

## GROUP 12 SELF-DIAGNOSTIC SYSTEM

### 1. OUTLINE

When any abnormality occurs in the CAPO-III system caused by electric parts malfunction and by open or short circuit, the CPU controller diagnoses the problem and sends the error codes to the cluster and also stores them in the memory.

The current or recorded error codes are displayed at the error display mode selected by touching **SELECT** switch 2 times while pressing **BUZZER STOP** switch.

### 2. CURRENT ERROR DISPLAY

Cluster displays **Co : Err** and makes buzzer sound itself to warn the communication error when communication problem caused by wire-cut or malfunction of the CPU controller occurs.

Cluster displays real time error codes received from CPU controller through communication. In case of no problem it displays **Err : 00**.

If there are more than 2 error codes, each one is displayed for 2 seconds respectively, and there is short term beep at every number change.

#### Examples :

1) Communication Error

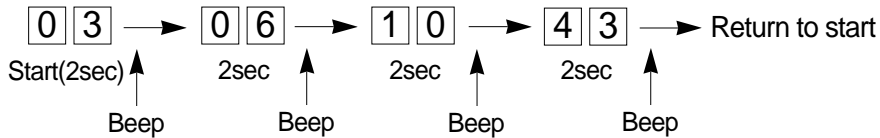
Co : Err & Buzzer sound

2) No problem

Err : 00

3) 4 Error codes(03, 06, 10, 43) display

Err : 03



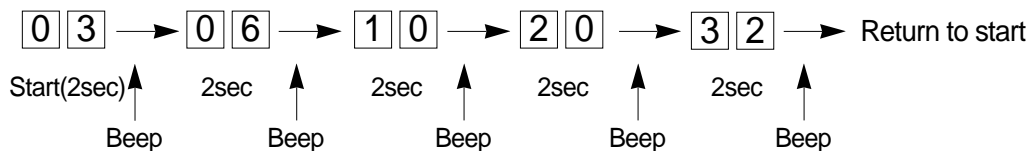
### 3. RECORDED ERROR DISPLAY

The recorded error can be displayed only when the key switch is at ON position.

Each recorded error code memoried in the CPU controller is displayed for 2 seconds respectively, and there is short term beep at every number change.

**Examples :** 5 Recorded error codes(03, 06, 10, 20, 32) display

TIME Err : 03



### 4. DELETE ALL RECORDED ERROR CODES

Select recorded error(TIME Err) display and press engine speed up (▲) and down (▼) switch at the same time for 2 seconds or more. Cluster display changes to TIME Err : 00, which shows that CPU controller deleted all the recorded error in the memory.

## 5. ERROR CODES TABLE

Display		Problems
Current error	Recorded error	
Err : 00	TIME Err : 00	No problem
Err : 01	TIME Err : 01	Short circuit in governor motor 2 lines
Err : 02	TIME Err : 02	Potentiometer is shorted to Vcc(5V) or battery(+)
Err : 03	TIME Err : 03	Short circuit in pump EPPR valve 2 lines
Err : 04	TIME Err : 04	Short circuit in swing EPPR valve 2 lines
Err : 05	TIME Err : 05	Short circuit in travel solenoid 2 lines
Err : 06	TIME Err : 06	Short circuit in power max solenoid 2 lines
Err : 07	TIME Err : 07	Short circuit in max flow solenoid 2 lines
Err : 08	TIME Err : 08	Short circuit in cut off cancel solenoid 2 lines
Err : 09	TIME Err : 09	Short circuit in swing lock solenoid 2 lines
Err : 10	TIME Err : 10	Short circuit in hourmeter 2 lines
Err : 12	TIME Err : 12	P1 pressure sensor is shorted to battery(+)
Err : 13	TIME Err : 13	P2 pressure sensor is shorted to battery(+)
Err : 14	TIME Err : 14	P3 pressure sensor is shorted to battery(+)
Err : 16	TIME Err : 16	Governor motor circuit is open or shorted to ground
Err : 17	TIME Err : 17	Potentiometer circuit is open or shorted to ground
Err : 18	TIME Err : 18	Pump EPPR valve circuit is open or shorted to ground
Err : 19	TIME Err : 19	Swing EPPR valve circuit is open or shorted to ground
Err : 20	TIME Err : 20	Travel solenoid circuit is open or shorted to ground
Err : 21	TIME Err : 21	Power max solenoid circuit is open or shorted to ground
Err : 22	TIME Err : 22	Max flow solenoid circuit is open or shorted to ground
Err : 23	TIME Err : 23	Cut off cancel solenoid circuit is open or shorted to ground
Err : 24	TIME Err : 24	Swing lock solenoid circuit is open or shorted to ground
Err : 25	TIME Err : 25	Hourmeter circuit is open or shorted to ground
Err : 26	TIME Err : 26	Swing speed dial circuit is open or shorted to ground
Err : 27	TIME Err : 27	P1 pressure sensor circuit is open or shorted to ground
Err : 28	TIME Err : 28	P2 pressure sensor circuit is open or shorted to ground
Err : 29	TIME Err : 29	P3 pressure sensor circuit is open or shorted to ground
Err : 32	TIME Err : 32	Battery power input circuit is open
Err : 33	TIME Err : 33	No alternator voltage input
Err : 34	TIME Err : 34	Controller input voltage is less than 18V
Err : 35	TIME Err : 35	Controller input voltage is greater than 38V
-	TIME Err : 36	Error in data receiving from cluster
Err : 37	TIME Err : 37	Engine speed sensor circuit is open or shorted to ground or sensor signal is less than 1V
Err : 38	TIME Err : 38	Anti-restart relay circuit is open or shorted to ground
Err : 39	TIME Err : 39	Governor motor does not stop at a target position
Err : 40	TIME Err : 40	There is more than 500rpm difference between target speed and actual speed
Err : 41	TIME Err : 41	Hydraulic oil temperature sensor circuit is shorted to ground
Err : 42	TIME Err : 42	Fuel level sensor circuit is shorted to ground
Err : 43	TIME Err : 43	Coolant temperature sensor circuit is shorted to ground
Err : 45	TIME Err : 45	Hydraulic oil temperature sensor circuit is open or shorted to battery(+)
Err : 46	TIME Err : 46	Fuel level sensor circuit is open or shorted to battery(+)
Err : 47	TIME Err : 47	Coolant temperature sensor circuit is open or shorted to battery(+)

※ Every machine may not have all of the above error codes. For example, machines not equipped pressure sensors will not have the error codes 12, 13, 14, 27, 28, 29.