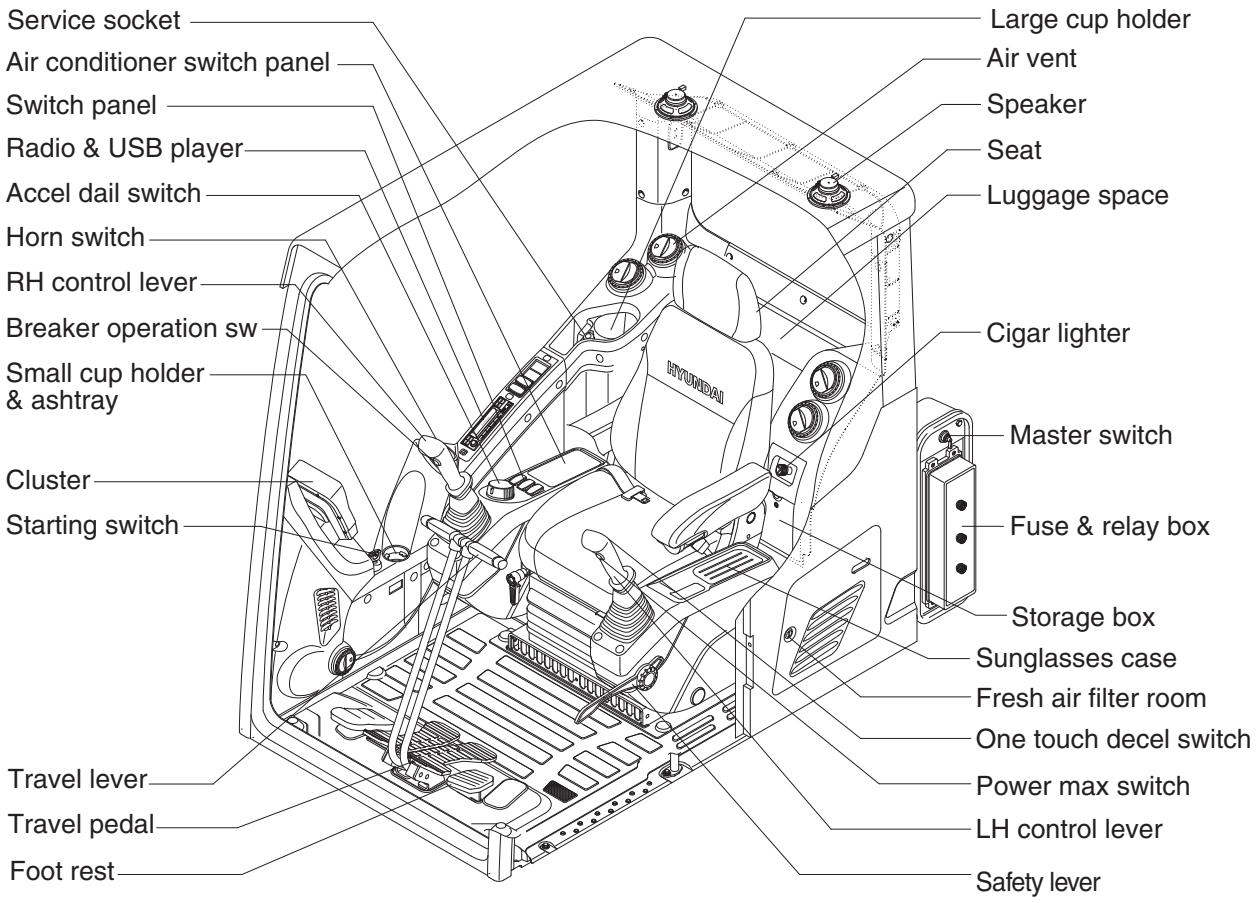
1. CAB DEVICES

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.



290S3CD31

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.**

Normal type

220S3CD501

Premium type

220S3CD01

※ **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 3-6 for details.**

2) GAUGE

(1) Operation screen

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

Normal type

220S3CD551

Premium type

Default

Option

220S3CD151

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 (premium type). Refer to page 3-29 for details.

(2) RPM / Speed gauge

Normal type

① This display the engine speed.

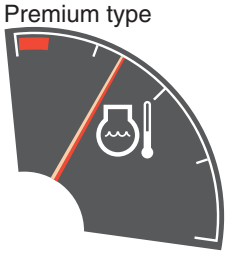
Premium type

220S3CD549

(3) Engine coolant temperature gauge

Normal type

Premium type



220S3CD553

① This gauge indicates the temperature of coolant.
- White range : 40-102˚C (104-215˚F)
- Red range : Above 102˚C (215˚F)

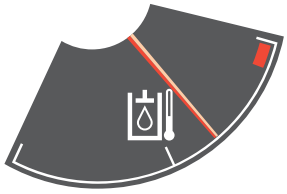
② If the indicator is in the red range or lamp pops up and the buzzer sounds turn OFF the engine and check the engine cooling system.

※ 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

Normal type

Premium type



220S3CD554

① This gauge indicates the temperature of hydraulic oil.
- White range : 40-105˚C(104-212˚F)
- Red range : Above 105˚C(221˚F)

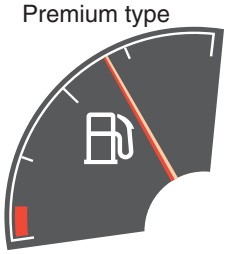
② If the indicator is in the red range or lamp pops up and the buzzer sounds reduce the load on the system. If the gauge stays in the red range, stop the machine and check the cause of the problem.

※ If the gauge indicates the red range or 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

Normal type

Premium type



220S3CD555

① This gauge indicates the amount of fuel in the fuel tank.

② Fill the fuel when the red range, or lamp pops up and the buzzer sounds.

※ **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.**

(6) Tripmeter display

290F3CD56

① This displays the engine the tripmeter.

※ **Refer to page 3-31 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

Normal type

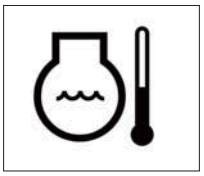
Premium type

※ 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
	Warning lamp pops up on the center of the LCD and the buzzer sounds	**※ Refer to page 3-7 for details.**

※ Refer to page 3-13 for the buzzer stop switch AUTO IDLE Buzzer Stop .

(1) Engine coolant temperature warning lamp



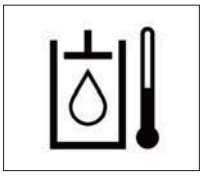
290F3CD61

① Engine coolant temperature warning is indicated two steps.
- 100˚C over : The lamp pops up and the buzzer sounds.
- 102˚C 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



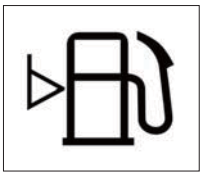
290F3CD62

① Hydraulic oil temperature warning is indicated two steps.
- 100˚C over : The lamp pops up and the buzzer sounds.
- 105˚C 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

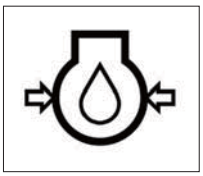
290F3CD64

① This warning lamp pops up and the buzzer sounds when each of the below warnings is happened.
- Engine coolant overheating (over 102˚C)
- Hydraulic oil overheating (over 105˚C)
- 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.

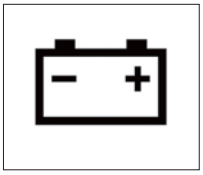
(5) Engine oil pressure warning lamp



290F3CD65

① This warning lamp pops up and the buzzer sounds when the engine oil pressure is low.
② If the lamp blinks, shut OFF the engine immediately. Check oil level.

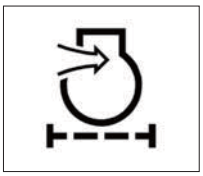
(6) Battery charging warning lamp



290F3CD67

① This warning lamp pops up and the buzzer sounds when the battery charging voltage is low.
② Check the battery charging circuit when this lamp blinks.

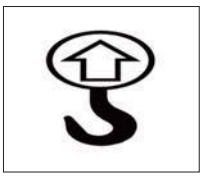
(7) Air cleaner warning lamp



290F3CD68

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

(8) Overload warning lamp (opt)



290F3CD69

① When the machine is overload, the overload warning lamp pops up and the buzzer sounds during the overload switch is ON. (if equipped)
② Reduce the machine load.

4) PILOT LAMPS

Normal type

220S3CD574

Premium type

220S3CD74

(1) Mode pilot lamps

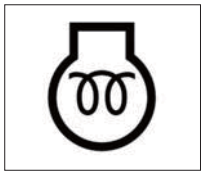
No	Mode	Pilot lamp	Selected mode
1	Power mode	P	Heavy duty power work mode
		S	Standard power mode
		E	Economy power mode
2	User mode	U	User preferable power mode
3	Work tool mode		General operation - IPC speed mode
			General operation - IPC balance mode
			General operation - IPC efficiency mode
			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 3-36 for power max function.**

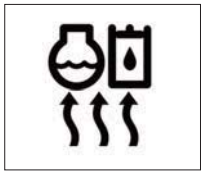
(3) Preheat pilot lamp



290F3CD79

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

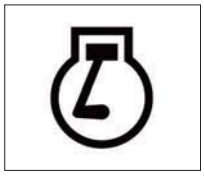
(4) Warming up pilot lamp



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

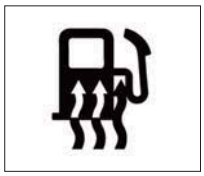
① Operating one touch decel switch on the RCV lever makes the lamp ON.

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 3-36.**

(6) Fuel warmer pilot lamp

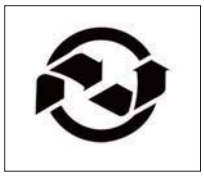


290F3CD82

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 3-24.**

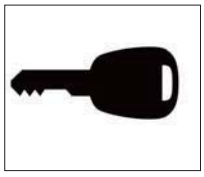
(8) Entertainment pilot lamp (premium type)

290F3CD84

① This lamp is on when audio or video files are playing.

※ **Refer to the page 3-30.**

(9) Smart key pilot lamp (premium type, 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 3-25.**

5) SWITCHES

Normal type

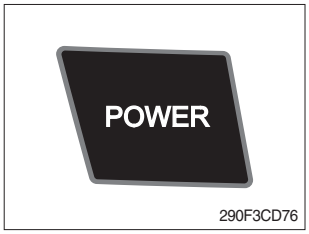
220S3CD586

Premium type

220S3CD86

※ When some of the switches are selected, the pilot lamps are displayed on the LCD. Refer to the page 3-9 for details.

(1) Power mode switch



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.

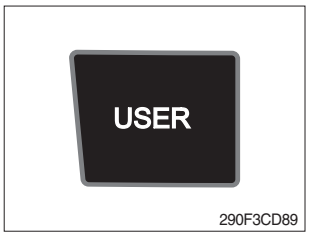
② The pilot lamp changes E → S → P → E in order.

(2) Work mode switch

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 : Push more than 2 seconds.
- Action : Push within 2 seconds.
- Cancel : Push this switch once more within 2 seconds.

② Refer to the page 3-19 for another set of user mode.

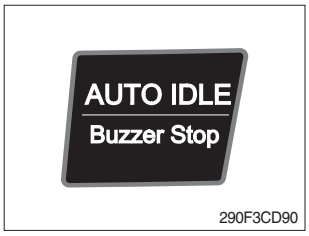
(4) Travel speed switch

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

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

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

(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.

(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 3-31 for the camera.
③ If the camera is not installed, this switch is used only ESC function.

(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.

(8) Head light switch

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

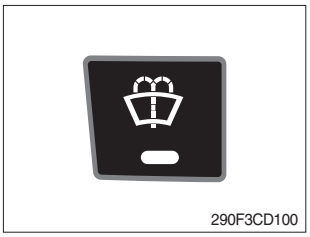
(9) Intermittent wiper switch

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

(10) Wiper switch

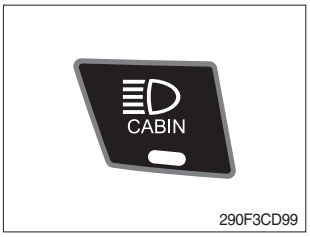
① This switch is used to operate the window wiper.
② Note that the wiper will self-park when switched off.
③ The pilot lamp is turned ON when operating the switch.
※ If the wiper does not operate with the switch in ON position, turn the switch OFF immediately. Check the cause. If the switch remains ON,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

(11) Washer switch



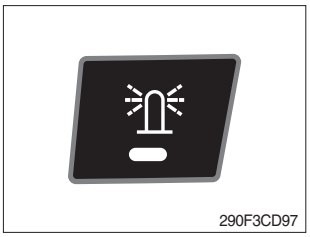
① The washer liquid is sprayed and the wiper is operated only while pressing this switch.
② The pilot lamp is turned ON when operating the switch.

(12) Cab light switch



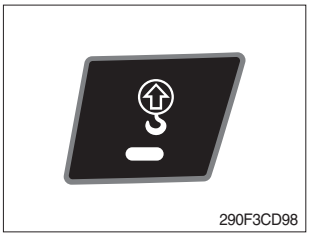
① This switch turns ON the cab light on the cab.
② The pilot lamp is turned ON when operating the switch.

(13) Beacon switch



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

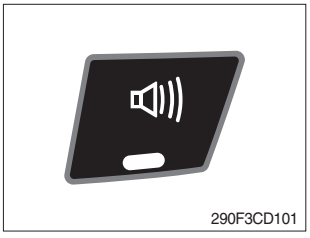
(14) Overload switch



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

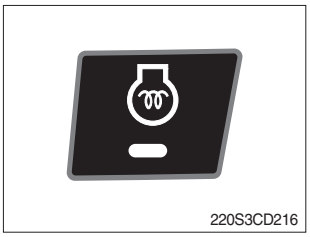
⚠ Overloading the machine could impact the machines stability which could result in tipover hazard. A tipover hazard could result in serious injury or death. Always activate the overload warning device before you handle or lift objects.

(15) Travel alarm switch



① This switch is to activate travel alarm function surrounding when the machine travels to forward and backward.
② On pressing this switch, the alarm operates only when the machine is traveling.
③ The pilot lamp is turned ON when operating the switch.

(16) Pre-heater switch



① Turning the smart key switch on position starts preheating in cold weather.

(17) Main menu quick touch switch

① This switch is to activate the main menu in the cluster.

※ **Refer to the page 3-18.**

(18) Entertainment quick touch switch (premium type, opt)

① This switch is to activate the entertainment control menu in the cluster.

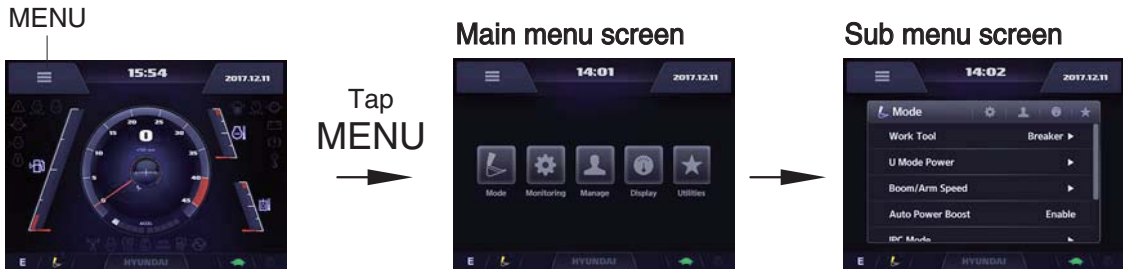
※ **Refer to the page 3-30.**

6) MAIN MENU

※ 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.

Normal type

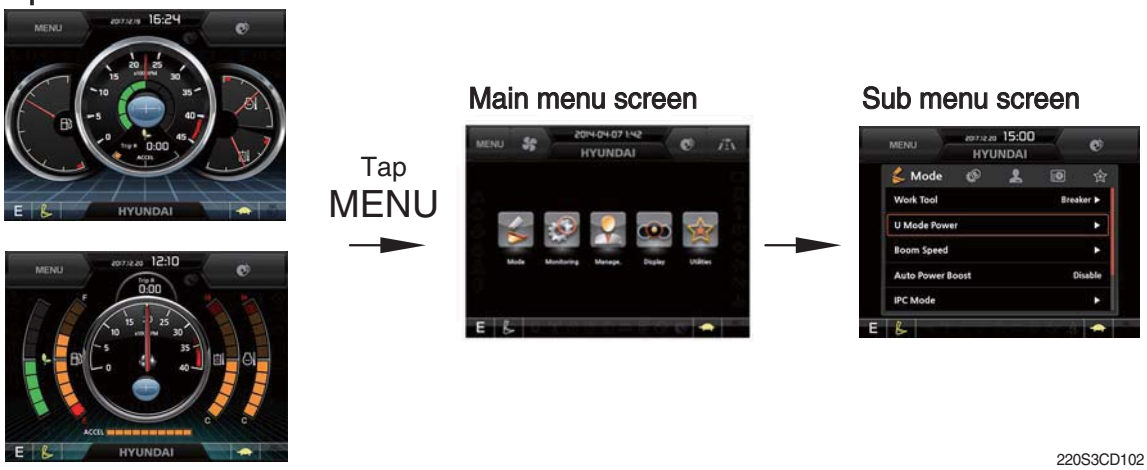
Operation screen



220S3CD502

Premium type

Operation screen



220S3CD102

(1) Structure

No	Main menu	Sub menu	Description
1	 Mode 220S3CD103	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 Enable, Disable Speed mode, Balance mode, Efficiency mode One time, Always, Disable Key on initial mode, Accel initial mode / step Switch function
2	 Monitoring 220S3CD104	Active fault Logged fault Delete logged fault Monitoring	MCU MCU All logged fault delete, Initialization canceled Machine information, Switch status, Output status,
3	 Management 220S3CD105	Fuel rate information Maintenance information Machine security Machine information Contact Service menu Clinometer Update	General record, Hourly, Daily, Mode record Replacement, Change interval oils and filters ESL mode setting, Password change Model, MCU, Monitor RMCU, Relay drive unit, AAVM (opt) A/S phone number, A/S phone number change Power shift, Operating hour, Breaker mode pump acting, EPPR current level, Overload pressure Clinometer setting Cluster, ETC device
4	 Display 220S3CD106	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 220S3CD107	Entertainment★ Tripmeter Camera setting AUX Manual	Play Video, Audio, Smart terminal.★ 3 kinds (A, B, C) Number of active, Display order, AAVM (opt)★

★ : premium type

(2) Mode setup

※ Illustrations are based on the premium type cluster.

① Work tool

220S3CD108

220S3CD253

A

220S3CD254

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

220S3CD111

220S3CD112

· 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.

Step (▮)	Engine speed (rpm)	Idle speed (rpm)	Power shift (bar)
1	1400	1000	0
2	1500	1050	3
3	1600	1080	6
4	1700	1100	9
5	1750	1150	12
6	1800	1200 (auto decel)	16
7	1850	1230	20
8	1900	1250	26
9	1950	1300	32
10	2000	1350	38

※One touch decel & low idle : 1000 rpm

③ Boom speed

220S3CD113

220S3CD115

· **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

④ Auto power boost

220S3CD118

220S3CD117

· 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

220S3CD310

220S3CD311

220S3CD304

220S3CD312

220S3CD305

220S3CD313

220S3CD306

· 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 3-27.

⑥ Automatic engine shutdown (option)

220S3CD91

220S3CD92

220S3CD93

· 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

220S3CD122

220S3CD119

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

⑧ Emergency mode

220S3CD248

220S3CD249

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

(3) Monitoring

① Active fault

220S3CD120

220S3CD125

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

② Logged fault

220S3CD128

220S3CD124

· The logged faults of the MCU can be checked by this menu.

③ Delete logged fault

220S3CD134

220S3CD126

220S3CD127

· The logged faults of the MCU can be deleted by this menu.

④ Monitoring

220S3CD172

220S3CD188

220S3CD189

· 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

220S3CD14

220S3CD15

A

220S3CD16

B

220S3CD17

C

220S3CD18

D

220S3CD19

· **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

220S3CD131

220S3CD132

220S3CD133

- 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 30 hours.
- **Change or relpace interval**

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

③ Machine security

220S3CD190

220S3CD135

220S3CD136

220S3CD137

220S3CD138

· **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.
- If the ESL mode was selected Enable, the password will be required when the start switch is turned ON.
- **Machine security**

  Disable : Not used ESL function

  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 maximum 4 hours.

※**Default password : 00000 +** ✔

※**Password length : (5~10 digit) +** ✔

- **Smart key** (premium type, opt) : 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 entering is needed.

· **Password change**

- The password is 5~10 digits.

220S3CD190

220S3CD140

220S3CD135

Enter the current password

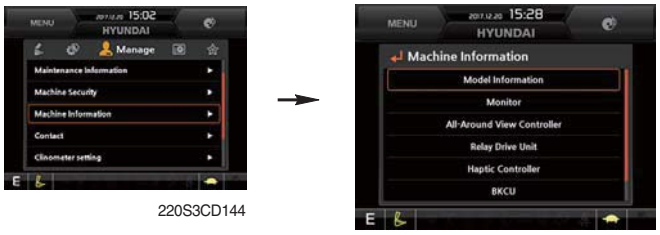
220S3CD143

Enter the new password again

220S3CD142

Enter the new password

④ Machine Information



220S3CD144 220S3CD145

· 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)

220S3CD146 220S3CD147 220S3CD148

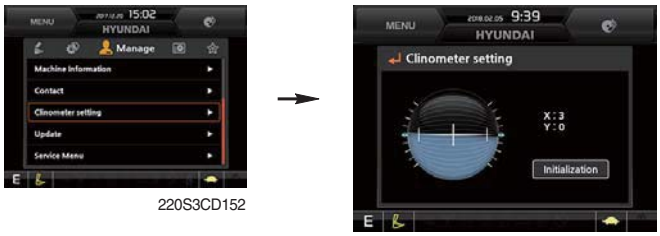
Enter the new A/S phone number

⑥ Service menu

220S3CD149 220S3CD150 220S3CD251

· 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)
· Overload pressure : 100 ~ 350 bar

⑦ Clinometer



220S3CD152 220S3CD153

· 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)

220S3CD67
220S3CD135
220S3CD280
220S3CD290
220S3CD281
220S3CD291
220S3CD282
220S3CD292
220S3CD283
220S3CD293
220S3CD284
220S3CD294
220S3CD285
220S3CD295
220S3CD296
220S3CD297
220S3CD298
220S3CD299

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

(5) Display

① Display item

220S3CD154

220S3CD155

220S3CD156

· 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

220S3CD157

220S3CD158

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

③ Brightness

220S3CD159

220S3CD160

220S3CD139

220S3CD141

220S3CD191

220S3CD192

· 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)

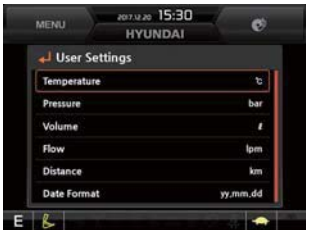
④ Unit

220S3CD161

220S3CD182

220S3CD183

220S3CD186



220S3CD162

290F3CD193

- 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

220S3CD163

220S3CD164

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

⑥ Screen type (premium type)

220S3CD165

A Type (Default) 220S3CD166

220S3CD156

B Type (Option) 220S3CD174

220S3CD167

(6) Utilities

① Entertainment (premium type)

220S3CD195

220S3CD196

A

220S3CD219

220S3CD197

B

220S3CD220

220S3CD198

C

220S3CD199

220S3CD22

- Video (A) : This menu operates the video play function.
  mp4, mkv, avi files and so on.
- Audio (B) : This menu operates the play music.
  mp3, mp4 files and so on.
- Smart terminal (C) : The menu features a smartphone and operates the miracast.

② Tripmeter

220S3CD168

220S3CD169

· 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.

③ Camera setting

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

220S3CD225

220S3CD255

220S3CD256

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

220S3CD222

290F3CD221

④ **AAVM** (All Around View Monitoring, premium type, opt)

· The AAVM buttons of the cluster consist of ESC/CAM and AUTO IDLE/Buzzer stop.

220S3CD244

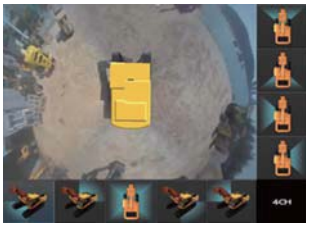
- **Escape button**

· 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.

220S3CD156

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.

290F3CD246

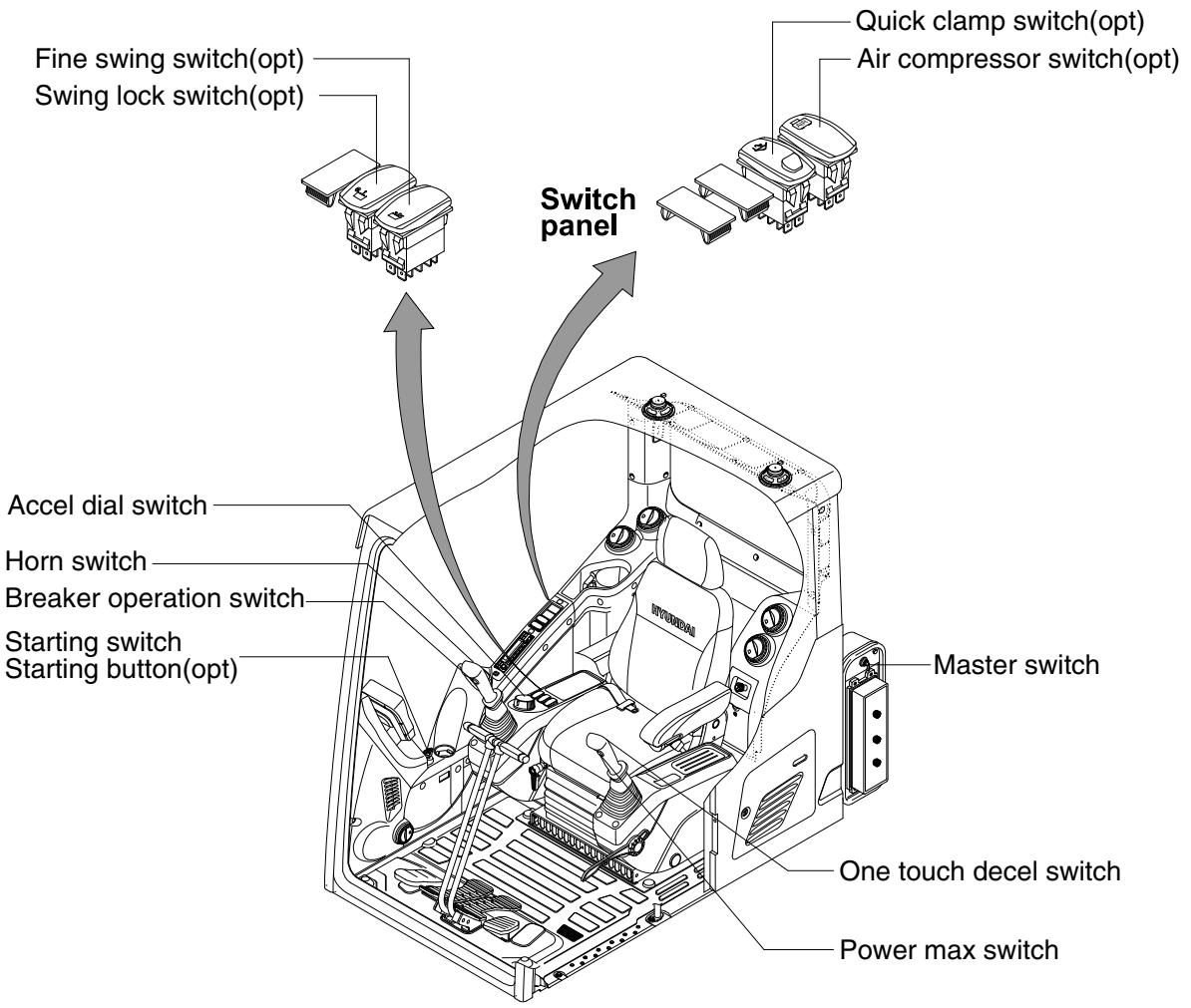
· When the worker or pedestrian go to the blue line (radius 5 m), an external danger area of equipping on the cluster screen, the warning buzzer sounds and it displays the blue rectangular box for the recognition of the worker and pedestrian.
At this time, the operator should stop work immediately, and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

290F3CD247

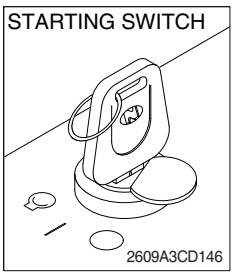
· When the worker or pedestrian go inside of red line (radius 3 m), an internal danger area of equipping on the cluster screen, the warning buzzer sounds and it displays the red rectangular box for the recognition of the worker and pedestrian.
At this time, the operator should stop work immediately,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

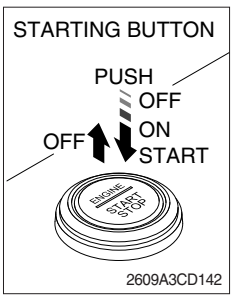
※ In AAVM mode, a touch screen of the LCD is available only. The multimodal dial of the haptic controller is not available.

3. SWITCHES



1) STARTING SWITCH & STARTING BUTTON (OPT)





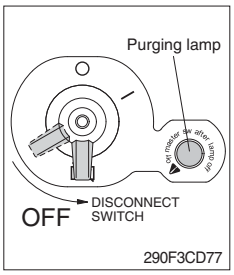
Starting button with smart key tag (opt)

(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



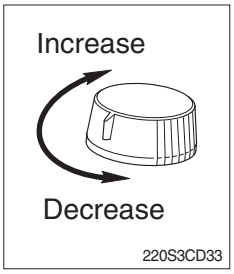
(1) This switch is used to shut off the entire electrical system.

(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

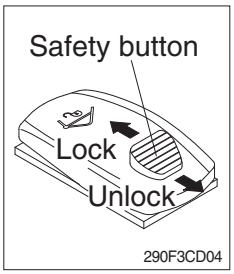


(1) There are 10 dial setting.

(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)



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

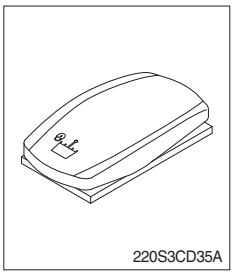
※ **Refer to the page 8-6 for details.**

5) AIR COMPRESSOR SWITCH (option)

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

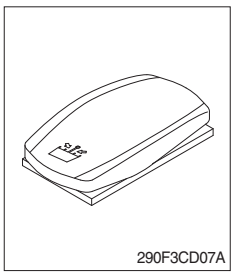
(2) The indicator lamp is turned on when operating the switch.

6) SWING LOCK SWITCH (option)



(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.

7) FINE SWING SWITCH (option)

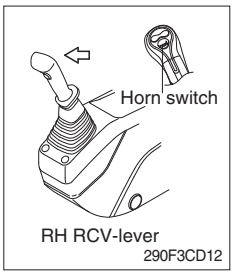


(1) When the switch is pressed ON position, the swing parking brake is released.

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

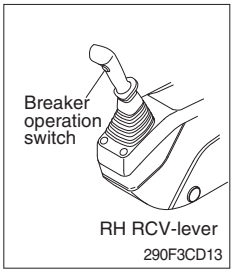
⚠ If the machine is operating on a slope with the switch in this position, swing motion may become uncontollable which could result in property damage, personal injury or death.Do not use this position when the machine is operating on a slope.

8) HORN SWITCH



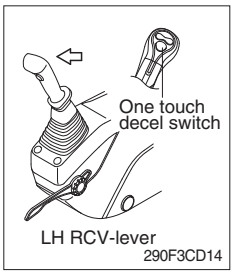
(1) This switch is at the top of right side control lever.
On pressing, the horn sounds.

9) BREAKER OPERATION SWITCH



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

10) ONE TOUCH DECEL SWITCH

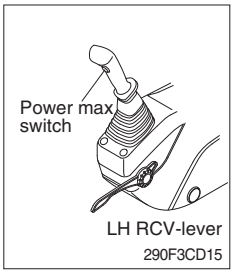


(1) This switch is used to actuate the deceleration function quickly.

(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.

11) POWER MAX SWITCH

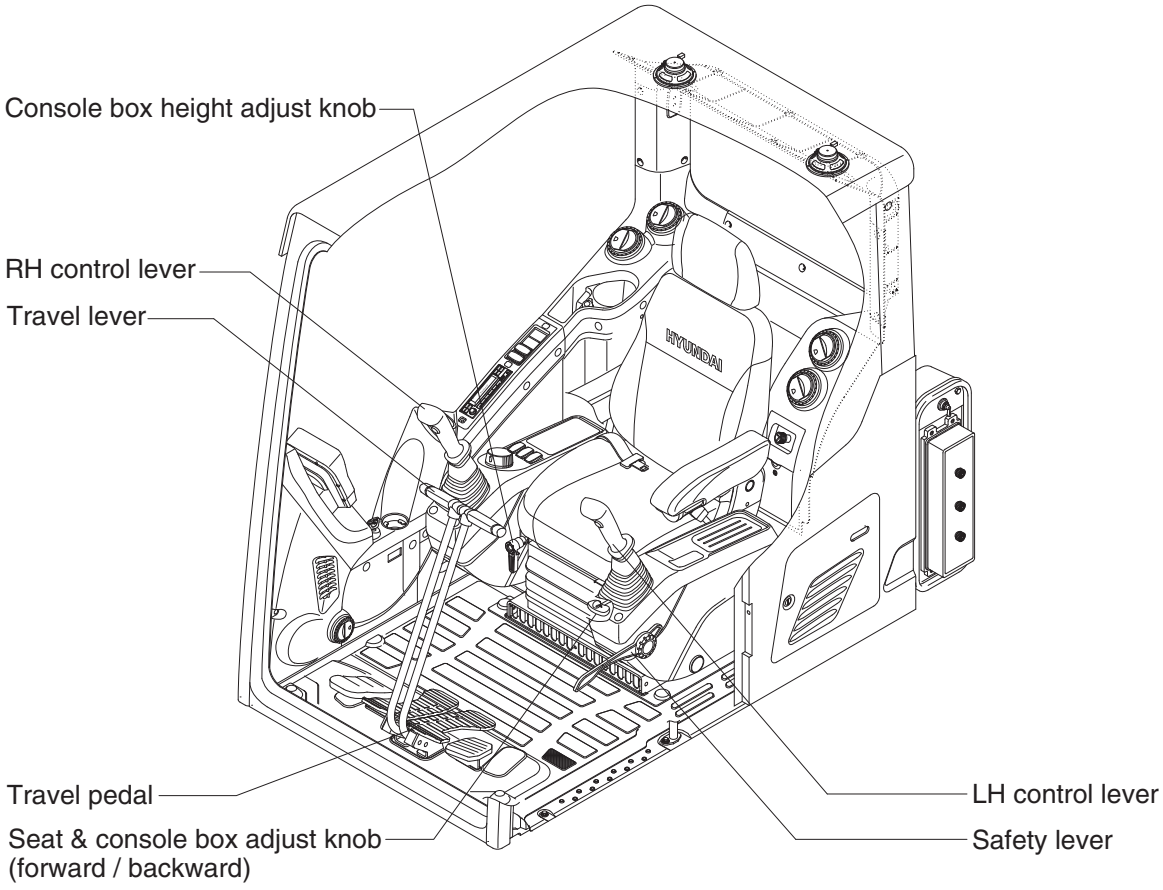


(1) This switch activate power max function.
When this switch is kept pressed, hydraulic power of work equipment will be increased to approx 110 percent during 8 seconds.

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

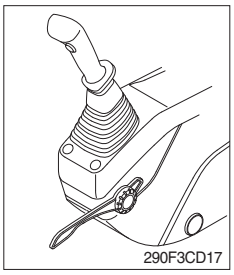
※ **Do not use for craning purposes.**

4. LEVERS AND PEDALS



220S3CD36

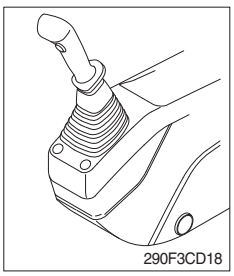
1) LH CONTROL LEVER


290F3CD17

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

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

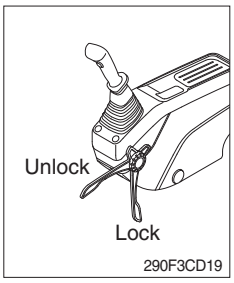
2) RH CONTROL LEVER


290F3CD18

(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



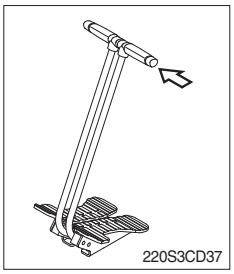
(1) All control levers and pedals are disabled from operation by locating the lever to lock position as shown.

※ **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.**

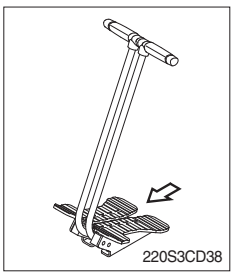
4) TRAVEL LEVER



(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

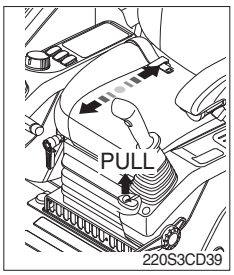


(1) This pedal is used to move the machine forward or backward.

(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.

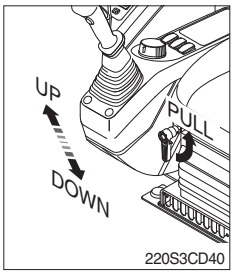
6) SEAT AND CONSOLE BOX ADJUST KNOB (forward/backward)



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

(2) Pull the knob to adjust forward or backward over 150 mm (5.9").

7) CONSOLE BOX (CONTROL LEVER) HEIGHT ADJUST KNOB



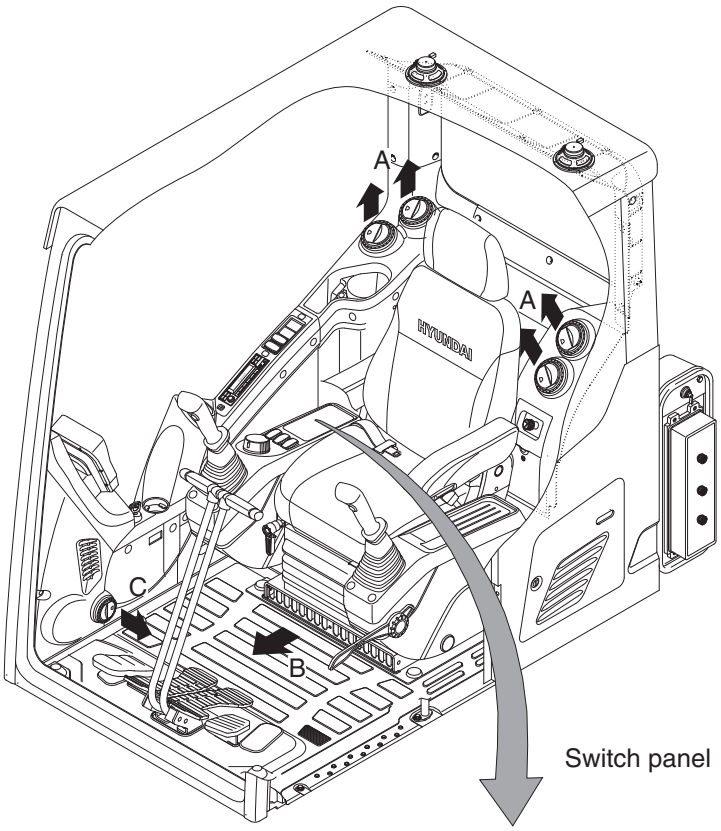
(1) This knob is used to move the LH and RH control levers to fit the contours of the operator's body.

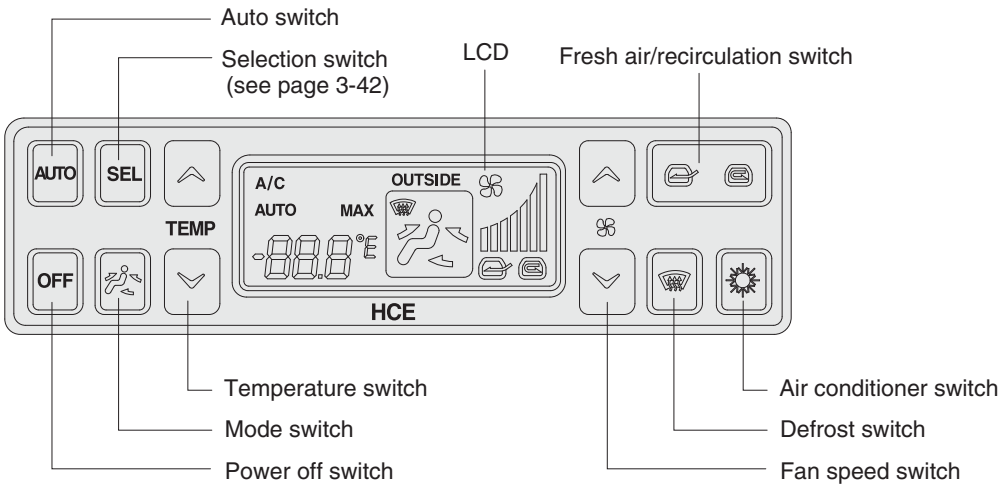
(2) The control levers can be moved upward and downward over 80 mm (2.4").

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**





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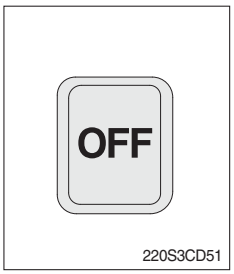
1) POWER OFF SWITCH

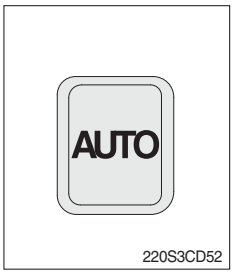


(1) This switch makes the system and the LCD OFF.
Just before the power OFF, set values are stored.

(2) Default setting values

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

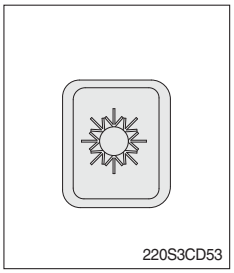
2) AUTO SWITCH



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

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

3) AIR CONDITIONER SWITCH

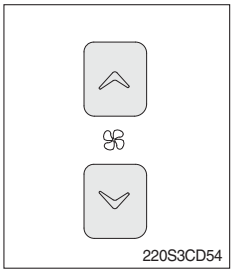


(1) This switch turns the compressor ON/OFF.

(2) In accordance with the temperature sensed by duct (evaporator) sensor, compressor turns ON or OFF automatically.

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

4) FAN SPEED SWITCH

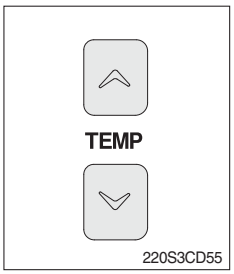


(1) Fan speed is controlled automatically by setted temperature.

(2) This switch controls fan speed manually.
- There are 5 steps (OFF, 1 ~ 4 speed) to control fan speed.
- The maximum step or the minimum step beeps 5 times.

(3) This switch makes the system ON.

5) TEMPERATURE CONTROL SWITCH



(1) Setting temperature indication (17~32˚C, scale : 0.5˚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	Auto (Hi)	Fresh	Foot

(4) Temperature unit can be changed between celsius (˚C) and fahrenheit (˚F)

① Default status (˚C)

② Push Up/Down temperature control switch simultaneously more than 5 second displayed temperature unit change (˚C → ˚F)

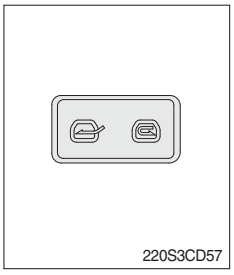
6) MODE SWITCH

(1) Operating this switch, it beeps and displays symbol of each mode in order.

Vent → B/L → Foot → Mix → Vent

Mode switch		Vent	B/L	Foot	Mix
Outlet	A	●	●		
	B		●	●	●
	C				●

7) FRESH AIR/RECIRCULATION SWITCH



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

① Fresh air ( )

Inhaling air from the outside.

※ Check out the fresh air filter periodically to keep a good efficiency.

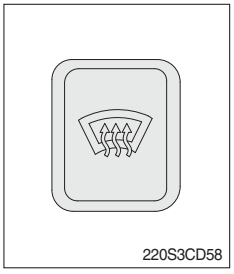
② Air recirculation ( )

It recycles the heated or cooled air to increase the energy efficiency.

※ Change air occasionally when using recirculation for a long time.

※ Check out the recirculation filter periodically to keep a good efficiency.

8) DEFROST SWITCH

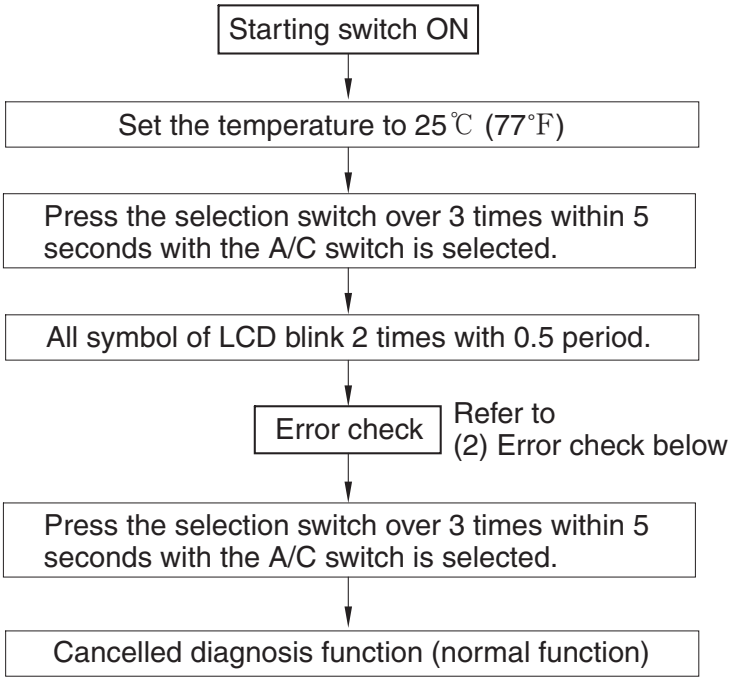


(1) This switch makes the defrost mode operating.

(2) When defroster mode operating, fresh air/recirculation switch turns to fresh air mode and air conditioner switch turns ON.

8) SELF DIAGNOSIS FUNCTION

(1) Procedure



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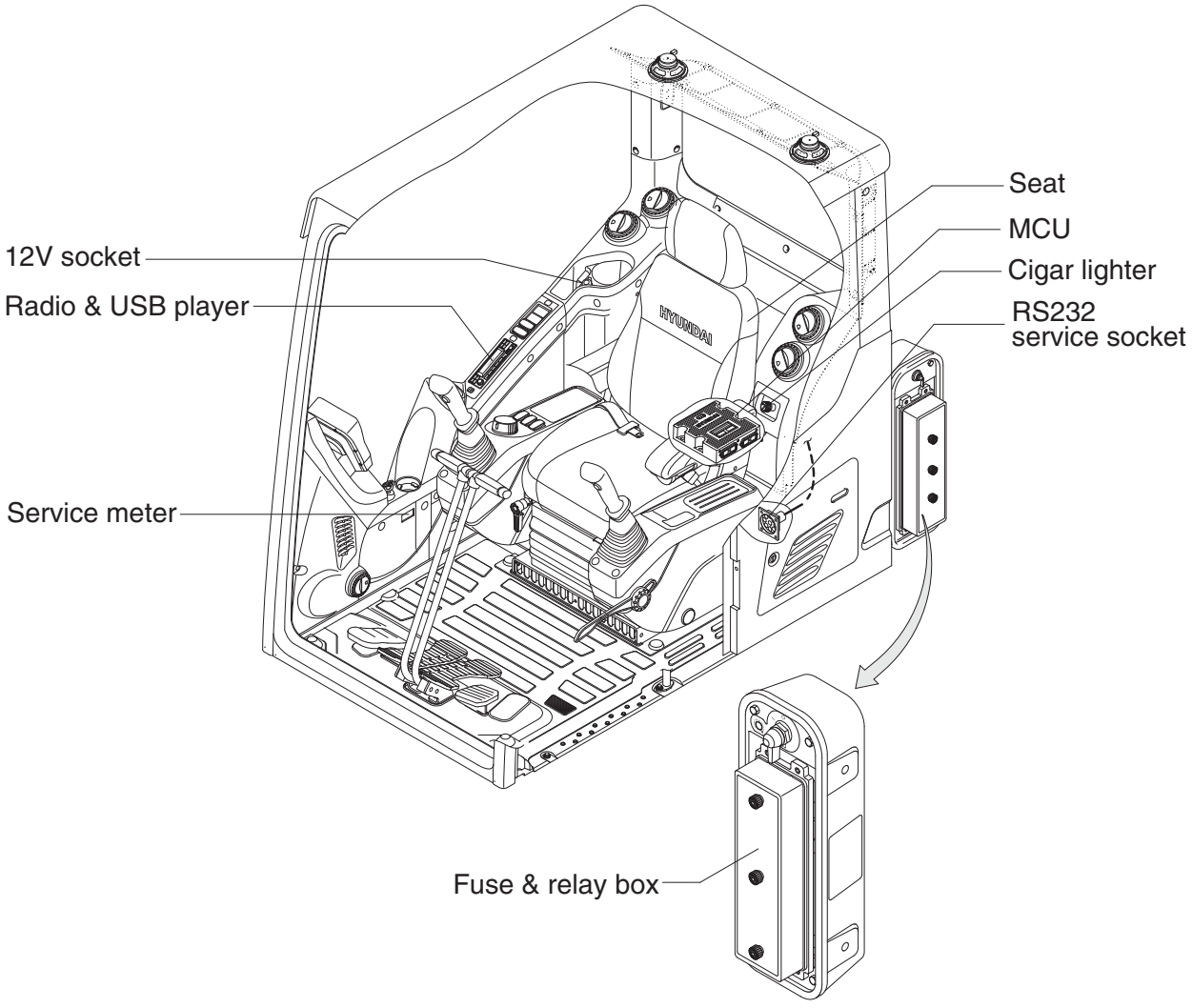
(2) Error check

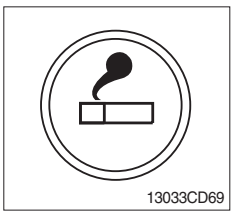
- If normal, display E0.
- The corresponding error code flickers on the setup temperature display panel, the other symbol will turn OFF.
- Error code flickers every 0.5 second.
- If error code is more than two, each code flickers 2 times in sequence.
- Up and down the error codes by prossing the temperature control switch.
- Error code

Error code	Description	Error code	Description
E0	Normal	E5	Duct sensor short
E1	Incar sensor short	E6	Duct sensor open
E2	Incar sensor open	E11	DPS open
E3	Ambient sensor short	E12	Mode actuator fail
E4	Ambient sensor open	E13	Mix actuator fail

6. OTHERS



1) CIGAR LIGHTER



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

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

※ **Service socket**

Use cigar lighter socket when you need emergency power.
Do not use the lighter exceeding 24 V, 100 W.

2) RADIO AND USB PLAYER

■PRECAUTIONS

- Please adjust the volume to a reasonable level to protect your hearing.
- Please prevent water spraying onto the device.
- It is a normal phenomenon that the temperature of the chassis of the device rises after prolonged usage under high volume.
- Please avoid touching it when overheat.
- Please do not disassemble the device or else warranty is void.
- Please contact the HYUNDAI dealer if you find any difficulties in using the device.

■FEATURE

Including FM/AM tuner, MP3 player, AUX IN, Bluetooth functions, Clock setting & Equalizer setting.

① Main feature	: Digital FM/AM Radio Tuner, USB-MP3 Player, Clock display, AUX IN, Bluetooth function
② Tuner	: Support FM tuning , AM tuning
③ MP3 player	: Support MP3 format in USB drives
④ AUX IN	: Support sound source from external devices through AUX cable
⑤ Bluetooth	: A2DP, AVRCP, HFP
⑥ Clock display	: Support 24-hour format and clock memory (when only ACC supply is disconnected)

■PANEL

300S3CD50

■FRONT PANEL PRESENTATION

1 POWER	7 SEEK / MUSIC TRACK
2 BAND SELECTION	8 PRESET FUNCTION KEYS
3 LOUDNESS / HANG UP	9 CLOCK
4 MODE	10 AUX / USB PORT
5 AS / PS (Auto Preset Store)	11 MIC
6 ANSWER CALLS / VOLUME / SEL	

■OPERATIONS

(1) PWR : Press < PWR > to switch on and off.

(2) BND : Selecting waveband FM1/ FM2/FM3/AM1/ AM2.

(3) LOUDNESS / HANG UP

① LOUDNESS

Press < LOU >. Then "LOUD" will be shown on the LCD screen. Only activated under AM/FM mode.

② HANG UP

Hang up the phone.

(4) MOD : Press to switch between modes : RADIO ↔ AUX IN ↔ BT PLAY ↔ MP3(USB).

(5) AS / PS : Hold for more than 2 seconds to auto scan and prestore stations.

(6) VOLUME / ANSWER CALLS

① ADJUST VOLUME

Rotate < SEL/MENU > to adjust volume.

② ANSWER CALLS

Press < SEL/MENU > to answer calls.

(7) SEEK / MUSIC TRACK : Switch UP / DOWN to seek radio frequencies, MP3 track or BT PLAY track.

(8) MP3 SETTINGS

① MP3 MODE

Press < MOD > to exchange between radio, AUX IN, BT PLAY and MP3.

② USB PLAYER

Without USB device LCD DISPLAY will not show "MP3".
With a USB device but no MP3 format inside the LCD DISPLAY shows "NO FILE".
After loading, LCD DISPLAY shows the total amount of songs and starts playing.

③ SCAN AND QUICK SCAN

Press < ∧ ∨ > to select the previous / next song. Press and hold < ∧ ∨ > for more than 2 seconds for a quick scan, the final scanned song will be played after 2 seconds without any operations.

④ MP3 PLAYER

····· Pause / Player

····· Scan / Player

····· Repeat / Player

····· Random / Player

····· Skip -10

····· Skip +10

(9) CLOCK SETTINGS

① CLOCK DISPLAY

Press < CLK > to enter to clock mode.

② ADJUST CLOCK

Press < CLK > for more than 2 seconds to enter clock mode. Press and hold < CLK > until the display is flashing. Then rotate < SEL/MENU > to adjust hours up/down. After that press < CLK > change to minutes mode. Then rotate < SEL/MENU > to adjust minutes up/down. Finally press < SEL/MENU > again to complete the setting.

(10) SOUND EFFECTS

Press < SEL/MENU > to change VOL → BAS → TRE → BAL.

① Volume : When LCD shows "MAIN V" then rotate < SEL/MENU > to adjust.
② Bass : When LCD shows "BASS" then rotate < SEL/MENU > to adjust.
③ Treble : When LCD shows "TRE B" then rotate < SEL/MENU > to adjust.
④ Balance : When LCD shows "BAL" then rotate < SEL/MENU > to adjust.

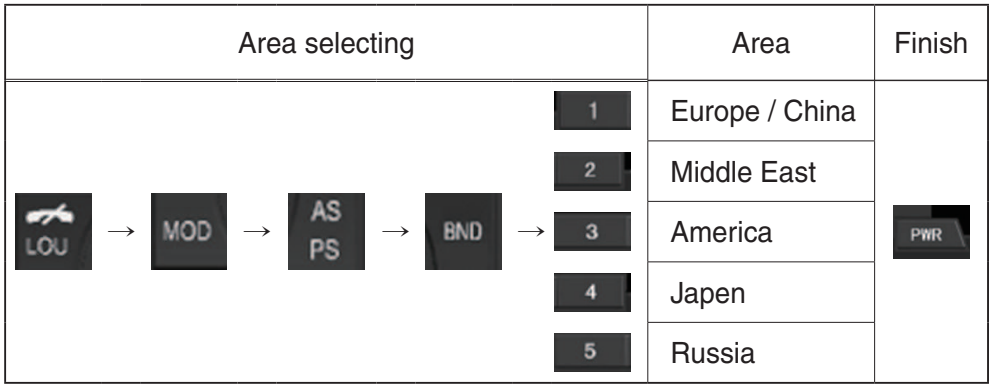
(11) BLUETOOTH PLAYER MODE

① Connet TD-650 with your phone device through bluetooh and if the connection is succeeded, " 🖿 " will be shown on the LCD screen.
② Press < MOD > button and switch to "BT play mode" so that you can play music from your phone device.

※ Bluetooth functions may vary due to different phones. It is recommended to contact manufacturer AS department if you find any difficulties.

(12) MIC PORT : This port connect radio with your phone device through bluetooth to call.

(13) AREA SELECTION FUNCTION



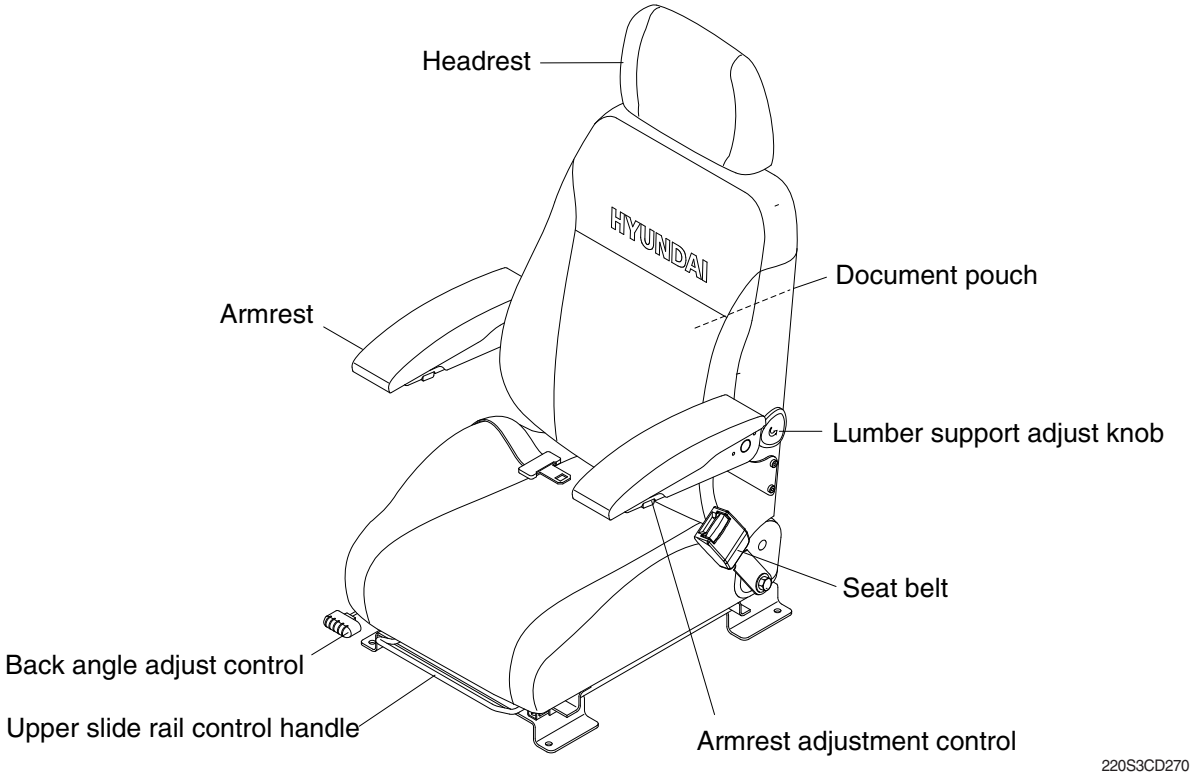
※ Setting conditions : only under standby mode.
※ Complete area selecting「LOU ~ ①」within 5 seonds.

■TROUBLESHOOTING

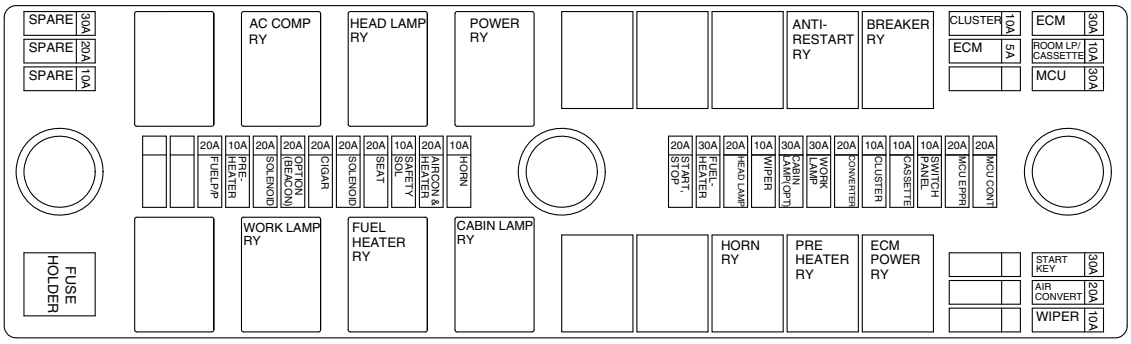
Problem	Cause / Remedy
Soundless	1. Check connection. 2. Delete mute function. 3. Turn volume up. 4. Restart.
No Display	1. Wrong installation
MP3 without playing	1. USB incorrect insertion 2. USB without MP3 format
Bluetooth disconnection	1. Restart Redio. 2. Restart Bluetooth of your phone.

3) SEAT

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



4) FUSE & RELAY BOX



220S3CD225

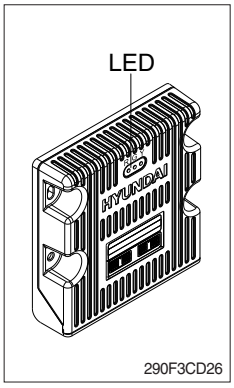
(1) The fuses protect the electrical parts and wiring from burning out.

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

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

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

5) MCU



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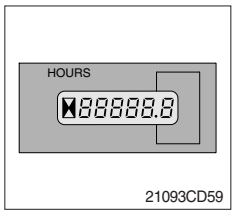
(1) To match the pump absorption torque with the engine torque, MCU varies EPPR valve output pressure, which control pump discharge amount whenever feedbacked engine speed drops under the reference rpm of each mode set.

(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

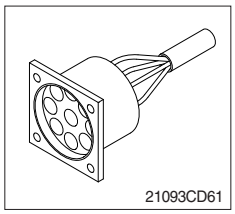
6) SERVICE METER



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

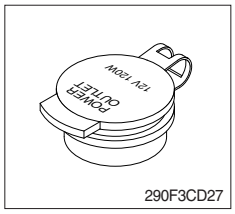
(2) Always ensure the operating condition of the meter during the machine operation. Inspect and service the machine based on hours as indicated in chapter 6, maintenance.

7) RS232 SERVICE SOCKET CONNECTOR



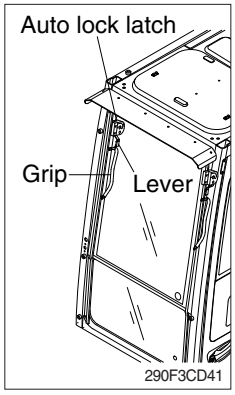
(1) MCU communicates the machine data with Laptop computer through the RS232 service socket.

8) 12V SOCKET



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

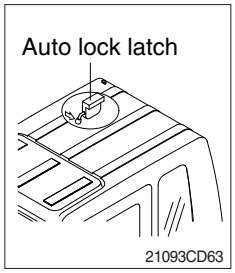
9) UPPER WINDSHIELD



(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.



(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.