## 1. ALL SPEED ARE SLOW

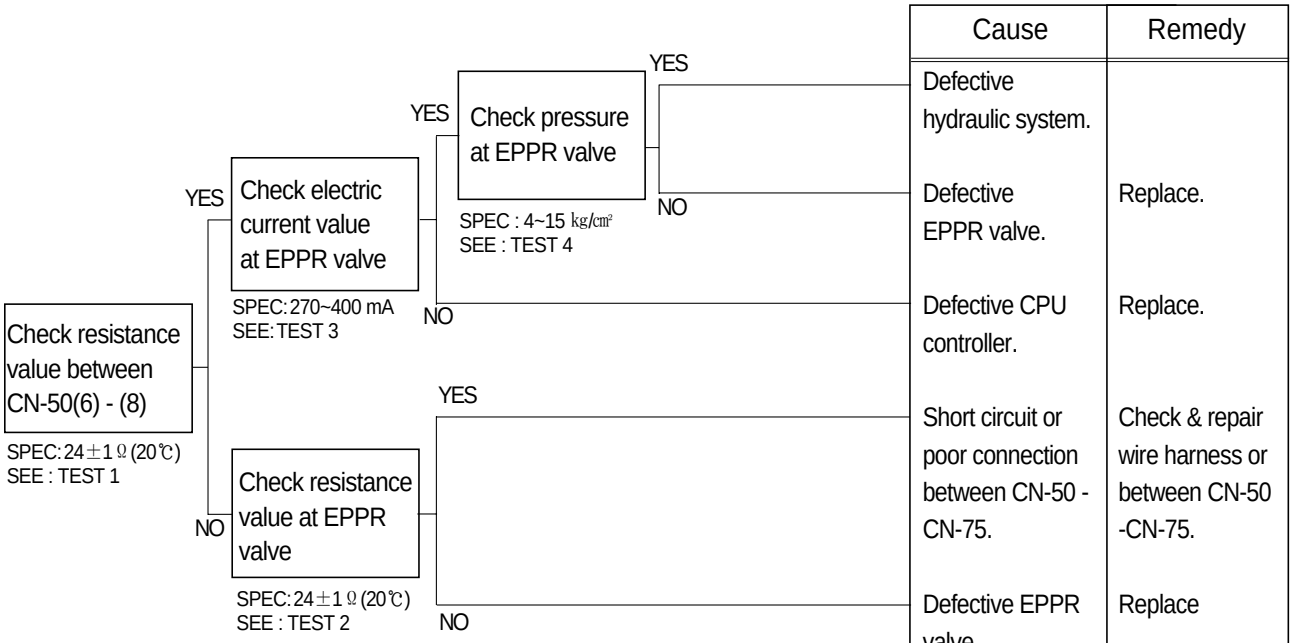
※ Boom, Arm, Bucket, Swing and travel but engine speed is good.

※ Spec : H-mode 2350 +50rpm S-mode 2350 +50rpm

L-mode 2150 +50rpm F-mode 1750 +50rpm

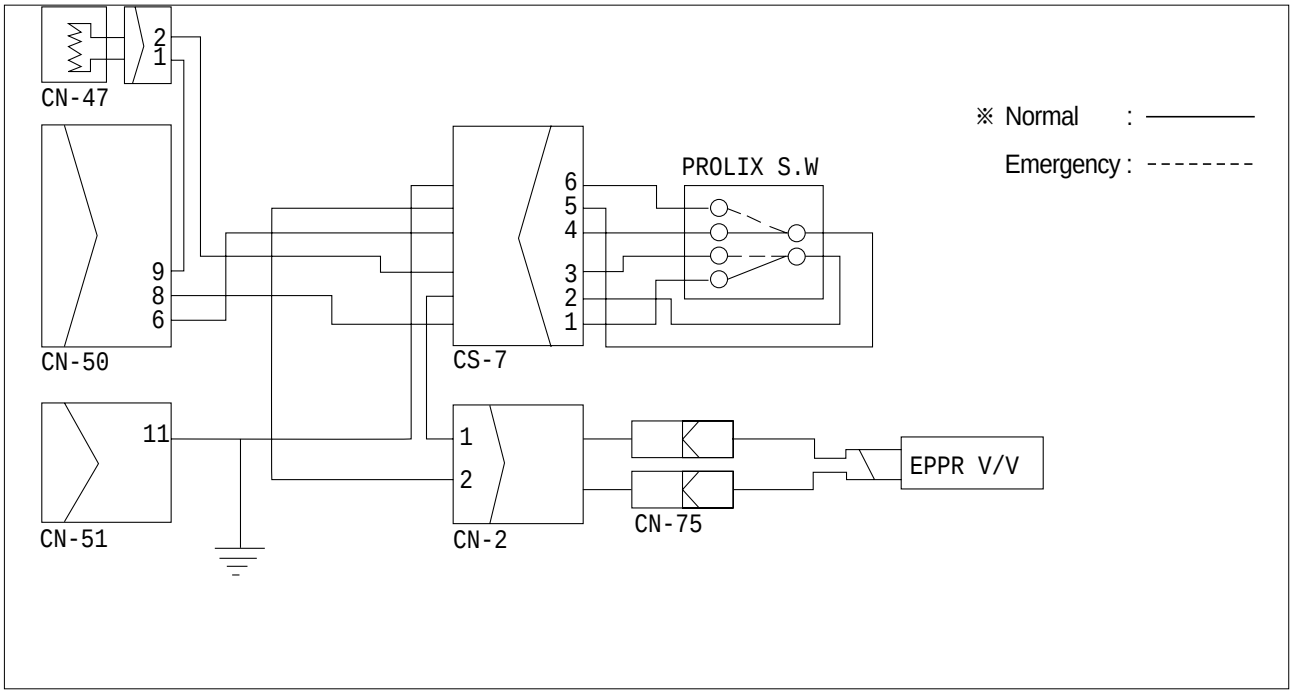
※ Before carrying out below procedure, check all the related connectors are properly inserted.

### 1) INSPECTION PROCEDURE




| Cause | Remedy |
|---|---|
| Defective hydraulic system. | |
| Defective EPPR valve. | Replace. |
| Defective CPU controller. | Replace. |
| Short circuit or poor connection between CN-50 - CN-75. | Check & repair wire harness or between CN-50 -CN-75. |
| Defective EPPR valve. | Replace |

**Wiring diagram**

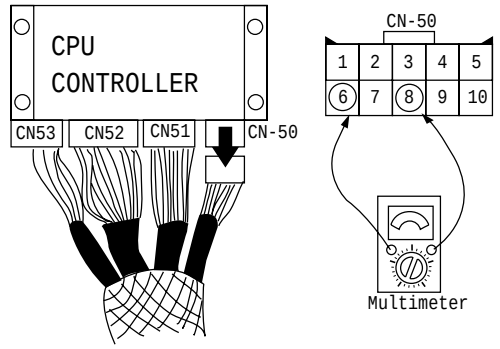


**2) TEST PROCEDURE**

(1) **Test 1** : Check resistance value (6)-(8) at connector CN-50.

① Starting key OFF.
② Remove CPU controller and disconnect connector CN-50.
③ Check resistance value between pin No. 6 and No. 8 at connector CN-50.

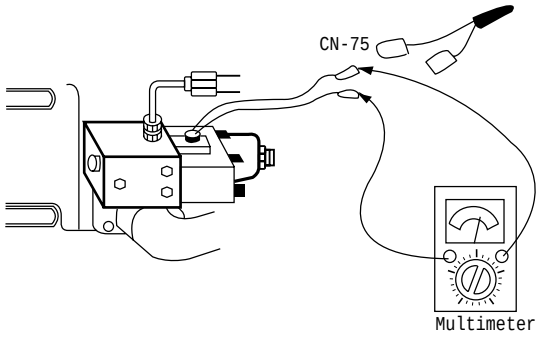
SPEC : 24 ± 1Ω(20℃)




(2) **Test 2** : Check resistance value at connector CN-75.

① Starting key OFF.
② Disconnect connector CN-75 from EPPR valve at main hydraulic pump.
③ Check resistance value between 2 lines as below.

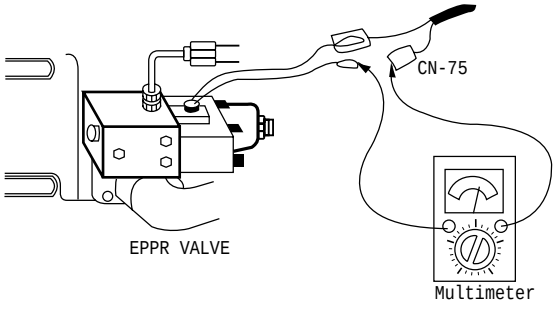
SPEC : 24 ± 1Ω(20℃)




(3) **Test 3** : Check electric current value at EPPR valve.

① Start engine.
② Set S-mode and cancel auto decel mode.
③ If tachometer show approx 2350+50rpm, disconnect one wire harness from EPPR valve.
④ Install multimeter as Fig.
⑤ Check electric current value at bucket circuit relief position.

SPEC : 270~400mA



(4) **Test 4** : Check pressure at EPPR valve.

① Remove plug and connect pressure gauge as Fig.
Gauge capacity : 0 to 40~50㎏/㎠
(0 to 580~730 psi)

② Start engine.

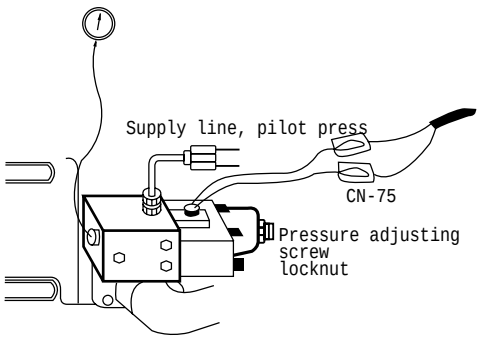
③ Set S-mode and cancel auto decel mode.

④ If tachometer show approx. 2350+50rpm, check pressure at relief position of bucket circuit by operating bucket control lever.

⑤ If pressure is not correct, adjust it.

⑥ After adjust, test the machine.

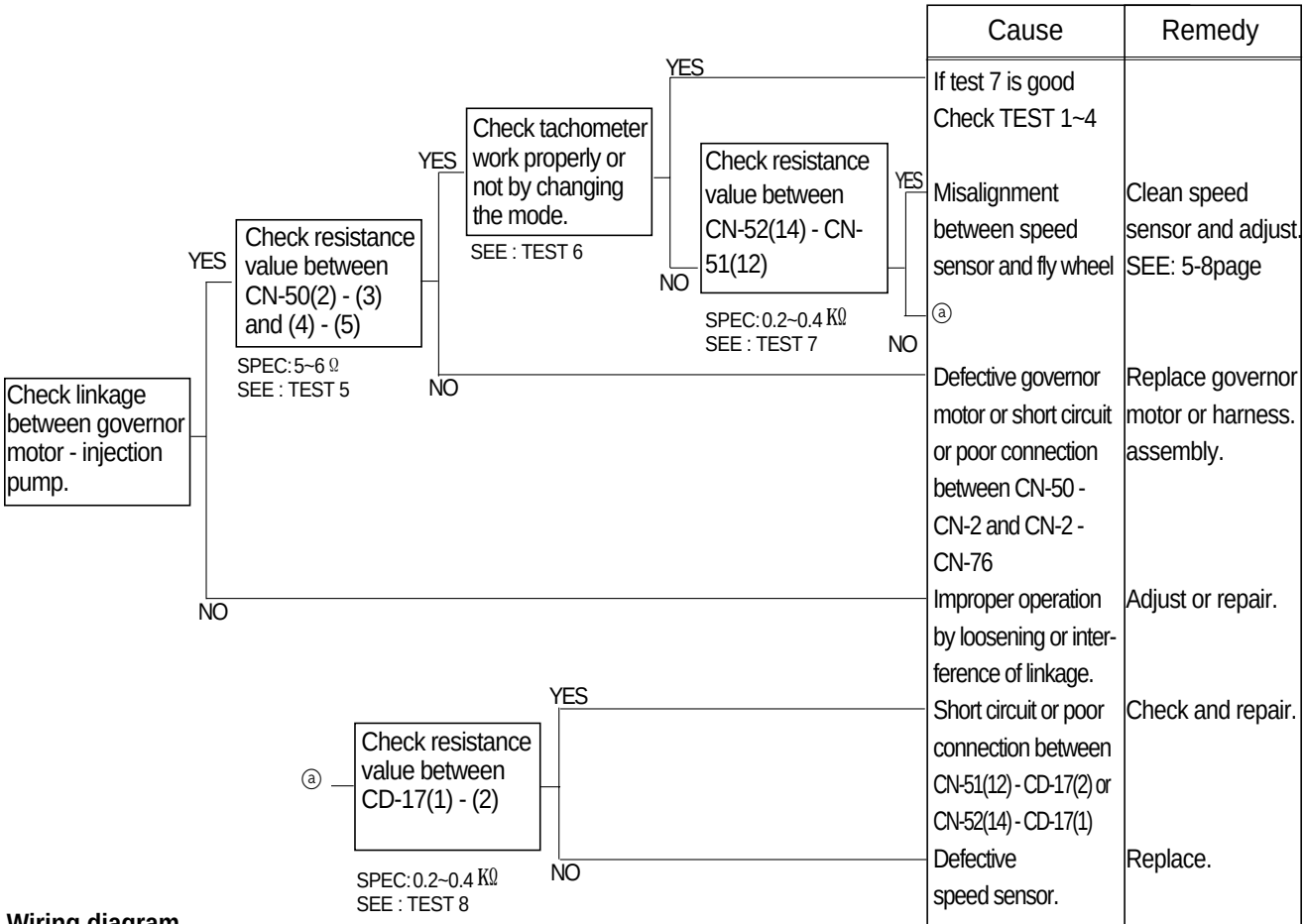
SPEC : 4~15㎏/㎠(58~220 psi)



## 2. ENGINE SPEED IS SLOW AT ALL MODE

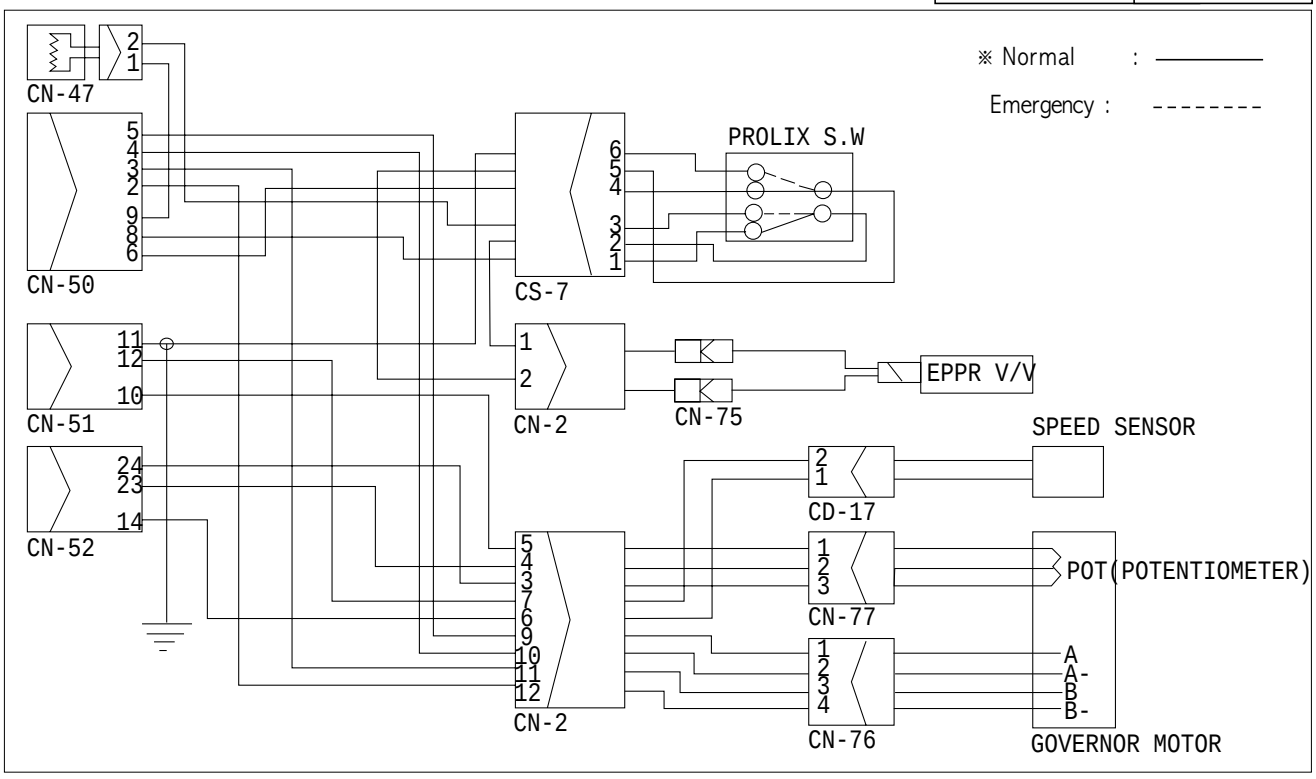
※ Before carrying out below procedure, check all the related connectors are properly inserted.

### 1) INSPECTION PROCEDURE




| Cause | Remedy |
|---|---|
| If test 7 is good Check TEST 1~4 | |
| Misalignment between speed sensor and fly wheel ⓐ | Clean speed sensor and adjust. SEE: 5-8page |
| Defective governor motor or short circuit or poor connection between CN-50 - CN-2 and CN-2 - CN-76 | Replace governor motor or harness. assembly. |
| Improper operation by loosening or interference of linkage. | Adjust or repair. |
| Short circuit or poor connection between CN-51(12) - CD-17(2) or CN-52(14) - CD-17(1) | Check and repair. |
| Defective speed sensor. | Replace. |

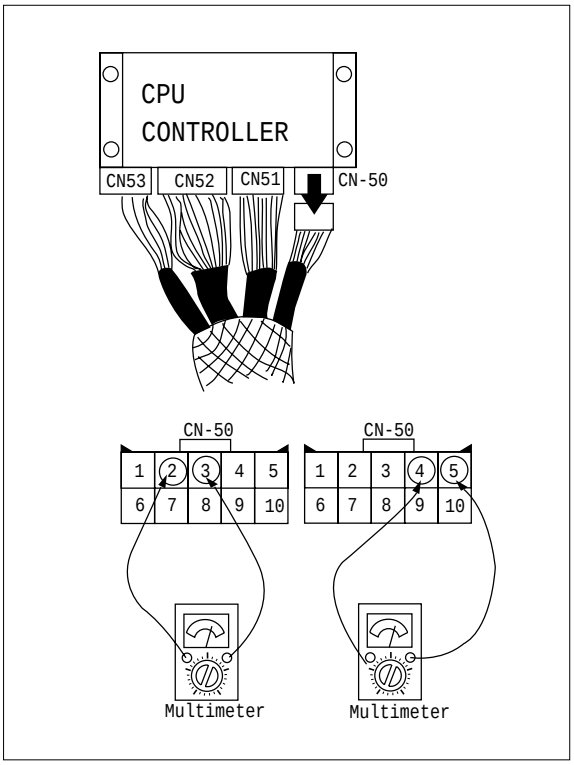
**Wiring diagram**



## 2) TEST PROCEDURE

(1) **Test 5** : Check resistance value between (2)-(3) and (4)-(5) at connector CN-50.

① Starting key OFF.
② Remove CPU controller and disconnect connector CN-50 from CPU controller.
③ Check resistance value as below.




(2) **Test 6** : Check tachometer (Work properly or not.)

① Start engine.
② Check tachometer reading.

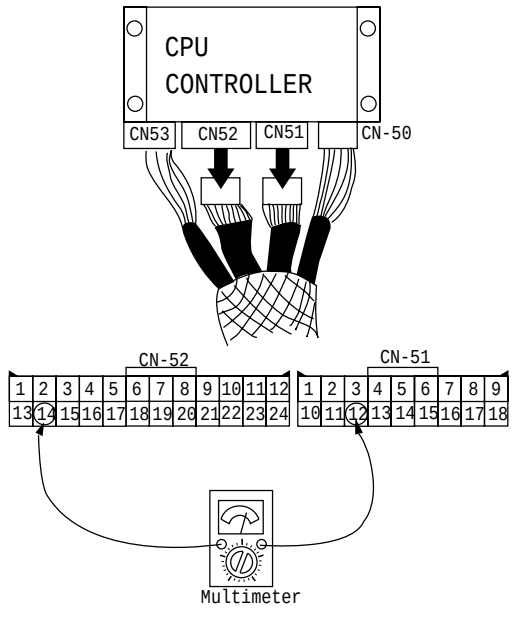
unit : rpm

| Spec | | Remark |
|---|---|---|
| H-mode | 2350$^{+50rpm}$ | Check rpm after cancel the auto decel mode. |
| S-mode | 2350$^{+50rpm}$ | |
| L-mode | 2150$^{+50rpm}$ | |
| F-mode | 1750$^{+50rpm}$ | |

(3) **Test 7** : Check resistance value between (14) of CN-52 and (12) of CN-51.

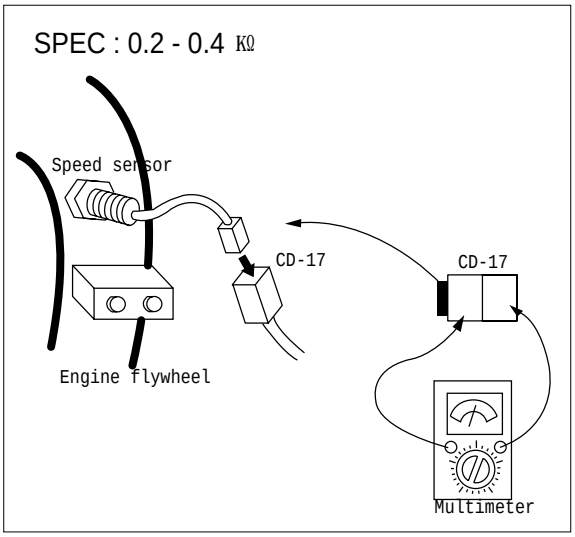
① Starting key OFF.
② Remove CPU controller and disconnect connector CN-51 and CN-52 from CPU controller.
③ Check resistance value as below.

SPEC : 0.2 ~ 0.4 KΩ



(4) **Test 8** : Check resistance value at speed sensor.

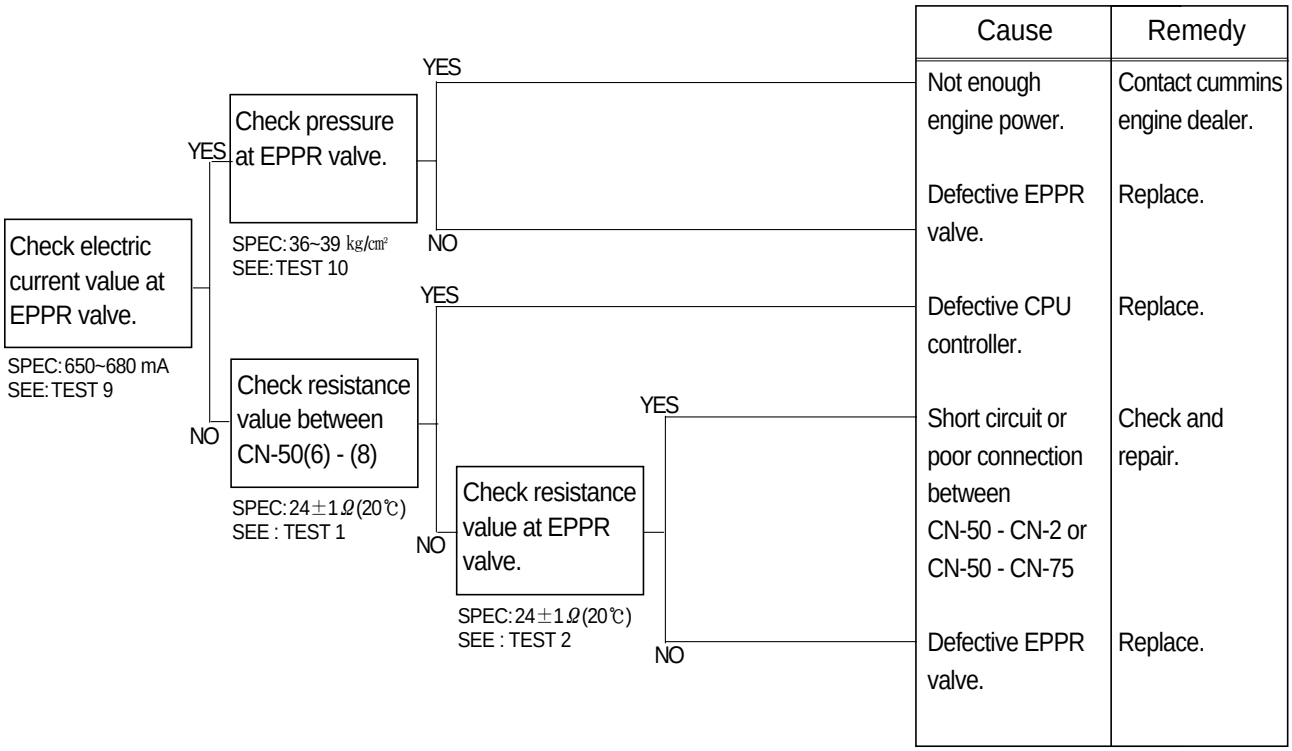
① Starting key OFF.
② Disconnect connector CD-17 of speed sensor at engine flywheel housing.
③ Check resistance value as Fig.



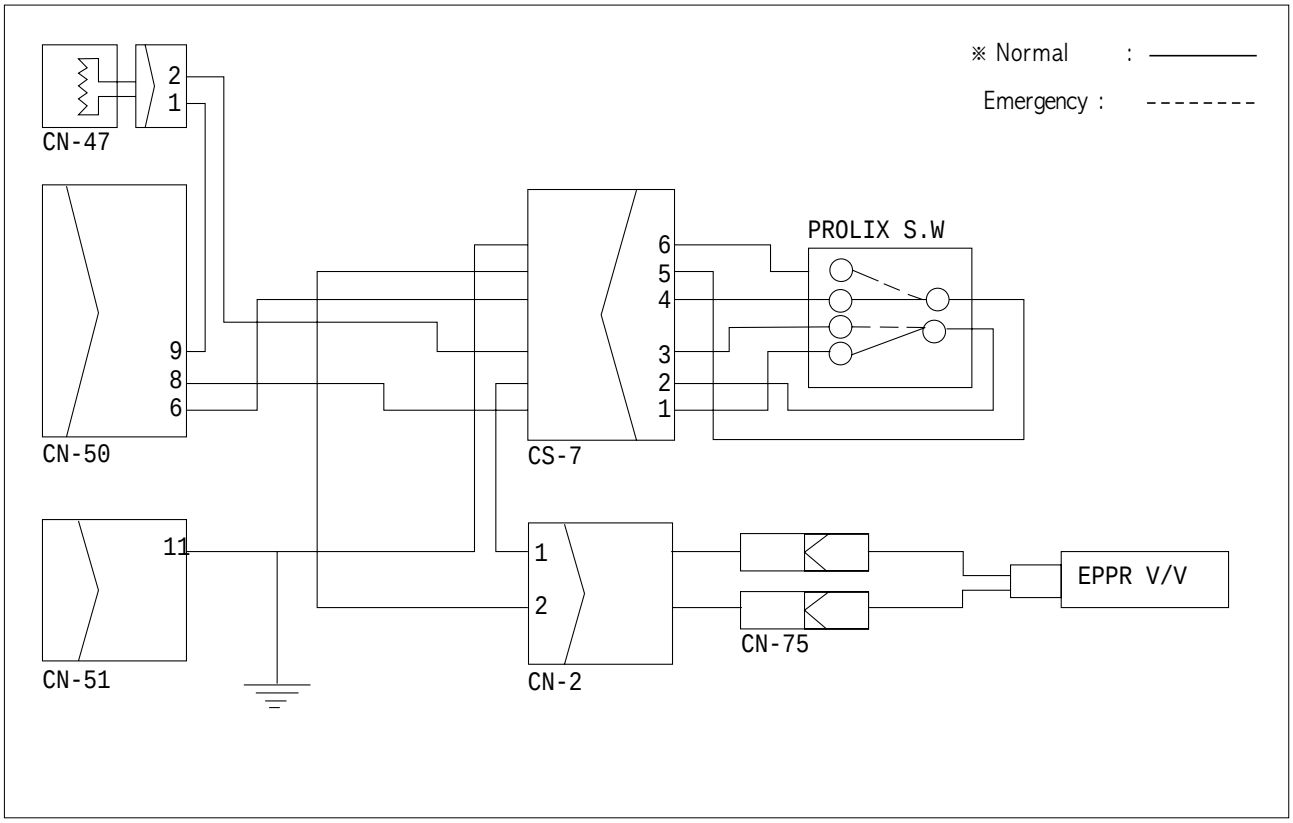
## 3. ENGINE STALL

※ Before carrying out below procedure, check all the related connectors are properly inserted.

### 1) INSPECTION PROCEDURE




**Wiring diagram**

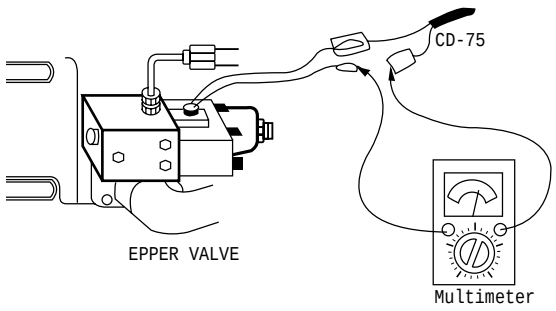


**2) TEST PROCEDURE**

(1) **Test 9** : Check electric current value at EPPR valve at F-mode

① Start engine.
② Set F-mode with 1750 +50rpm
③ Install multimeter as below.
④ Check electric current value at bucket circuit relief position.

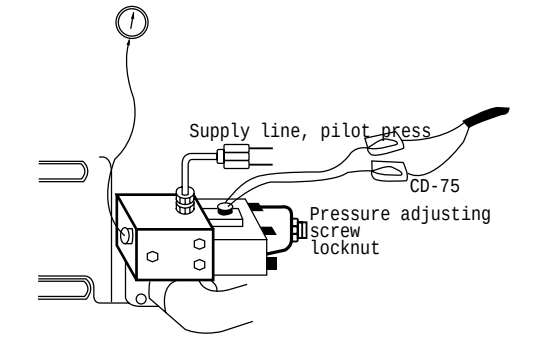
SPEC : 650~680mA




(2) **Test 10** : Check pressure at EPPR valve at F-mode

① Connect pressure gauge at EPPR valve.
② Start engine.
③ Set F-mode with 1750 +50rpm
④ Operate bucket lever completely push or pull.
⑤ Hold arm lever at the end of stroke.
⑥ Check pressure at relief position.

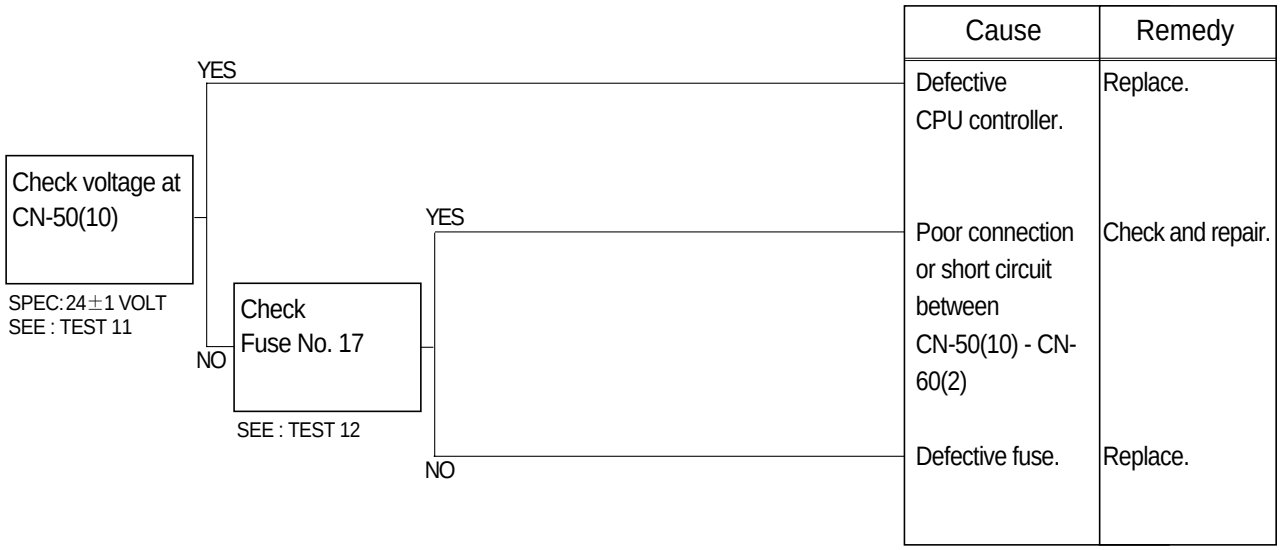
SPEC : 36~39㎏/㎠(520~570 psi)



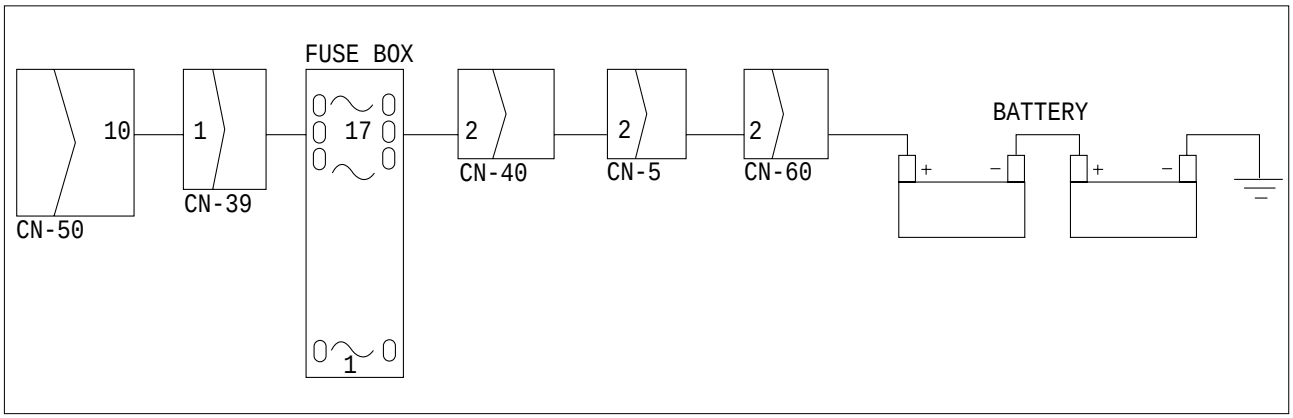
## 4. CLUSTER LAMPS ARE OFF IMMEDIATELY AFTER KEY SWITCH OFF

※ Before carrying out below procedure, check all the related connector are properly inserted.
Normal condition : Lamps "ON" approx. 3-12 second after key switch OFF.

### 1) INSPECTION PROCEDURE




**Wiring diagram**



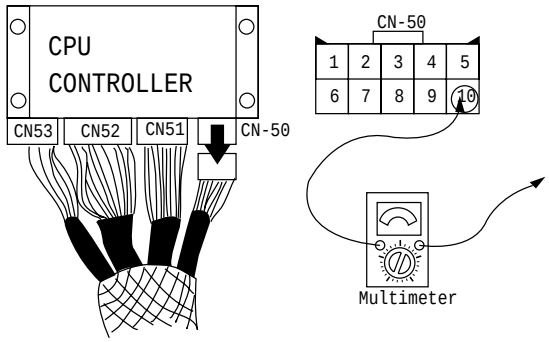
**2) TEST PROCEDURE**

(1) **Test 11** : Check voltage at (10) of CN-50.

① Starting key OFF.

② Disconnect connector CN-50 from CPU controller.

SPEC : 24 ± 1Volt



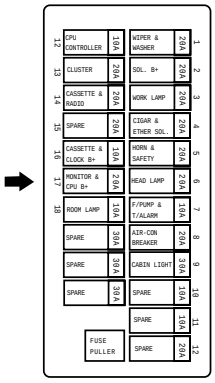

(2) **Test 12** : Check fuse at (17) of fuse Box.

① Starting key OFF.

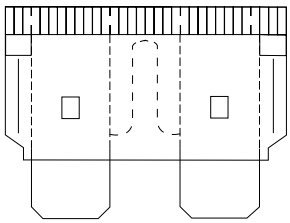
② Selecting the fuse at (17) of fuse Box.

③ Check if the fuse is defective or not.

Fuse box




SPEC : 20A

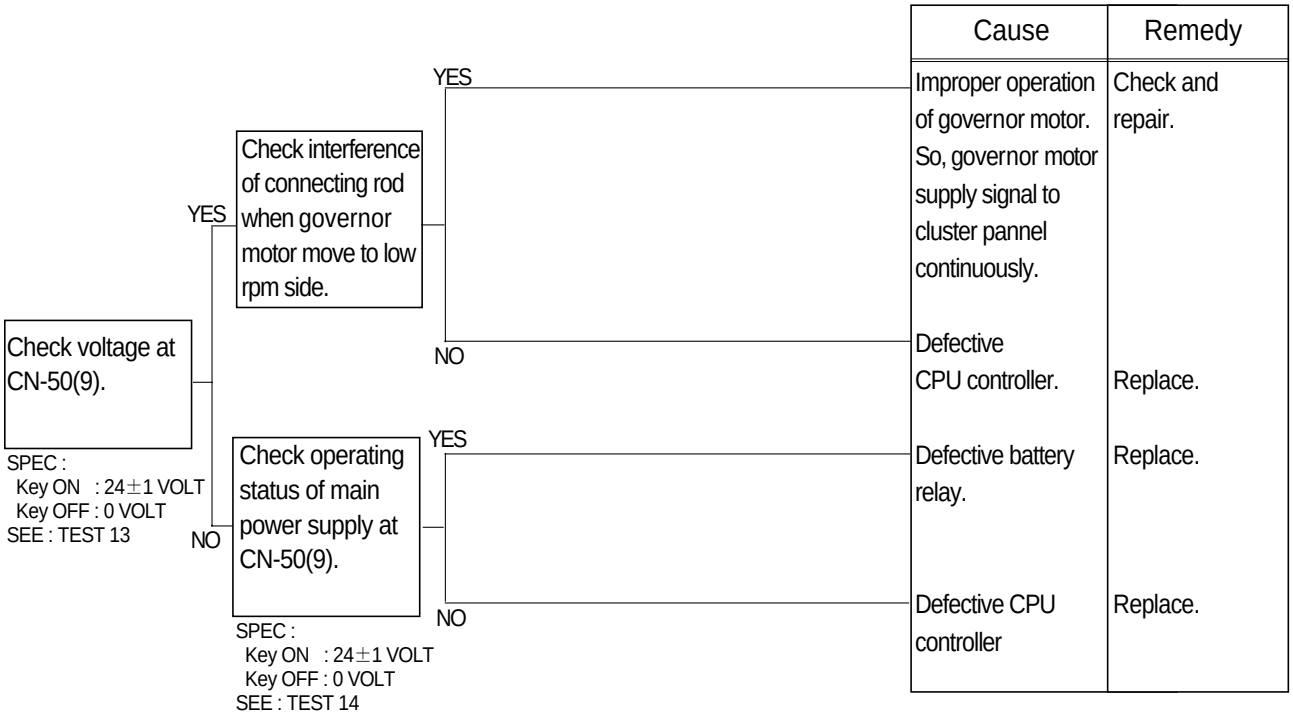


Fuse No. 17 for CPU $B^+$

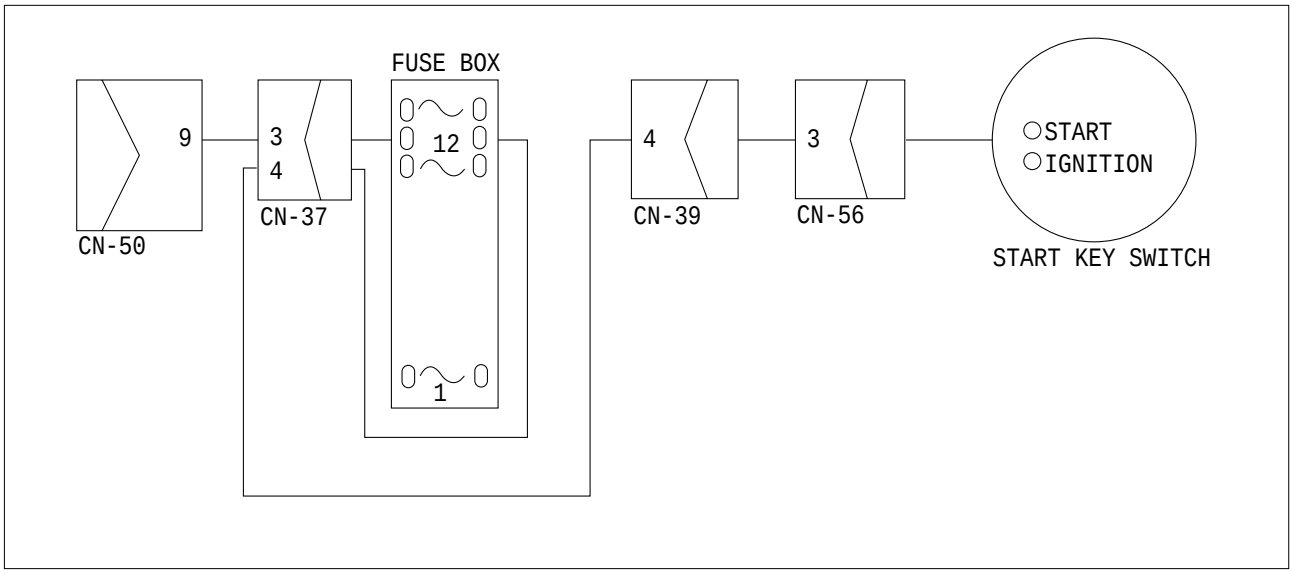
## 5. CLUSTER LAMPS ARE STILL ON AFTER STARTING KEY OFF

※ Before carrying out below procedure, check all the related connectors are properly inserted.

### 1) INSPECTION PROCEDURE




**Wiring diagram**



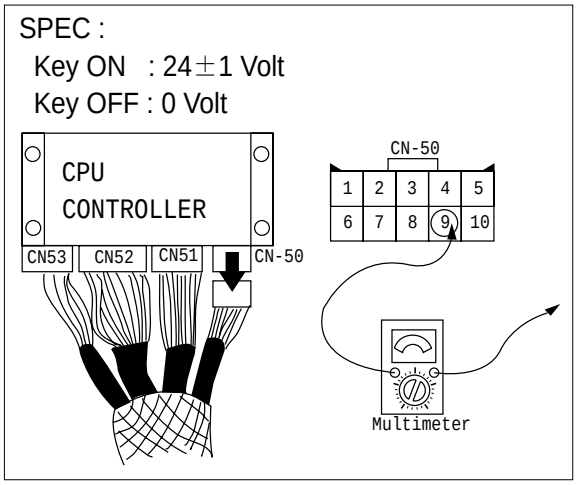
**2) TEST PROCEDURE**

(1) **Test 13** : Check voltage at(9) of CN-50.

① Starting key "ON".

② Disconnect connector CN-50 from CPU controller.

③ Check voltage as below.



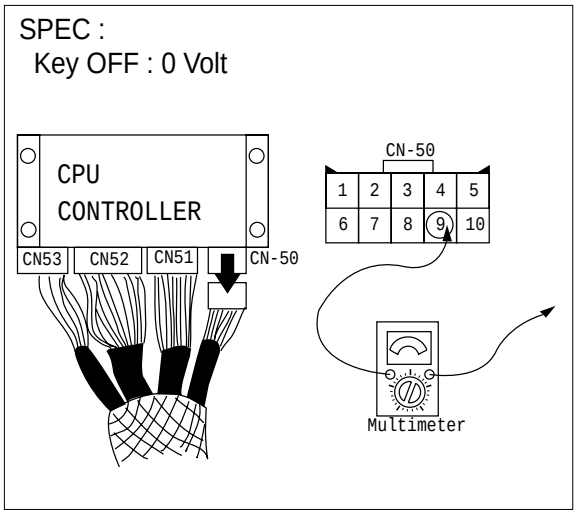

(2) **Test 14** : Check operating status of main power supply at (9) of CN-50.

① Starting key "ON".

② Disconnect CN-50 from CPU controller.

③ Check if the voltage remains at 24±1volt inspite of operating key switch on and off.

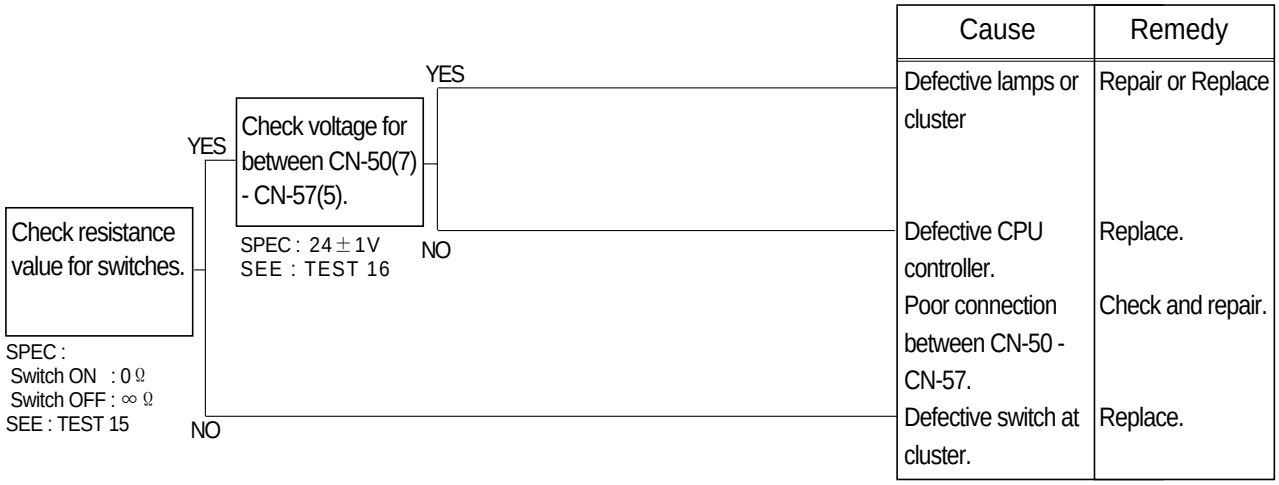
※ If there is certain amount of voltage, replace CPU controller.



## 6. CLUSTER LAMPS ARE ON WHEN ENGINE RUN OR MALFUNCTION OF MODE SELECTION SYSTEM

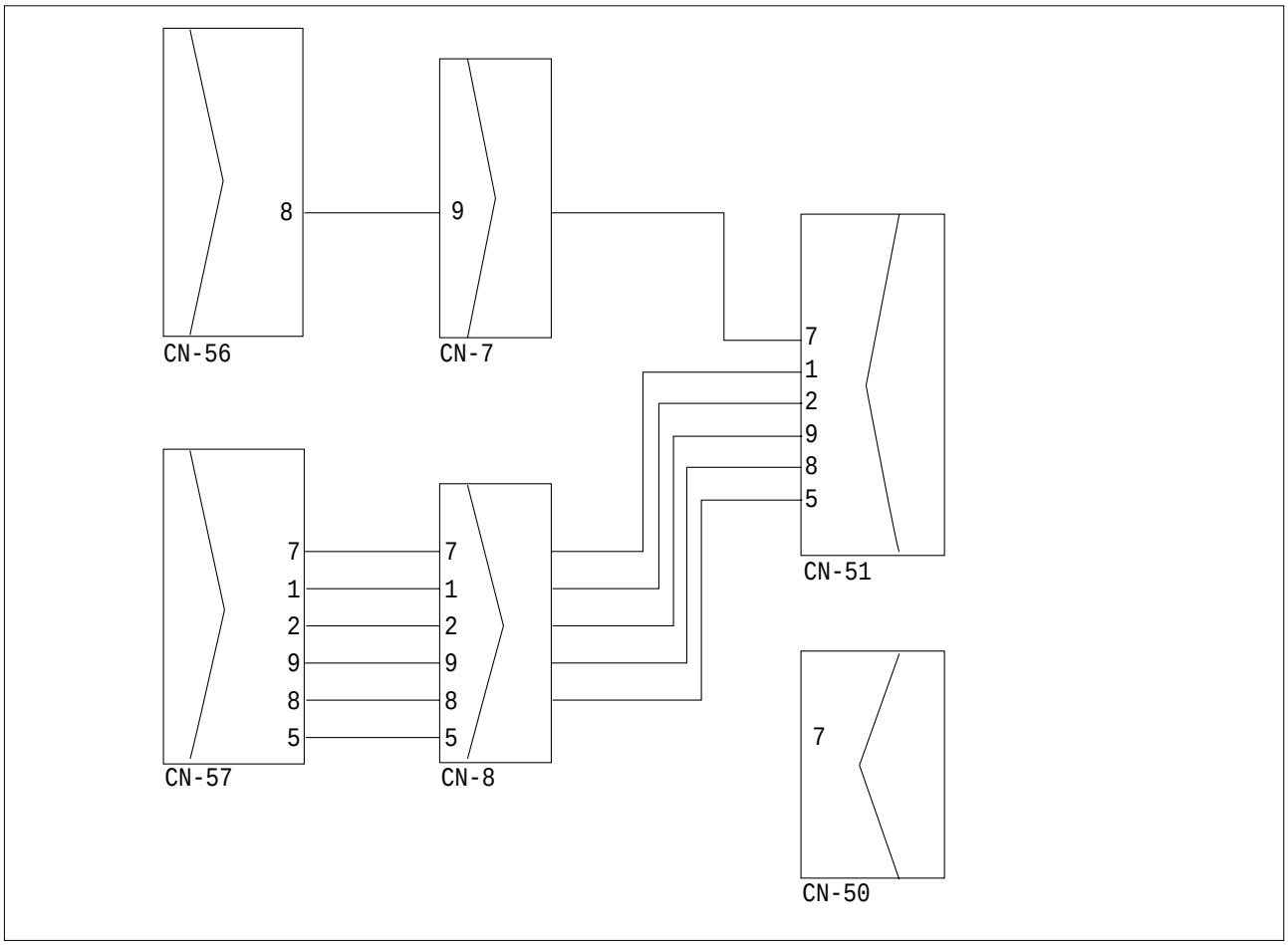
※ Before carrying out below procedure, check all the related connectors are properly inserted.

### 1) INSPECTION PROCEDURE




| Cause | Remedy |
|---|---|
| Defective lamps or cluster | Repair or Replace |
| Defective CPU controller. | Replace. |
| Poor connection between CN-50 - CN-57. | Check and repair. |
| Defective switch at cluster. | Replace. |

**Wiring diagram**



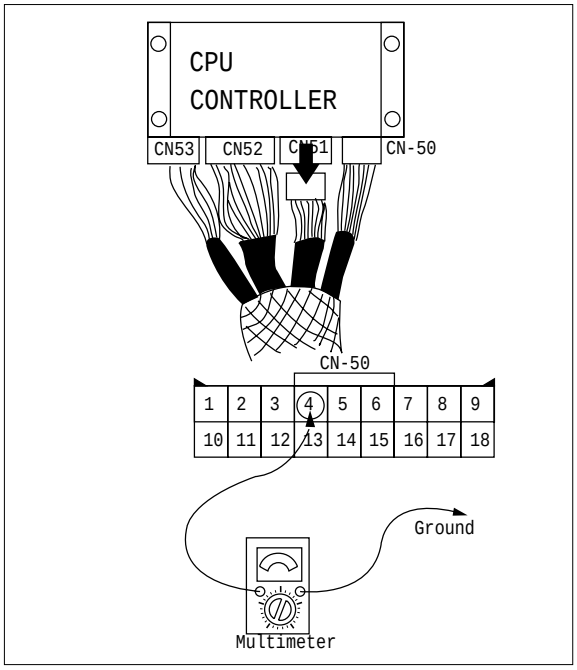
## 2) TEST PROCEDURE

(1) **Test 15** : Check resistance value for switches.

① Starting key OFF.

② Disconnect connector CN-51 from CPU controller.

③ Check resistance value as below.




(2) **Test 16** : Check voltage for CN-50, CN-57

· CN-50:output power(24±1volt)

· CN-57:input power(24±1volt)

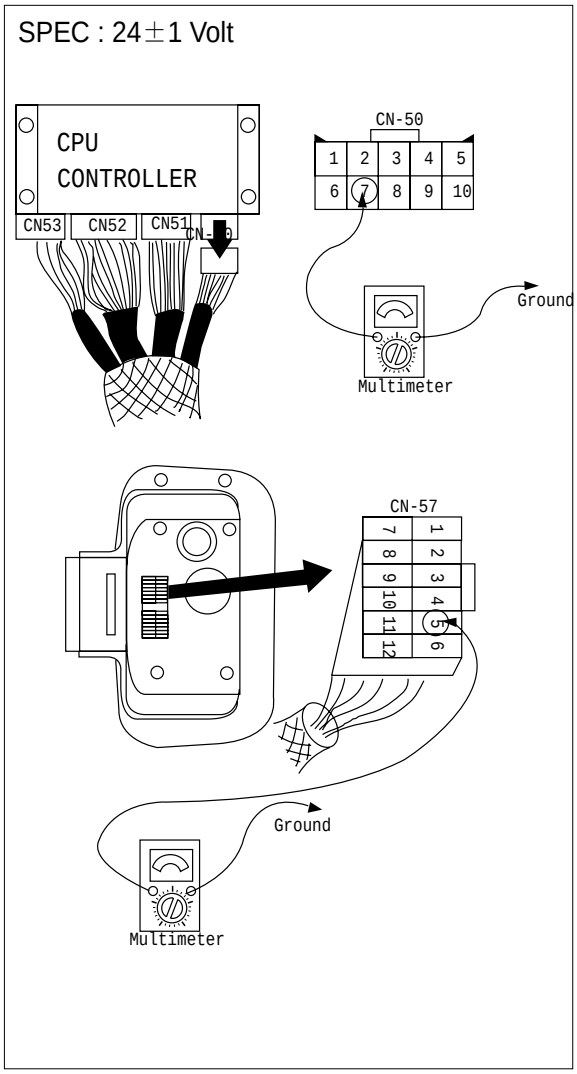
① Starting key ON.

② Remove cluster from pannel.

※ Don't disconnect connector CN-50 from CPU controller.

③ Disconnect connector CN-57 from cluster.

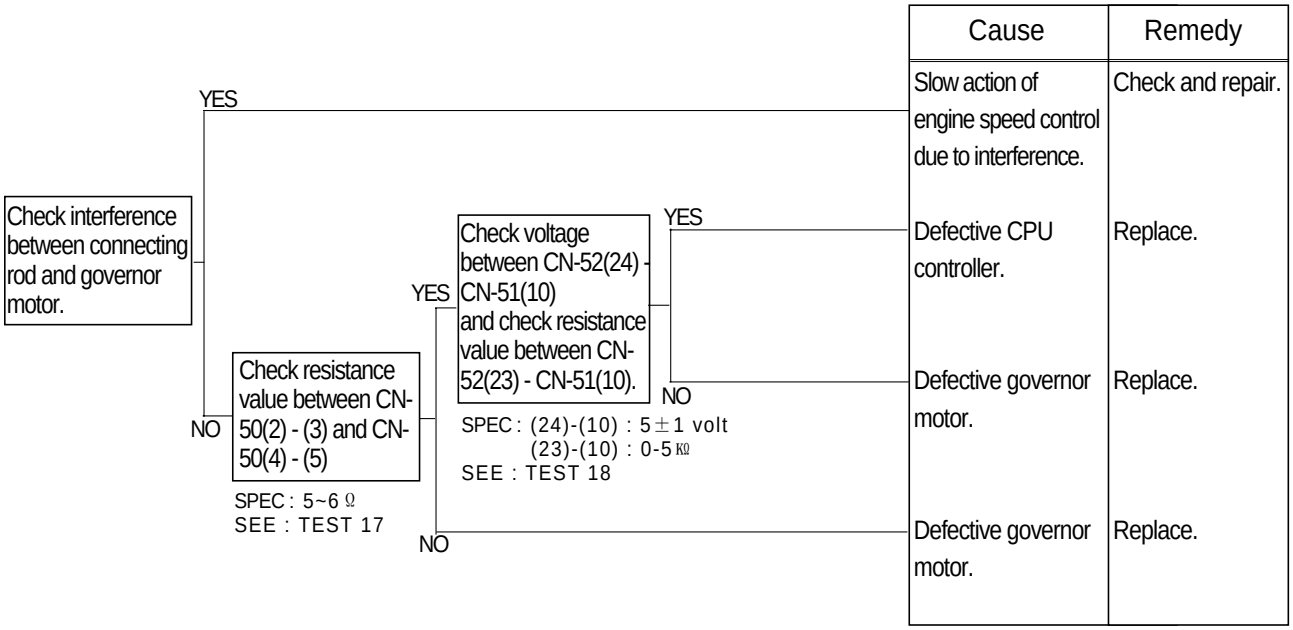
④ Check voltage CN-50,CN-57 with ground as Fig.



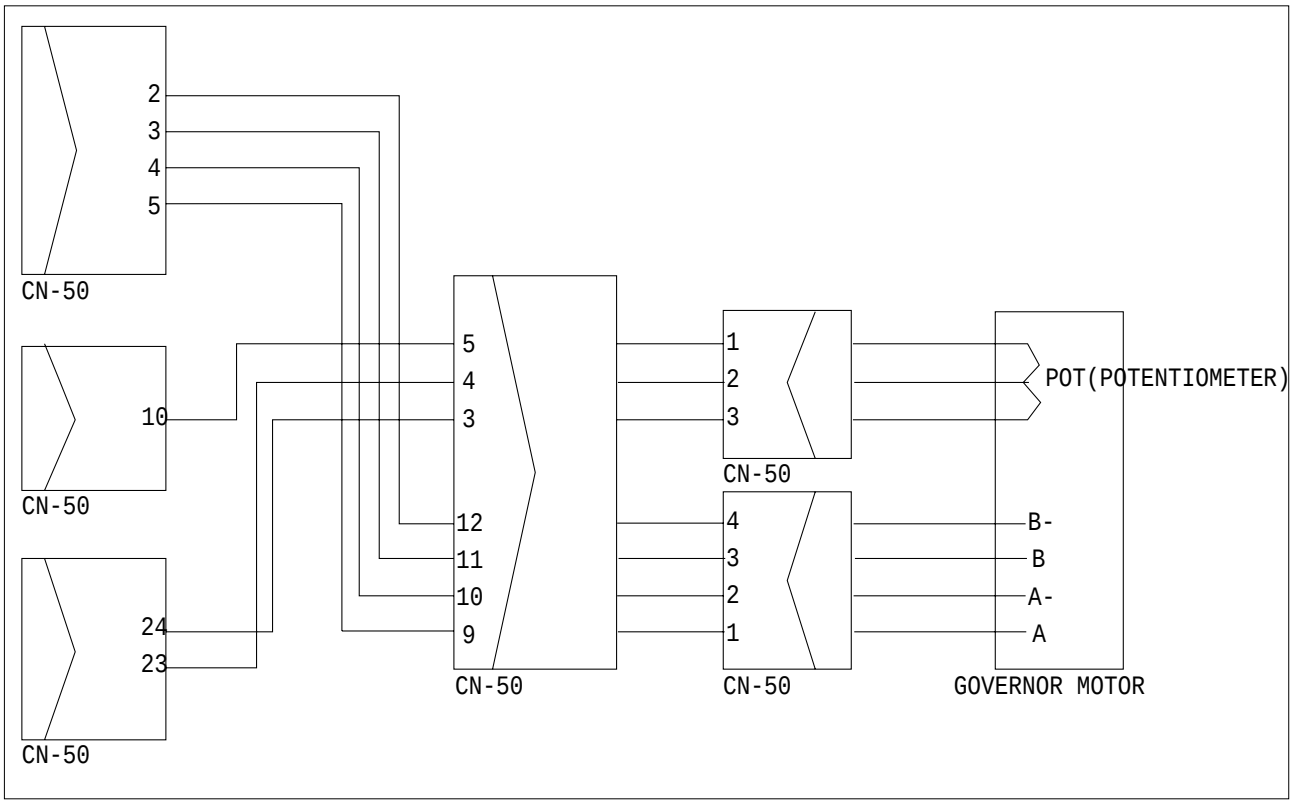
## 7. SLOW ACTION OF ENGINE SPEED CHANGE WHEN CHANGE THE MODE

※ Before carrying out below procedure, check all the related connectors are properly inserted.

### 1) INSPECTION PROCEDURE




**Wiring diagram**



**2) TEST PROCEDURE**

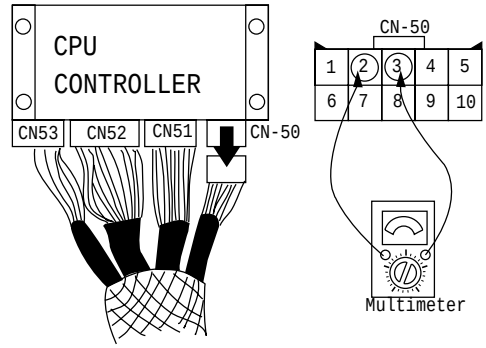
(1) **Test 17** : Check resistance value

①Starting key OFF.

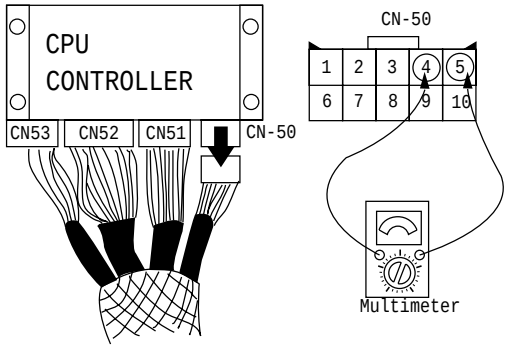
②Disconnect connector CN-50 from CPU controller.

③Check resistance value between (2) and (3),(4) and (5) of CN-50 as below.

Test - a



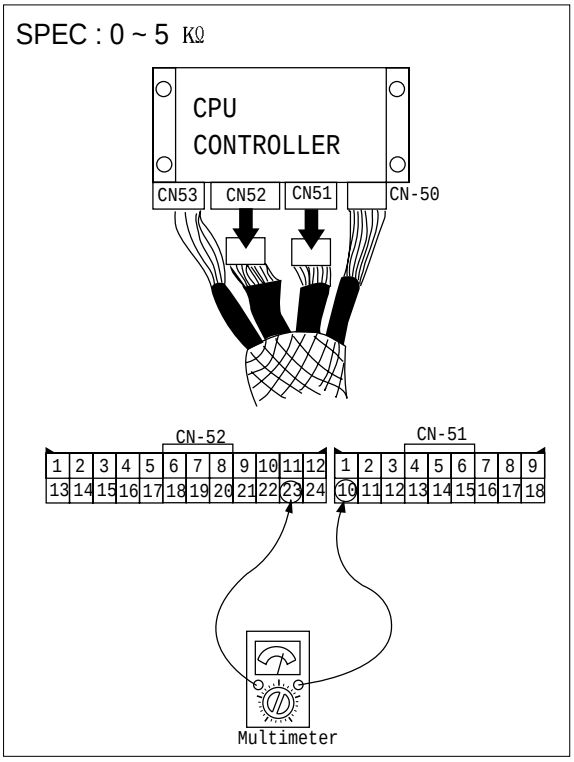

Test - b



(2) **Test 18** : Check voltage and resistance value.

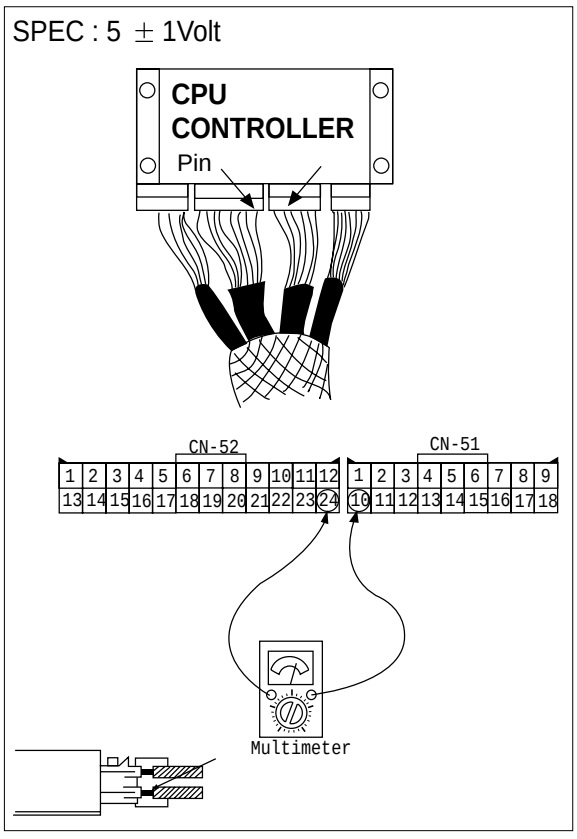
① Check resistance value between (23) of CN-52 and (10) of CN-51.

- Starting key OFF.
- Disconnect connector CN-52 and CN-51 from CPU controller.
- Check resistance value with multimeter as below.




② Check voltage between (24) of CN-52 and (10) of CN-51.

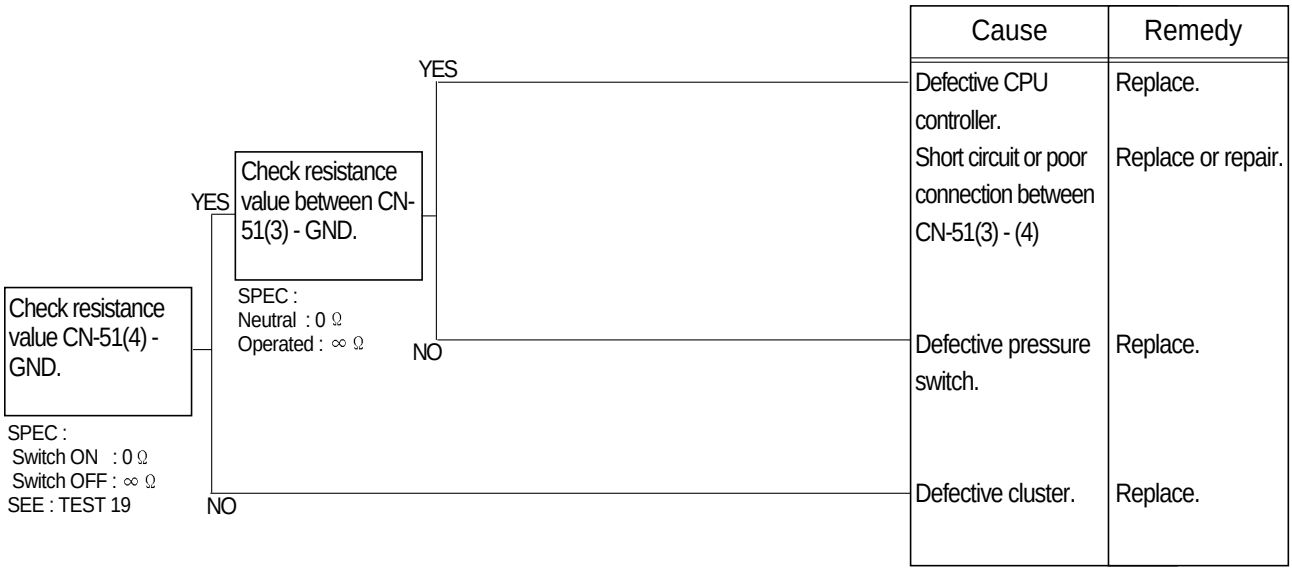
- Prepare 2 pieces of thin sharp pin, steel or copper.
- Starting key ON.
- Insert prepared pins to rear side of connectors :
  One pin to (24) of CN-52
  Other pin to (10) of CN-51
- Check voltage.



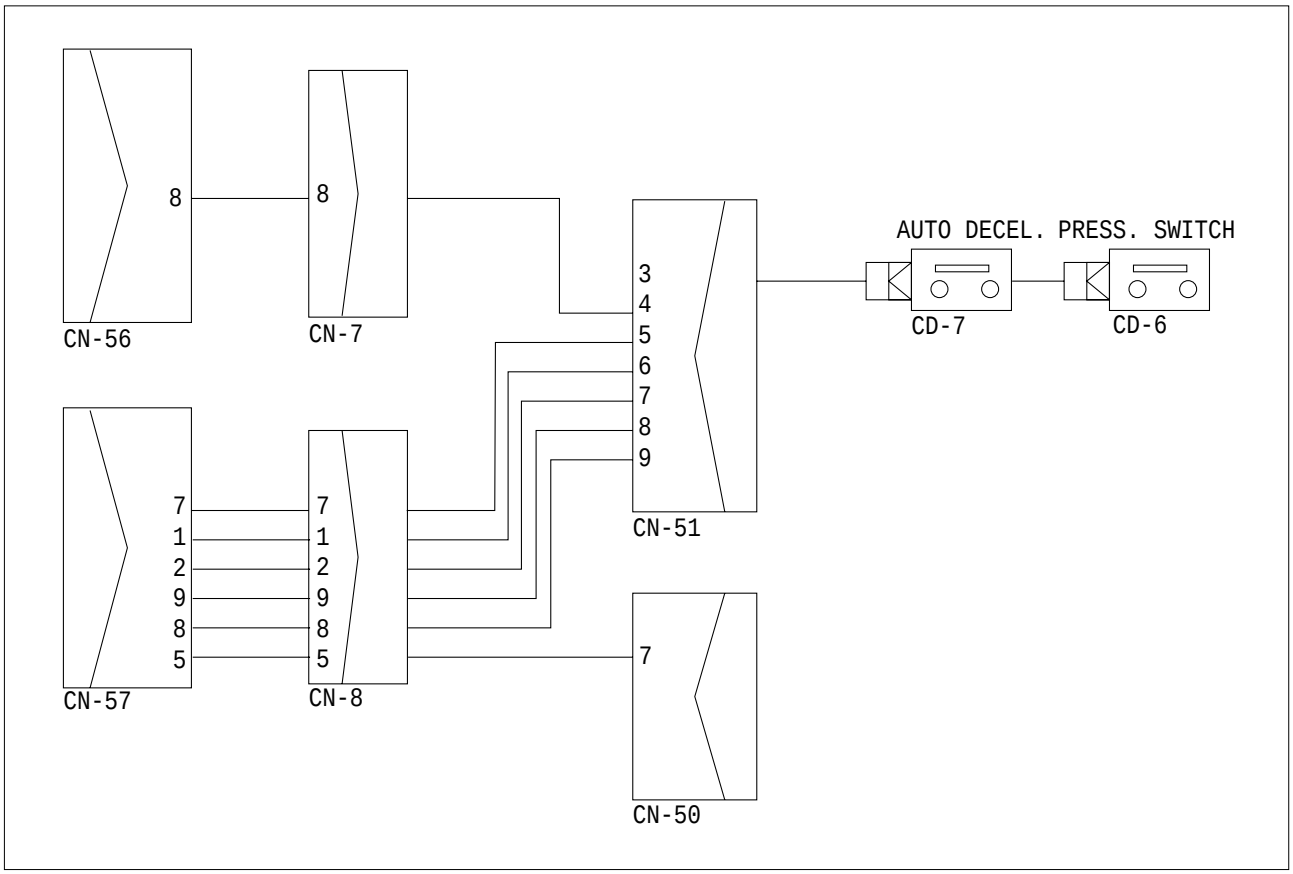
## 8. AUTO IDLE SYSTEM DOES NOT WORK

※ Before carrying out below procedure, check all the related connectors are properly inserted.

### 1) INSPECTION PROCEDURE




**Wiring diagram**



**2) TEST PROCEDURE**

(1) **Test 19** : Check resistance value at CN-51(4) and ground.

① Starting key OFF.

② Disconnect connector CN-51 from CPU controller.

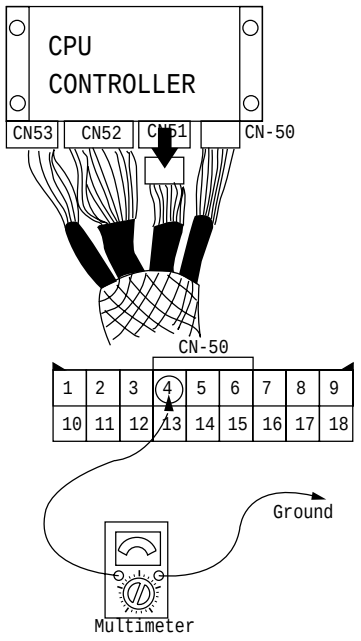
③ Turn start key ON.

Check resistance value as Fig.

SPEC :

Auto decel switch ON(Light ON) : 0 Ω

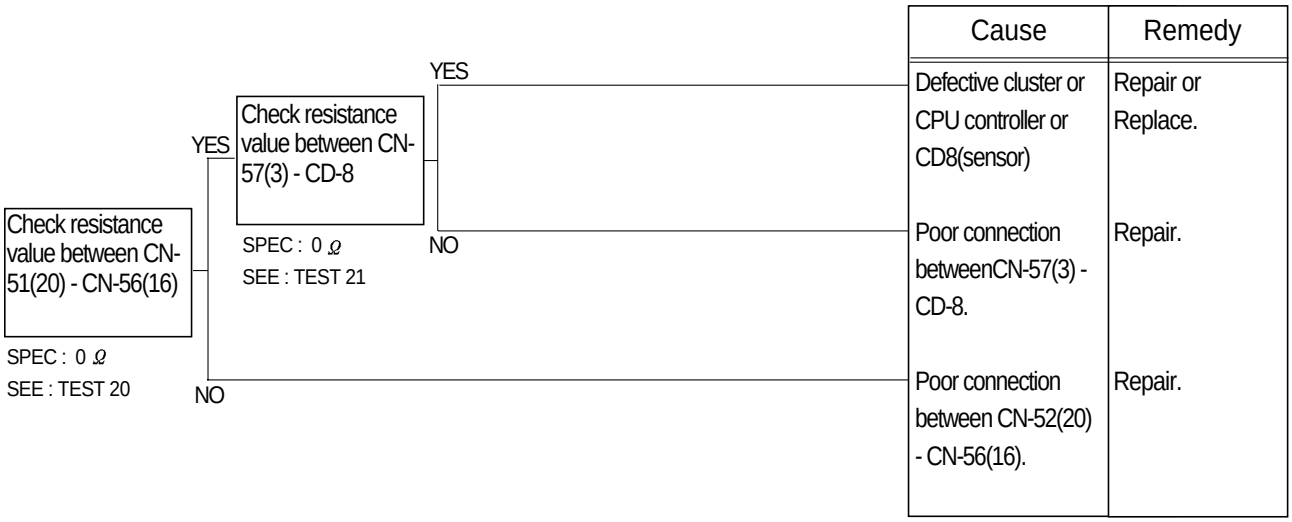
Auto decel switch OFF(Light OFF) : ∞ Ω



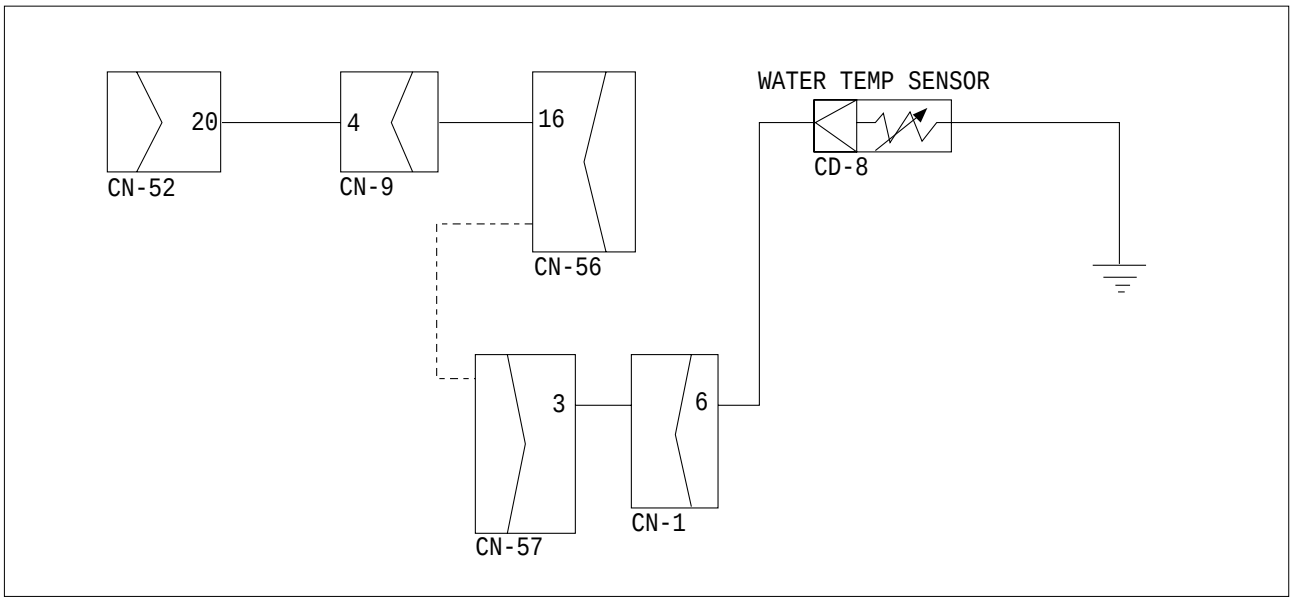
## 9. MALFUNCTION OF WARMING UP

※ Before carrying out below procedure, check all the related connectors are properly inserted.

### 1) INSPECTION PROCEDURE




**Wiring diagram**



**2) TEST PROCEDURE**

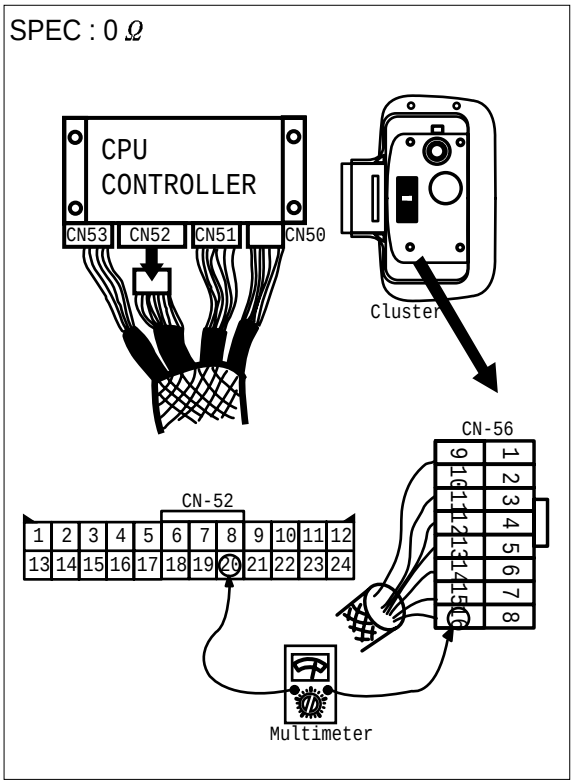
(1) **Test 20** : Check resistance value between connector (20) of CN-52 - (16) of CN-56.

① Starting key OFF.

② Remove CPU controller and disconnect CN-52 from CPU controller.

③ Remove cluster and disconnect CN-56 from cluster.

④ Check resistance value as Fig.



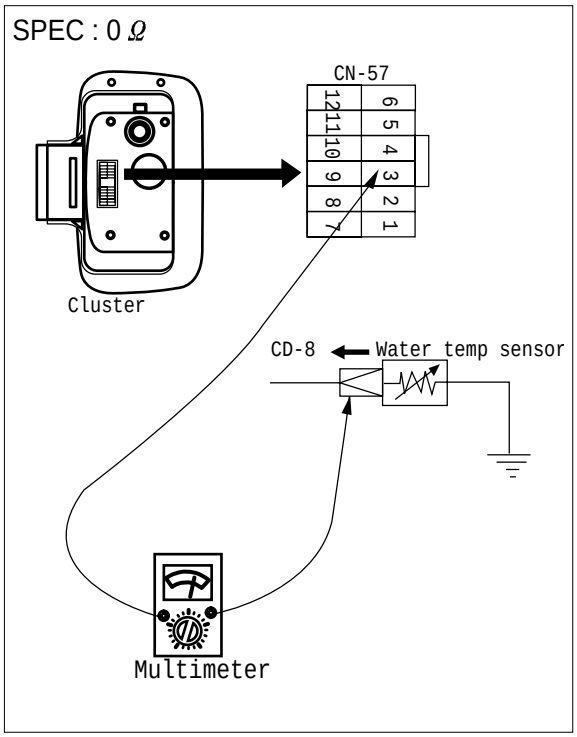

(2) **Test 21** : Check resistance value between connector (3) of CN-57 - CD-8.

① Starting key OFF.

② Remove cluster and disconnect CN-57 from cluster.

③ Disconnect connector CD-8 of water temp sensor at engine head.

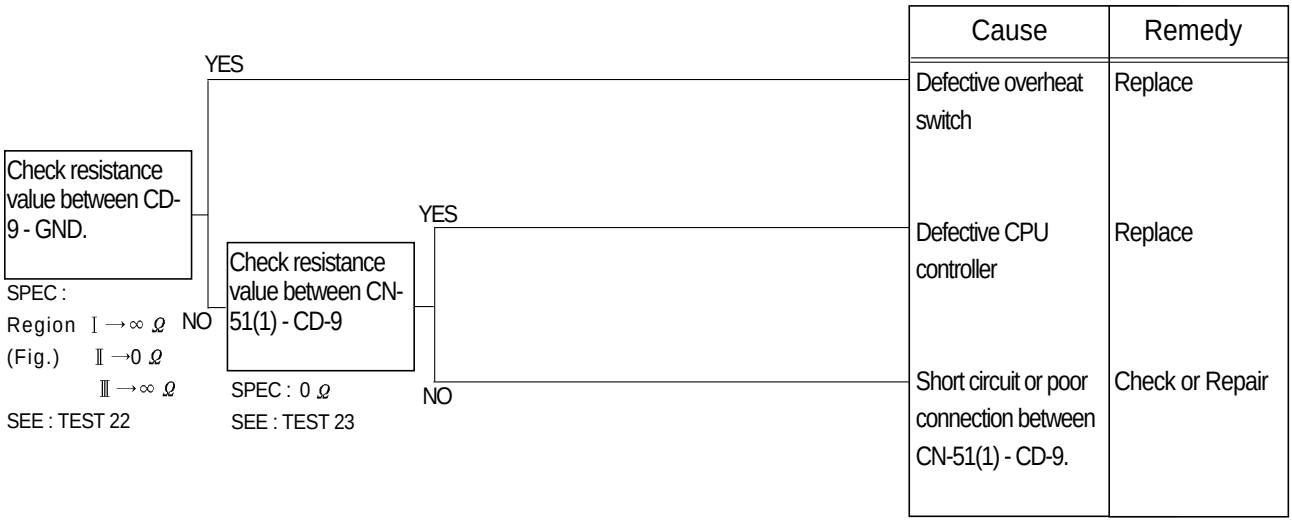
④ Check resistance value as Fig.



## 10. MALFUNCTION OF OVERHEAT

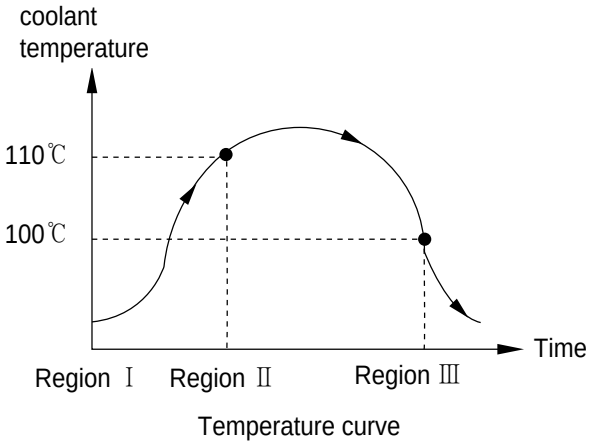
※ Before carrying out below procedure, check all the related connectors are properly inserted.

### 1) INSPECTION PROCEDURE



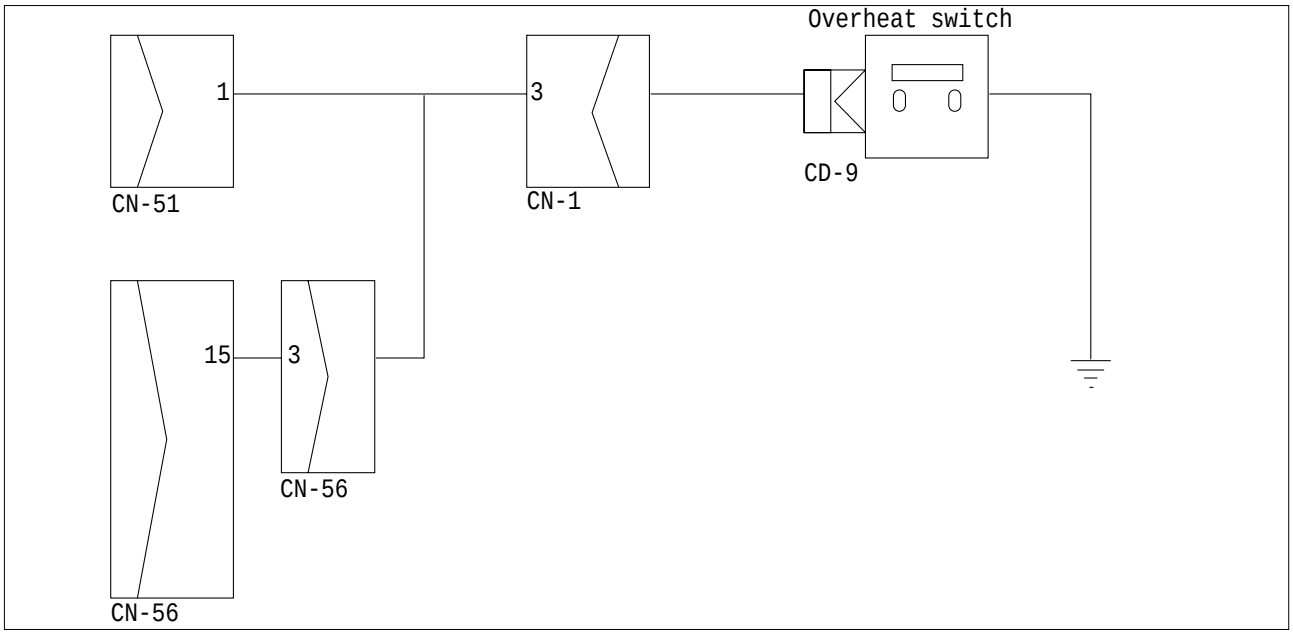

※ Overheat switch ON coolant temperature ---- 110℃

※ Overheat switch OFF coolant temperature --- 100℃




Temperature curve

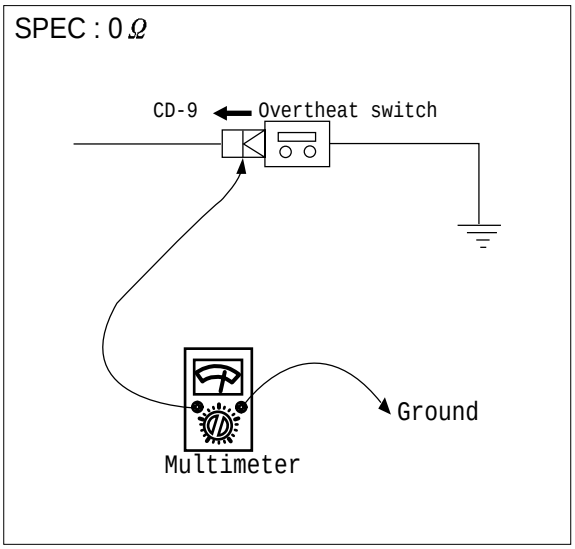
**Wiring diagram**



**2) TEST PROCEDURE**

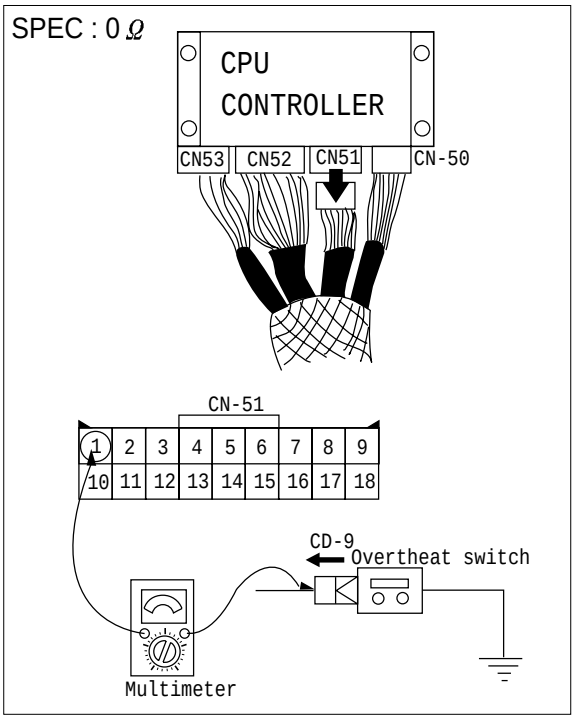
(1) **Test 22** : Check resistance value between connector CD-9 - GND.

① Starting key OFF.
② Disconnect connector CD-9 of overheat switch at engine head.
③ Check resistance value as Fig.




(2) **Test 23** : Check resistance value between connector (1) of CN-51 - CD-9.

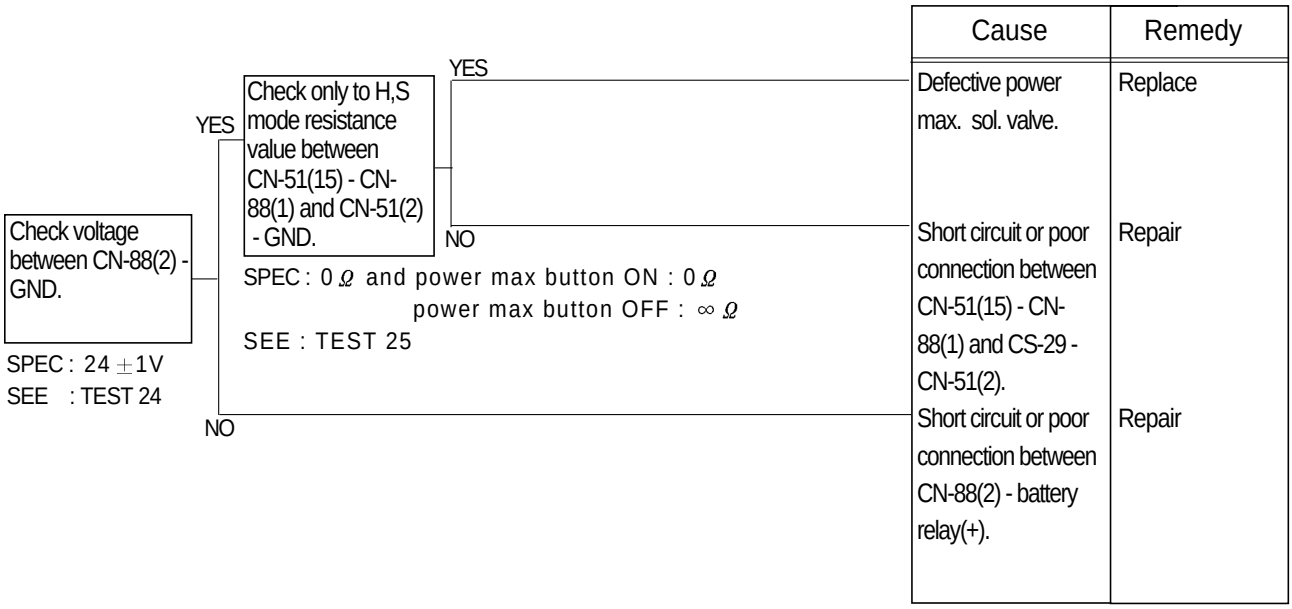
① Starting key OFF.
② Remove CPU controller and disconnect connector CN-51 from CPU controller.
③ Disconnect connector CD-9 of overheat switch at engine head.
④ Check resistance value as Fig.



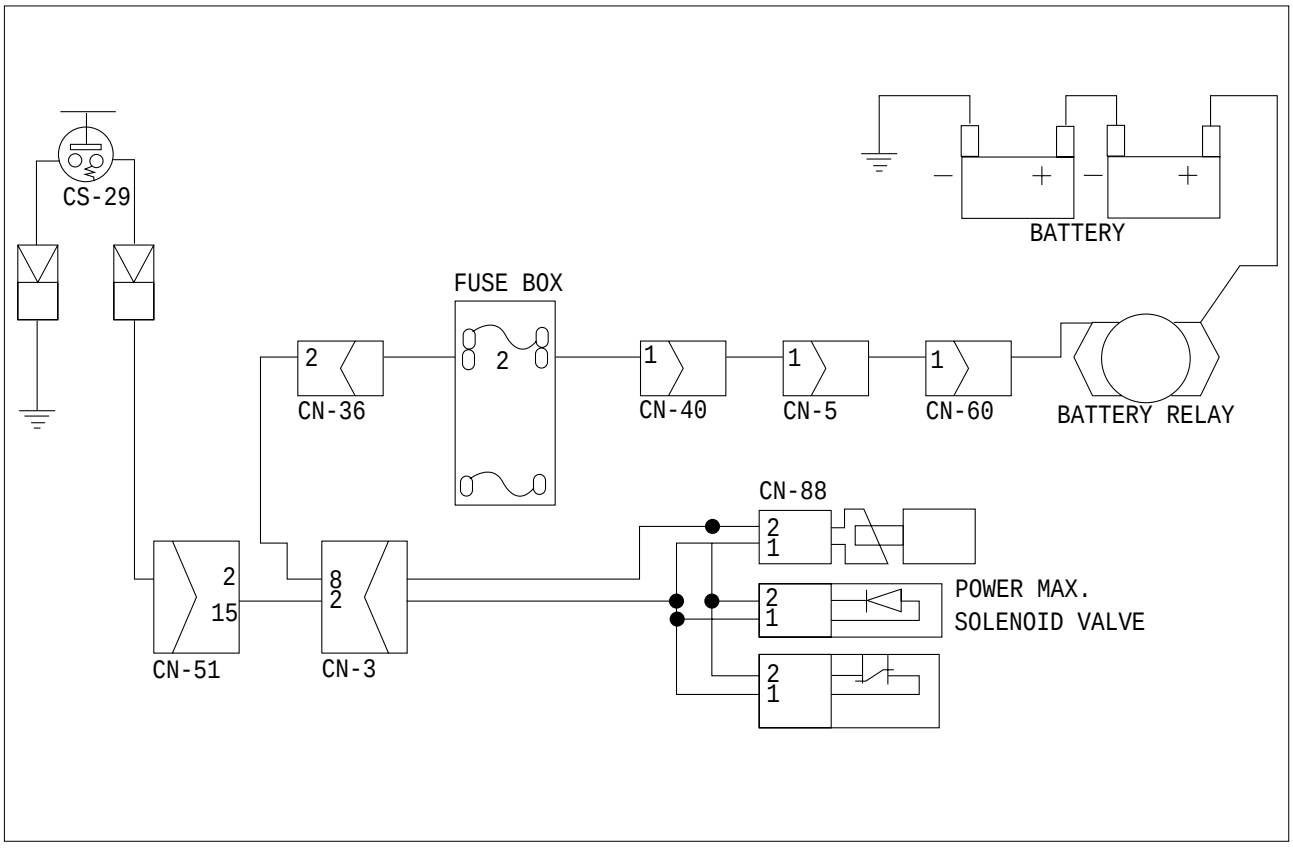
## 11. MALFUNCTION OF POWER MAX

※ Before carrying out below procedure, check all the related connectors are properly inserted.

### 1) INSPECTION PROCEDURE



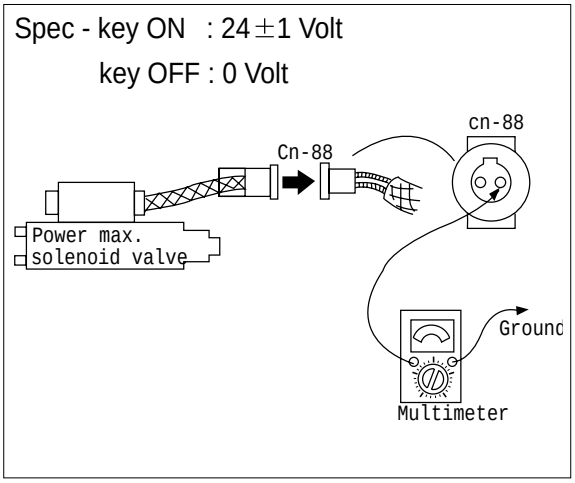

**Wiring diagram**



**2) TEST PROCEDURE**

(1) **Test 24** : Check voltage at (2) of connector CN-88 - GND.

① Starting key ON.
② Disconnect connector CN-88 from power max. solenoid valve.
③ Check voltage as Fig.




(2) **Test 25** : Check resistance value between connector (15) of CN-51-(1) of CN-88 and GND-(2) of CN-51.

① Starting key OFF.
② Remove CPU controller and disconnect connector CN-51 from CPU controller.
③ Disconnect connector CN-88 from power max. solenoid valve.
④ Check resistance value as Fig.