

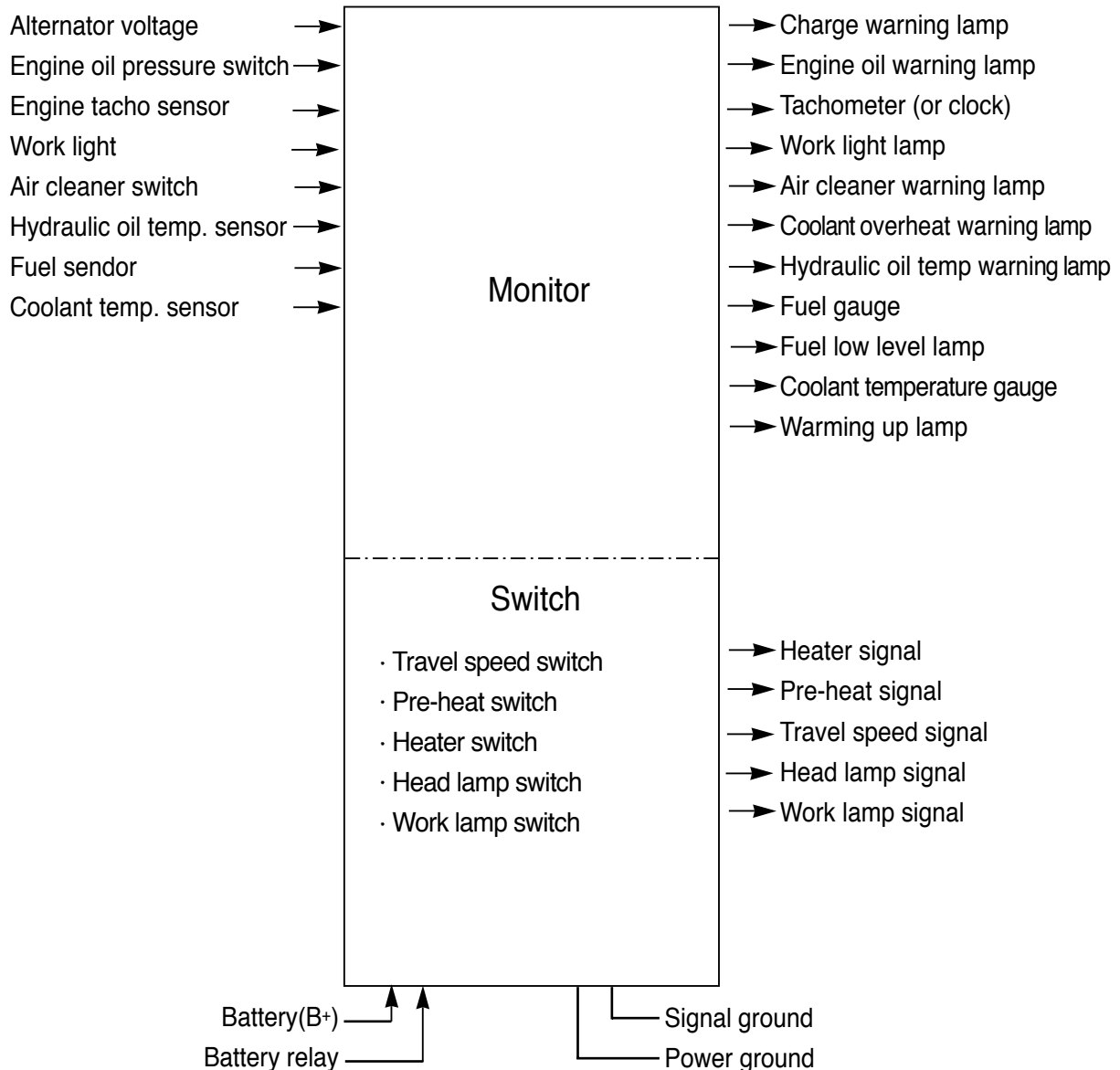
GROUP 4 MONITORING SYSTEM

1. OUTLINE

Monitoring system consists of the monitor part and switch part.

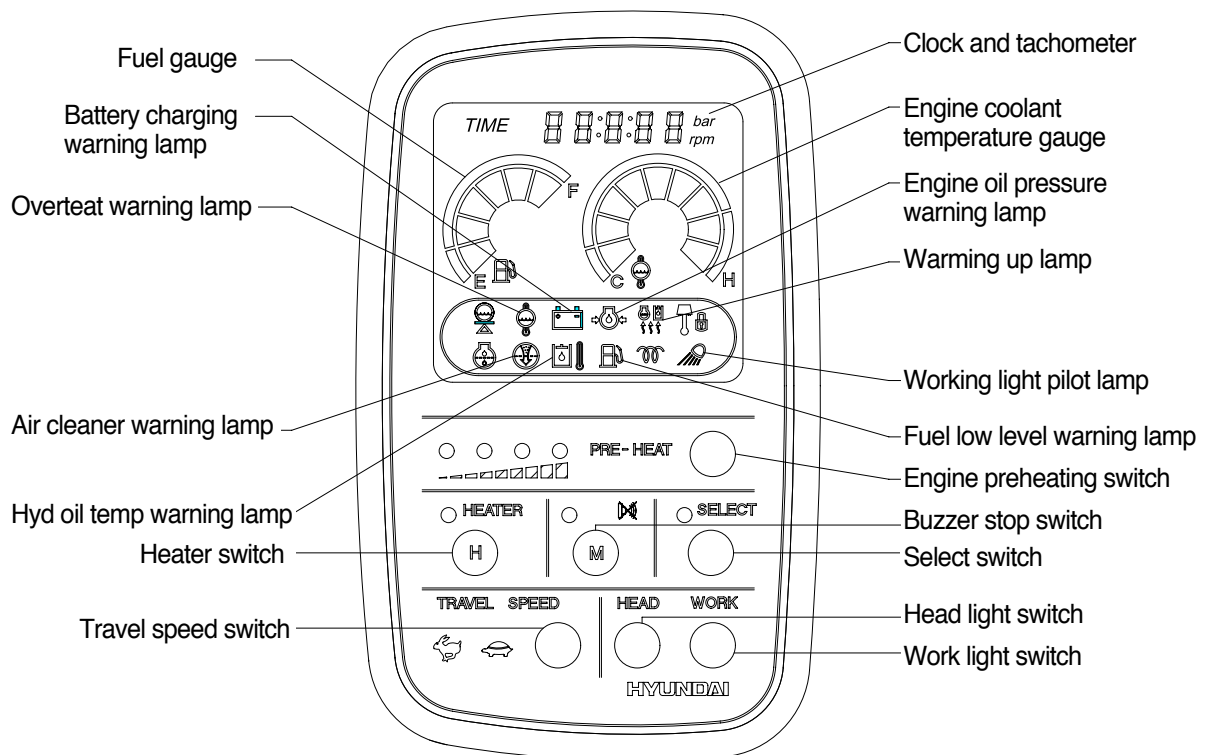
The monitor part gives warnings when any abnormality occurs in the machine and informs the condition of the machine.

Various select switches built into the monitor panel, and it acts as the control portion of the machine control system.



2. CLUSTER

1) Monitor panel



R55NM4EL13

2) CLUSTER CHECK PROCEDURE

(1) Start key : ON

Check monitor initial 3 seconds

- a. All lamps light up.
- b. Buzzer sound.

Check monitor after 3 seconds : indicate machine condition

- a. Tachometer : 0 rpm
- b. Fuel gauge : All light up below appropriate level
- c. Engine coolant temperature gauge : All light up below appropriate level
- d. Warning lamp

In case, the engine oil pressure lamp and battery charging lamp go on, but it is not abnormal

When engine coolant temperature below 50°C, the warming up lamp light up

Switch portion

Travel speed switch : Low(turtle)

(1) Start of engine

Check machine condition

- a. Tachometer indicate at present rpm
- b. Gauge and warning lamp : indicate at present condition

When normal condition : All warning lamp OFF

- c. Travel speed : Low(turtle)

In case of abnormal condition

- a. The lamp lights up and the buzzer sounds

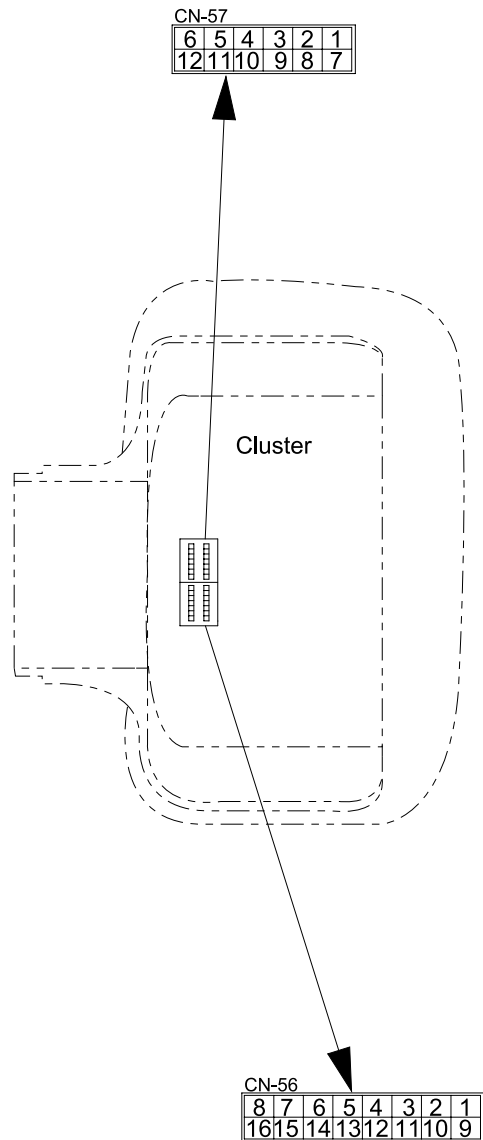
3. CLUSTER CONNECTOR

1) CN-57 CONNECTOR

No	Signal	Input/output
1	Null	-
2	Travel high / low signal	output
3	Water temp sender	Input
4	Fuel level sender	Input
5	Battery relay power	Input
6	Battery (B+)	Input
7	Null	-
8	Head light signal	output
9	Work light signal	output
10	Engine speed sensor	Input
11	Power ground	-
12	signal ground	-

2) CN-56 CONNECTOR

No	Signal	Input/output
1	Null	-
2	Null	-
3	Null	-
4	Null	-
5	Null	-
6	Null	-
7	Charge warning	Input
8	Heater signal	output
9	Null	-
10	Null	-
11	Null	-
12	Hyd. oil temp warning	Input
13	Eng. oil pressure warning	Input
14	Air cleaner warning	Input
15	Null	-
16	Pre heat signal	output



R55NM4EL12

4. CLUSTER FUNCTION

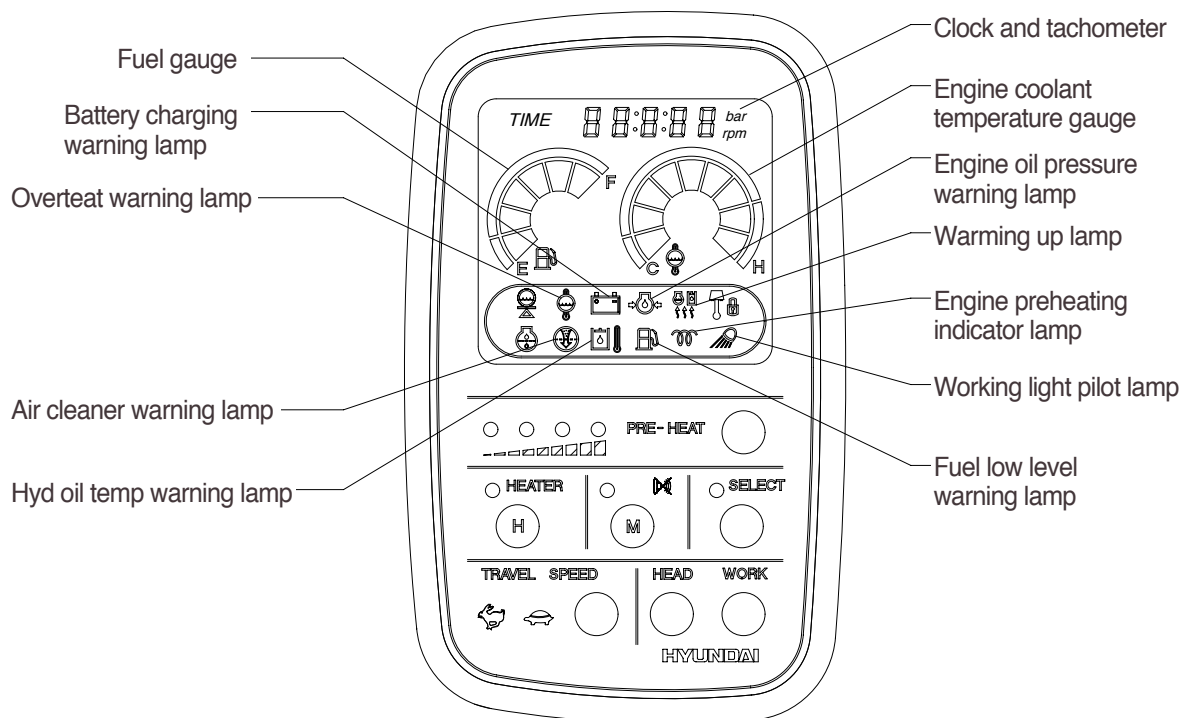
1) MONITOR PANEL

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(Red).
- Pilot lamp : Indicate operating status of the machine(Green).

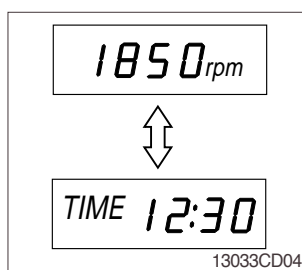
The monitor installed on this machine does not entirely guarantee the condition of the machine.

Daily inspection should be performed according to chapter 6, Maintenance.



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(1) Tachometer and clock

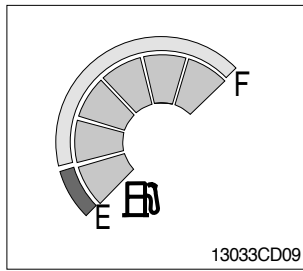


Tachometer displays the number of engine revolutions. It displays the current time by electric digital timer(LCD).

Refer to the select switch of the switch panel for the selection and adjustment.

It can be selected as tachometer or clock by select switch.

(2) Fuel gauge



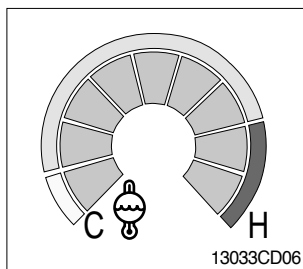
This gauge indicates the amount of fuel in the fuel tank.

Fill the fuel when the red range illuminates.

The gauge indicates continuously the current fuel amount even after turn OFF the starting switch. This does not mean that the gauge is out of order.

If the gauge illuminates the red range 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



This indicates the temperature of coolant.

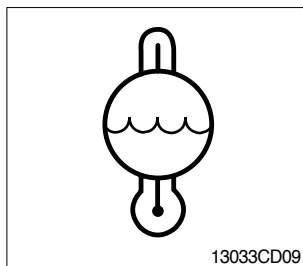
- White range : 30-50. C (86-122. F)
- Green range : 50-105. C (122-221. F)
- Red range : 105. C (221. F) above

The green range illuminates when operating.

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

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

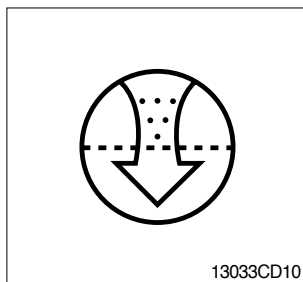
(4) Overheat warning lamp



This lamp is turned ON when the temperature of coolant is over the normal temperature(110. C , 230. F).

Check the cooling system when the lamp is ON.

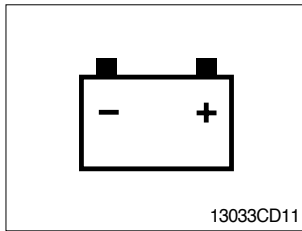
(5) Air cleaner warning lamp



This lamp is operated by the vacuum caused inside when the filter of air cleaner is clogged which supply air to the engine.

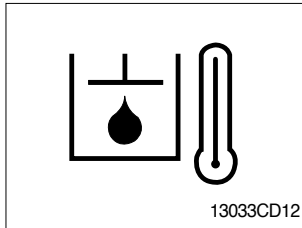
Check the filter and clean or replace it when the lamp operates.

(6) Battery charging warning lamp



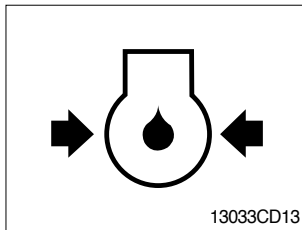
This lamp is ON when the starting switch is ON, it is turned OFF after starting the engine.
Check the battery charging circuit when this lamp comes ON, during engine operation.

(7) Hydraulic oil overheat warning lamp



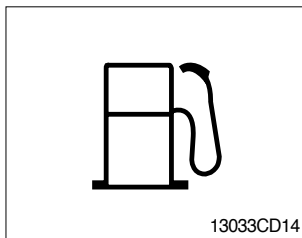
This warning lamp operates and the buzzer sounds when the temperature of hydraulic oil is over 110 °C(230 °F).
Check the hydraulic oil level when the lamp is turned ON.
Check for debris between oil cooler and radiator.

(8) Engine oil pressure warning lamp



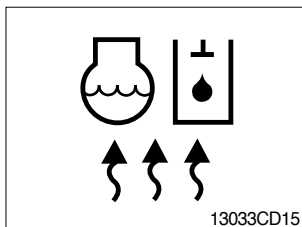
This lamp is turned OFF after starting the engine because of pressure.
If lamp comes ON during engine operation, shut OFF engine immediately. Check oil level.

(9) Fuel low level warning lamp



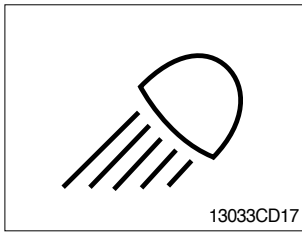
This lamp is turned ON when the level of fuel is below 13 (3.4U.S.gal).
Fill the fuel when the lamp comes ON.

(10) Warming up lamp



This lamp is turned ON when the coolant temperature is below 50 °C(122 °F).
Warming up is needed until this lamp OFF.

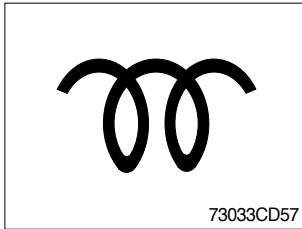
(11) Working light lamp



When the main light switch is turned ON second step, the working light mounted on boom is ON and indicator lamp comes ON.

Refer to the main light switch for detail.

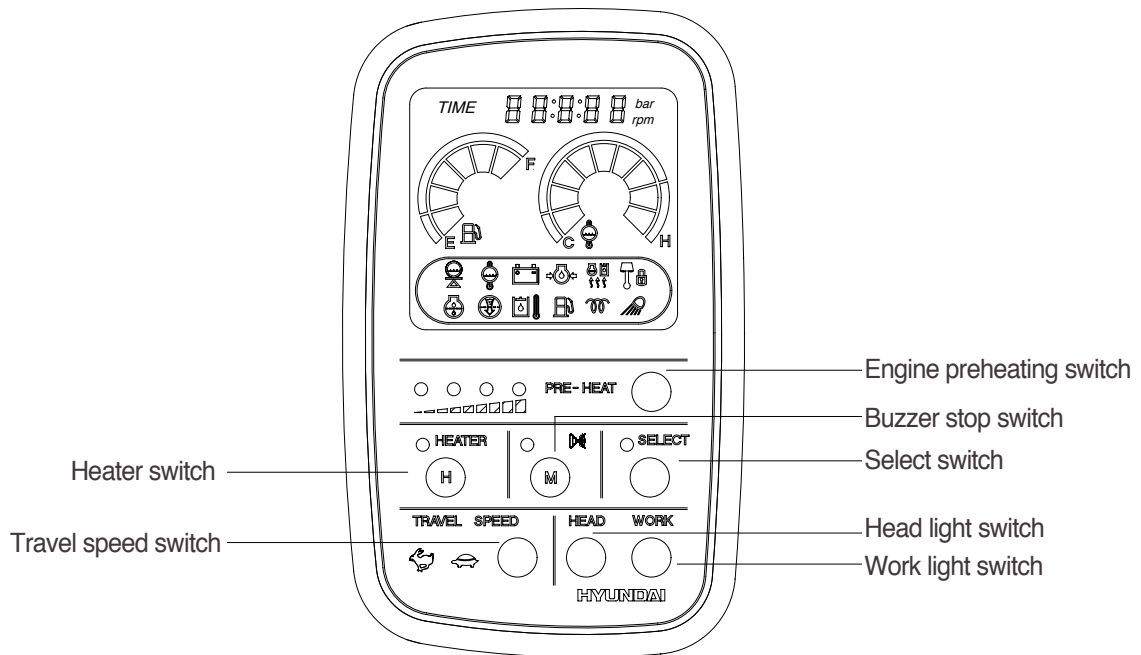
(12) Engine preheating indicator lamp



When engine preheating switch is turned ON, indicator lamp comes ON.

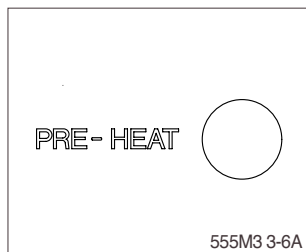
Refer to the engine preheating switch for detail.

1) SWITCH PANEL



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(1) Engine preheating switch

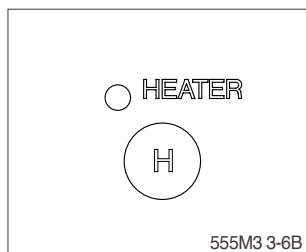


In case of severe cold weather, this switch is used to preheat engine before starting.

When this switch is pressed, LED lamp is turned on for 15 seconds in sequence and LED lamp off after second blink light when the time is completed.

Even if LED lamp is ON, this function is stopped when starting.

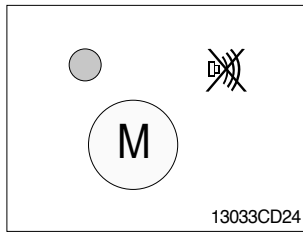
(2) Heater switch



This switch is used to operate heater.

When this switch is pressed one time, this function is operated (LED lamp ON) and stopped (LED lamp OFF) when pressed one more time.

(3) Alarm buzzer stop switch



When the starting switch is turned ON first, normally the alarm buzzer sounds for 3 seconds.

The red lamp lights ON and the buzzer sounds when the machine has a problem.

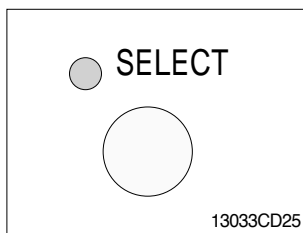
In this case, if the switch is pressed, the buzzer will be stopped.

Be sure to check machine for problems.

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.

(4) Select switch



This switch is used to select the tachometer or clock.

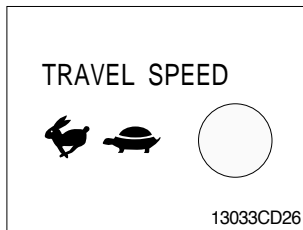
The switch is pressed, each function is selected by turns.

The switch is pressed for 3 seconds, it is selected time adjusting function, as below.

- Hour by auto decal switch
- Minute by buzzer stop switch

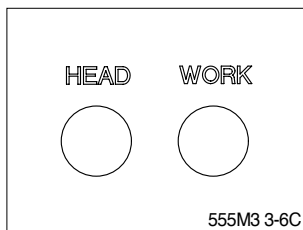
After time set, the switch is pressed, it is returned clock.

(5) Travel speed control switch



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

(6) Work and head light switch



This switch is used to operate the head light and work light.

When these switches are pressed by turns, lights ON and OFF.