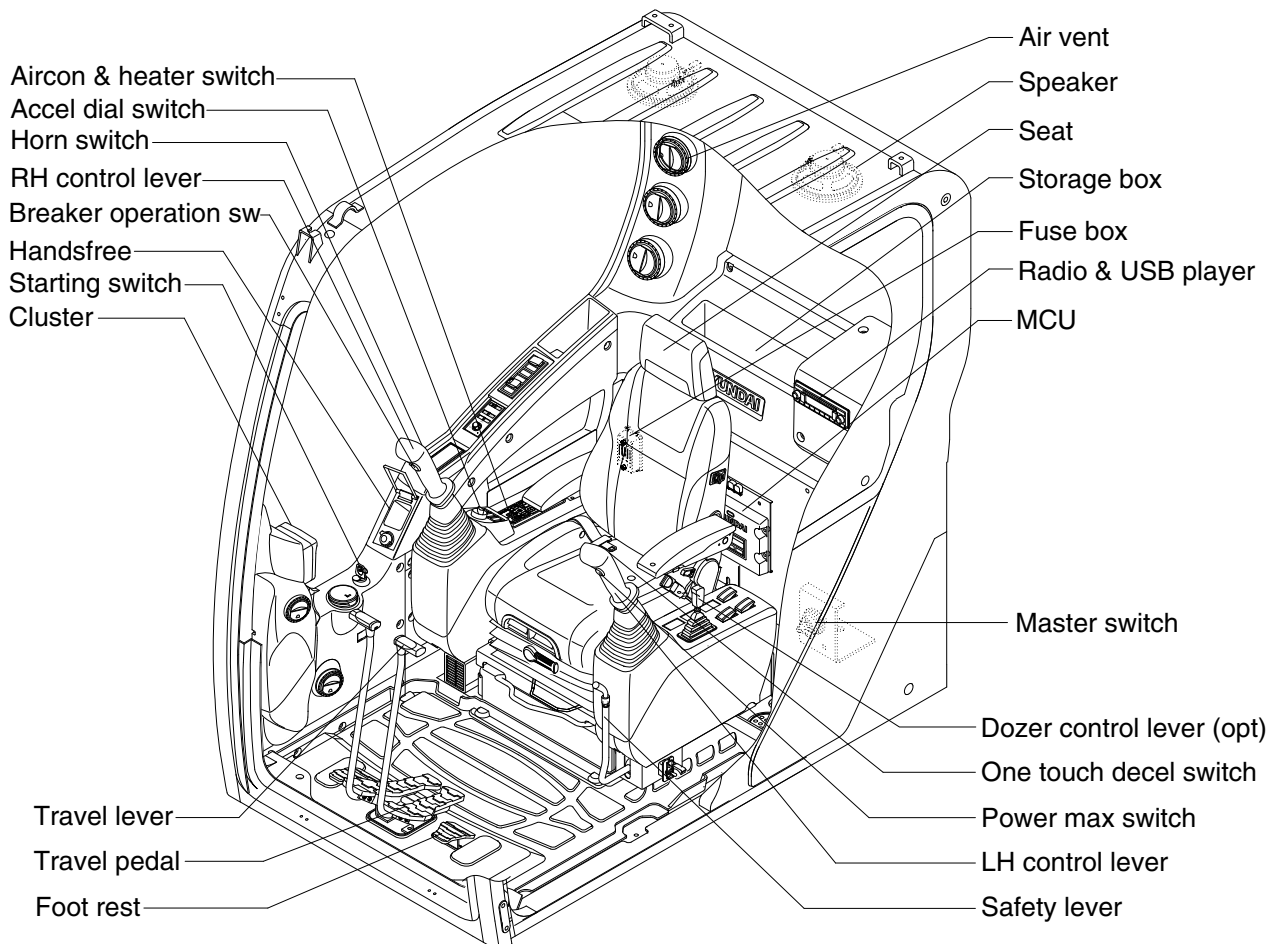## 1. CAB DEVICES

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.

Aircon & heater switch
Accel dial switch
Horn switch
RH control lever
Breaker operation sw
Handsfree
Starting switch
Cluster

Air vent
Speaker
Seat
Storage box
Fuse box
Radio & USB player
MCU

Master switch

Dozer control lever (opt)
One touch decel switch
Power max switch
LH control lever
Safety lever

Travel lever
Travel pedal
Foot rest

130ZF3CD01

2. CLUSTER

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.

Time display

Warning lamps
(see page 3-6)

Gauge(see page 3-3)
Main menu(see page 3-17)

Tripmeter
(see page 3-30)
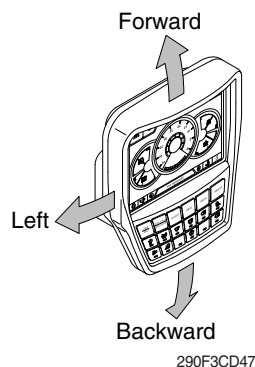
Pilot lamps
(see page 3-10)

Switches
(see page 3-13)

130ZF3CD205A

※ The warning lamp pops up and/or blinks and the buzzer sounds when the machine has a problem.

The warning lamp blinks until the problem is cleared. Refer to page 3-5 for details.
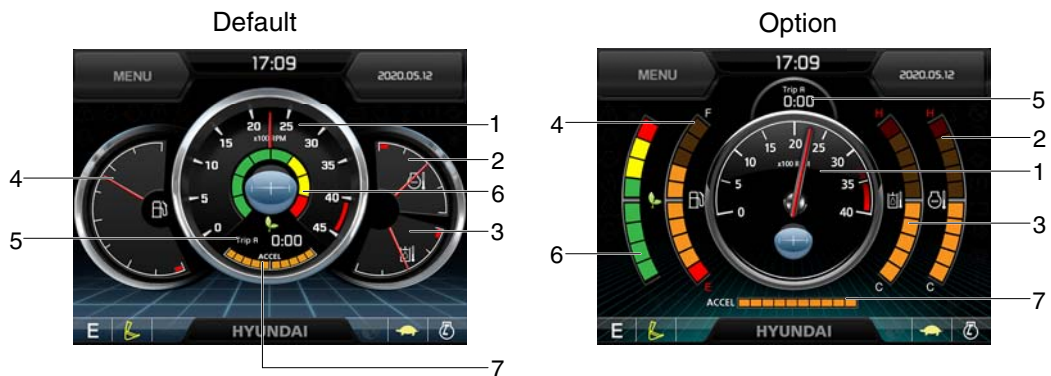
※ This cluster is adjustable.
 · Vertical (forward/backward) : each 15°
 · Horizontal (left only) : 8°

Forward

Left

Backward

290F3CD47

2) GAUGE

(1) Operation screen

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

Default   Option

130ZF3CD207A

1	RPM / Speed gauge	5	Tripmeter display
2	Engine coolant temperature gauge	6	Eco guage
3	Hydraulic oil temperature gauge	7	Accel dial gauge
4	Fuel level gauge		

※ **Operation screen type can be set by the screen type menu of the display.**
Refer to page 3-31 for details.

(2) RPM / Speed gauge
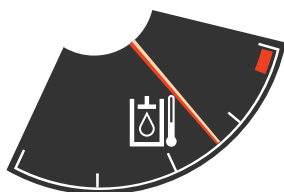

290F3CD49

① This display the engine speed.

(3) Engine coolant temperature gauge

290F3CD53

① This gauge indicates the temperature of coolant.
· White range : 40-107˚C (104-225˚F)
· Red range : Above 107˚C (225˚F)
② If the indicator is in the red range or ⌖ lamp pops up and the buzzer sounds turn OFF the engine and check the engine cooling system.
※ **If the gauge indicates the red range or ⌖ lamp blinks 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) Hydraulic oil temperature gauge

290F3CD54

① This gauge indicates the temperature of hydraulic oil.
· White range : 40-105°C(104-221°F)
· Red range : Above 105°C(221°F)
② If the indicator is in the red range or [icon] lamp pops up and the buzzer sounds 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 [icon] lamp blinks 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) Fuel level gauge
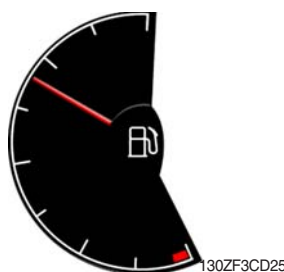
130ZF3CD255

① This gauge indicates the amount of fuel in the fuel tank.
② Fill the fuel when the red range, or [icon] lamp pops up and the buzzer sounds.
※ **If the gauge indicates the red range or [icon] lamp blinks 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.**
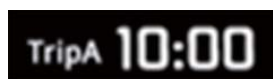
(6) Tripmeter display

290F3CD56

① This displays the engine the tripmeter.
※ **Refer to page 3-33 for details.**

(7) Eco gauge

290F3CD58

① This gauge indicates the fuel consumption rate and machine load status. So that operators can be careful with fuel economy.
② The fuel consumption rate or machine load is higher, the number of segment is increased.
③ The color of Eco gauge indicates operation status.
· White : Idle operation
· Green : Economy operation
· Yellow : Non-economy operation at a medium level.
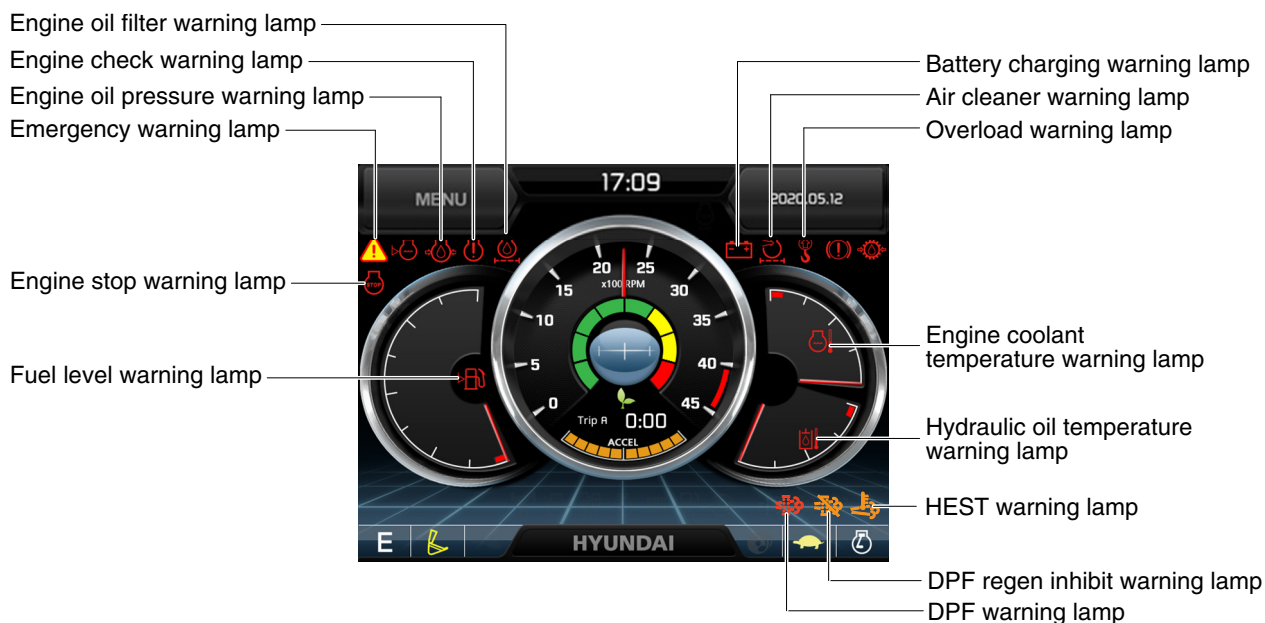· Red : Non-economy operation at a high level.

(8) Accel dial gauge

290F3CD59

① This gauge indicates the level of accel dial.

3) WARNING LAMPS

Engine oil filter warning lamp

Engine check warning lamp

Engine oil pressure warning lamp

Emergency warning lamp

Battery charging warning lamp

Air cleaner warning lamp

Overload warning lamp

Engine stop warning lamp

Fuel level warning lamp

Engine coolant temperature warning lamp

Hydraulic oil temperature warning lamp

HEST warning lamp

DPF regen inhibit warning lamp

DPF warning lamp

130ZF3CD203A

※ Warning lamps and buzzer

Warnings	When error happened	Lamps and buzzer
All warning lamps except below	Warning lamp pops up on the center of the LCD and the buzzer sounds	· The pop-up warning lamp moves to the original position and blinks, and the buzzer stops when ; - the buzzer stop switch [AUTO IDLE Buzzer Stop] is pushed - the lamp of the LCD is touched
(icons)	Warning lamp pops up on the center of the LCD and the buzzer sounds	· The pop-up warning lamp moves to the original position and light ON, and the buzzer stops when 2 seconds elapsed. ※ Refer to page 3-10 for details.
(icons)	Warning lamp pops up on the center of the LCD and the buzzer sounds	※ Refer to page 3-6 for details.

※ Refer to page 3-17 for the buzzer stop switch [AUTO IDLE Buzzer Stop] .

3-5

(1) Engine coolant temperature warning lamp
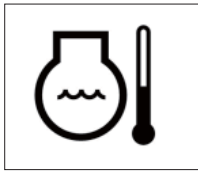
290F3CD61

① Engine coolant temperature warning is indicated two steps.
  − 103℃ over : The ⊖ lamp pops up and the buzzer sounds.
  − 107℃ over : The ⚠ lamp pops up and the buzzer sounds.
② The pop-up ⊖, ⚠ lamps move to the original position and blinks when the buzzer stop switch [AUTO IDLE Buzzer Stop] is pushed. And the buzzer stops and ⊖, ⚠ lamps keep blink.
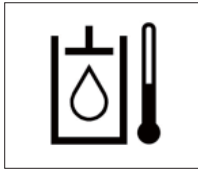③ Check the cooling system when the lamps keep blink.

(2) Hydraulic oil temperature warning lamp

290F3CD62

① Hydraulic oil temperature warning is indicated two steps.
  − 100℃ over : The ⊙ lamp pops up and the buzzer sounds.
  − 105℃ over : The ⚠ lamp pops up and the buzzer sounds.
② The pop-up ⊙, ⚠ lamps move to the original position and blinks when the buzzer stop switch [AUTO IDLE Buzzer Stop] is pushed. And the buzzer stops and ⊙, ⚠ lamps keep blink.
③ Check the hydraulic oil level and hydraulic oil cooling system.

(3) Fuel level warning lamp
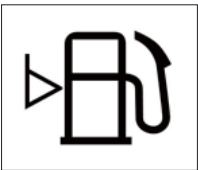
290F3CD63

① This warning lamp pops up and the buzzer sounds when the level of fuel is below 31 ℓ (8.2 U.S. gal).
② Fill the fuel immediately when the lamp blinks.

(4) Emergency warning lamp

290F3CD64

① This warning lamp pops up and the buzzer sounds when each of the below warnings is happened.
  − Engine coolant overheating (over 107℃)
  − Hydraulic oil overheating (over 105℃)
  − MCU input voltage abnormal
  − Cluster communication data error
  − Engine ECM communication data error
※ **The pop-up warning lamp moves to the original position and blinks when the buzzer stop switch [AUTO IDLE Buzzer Stop] is pushed. And the buzzer stops.**
② When this warning lamp blinks, machine must be checked and serviced immediately.

(5) Battery charging warning lamp
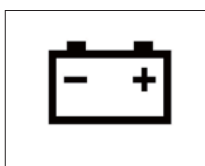
① This warning lamp pops up and buzzer sounds when the battery charging voltage is low.

② Check the battery charging circuit when this lamp blinks.

290F3CD67

(6) Air cleaner warning lamp
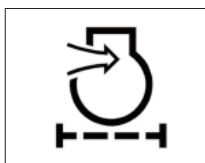
① This warning lamp pops up and buzzer sounds when the filter of air cleaner is clogged.

② Check the filter and clean or replace it.

290F3CD68

(7) Overload warning lamp (opt)

① When the machine is overload, the overload warning lamp pops up and buzzer sounds during the overload switch is ON. (if equipped)

② Reduce the machine load.

290F3CD69

(8) Engine oil pressure warning lamp
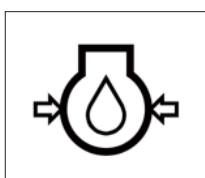
① This warning lamp pops up and the buzzer sounds when the engine oil pressure is low.

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

※ But, when key-on status, the lamp is ON for initial lamp check.

③ If the lamp blinks, engine oil change and oil life reset are required.

※ Refer to page 3-8 for details.

290F3CD65

(9) Engine stop warning lamp

① This warning lamp pops up and the buzzer sounds when when the engine oil pressure is low.

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

※ Refer to page 3-8 for details.

290F3CD252

(10) Eninge oil filter warning lamp
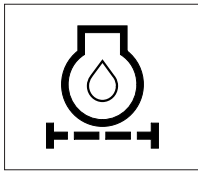
300A3CD306

① This warning lamp pops up and the buzzer sounds when the filter of eninge oil is clogged.
② Check the filter and clean or replace it.

(10) Engine check warning lamp

290F3CD66

① The engine check warning lamp will activate as following condition.
   a. The engine oil pressure is low.
   b. The engine oil life has exceeded the maximum service limit.
② Also, the engine stop warning lamp and engine oil pressure warining lamp will activated as table below

Engine warning lamp			State description
Engine check	Engine stop	Engine oil pressure	
Off	Off	Off	Oil pressure and oil life OK
On	On	On (Engine running)	Low oil pressure during engine operation
Off	Off	Flash (2 Hz)	The engine oil change due soon. Triggered at *480 hours from last oil change reset. Pop-up window is seen in a cluster. 130ZF3CD103
On	Off	Flash (2 Hz)	The engine oil life has reached the maximum recommended life. Triggered by the oil life algorithm. Pop-up window is seen in a cluster. 130ZF3CD104
Flash	Off	Flash (2 Hz)	The engine oil life has exceeded the maximum allowable life for the monitored operating conditions. Engine derates. Triggered by the oil life algorithm. Pop-up window is seen in a cluster. 130ZF3CD105
Off	Off	Flash (1 Hz)	Oil life reset confirmed. Flashes at 1 Hz until key cycle is reset

* Recommended time period between oil service intervals is 500 hrs.

※ **Method of the engine oil life reset**

Once engine oil is changed, the oil life reset is required. To perform oil life reset, follow the procedure as below.

(1) Turn the starting switch on without engine running.

(2) Then press "Menu" → "Manage" → "Engine Oil Life Reset"

(3) Press OK and Put "User Password".

130ZF3CD101

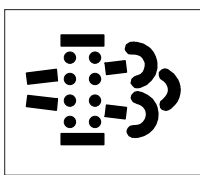(4) When the oil life reset is completed, the pop-up window below is seen, and oil pressure warning lamp flashes at 1 Hz until starting switch cycle is reset.

(5) Turn the starting switch off and then starting switch on again to perform starting switch cycle reset.

130ZF3CD102A

(11) DPF (Diesel Particulate Filter) warning lamp

130ZF3CD219

① This warning lamp lights ON or BLINK when the regeneration is needed.
② When this lamp lights ON or BLINK, press the DPF switch to manual regeneration position (I) at least 2 seconds to initiate the manual DPF regeneration.
③ When the manual regeneration is started, the DPF lamp will be turned off and HEST lamp will be ON.
※ **Consequences of delaying regeneration**
   - Poor performance caused by increasing exhaust gas pressure.
   - Higher fuel consumption
   - Shorter filter lifetime
※ **Refer to the page 3-39 for the DPF switch operation.**

(12) DPF regeneration inhibit warning lamp
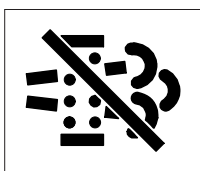
130ZF3CD220

① This warning lamp lights ON or BLINK when pressing the DPF switch at inhibit position (II) at least 2 seconds.
② When this lamp lights ON or BLINK, the automatic or manual regeneration does not occur.
③ To clear the Inhibit lamp, pressing the DPF switch once again at inhibit position (II) at least 2 seconds.

(13) HEST (High Exhaust System Temperature) warning lamp
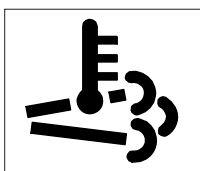
130ZF3CD221

① This warning lamp indicate high temperature of the exhaust system due to DPF regeneration.
② The lamp will also illuminate during the manual DPF regeneration.
③ When this lamp is illuminated, be sure the exhaust pipe outlet is not directed at any surface or material that can be melted, burn, or explode.
⚠ **The exhaust gas temperature could reach 650 °C [1200 °F], which is hot enough to ignite or melt common materials, and to cause burns.**
※ **The lamp does not signify the need for any kind of equipment or engine service; It just alerts the operator to high exhaust temperatures. It is common for the lamp to illuminate on and off during normal equipment operation as the engine completes DPF regeneration.**

※ Below chart shows the lamp statuses at each conditions.

Condition	Engine check lamp	Engine stop warning lamp	DPF warning lamp	HEST warning lamp	DPF regen inhibit warning lamp	State description
Normal (soot low)	OFF	OFF	OFF	OFF	OFF	Normal operation (passive regeneration)
Regeneration disabled	OFF	OFF	OFF	OFF	ON	Regeneration disabled due to DPF regeneration inhibit switch activated
Regeneration	OFF	OFF	OFF	ON	OFF	High exhaust temperature lamp ON during active or manual regeneration. The lamp will turn OFF 1 min after regeneration is completed.
Soot midium	OFF	OFF	ON	OFF	OFF	DPF above 130% soot loading, warns the operator that regeneration is required.
Soot high	Blink	OFF	ON	OFF	OFF	DPF above 180% soot loading. Engine power derates dependent on soot load. Regeneration is required.
Soot full	Blink	ON	ON	OFF	OFF	DPF above 250% soot loading. Engine will be locked at low idle. Contact the HD Hyundai Construction Equipment service center or a local dealer.

※ **Manual DPF regeneration**
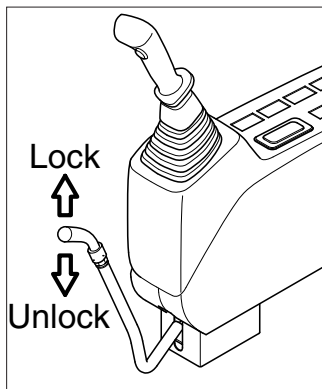
235F3CD55

(1) Manual DPF regeneration can be performed when the below conditions are met.
① Engine running > 10 seconds
② Coolant temperature > 65 ˚C
③ Engine at low idle
④ Soot load >130% (when DPF lamp is ON)
⑤ Safety lever = Lock position
⚠ **Manual DPF Regeneration must be performed when the machine is in a fireproof area.**
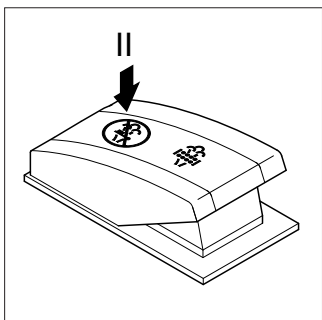
130ZF3CD10-3

※ **To stop a manual DPF regeneration before it has completed, set the DPF switch to Inhibit position (II) or turn OFF the engine.**

(2) **Procedure**
① Park a machine in a fireproof area.
② Set the engine at a low idle.
③ Push the DPF switch to manual regeneration position (I) at least 2 seconds to initiate the manual DPF regeneration.
※ **Refer to the page 3-39 for the DPF switch operation.**
※ **The engine speed will accelerate automatically from low idle to 2000 rpm at a rate of 100 rpm/s. The engine speed shall be maintained for a period of 15 to 25 minutes depending on the initial soot load. Once the regeneration has completed the engine will drop to low idle.**
④ The HEST warning lamp will light ON during the DPF regeneration.
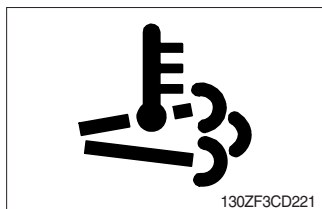
130ZF3CD10-4

130ZF3CD221

HEST warning lamp ON
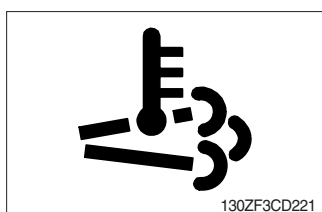
⑤ The HEST warning lamp will light OFF 1 minute after the DPF regeneration is completed.

130ZF3CD221

HEST warning lamp OFF

4) PILOT LAMPS

Warming up pilot lamp
Preheat pilot lamp
Power max pilot lamp

Auto engine shutdown pilot lamp (opt)

Decel pilot lamp

Fuel warmer pilot lamp
Maintenance pilot lamp

Power/User mode pilot mode
Work tool mode pilot lamp
Smart key pilot lamp

Auto idle pilot lamp
Travel speed pilot lamp
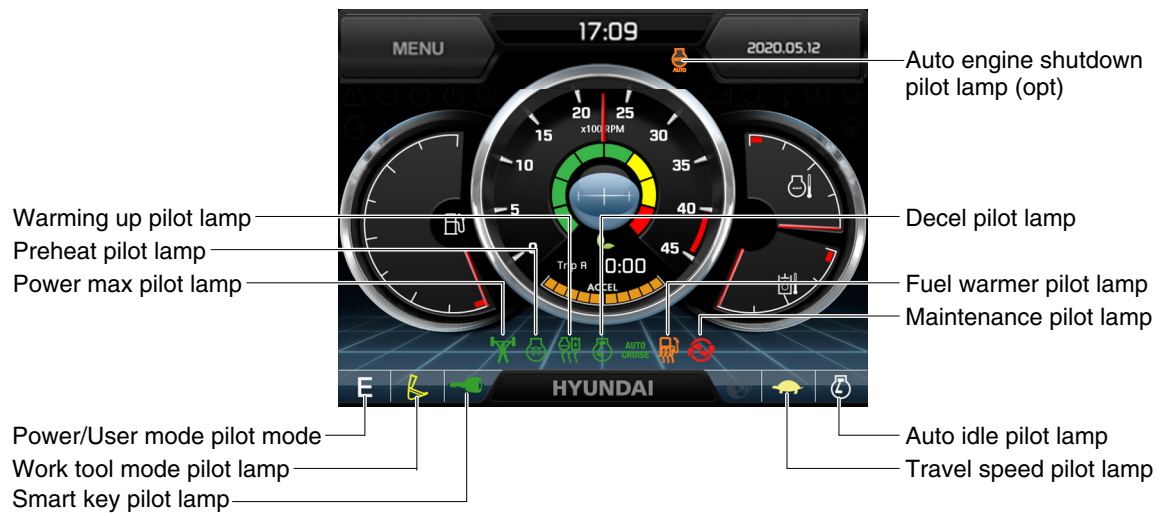
130ZF3CD274A

(1) Mode pilot lamps

No	Mode	Pilot lamp	Selected mode
1	Power mode	P	Heavy duty power work mode
		S	Standard power mode
		E	Economy power mode
2	User mode	U	User preferable power mode
3	Work mode		General operation - IPC speed mode
			General operation - IPC balance mode
			General operation - IPC efficiency mode
			Breaker operation mode
			Crusher operation mode
4	Travel mode		Low speed traveling
			High speed traveling
5	Auto idle mode		Auto idle

(2) Power max pilot lamp
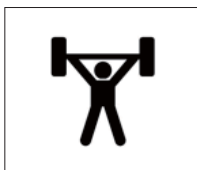
290F3CD78

① The lamp will be ON when pushing power max switch on the LH RCV lever.
② The power max function is operated maximum 8 seconds.
※ **Refer to the page 3-38 for power max function.**

(3) Preheat pilot lamp

290F3CD79

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

(4) Warming up pilot lamp
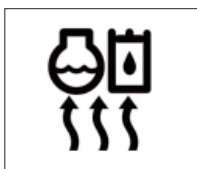
290F3CD80

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.

(5) Decel pilot lamp

290F3CD81

① Operating one touch decel switch on the RCV lever makes the lamp ON.
② Also, the lamp will be ON and engine speed will be lowered automatically to save fuel consumption when all levers and pedals are at neutral position, and the auto idle function is selected.
※ **One touch decel is not available when the auto idle pilot lamp is turned ON.**
※ **Refer to the page 3-37.**

(6) Fuel warmer pilot lamp
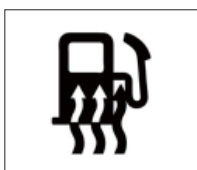
290F3CD82

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) Maintenance pilot lamp

290F3CD83

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 3-26.**

(8) Smart key pilot lamp (opt)
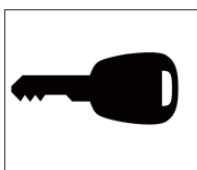
290F3CD214

① This lamp is ON when the engine is started by the start button.
② This lamp is red when the a authentication fails, green when succeeds.
※ **Refer to the page 3-27.**

(9) Auto engine shutdown pilot lamp (opt)

220A3CD202A

① This lamp is turned ON when the auto engine shutdown is activated.
※ **Refer to the page 3-22.**

5) SWITCHES

Main menu quick touch switch

Work mode pilot lamp

Power/User mode pilot lamp

User mode switch

Power mode switch

Work mode switch

Work light switch

Cab light switch

Head light switch

Intermittent wiper switch

Washer switch

Travel speed pilot lamp

Auto idle pilot lamp

Travel speed switch

Auto idle/Buzzer stop switch

Escape(previous or parent menu) Rear camera(option)

Overload switch(option)

Travel alarm switch

Beacon switch(option)

Wiper switch

130ZF3CD286A

※ **When some of the switches are selected, the pilot lamps are displayed on the LCD. Refer to the page 3-13 for details.**

(1) Power mode switch

290F3CD76
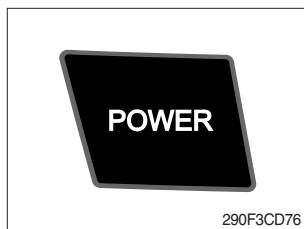
① This switch is to select the machine power mode and selected power mode pilot lamp is displayed on the pilot lamp position.
  · P : Heavy duty power work.
  · S : Standard power work.
  · E : Economy power work.
② The pilot lamp changes E → S → P → E in order.

(2) Work mode switch

290F3CD88
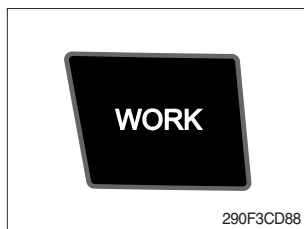
① This switch is to select the machine work mode, which shifts from general operation mode to optional attachment operation mode.
  · ⬚ : General operation mode
  · ⬚ : Breaker operation mode (if equipped)
  · ⬚ : Crusher operation mode (if equipped)
  · Not installed : Breaker or crusher is not installed.
※ **Refer to the page 4-7 for details.**

(3) User mode switch
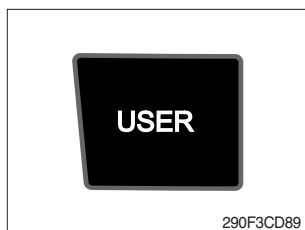
① This switch is used to memorize the current machine operating status in the MCU and activate the memorized user mode.
   · Memory : Automatically saved after key OFF.
   · Action   : Push this switch.
   · Cancel   : Push this switch once more.
② Refer to the page 3-17 for another set of user mode.

290F3CD89

(4) Travel speed switch

① This switch is used to select the travel speed alternatively.
   · [icon] : Low speed
   · [icon] : High speed

※ **Do not change the setting of the travel speed switch. Machine stability may be adversely affected.**

⚠ **Personal injury can result from sudden changes in machine stability.**

290F3CD91

(5) Auto idle/ buzzer stop switch

① This switch is used to activate or cancel the auto idle function.
   · Pilot lamp ON   : Auto idle function is activated.
   · Pilot lamp OFF : Auto idle function is cancelled.
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.

290F3CD90

(6) Escape/Camera switch
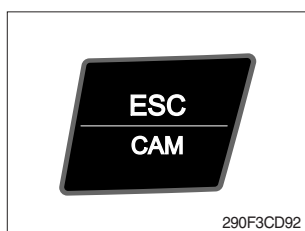
① This switch is used to return to the previous menu or parent menu.
② In the operation screen, pushing this switch will display the view of the camera on the machine (if equipped).
   Please refer to page 3-33 for the camera.
③ If the camera is not installed, this switch is used only ESC function.

290F3CD92

(7) Work light switch

① This switch is used to operate the work light.
② The pilot lamp is turned ON when operating the switch.

290F3CD93

(8) Head light switch

290F3CD94

① This switch is used to operate the head light.
② The pilot lamp is turned ON when operating the switch.

(9) Intermittent wiper switch

290F3CD95

① This switch is used to wipe operates intermittently.
② The pilot lamp is turned ON when operating the switch.

(10) Wiper switch

290F3CD96

① This switch is used to operate the window wiper.
② Note that the wiper will self-park when switched off.
③ The pilot lamp is turned ON when operating the switch.
※ **If the wiper does not operate with the switch in ON position, turn the switch OFF immediately. Check the cause. If the switch remains ON, motor failure can result.**

(11) Washer switch

290F3CD100
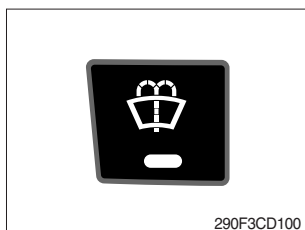
① The washer liquid is sprayed and the wiper is operated only while pressing this switch.
② The pilot lamp is turned ON when operating the switch.

(12) Cab light switch

290F3CD99
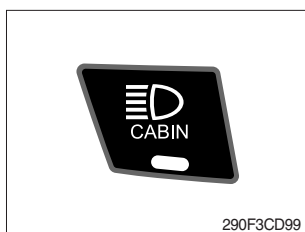
① This switch turns ON the cab light on the cab.
② The pilot lamp is turned ON when operating the switch.

(13) Beacon switch (opt)

290F3CD97
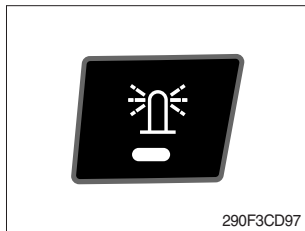
① This switch turns ON the rotary light on the cab.
② The pilot lamp is turned ON when operating the switch.

(14) Overload switch (opt)

290F3CD98
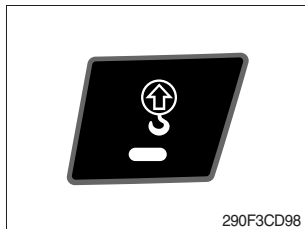
① When this switch turned ON, buzzer makes sound and over-load warning lamp comes ON in case that the machine is overload.
② When it turned OFF, buzzer stops and warning lamp goes out.
⚠ **Overloading the machine could impact the machines stability which could result in tipover hazard. A tipover hazard could result in serious injury or death. Always activate the overload warning device before you handle or lift objects.**

(15) Travel alarm switch

290F3CD101
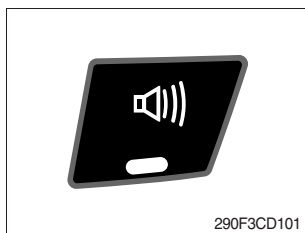
① This switch is to activate travel alarm function surrounding when the machine travels.
   · ON   : The travel alarm function is activated.
   · OFF   : The travel alarm function is not activated.

(16) Main menu quick touch switch

290F3CD217

① This switch is to activate the main menu in the cluster.
※ **Refer to the page 3-20.**

6) MAIN MENU

※ You can select or set the menu by touch screen.

On the operation screen, tap MENU to access the main menu screen.

On the sub menu screen, you can tap the menu bar to access functions or applications.

· Operation screen

Tap
MENU

Main menu screen

Sub menu screen
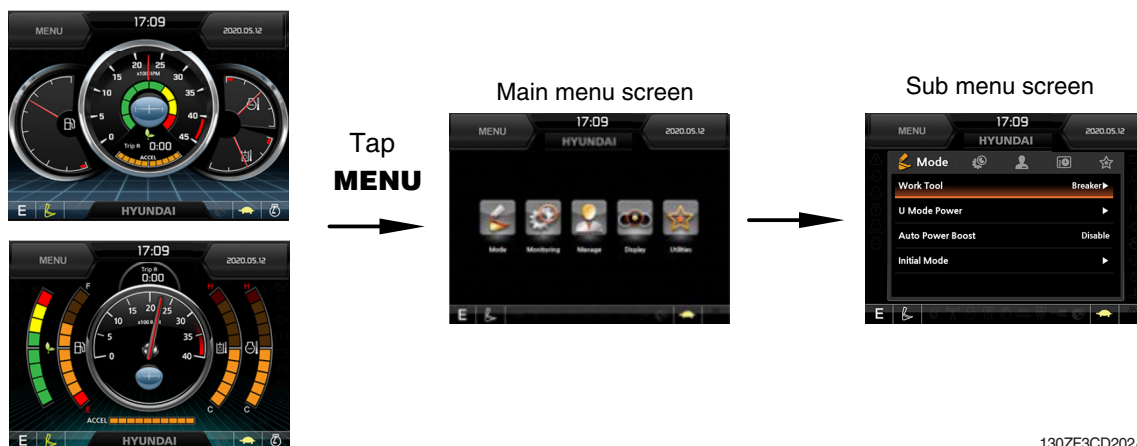
130ZF3CD202A

(1) Structure

No	Main menu	Sub menu	Description
1	Mode 290F3CD103	Work tool U mode power Boom/Arm speed Auto power boost IPC mode Auto engine shutdown (option) Initial mode Emergency mode	Breaker, Crusher, Not installed User mode only Boom speed, Arm speed Enable, Disable Speed mode, Balance mode, Efficiency mode One time, Always, Disable Key on initial mode, Accel initial mode / step Switch function
2	Monitoring 290F3CD104	Active fault Logged fault Delete logged fault Monitoring	MCU, Engine ECM, AAVM (option) MCU, Engine ECM, AAVM (option) All logged fault delete, Initialization canceled Machine information, Switch status, Output status,
3	Management 290F3CD105	Fuel rate information Maintenance information Machine security Machine information Contact Service menu Clinometer Update Engine oil life reset	General record, Hourly, Daily, Mode record Replacement, Change interval oils and filters ESL mode setting, Password change Model, MCU, Monitor, Switch controller, RMCU, Relay drive unit, AAVM (option) A/S phone number, A/S phone number change Power shift, Operating hour, IPC mode, Breaker mode pump acting, EPPR current level, Overload pressure Clinometer setting Cluster, ETC device Reset
4	Display 290F3CD106	Display item Clock Brightness Unit setup Language selection Screen type	Engine speed, Tripmeter A, Tripmeter B, Tripmeter C Clock Manual, Auto Temperature, Pressure, Flow, Distance, Date format Korean, English, Chinese, ETC A type, B type
5	Utilities 290F3CD107	Tripmeter Camera	3 kinds (A, B, C) Camera on/off, AAVM (option)

3-20

(2) Mode setup

① Work tool

235F3CD108A

220S3CD253A

A

235F3CD254A

B

· Select on installed optional attachment
  - A : It can set the user's attachment.
      It is available in setting #1~#10.
  - B : Max flow - Set the maximum flow for the attachment.
      Relief pressure - Set the relief pressure.

② U mode power

220S3CD111A

235F3CD112A
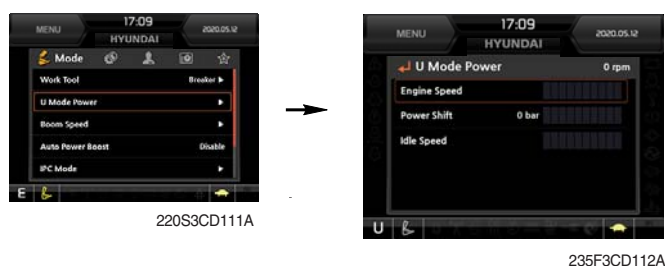
Step ( )	Engine speed (rpm)	Idle speed (rpm)	Power shift (bar)
1	1300	1000	0
2	1400	1050	3
3	1500	1100 (auto decel)	6
4	1600	1130	9
5	1700	1150	12
6	1800	1180	16
7	1900	1200	20
8	2000	1230	26
9	2050	1250	32
10	2100	1280	38

※ One touch decel & low idle : 1000 rpm

· Engine high idle rpm, auto idle rpm and pump torque (power shift) can be modulated and memorized separately in U-mode.
· U-mode can be activated by user mode switch.

③ Boom/Arm speed

235F3CD113A

235F3CD114A

235F3CD115A

· **Boom speed**
  - Boom priority function can be activated or cancelled
    Enable - Boom up speed is automatically adjusted as working conditions by the MCU.
    Disable - Normal operation

· **Arm speed**
  - Arm regeneration function can be activated or cancelled.
    Enable - Arm in speed is up.
    Disable - Normal operation.

④ **Auto power boost**

220S3CD118A

220S3CD117A

· The power boost function can be activated or cancelled.
   Enable - The digging power is automatically increased as working conditions by the MCU.
           It is operated max 8 seconds.
   Disable - Not operated.

⑤ **IPC mode**

220S3CD310A

220S3CD311A

130ZF3CD256A

220S3CD312A

130ZF3CD258A

220S3CD313A

130ZF3CD259A

· The IPC mode can be selected by this menu.
   - Speed mode
   - Balance mode (default)
   - Efficiency mode
· This mode is applied only general operation mode of the work tool mode.
※ Please update the cluster programs if this mode is not displayed in the mode setup menu. Refer
   to the page 3-25-1.

⑥ **Automatic engine shutdown (option)**

220S3CD91A

220S3CD92A

130ZF3CD213A

· The automatic engine shutdown function can be set by this menu.
  - One time
  - Always
  - Disable
  - Wait time setting : Max 40 minutes, min 2 minutes

⑦ **Initial mode**

220S3CD122A

235F3CD119A

· **Key on initial mode**
  - Selected the power mode is activated when the engine is started.

· **Accel initial mode**
  - Last setting value
  - User setting value

· **Accel initial step**
  - 0~9 step

⑧ **Emergency mode**

220S3CD248A

220S3CD249A

· This mode can be use when the switches are abnormal on the cluster.
· The cluster switches will be selected by touched each icon.

(3) Monitoring

① Active fault

220S3CD120A

235F3CD121A

220S3CD125A
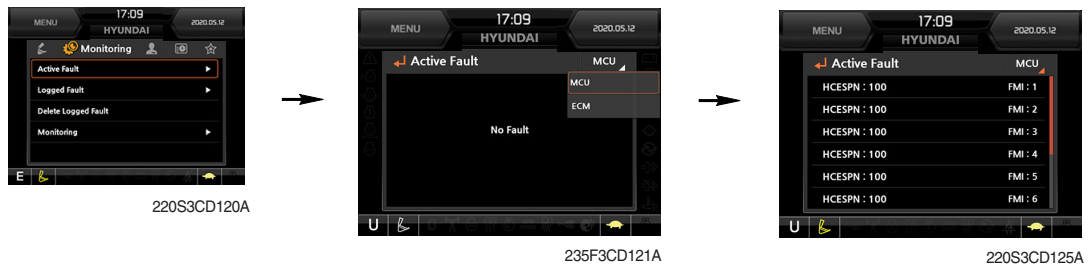
· The active faults of the MCU, engine ECM, AAVM (option) can be checked by this menu.

② Logged fault

220S3CD128A

235F3CD123A

220S3CD124A
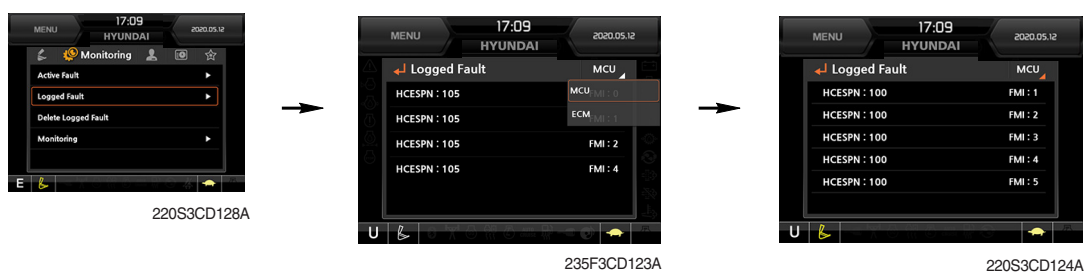
· The logged faults of the MCU, engine ECM, AAVM (option) can be checked by this menu.

③ Delete logged fault

220S3CD134A

220S3CD126A

220S3CD127A

· The logged faults of the MCU, engine ECM, AAVM (option) can be deleted by this menu.

④ Monitoring

220S3CD172A

235F3CD188A

235F3CD189A
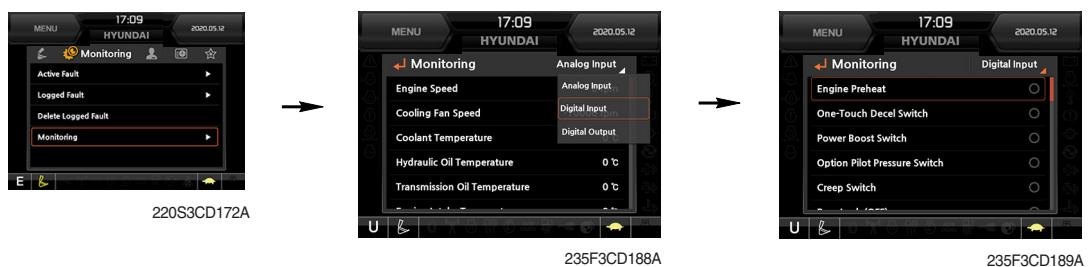
· The machine status such as the engine rpm, oil temperature, voltage and pressure etc. can be checked by this menu (Analog input).
· The switch status or output status can be confirmed by this menu (Digital input & Digital output).
· The activated switch or output pilot lamps ● are light ON.

(4) Management

① Fuel rate information

220S3CD14A

220S3CD15A

A

220S3CD16A

B

220S3CD17A

C

220S3CD18A

D

220S3CD19A

· General record (A)
- Average fuel rate (left) (from "Reset" to now)
  Fuel consumption devided by engine run time (service meter time).
- A days fuel used (right)
  Fuel consumption from 24:00 (or "Reset" time) to now (MCU real time).

· Hourly record (B)
- Hourly fuel rates for past 12 hours (service meter time).
- No record during key-off time.
- One step shift to the right for every one hour.
- Automatic deletion for 12 hours earlier data.
- All hourly records deletion by "Reset".
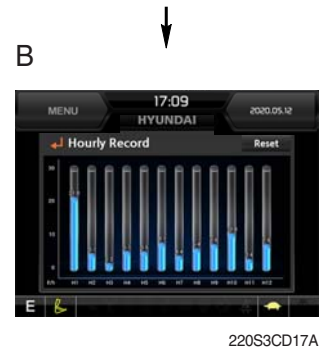
· Daily record (C)
- Daily fuel consumption for past seven days (MCU real time).
- No record during key-off time.
- One step shift to the right at 24:00 for every day.
- Automatic deletion for 7 days earlier data.
- All daily records deletion by "Reset".
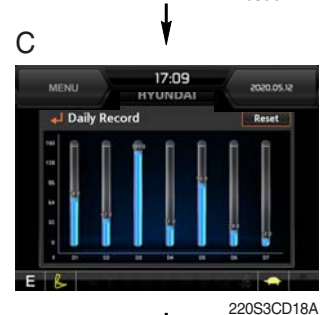
· Mode record (D)
- Average fuel rate for each power mode/accel dial (at least 7) from "Reset" to now.
- No record during idle.
- All mode records deletion by "Reset".
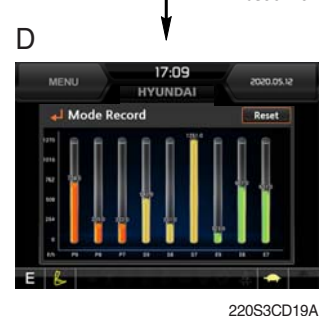
② **Maintenance information**

220S3CD131A

220S3CD132A

220S3CD133A

· Alarm lamp (🔴) is ON when oil or filter needs to be changed or replaced.
· Replacement   : The elapsed time will be reset to zero (0).
· Change interval : The change or replace interval can be changed in the unit of 50 hours.
· **Change or relpace interval**

③ Machine security

220S3CD190A

220S3CD135A

220S3CD136A

220S3CD137A

220S3CD138A

· **ESL mode setting**
   - ESL : Engine Starting Limit
   - ESL mode is desingned 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.
   - **Machine security**
      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) +** ✔
   - **Smart key** (option) : Refer to next page.
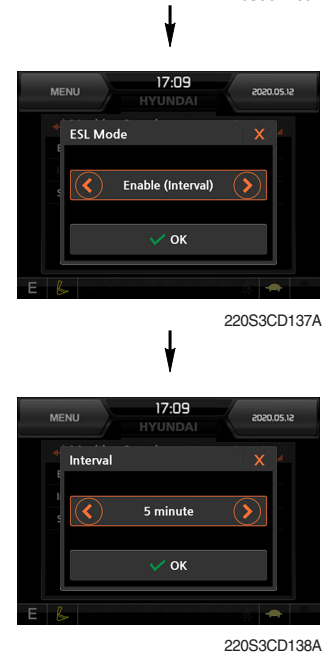
· **Password change**
   - The password is 5~10 digits.

220S3CD190A

220S3CD140A

220S3CD135A
Enter the current password

220S3CD143A
Enter the new password again

220S3CD142A
Enter the new password

   ※ **Before first use, please set user password and owner password in advance for machine security.**

- **Smart key**

220S3CD190A

220S3CD135A

235F3CD001

· Smart key is registered when equipped with optional smart key. If smart key is not inside of the cabin, authentication process fails and the password is needed.
· Tag management menu is activated when the Smart key menu is Enabled.
  You can register and delete the tags.

235F3CD002

- **Tag management**
  · When registering a tag : Only the tag you want to register must be in the cabin.
  · When deleting a tag : All registered tags are deleted.

235F3CD003

Deleting

235F3CD006

235F3CD004

Registering

235F3CD005

④ Machine Information

220S3CD144A

220S3CD145A
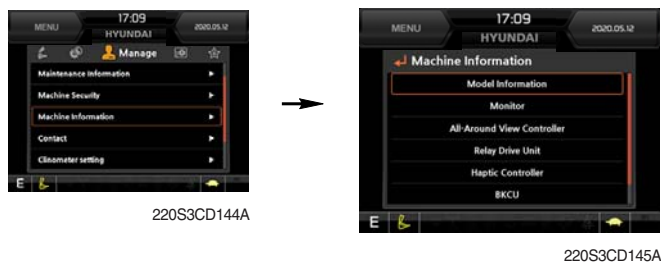
· This can confirm the identification of the model information (ECU), MCU, monitor, switch controller, RMCU, relay driver unit, AAVM (opt).

⑤ Contact (A/S phone number)

220S3CD146A

220S3CD147A

220S3CD148A

Enter the new A/S phone number

⑥ Service menu

220S3CD149A

220S3CD150A

220S3CD251A

· Power shift (standard/option) : Power shift pressure can be set by option menu.
· Operating hours : Operating hours since the machine line out can be checked by this menu.
· Breaker mode pump acting (1 pump/2 pump)
· EPPR current level (attach flow EPPR 1 & 2, boom priority EPPR, attach relief pressure EPPR 1& 2)
· Overload pressure : 100 ~ 350 bar

⑦ Clinometer

220S3CD152A

220S3CD153A
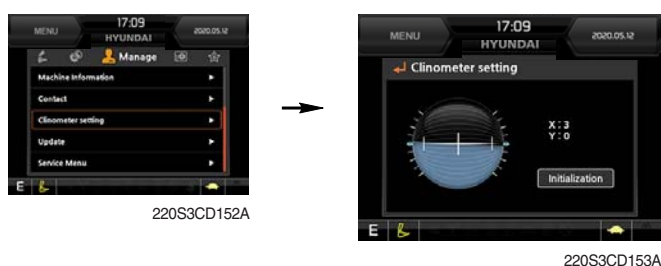
· When the machine is on the flatland, if tap the "initialization", the values of X, Y reset "0".
· You can confirm tilt of machine in cluster's operating screen.

⑧ **Update (cluster & ETC devices)**

220S3CD67A

220S3CD135A

220S3CD280A

380F3CD06

235F3CD04A
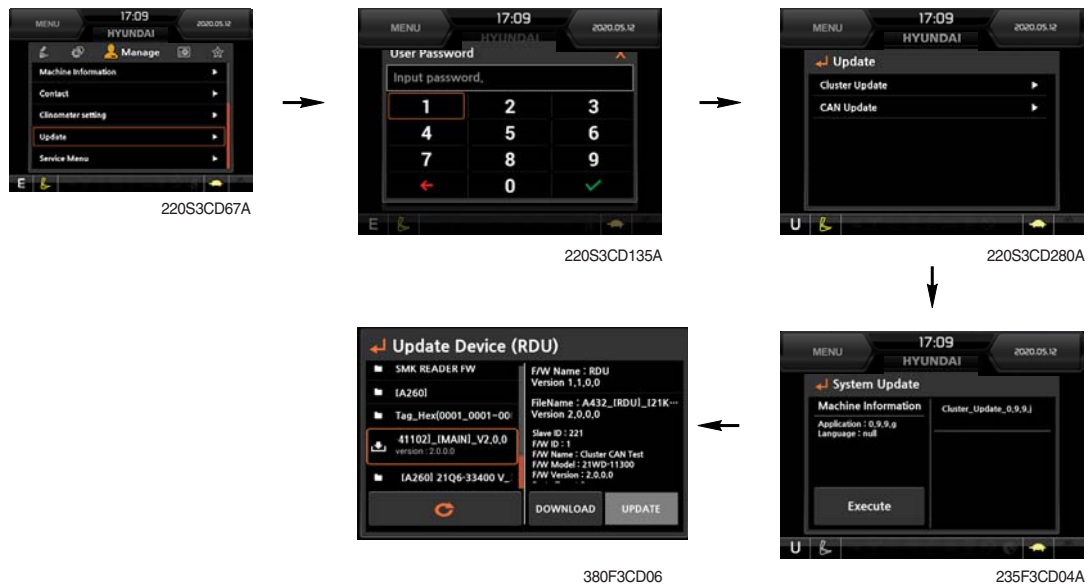
· ETC devices and cluster can be updated through CAN 2 network.
· Insert USB memory stick which includes program files, start download.

⑨ **Engine oil life reset**

130ZF3CD100A

130ZF3CD101

130ZF3CD102A

(5) Display

① Display item

220S3CD154A

235F3CD155A

130ZF3CD256A

· The center display type of the LCD can be selected by this menu.
· The engine speed or each of the tripmeter (A,B,C) is displayed on the center display.

② Clock

220S3CD157A

235F3CD158A

· The first line's three spots "∗∗/∗∗/∗∗∗∗" represent Month/Day/Year each.
· The second line shows the current time. (0:00~23:59)

③ Brightness

220S3CD159A

220S3CD160A

220S3CD139A

220S3CD141A

220S3CD191A

220S3CD192A

· If "Auto" is chosen, brightness for day and night can be differently set up. Also by using the bar in lower side, users can define which time interval belongs to day and night.
(in bar figure, white area represents night time while orange shows day time)

④ **Unit**

220S3CD161A

220S3CD162A

235F3CD193A

- · Temperature : ˚C ↔ ˚F
- · Pressure : bar ↔ MPa ↔ kgf/cm²
- · Volume : ℓ ↔ gal
- · Flow : lpm ↔ gpm
- · Distance : km ↔ mile
- · Date format : yy/mm/dd ↔ mm/dd/yy ↔ dd-mm-yy

⑤ **Language**

220S3CD163A

220S3CD164A

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

⑥ **Screen type**

220S3CD165A

A Type (Default)   220S3CD166A

130ZF3CD256A

B Type (Option)   220S3CD174A

235F3CD157A

(6) Utilities

① Tripmeter

235F3CD168A

220S3CD169A

· Maximum 3 kinds of tripmeters can be used at the same time.
· Each tripmeter can be turned on by choosing "Start" while it also can be turned off by choosing "Stop".
· If the tripmeter icon is activated in the operation screen, it can be controlled directly there.

② Camera setting

· If the rear camera is not installed on the machine, set disable.
· If the rear camera installed on the machine, set enable.

235F3CD200A

220S3CD255A

220S3CD256A

· In the operation screen, rear camera screen show up when ESC/CAM button is pushed.

290F3CD156A

290F3CD221

④ **AAVM** (All Around View Monitoring, option)
· The AAVM buttons of the cluster consist of ESC/CAM and AUTO IDLE/Buzzer stop.

Buzzer stop switch
Escape switch

130ZF3CD244A

- **Escape button**
· It will enter into the AAVM mode from the beginning screen if the AAVM is installed.
· While in the AAVM mode, select the ESC button to return to the beginning screen.

130ZF3CD256A
The beginning screen

AAVM mode   290F3CD222
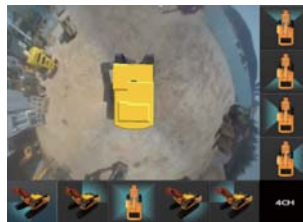
- **Buzzer stop button**
· In AAVM mode, it detects surrounding pedestrians or objects and the warning buzzer sounds.
· User can turn OFF the warning sound by pressing buzzer stop button.

290F3CD246A

· When the worker or pedestrian go to the green line (radius 5 m), an external danger area of equipping on the cluster screen, the warning buzzer sounds and it displays the blue rectangular box for the recognition of the worker and pedestrian.
At this time, the operator should stop work immediately, and stop the buzzer by pressing the buzzer stop button. And then, please work after you check whether the danger factors are solved.

290F3CD247A

· When the worker or pedestrian go inside of red line (radius 3 m), an internal danger area of equipping on the cluster screen, the warning buzzer sounds and it displays the red rectangular box for the recognition of the worker and pedestrian.
At this time, the operator should stop work immediately, and stop the buzzer by pressing the buzzer stop button. And then, please work after you check whether the danger factors are solved.

※ **In AAVM mode, a touch screen of the LCD is available only. The multimodal dial of the haptic controller is not available.**

3. SWITCHES

Option attachment switch
DPF switch

Switch panel

Accel dial switch
Horn switch
Breaker operation switch (option)
Starting switch
Starting button(opt)

Heated seat switch
Master switch

Quick clamp switch (option)
Fine swing switch (option)
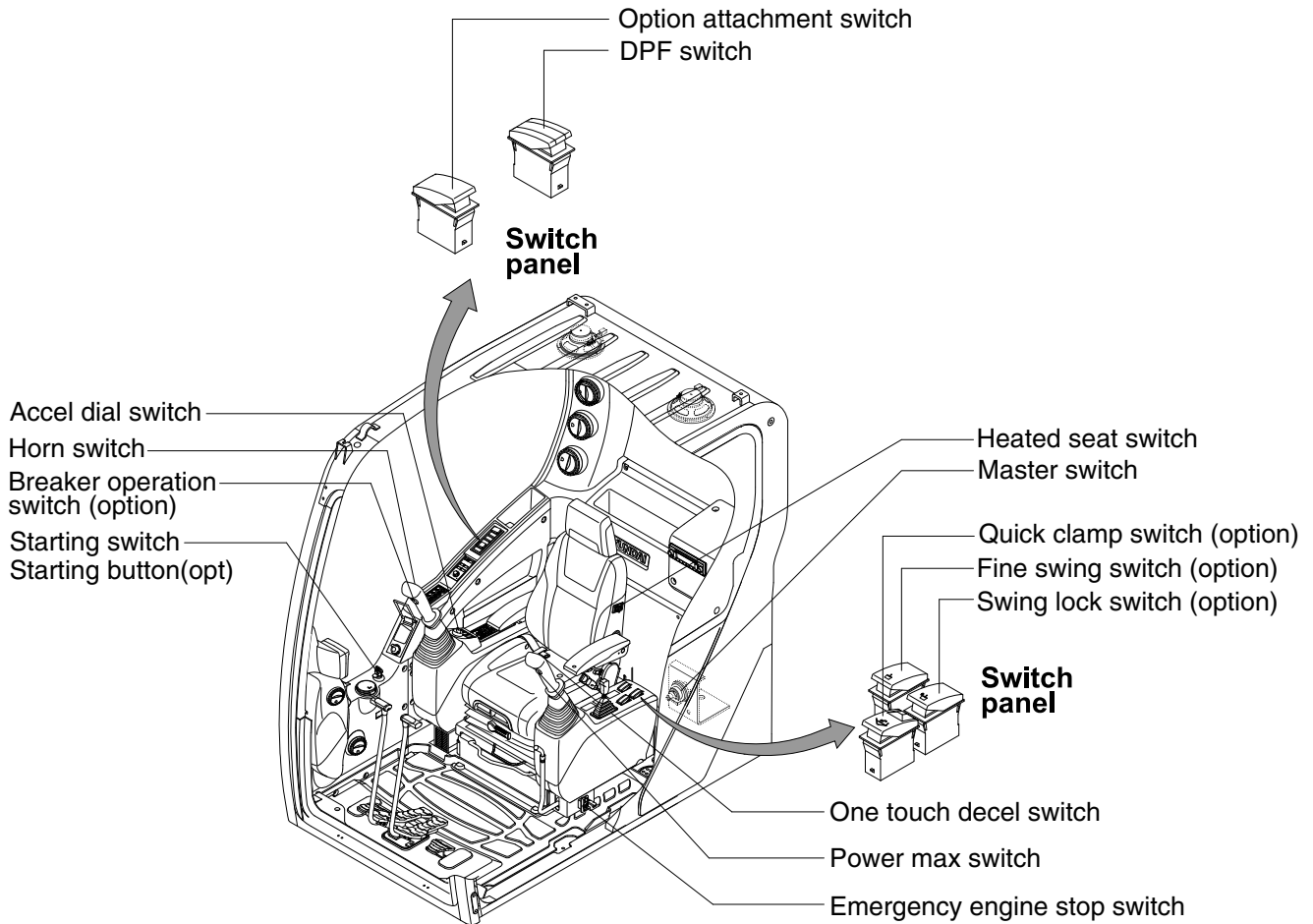Swing lock switch (option)

Switch panel

One touch decel switch
Power max switch
Emergency engine stop switch

130ZF3CD02A

1) STARTING SWITCH & STARTING BUTTON (OPT)

STARTING SWITCH

2609A3CD146

STARTING BUTTON

PUSH
OFF
OFF   ON
START

2609A3CD142
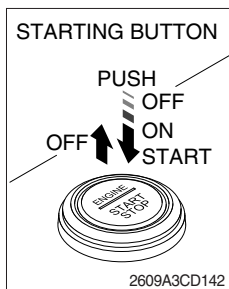
Starting button with smart key tag (opt)

(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.

※ 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 take according to ambient temperature.

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

2) MASTER SWITCH

Purging lamp

DISCONNECT SWITCH

OFF

290F3CD77
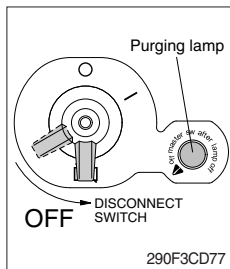
(1) This switch is used to shut off the entire electrical system.

(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. Engine and electrical system damage could result.**

※ **Off the master switch after purging lamp OFF.**

3) ACCEL DIAL SWITCH

Increase

Decrease

380H3CD02

(1) There are 10 dial setting.

(2) Setting 1 is low idle and setting 10 is high idle.

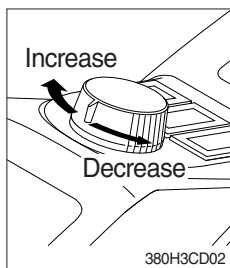   · By rotating the accel dial to right : Engine speed increases

    · By rotating the accel dial to left   : Engine speed decreases

4) QUICK CLAMP SWITCH (option)

Safety button

Lock

Unlock

130ZF3CD46
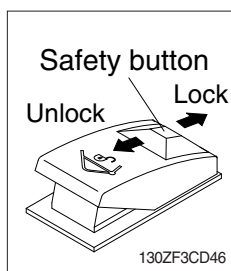
(1) This switch is used to engage or disengage the moving hook on quick clamp.

※ **Refer to the page 8-6 for details.**

5) HEATED SEAT SWITCH (option)

21093CD46M
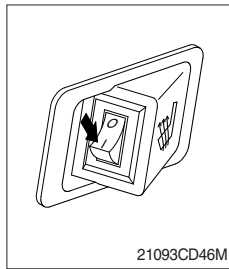
(1) This switch is used to heat the seat.
· Heater ON : 10±3.5 ˚C
· Heater OFF : 20±3 ˚C
(2) On pressing the switch, the indicator lamp is turned ON.

6) HORN SWITCH

Horn switch

RH RCV-lever

235F3CD46
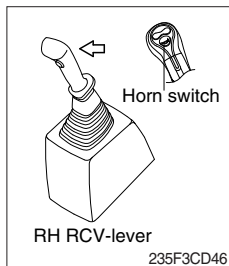
(1) This switch is at the top of right side control lever.
On pressing, the horn sounds.

7) BREAKER OPERATION SWITCH

Breaker operation switch

RH RCV-lever

235F3CD47
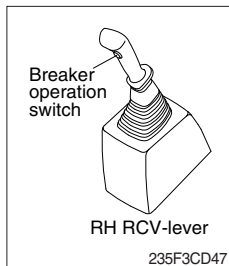
(1) On pressing this switch, the breaker operates only when the breaker operation mode is selected.

8) ONE TOUCH DECEL SWITCH

One touch decel switch

LH RCV-lever

235F3CD48
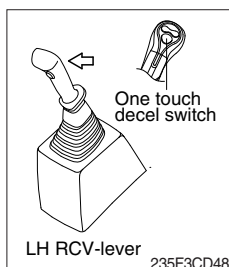
(1) This switch is used to actuate the deceleration function quickly.

(2) The engine speed is increased to previous setting value by pressing the switch again.

(3) One touch decel function is available only when the auto idle pilot lamp is turned OFF.

9) POWER MAX SWITCH

Power max switch

LH RCV-lever

235F3CD49
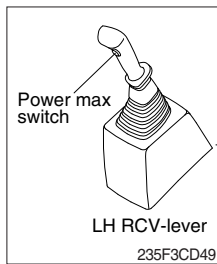
(1) This switch activate power max function.
   When this switch is kept pressed, hydraulic power of work equipment will be increased to approx 110 percent during 8 seconds.

(2) After 8 seconds, function is cancelled automatically even the switch keeps pressed.

※ **Do not use for craning purposes.**

10) EMERGENCY ENGINE STOP SWITCH

Emergency stop

Release

210N93CD46R
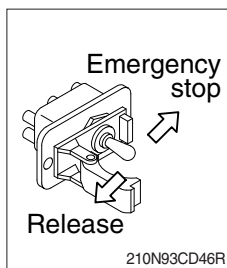
(1) This switch is used to emergency stop the engine.

※ **Be sure to keep the emergency switch on the release position when restart the engine.**

11) SWING LOCK SWITCH (option)

145ZF3CD52
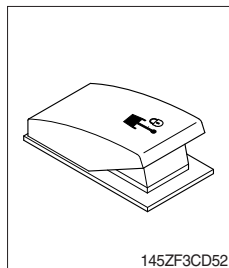
(1) When the switch is pressed ON position, the swing parking brake is locked and swing control is not available by shut off the swing pilot pressure to the swing spool.

12) FINE SWING SWITCH (option)

145ZF3CD52
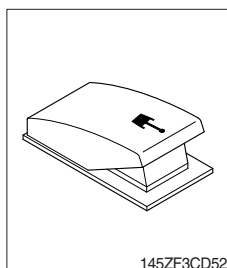
(1) When the switch is pressed ON position, the swing parking brake is released.

(2) Swing control improves during deceleration of a swing because the swing is allowed the drift instead of stopping abruptly.

⚠ **If the machine is operating on a slope with the switch in this position, swing motion may became uncontollable which could result in property damage, personal injury or death.**
   Do not use this position when the machine is operating on a slope.

13) DPF (DIESEL PARTICULATE FILTER) SWITCH

130ZF3CD10A
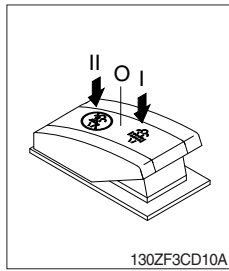
(1) This switch is used to select the regeneration function of the DPF.

(2) Inhibit position (II)
① The Inhibit position disallows any automatic or manual regeneration of the DPF.
② This may be used by an operator to prevent regeneration when the machine is operating in a hazardous environment where there are concerns of high temperature.
③ The Inhibit position should be activated only if high temperature may cause a hazardous condition. Using the inhibit position frequently may cause early DPF clogging.

(3) Neutral position (0)
① This position will initiate a automatic regeneration of the DPF.
② This is the normal position of the switch.

(4) Manual regeneration position (I)
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 3-10 for details.

4. LEVERS AND PEDALS

RH control lever
Travel lever

Single pedal (option)
Travel pedal
Seat & console box adjust lever

Dozer control lever (option)
LH control lever
Safety lever
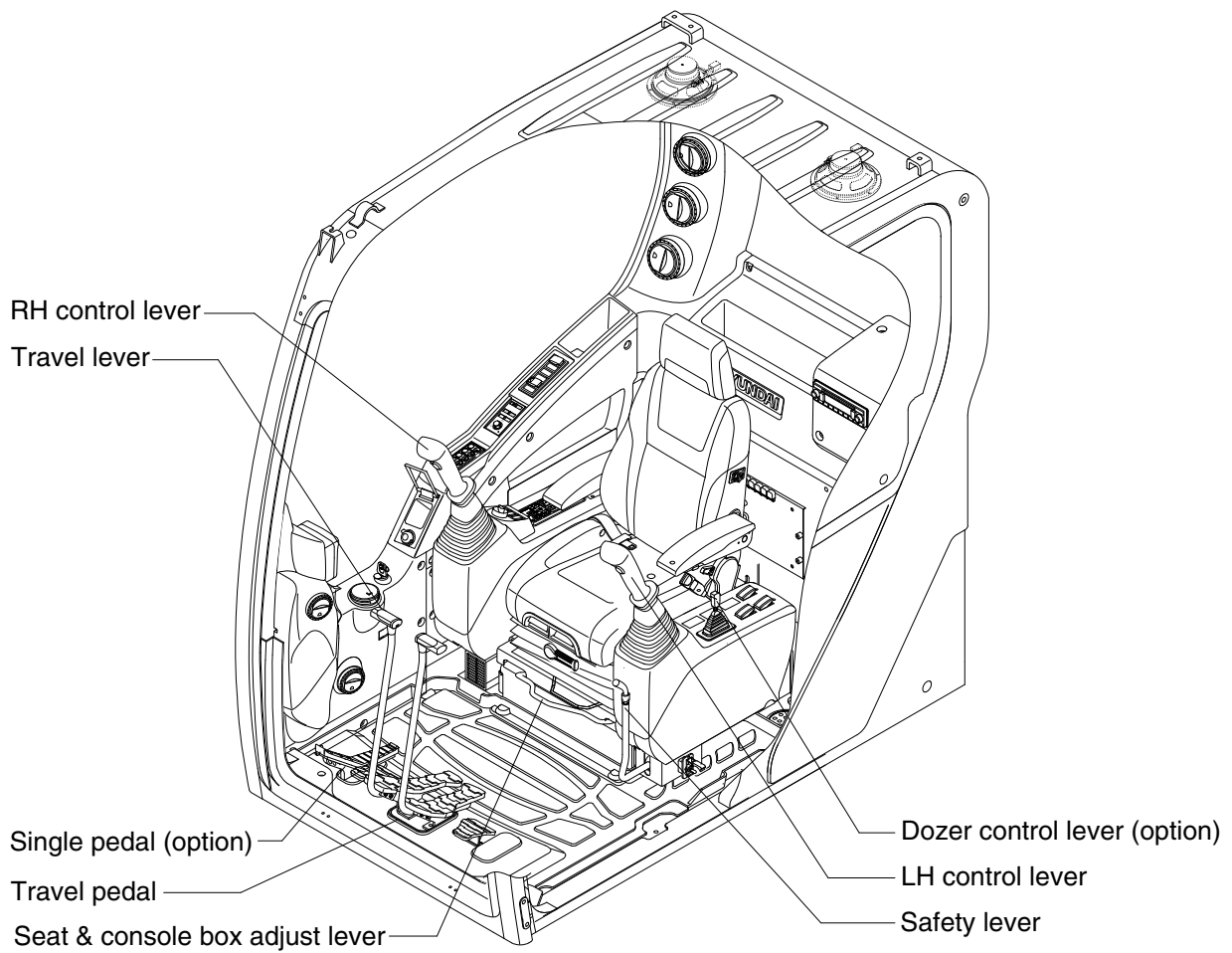
130ZF3CD16A

1) LH CONTROL LEVER

235F3CD53

(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

235F3CD54
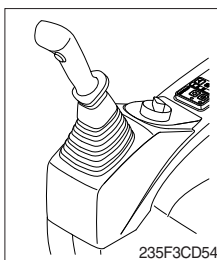
(1) This joystick is used to control the boom and the bucket.

(2) Refer to operation of working device in chapter 4 for details.

3) SAFETY LEVER
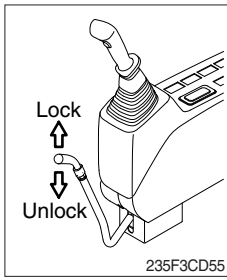
(1) All control levers and pedals are disabled from operation by locating the lever to lock position as shown.

※ **Be sure to lower the lever to LOCK position when leaving from operator's seat.**

(2) By pull lever to UNLOCK position, the machine is operational.

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

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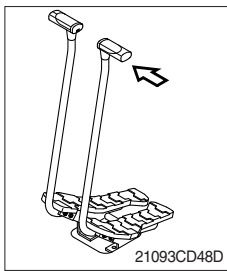
(1) This lever is mounted on travel pedal and used for traveling by hand. The operation principle is same as the travel pedal.

(2) Refer to traveling of the machine in chapter 4 for details.
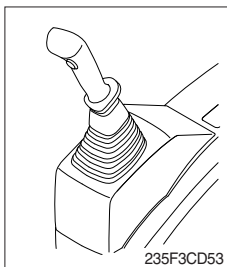
5) TRAVEL PEDAL
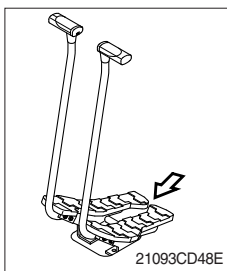
(1) This pedal is used to move the machine forward or backward.

(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
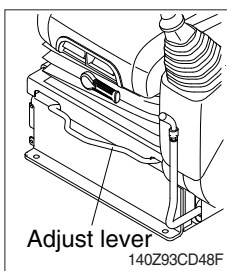
(1) This lever is used to move the seat and console box to fit the contours of the operator's body.

(2) Pull the lever to adjust forward or backward over 170mm(6.7").

7) DOZER CONTROL LEVER (option)
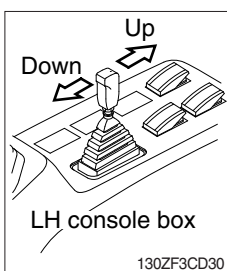
(1) This lever is used to operate the dozer blade.

(2) If the lever is pushed forward, the dozer blade will be going down.
And the lever is pulled back, the dozer blade will be going up.

8) SINGLE PEDAL (option)

145ZF3CD32
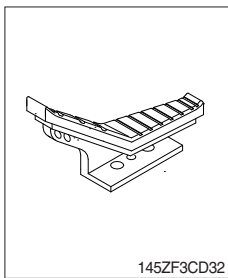
(1) This pedal is used to operate the 2nd boom.

(2) If the pedal is pushed front, the 2nd boom will be going down. And the pedal is pushed rear, the 2nd boom will be going up.

※ **Refer to operation of working device in chapter 4 for details.**

5. 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**

Switch panel

Fresh air switch   LCD   Mode switch

Auto switch

Power OFF switch

Fan speed switch   Air conditioner switch

Air recirculation switch   Temperature control switch
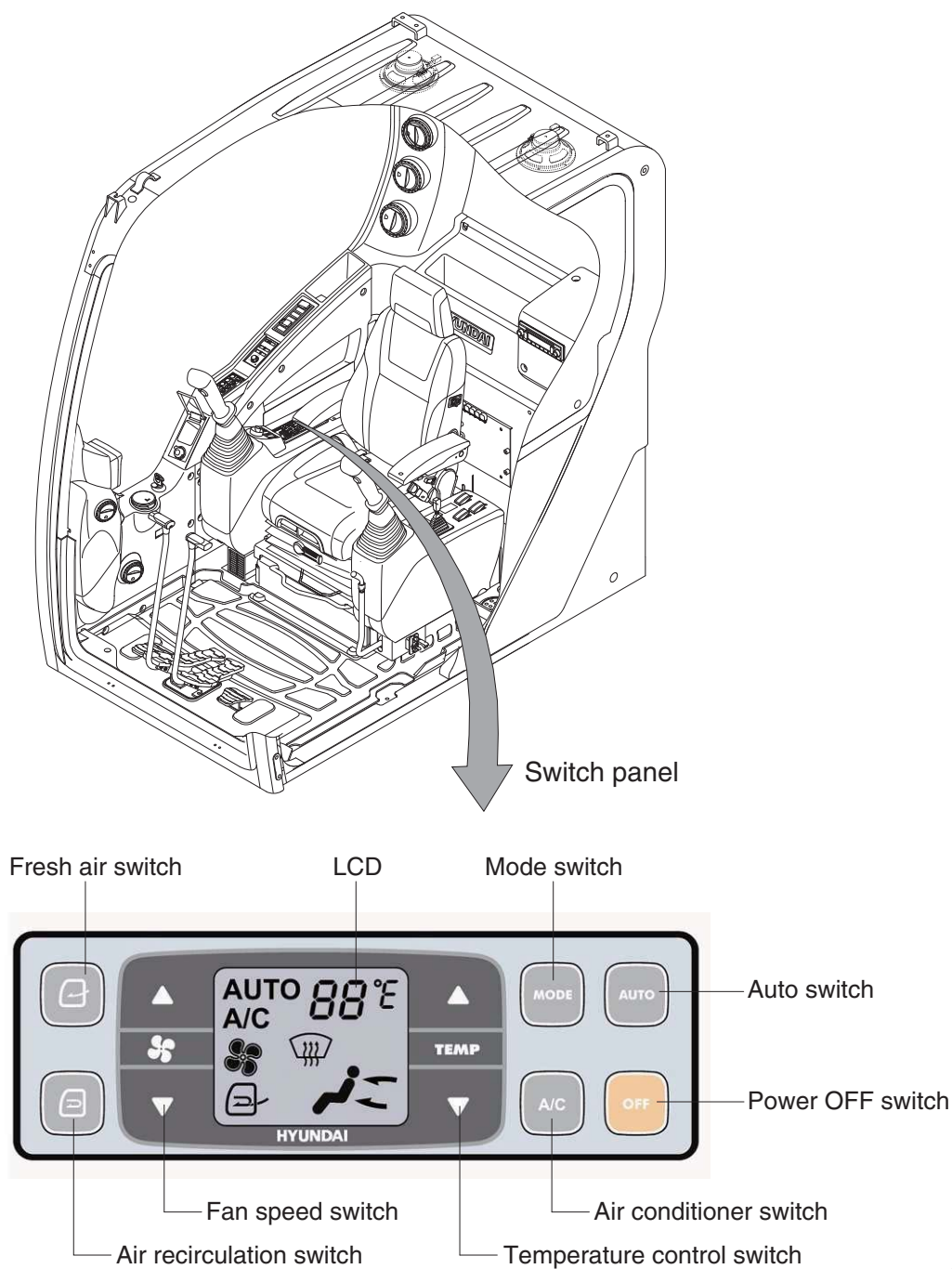
130ZF3CD06

1) POWER OFF SWITCH

370073CD54
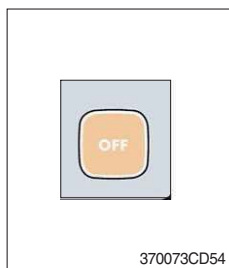
(1) This switch makes the system and the LED OFF.
Just before the power OFF, set values are stored.

(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

370073CD52
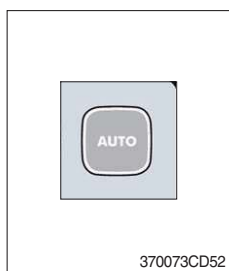
(1) Turn the starting switch to ON position, LCD lights ON.
Auto air conditioner and heater system automatically keeps the optimum condition in accordance with operator's temperature configuration sensing ambient and cabin inside temperature.

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

3) AIR CONDITIONER SWITCH (compressor switch)

370073CD53
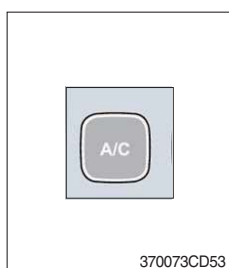
(1) This switch turns the compressor and the LCD ON.

(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

370074CD56
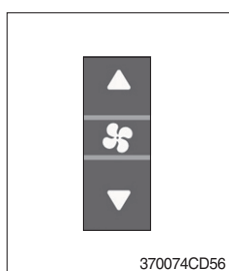
(1) Fan speed is controlled automatically by setted temperature.

(2) This switch controls fan speed manually.
· There are 8 up/down steps to control fan speed.
· The maximum step or the minimum step beeps 5 times.

(3) This switch makes the system ON.

5) TEMPERATURE CONTROL SWITCH

370074CD57
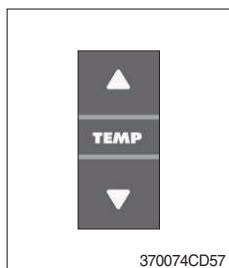
(1) Setting temperature indication

① Type A : 17~32°C, scale : 1°C

② Type B : Lo, 18~31°C, Hi, 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

370074CD50
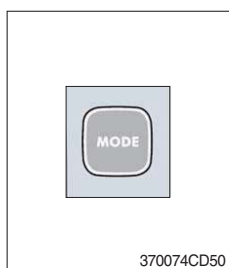
(1) Operating this switch, it beeps and displays symbol of each mode in order. (Vent → Vent/Foot → Def/Foot → Def/Vent → Def/Vent/Foot)

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

(2) When defroster mode operating, FRESH AIR/AIR RECIRCULATION switch turns to FRESH AIR mode and air conditioner switch turns ON.

7) FRESH AIR/AIR RECIRCULATION SWITCH

36073CD58
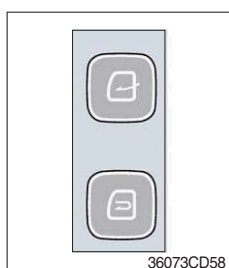
(1) It is possible to change the air-inlet method.

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

```
                    ┌─────────────────────┐
                    │ Starting switch ON  │
                    └──────────┬──────────┘
                               │
    ┌──────────────────────────▼──────────────────────────┐
    │ Press the air recirculation button over 5 times within│
    │   2 seconds during pressing the AUTO switch            │
    └──────────────────────────┬──────────────────────────┘
                               │
              ┌────────────────▼────────────────┐
              │   All symbol of LCD blink 5 times │
              └────────────────┬────────────────┘
      ┌────────────────────────┼
      │                        │
      │              ┌─────────▼──────┐  Switch OFF  ┌──────────────┐
      │              │  Error check   ├─────────────►│  System OFF  │
      │              └─────────┬──────┘              └──────────────┘
      │         Press AUTO switch│
      │              ┌──────────▼───────────────────────────────┐
      └──────────────┤ Cancelled diagnosis function(normal function)│
                     └──────────────────────────────────────────┘
```
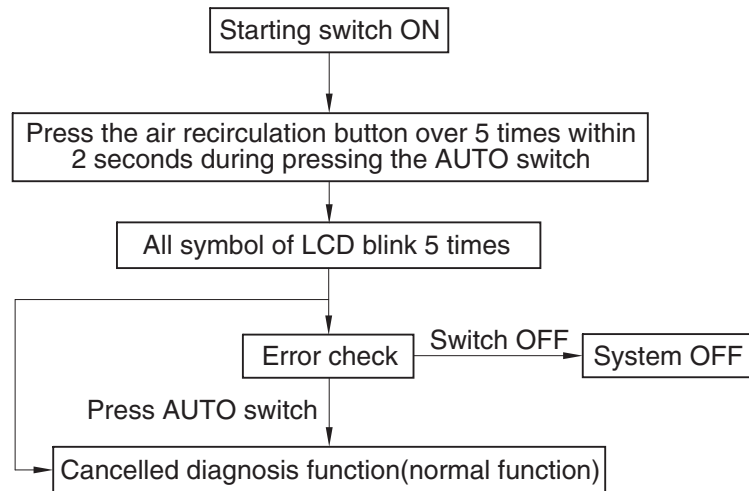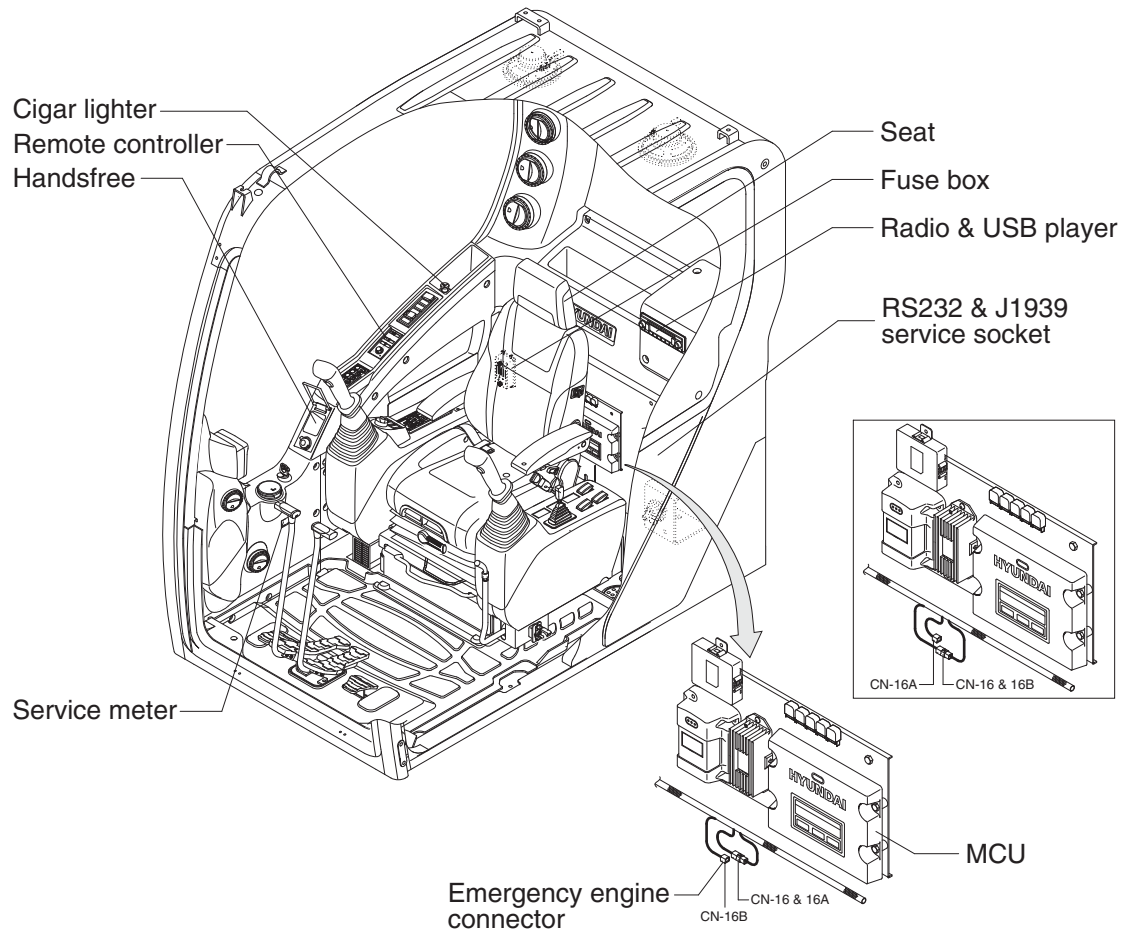
3607A3CD69

(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

Cigar lighter
Remote controller
Handsfree

Seat
Fuse box
Radio & USB player
RS232 & J1939 service socket

Service meter

MCU

Emergency engine connector

CN-16A — CN-16 & 16B

CN-16 & 16A
CN-16B

130ZF3CD05

1) CIGAR LIGHTER

13033CD69
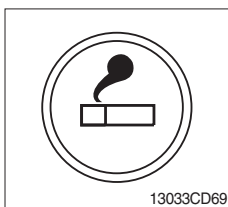
(1) This can be used when the engine starting switch is ON.

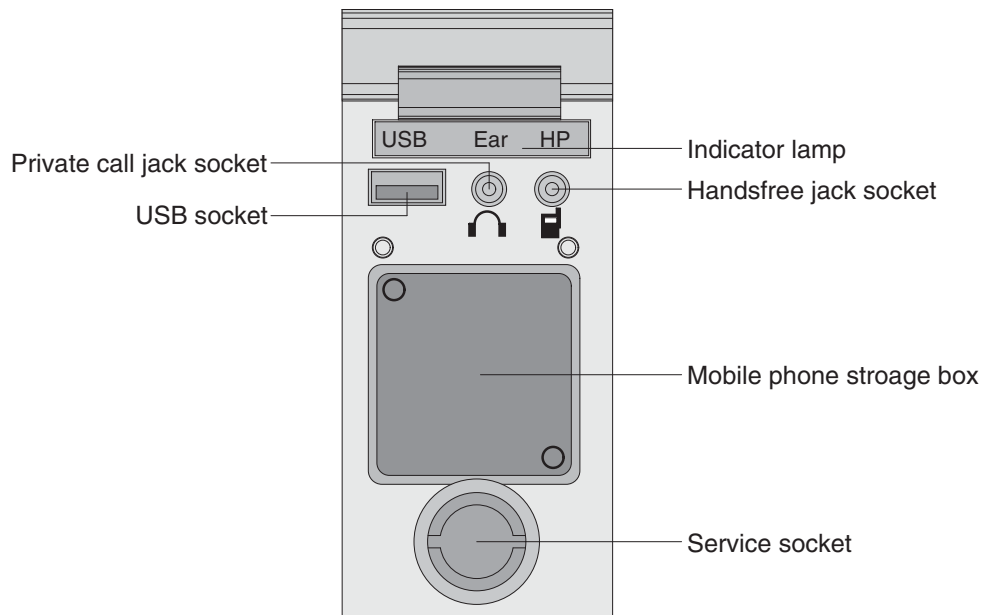(2) The lighter can be used when it springs out in a short while after being pressed down.

※ **Service socket**

Use cigar lighter socket when you need emergency power.

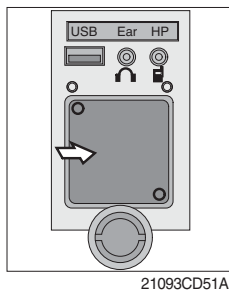**Do not use the lighter exceeding 24 V, 100 W.**

2) 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.

Private call jack socket

USB socket

USB   Ear   HP

Indicator lamp

Handsfree jack socket

Mobile phone stroage box

Service socket

21093CD51
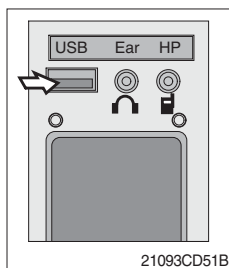
(1) Mobile phone storage box

21093CD51A

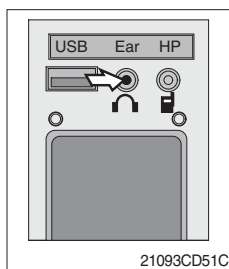① Mobile phone can be stored when call by handsfree.

(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
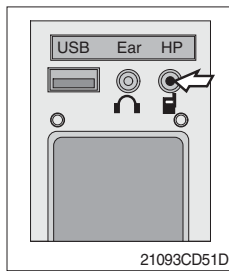
① Connect the jack cable when call by handsfree.

② Use the special adapter when jack cable is not interchangeable.

③ Check the jack type of mobile phone before use.

```
USB    Ear    HP
```

21093CD51D

(5) Indicator lamp
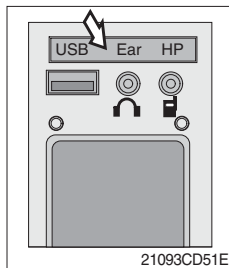
① This lamp is turned ON when the handsfree mode selected.

```
USB    Ear    HP
```

21093CD51E

(6) Service socket
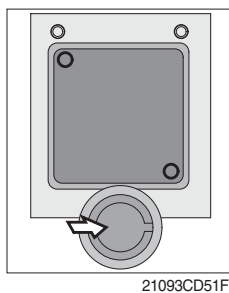
① Utilize the power of 12 V as your need and do not exceed power of 12 V, 30 W.

21093CD51F

(7) Wireless handsfree

LCD

Call button

55I3CD26

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.

⌗ | HYUNDAI
PAIRING

55I3CD27
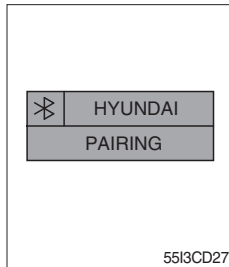
② The mobile phone finds bluetooth named " HYUNDAI".
Select "HYUNDAI" and set "connect with Bluetooth on the mobile phone".
· Default password : 0000

⌗ | HYUNDAI
CONNECTED

55I3CD28
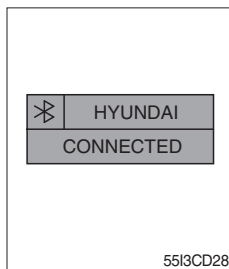
③ The Bluetooth pairing is made, the LCD screen shows "CONNECTED".

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.

3) REMOTE CONTROLLER

Radio handsfree jack — | — External speaker LED (null)
External speaker microphone (null) — | — Handsfree jack MIC
Power/volume switch — | — External speaker switch (null)

LCD —

CALL button — | — Handsfree mode button
SEEK button — | — SEEK button
MODE button — | — MUTE button
Radio calling mode button — | — TALK button
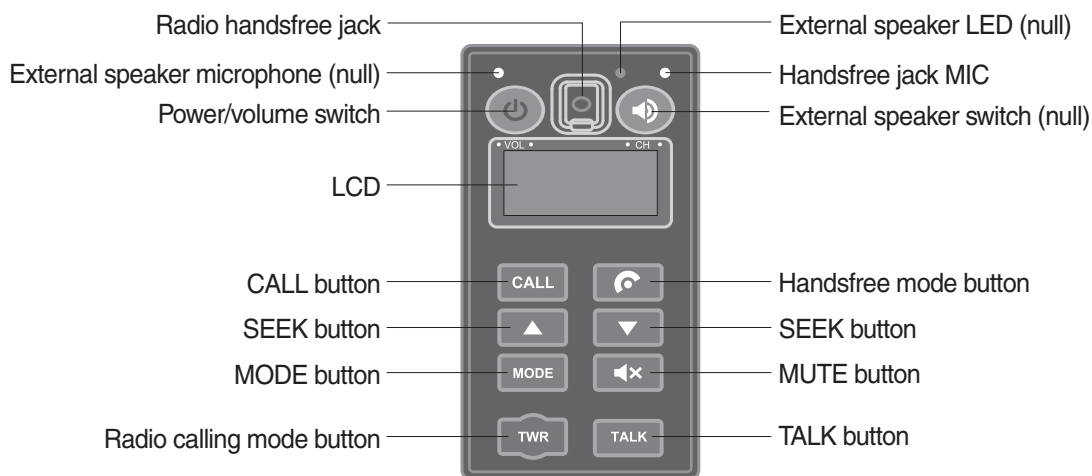
55I3CD31

(1) Power and volume switch

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.**

55I3CD31A

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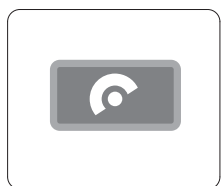
① This button is to select the handsfree mode or audio mode.
  · Lamp ON : Handsfree mode ("TEL MUTE" displayed ON audio LCD)
  · Lamp OFF : Audio mode

55I3CD31B

(3) Call button

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.**

55I3CD31C

(4) Handsfree MIC

55I3CD31D

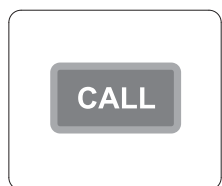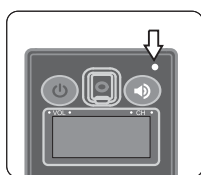① This MIC transfers user voice to receiver of the call when making a call by handsfree.

(5) Seek button
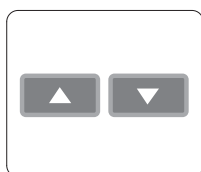
55I3CD31E

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

TWR
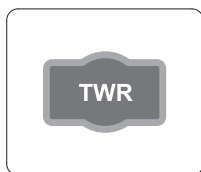
55I3CD31H

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.
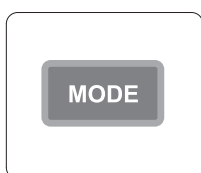The LED turned OFF when the audio mode or the mobile phone handsfree calling mode is activated.

※ **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

TALK

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.

4) RADIO AND USB PLAYER (WITH BLUETOOTH)

9403CD100

■ FRONT PANEL PRESENTATION

1 ······· Power ON/OFF,
Volume UP/DOWN button

2 ······· Manual UP/DOWN Tuning,
File search, SEL button

3 ······· Mode button,
Audio mute button

4 ······· Call & Pair button

5 ······· Call end button

6 ······· Station preset 1
DIS ··········· Display button

7 ······· Station preset 2

8 ······· Station preset 3
RPT ··········· Repeat play button

9 ······· Station preset 4
RDM ··········· Random play button

10 ······· Station preset 5
DIR- ··········· Directory down button

11 ······· Station preset 6
DIR+ ··········· Directory up button

12 ······· Scan play button (SCAN)
Best station memory (BSM) button

13 ······· Auto tune up, Seek up button

14 ······· Auto tune down, Track down button

15 ······· USB connector

16 ······· AUX IN Jack

17 ······· MIC hole

RADIO AND USB PLAYER (WITHOUT BLUETOOTH)

1   LCD   2

3   MODE MUTE   VOL   MP3   TUNE   SCAN BSM   12

4   SEEK   13

5   SEEK   14

6   7   8   9   10   11   15   16

9403CD101

■ FRONT PANEL PRESENTATION

1   ······· Power ON/OFF,
        Volume UP/DOWN button

2   ······· Manual UP/DOWN Tuning,
        File search, SEL button

3   ······· Mode button,
        Audio mute button

4   ······ Radio seek up button

5   ······ Radio seek down button

6   ······ Station preset 1
   DIS ············ Display button

7   ······ Station preset 2

8   ······ Station preset 3
   RPT ··········· Repeat play button

9   ······ Station preset 4
   RDM ·········· Random play button

10   ······ Station preset 5
    DIR- ··········· Directory down button

11   ······ Station preset 6
    DIR+ ··········· Directory up button

12   ······· Scan play button (SCAN)
         Best station memory (BSM) button

13   ······· Track up button

14   ······· Track down button

15   ······· USB connector

16   ······· AUX IN Jack

■ GENERAL

(1) Power and volume button

9403CD102

① **Power ON / OFF button**

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

② **Volume UP/DOWN control knob**

Turn VOL knob (1) right to increase the volume level.
Turn VOL knob (1) left to decrease the volume.
After 5 seconds the display will return to the previous display mode.

③ **Initial volume level set up**

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

④ **Clock ON/OFF control**

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

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

⑤ **Clock adjustment**

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

(2) Menu Selection

9403CD103

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.

④ **Balance control**

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).

⑤ **Fader control**

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).

⑥ **EQ control**

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

9403CD104

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

(2) Manual tuning button

9403CD105

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

9403CD106

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

9403CD107

(4) Station preset button

9403CD108

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

9403CD109

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

9403CD110

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

9403CD106

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.

9403CD107

(3) MP3 directory / File searching

9403CD111

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

9403CD112

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

9403CD113

- 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

9403CD114

- 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

9403CD115

- 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)

9403CD116

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

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

∗ USB Information and Notice
  a. Playback FILE SYSTEM and condition allowance.
    - FAT, FAT12, FAT16 and FAT32 in the file system.
    - V1.1, V2.2 and V2.3 in the TAG (ID3) version.
  b. Display up to 32 characters in the LCD display.
  c. No support any of MULTI-CAED Reader.
  d. No high speed playback but only playing with normal full speed.

※ DRM files in the USB may cause malfunction to playback in the radio unit.
※ The temperature below -10 Celsius, the audio unit with USB hook up would be affected to play well.

■ 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.

■ BLUETOOTH (if equipped)

1) Using a bluetooth wireless connection

(1) Your audio unit supports bluetooth wireless technology. You can set up a wireless link with bluetooth cellular phone.

(2) Keep PAIRING the cellular phone with audio unit in a few minutes as the phone are being switched on well enough.

※ Since this audio unit is on standby to connect with your cellular phone via bluetooth wireless technology, using this audio unit without running the engine can result battery drainage.

※ This audio unit phone call reception is on standby when ignition switch is set to ACC OFF or ON.

※ The line-of-sight distance between this audio unit and your cellular phone must be 10 meters or less for sending and receiving voice and data via bluetooth wireless technology. However the transmission distance may become shorter than the estimated distance depending on the environment in use.

※ Digital Noise & Echo suppression system provides the best sound clarity with little or no distortion (Echo & side tone will happen depending on cellular phone or service network).

※ To ensure the quality of calling, you should select a proper bluetooth VR level. This audio unit has already set with the best bluetooth VR level.

290F3CD215
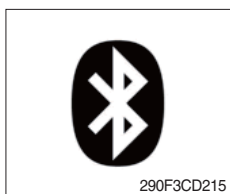
① Bluetooth icon
It will blink while establishing the bluetooth pairing.
It will light after a bluetooth device connected.

7709A3BT02
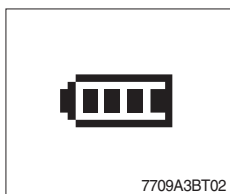
② Battery icon
It indicates the battery status of the connected bluetooth device.

7709A3BT03

③ Single strength icon
It indicates the signal strength of the connected bluetooth device.

2) Pairing in hands free modes

9403CD117

(1) Press and hold CALL button (4) for 2 seconds until you hear beep sound, then appears PAIR STR on the display.

(2) For the next procedure, go to cellular phone pairing mode.

(3) If it is in pairing status with audio unit and cellular phone, PAIRING will show on the display.

(4) If you want to exit pairing mode, press CALL END button (5) briefly while pairing, then it will show PAIR CLR on the display.

(5) Bluetooth Icon and PAIR OK appear on the display when pairing is successful.

3) Cellular phone pairing mode

(1) Browse your cellular phone menu and find the connectivity or bluetooth connection section.

(2) Select search for a new handsfree device function and allow the phone to find the mobile.

(3) HYUNDAI should appear on your cellular phone screen.

(4) Press connect menu among the handsfree option on your cellular phone.

(5) The cellular phone should prompt for a pin code. Insert the pin code 1234.

(6) The cellular phone should confirm that it has established a new paired connection.

(7) Close the menu. The pairing is now completed. It appears PAIR FAIL on the display for 3 seconds.

※ Each cellular phone type has distinct phone menu so you may need to refer to your manufactures instruction for the correct procedure on how to connect a new bluetooth device.

※ Please retry to the pairing instruction if HYUNDAI does not appear on the cellular phone screen.

※ Please select authorized, if there is authorized menu in the menu of bluetooth connection in your cellular phone.

※ Once the bluetooth pairing is completed between your cellular pone and this audio unit, the both units will be automatically recognized on its paring and when you turn on the key in your car even though this audio unit is turned off.

※ This audio unit can store up to 6 phones pairings. If the memory is full, the first stored paired phone will be deleted.

※ The connecting priority will be given to the last connected cellular phone.

※ If you want to change the connecting priority, try to connect this audio unit from the cellular phone.

4) Bluetooth connection and disconnection

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

9403CD118

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

9403CD117

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

※ When your cellular phone battery is at low charge, the bluetooth connection may occasionally be lost. To maintain good connectivity ensure that your phone battery is adequately charged.

※ In case of failure of bluetooth pairing :
  - Delete item in paired list on your phone.
  - Reset both phone by power off/on and the audio unit by ACC off/ on.

※ Connecting priority of handsfree profile is higher than headset profile.

※ The headset mode does not support caller ID, reject call and call Transfer.

5) Using the audio unit as a handsfree device

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

9403CD117/8

(2) To accept call
Press CALL button (4), it appears ANSWER CALL and follows TALKING on the display.

(3) To end call
To end call, press CALL END button (5), it appears REJECT on the display.

※ If reject call is activated in your phone, then your cellular phone does not support reject call function.

6) Audio transfer between the audio unit and phone

The audio transfer function is for switching the call from the audio unit to the cellular phone for private conversation.

9403CD117

(1) Press CALL button (4) briefly during conversation, it appears CALL TRANS on the display. To switch back to the audio unit, press button (4) briefly during private conversation, then it appears CALL TRANS on the display again.

※ This function will be a cause of disconnection of bluetooth link in some nokia phones, but you do not worry just press button (4) during private conversation, then switch back to the audio unit automatically.

※ The quality of calling between cellular phone and audio unit is better than calling between one audio unit and another one.

7) Last call number dialing

9403CD117

(1) Press CALL button (4) briefly, it appears CALL TO, then simply press CALL button once again, it would make the last call with phone number display on LCD.
If Reject call is activated in your phone, then your cellular phone does not support Reject Call function.

※ If you are using SAMSUNG phone, then you may need to press once more send button. First press button shows phone contact list in your phone, then second press make the last call.

8) To make a call by cellular phone

The audio transfer function is for switching the call from the audio unit to the cellular phone for private conversation.

(1) The audio unit activated automatically when you make a call by cellular phone.
(2) When you make a call processing by cellular phone, it shows CALLING on the display.
(3) When you receive a call, the phone number ******** appears on the display.

9) Using the audio unit as bluetooth music

The audio unit supports A2DP (Audio Advanced Distribution Profile) and AVRCP (Audio Video Remote Control Profile), and both profiles are available to listen music at the audio unit via cellular phone which is supporting the two profiles above.

(1) To play music, search the menu on your cellular phone as below :
   i.e : Menu → File manager → Music → Option → Play via bluetooth.
   It appears BT MP3 on the display.

(2) During BT MP3 playing, you could select the previous or next track by pressing SEEK up or TRACK down button on audio unit or operate via your cellular phone.

(3) To stop music, press button (5) briefly and it will automatically switch into the previous mode.

(4) To resume music playing, press the play button on your cellular phone.

※ This function maybe different depends on cellular phone. Please follow the cellular phone menu. Some kinds of phone need to pair once more for bluetooth MP3 connection.

※ This function will be caused to disconnect A2DP, AVRCP depends on cellular phone.

※ Information about songs (e.g.: the elapsed playing time, song title, song index, etc.) cannot be displayed on this audio unit.

■ RESET AND PRECAUTIONS

1) Reset function

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

(1) press and hold [SEEK] [5 DIR-] simultaneously for about 5 seconds. (without Bluetooth)

Press and hold [☎] [5 DIR-] simultaneously for about 5 seconds. (with Bluetooth)

(2) Take out the fuse for the audio system in the vehicle once and then plug again.

※ 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 operation correctly.

2) Precautions

When the inside of the car is very cold and the player is used soon 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
(5) Bluetooth version : V2.1
(6) Bluetooth supported profile :
- A2DP : Advanced Audio Distribution Profile
- AVRCP : Audio/Video Remote Control Profile
- HFP : Hands-Free Profile

5) 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.

Handle Upward
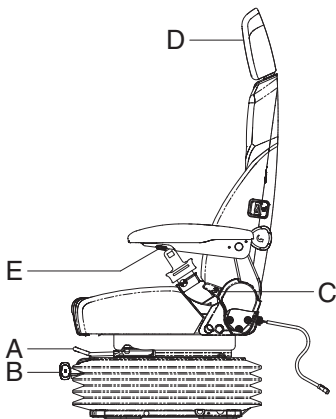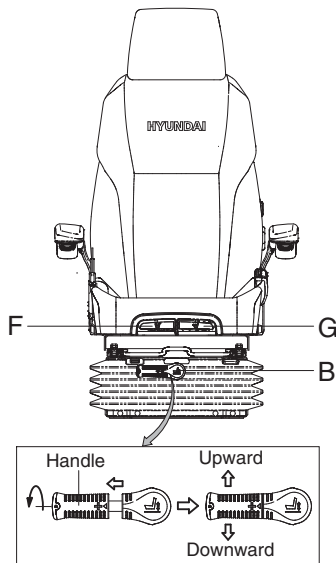
Downward

21093CD55

(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 140 mm (5.5") in 13 steps.

(2) Height/weight adjustment (B)
① Turn the handle to adjust seat upward or downward
  · Turn to clockwise, the seat is moved to upward and the weight is increased.
    If it is turned to counterclockwise, the seat is moved to downward and the weight is decreased.
② **Method of changing direction** (up/down)
  · First, pull the handle to outside.
  · Second, rotate 180° and release the handle.

(3) Reclining adjustment (C)
Pull lever C to adjust seat back rest.

(4) Arm rest adjustment (E)
This can be adjusted by pushing the button E to right and left.

(5) Head rest adjustment (D)
This is adjustable vertically to fit operator's requirements over 60 mm (2.4").

(6) Seat cushion tilt adjustment (F)
Pull lever F to adjust seat cushion tilting angle.

(7) Seat cushion length adjustment (G)
⚠ Pull lever G to adjust seat cushion forward or backward.

⚠ 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.
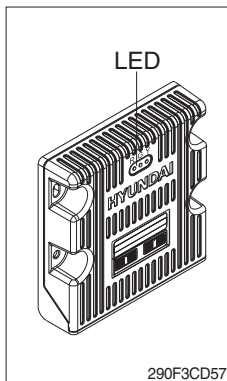
6) FUSE & RELAY BOX
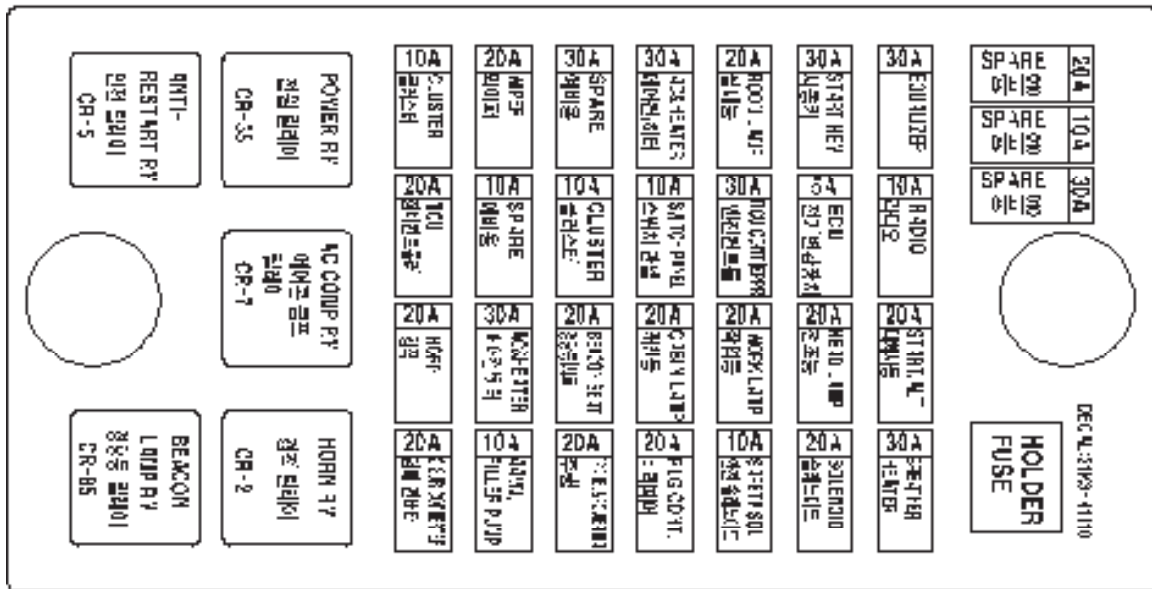
130ZF3CD56

(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 or relay with another of the same capacity.

 ⚠ Before replacing a fuse or relay, be sure to turn OFF the starting switch.


7) MCU

LED

290F3CD57

(1) To match the pump absorption torque with the engine torque, MCU varies EPPR valve output pressure, which control pump discharge amount whenever feedbacked engine speed drops 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 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

3-70

## 8) EMERGENCY ENGINE SPEED CONTROL CONNECTOR

130ZF3CD58
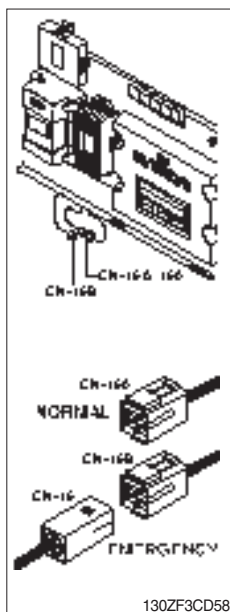
(1) When the CAN communication between the ECM and the MCU is abnormal due to malfunction, change CN-16 connection from CN-16A to CN-16B and then control the engine speed by rotating accel dial switch.

※ Never connect connector CN-16 with CN-16B when MCU is in normal operation.
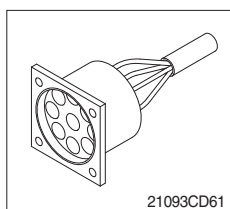
※ Make repair as soon as possible.

9) SERVICE METER

21093CD59
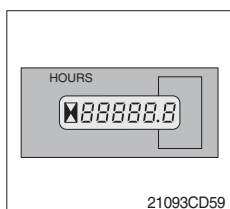
(1) This meter shows the total operation hours of the machine.

(2) Always ensure the operating condition of the meter during the machine operation. Inspect and service the machine based on hours as indicated in chapter 6, maintenance.

10) RS232 & J1939 SERVICE SOCKET

21093CD61

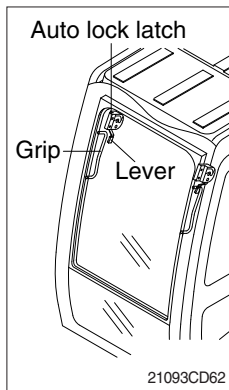(1) MCU communicates the machine data with Laptop computer through RS232 service socket.

(2) ECM communicates the engine data with Perkins electric tool through J1939 service socket.

① ECM fault code check

② ECM program change

③ Engine data monitoring & test

11) UPPER WINDSHIELD

Auto lock latch

Grip

Lever

21093CD62

(1) Perform the following procedure in order to open the upper windshield.
  ① Pull both levers with hold both grips that are located at the top of the windshield frame and push the windshield upward.
  ② Hold both grips and back into the lock position until auto lock latch is engaged, then release the grips.
  ⚠ **When working, without having locked the windshield by the auto lock (by pushing the windshield to the rear untill it's completely fixed), please be careful as it can cause personal injury if the windshield is not fixed or falls off.**

Auto lock latch

21093CD63

(2) Perform the following procedure in order to close the upper windshield.
  ① Pull the lever of the auto lock latch in order to release the auto lock latch.
  ② Reverse above step ① and ② in order to close the upper windshield.