

# CONTROL DEVICES

## 1. CANOPY / CAB DEVICES

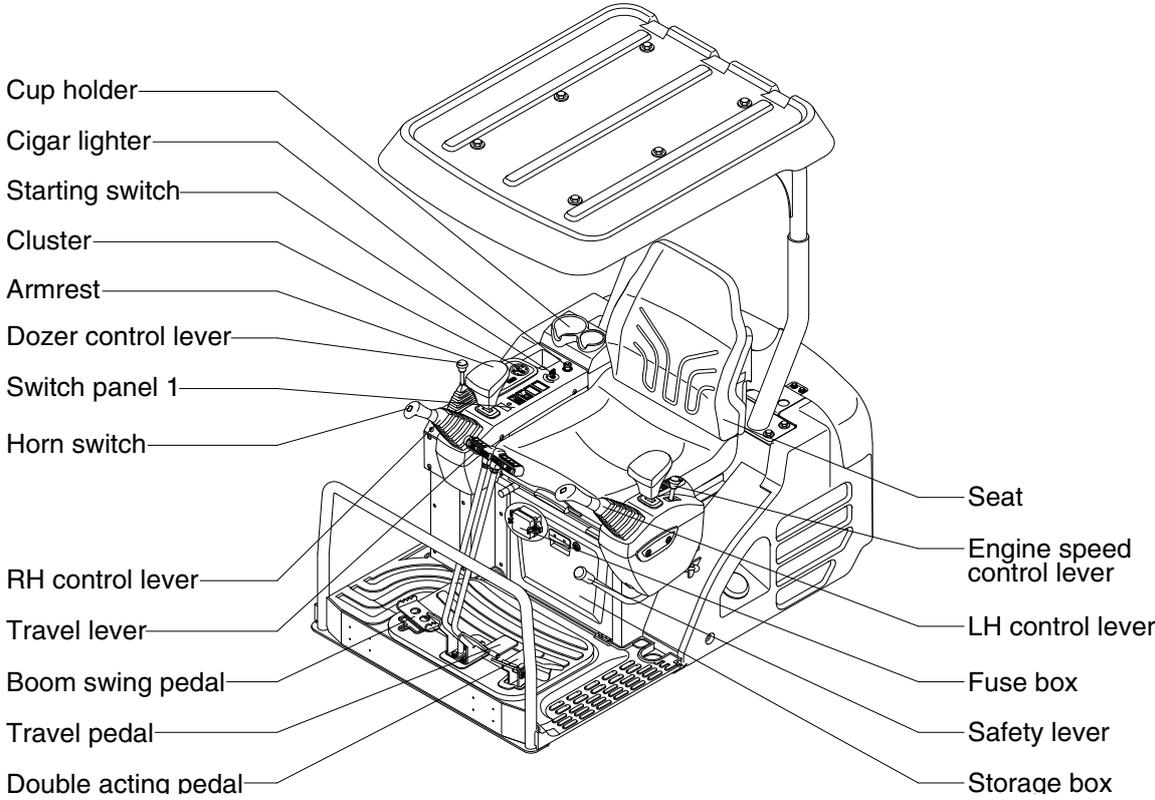
1) The ergonomically designed console box and suspension type seat provide the operator with comfort.

### 2) ELECTRONIC MONITOR SYSTEM

(1) The centralized electronic monitor system allows the status and conditions of the machine to be monitored at a glance.

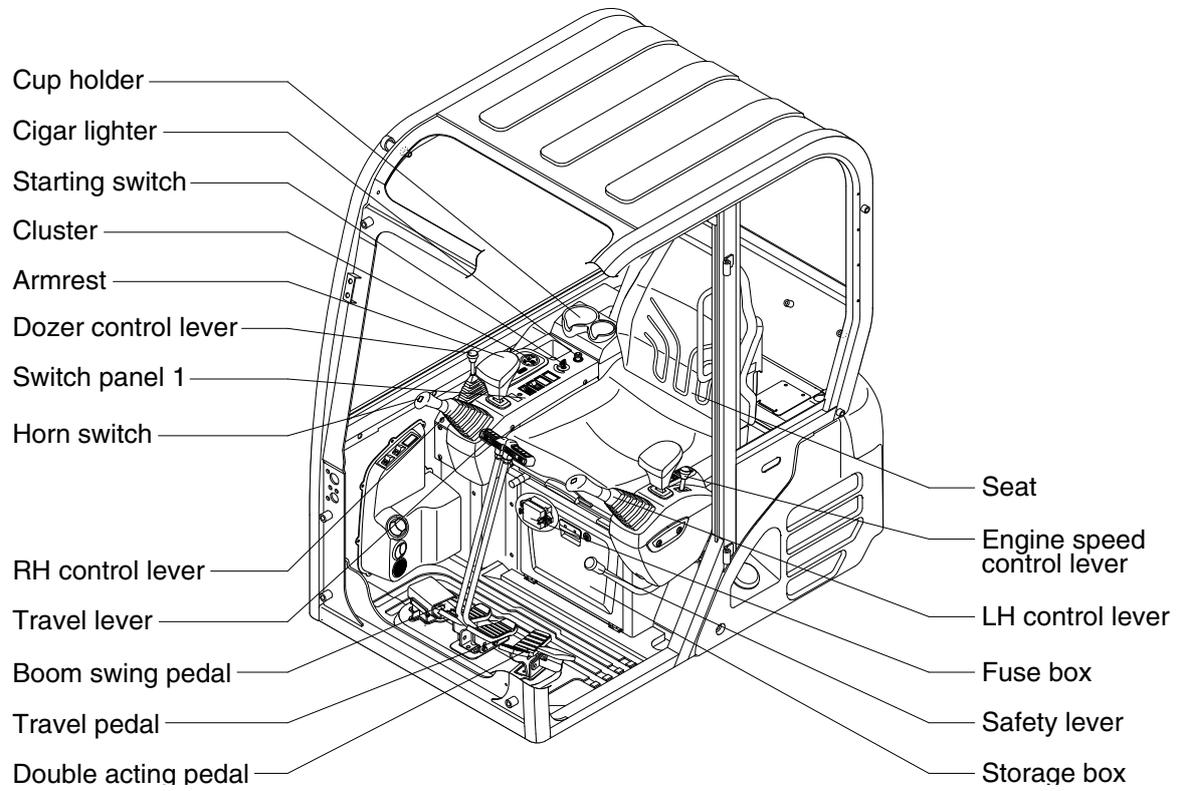
(2) It is equipped with a safety warning system for early detection of machine malfunction.

### ■ CANOPY TYPE



1893CD01-1

■ CAB TYPE



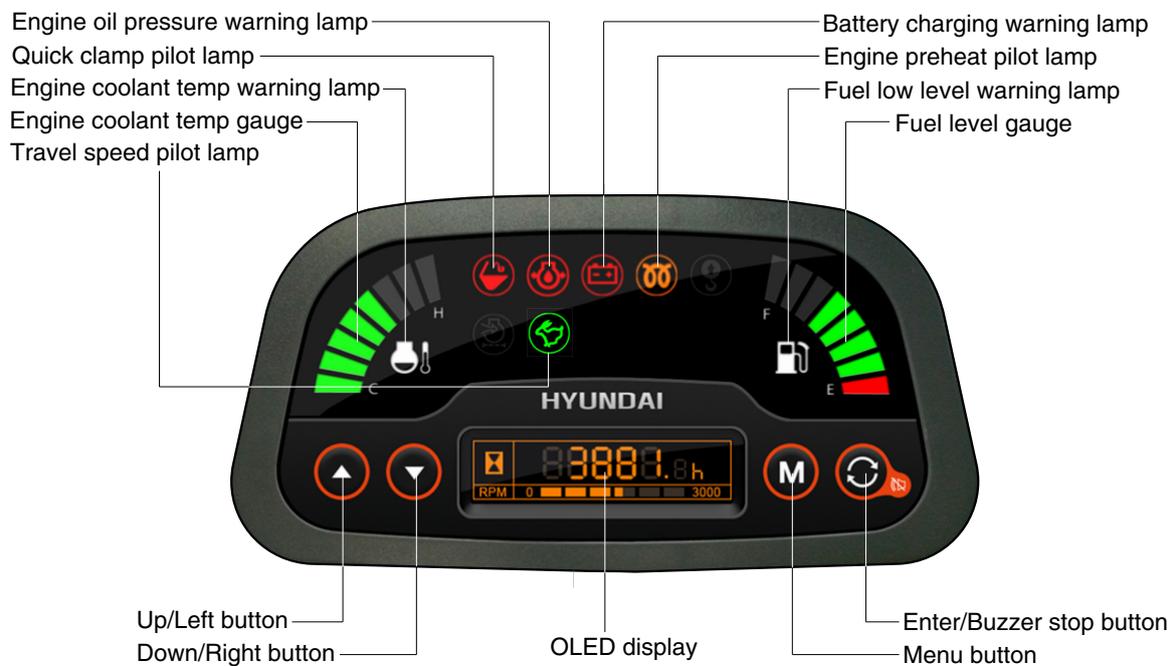
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## 2. CLUSTER

The cluster 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.

- ※ **The cluster installed on this machine does not entirely guarantee the condition of the machine. Daily inspection should be performed according to chapter 6, Maintenance.**
- ※ **When the cluster provides a warning, immediately check the problem and perform the required action.**



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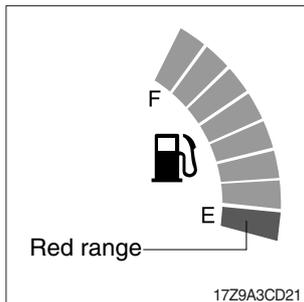
## 1) GAUGES AND DISPLAYS

### (1) Service meter



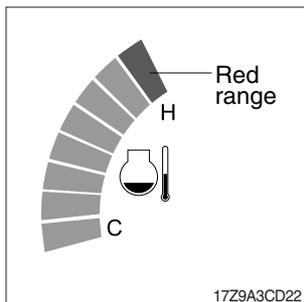
- ① This meter shows the total operation hours of the machine.
- ② Always ensure the operating condition of the meter during the machine operation.  
Inspect and service the machine based on hours as indicated in chapter 6, maintenance.

### (2) Fuel gauge



- ① This gauge indicates the amount of fuel in the fuel tank.
- ② Fill the fuel when the red range or warning lamp  ON.  
※ If the gauge illuminates the red range or warning lamp  ON 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) Engine coolant temperature gauge



- ① This indicates the temperature of coolant.  
· Red range : Above 115°C (239°F)
- ② When the red range pointed or warning lamp  ON, engine do not abruptly stop but run it at medium speed to allow it to cool gradually, then stop it.  
Check the radiator and engine.  
※ If the engine is stopped without cooled down running, the temperature of engine parts will rise suddenly, this could cause severe engine trouble.

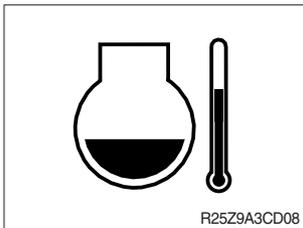
## 2) WARNING AND PILOT LAMPS

### (1) Fuel low level warning lamp



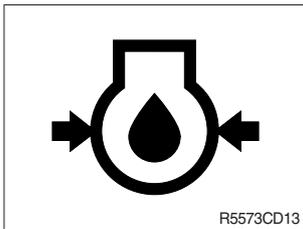
- ① This lamp blinks and buzzer sounds when the level of fuel is low.
- ② Fill the fuel immediately when the lamp blinks.

### (2) Engine coolant temperature warning lamp



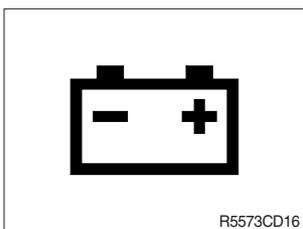
- ① This lamp blinks and buzzer sounds when the temperature of coolant is over the normal temperature 115°C (239°F) .
- ② Check the cooling system when the lamp blinks.

### (3) Engine oil pressure warning lamp



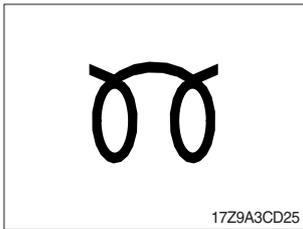
- ① This lamp blinks and buzzer sounds after starting the engine because of the low oil pressure.
- ② If the lamp blinks during engine operation, shut OFF engine immediately. Check oil level.

### (4) Battery charging warning lamp



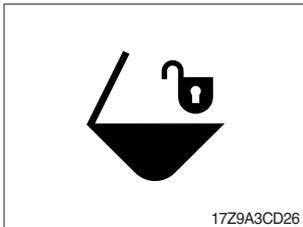
- ① This lamp blinks and buzzer sounds when the starting switch is ON, it is turned OFF after starting the engine.
- ② Check the battery charging circuit when this lamp blinks during engine operation.

**(5) Engine preheat pilot lamp**



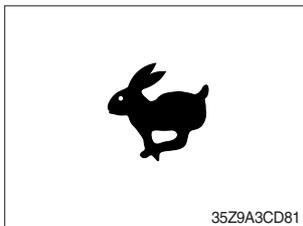
- ① When the start switch turn to HEAT position, pilot lamp comes ON.
- ② Refer to the page 4-4 for details.

**(6) Quick clamp lock pilot lamp**



- ① When the quick clamp switch turned ON, this lamp turn ON and the buzzer sounds.
- ② This lamp turned OFF and the buzzer stop when the quick clamp switch turned OFF.

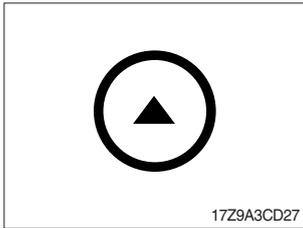
**(7) Travel speed pilot lamp**



- ① When this lamp turned ON, the machine travel high speed.
- ② Refer to the travel speed control switch in page 3-9 for details.

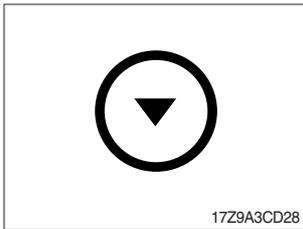
### 3) BUTTONS

#### (1) Up/left button



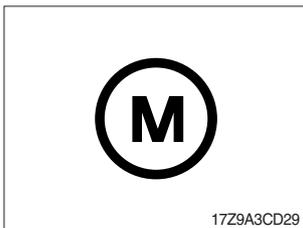
- ① Move in menu (up, left)
- ② Increase input value.

#### (2) Down/right button



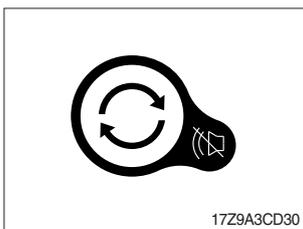
- ① Move in menu (down, right)
- ② Decrease input value.

#### (3) Menu button



- ① Current display to next display.

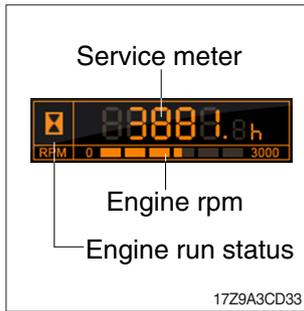
#### (4) Enter and buzzer stop button



- ① Select menu (enter).
- ② Stop buzzer sound when sound is ON.

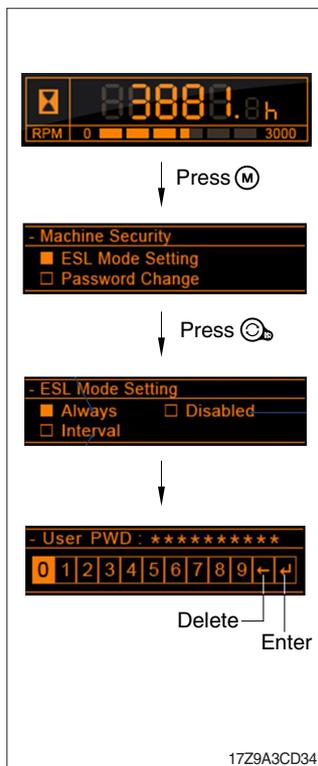
## 4) OLED display

### (1) Main display



- ① **Service meter** : This meter shows the total operation hours of the machine.
- ※ **Always ensure the operating condition of the service meter during the machine operation.**
- ② **Engine rpm** : This displays the engine speed.
- ③ **Engine run status** : This displays the engine run status.

### (2) Machine security

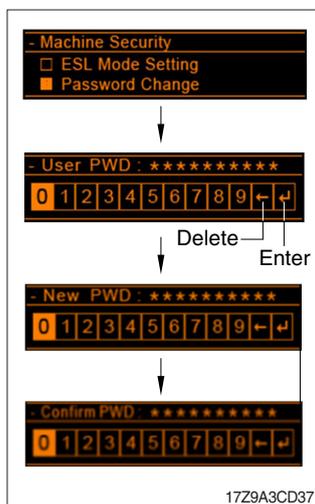


- ① **ESL (Engine Starting Limit) mode setting**
  - ESL mode is designed to be a theft deterrent or will prevent the unauthorized operation of the machine.
  - If the ESL mode was selected Always, the password will be required when the start switch is turned ON.
  - Disable : Not used ESL function.

Always: The password is required whenever the operator start engine.

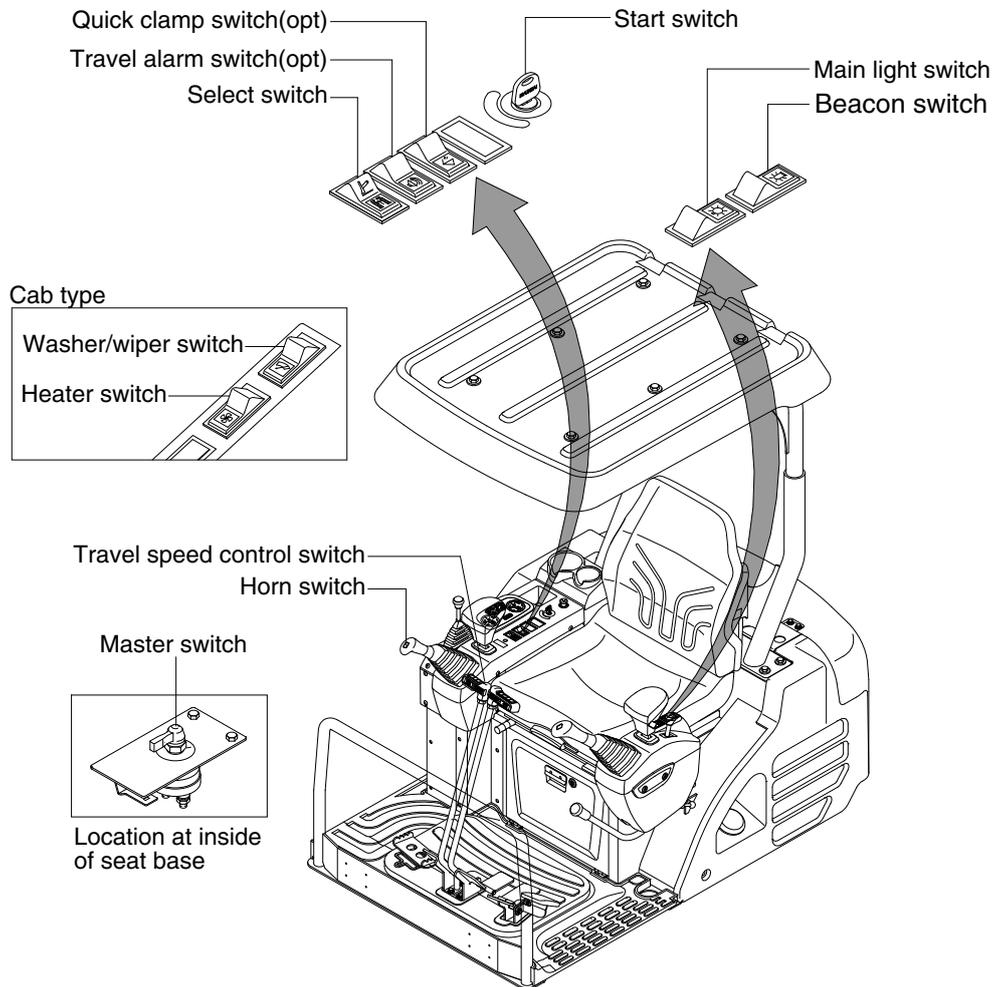
Interval : The password is required when the operator start engine first. But the operator can restart the engine within the interval time without inputting the password.

The interval time can be set maximum 2 days.
- **Interval time**
  - If set interval time to 5 minutes, ESL system is activated after 5 minutes. Therefore, the password does not need to restart engine within 5 minutes.
- ※ **Default password : 00000**



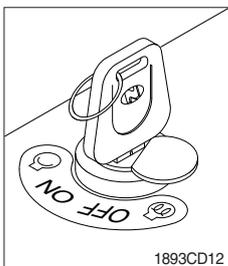
- ② **Password change**
  - Input 5 to 10 digits and press Enter.

### 3. SWITCHES



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#### 1) STARTING SWITCH



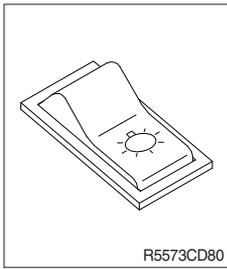
(1) There are three positions, OFF, ON and START.

-  (HEAT) : Preheating electrical circuit activates.
- OFF : None of electrical circuits activate.
- ON : All the systems of machine operate.
-  (START) : Use when starting the engine.

Release key immediately after starting.

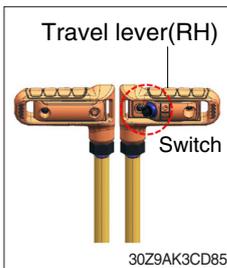
※ **Key must be in the ON position with engine running to maintain electrical and hydraulic function and prevent serious machine damage.**

## 2) MAIN LIGHT SWITCH



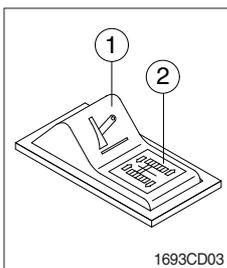
- (1) This switch use to operates the head light and work light by two step.
- First step : Head light and cluster illumination lamp comes ON.
  - Second step : Work light comes ON. Also, the below indicator lamp comes ON.

## 3) TRAVEL SPEED CONTROL SWITCH



- (1) This switch is to control the travel speed which is changed to high speed by pressing the switch and low speed by pressing it again.
- (2) When the machine travel high speed, the travel speed pilot lamp lights ON.

## 4) SELECT SWITCH



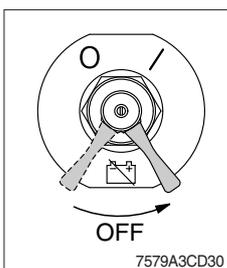
- (1) This switch is used to select the dozer blade or track operation.

① : Dozer blade up or down

② : Track extend or retract

※ Refer to the page for 3-12 details.

## 5) MASTER SWITCH



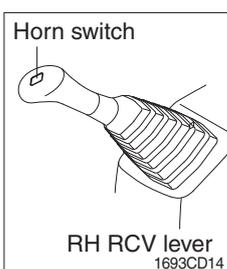
- (1) This switch is used to shut off the entire electrical system.

(2) I : The battery remains connected to the electrical system.

O : The battery is disconnected to the electrical system.

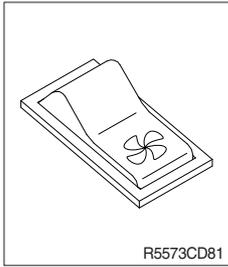
※ **Never turn the master switch to O (OFF) with the engine running. It could result in engine and electrical system damage.**

## 6) HORN SWITCH



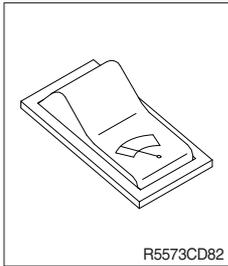
- (1) This switch is at the top of right side control lever.  
On pressing, the horn sounds.

### 7) HEATER SWITCH (Cab type)



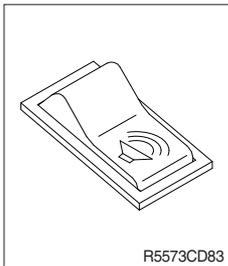
- (1) This switch use to operates the heater by two step.
- First step : Low fan speed
  - Second step : High fan speed

### 8) WIPER AND WASHER SWITCH (Cab type)



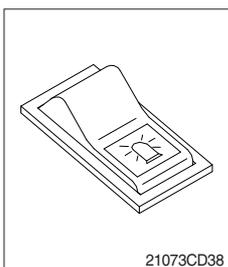
- (1) The switch use to operates the wiper and washer by two step.
- First step : The wiper operates.
  - Second step : The washer liquid is sprayed and the wiper is operated only while pressing. If release the switch, return to the first step position.

### 9) TRAVEL ALARM SWITCH (option)



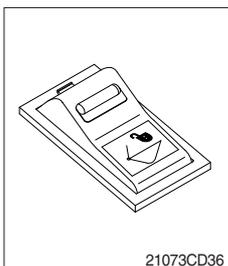
- (1) This switch is the signal to alarm surroundings when the machine travels to forward and backward.
- (2) On pressing this switch, the alarm operates only when the machine is traveling.

### 10) BEACON SWITCH (option)



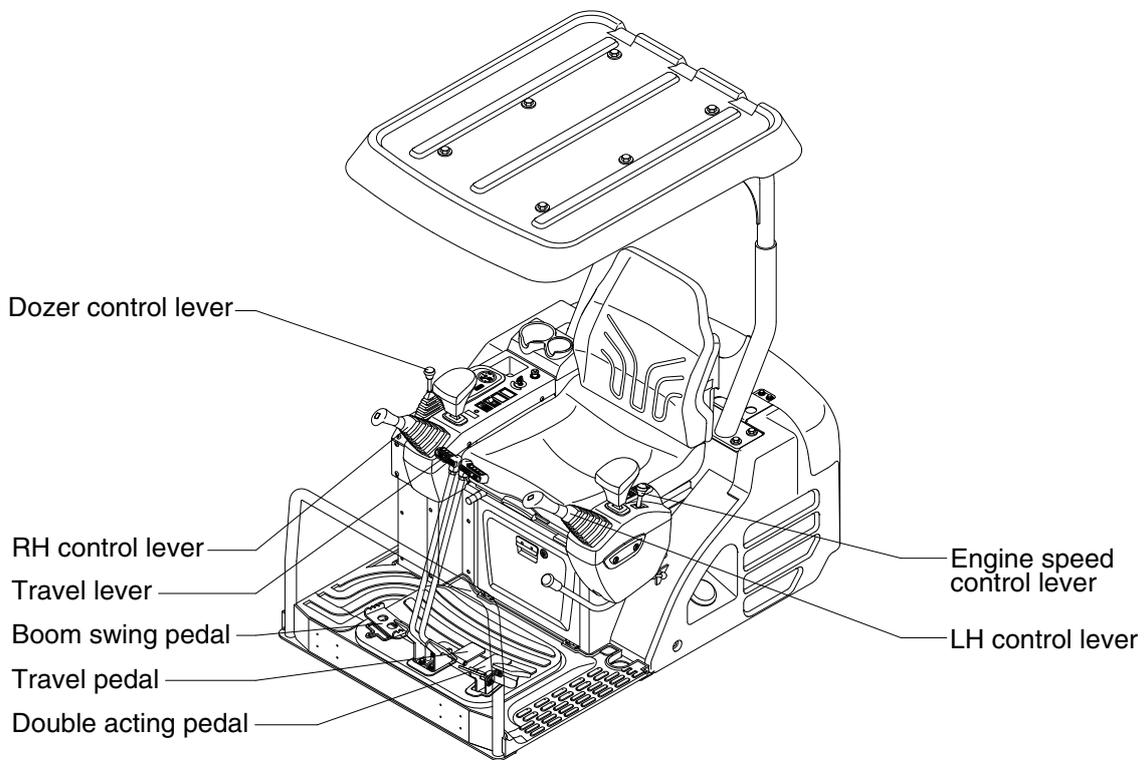
- (1) This switch turns ON the rotary light on the cab.
- (2) The below indicator lamp is turned ON when operation this switch.

### 11) QUICK CLAMP SWITCH (option)



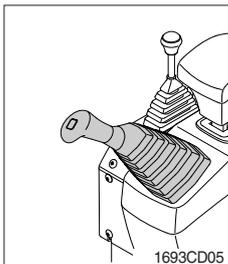
- (1) This switch is used to engage or disengage the moving hook on quick clamp.
- ※ Refer to the page 8-6 for details.

## 4. LEVERS AND PEDALS



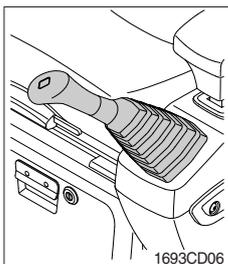
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### 1) LH CONTROL LEVER



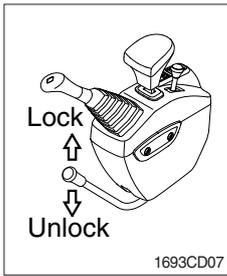
- (1) This joystick is used to control the swing and the arm.
- (2) Refer to operation of working device in chapter 4 for details.

### 2) RH CONTROL LEVER



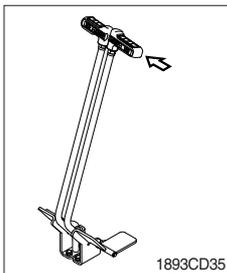
- (1) This joystick is used to control the boom and the bucket.
- (2) Refer to operation of working device in chapter 4 for details.

### 3) SAFETY LEVER



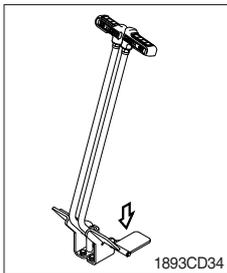
- (1) All control levers are disabled from operation by locating the lever to lock position as shown.
  - ※ **Be sure to raise the lever to LOCK position when leaving from operator's seat.**
- (2) By pushing lever to UNLOCK position, machine is operational.
  - ※ **Do not use the safety lever for handle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

### 4) TRAVEL LEVER



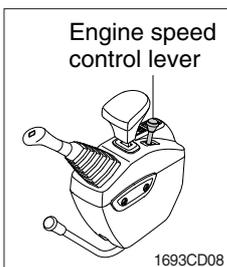
- (1) This lever is mounted on travel pedal and used for traveling by hand. The operation principle is same as the travel pedal.
- (2) Refer to traveling of the machine in chapter 4 for details.

### 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) ENGINE SPEED CONTROL LEVER



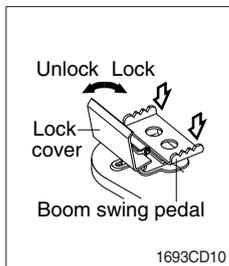
- (1) This lever is used to increase or decrease the rotation speed of engine.
- (2) Move the lever backward to increase engine RPM. Move the lever forward to decrease engine RPM.
- (3) When stopping the engine, move the engine speed control lever forward completely and turn key OFF.

## 7) DOZER OR CRAWLER CONTROL LEVER



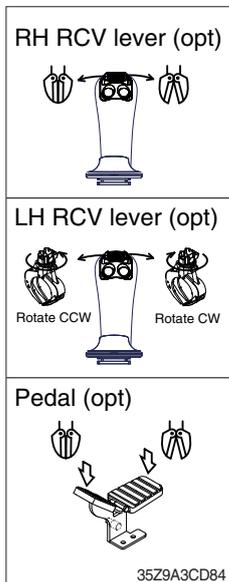
- (1) This lever is used to operate the dozer blade or crawler.
  - (2) Select switch : Position ①  
The lever is pushed forward, the dozer blade will be going down.  
The lever is pulled back, the dozer blade will be going up.
  - (3) Select switch : Position ②  
The lever is pushed forward, the track extend out the maximum length.  
The lever is pulled back, the track retract to the minimum one.
- ※ Refer to the page 3-7 for the select switch.

## 8) BOOM SWING PEDAL



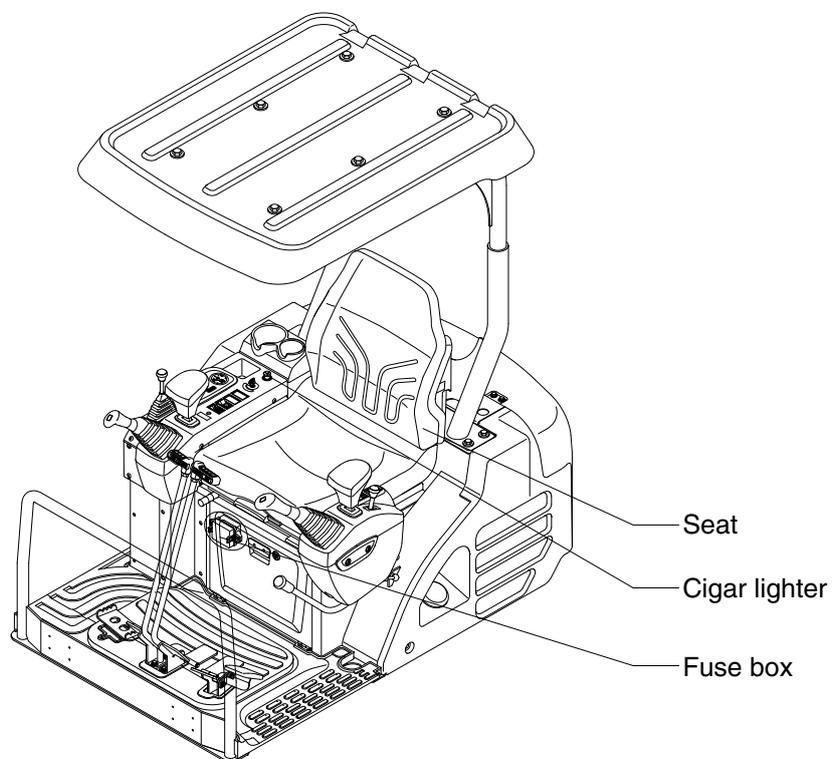
- (1) This pedal is used to swing the boom to the right and left direction.
- (2) Move the lock cover to unlock position by foot.
- (3) The pedal is pressed to left side, boom will swing to the left direction.  
The pedal is pressed to right side, boom will swing to the right direction.

## 9) DOUBLE ACTING SWITCH AND PEDAL (option)



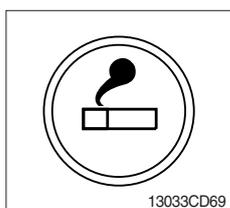
- (1) This switch and pedal operate the breaker or clamshell or shear if equipped.
- ※ This switch applies to double action hydraulic attachment circuit.  
※ This pedal applies to single or double action hydraulic attachment circuit.  
※ Refer to page 4-23.

## 5. OTHERS



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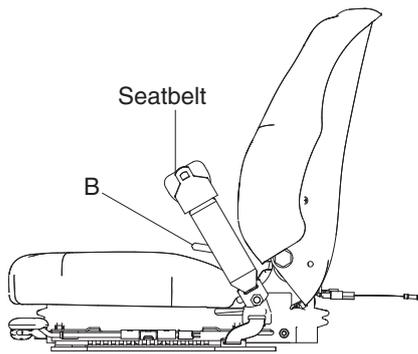
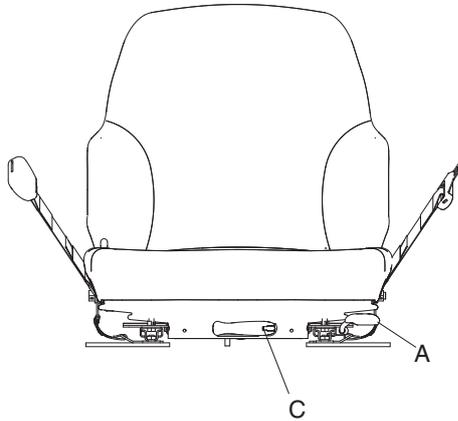
### 1) CIGAR LIGHTER



- (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 12V, 120W.**

## 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.



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### (1) For/aft adjustment (A)

The seat can be positioned over a range 52mm, giving you plenty of room to maneuver in every height and work situation.

### (2) Seatback angle adjustment (B)

The seatback adjusts over a range of -5° to +25° with 18 locking positions, to give your back full support for every job and make sure you feel best.

### (3) Weight adjustment (C)

Just sit down, press the smooth-action lever, click, and you're primed for action, with optimum suspension for all operator weights between 45 and 136 kg (99 and 300 lb). Design comfort with driver appeal-it only takes one simple action to adjust the suspension to the ideal sitting position that's best for you and your back.

### (4) Seatbelt system

The seatbelt provides freedom of movement, yet ensure that you're safety restrained in your seat, even if your vehicle should crash or tip over.

- ▲ Always check the condition of the seat belt and mounting hardware before operating the machine.
- ▲ Replace the seat belt at least once every three years, regardless of appearance.

## 3) FUSE BOX

20A	TRAVEL BEACON 주행,경광등	SPARE,10A	10A	WIPER MOTOR 와이퍼 모터
20A	CIGAR LIGHTER 시가라이터	SPARE,10A	20A	HEAD LAMP 전조등
10A	SAFETY SOL. EPPR 안전 솔레노이드 비례제어	SPARE,20A	20A	WORK LAMP QUICK COUPLER 작업등,퀵 커플러
10A	FUEL FEED PUMP, ALT. 연료공급펌프 알터네이터	SPARE,20A	10A	HORN 뿔
20A	HEATER 히터	SPARE,20A	20A	CONTROLLER 컨트롤러
	FUSE PULLER	SPARE,20A	10A	MONITOR RADIO 모니터,라디오
			20A	B+ 상시전원

1893CD60

- (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) RADIO AND USB PLAYER (CAB TYPE)



9403CD101

#### ■ FRONT PANEL PRESENTATION

- |  |   |
|--|---|
| <p>1  ..... Power ON/OFF,<br/>Volume UP/DOWN button</p> <p>2  ..... Manual UP/DOWN Tuning,<br/>File search, SEL button</p> <p>3  ..... Mode button,<br/>Audio mute button</p> <p>4  ..... Radio seek up button</p> <p>5  ..... Radio seek down button</p> <p>6  ..... Station preset 1<br/>DIS ..... Display button</p> <p>7  ..... Station preset 2</p> <p>8  ..... Station preset 3<br/>RPT ..... Repeat play button</p> <p>9  ..... Station preset 4<br/>RDM ..... Random play button</p> | <p>10  ..... Station preset 5<br/>DIR- ..... Directory down button</p> <p>11  ..... Station preset 6<br/>DIR+ ..... Directory up button</p> <p>12  ..... Scan play button (SCAN)<br/>Best station memory (BSM) button</p> <p>13  ..... Track up button</p> <p>14  ..... Track down button</p> <p>15  ..... USB connector</p> <p>16  ..... AUX IN Jack</p> |
|--|---|

## ■ GENERAL

### (1) Power and volume button



#### ① Power ON / OFF button

Press power button (1) to turn the unit on or off.

#### ② Volume UP/DOWN control knob

Turn VOL knob (1) right to increase the volume level.

Turn VOL knob (1) left to decrease the volume.

After 5 seconds the display will return to the previous display mode.

#### ③ Initial volume level set up

I-VOL is the volume level the unit will play at when next turned on. To adjust the I-VOL level, press and hold VOL button (1) for longer than 2 seconds. The current volume level displays on the display panel.

Then turn button (1) right or left to set the volume level as the I-VOL level.

#### ④ Clock ON/OFF control

The CLOCK was default at off status. To turn CLOCK ON, press and hold VOL button (1) for longer than 2 seconds to display I-VOL, then short press VOL again, turn VOL knob while CLOCK OFF display, then the CLOCK ON will be displayed.

※ **Due to time tolerance, the clock display on the Audio unit might have little difference.**

#### ⑤ Clock adjustment

With CLOCK ON selected, press VOL knob again after CLOCK ON display, the hour will blink, turn VOL knob right or left to adjust hour. Simply press VOL again, the minute will blink, turn VOL knob to adjust minute. Then press VOL again to confirm the clock once finished.

## (2) Menu Selection



- ① This button can adjust the sound effect and other things.  
Each time you press this button (2), LCD displays as follows :

BAS → TREB → BAL L=R → FAD F=R → EQ → LOUD ON →  
BEEP 2ND

On each setting, the level can be controlled by turning TUNE knob (2).  
When the last adjustment is made, after 5 seconds, the display will automatically return to the previous display mode.

### ② Bass control

To adjust the bass tone level, first select the bass mode by pressing SEL button (2) repeatedly until BASS appears on the display panel. Then turn knob (2) right or left within 5 seconds to adjust the bass level as desired. The bass level will be shown on the display panel from a minimum of BASS-7 to a maximum of BASS+7.

### ③ Treble control

To adjust the treble tone level, first select the treble mode by pressing SEL button (2) repeatedly until TREB appears on the display panel. Then turn knob (2) right or left within 5 seconds to adjust the treble level as desired. The treble level will be shown on the display panel from a minimum of TREB -7 to a maximum of TREB +7.

### ④ Balance control

To adjust the left-right speaker balance, first select the balance mode by pressing SEL button (2) repeatedly until BAL indication appears on the display panel. Then turn knob (2) right or left within 5 seconds to adjust the balance as desired. The balance position will be shown by the bars on the display panel from BAL 10R (full right) to BAL 10L (full left).

### ⑤ Fader control

To adjust the front-rear speaker balance, first select the fader mode by pressing SEL button (2) repeatedly until FADER indication appears on the display panel. Then turn knob (2) right or left within 5 seconds to adjust the front-rear speaker level as desired. The fader position will be shown by the bars on the display panel from FAD 10F (full front) to FAD 10R (full rear).

### ⑥ EQ control

You can select an equalizer curve for 4 music types (CLASSIC, POP, ROCK, JAZZ). Press button (2) until EQ is displayed, then turn knob (2) right or left to select the desired equalizer curve. Each time you turn the knob, LCD displays as follows :

EQ OFF → CLASSIC → POP → ROCK → JAZZ

- ※ When the EQ mode is activated, the BASS and TREBLE modes are not displayed.

### ⑦ 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 button (2) until LOUD is displayed, then turn knob (2) right or left to activate or deactivate loudness.

### ⑧ Beep control

To adjust the BEEP mode, first select the BEEP mode by pressing button (2) repeatedly until BEEP indication appears on the display panel. Then turn knob (2) left or right within 5 seconds to select BEEP 2ND, BEEP OFF or BEEP ON.

- BEEP 2ND : You will only hear the beep sound when the buttons are held down for more than 2 seconds.
- BEEP OFF : You can not hear the sound beep when you press the buttons.
- BEEP ON : You can hear the beep sound each time you press the buttons.

### (3) Mute control

- ① Press and hold MUTE button (3) for over 2 seconds to mute sound output and MUTE ON will blink on the LCD. Press the button again to cancel MUTE function and resume to normal playing mode.

### (4) Mode selection

- ① Repeat press MODE button (3) to switch between FM1, FM2, AM, USB, AUX, BT MUSIC.
- ※ If there is no USB, AUX, Bluetooth Phone connected, it would not display USB, AUX, BT when you press button (3).

## ■ RADIO

### (1) Mode button



- ① Repeat press MODE button to select FM1, FM2 or AM.

### (2) Manual tuning button



- ① To manually tune to a radio station, simply turn encoder TUNE (2) left or right to increase or decrease the radio frequency.

### (3) Auto tuning button



- ① To automatically select a radio station, simply press Seek up or Track down button.



### (4) Station preset button



- ① In radio mode, pressing buttons (6) to (11) will recall the radio stations that are memorized. To store desired stations into any of the 6 preset memories, in either the AM or FM bands, use the following procedure :

- Select the desired station.
- Press and hold one of the preset buttons for more than 2 seconds to store the current station into preset memory. Six stations can be memorized on each of FM1, FM2, and AM.

### (5) Preset scan (PS) / Best station memory (BSM) button



① Press BSM button (12) momentarily to scan the 6 preset stations stored in the selected band. When you hear your desired station, press it again to listen to it.

Press BSM button (12) for longer than 2 seconds to activate the Best Station Memory feature which will automatically scan and enter each station into memory.

※ **If you have already set the preset memories to your favorite stations, activating the BSM tuning feature will erase those stations and enter into the new ones. This BSM feature is most useful when travelling in a new area where you are not familiar with the local stations.**

## ■ USB PLAYER

### (1) USB playback



- ① The unit was equipped with a front USB jack and also a rear USB Jack.

With a USB device plugged in the front USB jack, it will be detected as front USB mode. And with a USB device plugged in the rear USB jack, it will be detected as rear USB. To get to a USB mode, press MODE (3) button momentarily or insert the USB device in front or rear USB jack.

- ※ If no mp3 or wma files in USB device, it will convert to the previous mode after display NO FILE.

### (2) Track Up / Down button



- ① Press SEEK up (13) or TRACK down (14) to select the next or previous track. Press and hold the buttons to advance the track rapidly in the forward or backward direction.



### (3) MP3 directory / File searching



- ① Button (2) is used to select a particular directory and file in the device. Turn button (2) right or left to display the available directories. Press button (2) momentarily when the desired directory is displayed, then turn button (2) right or left again to display the tracks in that directory. Press button (2) to begin playback when the desired file is displayed.

### (4) Directory Up / Down button



- ① During MP3/WMA playback, simply press DIR- button (10) to select the previous directory (if available in the device); simply press DIR+ button (11) to select the next directory (if available in the device).

- ※ If the USB device does not contain directories, it would play MP3/WMA tracks at 10- file when you press DIR- button (10), and play MP3/WMA tracks at 10+ file when you press DIR+ (11) button.

#### (5) Track Scan Play (SCAN) button



- SCAN playback : Simply press SCAN (12) button to play the first 10 seconds of each track.
- SCAN folder : Press and hold SCAN button for longer than 2 seconds to scan play the tracks in current folder.
- SCAN off : Simply press it again to cancel SCAN feature.

#### (6) Track Repeat Play (RPT) button



- REPEAT playback : Simply press RPT (8) button to play current track repeatedly.
- REPEAT folder : Press and hold RPT for longer than 2 seconds to repeat play the tracks in current folder.
- REPEAT off : Simply press it again to cancel REPEAT feature.

#### (7) Track Random Play (RDM) button



- RANDOM playback : Simply press RDM (9) button to play the tracks in the device in a random sequence.
- RANDOM folder : Press and hold RDM button for longer than 2 seconds to random play the tracks in current folder.
- RANDOM off : Simply press it again to cancel RANDOM feature.

#### (8) ID3 v2 (DISP)



- ① While a MP3 file is playing, press DISP button (6) to display ID3 information. Repeat push DISP button (6) to show directory name / file name and album name / performer / title.

※ **If the MP3 disc does not have any ID3 information, it will show NO ID3.**

\* USB Information and Notice

a. Playback FILE SYSTEM and condition allowance.

- FAT, FAT12, FAT16 and FAT32 in the file system.
- V1.1, V2.2 and V2.3 in the TAG (ID3) version.

b. Display up to 32 characters in the LCD display.

c. No support any of MULTI-CAED Reader.

d. No high speed playback but only playing with normal full speed.

※ **DRM files in the USB may cause malfunction to playback in the radio unit.**

※ **The temperature below -10 Celsius, the audio unit with USB hook up would be affected to play well.**

## ■ AUX OPERATION

It is possible to connect your portable media player to the audio system for playback of the audio tracks via the cab speakers.

To get the best results when connecting the portable media to the audio system, follow these steps :

- Use a 3.5 mm stereo plug cable to connect the media player headphone socket at each end as follows.
  - Adjust the portable media player to approximately 3/4 volume and start playback.
  - Press the MODE button (3) on the audio unit to change into AUX mode.
  - The volume and tone can now be adjusted on the audio unit to the desired level.
- ※ **The audio quality of your media player and the audio tracks on it may not be of the same sound quality as the audio system is CD Player.**
- ※ **If the sound of the media player is too low compared with the radio or CD, increase the volume of the player.**
- ※ **If the sound of the media player is too loud and/or distorted, decrease the volume of the player.**
- ※ **When in AUX mode, only the Volume, Bass, Treble, EQ and Mode functions of the audio unit can be used.**