

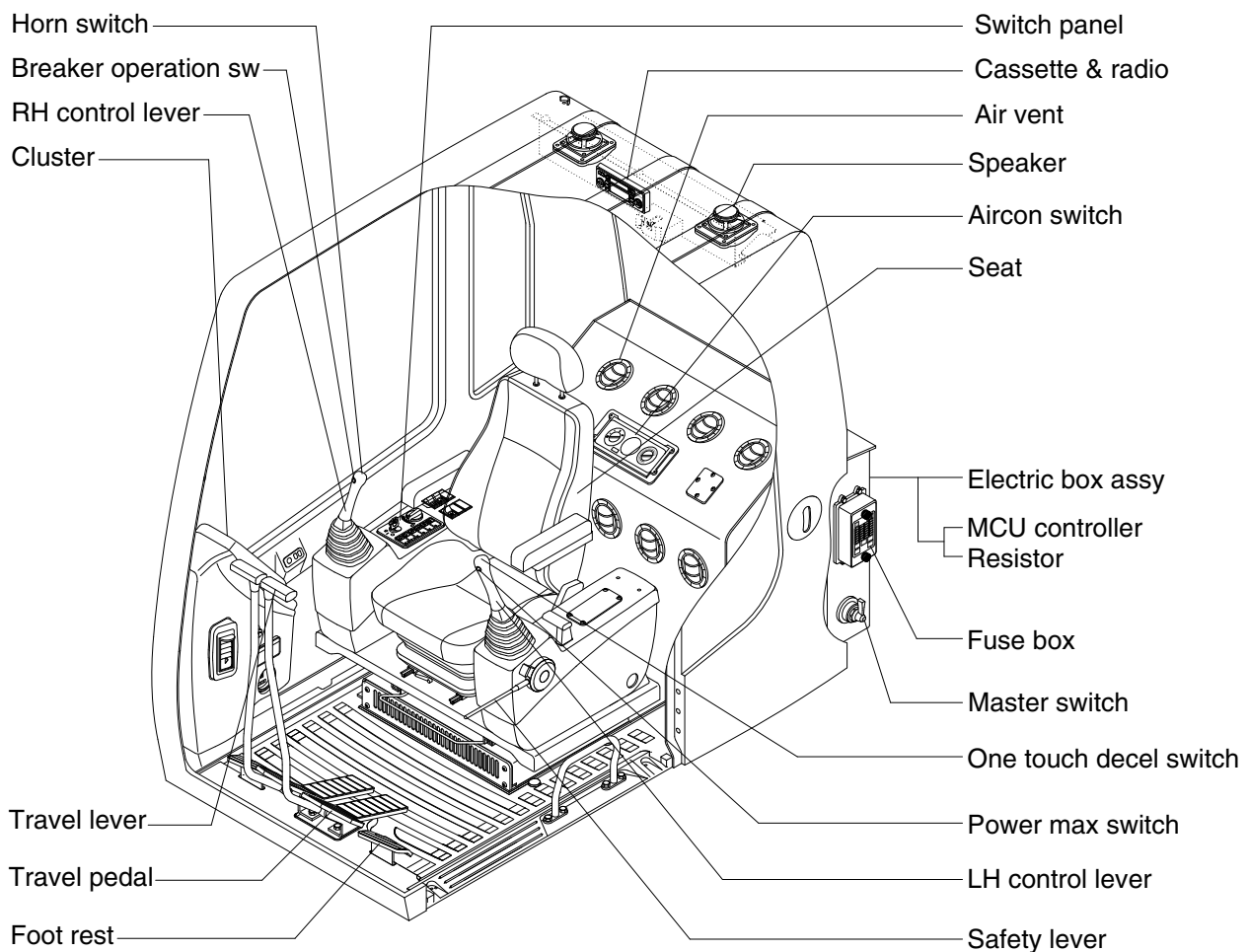
# CONTROL DEVICES

## 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.



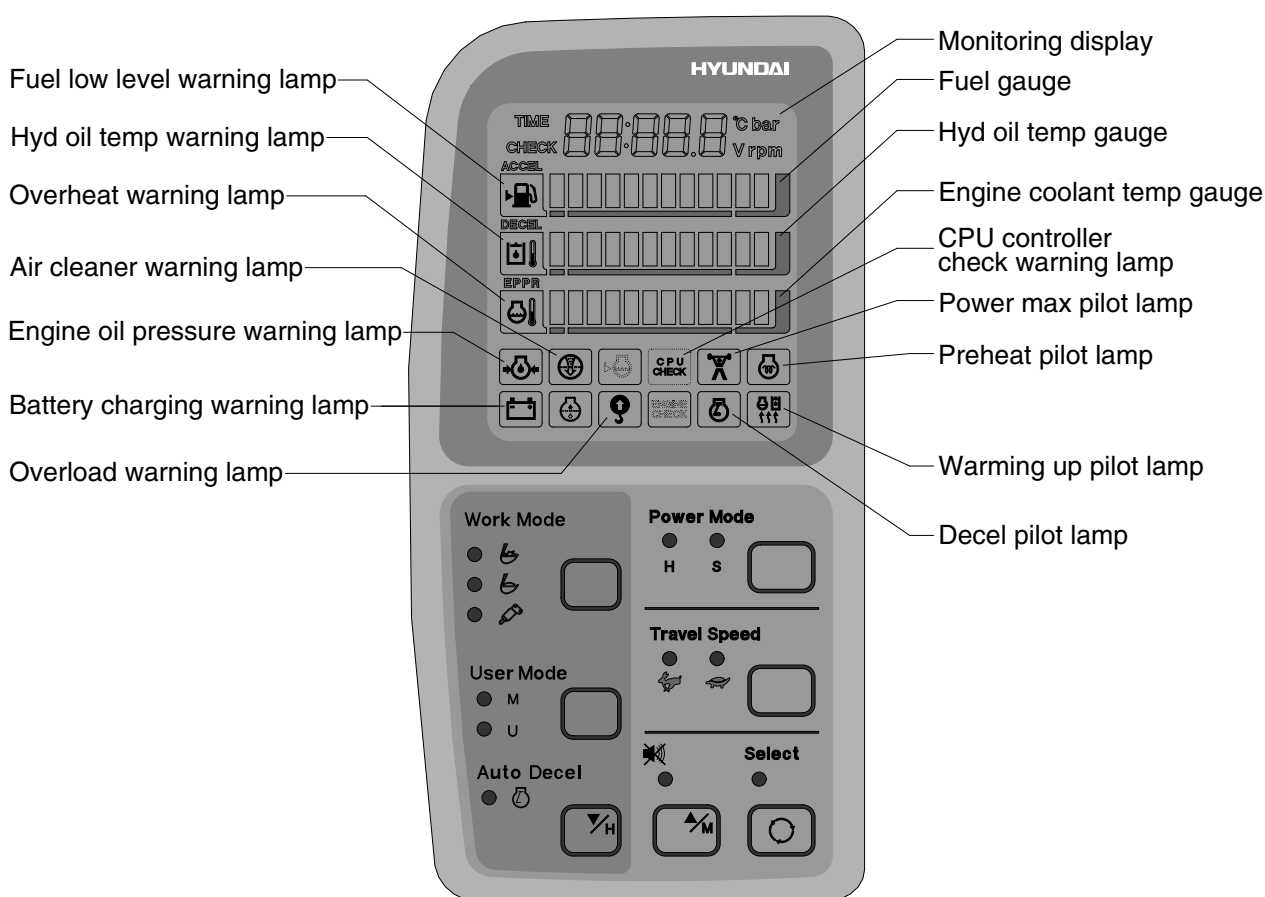
34073CD01

## 2. CLUSTER (up to #0007)

### 1) MONITOR PANEL

The monitor panel consists of gauges and lamps as shown below, to warn the operator in case of abnormal machine operation or conditions for the appropriate operation and inspection.

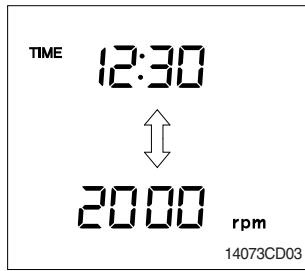
- Gauges : Indicate operating status of the machine.
  - Warning lamp : Indicate abnormality of the machine(Red).
  - Pilot lamp : Indicate operating status of the machine(Amber).
- ※ The monitor installed on this machine does not entirely guarantee the condition of the machine. Daily inspection should be performed according to chapter 6, Maintenance.
- ※ When the monitor provides a warning immediately check the problem, and perform the required action.



RD22073CD02

- ※ The warning lamp lights ON and the buzzer sounds when the machine has a problem. In this case, press the buzzer stop switch and buzzer stop, but the warning lamp lights until the problem is cleared.

### (1) Monitoring display



- ① This displays the current time and machine information such as engine rpm, coolant/hydraulic oil temperature, hydraulic oil pressure and also error codes.


※ Refer to the page 4-12 for details.

### (2) Fuel gauge

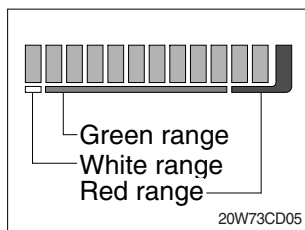


- ① This gauge indicates the amount of fuel in the fuel tank.

- ② Fill the fuel when the white range or warning lamp  blinks.

※ If the gauge illuminates the white range or warning lamp  blinks even though the machine is on the normal condition, check the electric device as that can be caused by the poor connection of electricity or sensor.

### (3) Hydraulic oil temperature gauge



- ① This indicates the temperature of coolant.

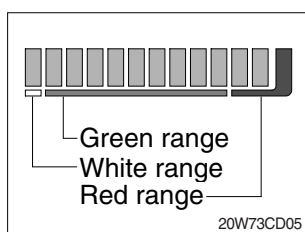
- White range : Below 30°C(86°F)
- Green range : 30-105 °C(86-221°F)
- Red range : Above 105°C(221°F)

- ② The green range illuminates when operating.

- ③ Keep idling engine at low speed until the green range illuminates before operation of machine.

- ④ When the red range illuminates, reduce the load on the system. If the gauge stays in the red range, stop the machine and check the cause of the problem.

### (4) Engine coolant temperature gauge



- ① This indicates the temperature of coolant.

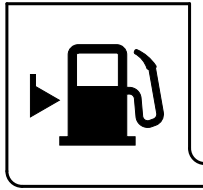
- White range : Below 30°C(86°F)
- Green range : 30-105 °C(86-221°F)
- Red range : Above 105°C(221°F)

- ② The green range illuminates when operating.

- ③ Keep idling engine at low speed until the green range illuminates before operation of machine.

- ④ When the red range illuminates, turn OFF the engine, check the radiator and engine.

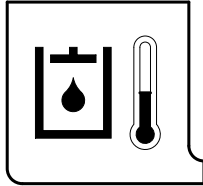
**(5) Fuel low level warning lamp**



21073CD04A

- ① This lamp blinks and the buzzer sounds when the level of fuel is below 67 l (17.7U.S. gal).
- ② Fill the fuel immediately when the lamp blinks.

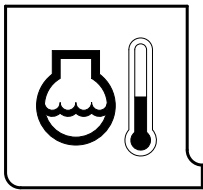
**(6) Hydraulic oil temperature warning lamp**



21073CD05A

- ① This warning lamp operates and the buzzer sounds when the temperature of hydraulic oil is over 105 °C ( 221 °F) .
- ② Check the hydraulic oil level when the lamp blinks.
- ③ Check for debris between oil cooler and radiator.

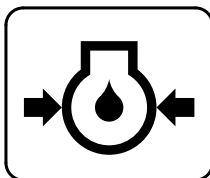
**(7) Overheat warning lamp**



21073CD06A

- ① This lamp blinks and the buzzer sounds when the temperature of coolant is over the normal temperature 110°C ( 230°F) .
- ② Check the cooling system when the lamp blinks.

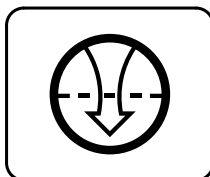
**(8) Engine oil pressure warning lamp**



21073CD07

- ① This lamp blinks and the buzzer sounds after starting the engine because of the low oil pressure.
- ② If the lamp blinks during engine operation, shut OFF engine immediately. Check oil level.

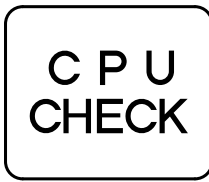
**(9) Air cleaner warning lamp**



21073CD08

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

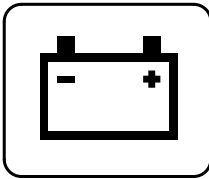
#### (10) CPU controller check warning lamp



21073CD10

- ① Communication problem between MCU and cluster makes the lamp blinks and the buzzer sounds.
- ② Check if any fuse for MCU burnt off.
- ③ If not check the communication line between them.

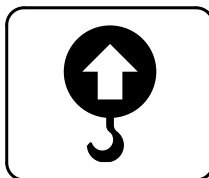
#### (11) Battery charging warning lamp



21073CD13

- ① This lamp blinks and the buzzer sounds when the starting switch is ON, it is turned OFF after starting the engine.
- ② Check the battery charging circuit when this lamp blinks during engine operation.

#### (12) Overload warning lamp



21073CD15

- ① When the machine is overload, the overload warning lamp blinks during the overload switch is ON.

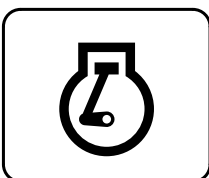
#### (13) Power max pilot lamp



21073CD11

- ① The lamp will be ON when pushing power max switch on the LH RCV lever.

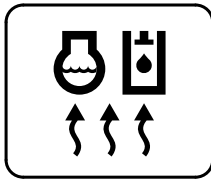
#### (14) Decel pilot lamp



21073CD17

- ① Operating auto decel or one touch decel makes the lamp ON.
- ② The lamp will be ON when pushing one touch decel switch on the LH RCV lever.

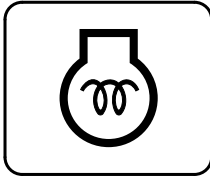
**(15) Warming up pilot lamp**



21073CD18

- 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.

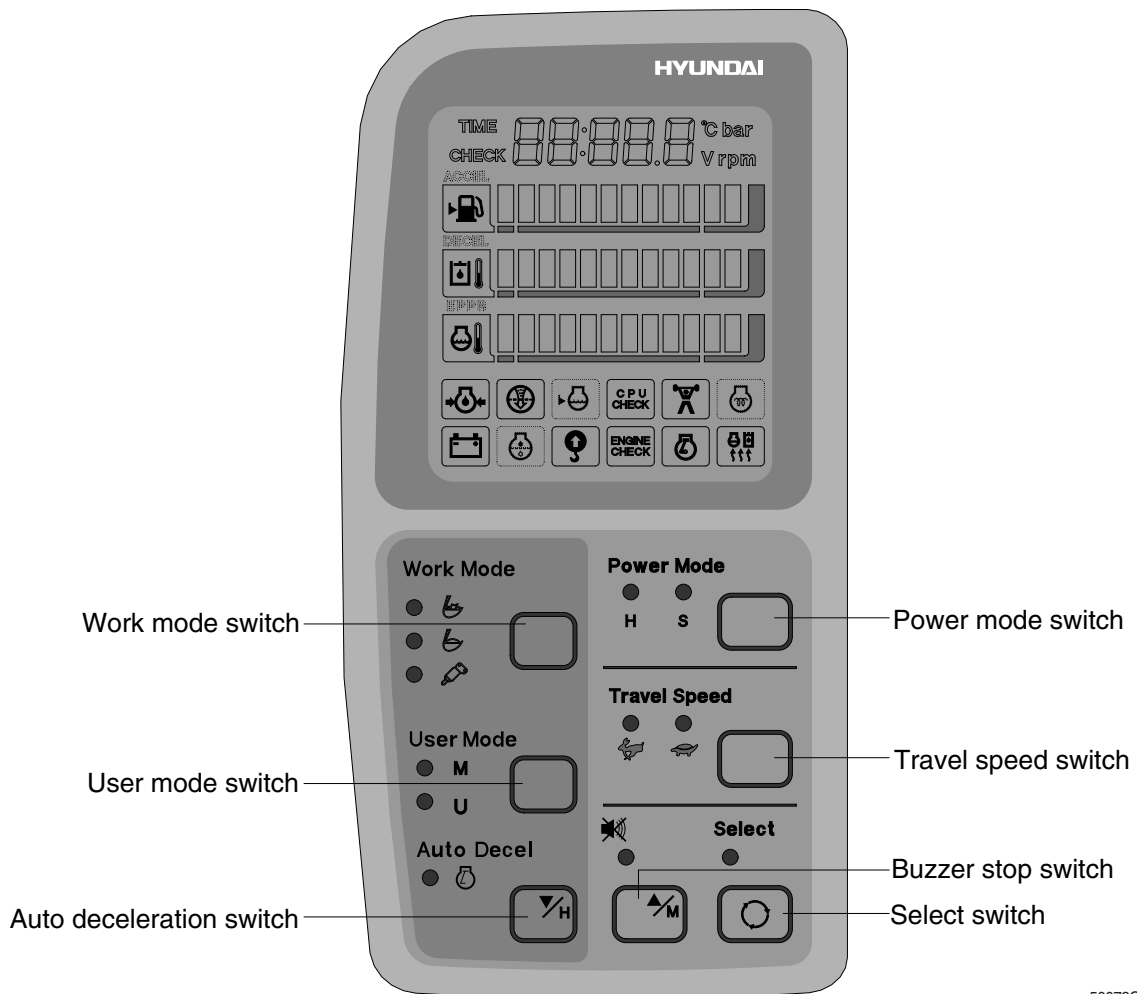
**(16) Preheat pilot lamp**



21073CD12

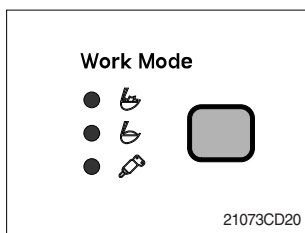
- ① Turning the start key switch ON position starts preheating in cold weather.
- ② Start the engine as this lamp is OFF.

## 2) SWITCH PANEL



50073CD19

### (1) Work mode switch

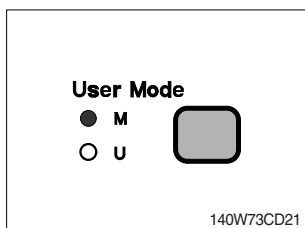


- ① This switch is to select the machine operation mode, which shifts from general operation mode to heavy operation mode and breaker mode in a row by pressing the switch.

- : Heavy duty work mode
- : General work mode
- : Breaker operation mode

※ Refer to the page 4-7 for details.

### (2) User mode switch

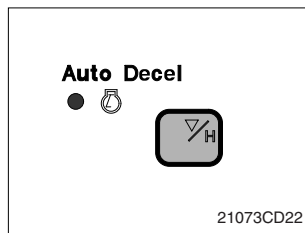


- ① This switch is to select the maximum power or user mode.

- M : Maximum power
- U : Memorizing operators preferable power setting

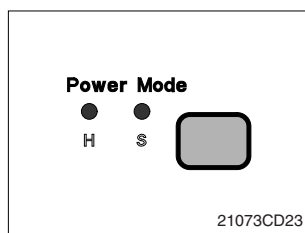
※ Refer to the page 4-7 for details.


### (3) Auto deceleration switch



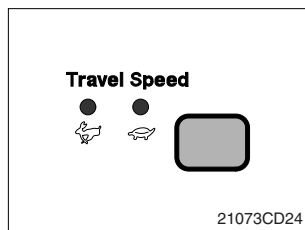
- ① This switch is used to actuate or cancel the auto deceleration function.
- ② When the switch actuated and all control levers and pedals are at neutral position, engine speed will be lowered automatically to save fuel consumption.
  - Light ON : Auto deceleration function is selected.
  - Light OFF : Auto deceleration function is cancelled so that the engine speed increased to previous setting value.
- ③ Operating the auto deceleration function makes the decel indicating lamp on the LCD panel ON.

### (4) Power mode switch



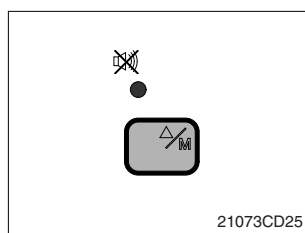
- ① The lamp of selected mode is turned ON by pressing the switch(  ).
  - H : High power work.
  - S : Standard power work.

### (5) Travel speed control switch



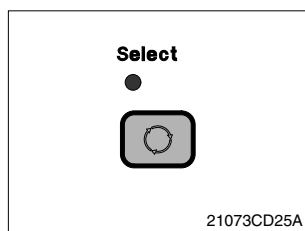
- ① This switch is to control the travel speed which is changed to high speed(Rabbit mark) by pressing the switch and low speed(Turtle mark) by pressing it again.



### (6) Buzzer stop switch



- ① When the starting switch is turned ON first, normally the alarm buzzer sounds for 2 seconds during lamp check operation.
- ② The red lamp lights ON and the buzzer sounds when the machine has a problem.  
In this case, press this switch and buzzer stops, but the red lamp lights until the problem is cleared.

### (7) Select switch



- ① This switch is used to select the monitor display function.  
※ **Refer to the page 4-12 for details.**
- ② If the switch is pressed for 3 seconds in time display mode, it moves to time adjusting function, and you can adjust the time as below.
  - Hour by auto decel(  )switch
  - Minute by buzzer stop(  ) switch.
- ③ After time set, the switch is pressed, it returns to clock display.



## 2. CLUSTER (#0008 and up)

### 1) MONITOR PANEL

The monitor panel consists of LCD and lamps as shown below, to warn the operator in case of abnormal machine operation or conditions for the appropriate operation and inspection.

- LCD : Indicate operating status of the machine.
- Warning lamp : Indicate abnormality of the machine(Red).
- Pilot lamp : Indicate operating status of the machine(Amber).

※ The monitor installed on this machine does not entirely guarantee the condition of the machine. Daily inspection should be performed according to chapter 6, Maintenance.

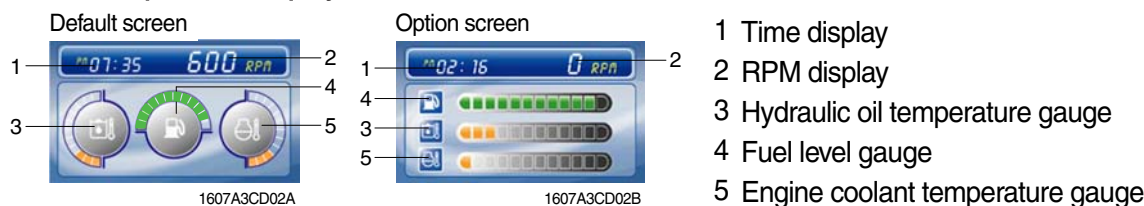
※ When the monitor provides a warning immediately check the problem, and perform the required action.



3607A3CD02

※ The warning lamp lights ON and the buzzer sounds when the machine has a problem. In this case, press the buzzer stop switch and buzzer stop, but the warning lamp lights until the problem is cleared.

## 2) LCD main operation display



### (1) Time display



① This displays the current time.

※ Refer to the page 3-8-6 to set time for details.

### (2) RPM display



① This displays the engine rpm.

### (3) Hydraulic oil temperature gauge



① This gauge indicates the temperature of hydraulic oil in 12 step gauge.

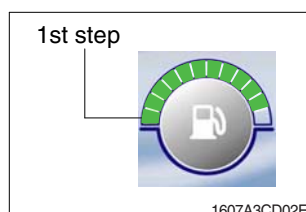
- 1st step : Below 30°C(86°F)
- 2nd~10th step : 30-105 °C(86-221°F)
- 11th~12th step : Above 105°C(221°F)

② The gauge between 2nd and 10th steps illuminates when operating.

③ Keep idling engine at low speed until the gauge between 2nd and 10th steps illuminates, before operation of machine.

④ When the gauge of 11th and 12th steps illuminates, reduce the load on the system. If the gauge stays in the 11th~12th steps, stop the machine and check the cause of the problem.

### (4) Fuel level gauge

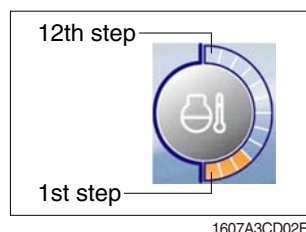


① This gauge indicates the amount of fuel in the fuel tank.

② Fill the fuel when the 1st step or fuel icon blinks in red.

※ If the gauge illuminates the 1st step or fuel icon 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) Engine coolant temperature gauge



① This gauge indicates the temperature of coolant in 12 step gauge.

- 1st step : Below 30°C(86°F)
- 2nd~10th step : 30-105 °C(86-221°F)
- 11th~12th step : Above 105°C(221°F)

② The gauge between 2nd and 10th steps illuminates when operating.

③ Keep idling engine at low speed until the gauge between 2nd and 10th steps illuminates, before operation of machine.

④ When the gauge of 11th and 12th steps illuminates, turn OFF the engine, check the radiator and engine.

### 3) Warning of main operation screen

#### (1) Warning display

##### ① Engine coolant temperature



- This lamp blinks and the buzzer sounds when the temperature of coolant is over the normal temperature 105°C ( 221°F ) .
- Check the cooling system when the lamp blinks.

##### ② Fuel level



- This lamp blinks and the buzzer sounds when the level of fuel is below 67 l (17.7U.S. gal).
- Fill the fuel immediately when the lamp blinks.

##### ③ Hydraulic oil temperature



- This warning lamp operates and the buzzer sounds when the temperature of hydraulic oil is over 105 °C ( 221 °F ) .
- Check the hydraulic oil level when the lamp blinks.
- Check for debris between oil cooler and radiator.

##### ④ All gauge



- This lamp blinks and the buzzer sounds when the all gauge is abnormal.
- Check the each system when the lamp blinks.

##### ⑤ Communication error



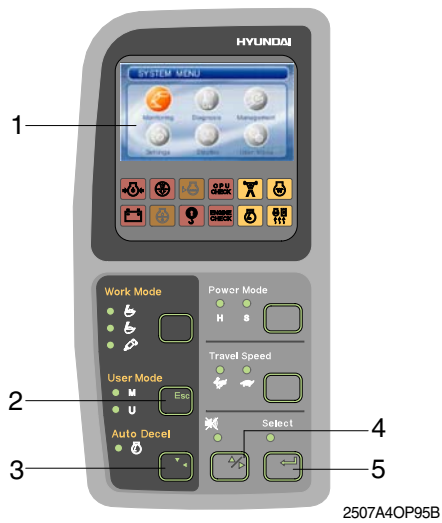
- Communication problem between MCU controller and cluster makes the lamp blinks and the buzzer sounds.
- Check if any fuse for MCU burnt off.  
If not check the communication line between them.






#### (2) Pop-up icon display

No	Switch	Selected mode	Display
1	Work mode switch	General work mode	
		Heavy duty work mode	
		Breaker operation mode	
2	Power mode switch	High power work mode	
		Standard power work mode	

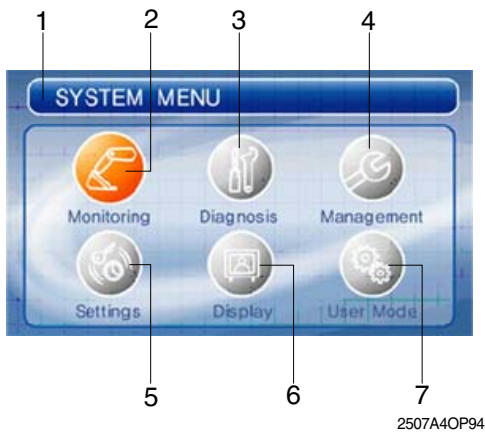
No	Switch	Selected mode	Display
3	Auto deceleration switch	Light ON	
		Light OFF	
4	Travel speed control switch	Low speed	
		High speed	








#### 4) LCD



- 1  : LCD
- 2  : Escape,  
Return to the previous menu
- 3  : Down/Left Direction
- 4  : Up/Right Direction
- 5  : Select(Enter)  
Activate the currently chosen item

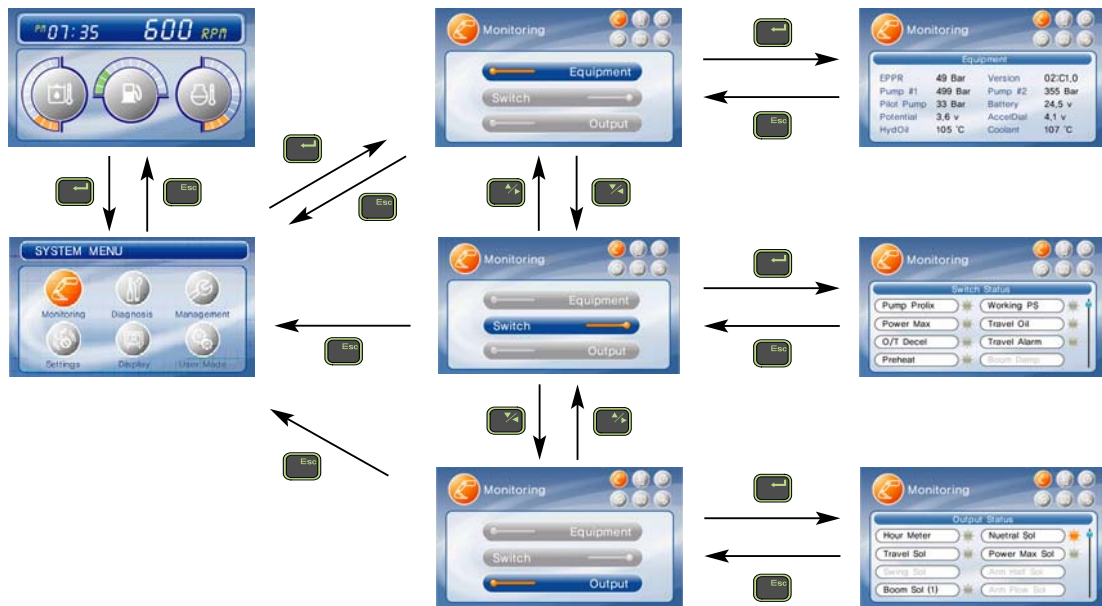
#### (1) Main menu



- 1  : Menu information
- 2  : Monitoring  
- Equipment, Switch, Output
- 3  : Diagnosis  
- Current error, Recorded error
- 4  : Maintenance
- 5  : Settings  
- Time set, Dual mode  
- System lock(Reserved)
- 6  : Display  
- Operation skin, Brightness, Language
- 7  : User mode

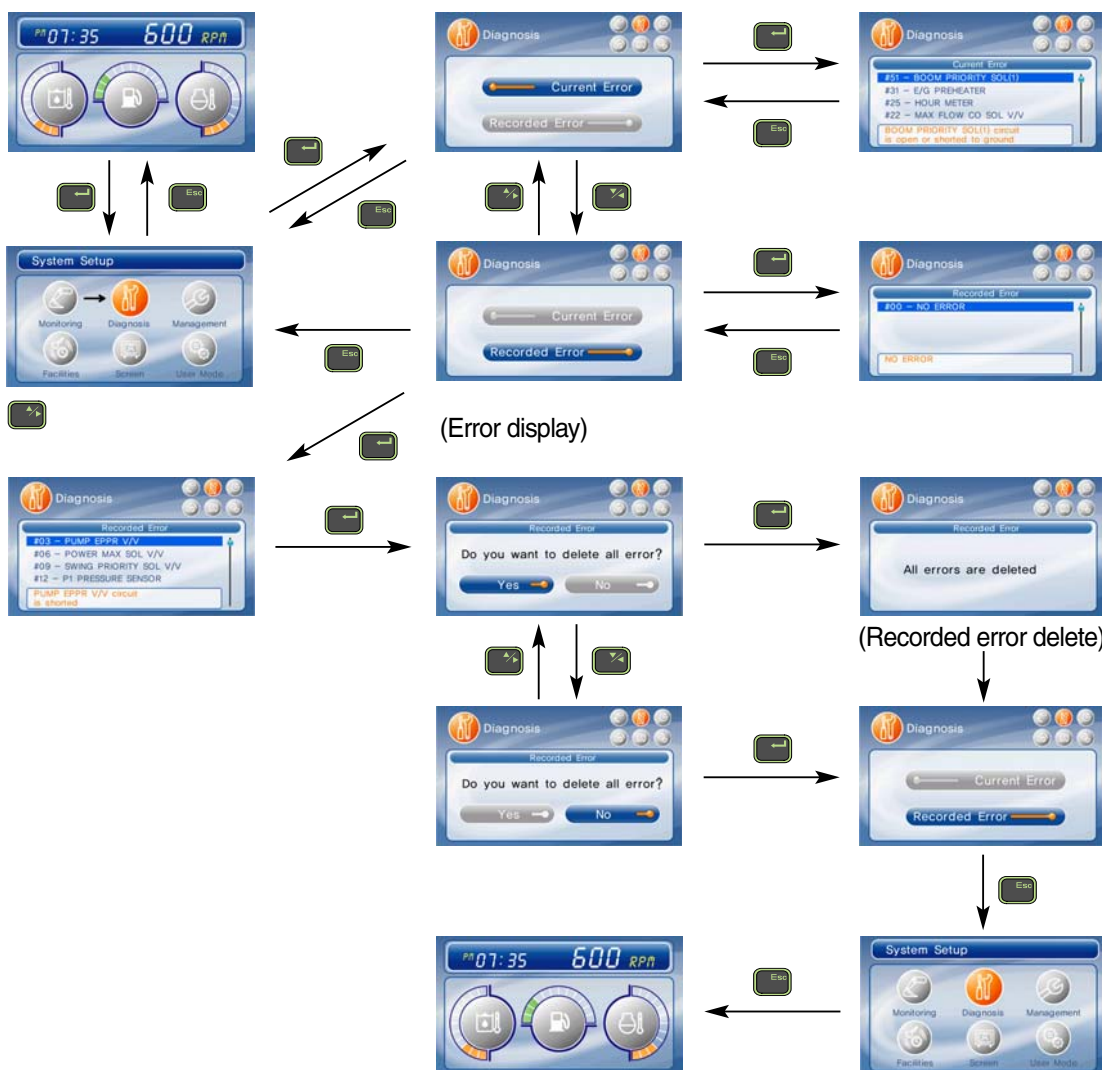
## (2) Display map

### ① Monitoring



### ② Diagnosis

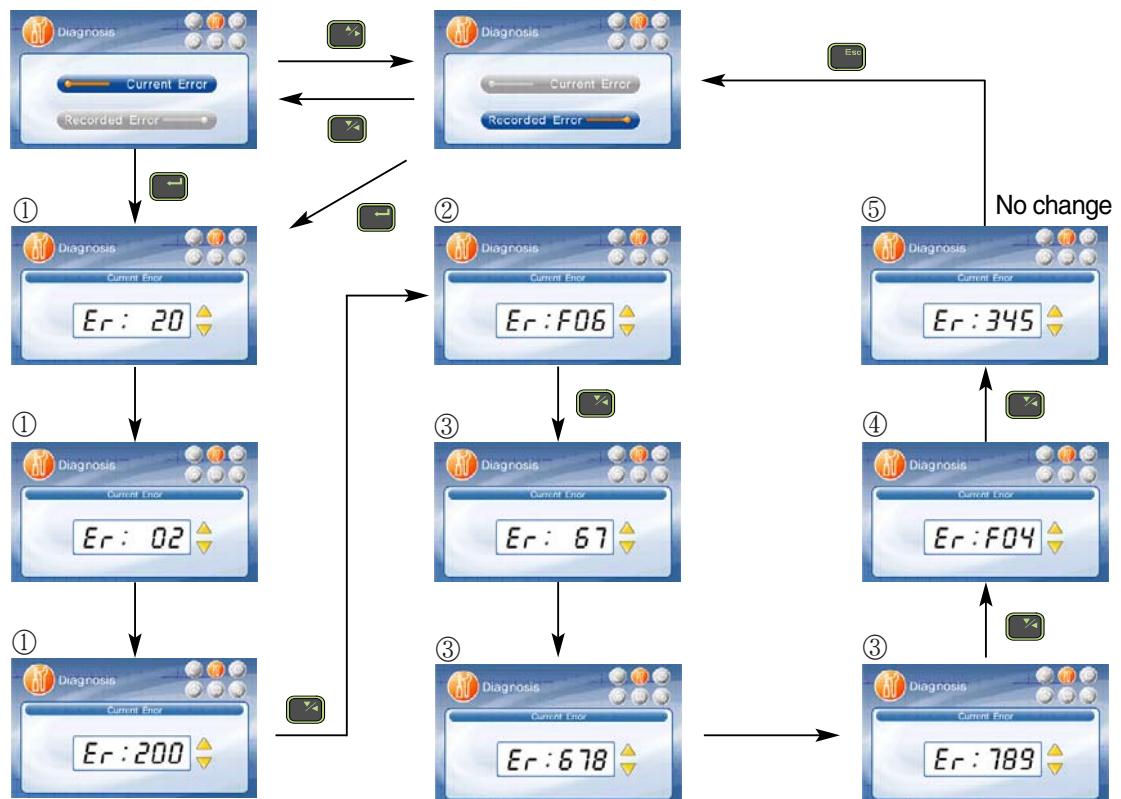
#### a. New protocol



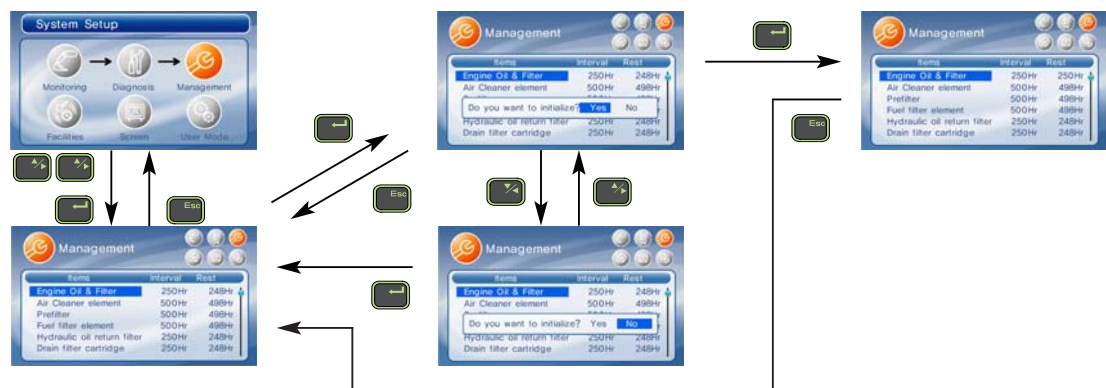


b. Old protocol : Old MCU controller

- If there are more than 2 error codes, each one can be displayed by pressing or switch respectively.
- 3 error codes (①SPN200200, ②FMI06, ③SPN6789, ④FMI04, ⑤345) display.



③ Maintenance



④ Setting

a. Time set



b. System lock - Reserved

- c. Dual mode
  - Changing the MCU mode

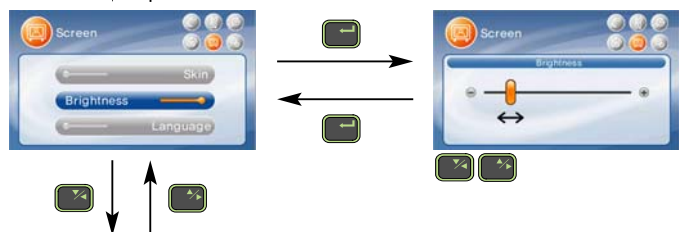


⑤ Display

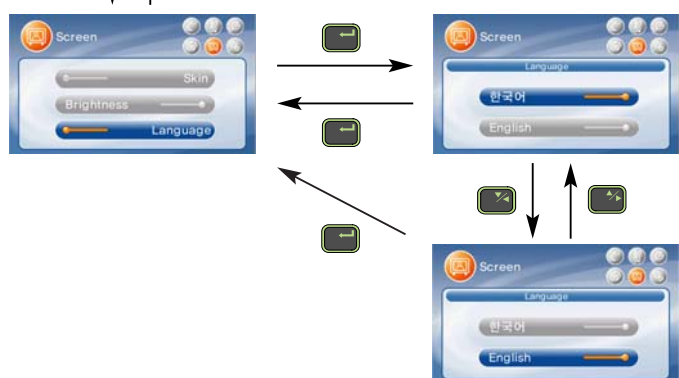
a. Operation skin



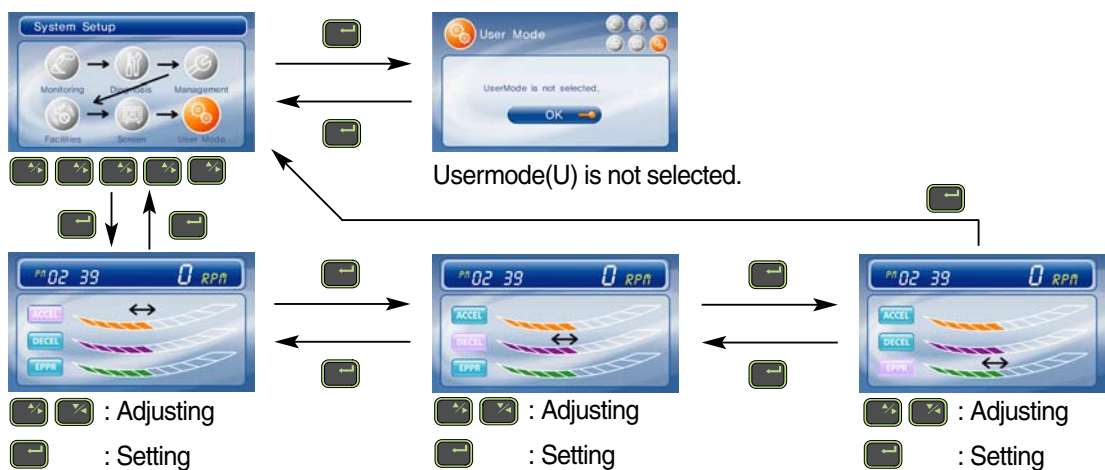
b. Brightness



c. Language

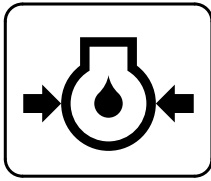


⑥ User mode



## 5) Warning and pilot lamp

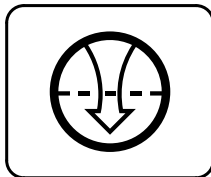
### (1) Engine oil pressure warning lamp



21073CD07

- ① This lamp blinks and the buzzer sounds after starting the engine because of the low oil pressure.
- ② If the lamp blinks during engine operation, shut OFF engine immediately. Check oil level.

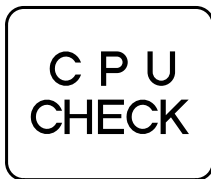
### (2) Air cleaner warning lamp



21073CD08

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

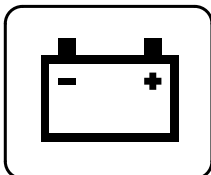
### (3) MCU controller check warning lamp



21073CD10

- ① If any fault code is received from MCU controller, this lamp blinks and the buzzer sounds.
- ② Check the communication line between MCU controller and cluster.

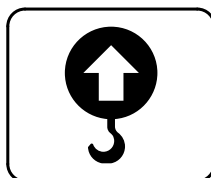
### (4) Battery charging warning lamp



21073CD13

- ① This lamp blinks and the buzzer sounds when the starting switch is ON, it is turned OFF after starting the engine.
- ② Check the battery charging circuit when this lamp blinks during engine operation.

### (5) Overload warning lamp

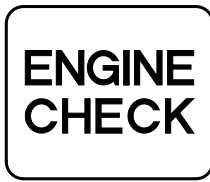


21073CD15

- ① When the machine is overload, the overload warning lamp blinks during the overload switch is ON.



#### (6) Engine check warning lamp



29073CD10

- ① This lamp blinks and the buzzer sounds when the communication between MCU controller and ECU on the engine is abnormal, or if any fault code received from ECU.
- ② Check the communication line between them.  
If the communication line is OK, then check the fault code on the cluster

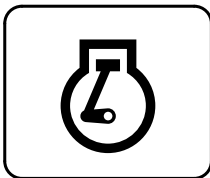
#### (7) Power max pilot lamp



21073CD11

- ① The lamp will be ON when pushing power max switch on the LH RCV lever.

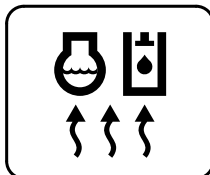
#### (8) Decel pilot lamp



21073CD17

- ① Operating auto decel or one touch decel makes the lamp ON.
- ② The lamp will be ON when pushing one touch decel switch on the LH RCV lever.

#### (9) Warming up pilot lamp



21073CD18

- 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.

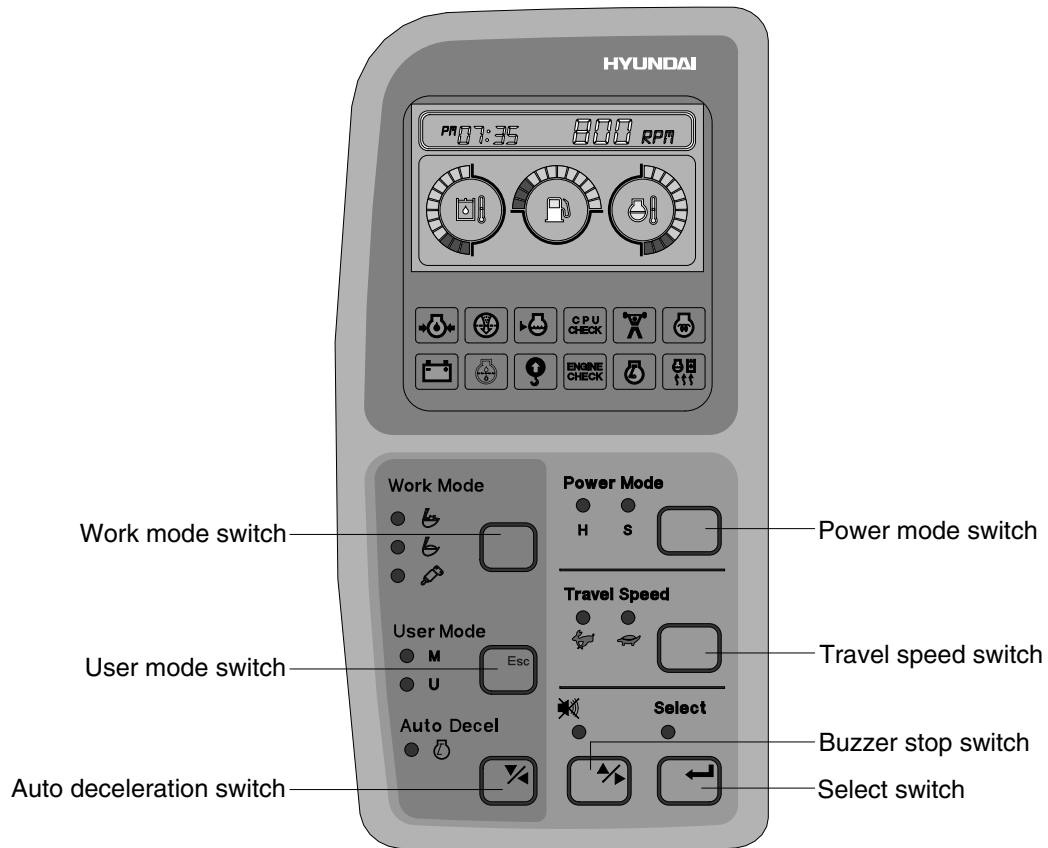
#### (10) Preheat pilot lamp



21073CD12

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

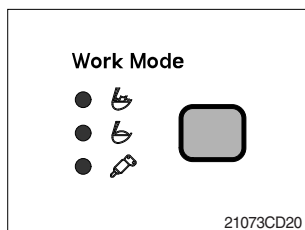
## 6) SWITCH PANEL



1607A3CD19

※ When the switches (Work mode, Power mode, Auto decel, Travel speed control) are selected, the pop-up icon is displayed on the LCD.  
Refer to the page 3-4 for details.

### (1) Work mode switch

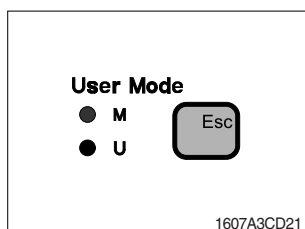


① This switch is to select the machine operation mode, which shifts from general operation mode to heavy operation mode and breaker mode in a row by pressing the switch.

- : Heavy duty work mode
- : General work mode
- : Breaker operation mode

※ Refer to the page 4-6, 4-12-1 for details.

### (2) User mode switch

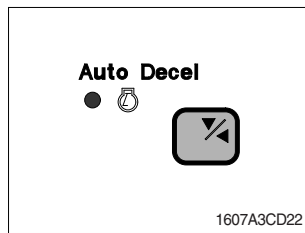


① This switch is to select the maximum power or user mode.

- M : Maximum power
- U : Memorizing operators preferable power setting.

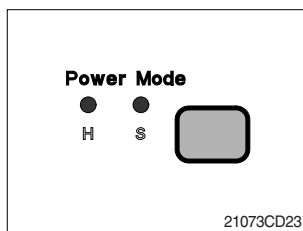
※ Refer to the page 4-6, 4-12-1 for details.


### (3) Auto deceleration switch



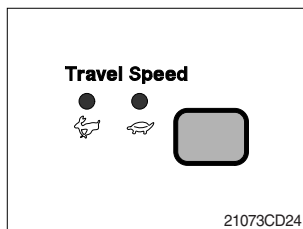
- ① This switch is used to actuate or cancel the auto deceleration function.
- ② When the switch actuated and all control levers and pedals are at neutral position, engine speed will be lowered automatically to save fuel consumption.
  - Light ON : Auto deceleration function is selected.
  - Light OFF : a. Auto deceleration function is cancelled so that the engine speed increased to previous setting value.  
b. One touch decel function is available.

### (4) Power mode switch



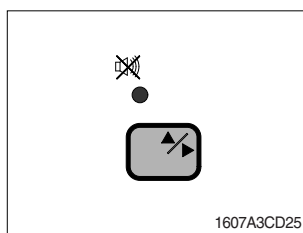
- ① The lamp of selected mode is turned ON by pressing the switch(  ).
  - H : High power work.
  - S : Standard power work.

### (5) Travel speed control switch



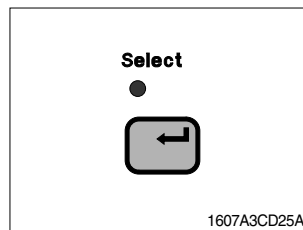
- ① This switch is to control the travel speed which is changed to high speed(Rabbit mark) by pressing the switch and low speed(Turtle mark) by pressing it again.

### (6) Buzzer stop switch



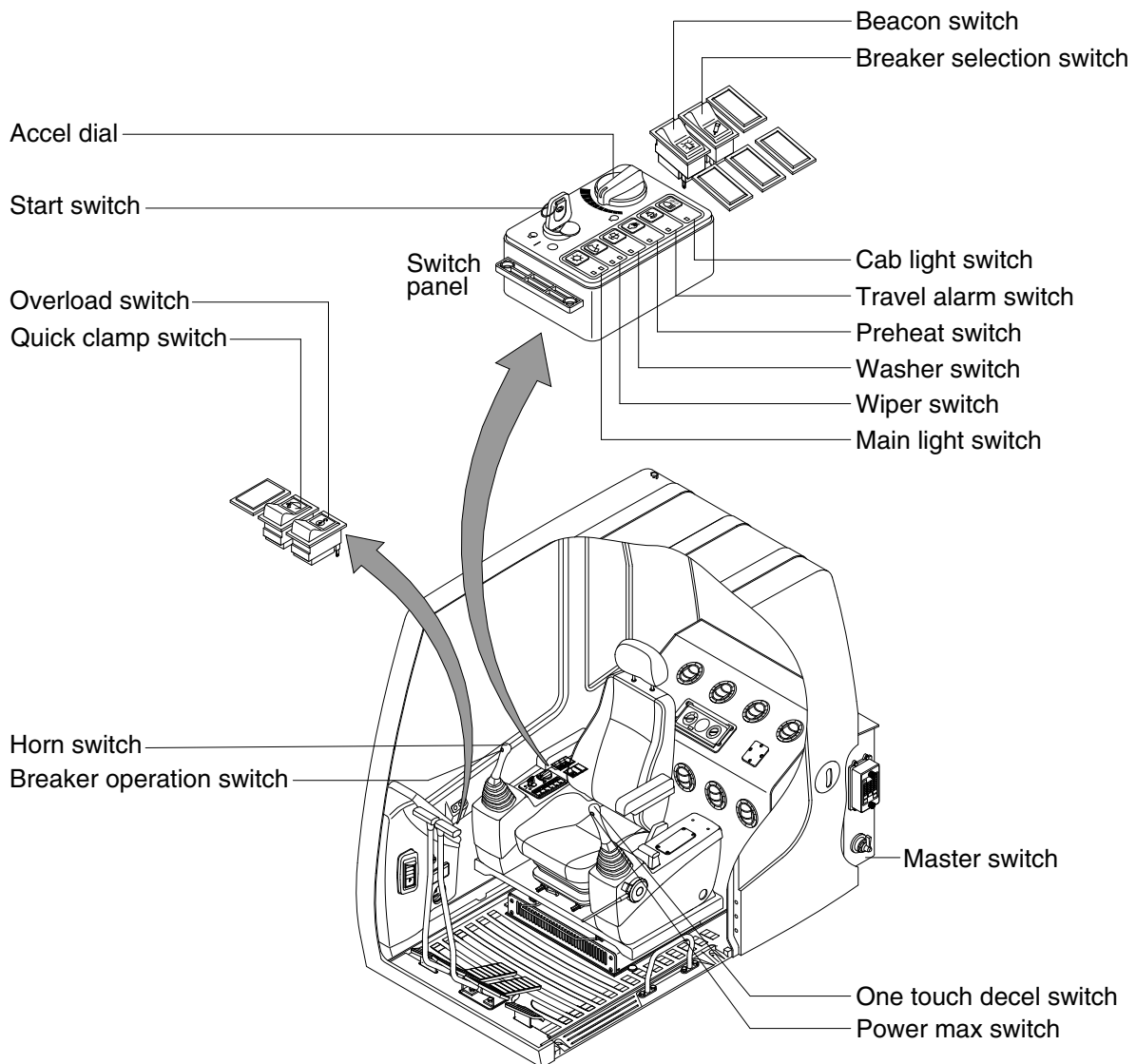
- ① When the starting switch is turned ON first, normally the alarm buzzer sounds for 2 seconds during lamp check operation.
- ② The red lamp lights ON and the buzzer sounds when the machine has a problem.  
In this case, press this switch and buzzer stops, but the red lamp lights until the problem is cleared.

### (7) Select switch



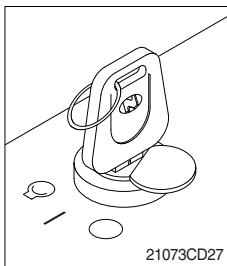
- ① This switch is used to enter main menu and sub menu of LCD.  
i Refer to the page 3-8-4 for details.

### 3. SWITCHES



34073CD02

#### 1) STARTING SWITCH

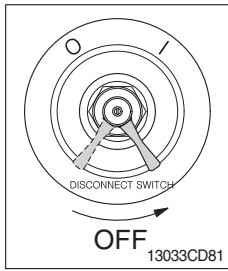


(1) There are three positions, OFF, ON and START.

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

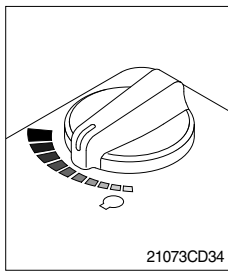
※ Key must be in the ON position with engine running to maintain electrical and hydraulic function and prevent serious machine damage.

## 2) MASTER SWITCH



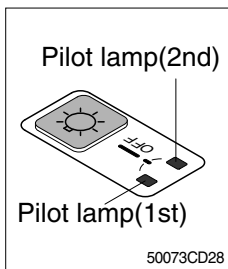
- (1) This switch is used to shut off the entire electrical system.
  - (2) **I** : The battery remains connected to the electrical system.  
**O** : The battery is disconnected to the electrical system.
- ※ **Never turn the master switch to O(OFF) with the engine running. Engine and electrical system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

## 3) ACCEL DIAL SWITCH



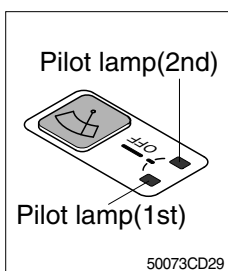
- (1) There are 10 dial setting.
- (2) Setting 1 is low idle and setting 10 is high idle.
  - By rotating the accel dial to right : Engine speed increases
  - By rotating the accel dial to left : Engine speed decreases

## 4) MAIN LIGHT SWITCH



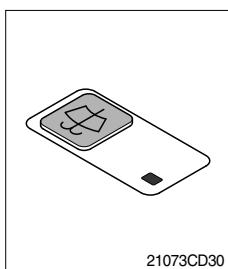
- (1) This switch used to operate the head light and work light.
  - Press the switch once to head light comes ON.
  - Press the switch once more to work light comes ON.
  - Press the switch again, return to a first step position.
  - Press the switch more than one second to turn off lights.

## 5) WIPER SWITCH



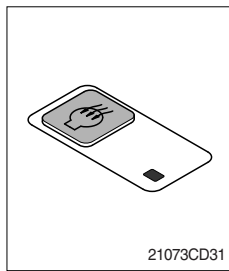
- (1) This switch used to operate wiper.
  - Press the switch once to intermittently operate wiper.
  - Press the switch once more to operate wiper low speed.
  - Press the switch again return to first step position.
  - Press the switch more than one second to turn off wiper.

## 6) WASHER SWITCH



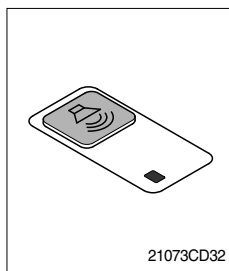
- (1) The washer liquid is sprayed and the wiper is operated only while pressing this switch.
- (2) The indicator lamp is turned ON when operating this switch.

## 7) PREHEAT SWITCH



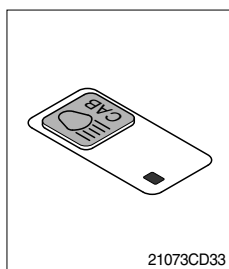
- (1) This switch is used for starting the engine in cold weather. If pressed, starting aid fluid injected to get easier engine starting.  
※ **Never hold the push button switch for more than 30 seconds, as this can damage the electric valve solenoid.**
- (2) The indicator lamp is turned ON when operating this switch.

## 8) TRAVEL ALARM SWITCH



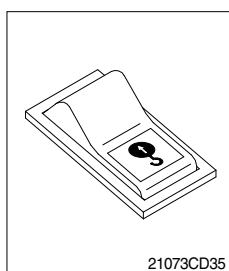
- (1) This switch is to activate travel alarm function surrounding when the machine travels to forward and backward.
- (2) On pressing this switch, the alarm operates only when the machine is traveling.

## 9) CAB LIGHT SWITCH(Optional)



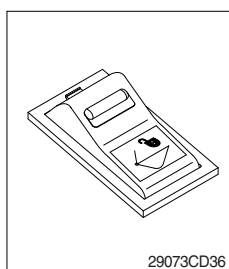
- (1) This switch turns ON the cab light on the cab.

## 10) OVERLOAD SWITCH(Optional)



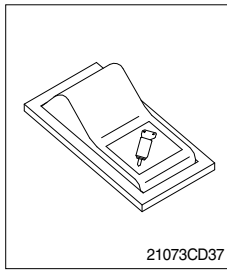
- (1) When this switch turned ON, buzzer makes sound and overload warning lamp comes ON in case that the machine is overload.
- (2) When turn OFF buzzer stops and warning lamp goes out.

## 11) QUICK CLAMP SWITCH(Optional)



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

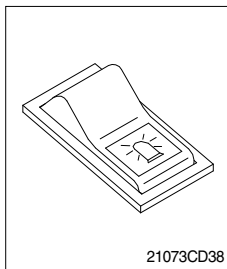
## 12) BREAKER SELECTION SWITCH(Optional)



(1) This switch is used to select breaker.

※ The breaker operates only when this switch is selected.

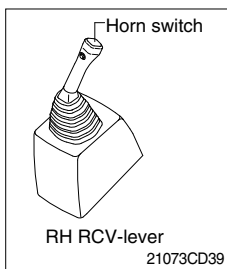
## 13) BEACON SWITCH(Optional)



(1) This switch turns ON the rotary light on the cab.

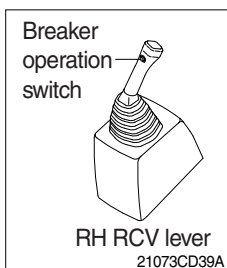
(2) The below indicator lamp is turned ON when operating this switch.

## 14) HORN SWITCH



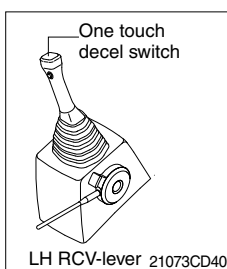
(1) This switch is at the top of right side control lever.  
On pressing, the horn sounds.

## 15) BREAKER OPERATION SWITCH



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

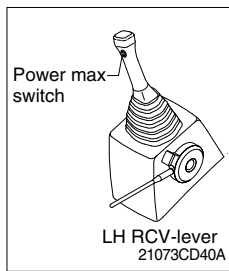
## 16) ONE TOUCH DECEL SWITCH



(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.

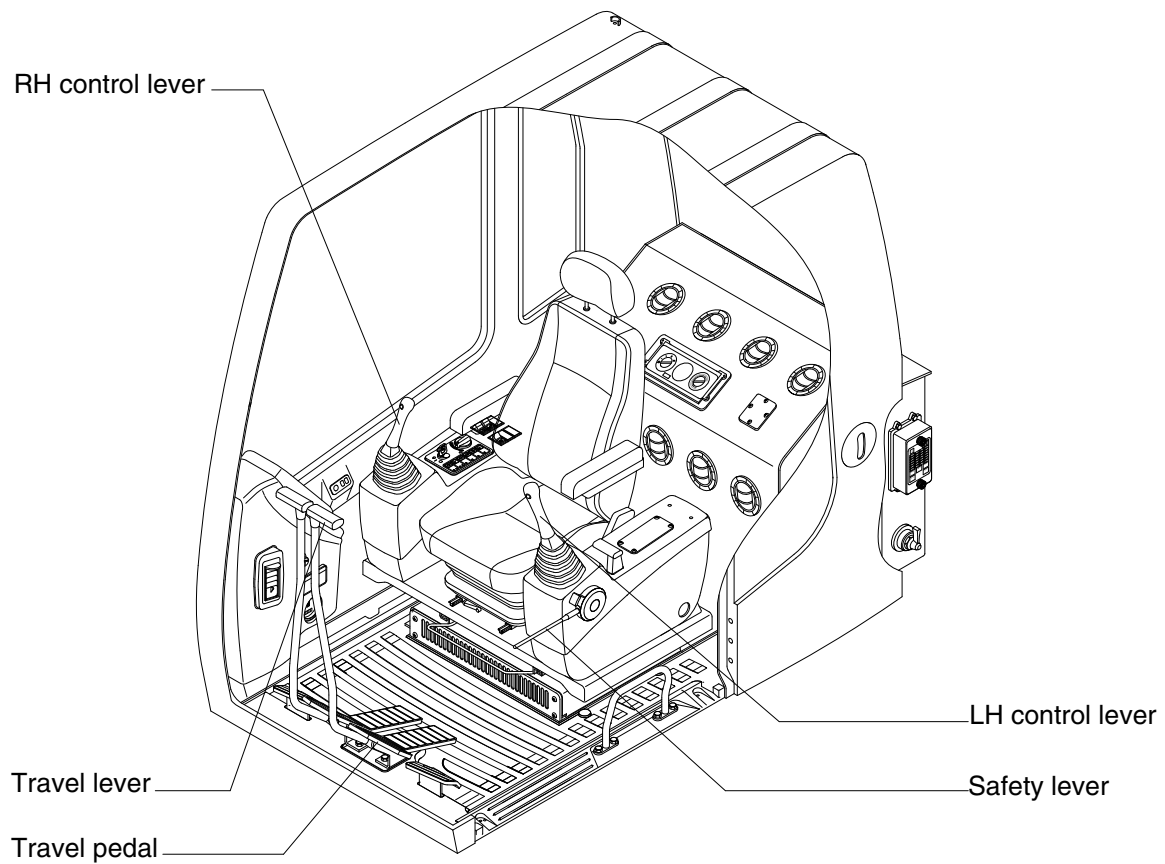
## 17) POWER MAX SWITCH



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

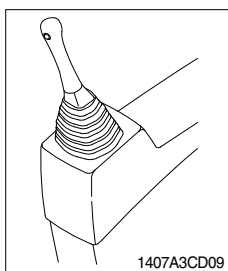


## 4. LEVERS AND PEDALS



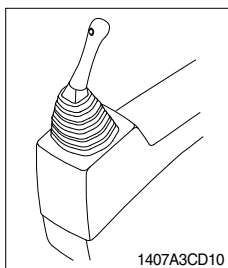
34073CD03

### 1) LH CONTROL LEVER



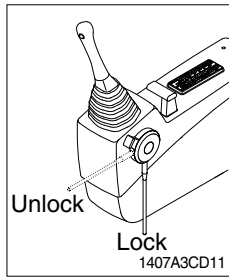
- (1) This joystick is used to control the swing and the arm.
- (2) Refer to **operation of working device** in chapter 4 for details.

### 2) RH CONTROL LEVER



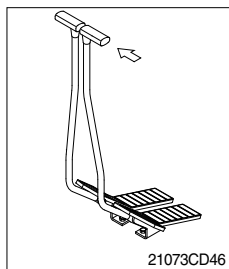
- (1) This joystick is used to control the boom and the bucket.
- (2) Refer to **operation of working device** in chapter 4 for details.

### 3) SAFETY LEVER



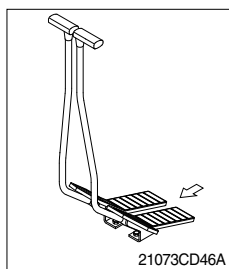
- (1) All control levers and pedals are disabled from operation by locating the lever to lock position as shown.
  - ※ **Be sure to lower the lever to LOCK position when leaving from operator's seat.**
- (2) By pulling lever to UNLOCK position, machine is operational.
  - ※ **Do not use the safety lever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

### 4) TRAVEL LEVER



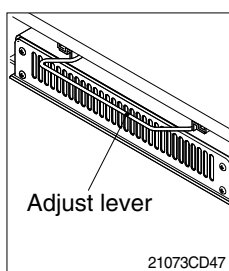
- (1) This lever is mounted on travel pedal and used for traveling by hand. The operation principle is same as the travel pedal.
- (2) Refer to **traveling of the machine** in chapter 4 for details.

### 5) TRAVEL PEDAL



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

### 6) SEAT AND CONSOLE BOX ADJUST LEVER

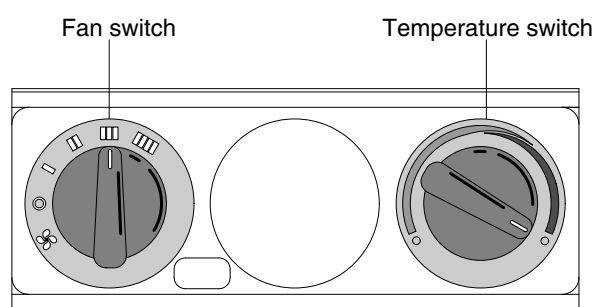
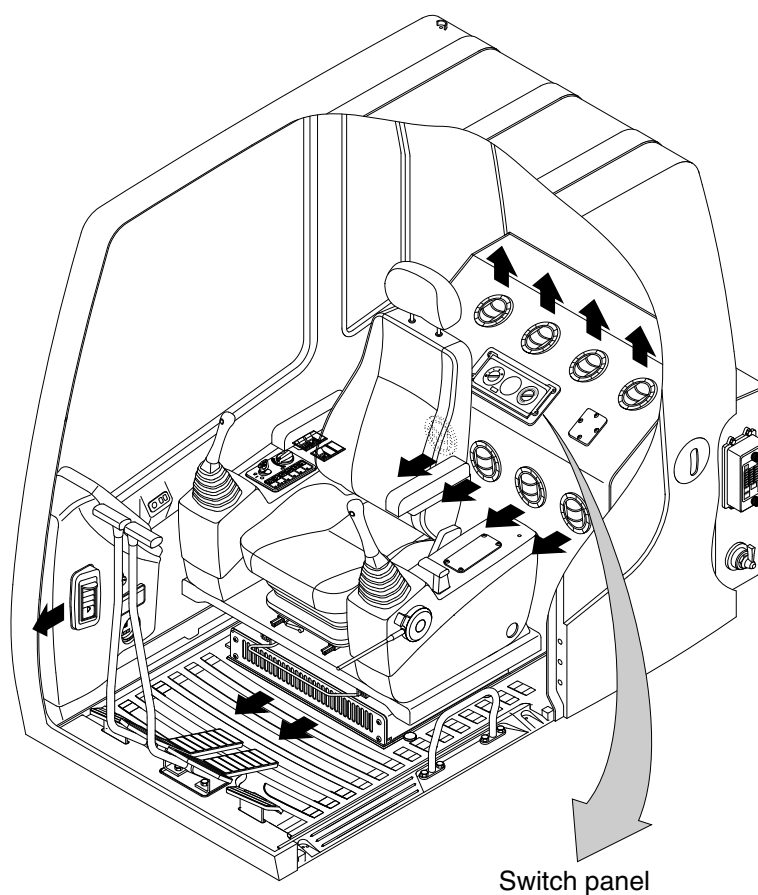


- (1) This lever is used to move the seat and console box to fit the contours of the operator's body.
- (2) Pull the lever to adjust forward or backward over 170mm(6.7").

## 5. AIR CONDITIONER

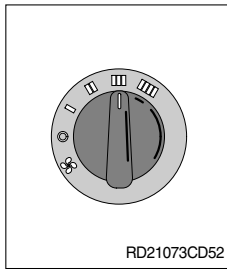
Air conditioner is equipped for pleasant operation against outside temperature and defrost on window glass.

- Location of air flow ducts



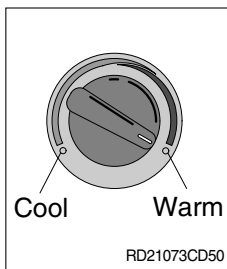
34073CD05

## 1) FAN SWITCH



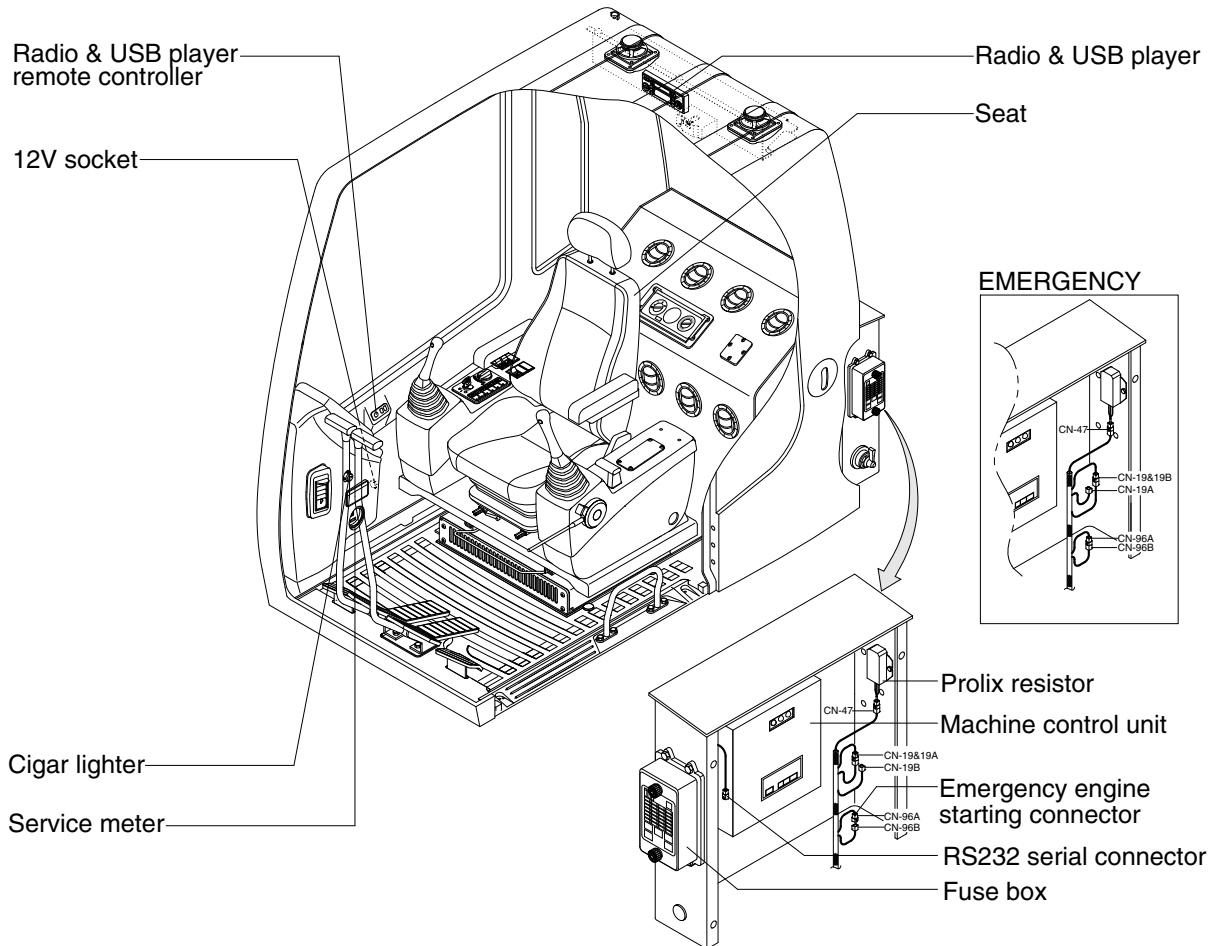
- (1) It is possible to control the fan speed as four steps.
- Turn to right : Fan speed increases
  - Turn to left : Fan speed decreases

## 2) TEMPERATURE SWITCH



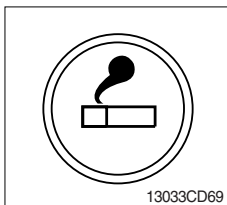
- (1) It is possible to control the temperature inside of cab.
- Turn to right : Temperature increases
  - Turn to left : Temperature decreases

## 6. OTHERS



34073CD04

### 1) CIGAR LIGHTER



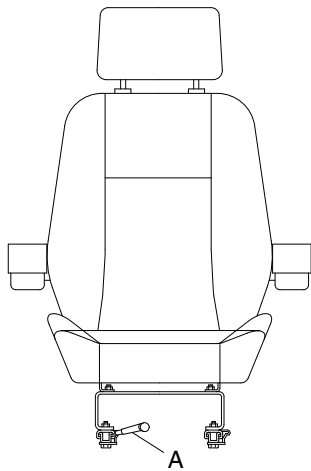
- (1) This can be used when the engine starting switch is ON.
- (2) The lighter can be used when it springs out in a short while after being pressed down.

※ **Service socket**

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

## 2) SEAT

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

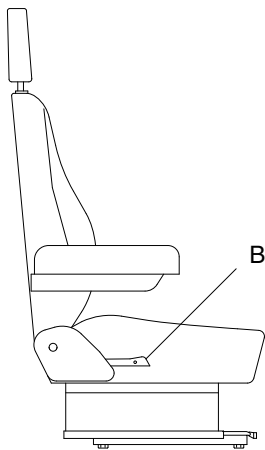


### (1) Forward/Backward adjustment(A)

- ① Pull lever A to adjust seat forward or backward.
- ② The seat can be moved forward and backward over 140mm(5.5") in 7 steps.

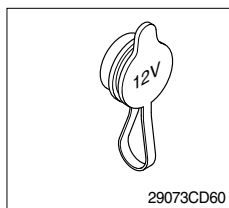
### (2) Reclining adjustment(B)

Pull lever B to adjust seat back rest.



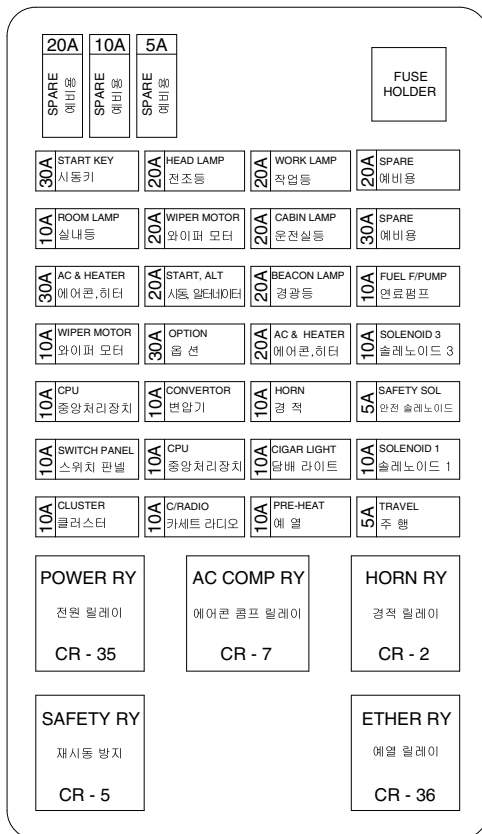
34073CD08

## 3) 12V SOCKET(Optional)



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

#### 4) FUSE BOX



34073CD09

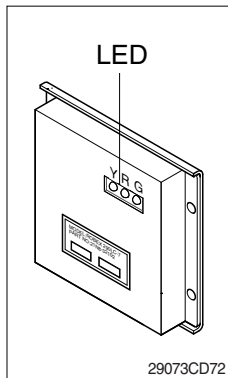
(1) The fuses protect the electrical parts and wiring from burning out.

(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) MACHINE CONTROL UNIT(MCU)



29073CD72

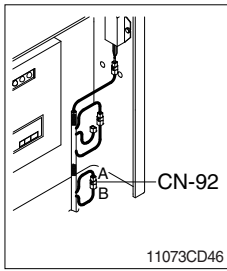
(1) To match the engine torque with the pump absorption torque, MCU varies EPPR valve output pressure, which control pump discharge amount whenever feedbacked engine speed drops under the reference rpm of each mode set.

(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 or ROM	· 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 (24V, GND) of controller is disconnected · Check the fuse

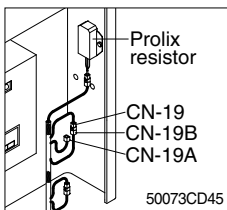
G : green, R : red, Y : yellow

## 6) EMERGENCY ENGINE STARTING CONNECTOR



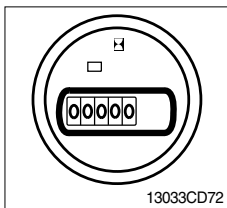
- (1) If the MCU is removed, the engine does not start.
  - (2) Before starting the engine, connect the connector CN-92 A with B.
- ※ Do not connect these connectors when the MCU is not removed.

## 7) PROLIX RESISTOR



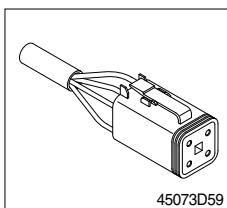
- (1) This resistor is used to continuous working in case of malfunction of the MCU.
    - Normal : CN-19 connect with connector CN-19A
    - Emergency : CN-19 connect with connector CN-19B
- ※ Never connect connector CN-19 with connector CN-19B when MCU is in normal operation.

## 8) 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**.

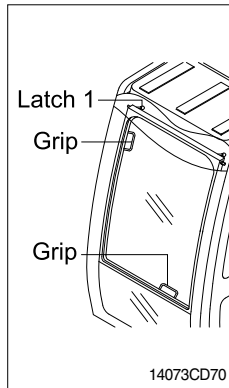
## 9) RS232 SERIAL CONNECTOR



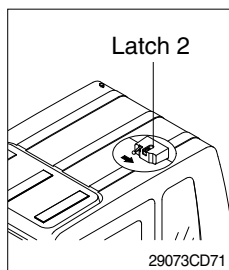
- (1) MCU communicates the machine data with Lap top computer through RS232 connector.



## 10) UPPER WINDSHIELD



- (1) Perform the following procedure in order to open the upper windshield.
- ① Release both latches(1) in order to release the upper windshield.
  - ② Hold both grips that are located at the bottom of the windshield frame and at the top of the windshield frame push the windshield upward.
  - ③ Hold both grips that are provided on the windshield frame and back into the storage position until auto lock latch(2) is engaged, move the levers of both latches(1) into the locked position. Push the levers toward the rear of the cab in order to hold the windshield in storage position.



- (2) Perform the following procedure in order to close the upper windshield.
- ① Move the lever of the auto lock latch(2) in the direction of the arrow in order to release the auto lock latch.
  - ② Reverse step ① through step ③ in order to close the upper windshield.

## 11) RADIO AND USB PLAYER



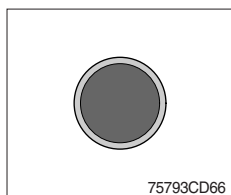
75793CD62

### ■ FRONT PANEL PRESENTATION

- |   |  |  |    |  |   |
|---|--|--|----|--|---|
| 1 |  | ..... Sound function selection button<br>(audio selection) | 10 |  | ..... Preset memory button 6                        |
| 2 |  | ..... Power and volume button                              |    |  | ..... Directory up                                  |
| 3 |  | ..... Mode button<br>(select RADIO / USB / AUX)            | 11 |  | ..... Aux function                                  |
| 4 |  | ..... UP / DOWN tuning button                              | 12 |  | ..... Preset scan (PS)<br>Best station memory (BSM) |
| 5 |  | ..... Preset memory button 1                               | 13 |  | ..... Audio mute button                             |
|   |  | ..... ID3 v2 display                                       | 14 |  | ..... AM / FM button (radio)                        |
| 6 |  | ..... Preset memory button 2                               |    |  |   |
|   |  | ..... File scan  |    |  |   |
| 7 |  | ..... Preset memory button 3                               |    |  |   |
|   |  | ..... Repeat play selector                                 |    |  |   |
| 8 |  | ..... Preset memory button 4                               |    |  |   |
|   |  | ..... Random play selector                                 |    |  |   |
| 9 |  | ..... Preset memory button 5                               |    |  |   |
|   |  | ..... Directory down                                       |    |  |   |

## ■ GENERAL

### (1) Power and volume button



#### ① Power ON / OFF button

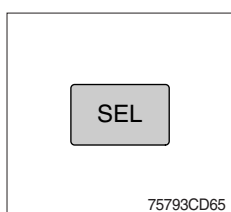
Press power button to turn the unit ON or OFF shortly.

When the power is ON, the previous mode (last memory) will appear.

#### ② Volume up / down control

Turn volume up / down button right to increase the volume level. The level will be shown in VOLUME xx on the LCD display. Turn it left to decrease the volume level. After 5 seconds of volume indication, display will return to the previous mode.

### (2) Sound function selection button (audio selection)




- ① This button is to adjust the sound. Each time you press power button shortly, LCD displays each mode as follows :

BASS → TREBLE → BAL → BEEP → LOUD → VOLUME



※ When this button is pressed, LCD display shows selected function for 5 seconds and then returns back to the previous mode. On selected function, level can be controlled by turning this button. The display will automatically return to normal indication in 5 seconds after the last adjustment is made or when another function is activated.


#### ② Bass control

To adjust the bass level, first select the bass mode by pressing the select button  until BASS indication appears on the LCD display. Within 5 seconds of choosing the bass mode, turn power button right / left to adjust the bass level as desired.

The bass level will be shown on the LCD display from a minimum of BASS -10 to a maximum of BASS +10.

The display will automatically return to the normal indication in 5 seconds after the last adjustment or when another function is activated.


#### ③ Treble control

To adjust the treble level, first select the treble mode by pressing the select button  until TREBLE indication appears on the LCD display. Within 5 seconds of choosing the treble mode, turn power button right / left to adjust the treble level as desired.

The treble level will be shown on the LCD display from a minimum of TREBLE -10 to a maximum of TREBLE +10.

The display will automatically return to the normal indication in 5 seconds after the last adjustment or when another function is activated.

#### ④ Balance control

To adjust the left-right speaker balance, first select the balance mode by pressing the select button  until the BAL indication appears on the LCD display.


Within 5 seconds of choosing the balance mode, turn power button right / left to adjust the balance as desired.

The balance position will be shown on the LCD display from BAL 10L (full left) to BAL 10R (full right).

When the volume level between the left and right speakers is equal, BAL L=R will be shown on the LCD display panel.

The display will automatically return to the normal indication in 5 seconds after the last adjustment or when another function is activated.

#### ⑤ Beep control

To adjust the beep mode, first select the beep mode by pressing the select button  until BEEP indication appears on the LCD display.

The beep mode will be shown on the LCD display from BEEP 2ND, BEEP OFF and BEEP ON by turning power button right / left.

The display will automatically return to the normal indication in 5 seconds after the last adjustment or when another function is activated.


Select BEEP ON when you wish to hear the BEEP sound whenever any function button is pressed.

Select BEEP 2ND when you wish to hear the BEEP sound whenever any tuner pre-set button and/or tune seek buttons are pressed for more than 3 seconds.

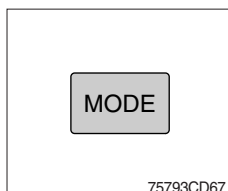
#### ⑥ Loud control

When listening to music at low volume levels, this feature will boost the bass and treble response.

This action will compensate for the reduction in bass and treble performance experienced at low volume.

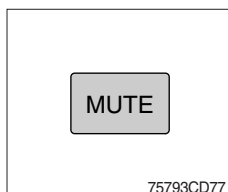
To select the loudness feature, press select button  until LOUD ON or LOUD OFF is displayed, then turn power button left or right to activate or deactivate loudness.

#### (3) Mode button



- ① Press mode button to select RADIO / USB / AUX.

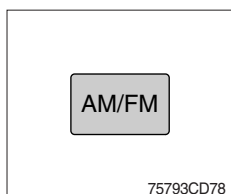
#### (4) Audio mute button



- ① Press mute button momentarily to mute volume and MUTE mark will blink on the LCD display.  
Press the button again to return to the mode in use before the mute mode was activated.

## ■ RADIO

### (1) AM / FM / LW band selector

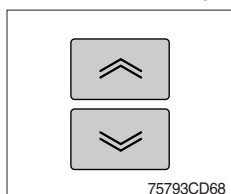


- ① Each time this button is pressed, the radio button is changed. Each time this button is pressed, LCD displays each band as follows :

FM1 → FM2 → FM3 → AM → LW

※ LW band is only available for Europe.

### (2) Up / down tuning

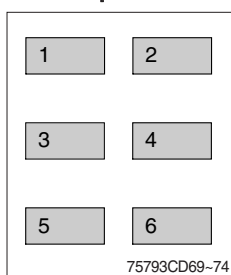


- ① To automatically select a radio station, momentarily press the up tune seek button  $\approx$  or down tune seek button  $\approx$  for less than 3 seconds to search for the closest radio station.

To manually select a radio station, press the up tuning & down tuning button for longer than 3 seconds.

The radio frequency will move up or down step by step each time you press button.

### (3) Station pre-set button

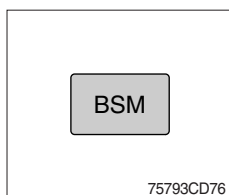


- ① Pressing these buttons shortly will recall your favorite pre-set radio stations.

To store your favorite stations into any of the 6 pre-set memories in each band (AM/FM/LW), use the following procedure :

- Turn the radio ON and select the desired band.
- Select the first station to be pre-set using the manual up/down or automatic seek tuning control button.
- Press the chosen pre-set button to store your selected station into and continue to hold it in. The beep sound will be momentarily heard and the pre-set number will appear on the LCD display indicating that the station is now set into that pre-set memory position and can be recalled at any time, by pressing that pre-set button.

#### (4) Pre-set scan (PS) / Best station memory (BSM) button



##### ① Pre-set scan (PS)

Press BSM button shortly to scan the 6 pre-set station stored the memories on each band (AM/FM/LW).

The unit will stop at each pre-set station (the pre-set number on the LCD display will flash during pre-set scan operation) and remain on the selected frequency. Press the button momentarily again to remain on the station currently being heard.

##### ② Best station memory (BSM)

Pressing BSM button for longer than 2 seconds will activate the BSM tuning feature which will automatically scan and enter each station into memory.

If you have already set the pre-set memories to your favorite stations, activating the BSM tuning feature will erase those stations and enter the new ones.

This BSM feature is most useful when traveling in a new area where you are not familiar with the local stations.

### ■ USB PLAYER

#### (1) USB function

There are two ways to play mp3 files in a USB device : using USB socket in the cab and the USB / AUX cable connected to the front side of the player.

##### · Use of USB socket

- ① Connect a USB device, which saves mp3 files, to USB socket in the cabin.
- ② If a USB device has not been connected, MP3 files are automatically played when you insert it into the USB port.
- ③ If a USB device has connected, MP3 files are played when you press mode for USB.

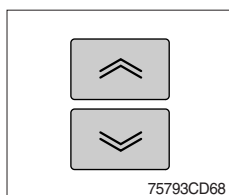
##### · Use of USB/AUX cable (option)



75793CD81

- ① Connect the USB/AUX cable to the player in order to play MP3 files in a USB device.
- ② If a USB device has not been connected, MP3 files are automatically played when you insert it into the cable.
- ③ If a USB device has connected, MP3 files are played when you press mode for USB.

## (2) File selection & cue / review button



### ① File selection function

This button is used to select file up / down. Each time the forward file select ≧ is pressed, file number is increased.

Each time the backward file select ≦ is pressed, file number is decreased.

### ② Cue / review functions

High-speed audible search of file on a USB can be made by this button (the cue and review functions).

Press and hold the cue button ≧ to advance rapidly in the forward direction or the review button ≦ to advance rapidly in the backward direction.

## (3) MP3 directory / file searching

- ① The power button is used to select a particular directory and file.

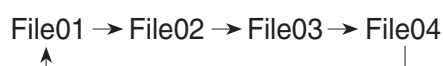
Press and hold for more than 3 seconds while playing MP3 file.

Turn right / left the power button to search the directory. Press the button when you find the wanted directory.

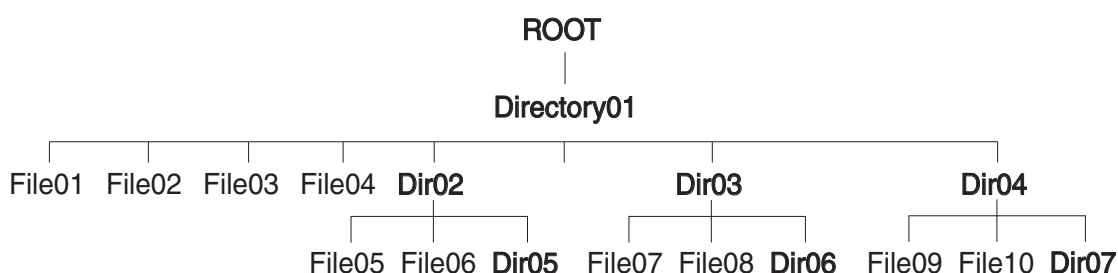
For example, the directory search generally changes in two methods depending on the order of writing as follows.

- Method 1 : ROOT → Dir01 → Dir02 → Dir03 → Dir04 → Dir05 → Dir06 → Dir07
- Method 2 : ROOT → Dir01 → Dir02 → Dir05 → Dir03 → Dir06 → Dir04 → Dir07

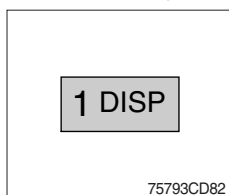
If you want to search the file in the located directory, turn right / left the power button consecutively. Press the button when you find the wanted file. The unit will then play the selected file. For instance, the file search changes in Dir01 as follows.



### ※ MP3 direction / file configuration



#### (4) ID3 v2 display

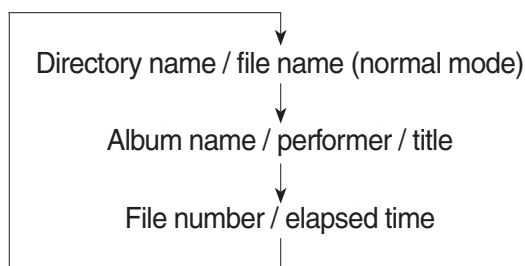


- ① Disp button is used to change the display information.

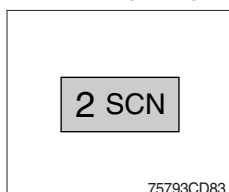
While playing an MP3 file, you can change the file information shown on the LCD display.

Each time you press DISP (display), the display changes to show the following.

- ※ If the MP3 disc does not have any ID3 information, the display will show NO ID3 on LCD display.



#### (5) File scan (SCN)



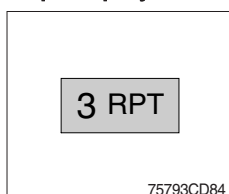
- ① During USB play, press SCN button to play the first 10 seconds of each file on the whole file on the USB (SCN mark will appear on the LCD display).

When a desired file is reached, press the SCN button again to cancel the function.

The unit will then play the selected file.

- ※ In case of playing MP3 file, when the SCN (scan) button is pressed and held for longer than 2 seconds, the SCN mark will blink on the LCD display and all files in the selected directory will be introduced until the file scan mode is cancelled by pressing the SCN button again or by activating the random or repeat functions.

#### (6) Repeat play selector (RPT)



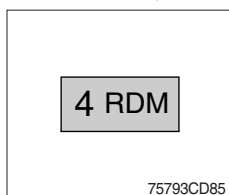
- ① During USB play, press RPT button to play the selected file repeatedly (RPT will appear on the LCD display).

Play of the file will continue to repeat until this button is pressed again and the RPT disappears from the LCD display.

- ※ In case of playing MP3 file, when the RPT button is pressed and held longer than 2 seconds, the RPT mark will blink on the LCD display and play all files in the selected directory and will be repeated until the directory repeat mode is cancelled by pressing the repeat button again or by activating the scan or random functions (RPT mark will disappear from LCD display).



## (7) Random play selector (RDM)

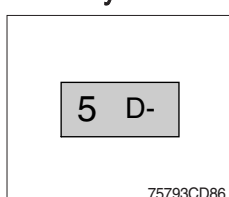


- ① During USB play, press RDM button to play the files on the USB in a random shuffled order (RDM will appear on the LCD display). The file select function will also select file in the random order instead of the normal process.

The random play mode can be cancelled by this button again.

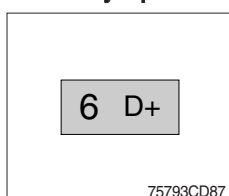
- ※ In case of MP3 file, when the random button is pressed and held longer than 2 seconds, the RDM mark will blink on the LCD display and play all files in directory randomly until the directory random mode is cancelled by pressing the random button again or by activating the scan or repeat functions (RDM mark will disappear from LCD display).

## (8) Directory down



- ① Press D- button briefly while playing MP3. The previous directory is located each time you press this button.

## (9) Directory up

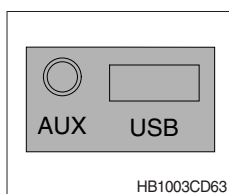


- ① Press D+ button briefly while playing MP3 . The next directory is located each time you press this button.
- ※ If the MP3 file does not have a directory, the unit play MP3 at 10-file intervals.
- ※ If any MP3 file does not exist in USB, this button can not operate.

## ■ AUX PLAYER

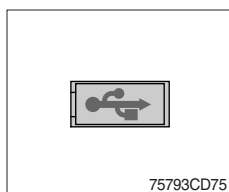
### (1) Aux function

#### · Use of USB socket



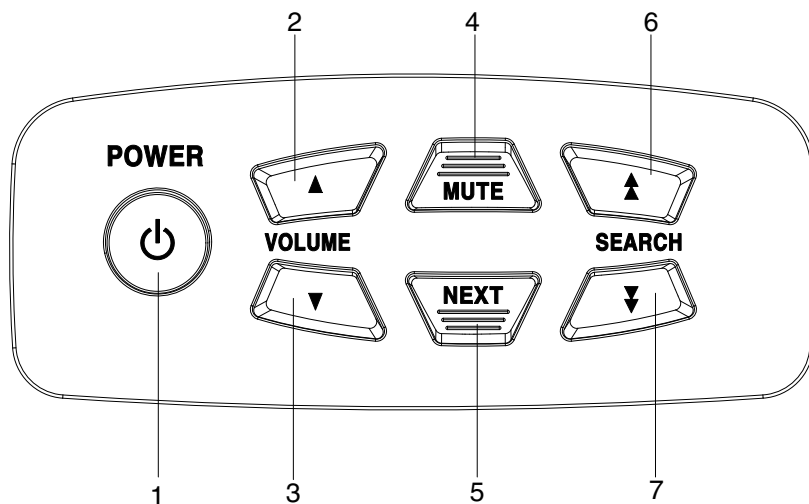
- ① If you want to listen to music of a external audio device, connect a external audio device into the USB port.
- ② Press mode button to change a current mode for AUX. If audio file of audio device is playing, you can listen to music through speaker.

#### · Use of USB/AUX cable (option)



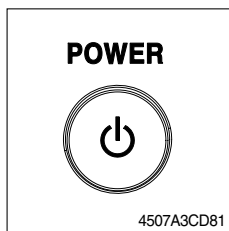
- ① If you want to listen to music of a external audio device, connect a external audio device through USB/AUX cable.
- ② Press mode button to change a current mode for AUX. If audio file of audio device is playing, you can listen to music through speaker.

## 12) REMOTE CONTROLLER





4507A3CD90

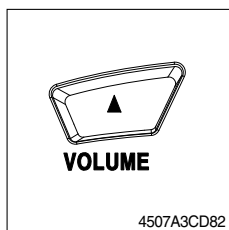
### (1) Power ON/OFF button



4507A3CD81

- ① Press  to switch ON the set. Press  for more than 2seconds to switch OFF the set.

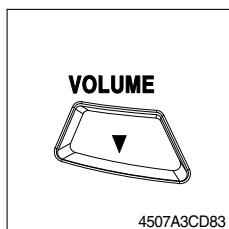
### (2) Volume button(up)



4507A3CD82

- Short press : Volume up one step
- Long press : Volume up continuous

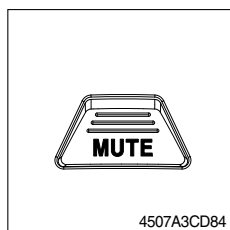
### (3) Volume button(down)



4507A3CD83

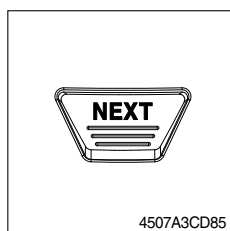
- Short press : Volume down one step
- Long press : Volume down continuous.

#### (4) Source & mute button



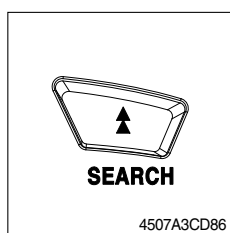
- Short press : Change source(Radio/CD)
- Long press : To mute or cancel mute.

#### (5) Next button



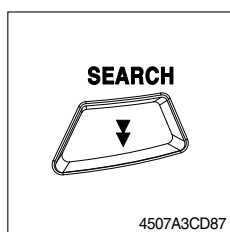
- ① Tuner mode
  - Short press : Preset up
  - Long press : Band up
- ② Cassette mode
  - Short press : Reverse(before the end of the tape)
  - Long press : No function
- ③ CD mode
  - Short press : Track 1
  - Long press : Scan track

#### (6) Search button(up)



- ① Tuner mode
  - Short press : Search up one step
  - Long press : Search up continuous
- ② Cassette & CD mode
  - Short press : Next track
  - Long press : Fast forward

#### (7) Search button(down)



- ① Tuner mode
  - Short press : Search down one step
  - Long press : Search down continuous
- ② Cassette & CD mode
  - Short press : Previous track
  - Long press : Fast rewind