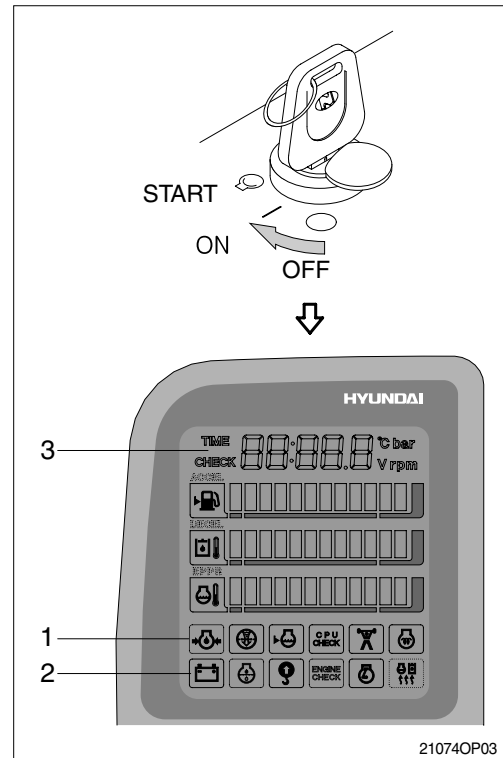## 3. STARTING AND STOP THE ENGINE
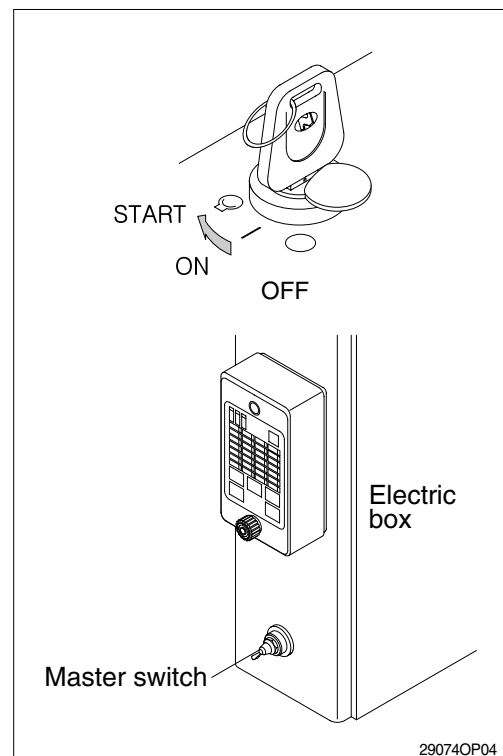
1) CHECK INDICATOR LIGHTS

(1) Check if all the operating lever is on the neutral position.

(2) Turn the starting switch to the ON position, and check following.

① If all the lamps light ON and buzzer sounding for 2 seconds.

② After lamp check **CL : 2.0** , the version of cluster program, is displayed on **Monitoring display(3)** for 5 seconds and the cluster returns to default.

③ Only below lamps will light ON and all the other lights will turn OFF after 2 seconds.
· Battery charging warning lamp(2)
· Engine oil pressure warning lamp(1)

21074OP03

2) STARTING ENGINE IN NORMAL TEMPERATURE

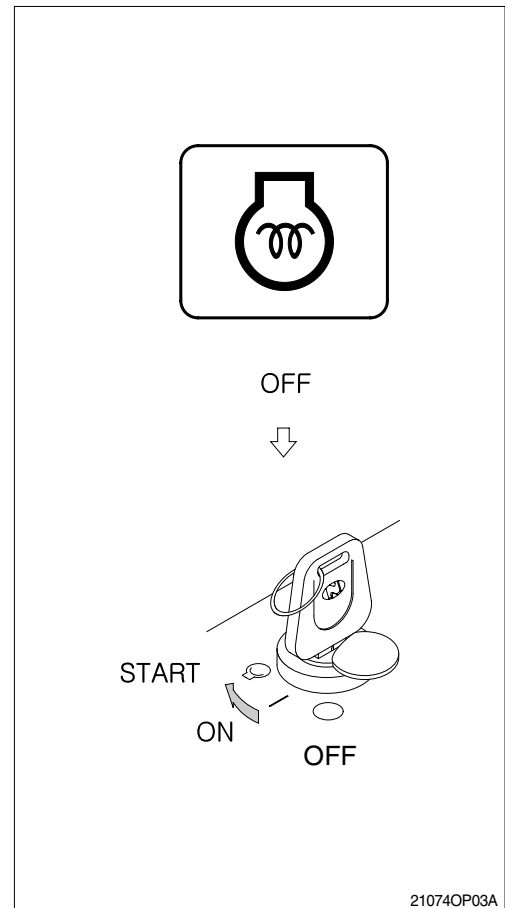※ **Sound the horn to warn the surroundings after checking if personnel or obstacles are in the area.**

(1) Turn the starting switch to START position to start the engine.

※ **If the engine does not start, allow the starter to cool for about 2 minutes before attempting to start the engine again.**

(2) Release the starting switch instantly after the engine starts to avoid possible damage to the starting motor.

Electric box

Master switch

29074OP04

3) STARTING ENGINE IN COLD WEATHER

※ **Sound horn to warn surroundings after checking if there are obstacles in the area.**

※ **Replace the engine oil and fuel referring to recommended oils at page 2-22.**

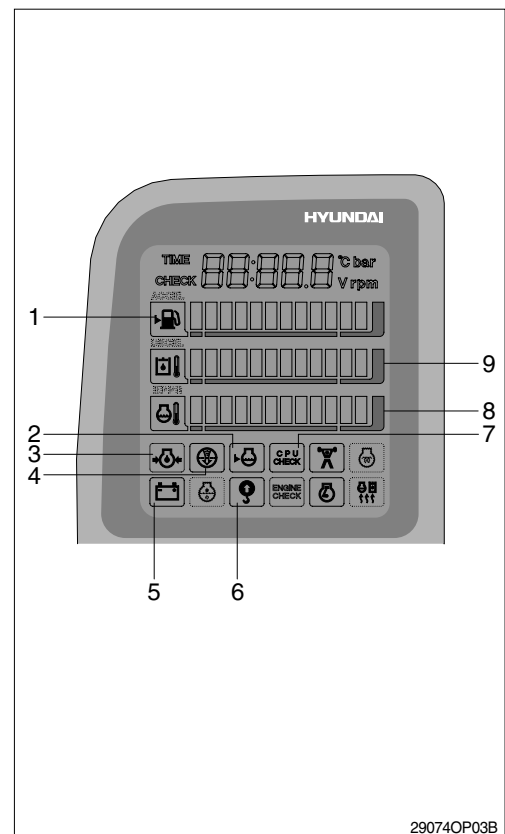※ **Fill the anti-freeze solution to the coolant as required.**

(1) Check if all the levers are in the neutral position.

(2) Turn the starting switch to ON position, and wait the preheat pilot lamp OFF.

(3) Start the engine by turning the starting switch to the START position after the preheat pilot lamp OFF

※ **If necessary use the preheat switch.**

※ **If the engine does not start, allow the starter to cool for about 2 minutes before attempting to start the engine again.**

(4) Release the starting switch immediately after starting engine.

(5) The operation for the warming up machine is automatic.

OFF

⇩

START

ON

OFF

21074OP03A

4) INSPECTION AFTER ENGINE START

Inspect and confirm the following after engine starts.

(1) Is the level gauge of hydraulic oil tank in the normal level?

(2) Are there leakages of oil or water?

(3) Are all the warning lamps OFF(1-7)?

(4) Is the indicator of water temperature gauge(8) and hydraulic temperature gauge(9) in the green zone?

(5) Is the engine sound and the color of exhaust gas normal?

(6) Are the sound and vibration normal?

※ **Do not increase engine speed quickly after starting, it can damage engine or turbocharger.**

※ **If there are problems in the control panel, stop the engine immediately and correct problem as required.**
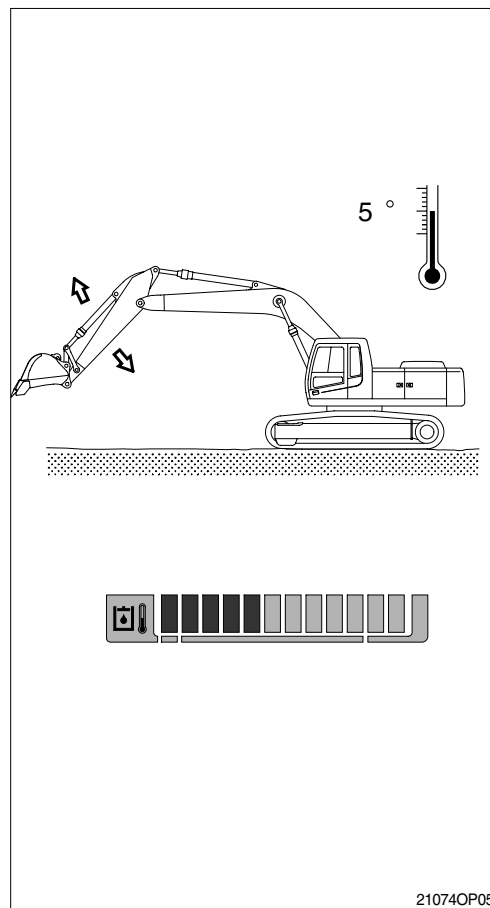
HYUNDAI

29074OP03B

5) WARMING-UP OPERATION

※ **The most suitable temperature for the hydraulic oil is about 50℃ (122℉).**
It can cause serious trouble in the hydraulic system by sudden operation when the hydraulic oil temperature is below 25℃ (77℉). **Then temperature must be raised to at least 25℃ (77℉) before starting work.**

(1) Run the engine at low idling for 5 minutes.

(2) Speed up the idling and run the engine at mid-range speed.

(3) Operate bucket lever for 5 minutes.
※ **Do not operate anything except bucket lever.**

(4) Run the engine at the high speed and operate the bucket lever and arm lever for 5-10 minutes.
※ **Operate only the bucket lever and arm lever.**

(5) This warming-up operation will be completed by operation of all cylinders several times, and operation of swing and traveling.
※ **Increase the warming-up operation during winter.**

21074OP05

6) TO STOP THE ENGINE

※ **If the engine is abruptly stopped before it has cooled down, engine life may be greatly shortened. Consequently, do not abruptly stop the engine apart from an emergency.**

※ **In particularly if the engine has overheated, do not abruptly stop it but run it at medium speed to allow it to cool gradually, then stop it.**

(1) Down the bucket on the ground then put all the levers in the neutral position.

(2) Run the engine at low idling speed for about 5 minutes.

(3) Return the key of starting switch to the OFF position.

(4) Remove the key to prevent other people using the machine and LOCK safety lever.

(5) Lock the cab door.

Low idling for 5 minutes

START
ON
OFF

21074OP04