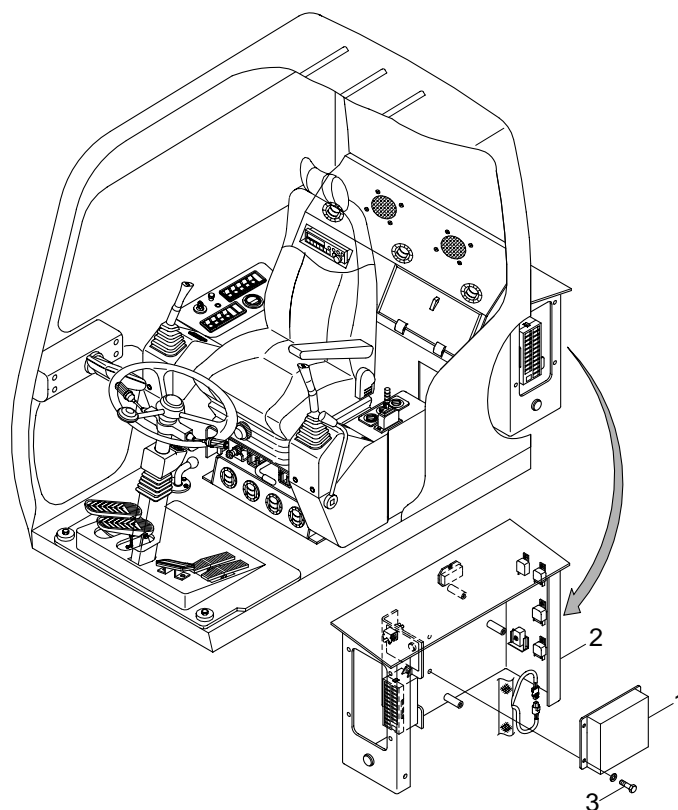


## GROUP 13 ENGINE CONTROL SYSTEM

### 1. CPU CONTROLLER MOUNTING



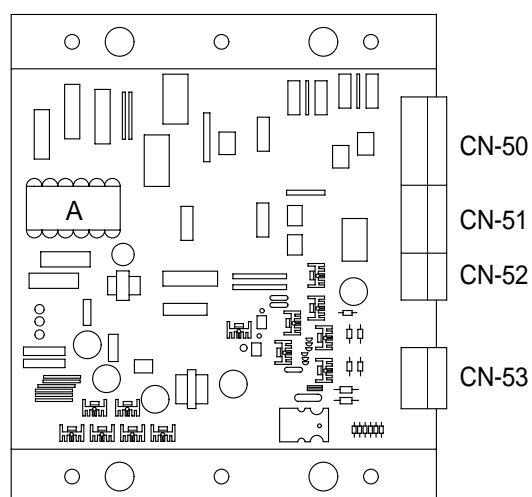
1 CPU controller

2 Electric box

3 Bolt(M8)

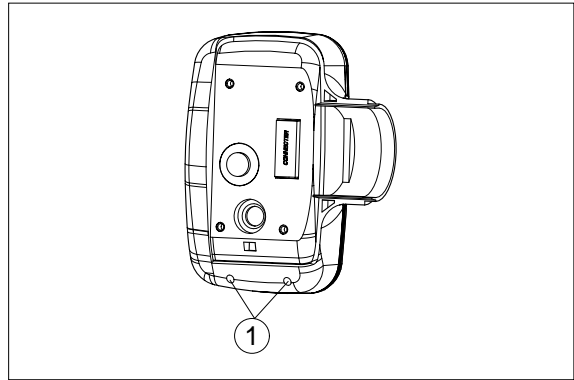
### 2. CPU CONTROLLER ASSEMBLY

- 1) Remove four pieces of bolt(3) of electric box.
- 2) Disconnect 4 connectors from CPU controller.
- 3) Remove 6 pieces of screw and open the cover of CPU controller.
- 4) Inspection : Check PCB(Printed Circuit Board)
  - (1) If any damage is found, replace CPU controller assembly.
  - (2) If not, but CAPO system does not work then replace **A** only.(A : EPROM)
    - ※ Removal : Insert small screwdriver or knife to bottom of EPROM and lift up carefully.
    - ※ Assembly : Assemble EPROM to mach with semicircle mark.

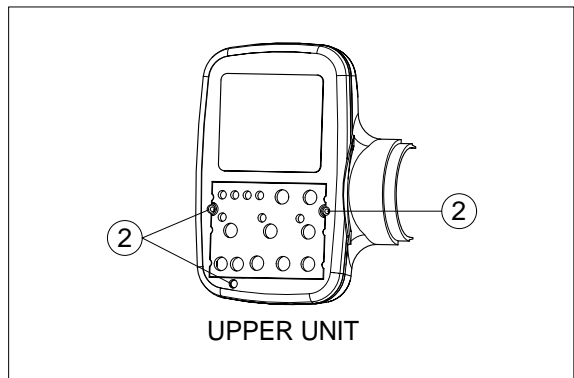


### 3. EXCHANGE METHOD OF THE ROM

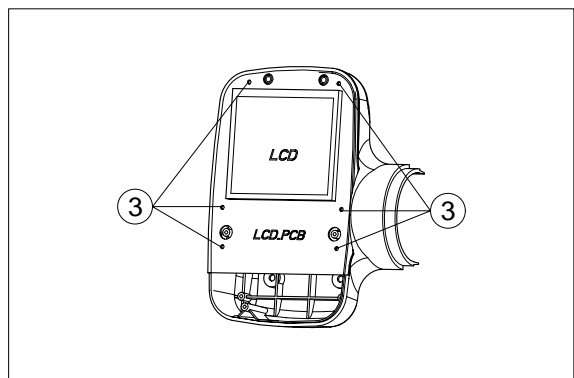
- 1) Disassemble the cluster.  
(Screw driver(+)) or L wrench 6mm)
- 2) Loosen the screw.(1 × 2 units)  
(Screw driver(+)) under d=5mm, over l=100mm)



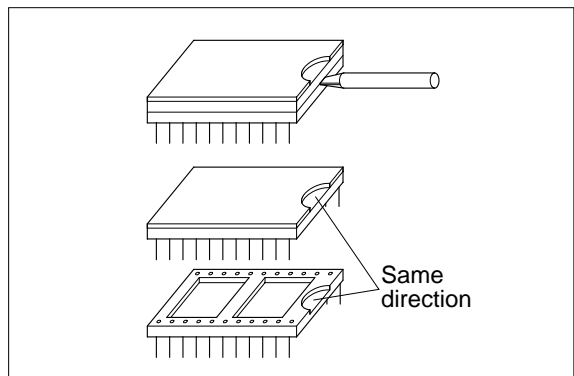
- 3) Remove the decal attached in front side of cluster.(First remove decal a little in the corner with sharp tool and remove all of decal by hand.)
- 4) Loosen the screw.(2 × 3units)  
(Screw driver(+))



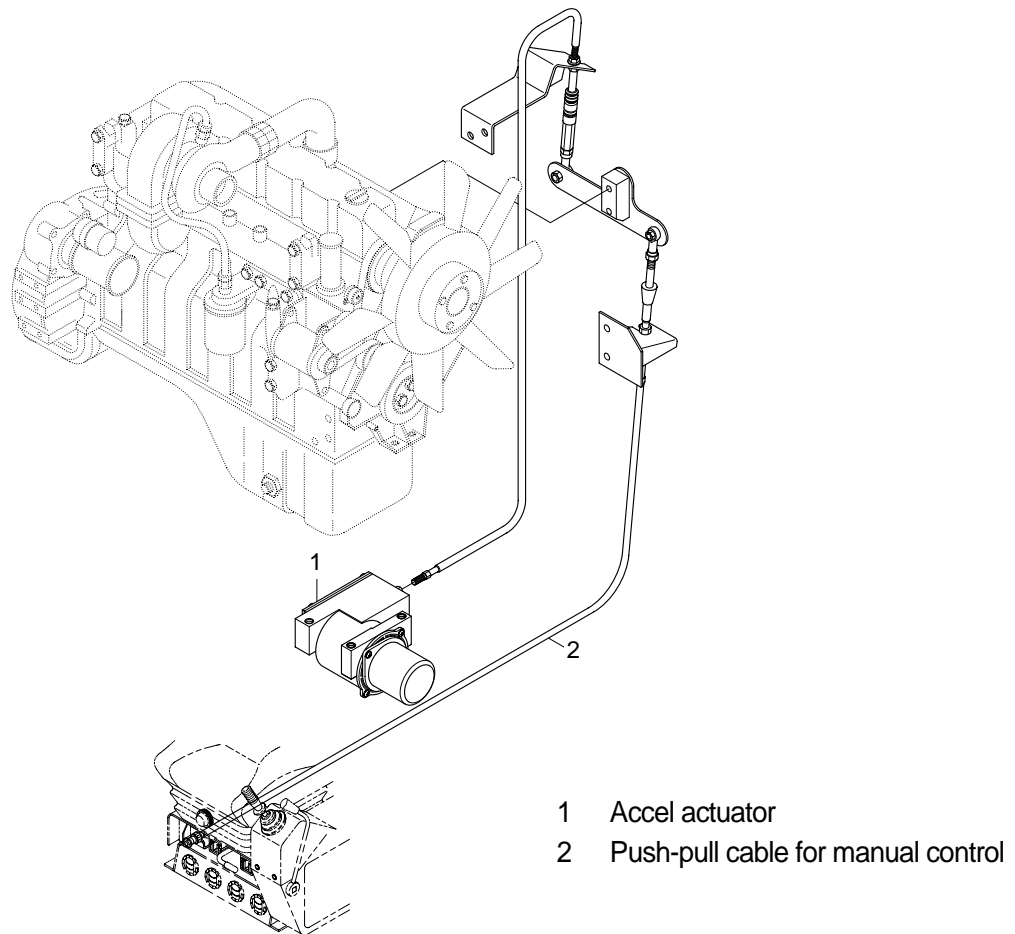
- 5) Then you can have two piece of cluster easily.(Upper, lower unit)
- 6) Loosen the screw.(3 × 6units)(You can see the screws in the rear side of upper unit)  
(Screw driver(+))



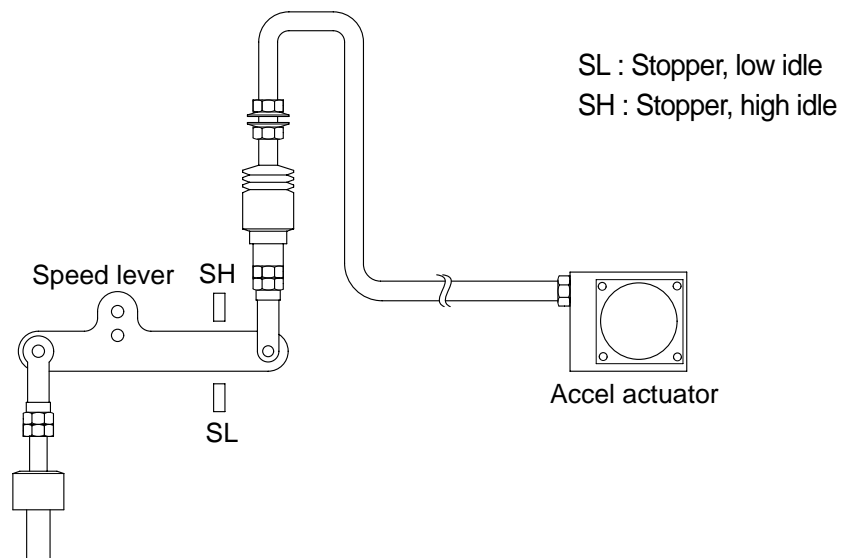
- 7) Then you can turn the LCD plate to the left side and remove the old ROM from the LCD plate.  
(Small screw driver(-)) or sharp tool)
- 8) Install the new ROM.(Be careful of direction and assemble the cluster in the reverse order to removal).



#### 4. ENGINE GOVERNOR MOTOR



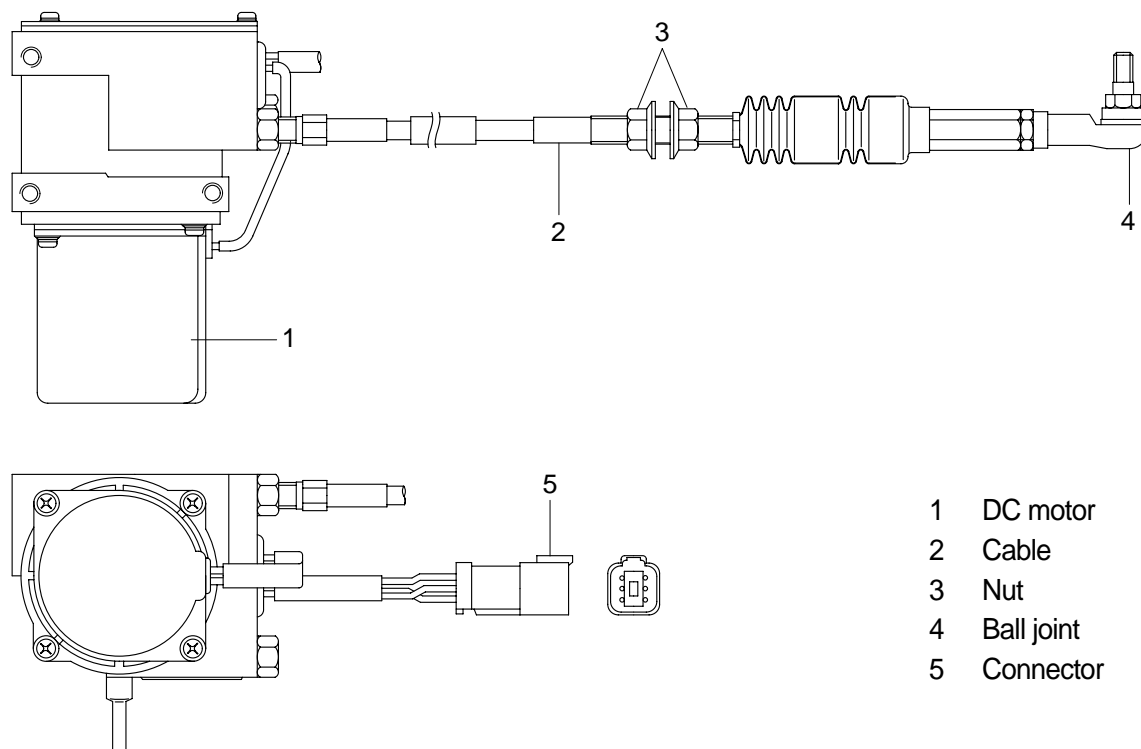
##### 1) ENGINE THROTTLE LEVER



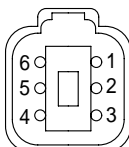
##### 2) EMERGENCY CABLE (Push-pull cable)

It controls engine speed by connecting onto the lever of the injection pump when the malfunction of the CPU controller or the governor motor happen.

## 2) ACCEL ACTUATOR



- 1 DC motor
- 2 Cable
- 3 Nut
- 4 Ball joint
- 5 Connector

Connector		
Type		6P, female
Line color & description	1	White(Potentiometer 5V)
	2	Blue(Potentiometer SIG)
	3	Black(Potentiometer GND)
	4	-
	5	Green(Motor+)
	6	Yellow(Motor -)
Inspection		Check resistance Spec : 1~2 Ω(Between No.5-6) 0.8~1.2kΩ (Between No.1-3)

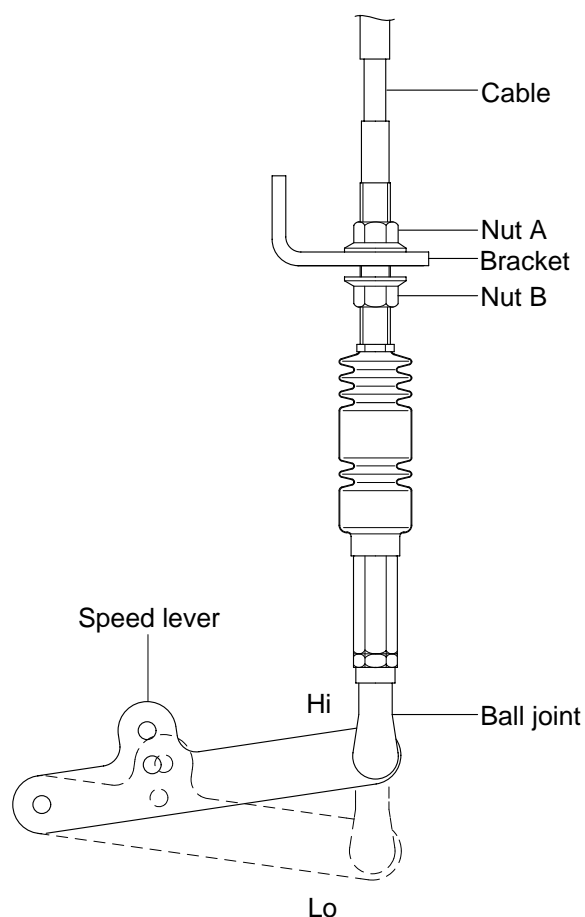
#### 4) ACCEL ACTUATOR CABLE SETTING PROCEDURE

##### (1) Key OFF

- ① Connect the ball joint of cable to engine speed lever.
- ② Pull the cable to high stopper and put nut **A** edge to yoke of the bracket.
  - ※ Make throttle lever not contact to the edge of high stopper.
- ③ Turn nut **A** to clockwise until touching to the edge of high stopper.
- ④ Make 1 turn more to clockwise in condition of the nut **A** contact to the edge of high stopper.

##### (2) Key START

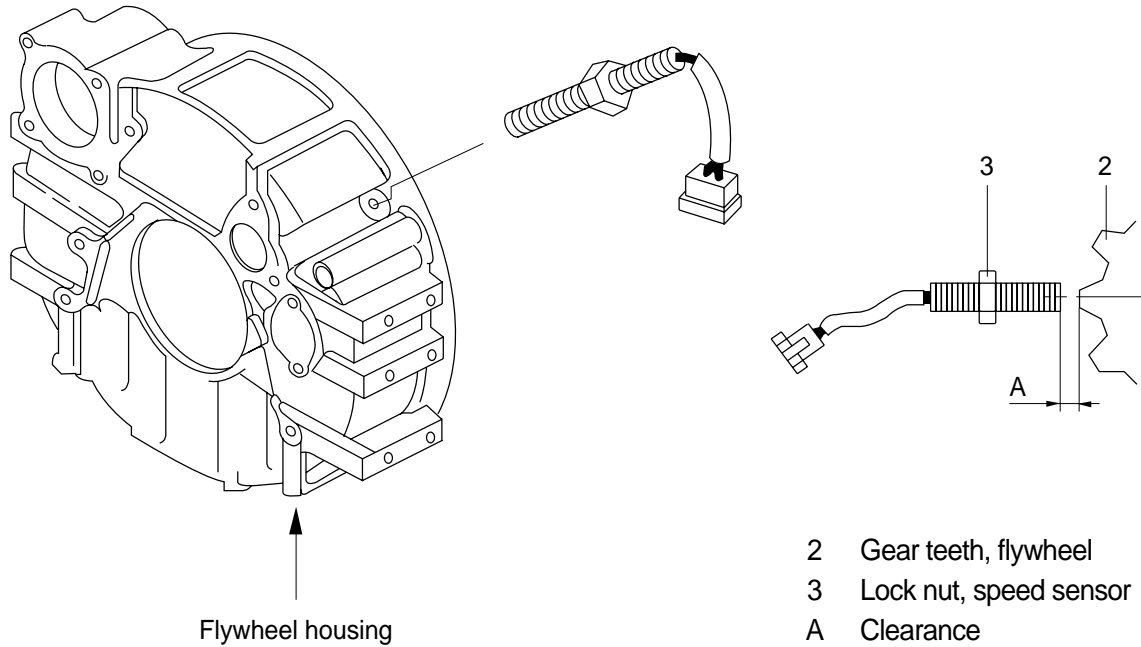
- ⑤ Confirm if the engine speed on cluster is same as each mode specification.
- ⑥ If the engine speed displayed on cluster is higher than each mode specification, then turn the nut **A** to counter clockwise and make the engine speed same to each mode specification.
- ⑦ If the engine speed displayed on cluster is lower than each mode specification, then turn the nut **A** to clockwise and make the engine speed same to each mode specification.
- ⑧ Turn nut **B** to clockwise and fix the cable to bracket.



Mode	RPM
H	$2240 \pm 50$
S	$2040 \pm 50$
L	
F	$1840 \pm 50$
Auto decel	$1200 \pm 100$
Key start	$950 \pm 100$

## 5. ENGINE SPEED SENSOR

### 1) DETECT ACTUAL ENGINE RPM AND SEND SIGNAL TO TACHOMETER



### 2) INSTALLATION

- (1) Clean contacting point of sensor.
- (2) Loosen lock nut.
- (3) Screw speed sensor into flywheel housing.
- (4) Turn it back 135° when it contacts with gear teeth.
- (5) Tight lock nut and connect wiring.

### 3) INSPECTION

- (1) Check resistance
  - SPEC : 300  $\Omega$
- (2) Check voltage while engine run.
  - SPEC : 2~28Vac, dependent on the engine speed(rpm)