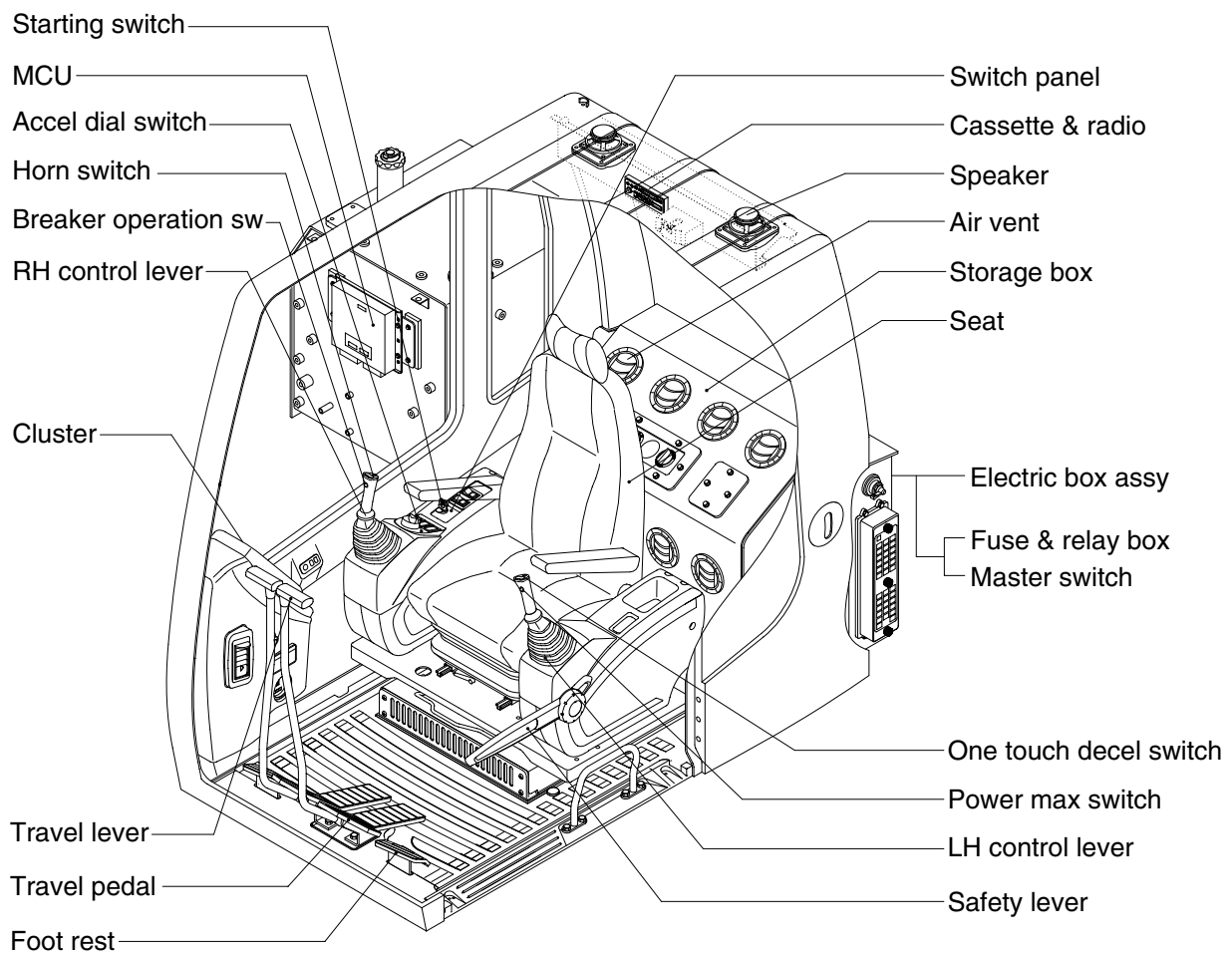


## 1. CAB DEVICES

- 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.



140D93CD01

## 2. CLUSTER

### 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.

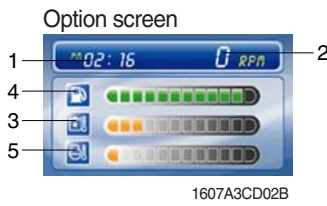
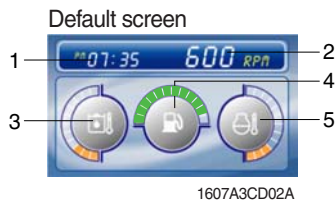
- LCD : Indicate operating status of the machine.
  - Warning lamp : Indicate abnormality of the machine (red).
  - Pilot lamp : Indicate operating status of the machine (amber).
- ※ The monitor installed on this machine does not entirely guarantee the condition of the machine. Daily inspection should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



140D93CD02

- ※ 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
- 2 RPM display
- 3 Hydraulic oil temperature gauge
- 4 Fuel level gauge
- 5 Engine coolant temperature gauge

### (1) Time display



- ① This displays the current time.

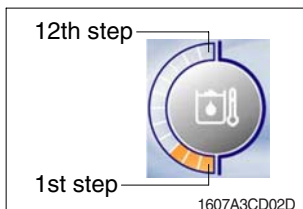
※ Refer to the page 3-7 to set time for details.

### (2) RPM display



- ① This displays the engine rpm.

### (3) Hydraulic oil temperature gauge

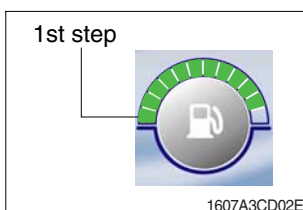


- ① This gauge indicates the temperature of hydraulic oil in 12 step gauge.

- 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



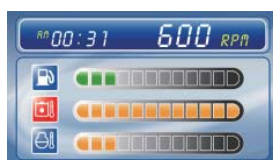
- This lamp blinks and the buzzer sounds when the temperature of coolant is over the normal temperature 105°C (221°F).
- Check the cooling system when the lamp blinks.

##### ② Fuel level



- This lamp blinks and the buzzer sounds when the level of fuel is below 31 l (8.2 U.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



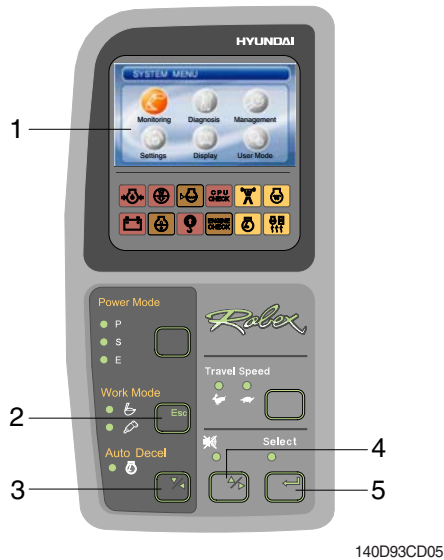
- Communication problem between MCU and cluster makes the lamp blinks and the buzzer sounds.
- Check if any fuse for MCU burnt off.
- If not check the communication line between them.






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

No	Switch	Selected mode	Interval
1	Work mode switch	General work mode	
		Breaker operation mode (Null)	
2	Power mode switch	Heavy duty power work mode	
		Standard power work mode	
		Economy power mode	

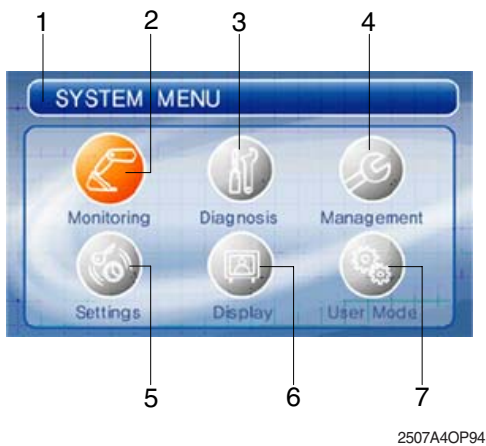
No	Switch	Selected mode	Interval
3	Auto deceleration switch	Light ON	
		Light OFF	
4	Travel speed control switch	Low speed	
		High speed	








#### 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

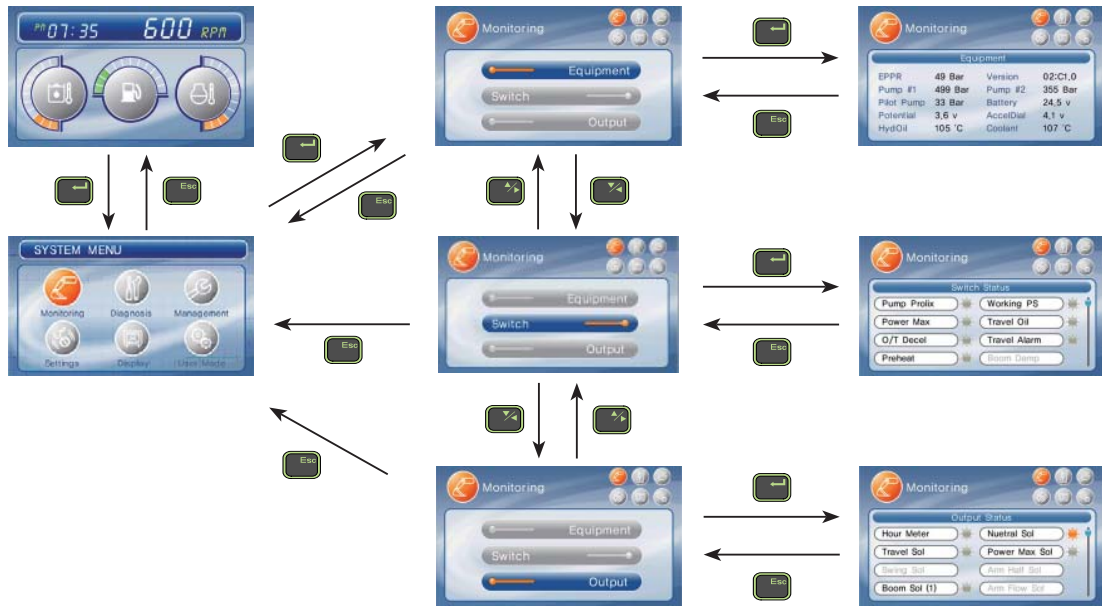


- 1  : Menu information
- 2  : Monitoring  
- Equipment, Switch, Output
- 3  : Diagnosis  
- Current error, Recorded error
- 4  : Maintenance
- 5  : Settings  
- Time set, Dual mode  
- System lock (reserved)
- 6  : Display  
- Operation skin, Brightness, Language
- 7  : User mode



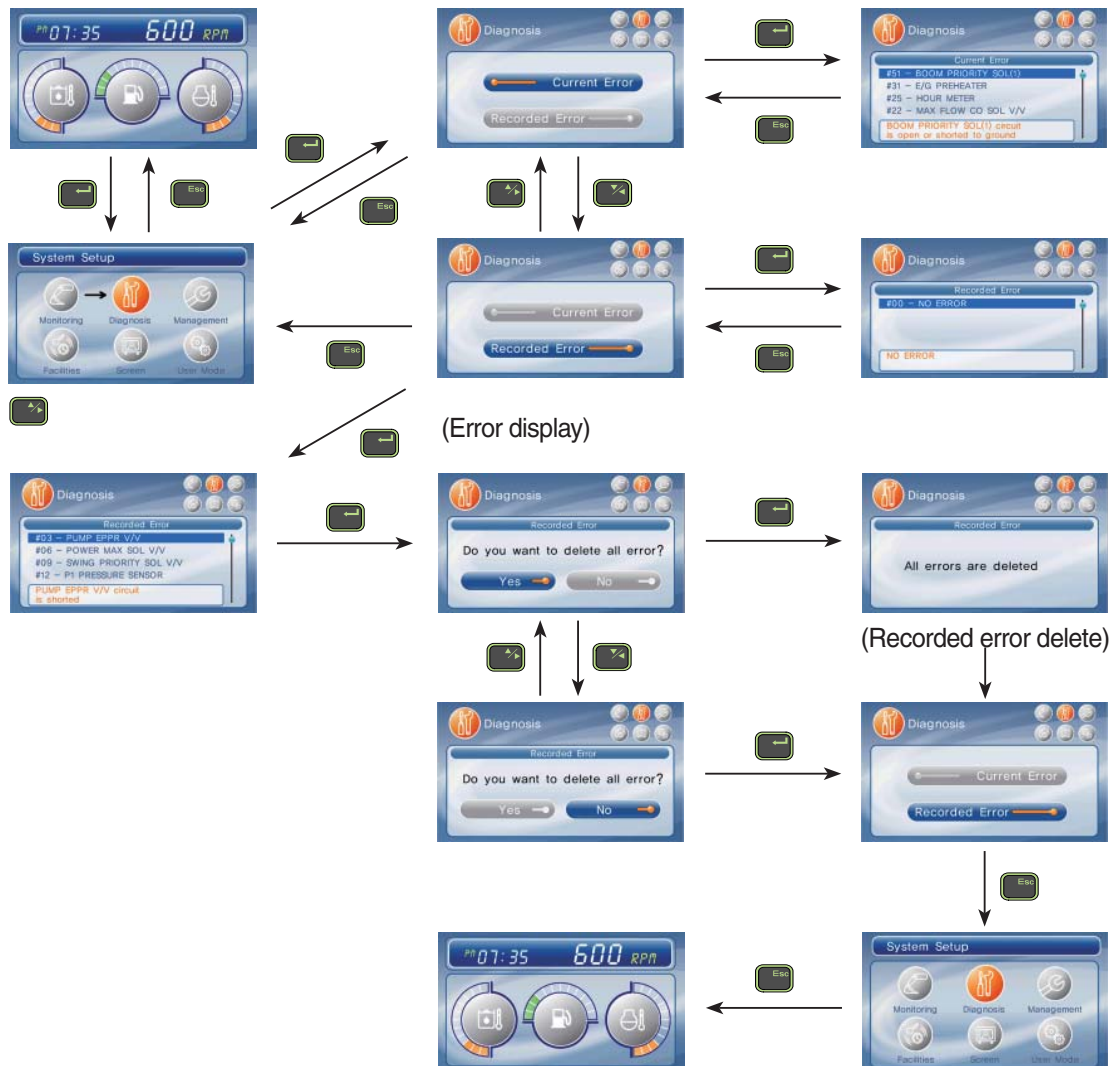
## (2) Display map

### ① Monitoring



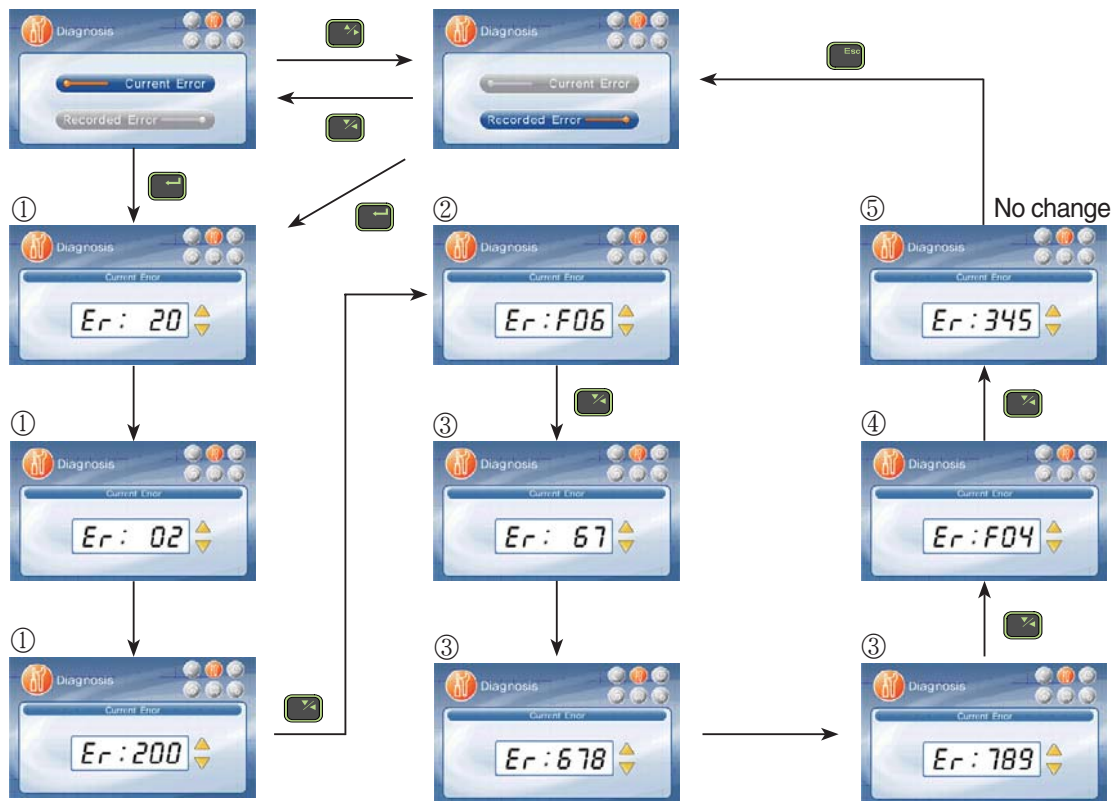
### ② Diagnosis

#### a. Protocol type 1

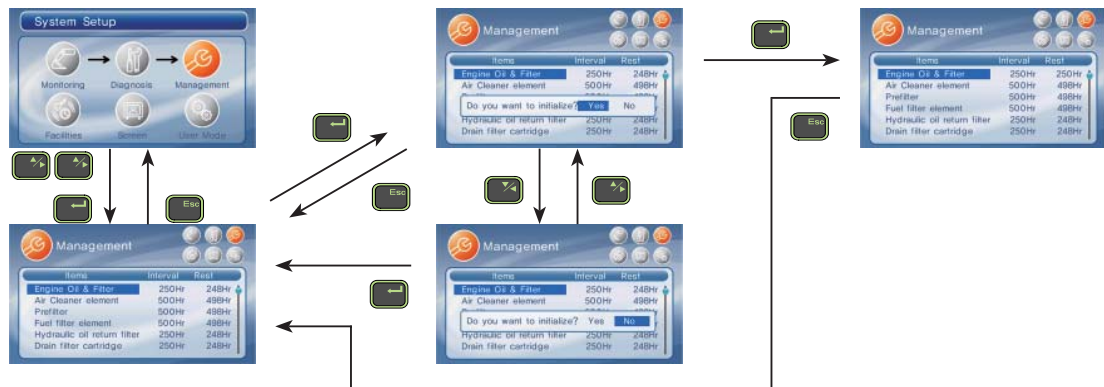


## b. Protocol type 2

- 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

- Changing the MCU mode

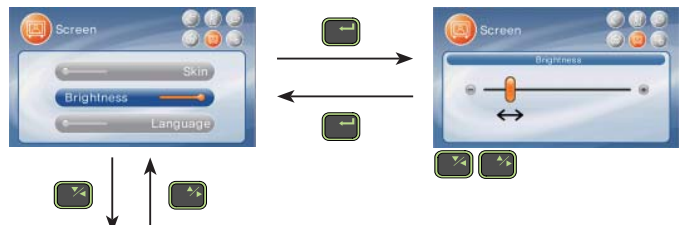


⑤ Display

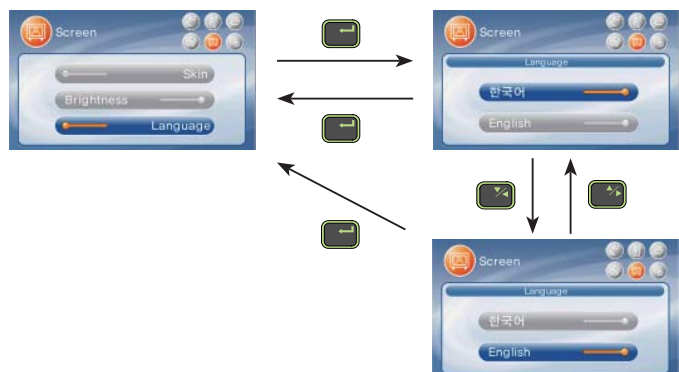
a. Operation skin



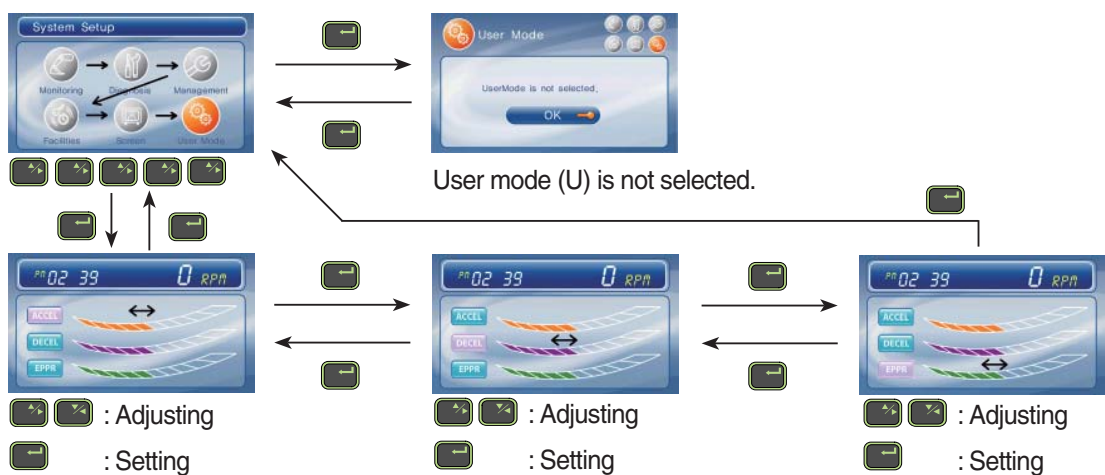
b. Brightness



c. Language



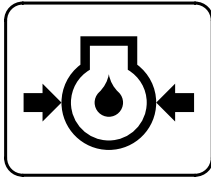
⑥ User mode





## 5) Warning and pilot lamp

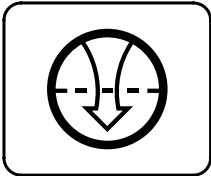
### (1) Engine oil pressure warning lamp



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.

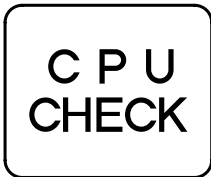
### (2) Air cleaner warning lamp



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.

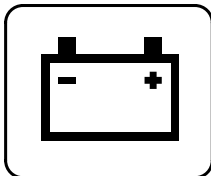
### (3) MCU check warning lamp



21073CD10

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

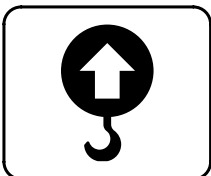
### (4) Battery charging warning lamp



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 (opt)



21073CD15

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

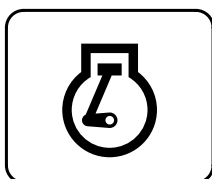
#### (6) Power max pilot lamp



21073CD11

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

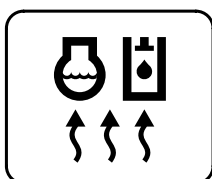
#### (7) Decel pilot lamp



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.

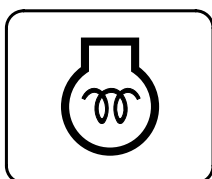
#### (8) Warming up pilot lamp



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.

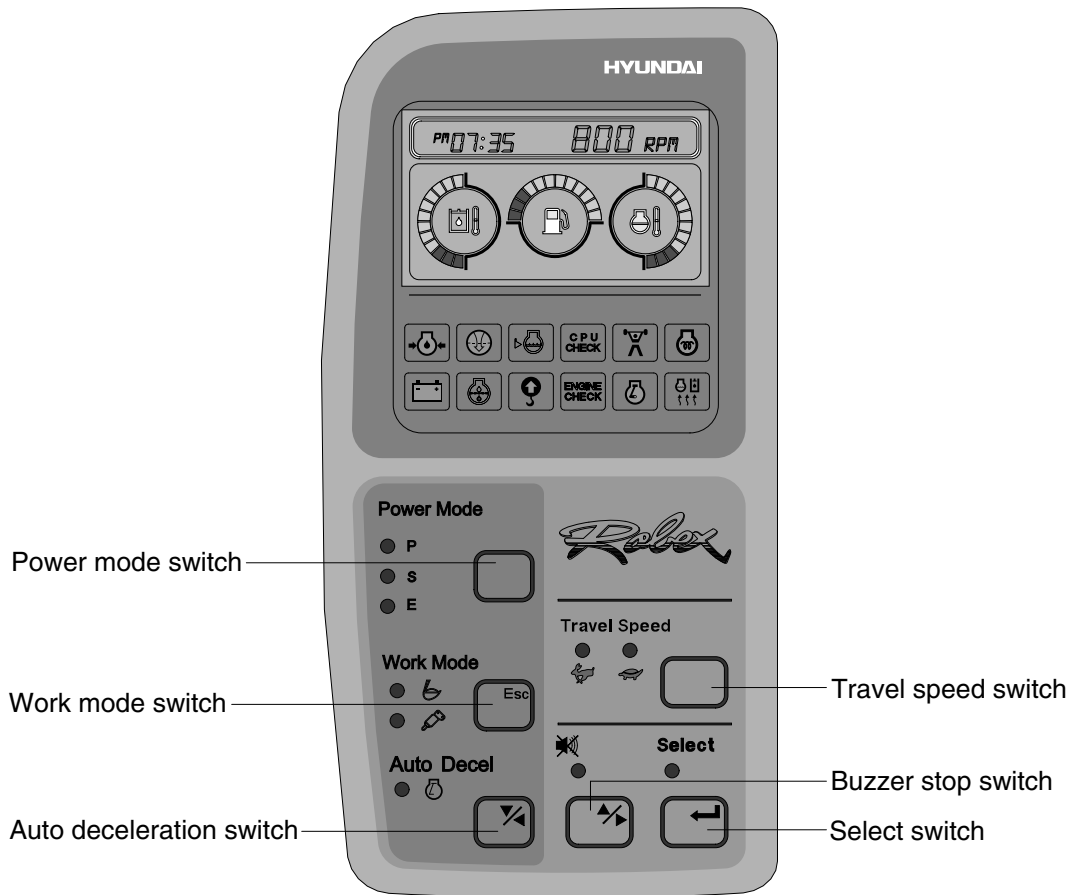
#### (9) Preheat pilot lamp



21073CD12

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

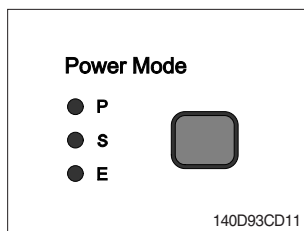
## 6) SWITCH PANEL



140D93CD10

※ 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.

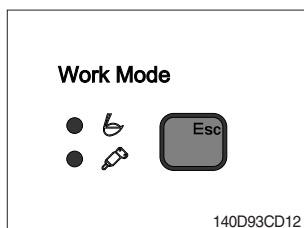
### (1) Power mode switch



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

- P : Heavy duty power work.
- S : Standard power work.
- E : Economy power work.

### (2) Work mode switch

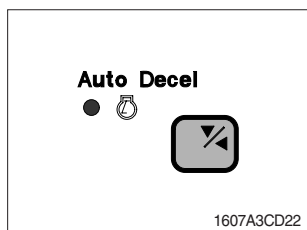


① This switch is to select the machine work mode, which shifts from general operation mode to optional attachment operation mode by pressing the switch.

- : General work mode
- : Breaker work mode (Null)

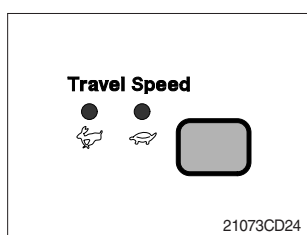
※ Refer to the page 4-6 for details.

### (3) Auto deceleration switch



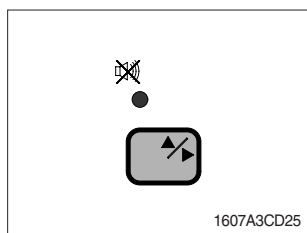
- ① This switch is used to actuate or cancel the auto deceleration function.
- ② When the switch actuated and all control levers and pedals are at neutral position, engine speed will be lowered automatically to save fuel consumption.
  - Light ON : Auto deceleration function is selected.
  - Light OFF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

### (4) Travel speed control switch



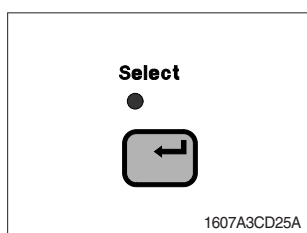
- ① This switch is to control the travel speed which is changed to high speed (rabbit mark) by pressing the switch and low speed (turtle mark) by pressing it again.

### (5) Buzzer stop switch



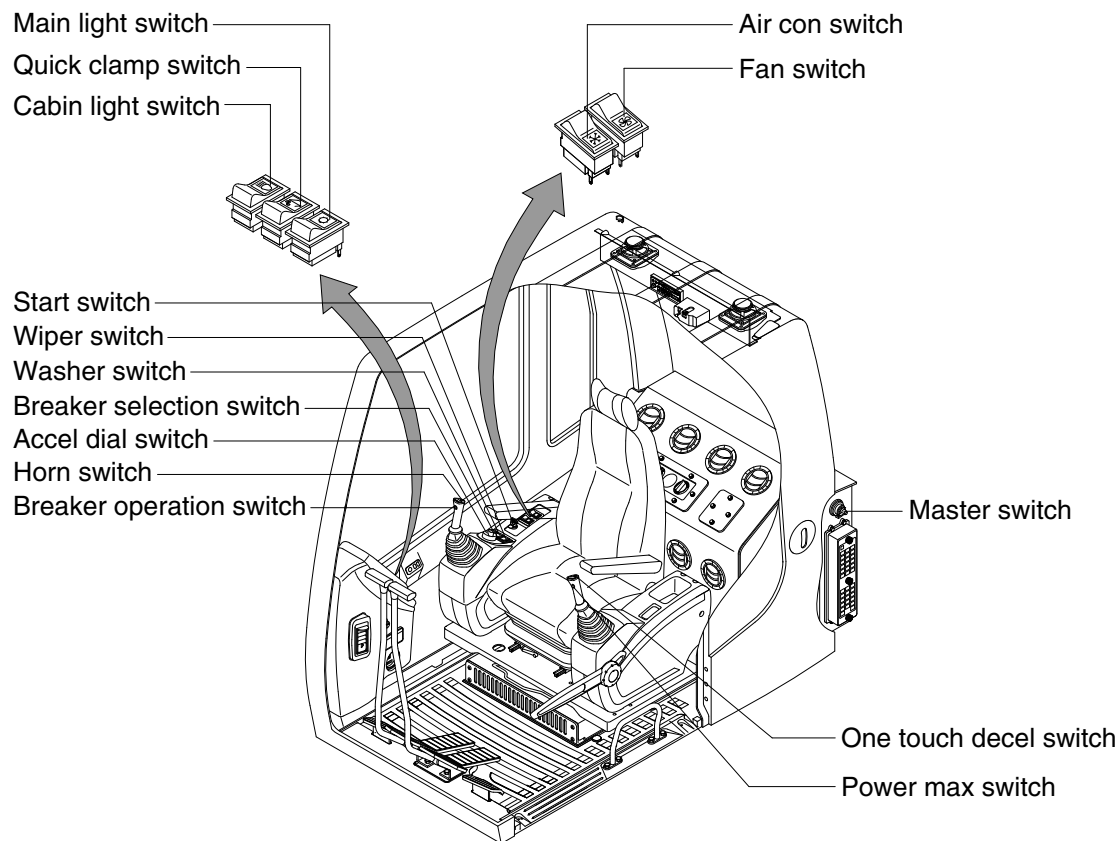
- ① When the starting switch is turned ON first, normally the alarm buzzer sounds for 2 seconds during lamp check operation.
- ② The red lamp lights ON and the buzzer sounds when the machine has a problem.  
In this case, press this switch and buzzer stops, but the red lamp lights until the problem is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

### (6) Select switch



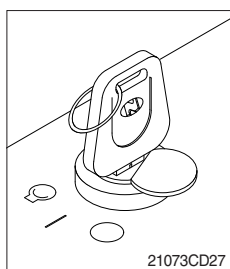
- ① This switch is used to enter main menu and sub menu of LCD.  
※ Refer to the page 3-5 for details.

### 3. SWITCHES



140D93CD47

#### 1) STARTING SWITCH



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

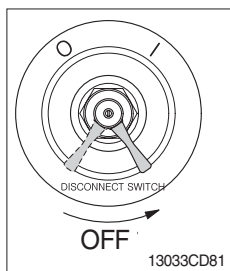
- ○ (OFF) : None of electrical circuits activate.
- | (ON) : All the systems of machine operate.
- ◯ (START) : Use when starting the engine.

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.**

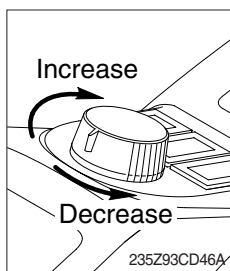


## 2) MASTER SWITCH



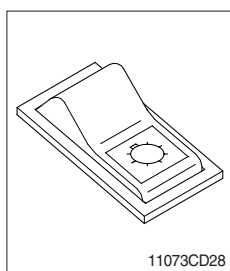
- (1) This switch is used to shut off the entire electrical system.
  - (2) I : The battery remains connected to the electrical system.  
O : The battery is disconnected to the electrical system.
- ※ **Never turn the master switch to O (OFF) with the engine running. Engine and electrical system damage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

## 3) ACCEL DIAL SWITCH



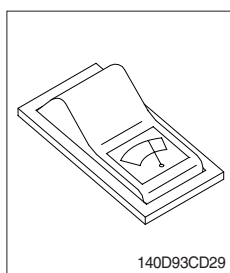
- (1) There are 10 dial setting.
- (2) Setting 1 is low idle and setting 10 is high idle.
  - By rotating the accel dial to right : Engine speed increases
  - By rotating the accel dial to left : Engine speed decreases

## 4) MAIN LIGHT SWITCH



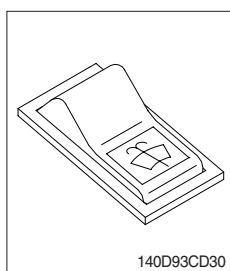
- (1) This switch used to operates the head light and work light by two step.
  - First step : Head light and cluster illumination lamp comes ON.
  - Second step : Work light comes ON. Also, the below indicator lamp comes ON.

## 5) WIPER SWITCH



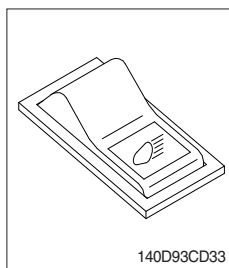
- (1) This switch used to operate wiper.
- (2) The indicator lamp is turned ON when operating this switch.

## 6) WASHER SWITCH



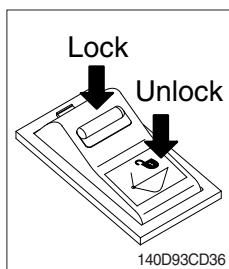
- (1) The washer liquid is sprayed and the wiper is operated only while pressing this switch.
- (2) The indicator lamp is turned ON when operating this switch.

## 7) CAB LIGHT SWITCH (option)



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

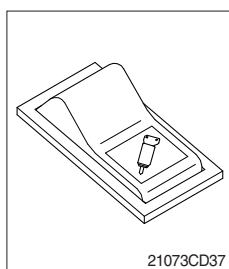
## 8) QUICK CLAMP SWITCH (option)



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

※ Refer to the page 8-6 for details.

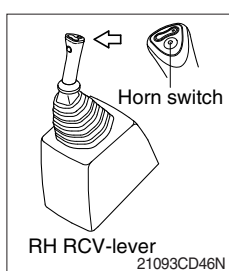
## 9) BREAKER SELECTION SWITCH (Null)



(1) This switch is used to select breaker.

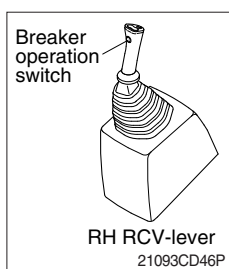
※ The breaker operates only when this switch is selected.

## 10) HORN SWITCH



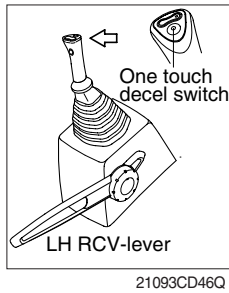
(1) This switch is at the top of right side control lever.  
On pressing, the horn sounds.

## 11) BREAKER OPERATION SWITCH (Null)



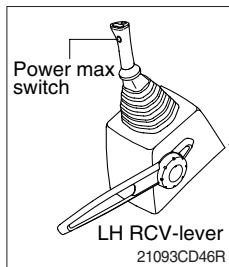
(1) On pressing this switch, the breaker operates only when the breaker operation mode is selected.

## 12) ONE TOUCH DECEL SWITCH



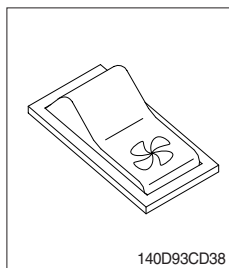
- (1) This switch is used to actuate the deceleration function quickly.
- (2) The engine speed is increased to previous setting value by pressing the switch again.
- (3) One touch decel function is available only when the auto idle pilot lamp is turned OFF.

## 13) POWER MAX SWITCH



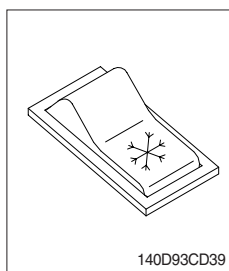
- (1) This switch activate power max function.  
When this switch is kept pressed, hydraulic power of work equipment will be increased to approx 110 percent during 8 seconds.
  - (2) After 8 seconds, function is cancelled automatically even the switch keeps pressed.
- ※ **Do not use for craning purposes.**

## 14) FAN SWITCH



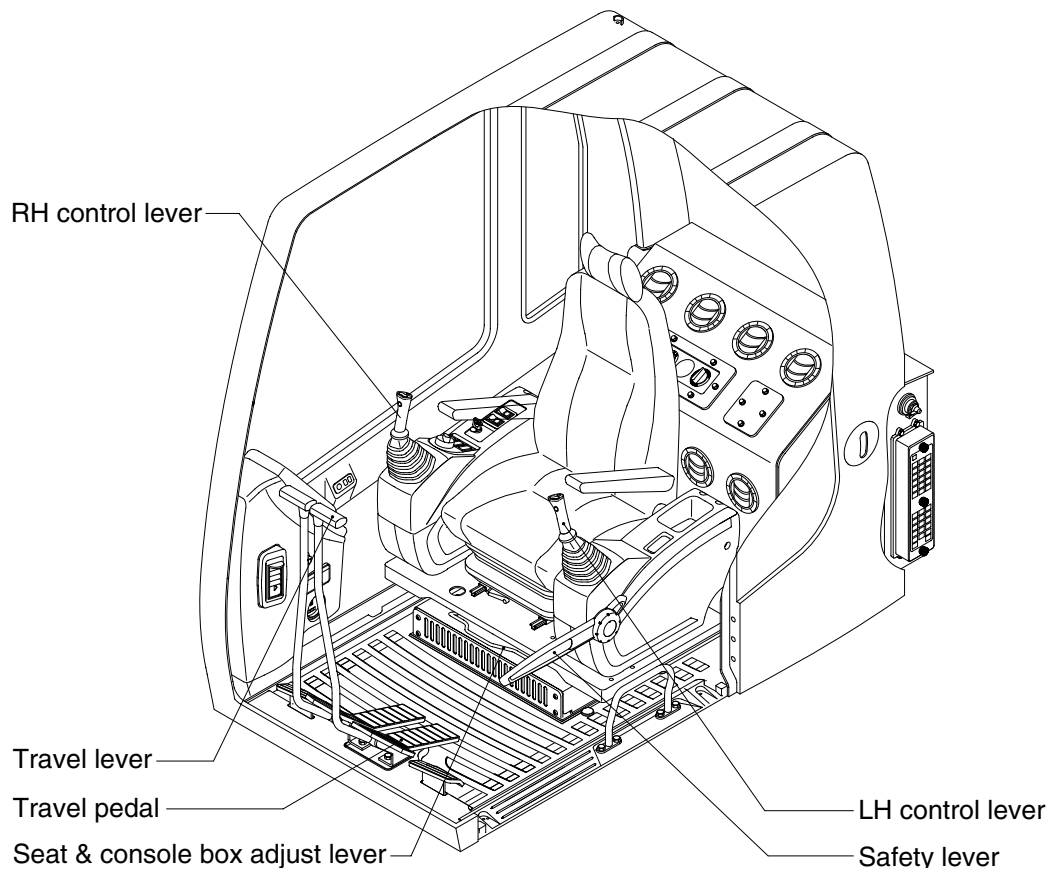
- (1) This switch is used to operate fan.

## 15) AIRCON SWITCH (option)



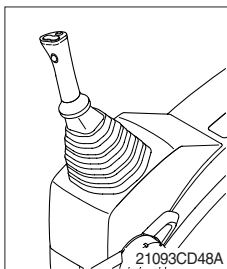
- (1) This switch is used to operates the air conditioner.
- (2) Refer to the page 3-19 for details.

## 4. LEVERS AND PEDALS



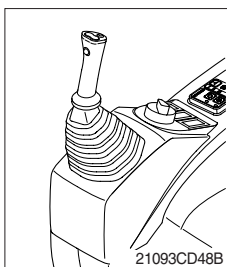
140D93CD48

### 1) LH CONTROL LEVER



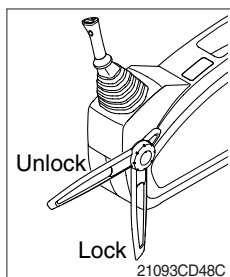
- (1) This joystick is used to control the swing and the arm.
- (2) Refer to operation of working device in chapter 4 for details.

### 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



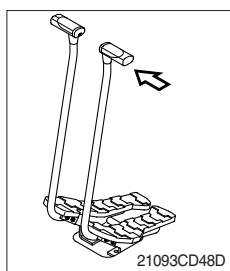
(1) All control levers and pedals are disabled from operation by locating the lever to lock position as shown.

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

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

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

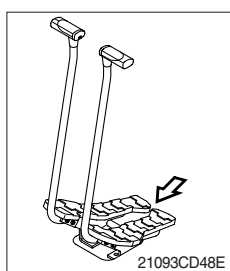
### 4) TRAVEL LEVER



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

(2) Refer to traveling of the machine in chapter 4 for details.

### 5) TRAVEL PEDAL



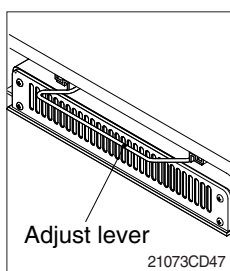
(1) This pedal is used to move the machine forward or backward.

(2) If left side pedal is pressed, left track will move.

If right side pedal is pressed, right track will move.

(3) Refer to traveling of machine in chapter 4 for details.

### 6) SEAT AND CONSOLE BOX ADJUST LEVER



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

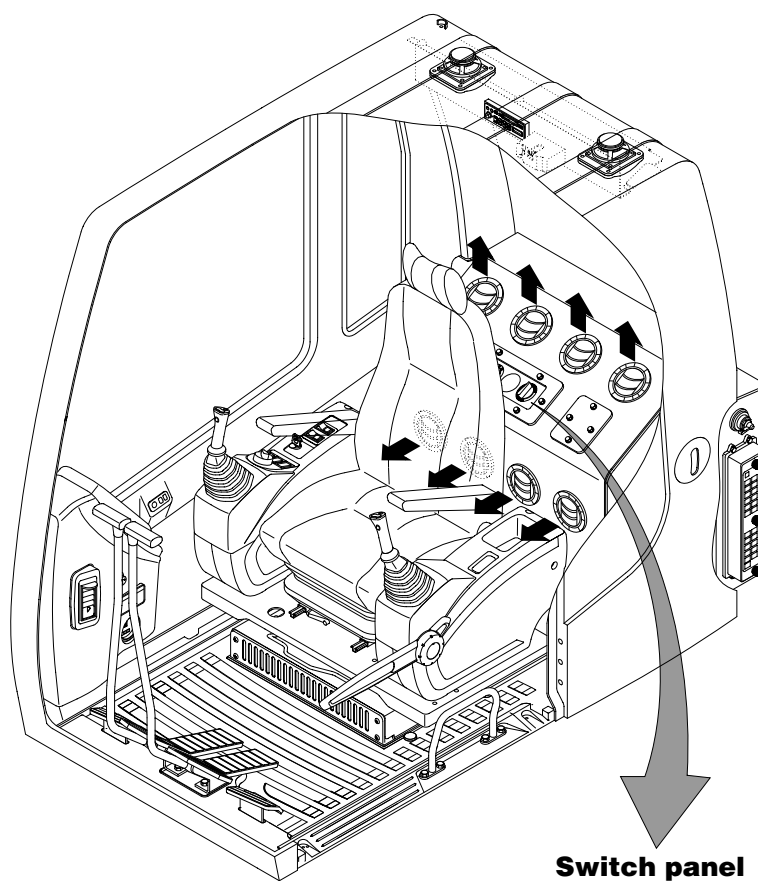
(2) Pull the lever to adjust forward or backward over 170 mm (6.7").



## 5. AIR CONDITIONER AND HEATER (option)

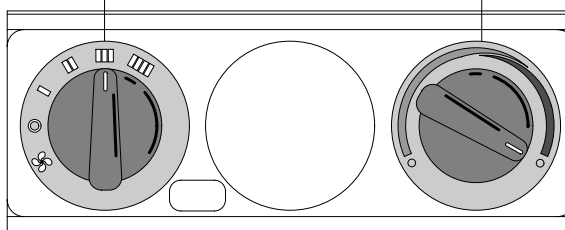
Air conditioner is equipped for pleasant operation against outside temperature and defrost on window glass.

- Location of air flow ducts



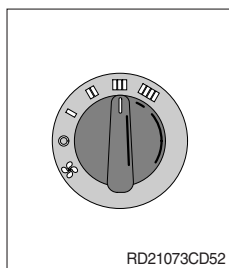
**Fan switch**

**Temperature switch**



140D93CD49

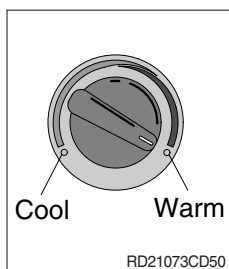
## 1) FAN SWITCH



(1) It is possible to control the fan speed as four steps.

- Turn to right : Fan speed increases
- Turn to left : Fan speed decreases

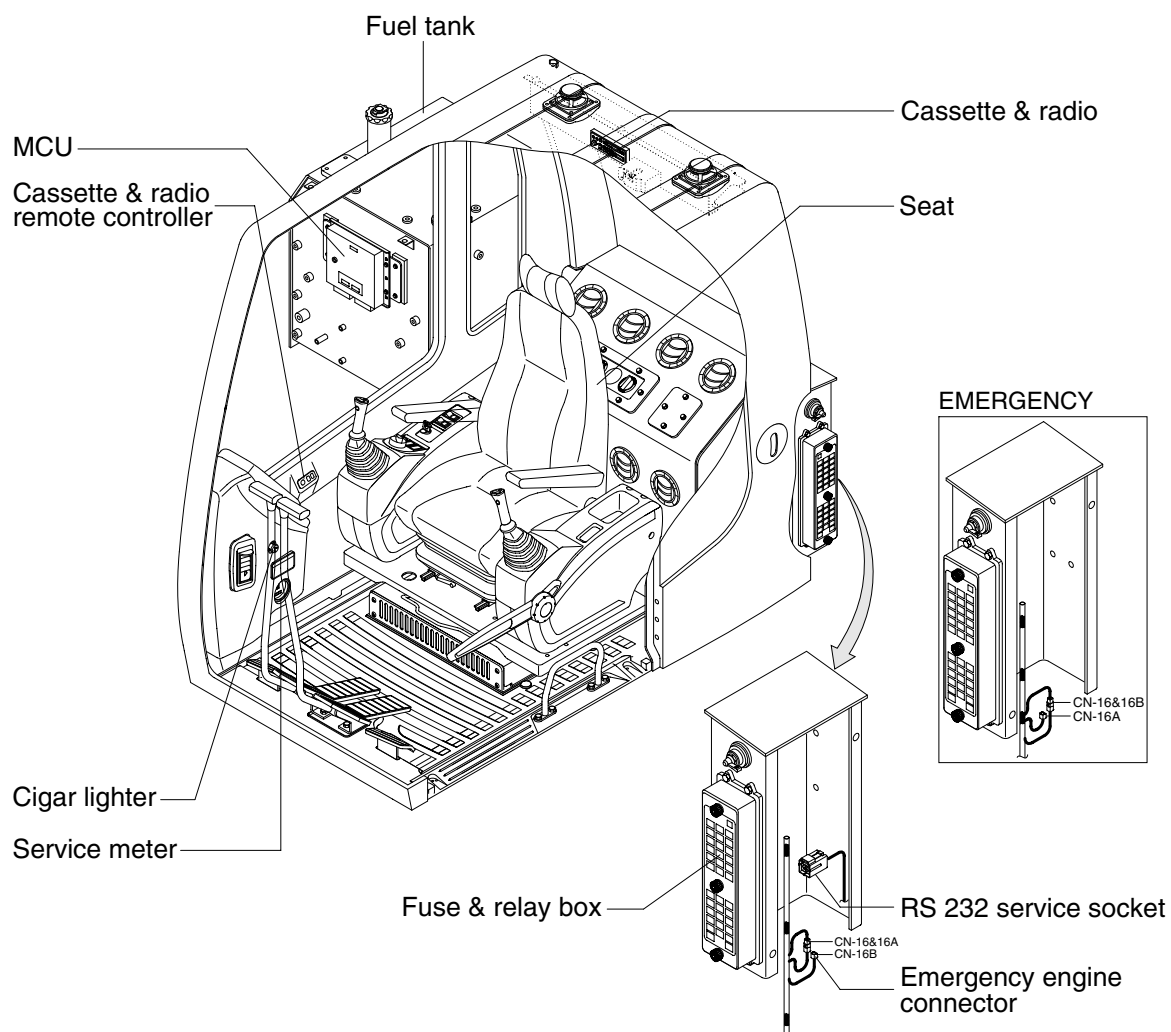
## 2) TEMPERATURE SWITCH



(1) It is possible to control the temperature inside of cab.

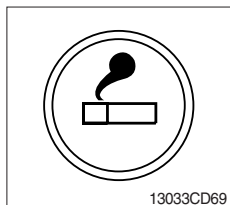
- Turn to right : Temperature increases
- Turn to left : Temperature decreases

## 6. OTHERS



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### 1) CIGAR LIGHTER (option)



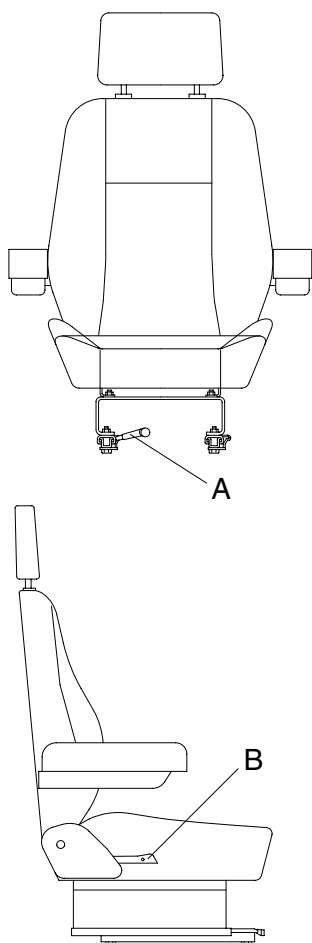
- (1) This can be used when the engine starting switch is ON.
- (2) The lighter can be used when it springs out in a short while after being pressed down.

#### ※ 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)**

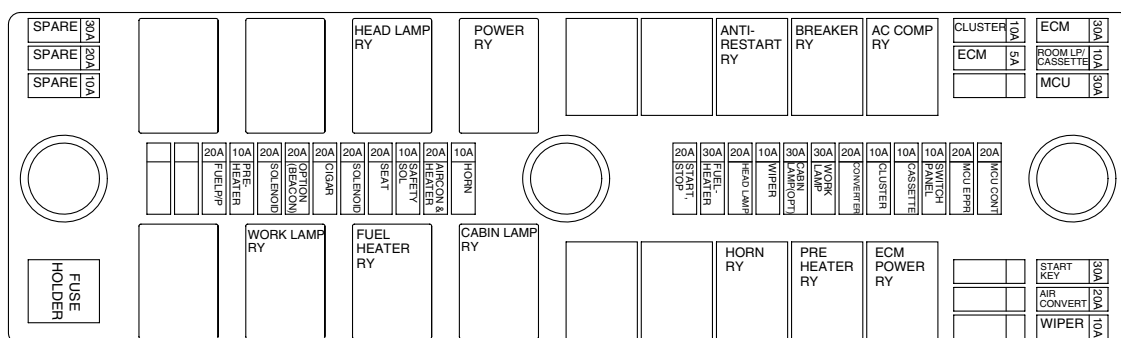
- ① Pull lever A to adjust seat forward or backward.
- ② The seat can be moved forward and backward over 140 mm (5.5") in 7 steps.

**(2) Reclining adjustment (B)**

Pull lever B to adjust seat back rest.

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### 3) FUSE & RELAY BOX



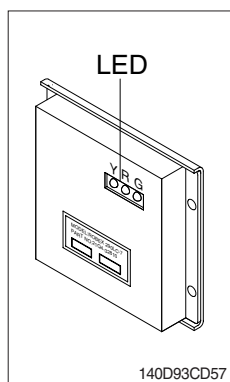
21093CD56

- (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.**

#### 4) MCU



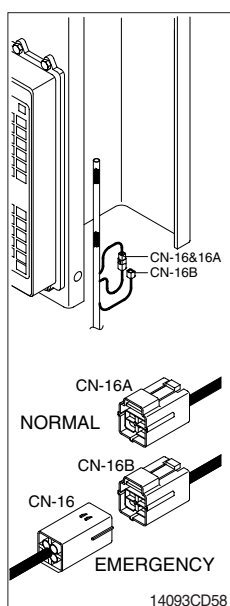
(1) To match the pump absorption torque with the engine torque, MCU varies EPPR valve output pressure, which control pump discharge amount whenever feedbacked engine speed drops under the reference rpm of each mode set.

(2) Three LED lamps on the MCU display as below.

LED lamp	Trouble	Service
G is turned ON	Normal	-
G and R are turned ON	Trouble on MCU	• Change the MCU
G and Y are turned ON	Trouble on serial communication line	• Check if serial communication lines between controller and cluster are disconnected
Three LED are turned OFF	Trouble on MCU power	• Check if the input power wire (24 V, GND) of controller is disconnected • Check the fuse

G : green, R : red, Y : yellow

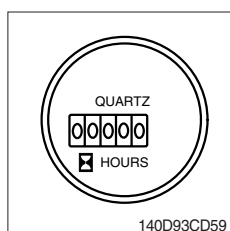
#### 5) EMERGENCY ENGINE SPEED CONTROL CONNECTOR



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

※ **Never connect connector CN-16 with CN-16B when MCU is in normal operation.**

#### 6) SERVICE METER

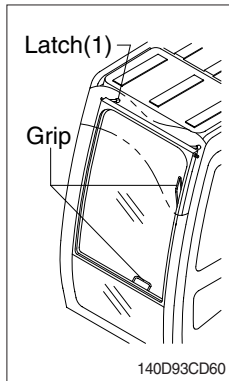


(1) This meter shows the total operation hours of the machine.

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

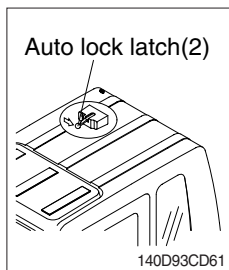


## 7) UPPER WINDSHIELD



(1) Perform the following procedure in order to open the upper windshield.

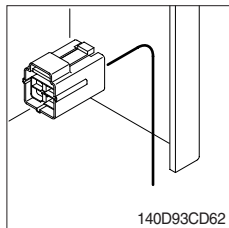
- ① Release both latches (1) in order to release the upper windshield.
- ② Hold both grips that are located at the bottom of the windshield frame and at the top of the windshield frame push the windshield upward.
- ③ Hold both grips that are provided on the windshield frame and back into the storage 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.

## 8) RS232 SERVICE SOCKET



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