

## 4. MODE SELECTION SYSTEM

### 1) STRUCTURE OF CAPO SYSTEM

CAPO, Computer Aided Power Optimization system, is the name of mode selection system developed by Hyundai.

#### (1) Power mode

3 power modes can be selected for the optimal power of the machine operation.

##### ① H mode

This mode is used for heavy-duty work.

##### ② S mode

When key switch is turned ON, this mode is selected automatically. This mode is used for standard work.

##### ③ L mode

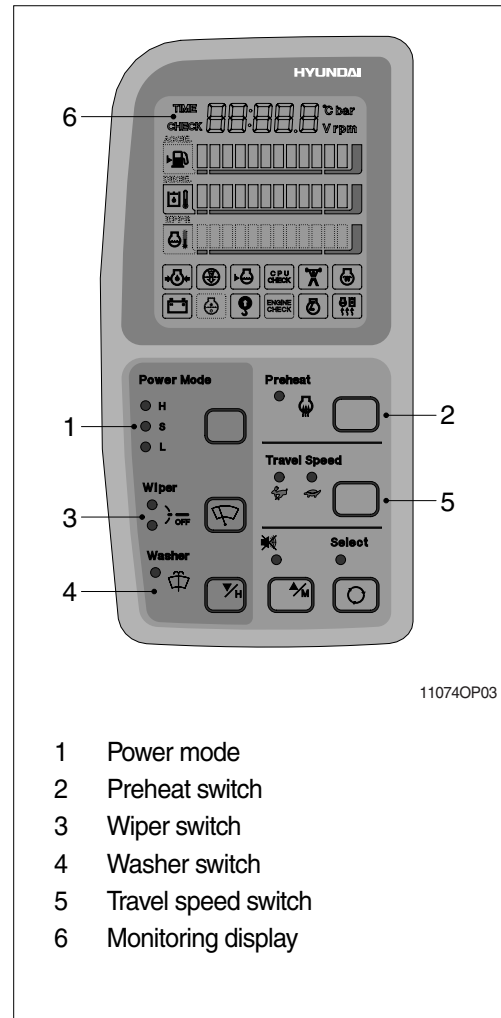
This mode is used for light-duty work.

#### (2) Preheat switch

This switch is used for starting the engine in cold weather. If pressed, grid heater is activated to get easier engine starting.

#### (3) Wiper switch



- Press the switch once to operate wiper.
- Press the switch once more to intermittently operate wiper low speed.
- Press the switch a third time to turn off wiper.



#### (4) Washer switch

The washer liquid is sprayed and the wiper is operated only while pressing the switch.

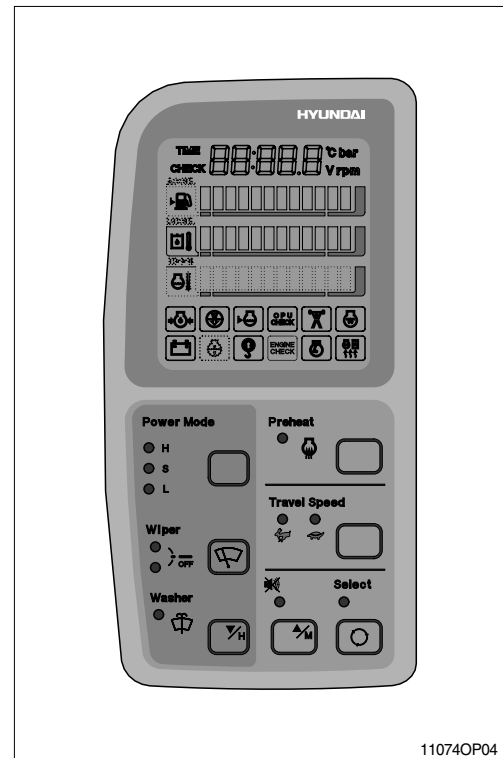
#### (5) Travel speed switch

-  : Low speed traveling.
-  : High speed traveling.

#### (6) Monitoring system

Information of machine performance as monitored by the machine control unit(MCU) can be displayed on the **monitoring display**.

※ Refer to 4-11 page for details.



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#### (7) Self diagnostic system

The MCU diagnoses problems in the CAPO system caused by electric parts' malfunction and by open or short circuit, which are displayed on the **monitoring display** as error codes.

#### (8) Anti-restart system

The system protects the starter from inadvertent restarting after the engine is already operational.

## 2) HOW TO OPERATE MODE SELECTION SYSTEM

### (1) When start key is turned ON

- ① When start key is turned ON, all illumination lamps are ON and all lamps are OFF automatically after 5 seconds. But the battery charging warning lamp and the engine oil pressure warning lamp keep turned ON until engine starting.
- ② After lamp check **CL : 2.0**, the version of cluster program, is displayed on **Monitoring display** for 2 seconds.
- ③ After the version of program is displayed, the cluster returns to default. Exactly engine rpm, battery charging warning lamp and engine oil pressure warning lamp are turned ON and S mode, one touch decel, low travel speed(Turtle mark) are displayed.
- ④ In default condition self-diagnostic function including trouble detecting of electric system can be carried out.

※ Refer to 4-11 page for details.



### (2) After engine start

- ① When the engine is started, three lamps are ON as below.

Mode		Status
Power mode	S	ON
Travel speed	Low(🐢)	ON
One touch decel		ON

- In this condition, tachometer indicates low idle,  $950 \pm 100$ rpm.
  - If coolant temperature is below  $30^{\circ}\text{C}$ , after 10 seconds the engine speed increases to  $1200 \pm 100$ rpm automatically to warm up the machine.
  - After 2-3 minutes, you can select any mode depending on job requirement.
- ② Self-diagnostic function can be carried out the same as start key is ON.

※ Refer to 4-11 page for details.



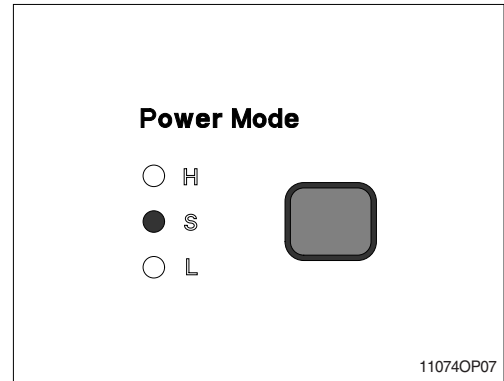
### 3) SELECTION OF POWER MODE

#### (1) S mode

When the accel dial is at setting 10 and one touch decel mode is cancelled and S mode is selected.

Engine rpm	Effect
1950 ± 50	Same power as <b>non</b> mode type machine.

※ When the accel dial is located below 9 the engine speed decreases about 50~100rpm per dial set.

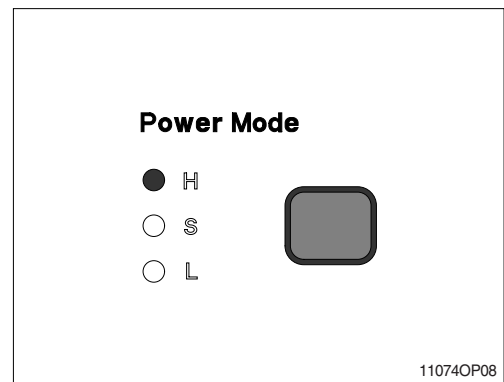


#### (2) H mode

When the accel dial is at setting 10 and one touch decel mode is cancelled and H mode is selected.

Engine rpm	Effect
2050 ± 50	Approximately 110% of power and speed available than <b>non</b> mode type machine or <b>S</b> mode.

※ When the accel dial is located below 9 the engine speed decreases about 50~100rpm per dial set.

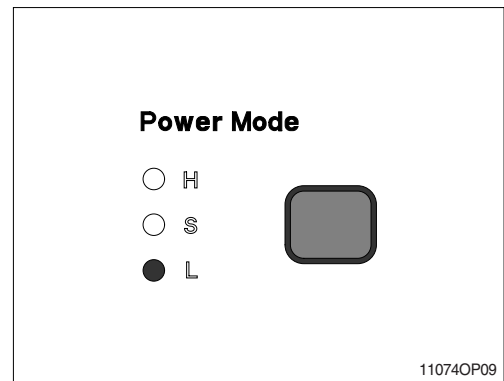


#### (3) L mode

When the accel dial is at setting 10 and one touch decel mode is cancelled and L mode is selected.

Engine rpm	Effect
1850 ± 50	Approximately 85% of power and speed available than <b>non</b> mode type machine or <b>S</b> mode.

※ When the accel dial is located below 9 the engine speed decreases about 50~100rpm per dial set.



#### 4) MONITORING DISPLAY

Information of machine performance as monitored by the CPU controller can be displayed on the cluster when the operator selects a display mode by touching **SELECT** switch alone or with **BUZZER STOP** switch on the cluster as below.

Display group	How to select display mode		Name	Display on the cluster
	Group selection	Display mode selection		
<b>Group 0</b> (Default)	Way 1 Key switch <b>ON</b> or <b>START</b> Way 2 Touch <b>WASHER</b> switch while pressing <b>BUZZER STOP</b> at group 1~4.	Initial	Engine rpm	1750 rpm
		Touch <b>SELECT</b> 1 time	Time	TIME 12:30
		Touch <b>SELECT</b> 2 times	Power shift pressure (EPPR valve)	EP:38 bar
		Touch <b>SELECT</b> 3 times	CPU model & version	11C 1.0
<b>Group 1</b> (Volt, temp, EPPR press, version)	Touch <b>SELECT</b> switch <b>once</b> while pressing <b>BUZZER STOP</b> . In this group <b>SELECT</b> LED <b>ON</b>	Default	Battery voltage(V)	b:24.8v
		Touch <b>SELECT</b> 1 time	Potentiometer voltage(V)	Pa: 2.5v
		Touch <b>SELECT</b> 2 times	Accel dial voltage(V)	dL: 3.8v
		Touch <b>SELECT</b> 3 times	Hydraulic oil temperature(°C)	Hd: 105°C
<b>Group 2</b> (Error code)	Touch <b>SELECT</b> switch <b>twice</b> while pressing <b>BUZZER STOP</b> . In this group <b>BUZZER</b> <b>STOP</b> LED blinks	Default	Current error	CHECK Er: 03
		Touch <b>SELECT</b> 1 time	Recorded error (Only key switch ON)	TIME Er: 03
		Press down(▼) & <b>SELECT</b> at the same time	Recorded error deletion (Only key switch ON)	TIME Er: 00
		Default	Power boost switch	Pb: on or off
<b>Group 3</b> (Switch input)	Touch <b>SELECT</b> switch <b>3 times</b> while pressing <b>BUZZER STOP</b> . In this group <b>SELECT</b> LED blinks at 0.5sec interval	Touch <b>SELECT</b> 1 time	One touch decel switch	od: on or off
		Touch <b>SELECT</b> 2 times	Preheat switch	PH: on or off
		Touch <b>SELECT</b> 3 times	Overload pressure switch	o: on or off
		Default	Hourmeter	Hd: on or off
<b>Group 4</b> (Output)	Touch <b>SELECT</b> switch <b>4 times</b> while pressing <b>BUZZER STOP</b> . In this group <b>SELECT</b> LED blinks at 1sec interval	Touch <b>SELECT</b> 1 time	Neutral relay (Anti-restart relay)	nr: on or off
		Touch <b>SELECT</b> 2 times	Travel speed solenoid	SS: on or off
		Touch <b>SELECT</b> 3 times	Power boost solenoid (2-stage relief solenoid)	PS: on or off
		Touch <b>SELECT</b> 4 times	Preheat relay	PR: on or off

※ By touching **SELECT** switch once while pressing **BUZZER STOP**, display group shifts.

Example : Group 0 → 1 → 2 → 3 → 4 → 0