

3. MONITORING SYSTEM

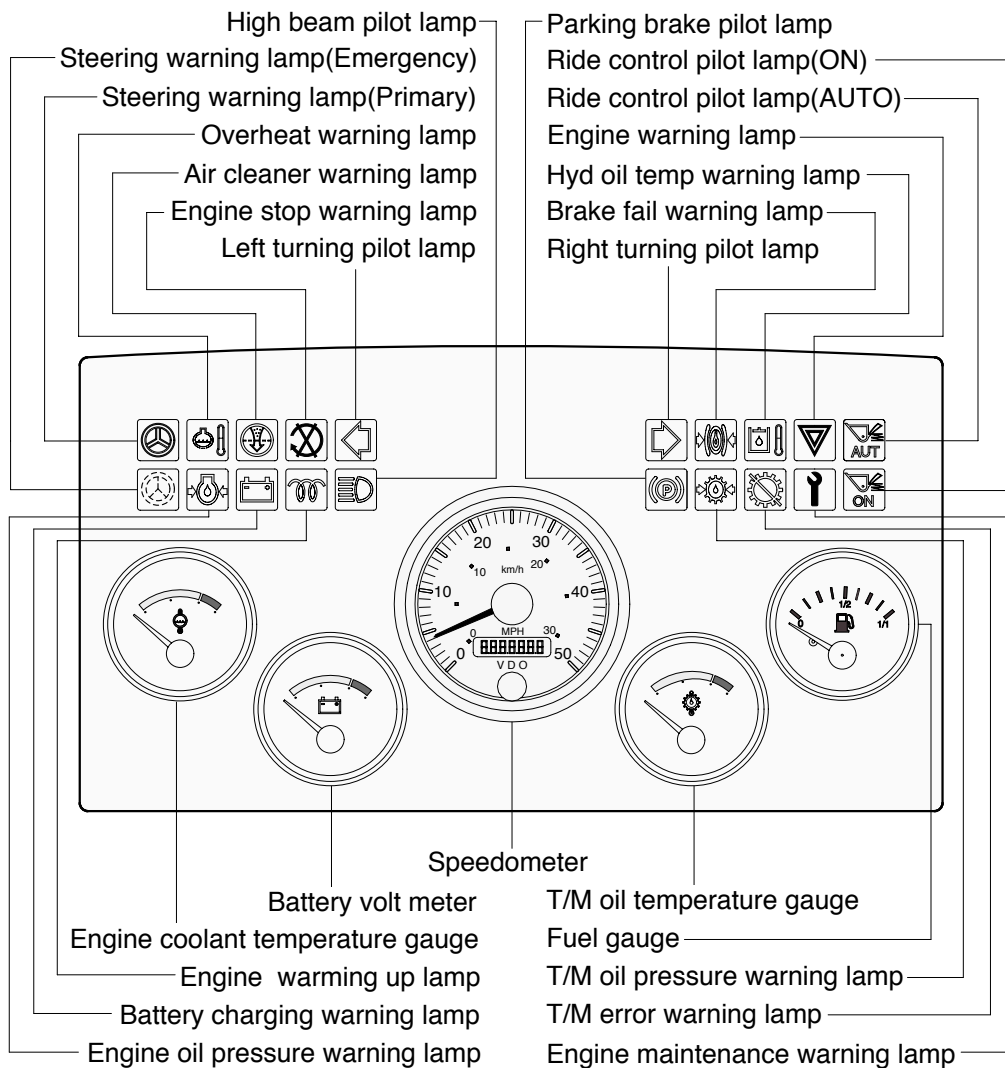
1. CLUSTER

The gauges panel consists of gauges and monitors 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.
- Pilot lamp : Indicate operating status of the machine.

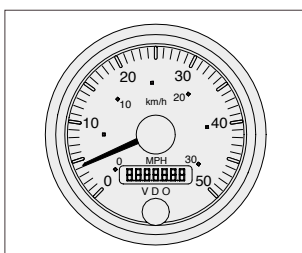
The monitor installed on this machine does not entirely guarantee the condition of the machine. Daily inspection should be performed according to chapter 6, MAINTENANCE in operator's manual.

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



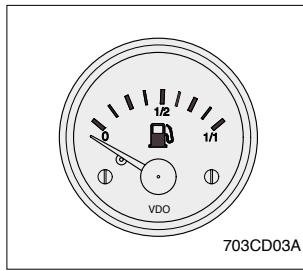
7803ACD02

1) SPEEDOMETER



- (1) The speedometer displays the speed of machine in mph and km/h.

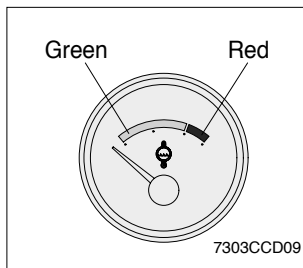
2) FUEL GAUGE



- (1) This gauge indicates the amount of fuel in the fuel tank.
- (2) Fill the fuel when the indicator moves 0 point, refuel as soon as possible to avoid running out of fuel.

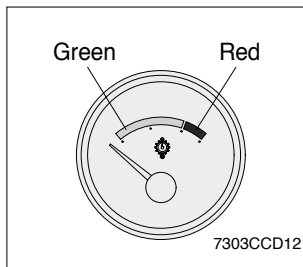
If the gauge indicates below 0 point even though the machine is on the normal condition, check the electric device as that can be caused by the poor connection of electricity or sensor.

3) ENGINE COOLANT TEMPERATURE GAUGE



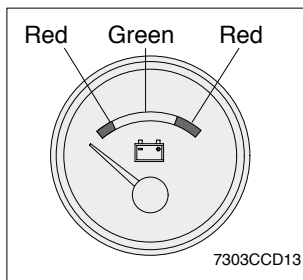
- (1) This indicates the temperature of coolant.
 - Green range : 40-105. C (104-221. F)
 - Red range : 105. C (221. F) Above
- (2) The green range illuminates when operating.
- (3) Keep idling engine at low speed until the green range illuminates, before operation of machine.
- (4) When the red range illuminates, turn OFF the engine, check the radiator and engine.

4) TRANSMISSION OIL TEMPERATURE GAUGE



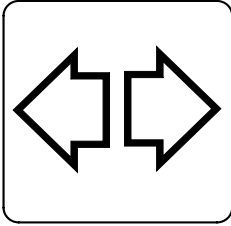
- (1) This range indicates the temperature of transmission oil.
 - Green range : 50-120. C (99-248. F)
 - Red range : 120. C (248. F) Above
- (2) The green range indicates when operating.
- (3) Keep idling engine at low speed until the green range indicates, before operation of machine.
- (4) If the indicator is in the red range, it means the transmission is overheated. Be careful that the indicator does not move into the red range.

5) BATTERY VOLT METER



- (1) This gauge indicates the voltage in the charging system when the engine is running.
- (2) If the indicator is below 20V (Red range), it means that the electricity is being discharged. If the indicator is above 28V (Red range), an unusually high voltage may damage the alternator. Check the charging system in both cases.

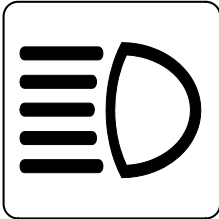
6) DIRECTION PILOT LAMP



7803ACD03

- (1) This lamp flashes when the signal indicator lever is moved.
- (2) When the lamp lights up, the alarm(50dB) sounds.

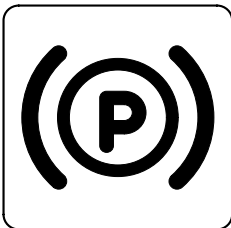
7) HIGH BEAM PILOT LAMP



7803ACD04

- (1) This lamp works when the illuminating direction is upward.
- (2) This lamp comes ON when the dimmer switch is operated, e.g., when passing another vehicle.

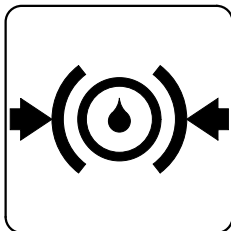
8) PARKING BRAKE PILOT LAMP



7803ACD05

- (1) When the parking brake is actuated, the lamp lights ON.
- Check the lamp is OFF before driving.**

9) BRAKE FAIL WARNING LAMP

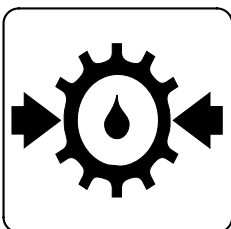


7803CD06

- (1) The lamp lights ON when the oil pressure of service brake drops below the normal range.
- (2) When the lamp is ON, stop the engine and check for its cause.

Do not operate until any problems are corrected.

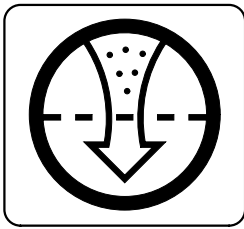
10) TRANSMISSION OIL PRESSURE WARNING LAMP



7803ACD07

- (1) The lamp lights ON when the oil pressure of the transmission drops.
- (2) When the lamp is ON, stop the engine and check the transmission system.

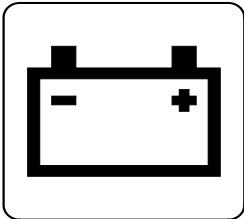
11) AIR CLEANER WARNING LAMP



7803ACD08

- (1) This lamp operates by the vacuum caused inside when the filter of air cleaner is clogged.
- (2) Check the filter and clean or replace it when the lamp is ON.

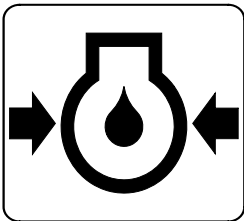
12) BATTERY CHARGING WARNING LAMP



7803A3CD09

- (1) This lamp is ON when key ON, it is turned OFF after starting the engine.
- (2) Check the battery charging circuit when this lamp comes ON, during engine operation.

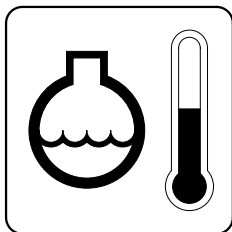
13) ENGINE OIL PRESSURE WARNING LAMP



7803A3CD10

- (1) If lamp comes ON during engine operation, shut OFF engine immediately. Check oil level.

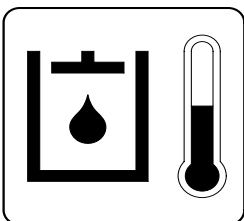
14) OVERHEAT WARNING LAMP



7803A3CD11

- (1) This lamp is turned ON when the temperature of cooling water is over the normal temperature (110. C , 230. F).
- (2) Check the cooling system when the lamp is ON.

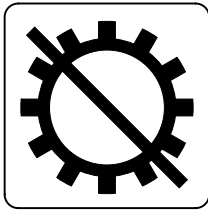
15) HYDRAULIC OIL TEMP WARNING LAMP



7803A3CD12

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

16) TRANSMISSION ERROR WARNING LAMP

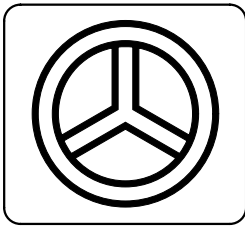


7803ACD13

- (1) This lamp lights ON and the transmission error display show the wrench with the error codes when a error occurs in the transmission.
- (2) Immediately pull the machine to a convenient stop. Stop the engine. Investigate the cause.

**Consult a HYUNDAI dealer to investigate the cause.
Do not operate until the cause has been corrected.**

17) STEERING WARNING LAMP(Option)

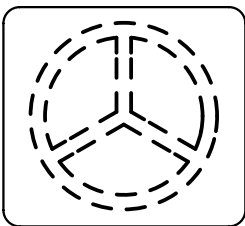


7803ACD14

(1) Primary

This lamp indicates that the primary steering has failed. when the indicators come on and the action alarm sounds, steer the machine immediately to a convenient location and stop the machine. stop the engine and investigate the cause.

Do not operate the machine until the cause has been corrected.



7803ACD15

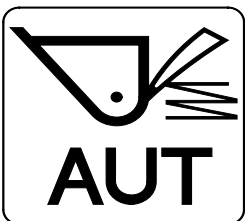
(2) Emergency

This lamp indicates the the emergency steering system is active.

Immediately pull the machine to a convenient stop and stop the engine.

**The emergency steering system can be manually tested.
Refer to page 7-36.**

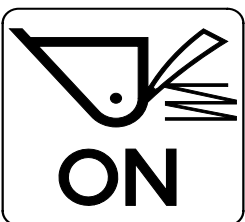
18) RIDE CONTROL PILOT LAMP(Option)



7803ACD16

(1) Auto ride control

This lamp lights ON when push in the top of the ride control switch in order to turn on the automatic ride control.

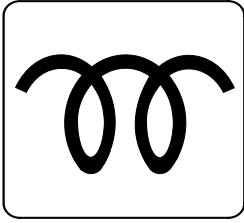


7803ACD17

(2) Ride control

This lamp lights ON when push in the bottom of the ride control switch in order to turn on the system for ride control.

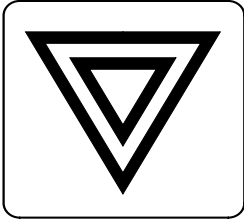
19) ENGINE WARMING UP LAMP



7803ACD19

- (1) This lamp lights ON when key ON, it will be ON to indicate the air grid heater is being heated.
- (2) When the lamp goes out the operator should start cranking the engine.

20) ENGINE WARNING LAMP



7803ACD20

- (1) This lamp lights ON during a nonfatal system error. The engine can still be run, but the fault should be corrected as soon as possible.
- ※ **In the diagnostic mode, the lamp will flash after the engine stop warning lamp complete the three-digit fault code.**
 - ※ **Refer to diagnostic fault codes, page 7-29.**

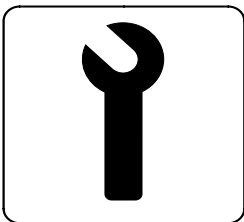
21) ENGINE STOP WARNING LAMP



7803ACD18

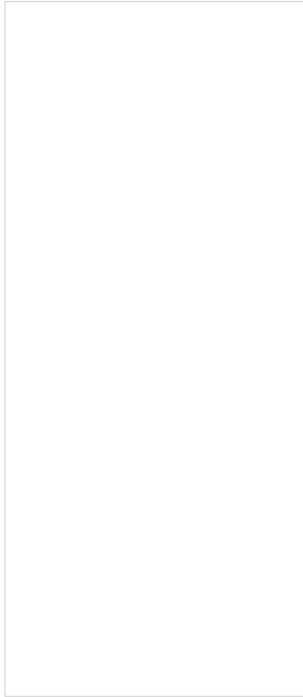
- (1) This lamp indicates that the engine needs to be shut down before permanent damage occurs to the engine.
- ※ **The engine should be shut off as soon as it can be shut off safely.**
 - ※ **This lamp is also used to flash out the fault code number in the diagnostic mode.**
 - ※ **Refer to diagnostic fault codes, page 7-29.**

22) ENGINE MAINTENANCE WARNING LAMP



7803ACD21

- (1) This lamp lights ON when it is time to change oil and perform any other simultaneous maintenance tasks.
 - (2) This lamp will alert the operator of the need to change oil by flashing this lamp for approximately 12 seconds after start switch ON. The flashing sequence will be three quick flashes, followed by a pause. This flash sequence will go through five cycles in the 12 seconds period. This sequence will occur at every start switch ON until the lamp has been reset.
- ※ **The diagnostics switch must be in the OFF position for the flashing sequence to occur.**



※ **Resetting the engine maintenance lamp with the diagnostic switch**

The engine maintenance lamp can be reset using by following steps 1 through 6 below.

Steps ② through ④ must be done within a maximum of 30 seconds.

The diagnostics switch must be in the OFF position.

Turn ON the starting switch (engine **must not** be operating)

Diagnostics switch ON within 3 secods, then the switch OFF

Diagnostics switch ON twice more briefly within 3 seconds each

Diagnostics switch ON within 3 seconds, then the switch OFF

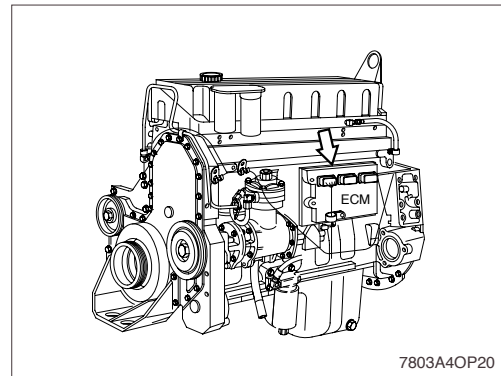
The lamp will flash three times

Turn OFF the starting switch

※ **If the engine maintenance lamp does not flash three times, the reset sequence must be performed again.**

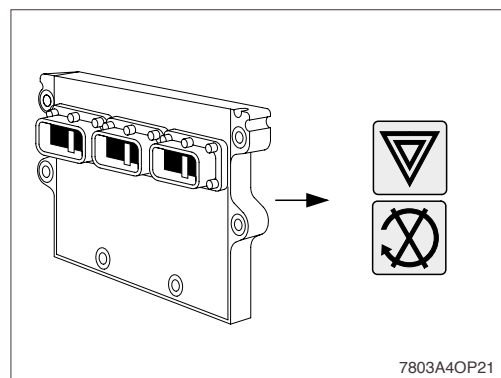
23) CHECK DIAGNOSTIC FAULT CODES

(1) The system can show and record operation irregularities that present themselves as fault codes. These codes will make troubleshooting easier. The fault codes are recorded in the **ECM**. They can be read using the two fault lamps.

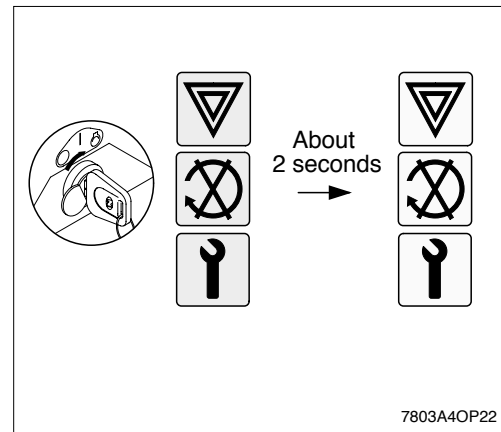


(2) Engine electronic fuel system codes

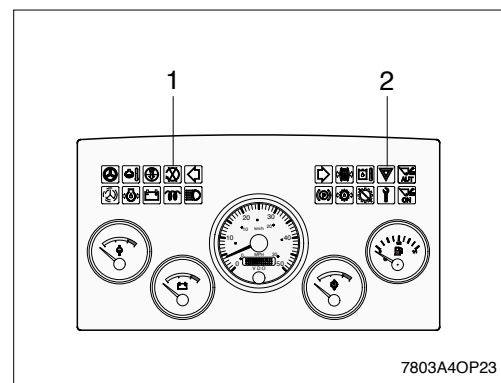
The engine electronic fuel system fault codes can be seen on the engine warning lamp and engine stop warning lamp in the cab.



The engine stop warning lamp is red. The engine warning lamp is yellow. When the machine starting switch is turned ON and the diagnostic switch is OFF, all three lamps will illuminate to check their operation. The lamps will go OFF in sequence after about 2 seconds.



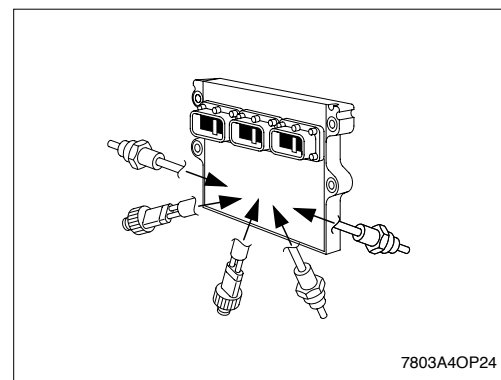
The lamps will remain OFF until a fault code is recorded. If a lamp remains ON, an active fault exists. If the engine stop warning lamp(1) is illuminated while operating, the fault can be engine disabling. The machine must be shut off as soon as it can be done in a safe manner. The machine must remain parked as long as this fault exists. If the engine warning lamp(2) is illuminated, the machine can be safely operated, but the fault must be corrected as soon as possible.



(3) Engine protection system codes

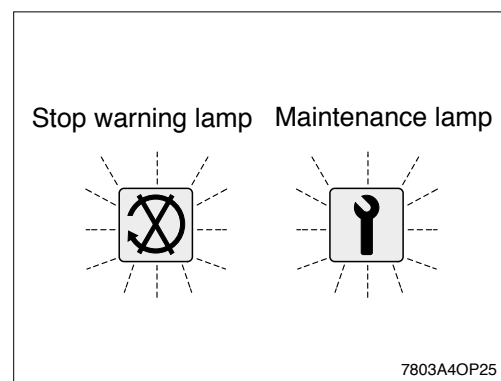
The engine protection system logs separate fault codes for out-of-range conditions associated with any of the following sensors:

- Coolant temperature
- Oil pressure
- Intake manifold temperature.



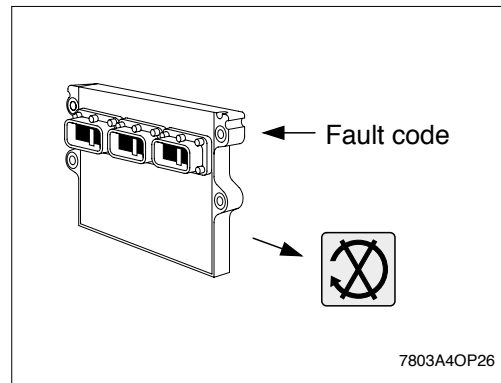
This system will activate an incab warning device when an out-of-range condition occurs. The warning device is a engine stop warning lamp.

This system will also activate the engine maintenance lamp(blue).

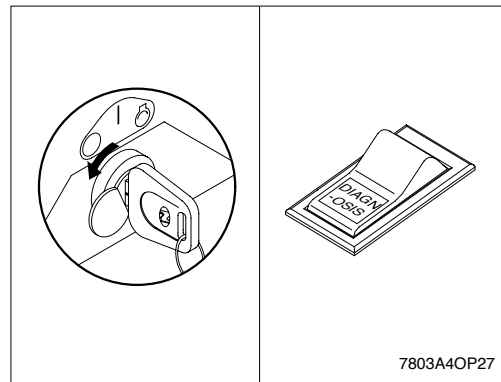


If the engine stop warning lamp comes ON while driving, it means a fault code has been recorded. The lamp will remain ON as long as the fault exists, and engine power and speed will gradually be reduced after 30 seconds warning.

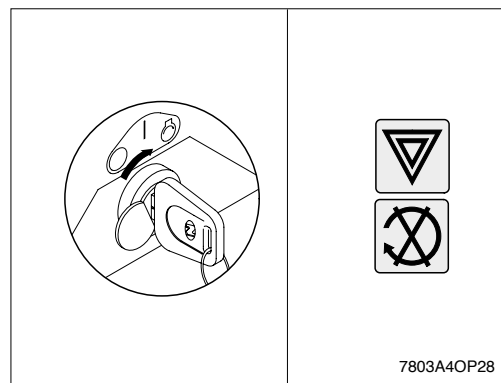
The fault must be corrected as soon as possible.



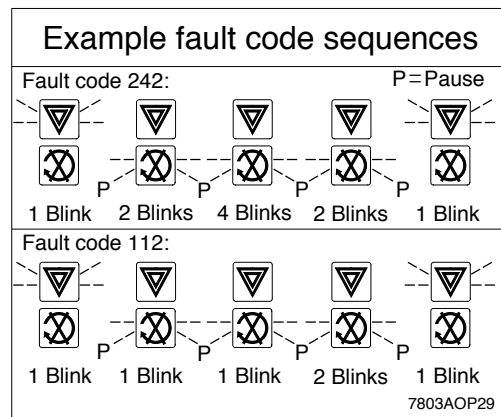
- (4) Turn off the engine. To check for engine electronic fuel system and engine protection system fault codes, move the diagnostic switch to the ON position.



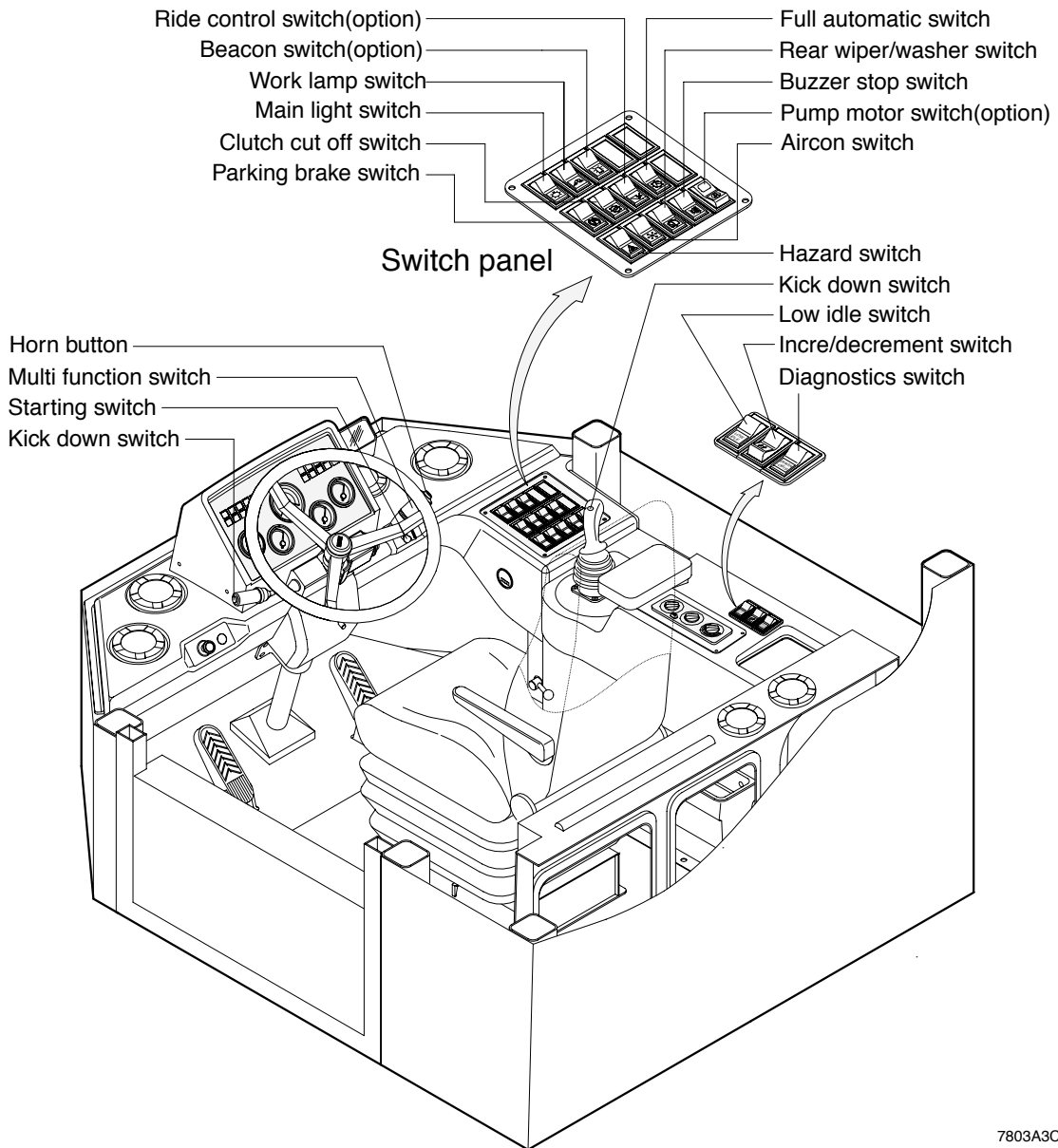
- (5) Turn the starting switch to the ON position.
 If no active fault codes are recorded, both lights will come ON and stay on.
 If active fault codes are recorded, both lights will come ON momentarily, then begin to flash the code of the recorded faults.



- (6) The fault code will flash in the following sequence:
 First, a engine warning lamp(yellow) light will flash. Then there will be a short 1-or 2-second pause after which the number of the recorded fault code will flash in engine stop lamp(red). There will be a 1- or 2-second pause between each number. When the number has finished flashing in red, a yellow light will appear again. The three-digit code will repeat in the same sequence.

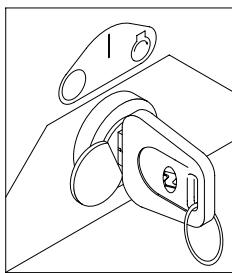


3. SWITCHES



7803A3CD22

1) STARTING SWITCH



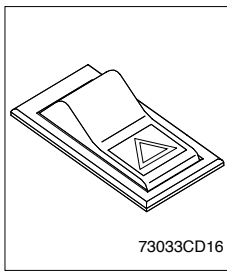
7803A3CD23

(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.

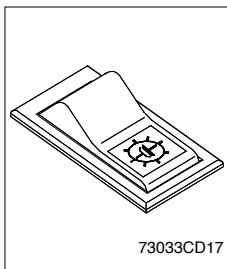
Key must be in the ON position with engine running maintain electrical and hydraulic function and prevent serious machine damage.

2) HAZARD SWITCH



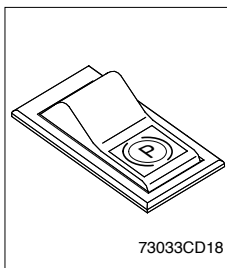
- (1) Use for parking, or roading machine.
If the switch is left ON for a long time, the battery may be discharged.
- (2) The below indicator lamp is turned ON when operating this switch.

3) CLUTCH CUT OFF SWITCH



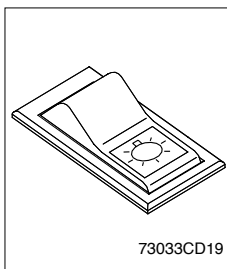
- (1) This switch is pressed, it will **cut off** the clutch when brake operates.
Be careful not to use this switch when driving on a slope.
- (2) The below indicator lamp is turned ON when operating this switch.

4) PARKING BRAKE SWITCH



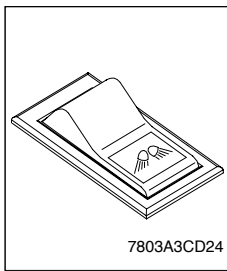
- (1) This switch is pressed, the parking brake will start to operate and the gauge panel warning lamp will comes ON.
When operating the gear selector lever, be sure to release the parking brake. If the machine is operated with the parking brake engaged, the brake will overheat and may cause the brake system to go out of order.
- (2) The below indicator lamp is turned ON when operating this switch.

5) MAIN LIGHT SWITCH



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

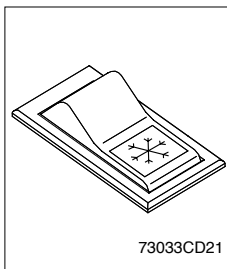
6) WORK LAMP SWITCH



(1) This switch use to operates the front and rear work lamps by two step.

- First step : Front work lamp located on the cab comes ON.
- Second step : Rear work lamp located on the cowl comes ON.

7) AIR CONDITIONER SWITCH

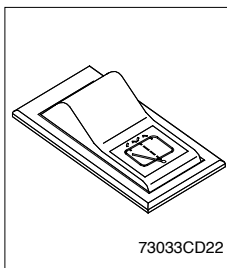


(1) This switch use to operates the air conditioner.

(2) Refer to the air conditioner and heater for detail operation.

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

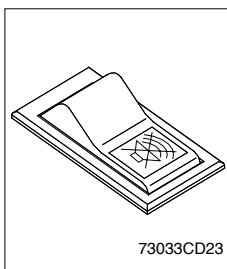
8) REAR WIPER AND WASHER SWITCH



(1) The switch use to operates the rear wiper and washer by two step.

- First step : The rear wiper operates.
- Second step : The washer liquid is sprayed and the rear wiper is operated only while pressing. If release the switch, return to the first step position.

9) BUZZER STOP SWITCH



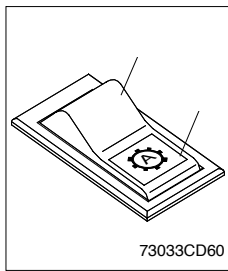
(1) The red lamp on the cluster lights ON and the buzzer sounds when the machine has a problem.

In this case, if the switch is pressed, the buzzer will be stopped. Be sure to check machine for problems.

(2) Wait until the lamp is turned OFF, if the red lamp lights ON after the buzzer stopped.

If not, stop engine and check the system which the lamp is ON.

10) FULL AUTOMATIC SWITCH



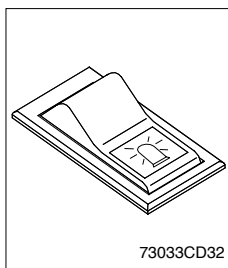
(1) Manual mode()

Press the top of the switch for the manual mode of the autoshift function. The operator selects the desired speed and the desired direction in the manual mode with the gear selector lever.

(2) Automatic mode()

Press the bottom of the switch for the autoshift function in the automatic mode. Press the bottom of the switch prior to shifting the transmission into forward or reverse in order to activate the autoshift function.

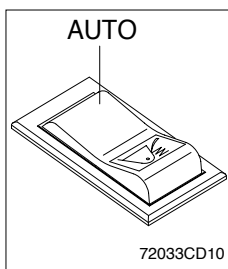
11) BEACON SWITCH (Option)



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

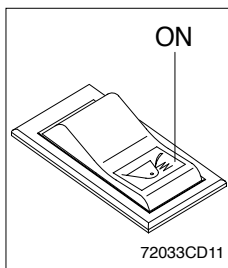
(2) The below indicator lamp is turned ON when operating this switch.

12) RIDE CONTROL SWITCH (Option)



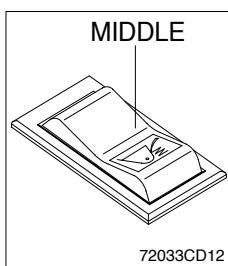
(1) AUTO position

Push in the top of the ride control switch in order to turn on the automatic ride control. The automatic ride control automatically turns on when the travel speed exceeds a preset speed of approximately 9.5km/h. The automatic ride control automatically shuts off during low speed travel mode.



(2) ON position

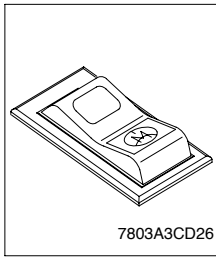
Push in the bottom of the ride control switch in order to turn on the system for ride control. The ride control will smooth the ride of the machine during travel.



(3) MIDDLE position

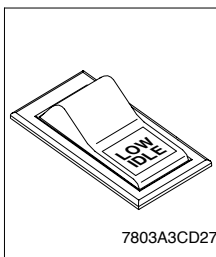
Push the ride control switch to the middle position in order to turn off the system for the ride control.

13) PUMP MOTOR SWITCH (option)



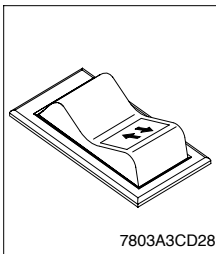
- (1) The emergency steering system can be manually tested.
Push the pump motor switch in order to determine if the emergency steering and the emergency steering lamp are functional.
- (2) When the switch is pushed, the emergency steering pump motor will run.
The emergency steering lamp will light. If the emergency steering lamp does not light, do not operate the machine.

14) LOW IDLE SWITCH



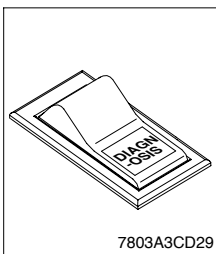
- (1) This switch allows the operator to switch the low idle speed between 2 value, "Normal idle and Alternate idle(1200RPM)" depending on low idle switch position.
There is no adjusting the alternate idle speed through the use of Incre/decrement switch. This feature can be configured to require a normal idle to alternate idle switch transition to go to alternate idle at start up and to warm the cab quickly up.

15) INCRE/DECREMENT SWITCH



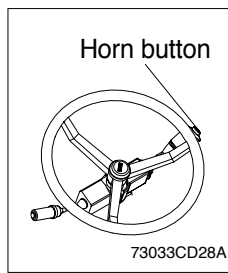
- (1) Use this switch to adjust the engine low idle speed increments of 25rpm. Each time the switch is briefly pushed down, the idle speed is decreased by 25rpm. When the switch is briefly pushed up, the idle speed is increased by 25rpm.

16) DIAGNOSTICS SWITCH



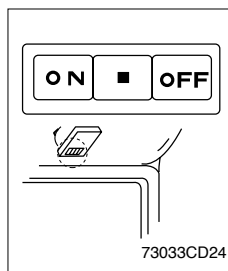
- (1) Use this switch to check for engine electronic fuel system and engine protection system fault codes.
※ **Refer to dignostic fault codes, page 7-29.**

17) HORN BUTTON



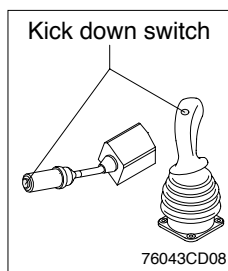
- (1) If you press the button on the top of the multifunction switch, the horn will sound.

18) CAB LAMP SWITCH



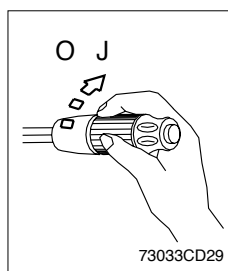
- (1) This switch turns ON the cab room lamp.

19) KICK DOWN SWITCH



- (1) The kick-down switch into first gear is not allowed. Press the switch and release the switch. The transmission downshift one gear speed, provided that an engine overspeed would not occur.

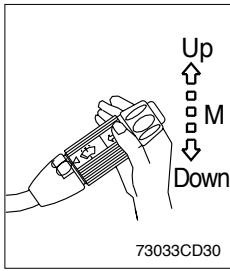
20) MULTI FUNCTION SWITCH



(1) Front wiper and washer switch

- ① When the switch is in J position, the wiper moves intermittently.
- ② When placed in I or II position, the wiper moves continuously.
- ③ If you press a button at the end of the lever, washer liquid will be sprayed and the wiper will be activated 2-3 times.

※ **Check the quantity of washer liquid in the tank. If the level of the washer liquid is LOW, add the washer liquid (In cold, winter days) or water. The capacity of the tank is 1 liter.**



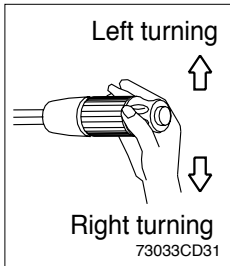
(2) Dimmer switch

This switch is used to turn the head lights direction.

Switch positions

- Up : To flash for passing
- Middle : Head lights low beam ON
- Down : Head lights high beam ON

If you release the switch when it's in up position, the switch will return to middle.



(3) Turning switch

This switch is used to warn or signal the turning direction of the machine to other vehicles or equipment.

Push the lever up for turning left, pull the lever down for turning right.