

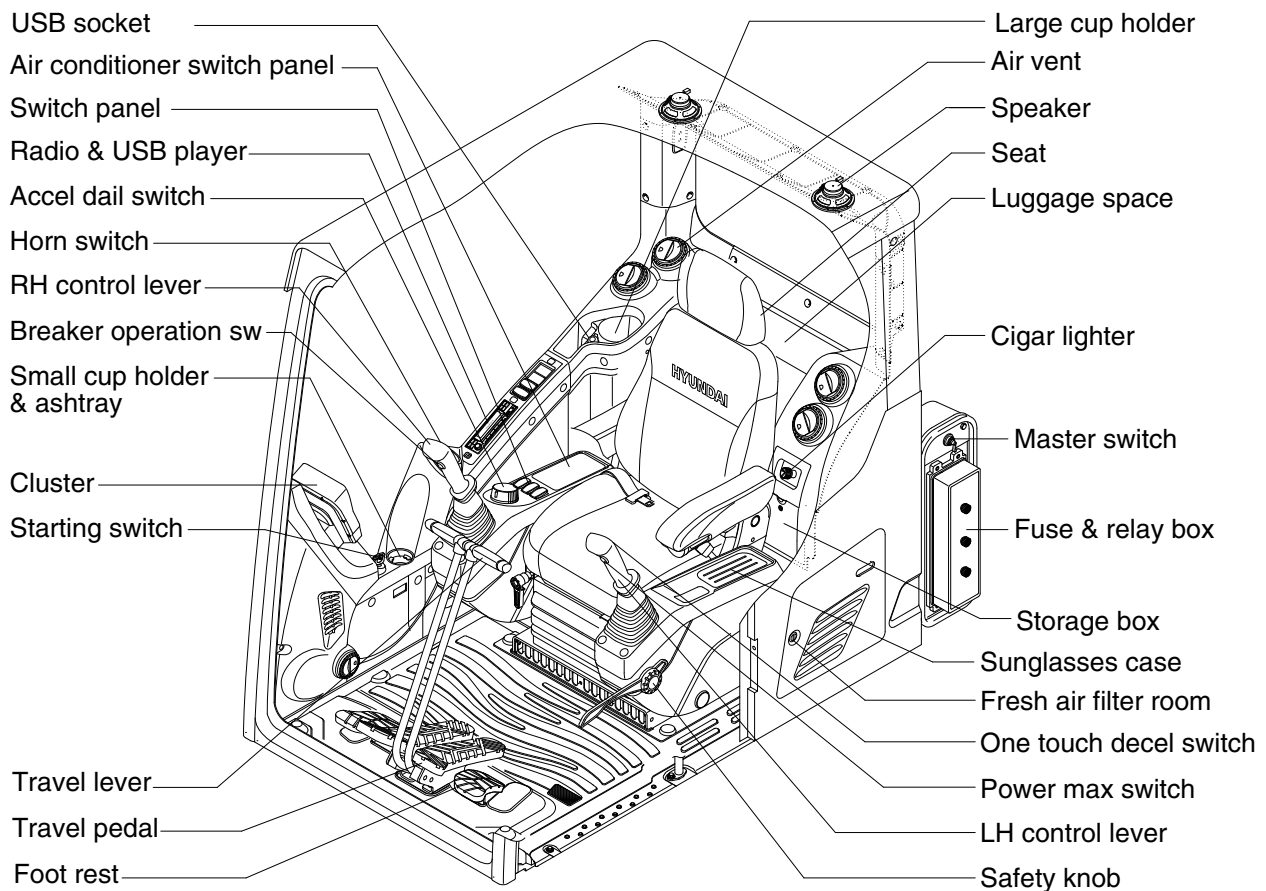
CONTROL DEVICES

1. CAB DEVICES

- 1) The ergonomically designed console box and suspension type seat provide the operator with comfort.

2) ELECTRONIC MONITOR SYSTEM

- (1) The centralized electronic monitor system allows the status and conditions of the machine to be monitored at a glance.
- (2) It is equipped with a safety warning system for early detection of machine malfunction.



340HD3CD31

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



220S3CD501B

Premium type



220S3CD01C

- ※ 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



Premium type

Default



Option



- 1 RPM / Speed gauge
- 2 Engine coolant temperature gauge
- 3 Hydraulic oil temperature gauge
- 4 Fuel level gauge

- 5 Tripmeter display
- 6 Eco guage
- 7 Accel dial gauge

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

(2) RPM / Speed gauge

Normal type



Premium type



① This display the engine speed.

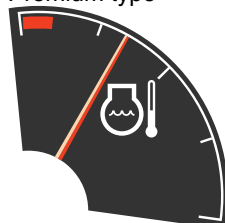
290F3CD549

(3) Engine coolant temperature gauge



Normal type



Premium type

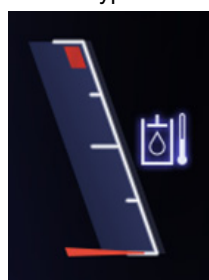


220S3CD553

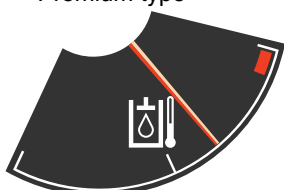
- ① This gauge indicates the temperature of coolant.
 - White range : 40-104°C (104-219°F)
 - Red range : Above 104°C (219°F)
 - ② If the indicator is in the red range or  lamp pops up and the buzzer sounds turn OFF the engine and check the engine cooling system.
- ※ If the gauge indicates the red range 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

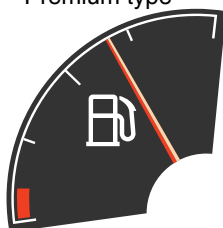
- ① This gauge indicates the temperature of hydraulic oil.
 - White range : 40-105°C(104-221°F)
 - Red range : Above 105°C(221°F)
 - ② If the indicator is in the red range or  lamp pops up and the buzzer sounds reduce the load on the system. If the gauge stays in the red range, stop the machine and check 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



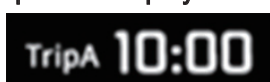
Premium type



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.

(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

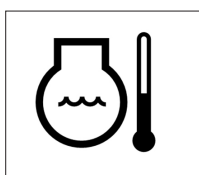


※ Warning lamps and buzzer








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	<ul style="list-style-type: none"> The pop-up warning lamp moves to the original position and blinks, and the buzzer stops when ; - the buzzer stop switch  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 .

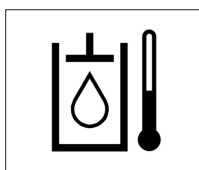
(1) Engine coolant temperature warning lamp










290F3CD61

- ① Engine coolant temperature warning is indicated two steps.
 - 100°C over : The  lamp pops up and the buzzer sounds.
 - 104°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  is pushed. And the buzzer stops and ,  lamps keep blink.
- ③ Check the cooling system when the lamps keep blink.

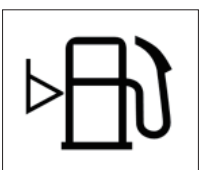
(2) Hydraulic oil temperature warning lamp



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  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 55 ℓ (14.5 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 104°C)
 - Hydraulic oil overheating (over 105°C)
 - MCU input voltage abnormal
 - Cluster communication data error
- ※ The pop-up warning lamp moves to the original position and blinks when the buzzer stop switch  is pushed. And the buzzer stops.
- ② When this warning lamp blinks, machine must be checked and serviced immediately.

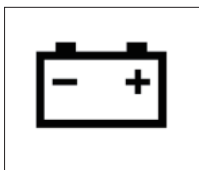
(5) Engine oil pressure warning lamp



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.

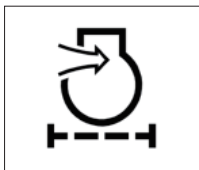
(6) Battery charging warning lamp



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)

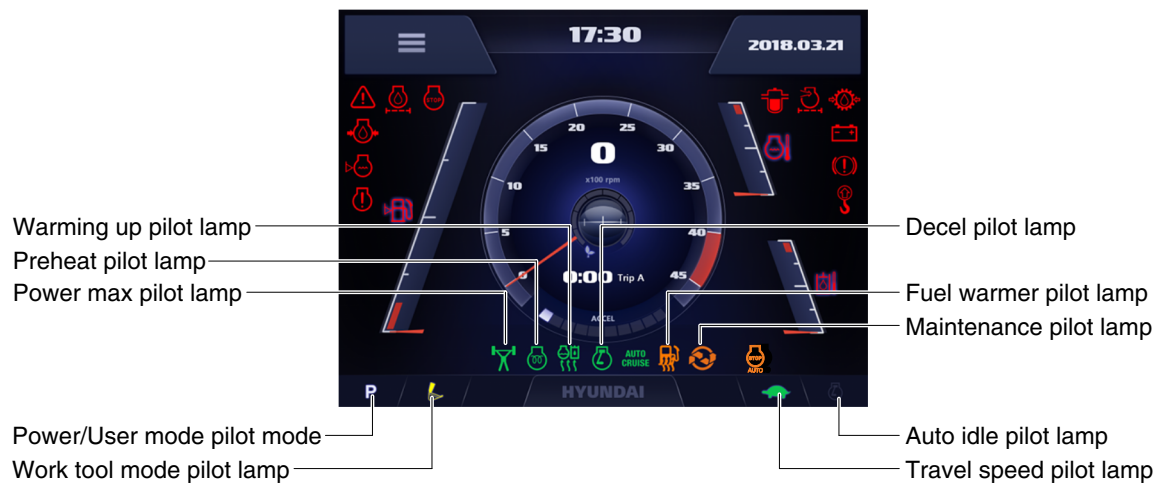


290F3CD69

- 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















220S3CD574B

Premium type

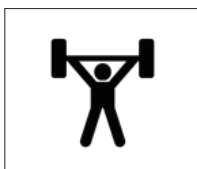


220S3CD74C

(1) Mode pilot lamps

No	Mode	Pilot lamp	Selected mode
1	Power mode		Heavy duty power work mode
			Standard power mode
			Economy power mode
2	User mode		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 page 3-35 for power max function.

(3) Preheat pilot lamp

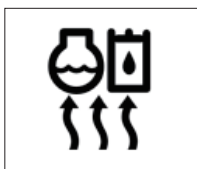


290F3CD79

① Turning the start key switch to the ON position starts preheating in cold weather.

② Start the engine after this lamp goes OFF.

(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.

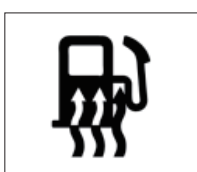
(5) Decel pilot lamp



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 page 3-35.**

(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.

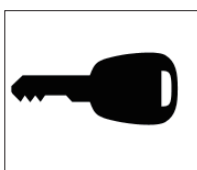
(7) Maintenance pilot lamp



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 page 3-24.**

(8) 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 authentication fails, green when succeeds.
- ※ **Refer to page 3-25.**

(9) Auto engine shutdown pilot lamp (opt)



220A3CD202A

- ① This lamp is turned ON when the auto engine shutdown is activated.
- ※ **Refer to page 3-21.**

5) SWITCHES

Normal type



220S3CD586

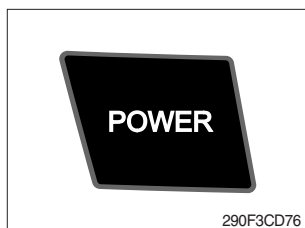
Premium type



220S3CD86B

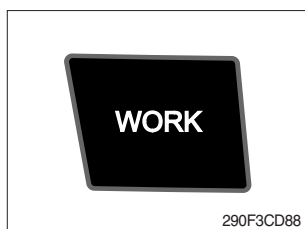
※ When some of the switches are selected, the pilot lamps are displayed on the LCD. Refer to page 3-9 for details.




(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.

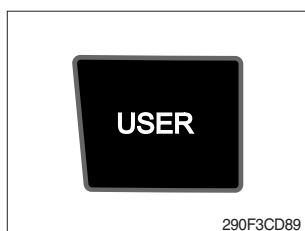
(2) Work mode switch



- 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.

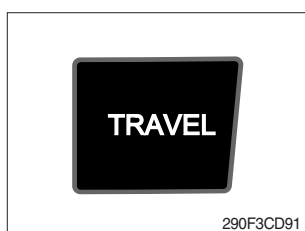
※ Refer to page 4-7 for details.



(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 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.

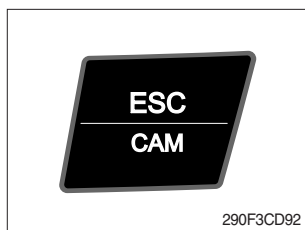
⚠ Personal injury can result from sudden changes in machine stability.

(5) Auto idle/ buzzer stop switch



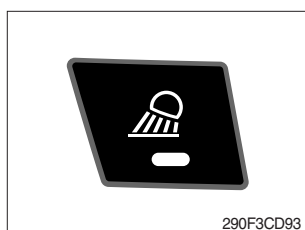
- ① This switch is used to activate or cancel the auto idle function.
 - Pilot lamp ON : Auto idle function is activated.
 - Pilot lamp OFF : Auto idle function is cancelled.
- ② The buzzer sounds when the machine has a problem. In this case, push this switch and buzzer stops, but the warning lamp blinks 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



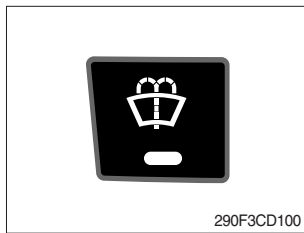
- ① This switch is used to wipe operates intermittently.
- ② The pilot lamp is turned ON when operating the switch.

(10) Wiper switch



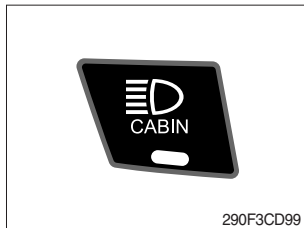
- ① This switch is used to operate the window wiper.
- ② Note that the wiper will self-park when switched off.
- ③ The pilot lamp is turned ON when operating the switch.
- ※ If the wiper does not operate with the switch in ON position, turn the switch OFF immediately. Check the cause. If the switch remains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

(11) Washer switch



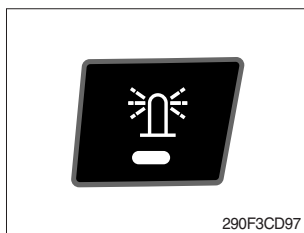
- ① The washer liquid is sprayed and the wiper is operated only while pressing this switch.
- ② The pilot lamp is turned ON when operating the switch.

(12) Cab light switch



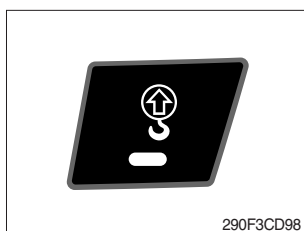
- ① This switch turns ON the cab light on the cab.
- ② The pilot lamp is turned ON when operating the switch.

(13) Beacon switch (option)



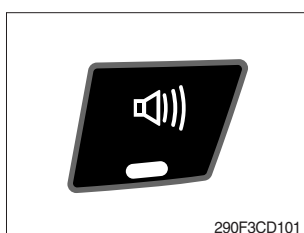
- ① This switch turns ON the rotary light on the cab.
- ② The pilot lamp is turned ON when operating the switch.

(14) Overload switch (option)



- 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.

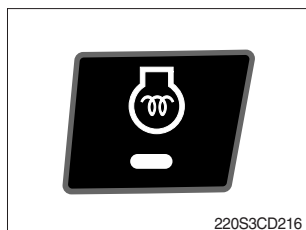
(16) Main menu quick touch switch



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

※ Refer to page 3-18.

(17) Pre-heater switch



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

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

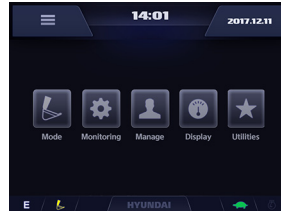
Operation screen

MENU



Tap
MENU

Main menu screen



Sub menu screen



220S3CD502

Premium type

Operation screen



Tap
MENU

Main menu screen












Sub menu screen



220S3CD102A

(1) Structure

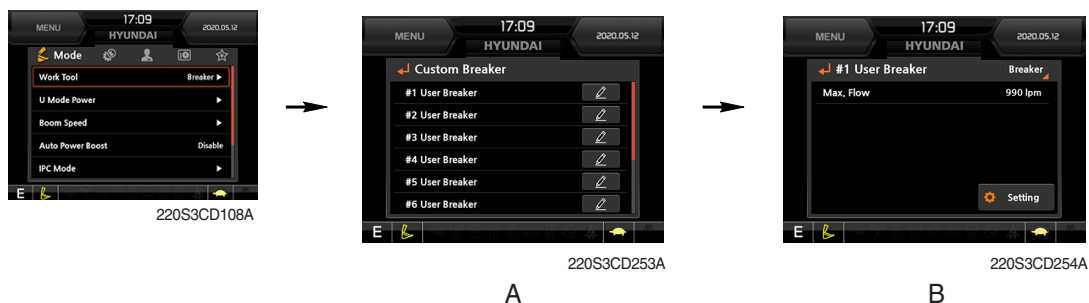
No	Main menu	Sub menu	Description
1	  Mode 290S3CD103	Work tool U mode power Boom/Arm speed Auto power boost IPC mode Auto engine shutdown (option) Initial mode Emergency mode	Breaker, Crusher, Not installed User mode only Boom speed Enable, Disable Speed mode, Balance mode, Efficiency mode One time, Always, Disable Key on initial mode, Accel initial mode / step Switch function
2	  Monitoring 290S3CD104	Active fault Logged fault Delete logged fault Monitoring	MCU, ★AAVM (option) MCU, ★AAVM (option) All logged fault delete, Initialization canceled Machine information, Switch status, Output status,
3	  Management 290S3CD105	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 (option) 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 290S3CD106	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, ETC A type, B type
5	  Utilities 290S3CD107	Tripmeter Camera setting AUX Manual	3 kinds (A, B, C) Camera setting, Auto mode (travel)

★ : premium type

(2) Mode setup

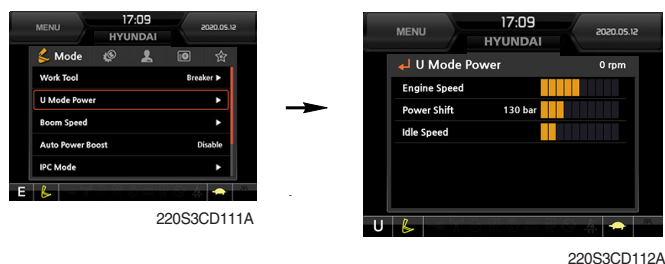
※ Illustrations are based on the premium type cluster.

① Work tool



- 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

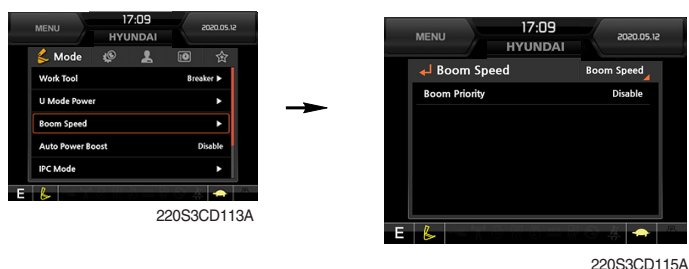


- Engine high idle rpm, auto idle rpm and pump torque (power shift) can be modulated and memorized separately in U-mode.
- U-mode can be activated by user mode switch.

Step (■)	Engine speed (rpm)	Idle speed (rpm)	Power shift (bar)
1	1400	1000	0
2	1500	1050 (auto decel)	3
3	1550	1100	6
4	1650	1150	9
5	1700	1200	12
6	1750	1250	16
7	1800	1300	20
8	1850	1350	26
9	1900	1400	32
10	1950	1450	38

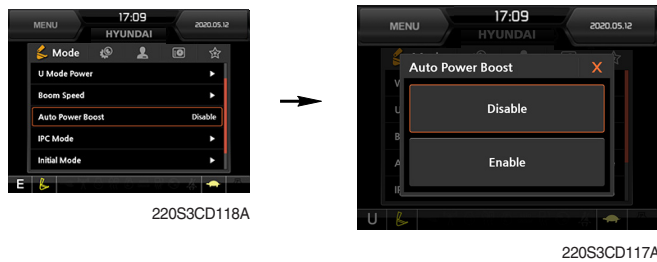
※ One touch decel & low idle : 1000 rpm

③ Boom speed



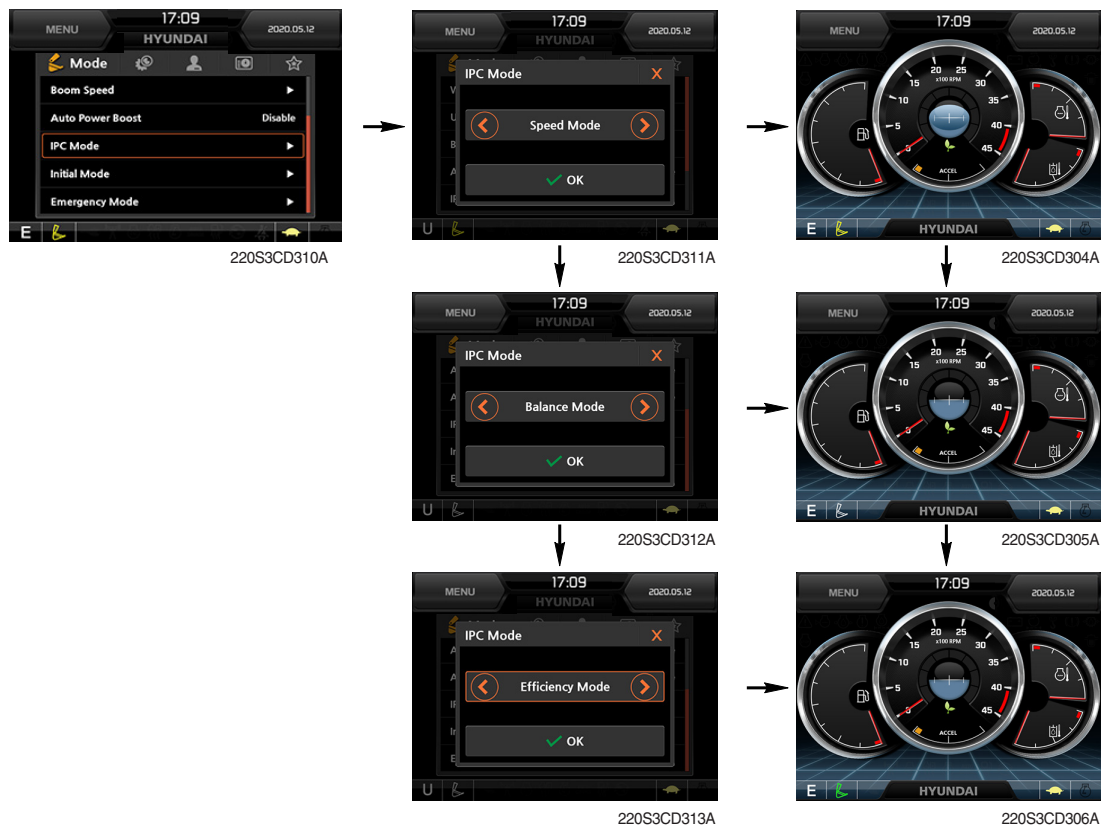
- Boom speed
 - Boom priority function can be activated or cancelled
Enable - Boom up speed is automatically adjusted as working conditions by the MCU.
Disable - Normal operation

④ Auto power boost



- 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



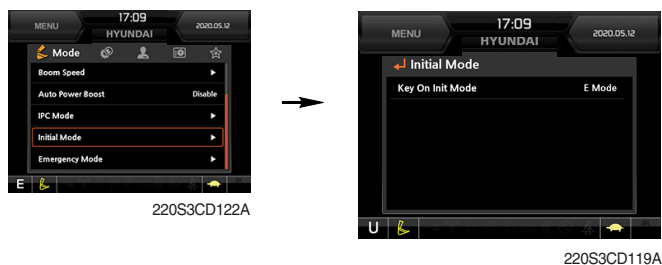
- The IPC mode can be selected by this menu.
 - Speed mode
 - Balance mode (default)
 - Efficiency mode
- This mode is applied only general operation mode of the work tool mode.
- ※ Please update the cluster programs if this mode is not displayed in the mode setup menu. Refer to page 3-27.

⑥ Automatic engine shutdown (option)



- 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



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

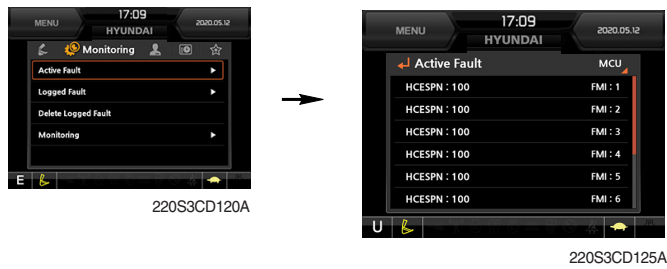
⑧ Emergency mode



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

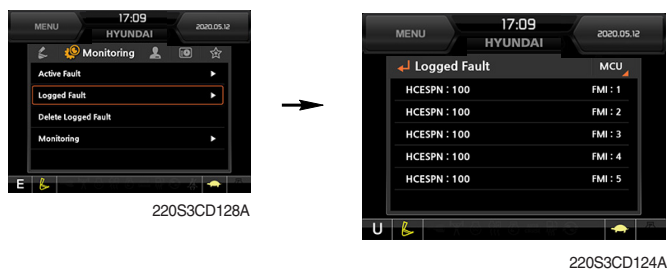
(3) Monitoring

① Active fault



- The active faults of the MCU and AAVM (option) can be checked by this menu.

② Logged fault



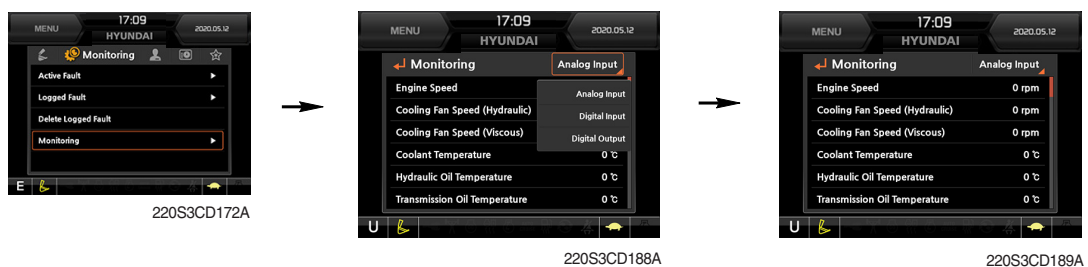
- The logged faults of the MCU and AAVM (option) can be checked by this menu.

③ Delete logged fault



- The logged faults of the MCU and AAVM (option) can be deleted by this menu.

④ Monitoring



- 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

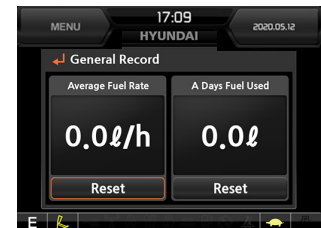


220S3CD15A

A

· General record (A)

- Average fuel rate (left) (from "Reset" to now)
Fuel consumption divided 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).



220S3CD16A

B

· 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".



220S3CD17A

C

· 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".



220S3CD18A

D

· 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".



220S3CD19A

② Maintenance information



- 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.
- ※ Refer to Maintenance chart for further information of maintenance interval.

③ Machine security



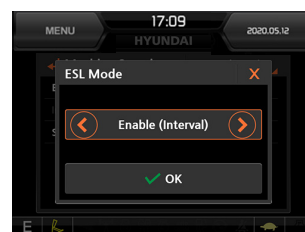
220S3CD190A



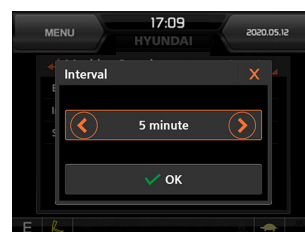
220S3CD135A



220S3CD136A



220S3CD137A



220S3CD138A

· ESL mode setting

- ESL : Engine Starting Limit
- ESL mode is designed to be a theft deterrent or will prevent the unauthorized operation of the machine.
- If the ESL mode was selected Enable, the password will be required when the start switch is turned ON.

- 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

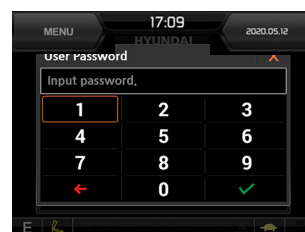
- The password is 5~10 digits.



220S3CD190A

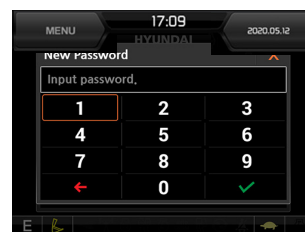


220S3CD140A



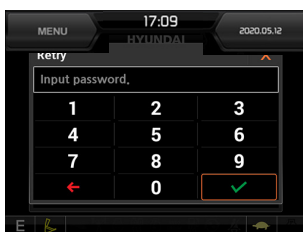
220S3CD135A

Enter the current password



220S3CD142A

Enter the new password

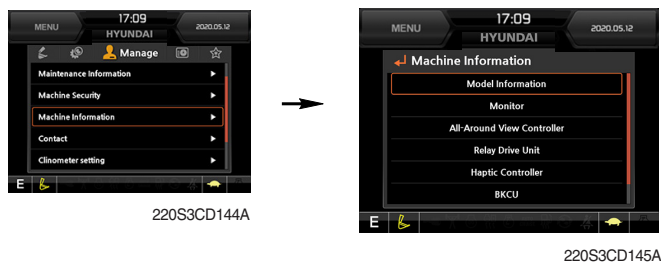


220S3CD143A

Enter the new password again

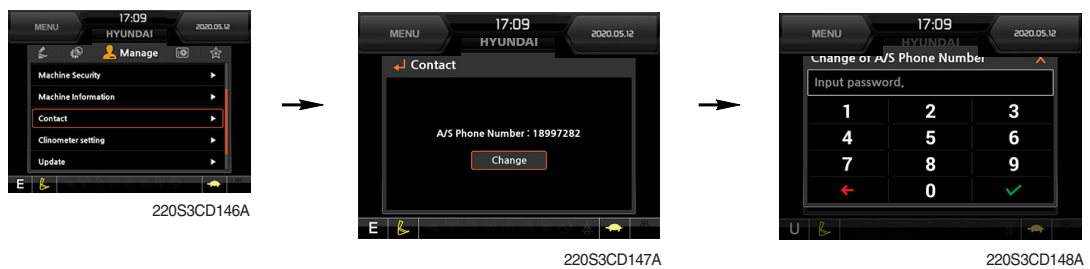
※ **Before first use, please set user password and owner password in advance for machine security.**

④ Machine Information



- 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)



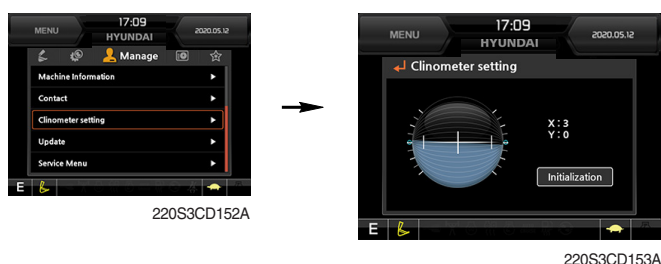
Enter the new A/S phone number

⑥ Service menu



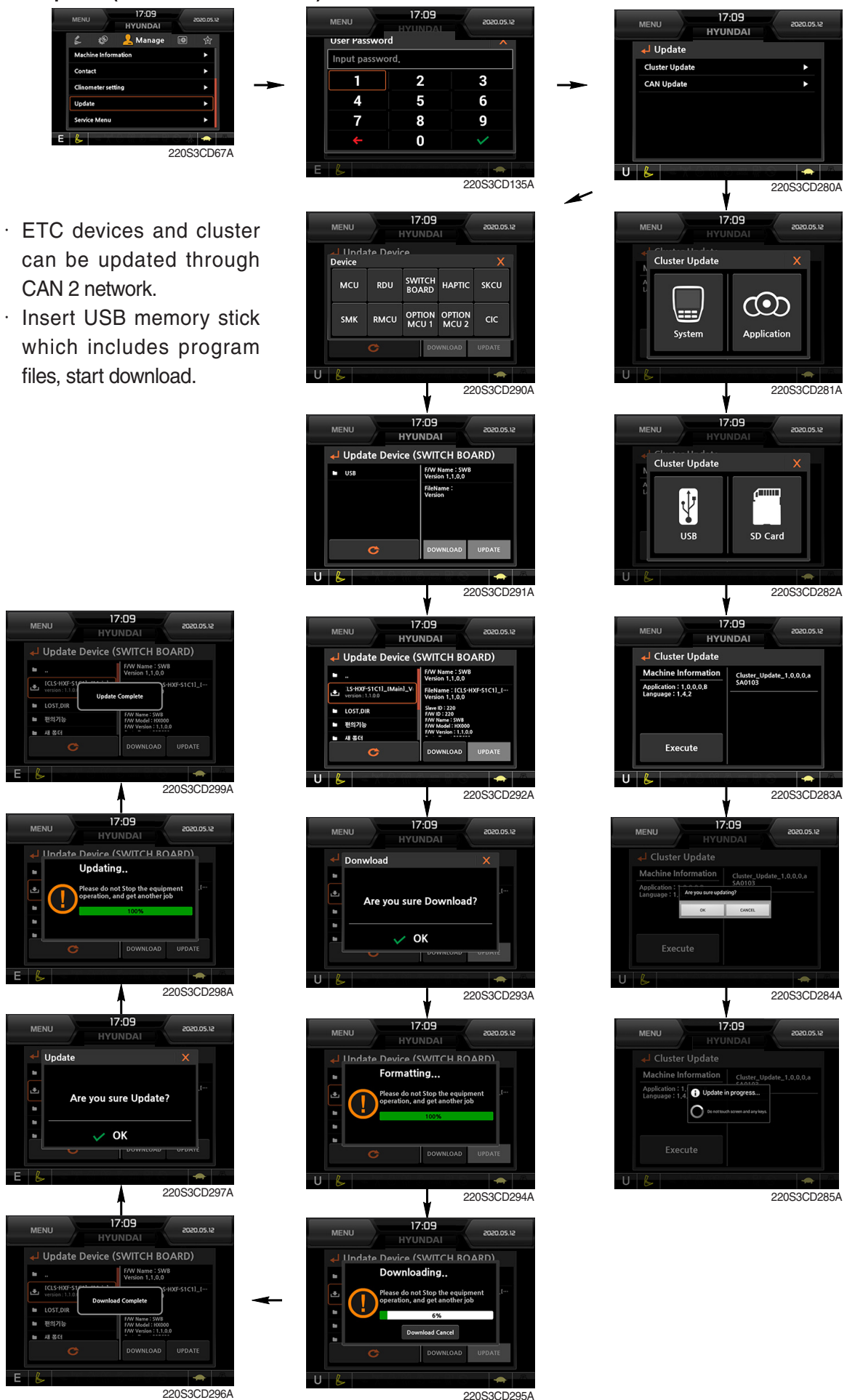
- Power shift (standard/option) : Power shift pressure can be set by option menu.
- Operating hours : Operating hours since the machine line out can be checked by this menu.
- Breaker mode pump acting (1 pump/2 pump)
- EPPR current level (attach flow EPPR 1 & 2)
- Overload pressure : 100 ~ 350 bar

⑦ Clinometer



- 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)



- 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



220S3CD154A



220S3CD155A



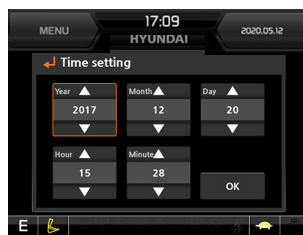
220S3CD156A

- 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



220S3CD158A

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

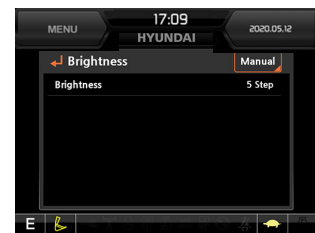
③ Brightness



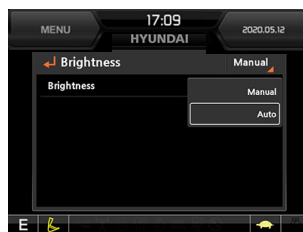
220S3CD159A



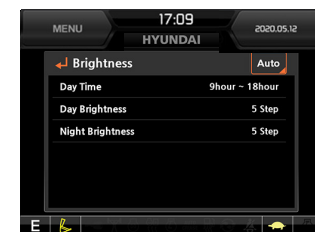
220S3CD160A



220S3CD139A



220S3CD141A



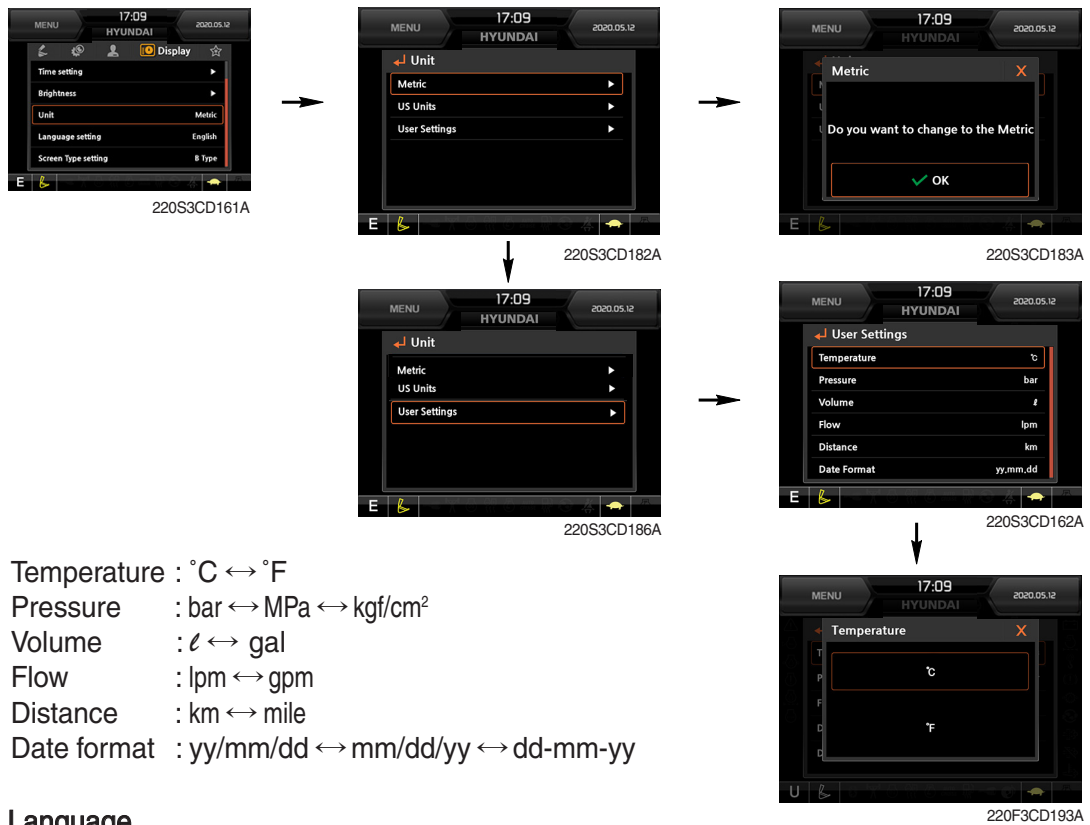
220S3CD191A



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



⑤ Language

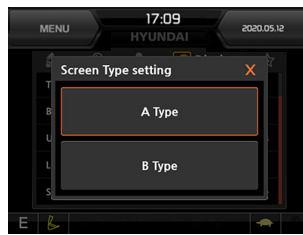


- User can select preferable language and all displays are changed the selected language.

⑥ Screen type (premium type)



220S3CD165A



A Type (Default) 220S3CD166A



220S3CD156A



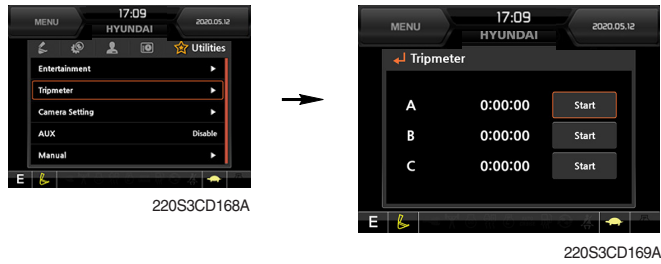
B Type (Option) 220S3CD174A



220S3CD167A

(6) Utilities

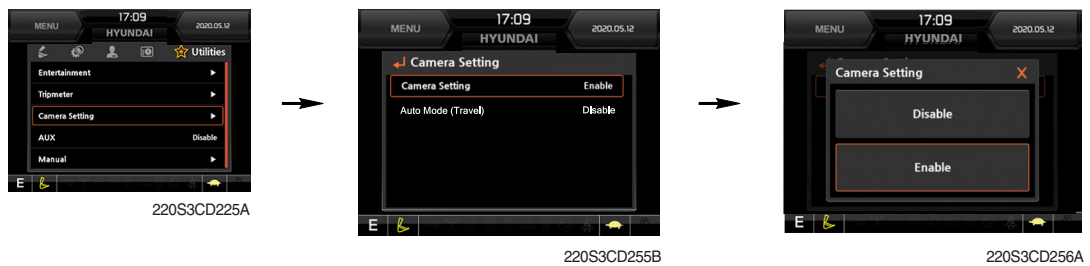
① Tripmeter



- 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.



- Auto Mode (Travel) : Enable
The cluster will automatically show camera view while machine is traveling.
- In the operation screen, rear camera screen shows up when ESC/CAM switch is pushed.



③ AAVM (Advanced Around View Monitoring, premium type, opt)

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



220S3CD244A

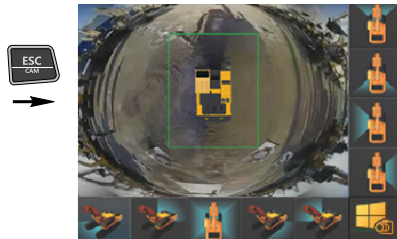
- Escape button

- 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.



220S3CD156A

The beginning screen



AAVM mode

235SA3CD222A

- 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.



220A3CD246

- When the worker or pedestrian go to the green line, an external danger area of equipping on the cluster screen, the warning buzzer sounds and it displays the green 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.



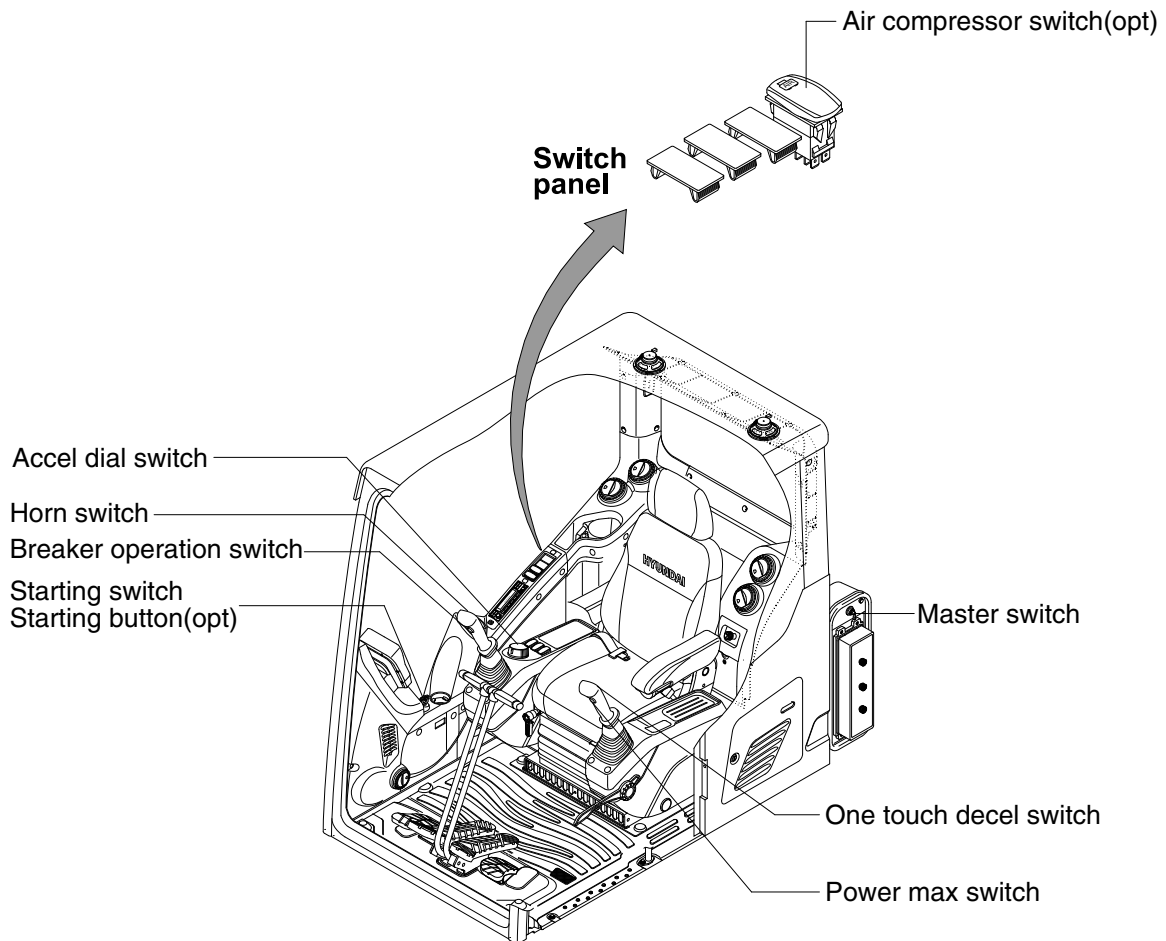
220A3CD247

- When the worker or pedestrian go inside of red line, 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.

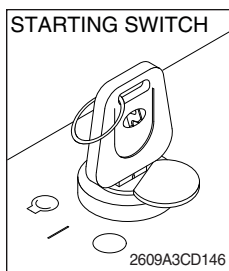
※ In AAVM mode, a touch screen of the LCD is available only. The multimodal dial of the haptic controller is not available.

3. SWITCHES



340HD3CD32

1) STARTING SWITCH & STARTING BUTTON (OPT)



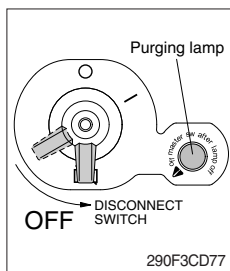
(1) There are three positions, OFF, ON and START.

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

Release key immediately after starting.

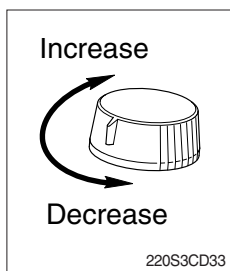
- ※ If you turn ON the starting switch in cold weather, the fuel warmer (if equipped) is automatically operated to heat the fuel by sensing the coolant temperature. Start the engine in 1~2 minutes after turning ON the starting switch. More time may take according to ambient temperature.
- ※ Key must be in the ON position with engine running to maintain electrical and hydraulic function and prevent serious machine damage.

2) MASTER SWITCH



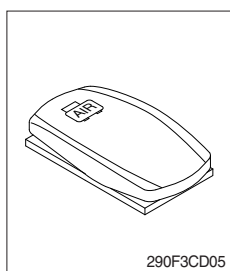
- (1) This switch is used to shut off the entire electrical system.
 - (2) I : The battery remains connected to the electrical system.
O : The battery is disconnected to the electrical system.
- ※ **Never turn the master switch to O (OFF) with the engine running.**
Engine and electrical system damage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

3) ACCEL DIAL SWITCH



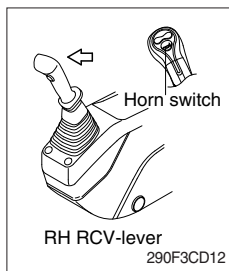
- (1) There are 10 dial setting.
- (2) Setting 1 is low idle and setting 10 is high idle.
 - By rotating the accel dial to right : Engine speed increases.
 - By rotating the accel dial to left : Engine speed decreases.

4) AIR COMPRESSOR SWITCH (option)



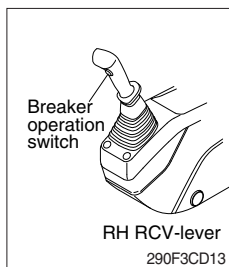
- (1) This switch is used to activate the air compressor.
- (2) The indicator lamp is turned on when operating the switch.

5) HORN SWITCH



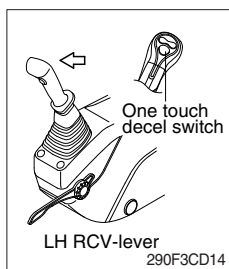
- (1) This switch is at the top of right side control lever.
On pressing, the horn sounds.

6) BREAKER OPERATION SWITCH



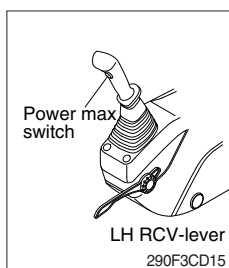
- (1) On pressing this switch, the breaker operates only when the breaker operation mode is selected.

7) ONE TOUCH DECEL SWITCH



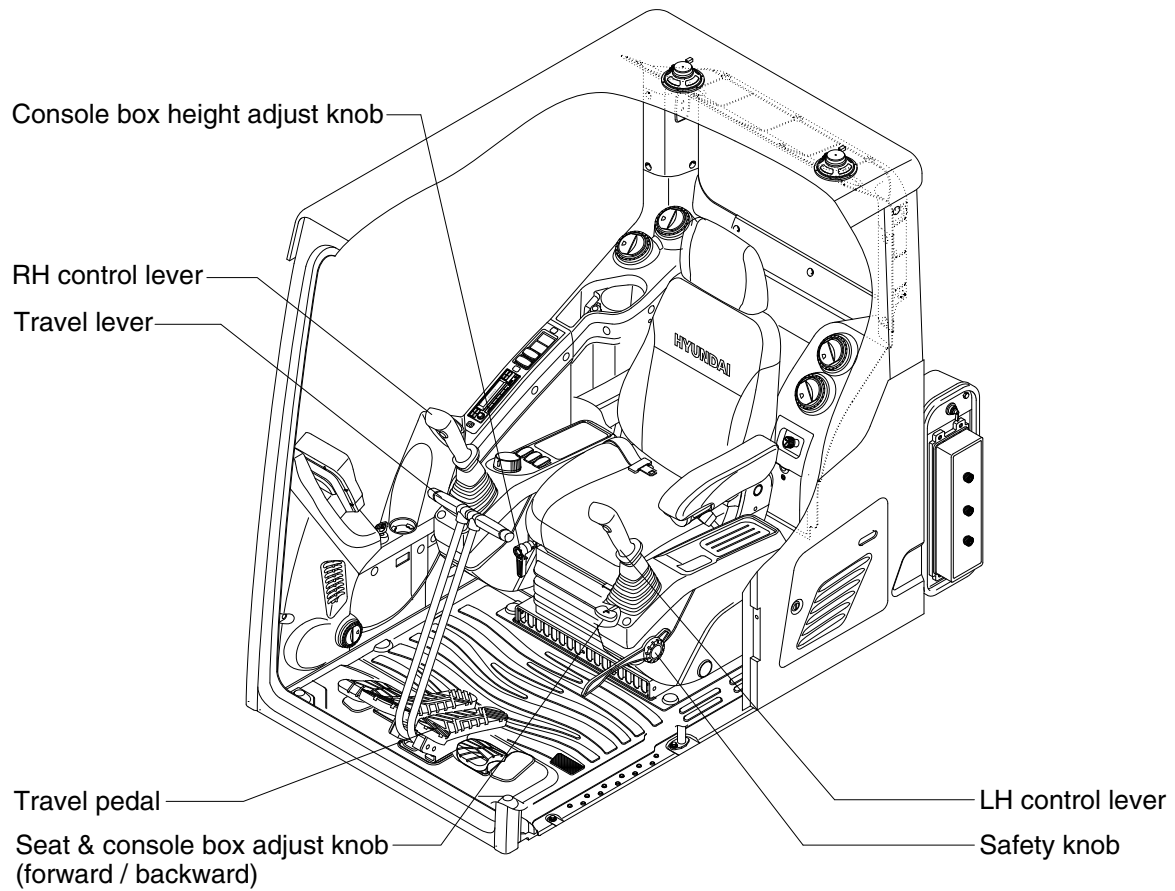
- (1) This switch is used to actuate the deceleration function quickly.
- (2) The engine speed is increased to previous setting value by pressing the switch again.
- (3) One touch decel function is available only when the auto idle pilot lamp is turned OFF.

8) POWER MAX SWITCH



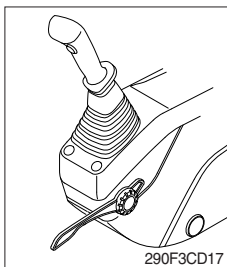
- (1) This switch activate power max function.
When this switch is kept pressed, hydraulic power of work equipment will be increased to approx 110 percent during 8 seconds.
 - (2) After 8 seconds, function is cancelled automatically even the switch keeps pressed.
- ※ **Do not use for craning purposes.**

4. LEVERS AND PEDALS



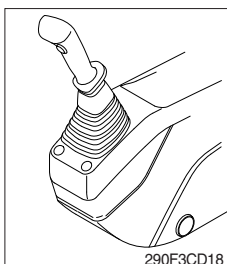
300S3CD36

1) LH CONTROL LEVER



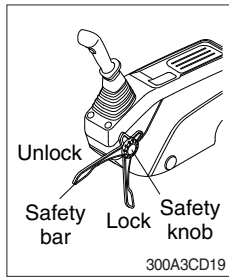
- (1) This joystick is used to control the swing and the arm.
- (2) Refer to operation of working device in chapter 4 for details.

2) RH CONTROL LEVER



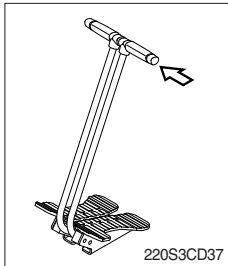
- (1) This joystick is used to control the boom and the bucket.
- (2) Refer to operation of working device in chapter 4 for details.

3) SAFETY KNOB



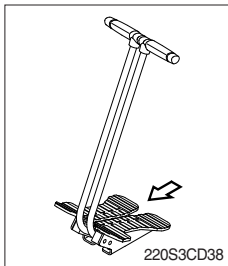
- (1) All control levers and pedals are disabled from operation by locating the safety knob to the LOCK position as shown.
※ **Be sure to turn the safety knob to the LOCK position when entering or leaving the operators seat/cabin.**
- (2) The machine is operational by turning the safety knob to the UNLOCK position.
※ **Do not use the safety bar for handle when getting on or off the machine.**

4) TRAVEL LEVER



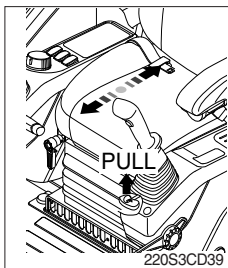
- (1) This lever is mounted on travel pedal and used for traveling by hand. The operation principle is same as the travel pedal.
- (2) Refer to traveling of the machine in chapter 4 for details.

5) TRAVEL PEDAL



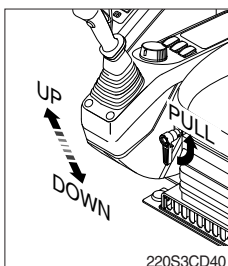
- (1) This pedal is used to move the machine forward or backward.
- (2) If left side pedal is pressed, left track will move.
If right side pedal is pressed, right track will move.
- (3) Refer to traveling of machine in chapter 4 for details.

6) SEAT AND CONSOLE BOX ADJUST 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

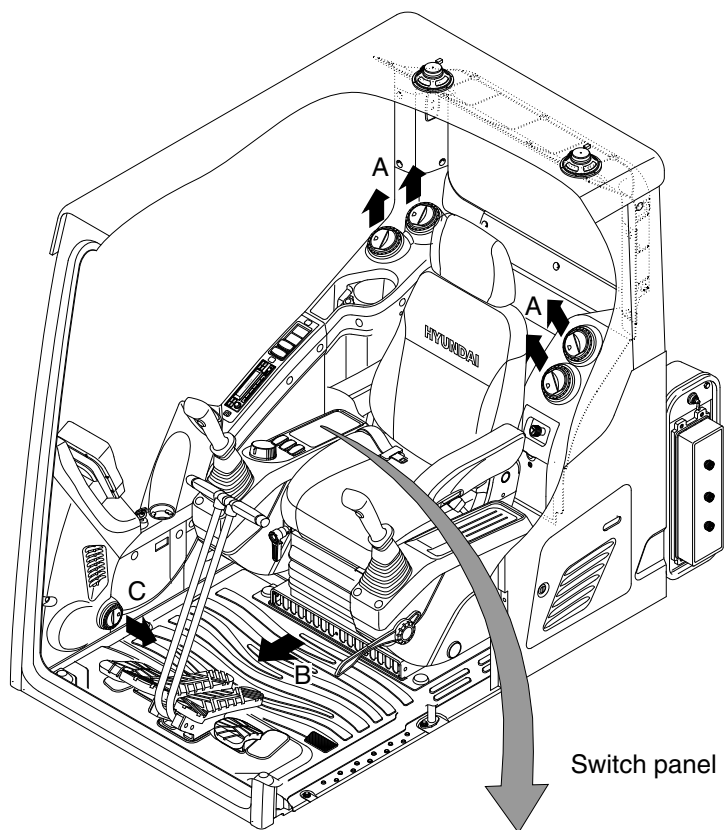


- (1) This knob is used to move the LH and RH control levers to fit the contours of the operator's body.
- (2) The control levers can be moved upward and downward over 80 mm (2.4").

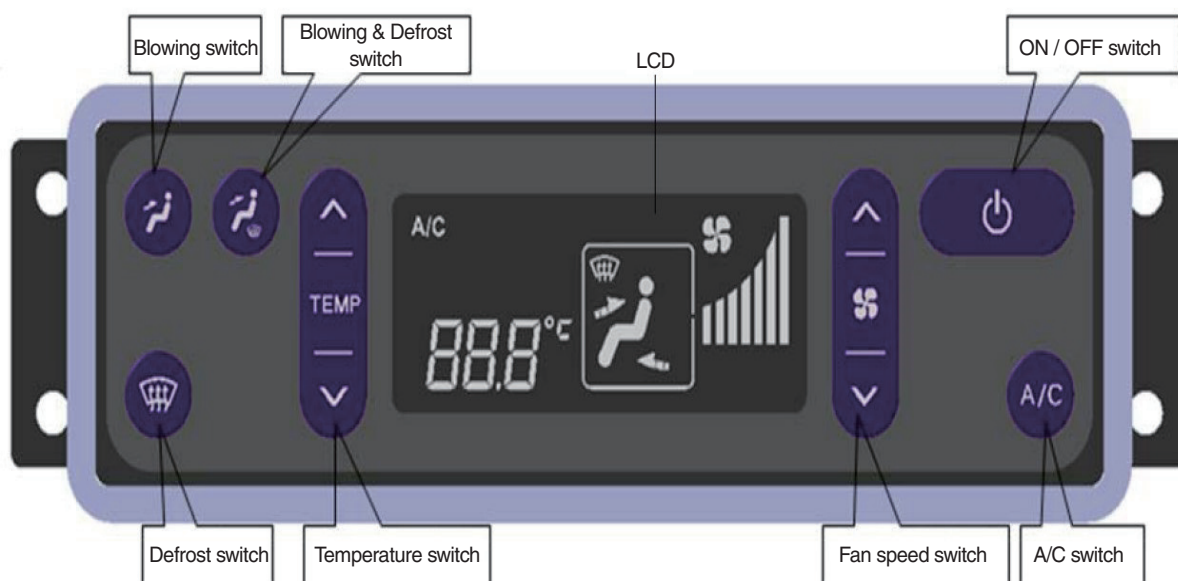
5. AIR CONDITIONER AND HEATER

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



300S3CD49



340HD3CD49-1

1) POWER OFF SWITCH



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

2) 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.**

3) FAN SPEED SWITCH



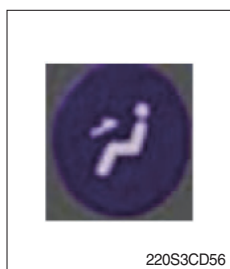
- (1) The wind speed step can show the LCD.
- (2) This switch controls fan speed manually.
- There are 5 steps (OFF, 1 ~ 4 speed) to control fan speed.
 - The maximum step or the minimum step beeps 5 times.
- (3) This switch makes the system ON.

4) TEMPERATURE CONTROL SWITCH



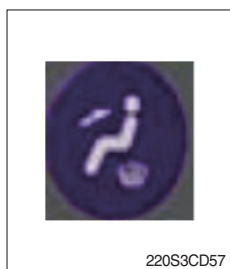
- (1) Setting temperature indication (17~32°C, scale : 0.5°C)
- (2) The highest setting temperature is 32°C , the lowest temperature 17°C.
- (3) Each ▼ or ▲ operation set temperature change range of 0.5°C.
- (4) Control the electric water valve according to the set temperature.
- (5) The power switch can deactivate this function.

5) BLOWING SWITCH



- (1) This switch indicator light is on.
- (2) This switch perform the blowing function.
- (3) Blow and defrost switch, defrost switch, power switch can deactivate this function.

6) BLOWING AND DEFROST SWITCH



- (1) This switch indicator light is on.
- (2) This switch perform the blowing and defrost function.
- (3) Blowing switch, defrost switch, power switch can deactivate this function.

7) DEFROST SWITCH



- (1) This switch indicator light is on.
- (2) This switch perform the defrost function.
- (3) Blowing switch, blowing and defrost switch, power switch can deactivate this function.

8) OTHERS FUNCTIONS

The unit of temperature marker is changed.

(1) The user can choose to change the temperature unit marked on the display screen. Press TEMP UP/DOWN for more than 3 seconds at the same time, can achieve $^{\circ}\text{C} \rightarrow ^{\circ}\text{F}$ to convert.

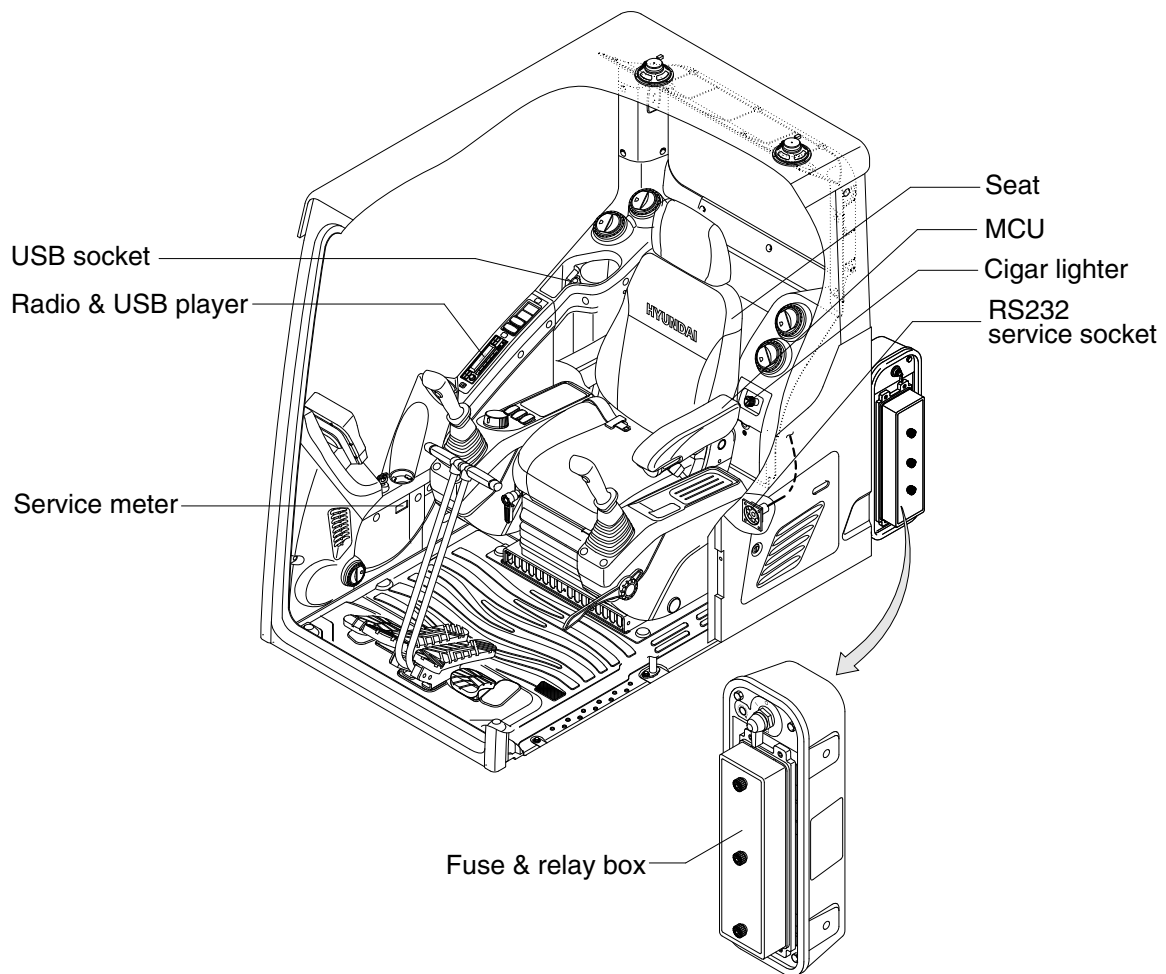
(2) Change the display temperature to $^{\circ}\text{C}$ or $^{\circ}\text{F}$.

$^{\circ}\text{C}$	$^{\circ}\text{F}$
17.0	61
17.5	62
18.0	63
18.5	64
19.0	65
19.5	66
20.0	67
20.5	68
21.0	69
21.5	70
22.0	71

$^{\circ}\text{C}$	$^{\circ}\text{F}$
22.5	72
23.0	73
23.5	74
24.0	75
24.5	76
25.0	77
25.5	78
26.0	79
26.5	80
27.0	81
27.5	82

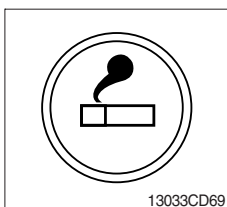
$^{\circ}\text{C}$	$^{\circ}\text{F}$
28.0	83
28.5	84
29.0	85
29.5	86
30.0	87
30.5	88
31.0	89
31.5	90
32.0	91

6. OTHERS



340HD3CD41

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

(1) The device supports the function of charging mobile phone with USB data cable.

※ It is not advisable to charge for a long time, and the battery may be damaged because there is no battery saturation detection function during charging.



340HD3CD100

(2) Turn the knob counterclockwise to reduce the current volume and turn the button clockwise to increase the current volume.

(3) Function for radio

Td-650 is a knob-type car audio system, including FM, AM tuning radio, Bluetooth, MP3 (USB/SD) clock sound adjustment, external audio input, loudness and other functions.

- System configuration: digital tuned radio, USB/SD-MP3 player, electronic clock display.
- Radio function: support FM (87.5~108MHz), AM (522~1620KHz), can store 24 stations.
- AUX function: Supports the play of MP3 files in U disk or SD card, and supports the input of audio from mobile phone and MP3.
- Sound function: support POP/ROCK/Classic/Flat sound.
- Bluetooth function: Support bluetooth phone connection and bluetooth music playback function.

(4) Radio button

- ① PWR : switch machine
- ② BND : band rotation
- ③ LOU : loudness control, hang up the phone
- ④ 1/▶/II, 2/INT, 3/RPT, 4/RDM, 5/D-DN, 6/D-LP: radio/storage keys, MP3 player keys
- ⑤ AS/PS : automatic presets of radio/songs
- ⑥ MOD : mode selection
- ⑦ ^ ∨ : manual/automatic search radio button; select previous/Next song button, fast forward/fast back button.
- ⑧ MOD : short press to switch from USB/SD to FM, then short press to switch FM1/FM2/FM3 long press to automatically search and save.
- ⑨ CLK : clock display and settings

(5) Radio operation

① Basic setting

- Mode switch : Press "PWR" to make the product in working state. Press the "MOD" button to loop through each mode in turn. If the USB flash drive is connected, the product directly enters the next mode. This product consists of RADIO mode, BT PLAY mode, USB moad and AUX IN mode.

- Radio Settings: Press the "PWR" button, and then press the "BND" button to select the desired band from FM1, FM2, FM3, AM1 and AM2. Short press the "^" button or "v" button to start automatic radio search. Long press the "^" button or "v" button for more than 2S to manually search the radio station. Long press the "AS/PS" button for more than 2S to automatically preset the radio. Long press any of the "1" to "6" buttons for more than 2S, and the current radio will be preset.

② MP3 (USB/SD/MMC) play

- In the radio working mode, after inserting the USB flash drive /SD, it will automatically switch to the USB flash drive /SD playback mode.
- Press the button to play the previous/next song in USB /SD. Long press the button to rewind/forward the current song.
- When the USB flash drive /SD is played, the corresponding USB flash drive /SD icon blinks.
- In MP3 playing mode
- Playing mode : play/pause control keys, browse, repeat, random, -10/+10 song selection

1/▶/	Play/pause control	4/RDM	Random/All
2/INT	Preview play/scan play	5/D-DN	Tune number minus 10 tune selection control key
3/RPT	Repeat/All	6/D-LP	Tune number plus 10 tune selection control key

- Turn the knob counterclockwise to reduce the current volume and turn the button clockwise to increase the current volume.

③ Clock setting

- Operation in radio /MP3 playing mode
- Short press MUTE/CLK to switch the MUTE switch
- Long press the key to display the clock, and then long press the key again to adjust the hour value by turning the knob against/clockwise after beating for hours, and long press the key again to adjust the value of minutes by turning the knob against/clockwise after beating for minutes. 5 consecutive beats will automatically quit the clockwise setting.

※ The clock will continue to cycle when the BAT power is off after the setting

④ Sound settings

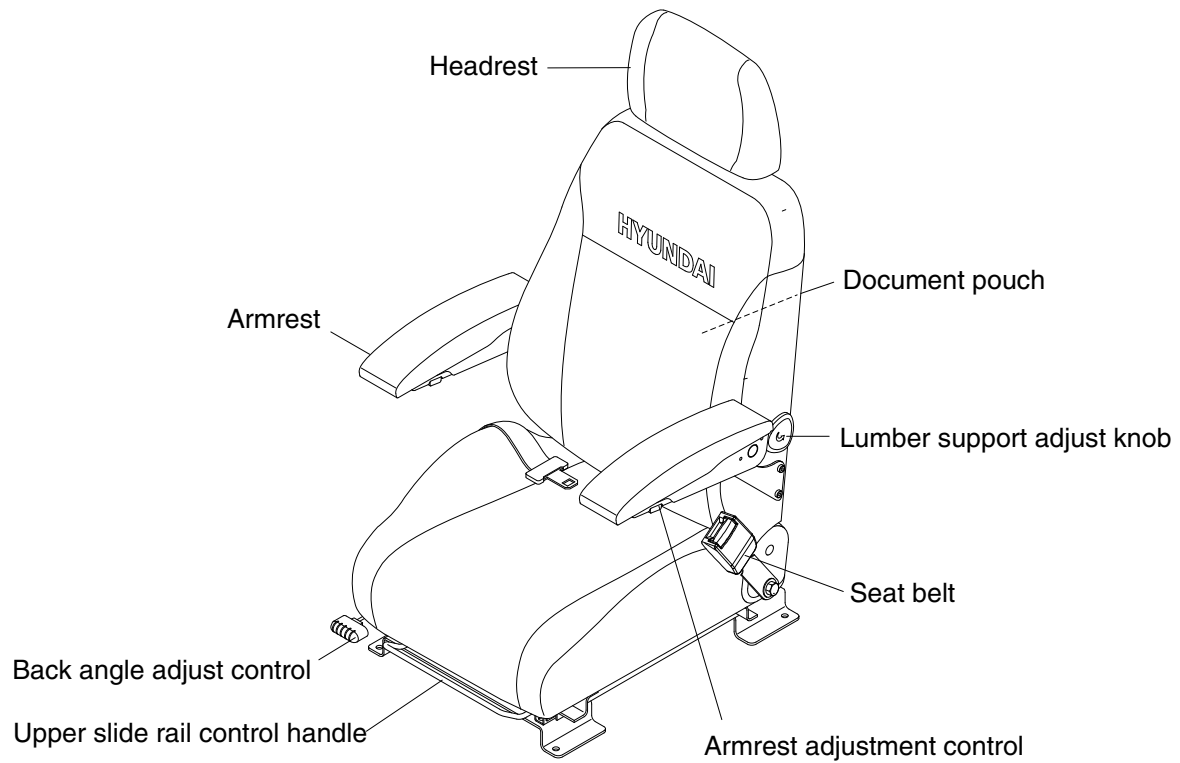
- Operation in radio /MP3 mode
- Short press the knob, successively appear BS O/TE O/BL O/EQOF
- Appear BS O display (Bass), reverse/clockwise turn the button to select the low value.
- Appear TE O display (Treble), Turn the reverse/clockwise button to select the high tone.
- Turn the reverse/clockwise button to select the balance value of left and right speakers value of the BL O display (Balance).
- Turn the reverse/clockwise button only after the appearance of the EQOF display. Will produce the JAZZ/POP/ROCK/CLASSIC/FLAT/EQOF sound, will not be able to manually during the electronic sound bass and treble values.

⑤ The bluetooth settings

Open the bluetooth of the mobile phone and search for the new "device" function. When the system gets signal contact with the mobile phone, it will prompt whether the mobile phone is connected to the device. Select "Yes" to start the connection. After the connection is successful, "■" is displayed on the LCD screen of the system, indicating that the connection is successful. If you are not in BT PLAY mode after bluetooth pairing, press the "MOD" button to switch to BT PLAY mode.

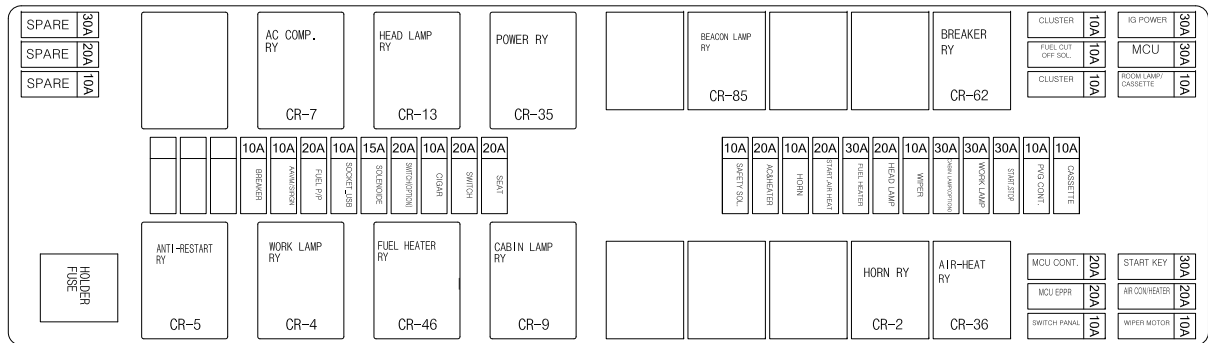
3) SEAT

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.



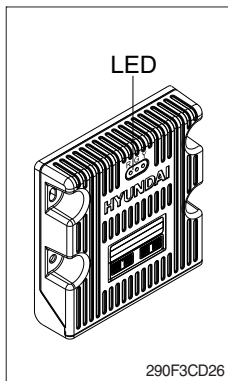
220S3CD270

4) FUSE & RELAY BOX



- (1) The fuses protect the electrical parts and wiring from burning out.
 - (2) The fuse box cover indicates the capacity of each fuse and 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

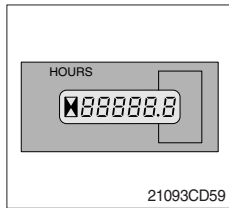


- (1) To match the pump absorption torque with the engine torque, MCU varies EPPR valve output pressure, which control pump discharge amount whenever feedbacked engine speed drops under the reference rpm of each mode set.
- (2) Three LED lamps on the MCU display as below.

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

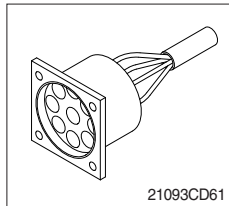
G : green, R : red, Y : yellow

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



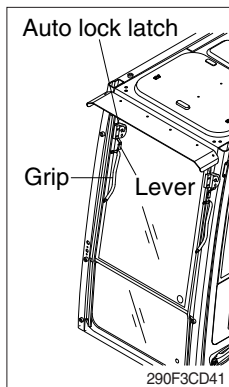
- (1) MCU communicates the machine data with Laptop computer through the RS232 service socket.

8) 12V SOCKET



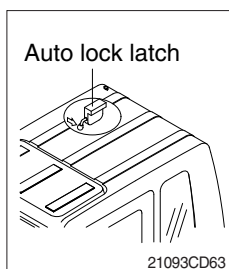
- (1) Connect other accessory devices as required.

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.

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



- (2) Perform the following procedure in order to close the upper windshield.
 - 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.