2. CLUSTER (up to #0135)

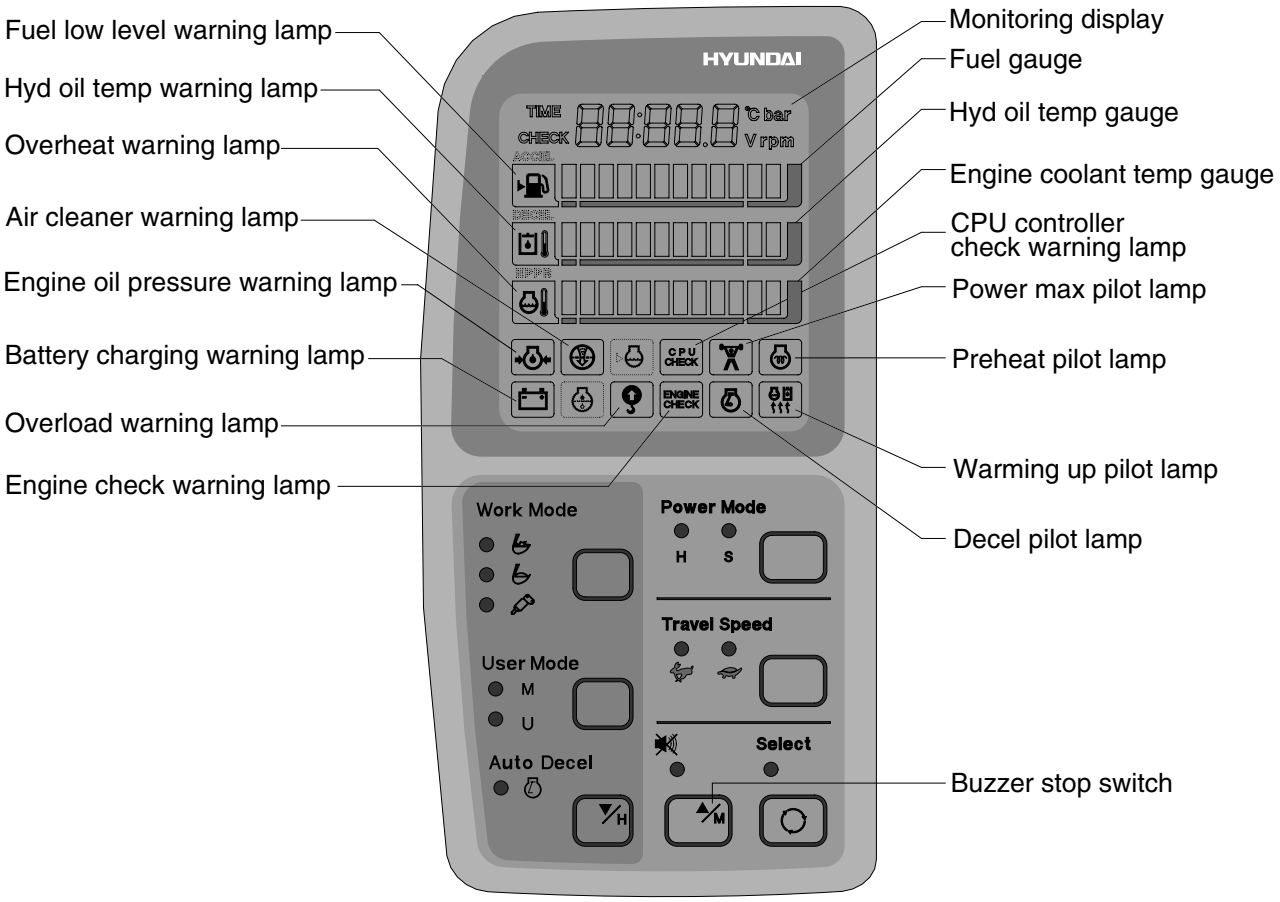
1) MONITOR PANEL

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.**

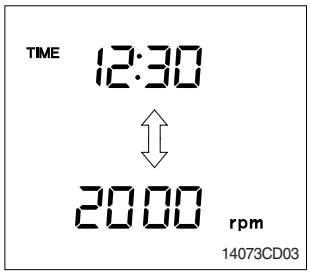
※ **When the monitor provides a warning immediately check the problem, and perform the required action.**



2907A3CD07

※ **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.**

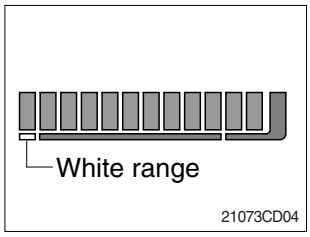
(1) Monitoring display



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 4-11 for details.**

(2) Fuel gauge

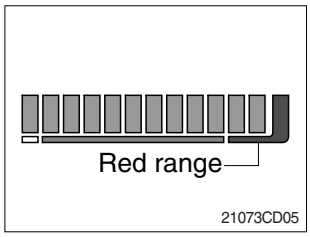


① This gauge indicates the amount of fuel in the fuel tank.

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



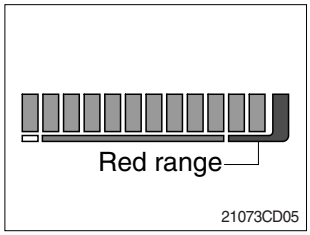
① This indicates the temperature of coolant.
- White range : Below 30℃ (86℉)
- Green range : 30-105 ℃ (86-221℉)
- Red range : Above 105℃ (221℉)

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



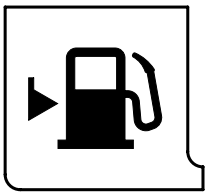
① This indicates the temperature of coolant.
- White range : Below 30℃ (86℉)
- Green range : 30-105 ℃ (86-221℉)
- Red range : Above 105℃ (221℉)

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.

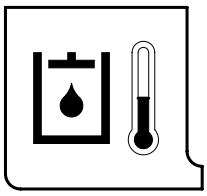
(5) Fuel low level warning lamp



21073CD04A

① This lamp blinks and the buzzer sounds when the level of fuel is below 45 ℓ (11.9U.S. gal).
② Fill the fuel immediately when the lamp blinks.

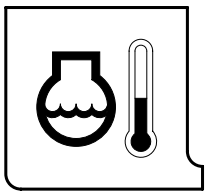
(6) Hydraulic oil temperature warning lamp



21073CD05A

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

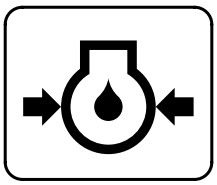
(7) Overheat warning lamp



21073CD06A

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

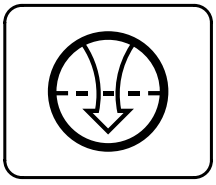
(8) Engine oil pressure warning lamp



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.

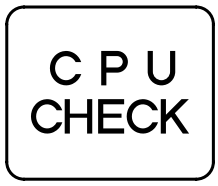
(9) Air cleaner warning lamp



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.

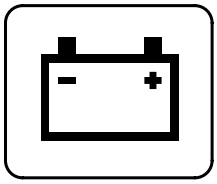
(10) MCU controller check warning lamp



21073CD10

① Communication problem between MCU controller and cluster makes the lamp blink and the buzzer sounds.
② Check the communication line between MCU controller and cluster.

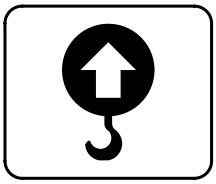
(11) Battery charging warning lamp



21073CD13

① This lamp blinks 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.

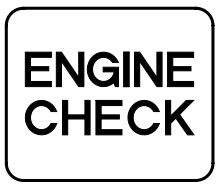
(12) Overload warning lamp(Option)



21073CD15

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

(13) Engine check warning lamp



29073CD10

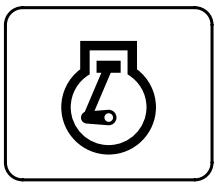
① This lamp blinks and the buzzer sounds when the communication between MCU controller and ECM on the engine is abnormal, or if any fault code received from ECM.
② Check the communication line between them.
If the communication line is OK, then check the fault code on the cluster.

(14) Power max pilot lamp

21073CD11

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

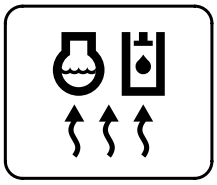
(15) Decel pilot lamp



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.

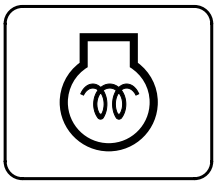
(16) Warming up pilot lamp



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 ℃, or when 10 minutes have passed since starting.

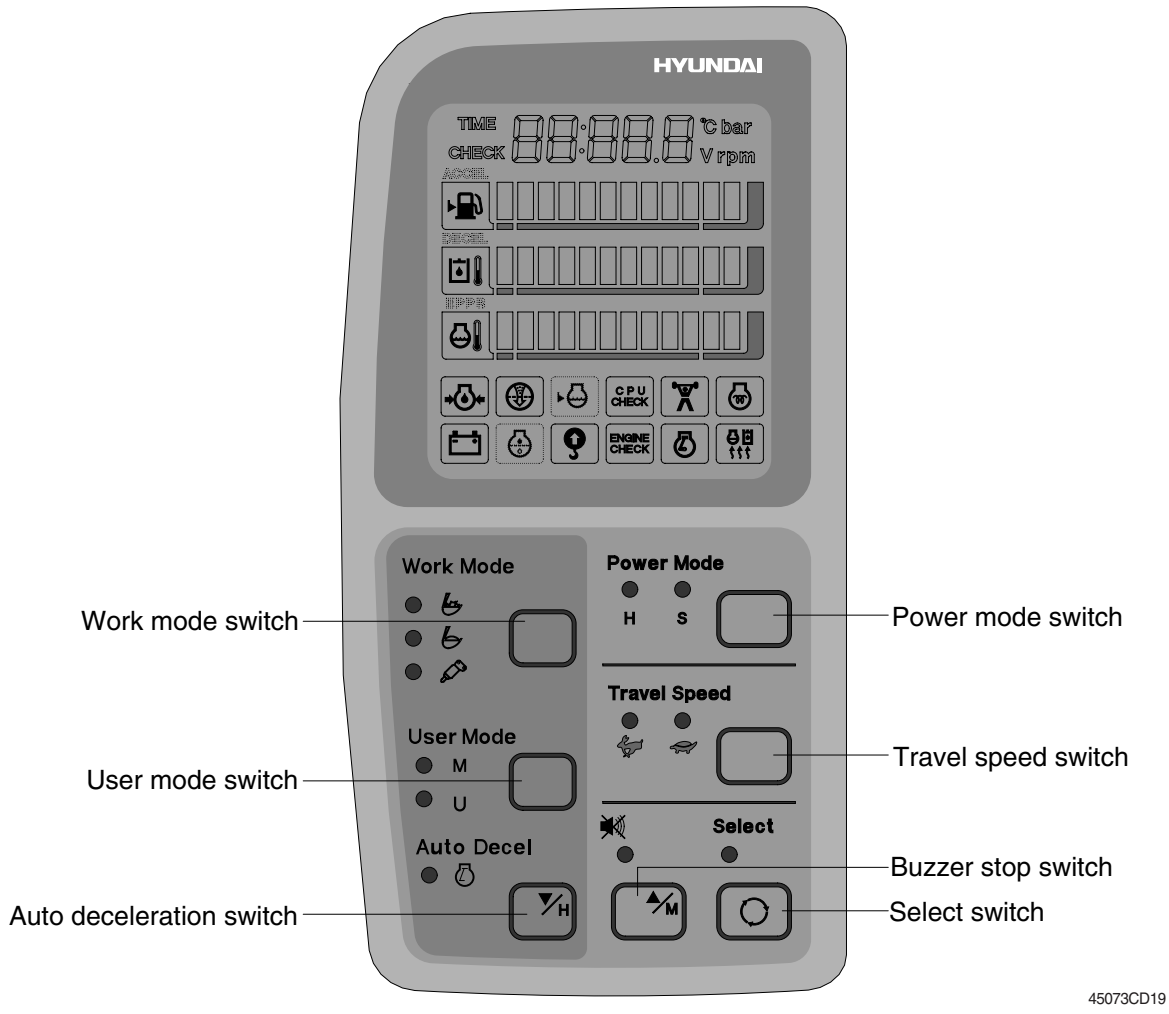
(17) Preheat pilot lamp



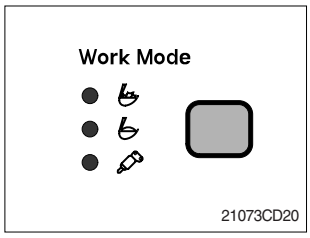
21073CD12

① This lamp is turned ON when the preheating function is actuated in cold weather.
② Start the engine as this lamp is OFF.

2) SWITCH PANEL



(1) Work mode switch

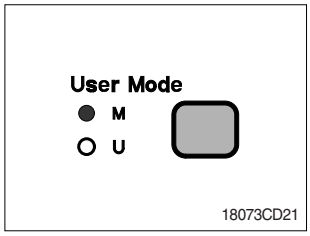


① This switch is to select the machine operation mode, which shifts from general operation mode to heavy operation mode and breaker mode in a raw by pressing the switch.

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

※ **Refer to the page 4-6 for details.**

(2) User mode switch

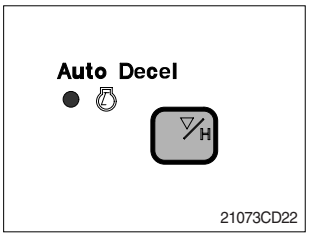


① This switch is to select the maximum power or user mode.

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

※ **Refer to the page 4-6 for details.**

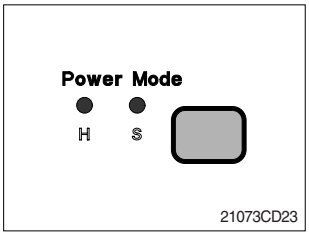
(3) Auto deceleration switch



① This switch is used to actuate or cancel the auto deceleration function.
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.

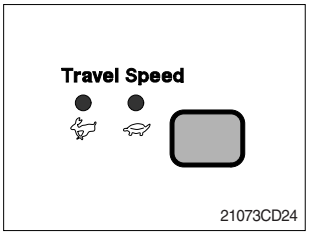
② Operating the auto deceleration function makes the decel indicating lamp on the LCD panel ON.

(4) Power mode switch



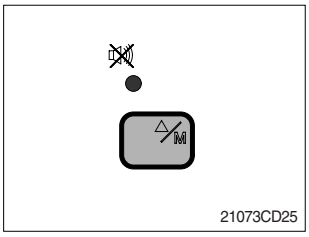
① The lamp of selected mode is turned ON by pressing the switch( ).
- H : High power work.
- S : Standard power work.

(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.

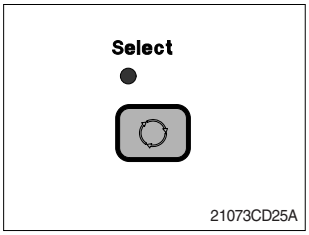
(6) Buzzer stop switch



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 4-11 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 (#0136 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.**

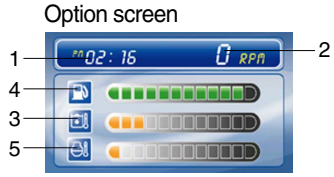
※ **The warning lamp lights ON and the buzzer sounds when the machine has a problem. In this case, press the buzzer stop switch and buzzer stop, but the warning lamp lights until the problem is cleared.**

2) LCD main operation display

Default screen

1607A3CD02A

Option screen



1607A3CD02B

1 Time display
2 RPM display
3 Hydraulic oil temperature gauge
4 Fuel level gauge
5 Engine coolant temperature gauge

(1) Time display

1607A3CD02C

① This displays the current time.

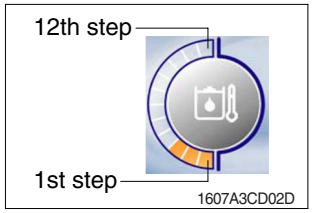
※ **Refer to the page 3-7 to set time for details.**

(2) RPM display

1607A3CD02C

① This displays the engine rpm.

(3) Hydraulic oil temperature gauge



1607A3CD02D

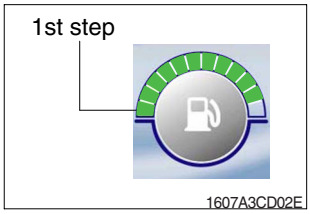
① This gauge indicates the temperature of hydraulic oil in 12 step gauge.
- 1st step : Below 30°C(86°F)
- 2nd~10th step : 30-105 °C(86-221°F)
- 11th~12th step : Above 105°C(221°F)

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



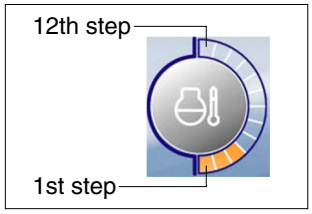
1607A3CD02E

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



1607A3CD02F

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

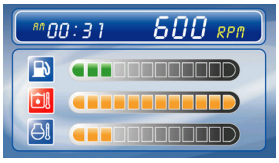
① Engine coolant temperature


- This lamp blinks and the buzzer sounds when the temperature of coolant is over the normal temperature 105℃(221℉) .
- 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 45 ℓ (11.9U.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 ℃(221 ℉) .
- Check the hydraulic oil level when the lamp blinks.
- Check for debris between oil cooler and radiator.

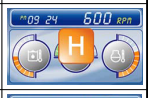
④ All gauge


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

⑤ Communication error

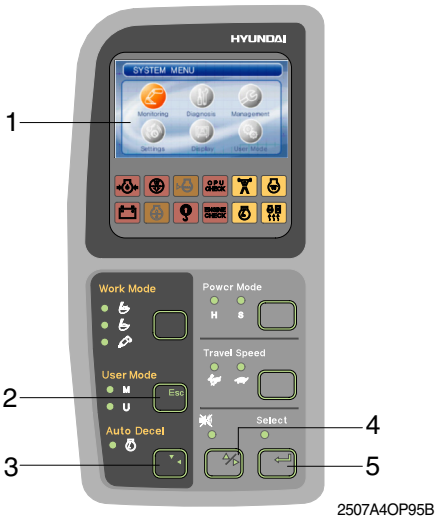
- Communication problem between MCU controller and cluster makes the lamp blinks and the buzzer sounds.
- Check if any fuse for MCU burnt off. If not check the communication line between them.

(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

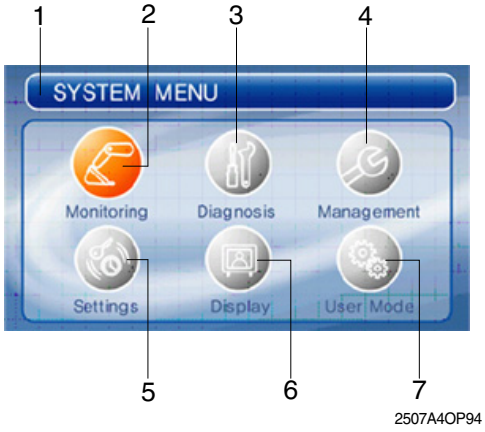
2 : Esc, Return to the previous menu

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

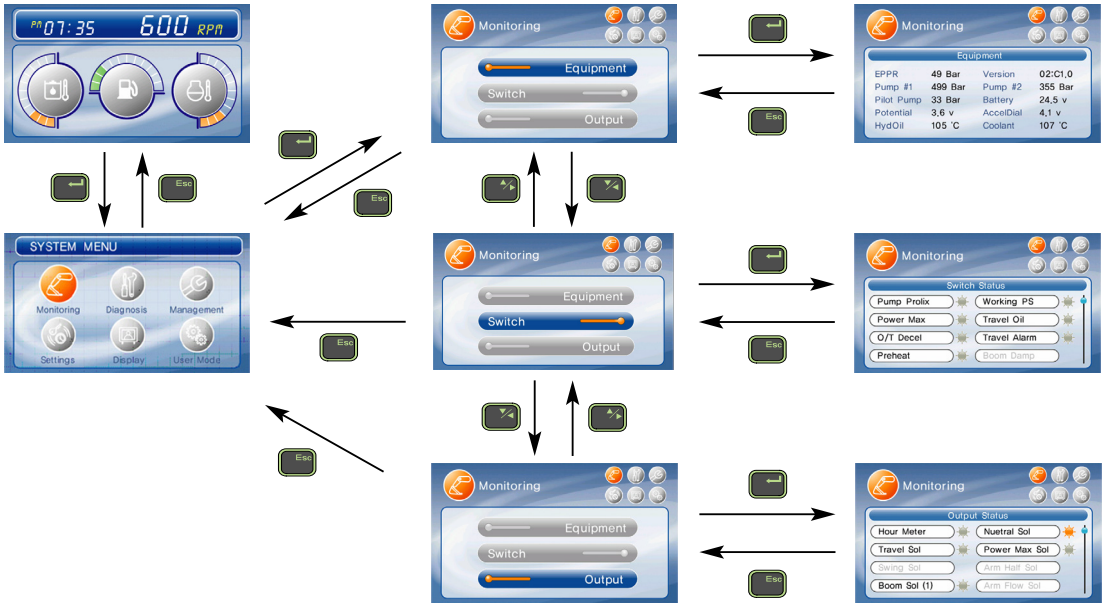
5 : Settings
- Time set, Dual mode
- System lock(Reserved)

6 : Display
- Operation skin, Brightness, Language

7 : User mode

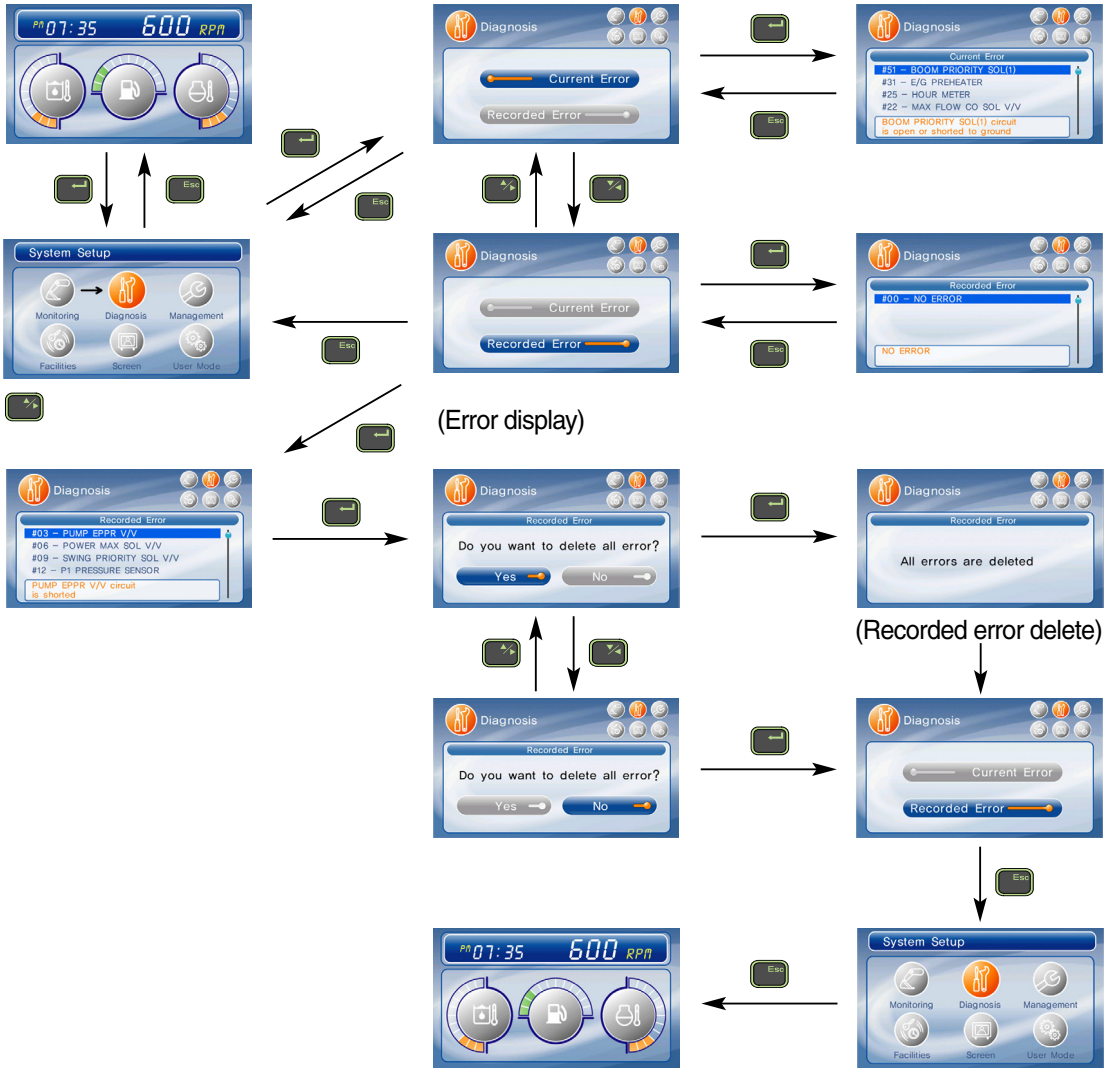
(2) Display map

① Monitoring



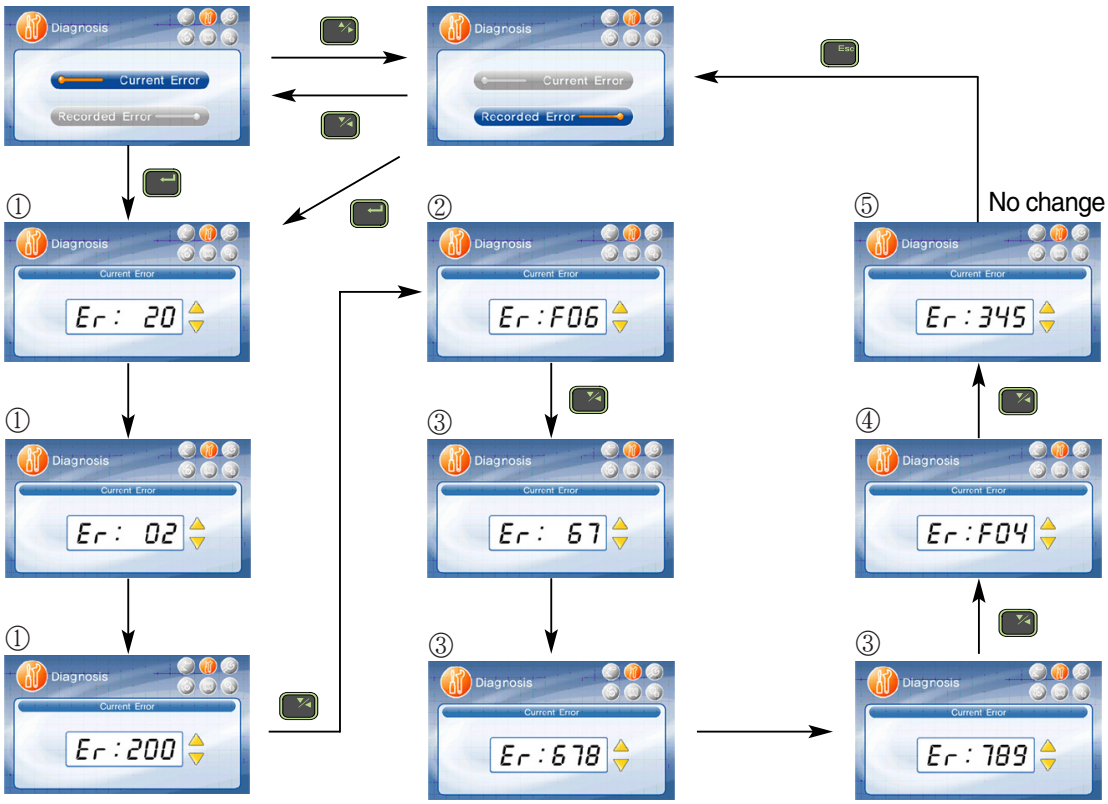
② Diagnosis

a. New protocol

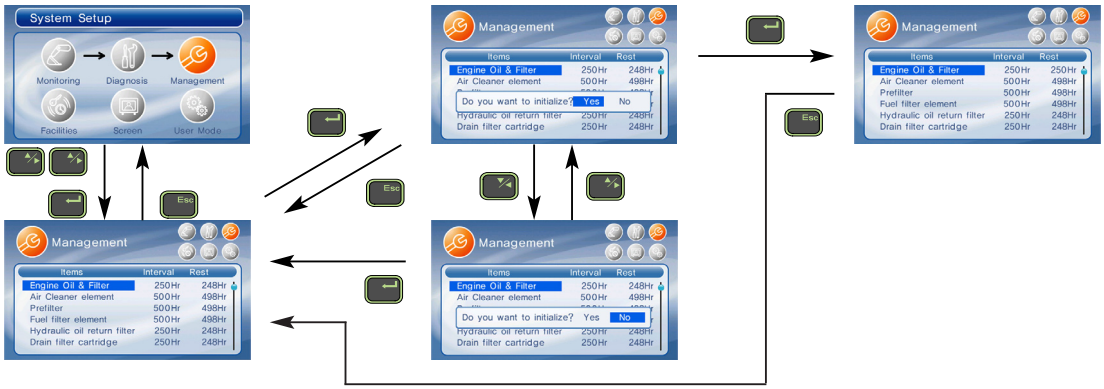


b. Old protocol : Old MCU controller

- 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

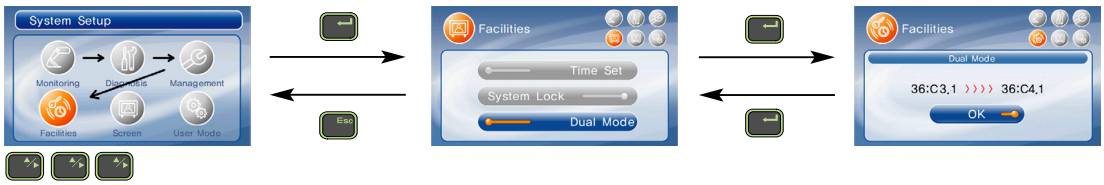


④ Setting

a. Time set

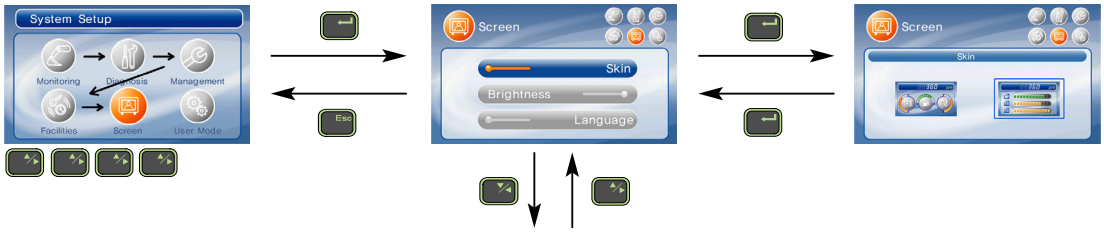
b. System lock - Reserved

c. Dual mode
- Changing the MCU mode

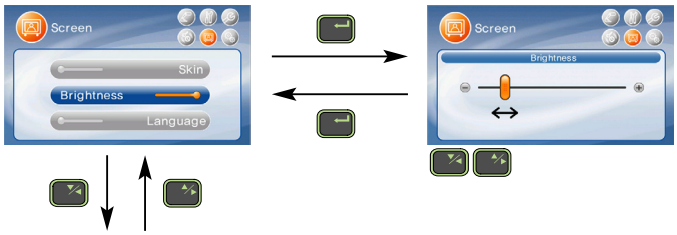


⑤ Display

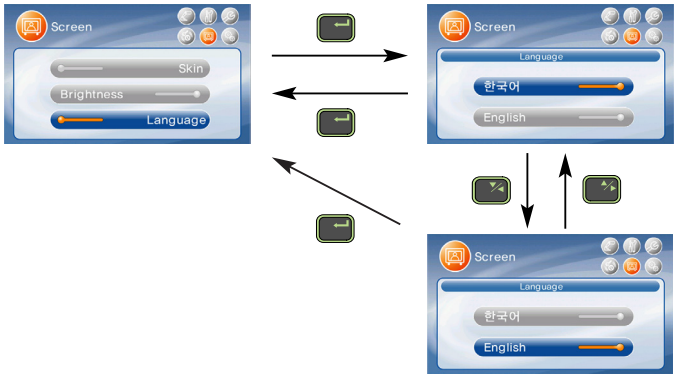
a. Operation skin



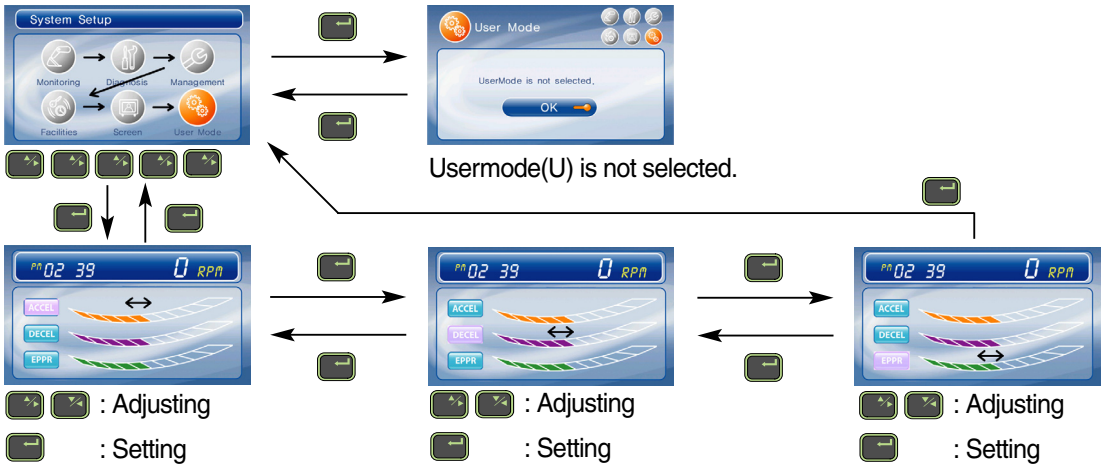
b. Brightness



c. Language

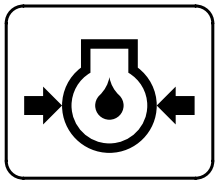


⑥ User mode



5) Warning and pilot lamp

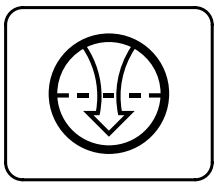
(1) Engine oil pressure warning lamp



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.

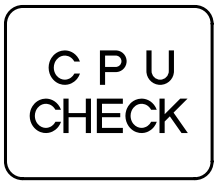
(2) Air cleaner warning lamp



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.

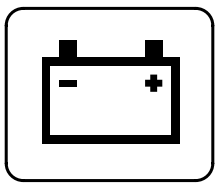
(3) MCU controller check warning lamp



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.

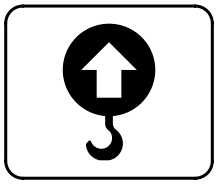
(4) Battery charging warning lamp



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.

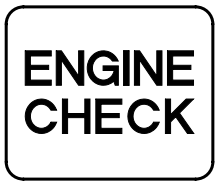
(5) Overload warning lamp



21073CD15

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

(6) Engine check warning lamp



29073CD10

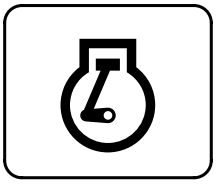
① This lamp blinks and the buzzer sounds when the communication between MCU controller and ECU on the engine is abnormal, or if any fault code received from ECU.
② Check the communication line between them.
If the communication line is OK, then check the fault code on the cluster

(7) Power max pilot lamp

21073CD11

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

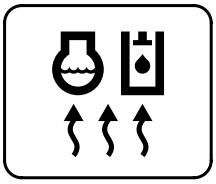
(8) Decel pilot lamp



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.

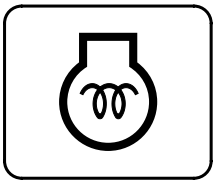
(9) Warming up pilot lamp



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.

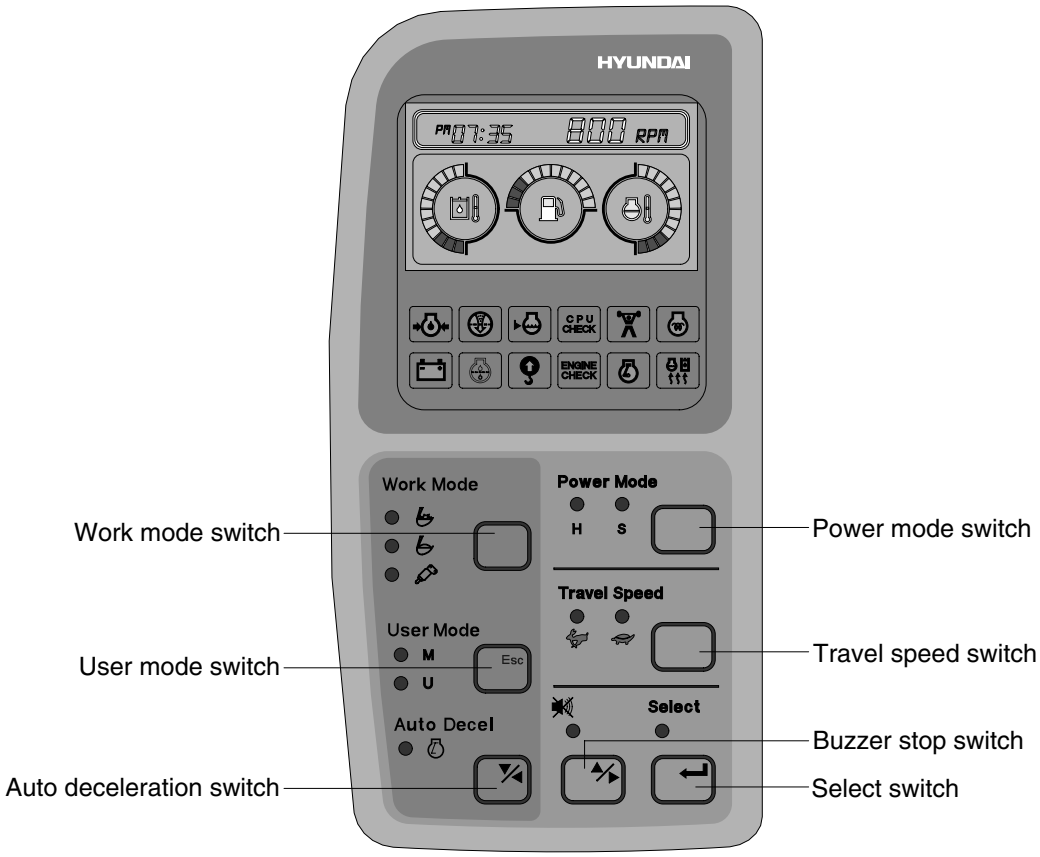
(10) Preheat pilot lamp



21073CD12

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

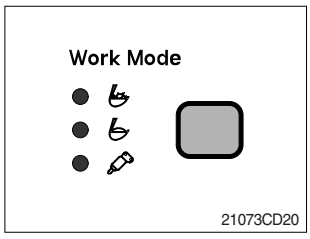
6) SWITCH PANEL



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

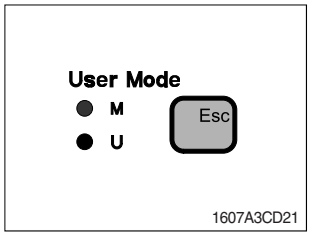


21073CD20

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 raw 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

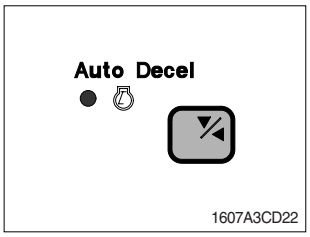


1607A3CD21

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

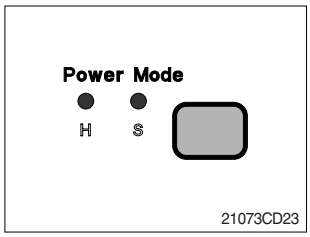


① This switch is used to actuate or cancel the auto deceleration function.

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.

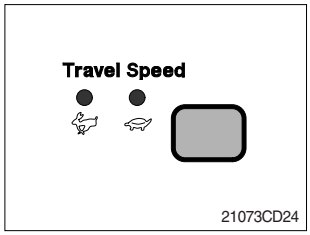
(4) Power mode switch



① The lamp of selected mode is turned ON by pressing the switch(▭).

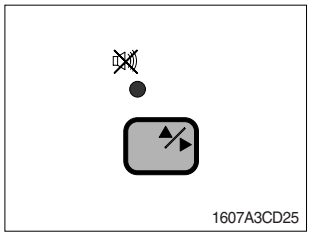
- H : High power work.
- S : Standard power work.

(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.

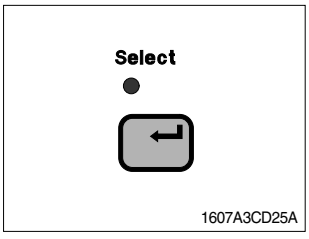
(6) Buzzer stop switch



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.

※ **Refer to the page 3-8-4 for details.**