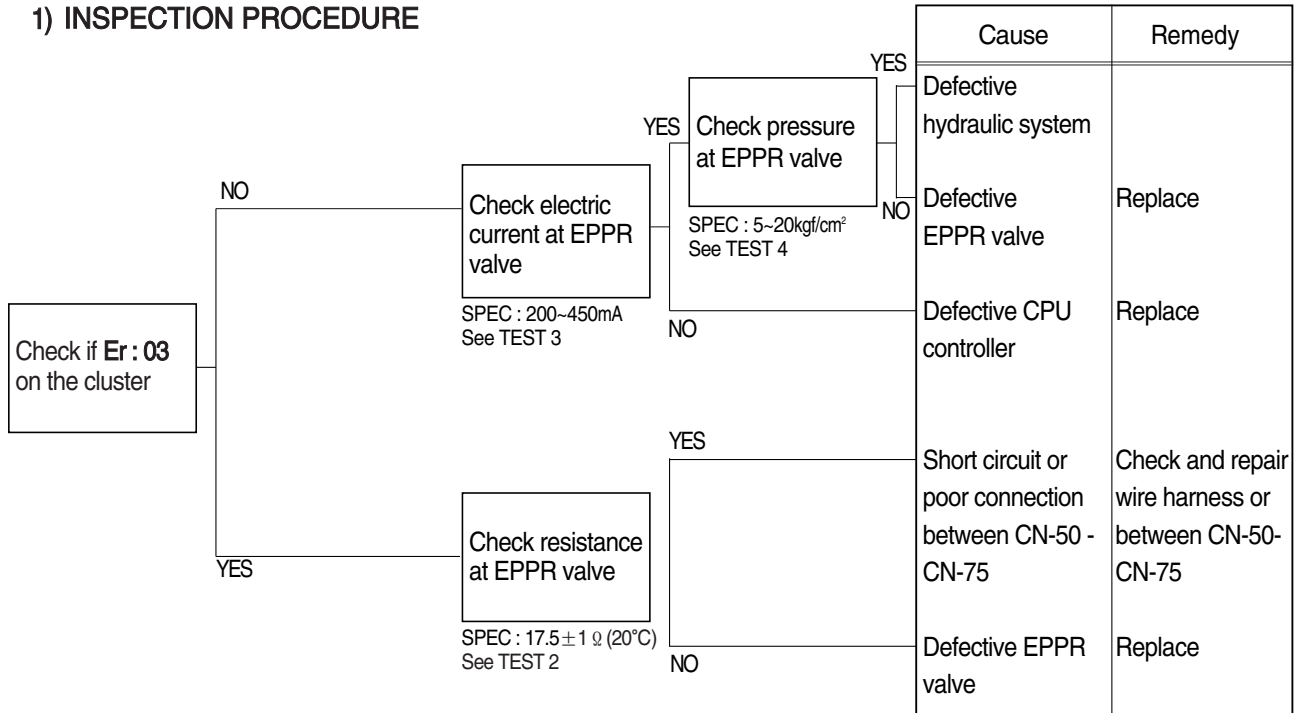


# GROUP 4 MECHATRONICS SYSTEM

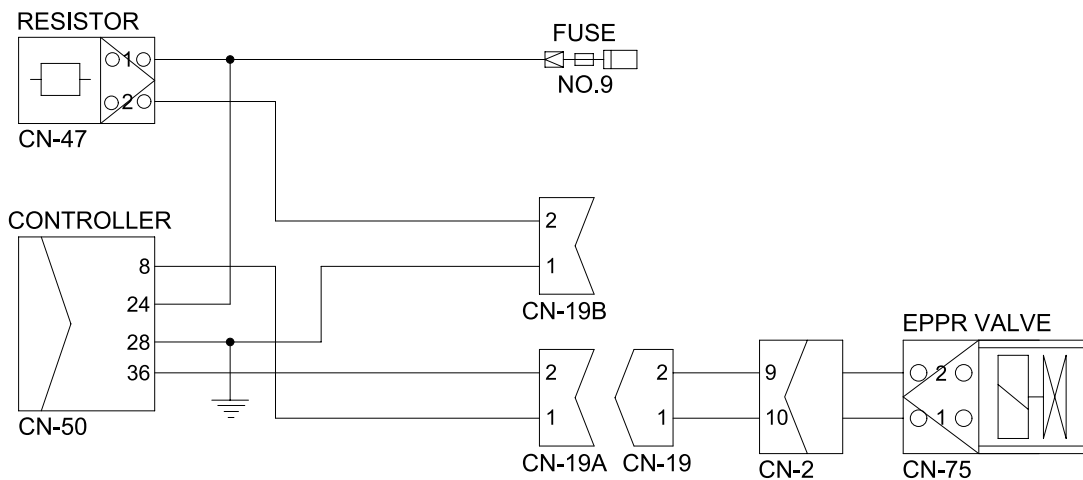
## 1. ALL ACTUATORS SPEED ARE SLOW

- ※ Boom, Arm, Bucket, Swing and travel speed are slow, but engine speed is good.
- ※ Spec : M-mode 2150±100rpm H-mode 2050±100rpm S-mode 1900±100rpm
- ※ Before carrying out below procedure, check all the related connectors are properly inserted.

### 1) INSPECTION PROCEDURE

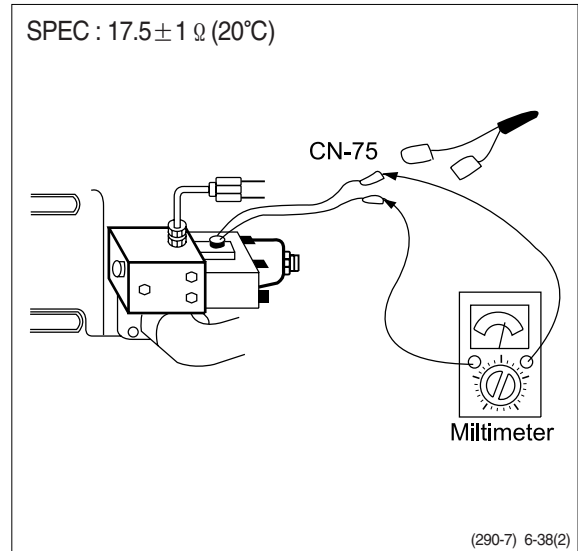


### Wiring diagram



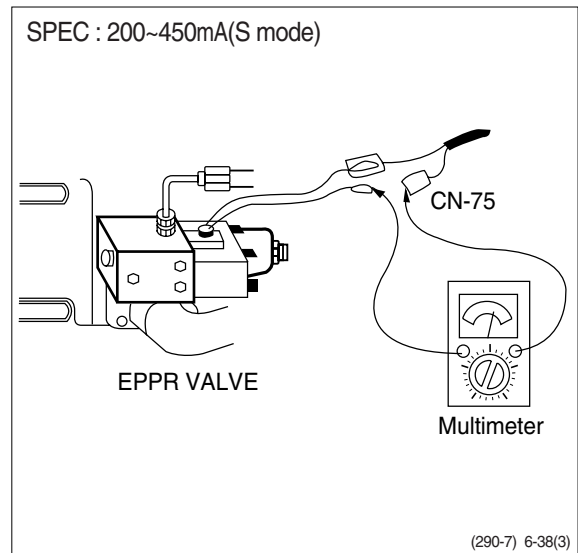
(1) **Test 2** : Check resistance at connector CN-75.

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



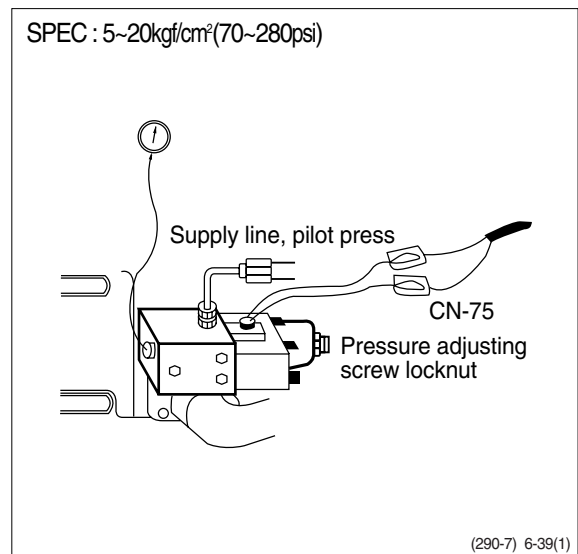
(2) **Test 3** : Check electric current at EPPR valve.

- ① Install multimeter as figure.
- ② Start engine.
- ③ Set the accel dial at "10"(MAX)
- ④ Set S-mode and cancel auto decel mode.
- ⑤ If tachometer show approx  $1900 \pm 100$ rpm check electric current.



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

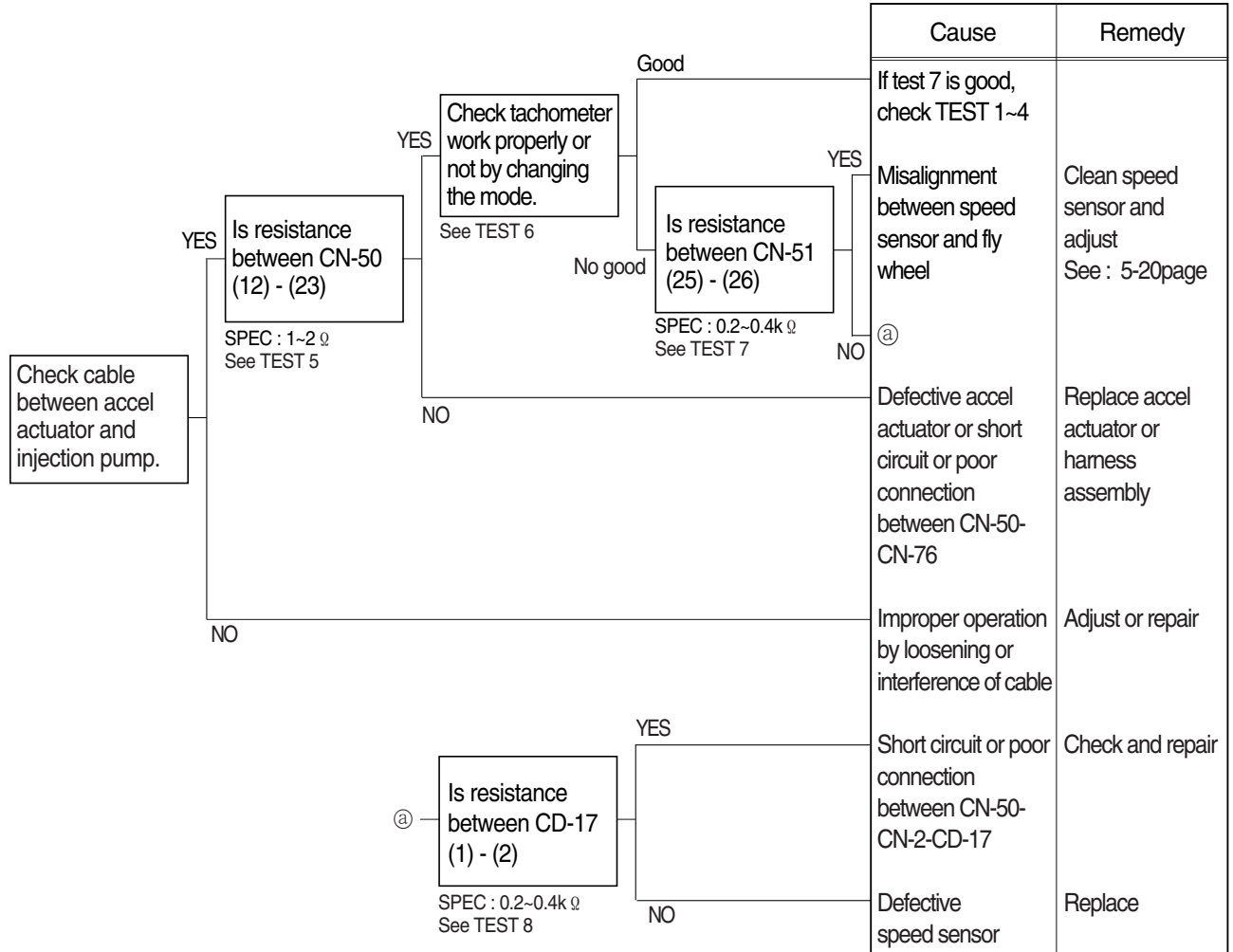
- ① Remove plug and connect pressure gauge as figure.
  - Gauge capacity : 0 to 40~50kgf/cm<sup>2</sup>  
(0 to 570~710psi)
- ② Start engine.
- ③ Set the accel dial at "10"(Max).
- ④ Set S-mode and cancel auto decel mode.
- ⑤ If tachometer show approx  $1900 \pm 100$ rpm check pressure.
- ⑥ If pressure is not correct, adjust it.
- ⑦ After adjust, test the machine.



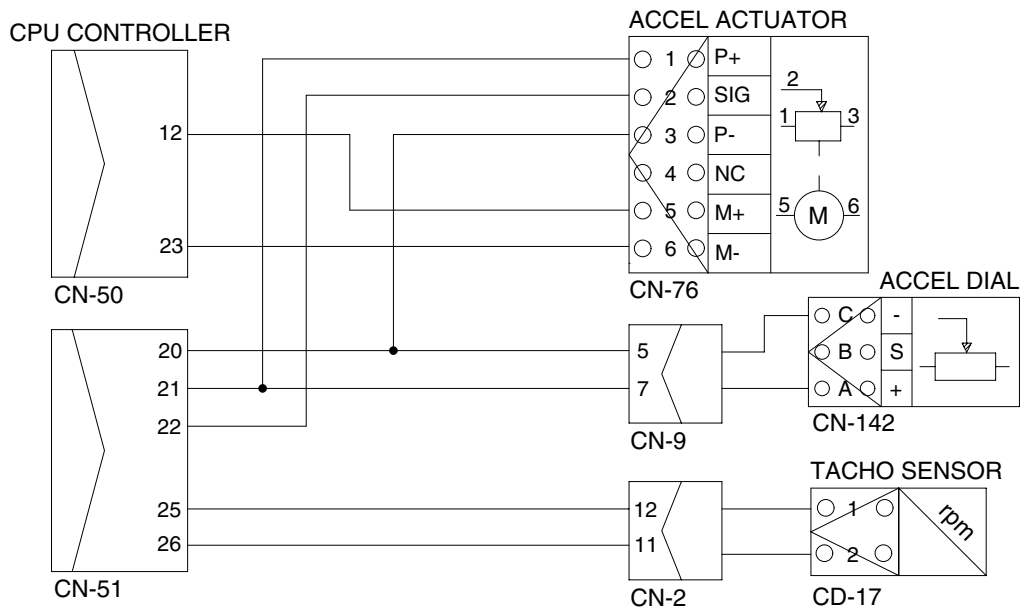
## 2. ENGINE SPEED IS SLOW AT ALL MODE

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

### 1) INSPECTION PROCEDURE



### Wiring diagram

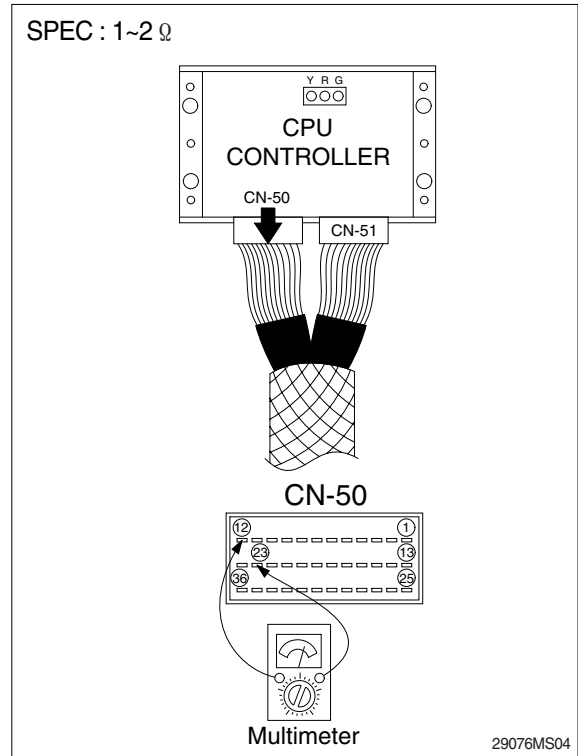


29076MS03

## 2) TEST PROCEDURE

(1) **Test 5** : Check resistance between CN-50 (12)-(23).

- ① Starting key OFF.
- ② Disconnect connector CN-50 from CPU controller.
- ③ Check resistance as figure.



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

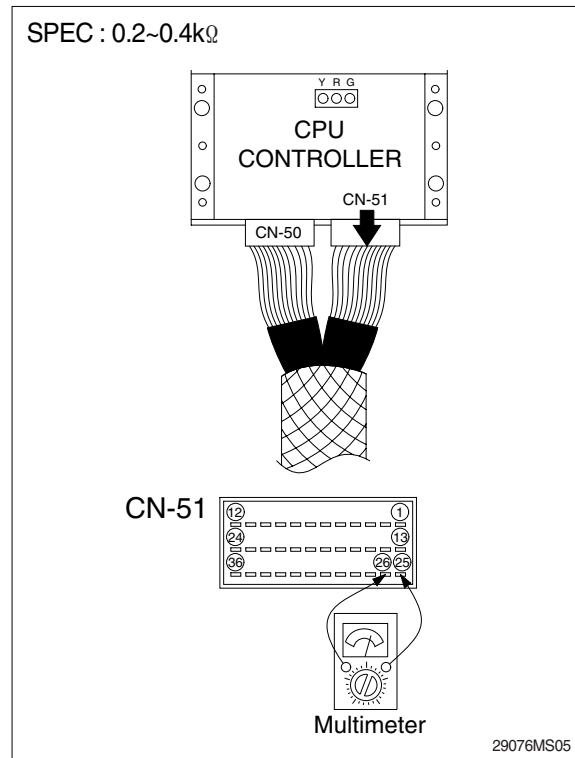
- ① Start engine.
- ② Check tachometer reading.

Unit : rpm

Spec		Remark
M mode	2150 ± 100	Check rpm after cancel the Auto decel mode.
H mode	2050 ± 100	
S mode	1900 ± 100	

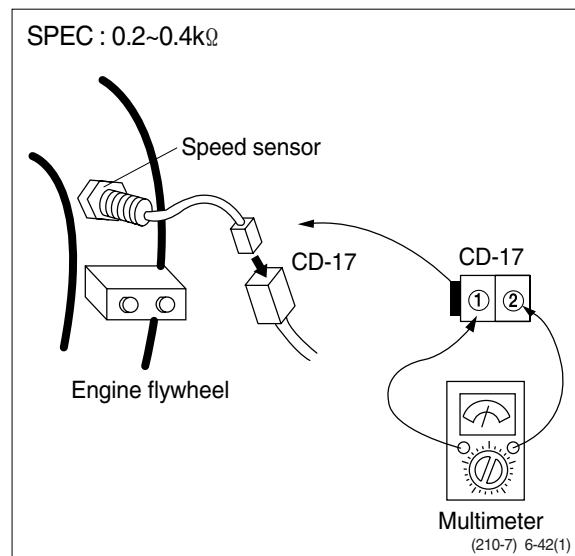
(3) **Test 7** : Check resistance between CN-51 (25) and CN-51(26).

- ① Starting key OFF.
- ② Disconnect connector CN-51 from CPU controller.
- ③ Check resistance as figure.



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

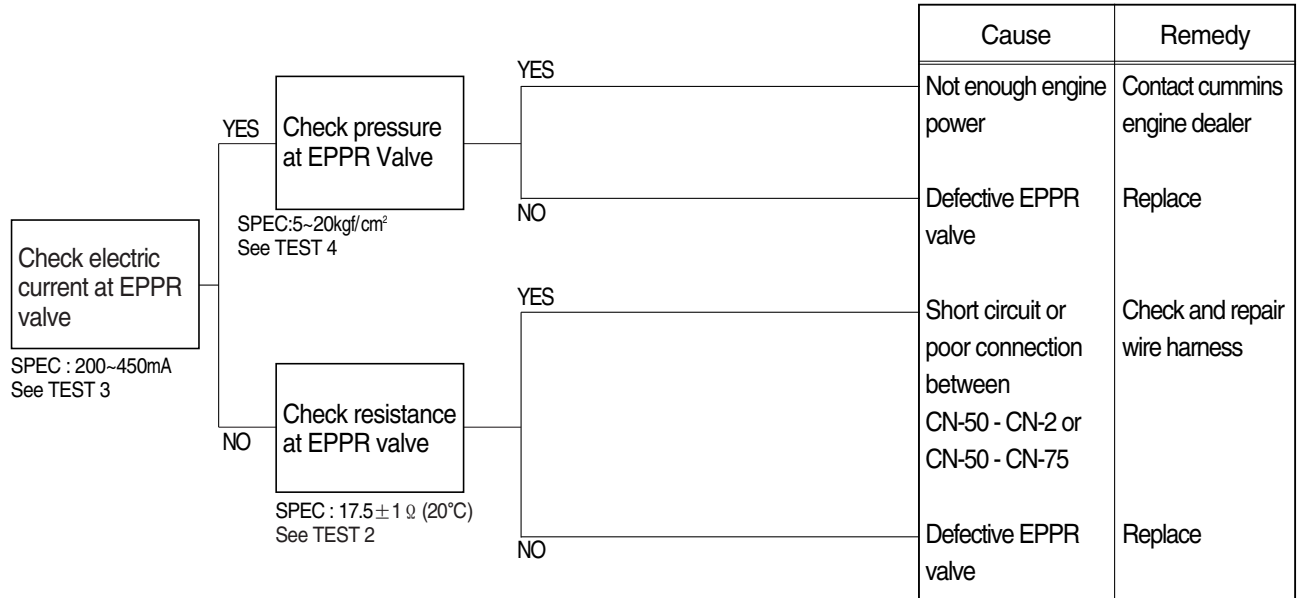
- ① Starting key OFF.
- ② Disconnect connector CD-17 of speed sensor at engine flywheel housing.
- ③ Check resistance as figure.



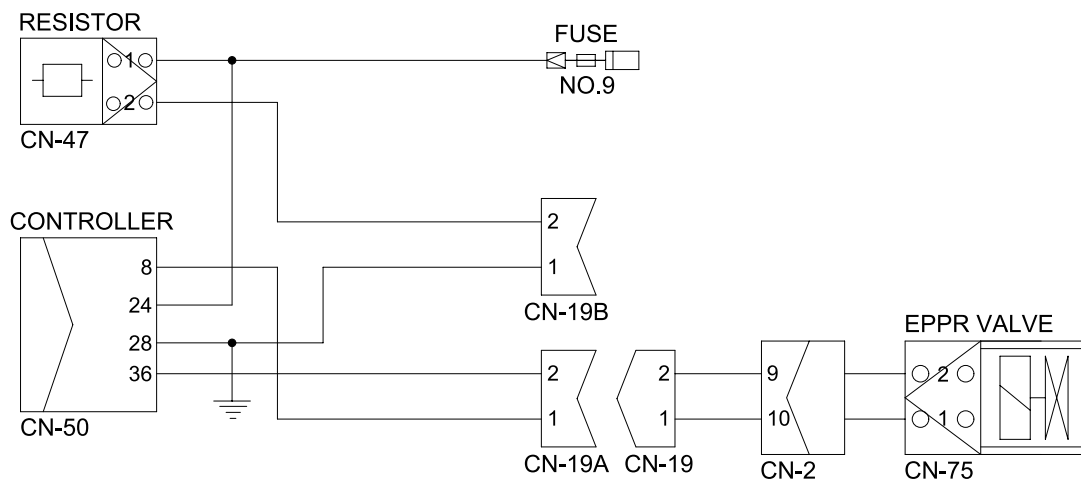
### 3. ENGINE STALL

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

#### 1) INSPECTION PROCEDURE



#### Wiring diagram

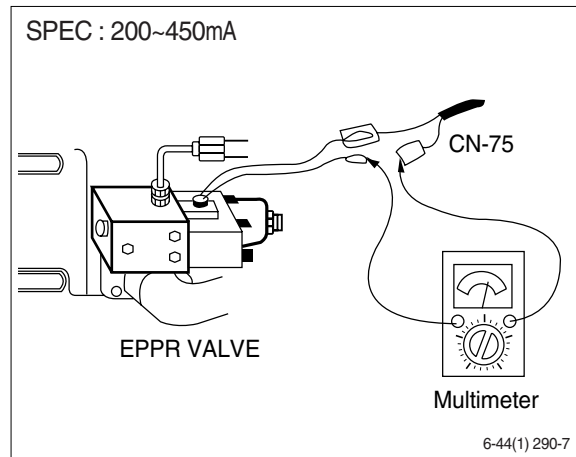


21076MS51

## 2) TEST PROCEDURE

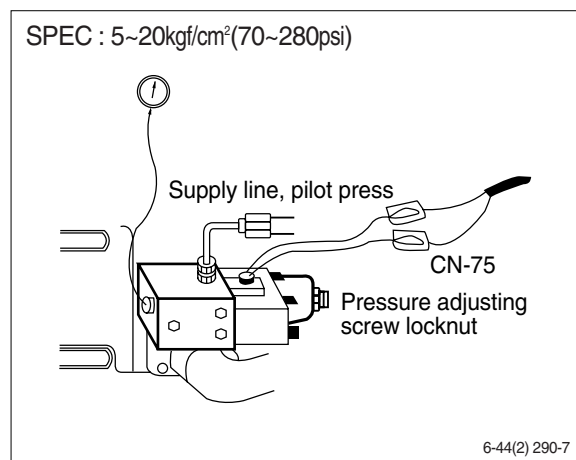
### (1) Test 3 : Check electric current at EPPR valve at S-mode

- ① Install multimeter as figure.
- ② Start engine.
- ③ Set the accel dial at "10"(max)
- ④ Set S-mode with  $1900 \pm 100$ rpm.
- ⑤ Check electric current.



### (2) Test 4 : Check pressure at EPPR valve at S-mode

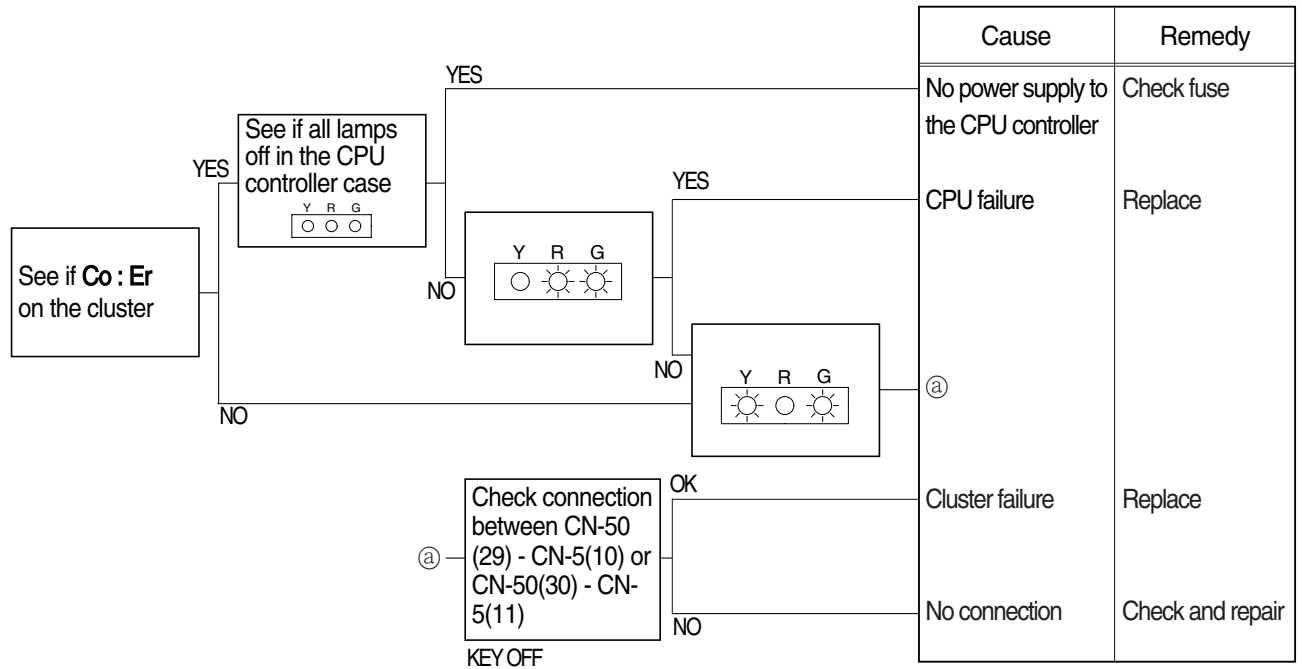
- ① Connect pressure gauge at EPPR valve.
- ② Start engine.
- ③ Set the accel dial at "10"(max)
- ④ Set S-mode with  $1900 \pm 100$ rpm.
- ⑤ Operate bucket lever completely push or pull.
- ⑥ Hold arm lever at the end of stroke.
- ⑦ Check pressure at relief position.



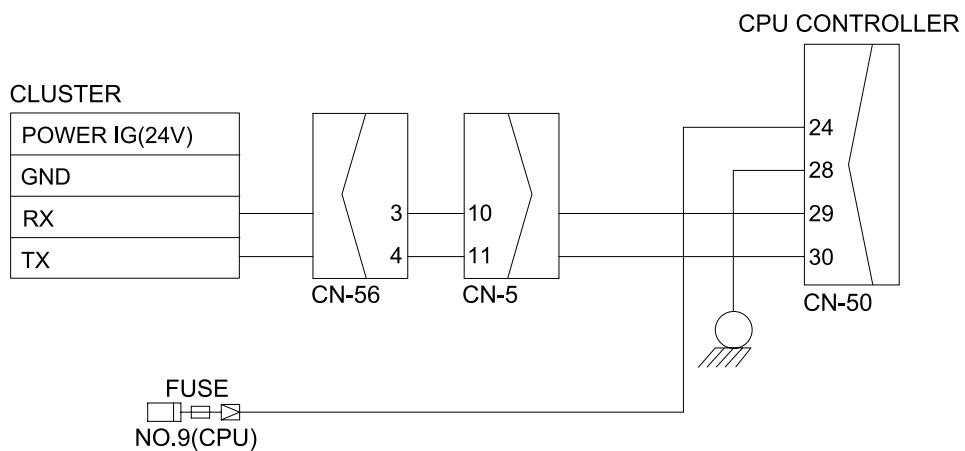
#### 4. MALFUNCTION OF CLUSTER OR MODE SELECTION SYSTEM

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

##### 1) INSPECTION PROCEDURE



##### Wiring diagram

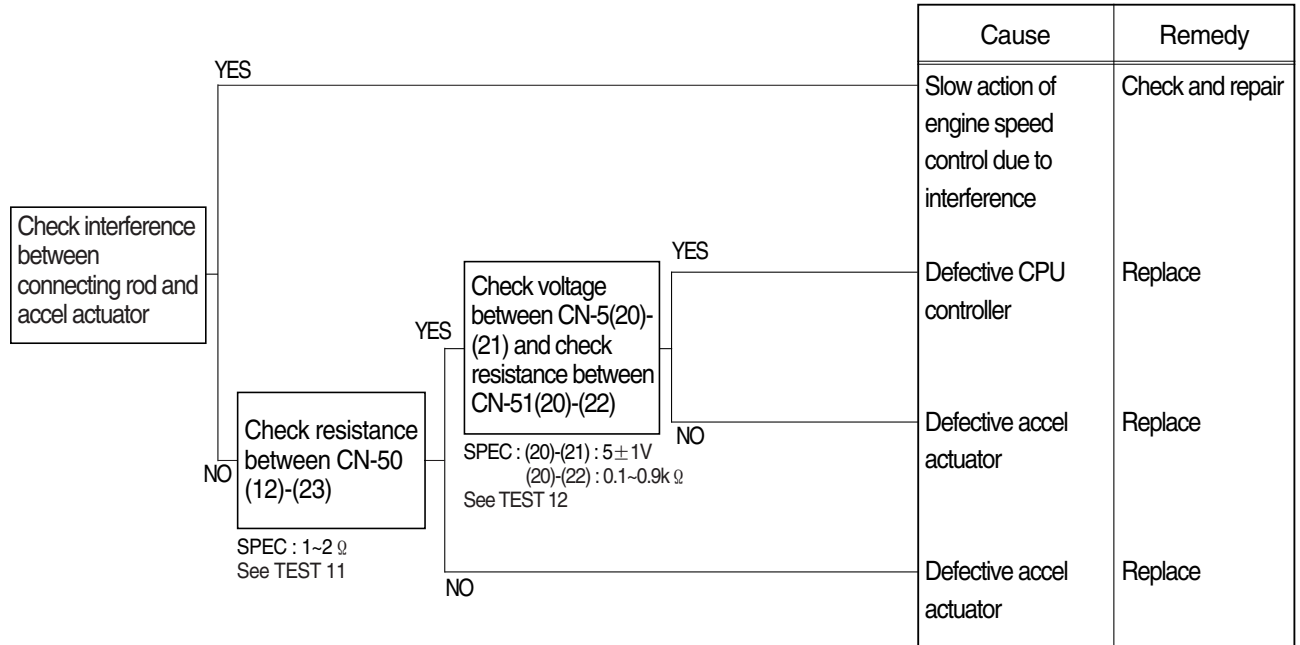




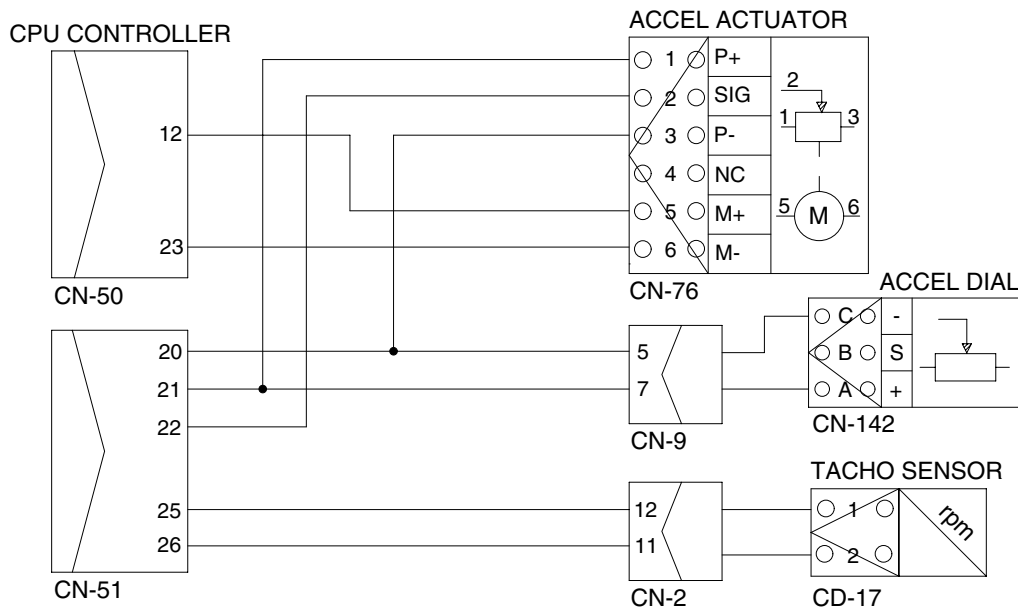
## 5. SLOW ACTION OF ENGINE SPEED CHANGE WHEN CHANGE THE MODE

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

### 1) INSPECTION PROCEDURE



### Wiring diagram



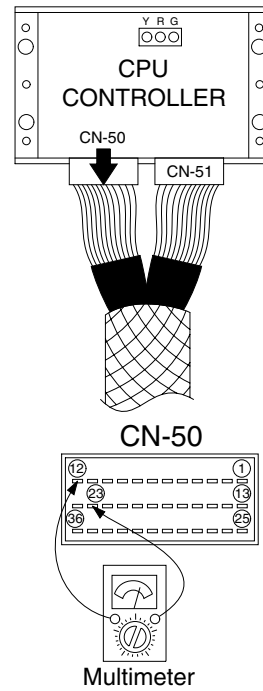
29076MS03

## 2) TEST PROCEDURE

(1) **Test 11** : Check resistance.

- ① Starting key OFF.
- ② Disconnect connector CN-50 from CPU controller.
- ③ Check resistance between CN-50(12)-(23) as figure.

SPEC : 1~2  $\Omega$

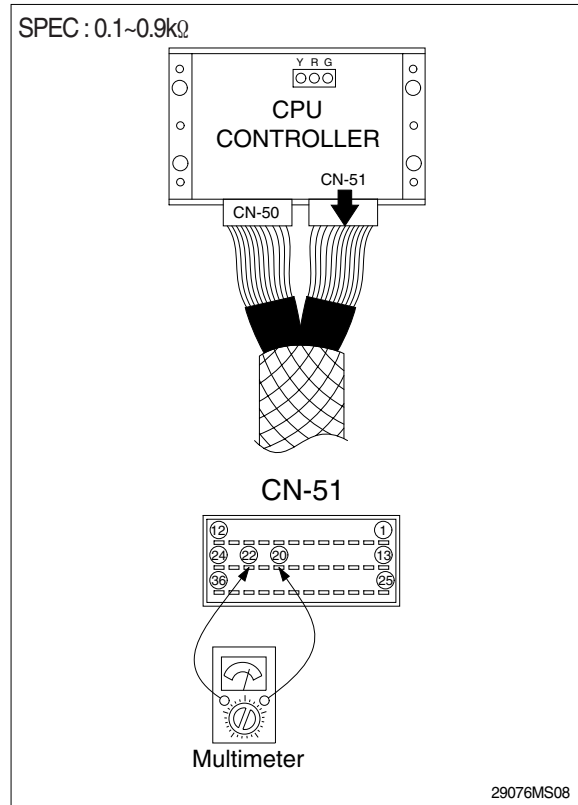


29076MS04

(2) **Test 12** : Check voltage and resistance.

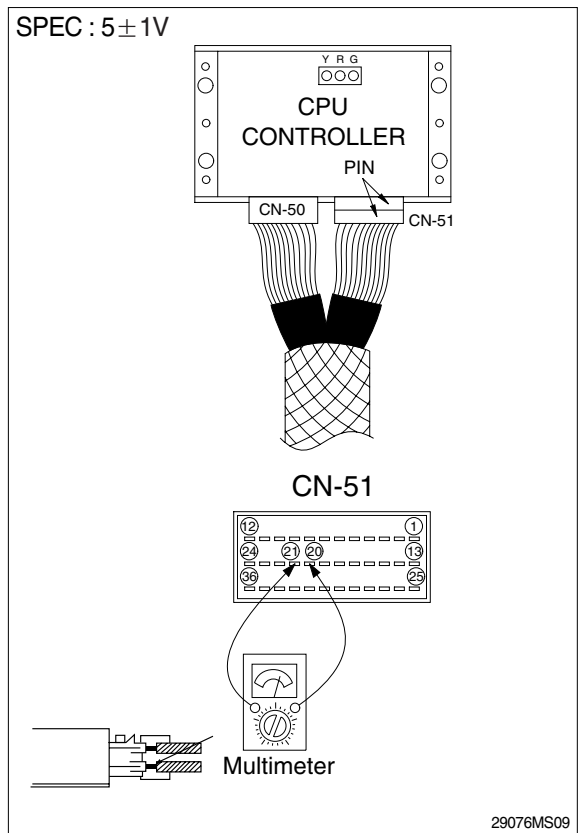
① Check resistance between CN-51(20)-  
(22).

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



② Check voltage between CN-51(20) and  
CN-51(21).

- Prepare 2 pieces of thin sharp pin, steel or copper.
- Starting key ON.
- Insert prepared pins to rear side of connectors : One pin to CN-51(20)  
Other pin to CN-51(21)
- Check voltage.



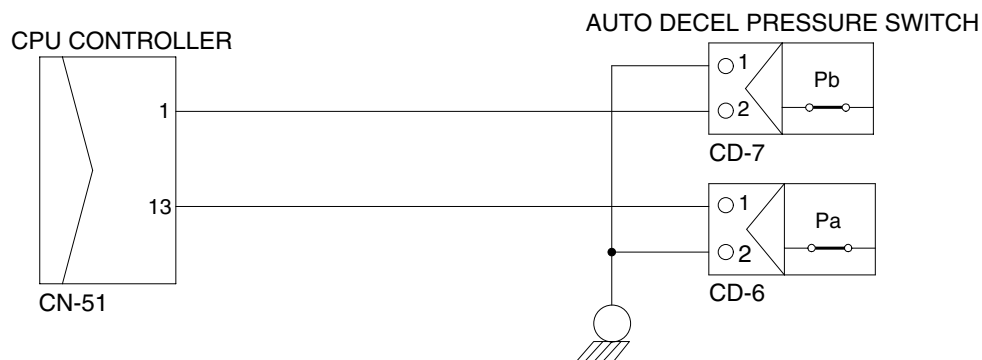
## 6. AUTO DECEL SYSTEM DOES NOT WORK

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

### 1) INSPECTION PROCEDURE

		Cause	Remedy
<div style="border: 1px solid black; padding: 5px; width: fit-content;">                     Check resistance between CN-51 (1)-GND and CN-51(13)-GND                 </div> <p>SPEC :                      Actuator operating : 4-5V                      Actuator stop :0-1V                      See TEST 13                      See TEST 14</p>	YES	Defective CPU controller	Replace
	NO	Short circuit or poor connection between CN-51(1), (13)- pressure switches	Replace or repair
	NO	Defective auto decel pressure switch	Replace

### Wiring diagram



29076MS10

## 2) TEST PROCEDURE

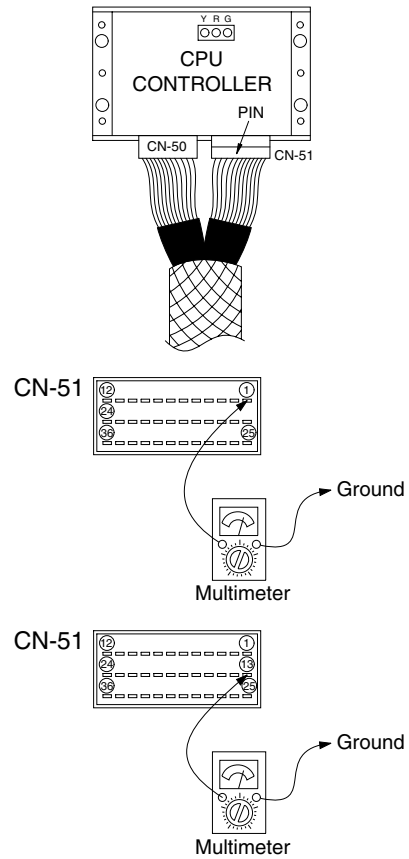
(1) **Test 13** : Check voltage at CN-51(1) and ground.

- ① Prepare 1 piece of thin sharp pin, steel or copper.
- ② Starting key ON.
- ③ Insert prepared pin to rear side of connectors : One pin to (1) of CN-51.
- ④ Check voltage as figure.

(2) **Test 14** : Check voltage at CN-51(13) and ground.

- ① Prepare 1 piece of thin sharp pin, steel or copper
- ② Starting key ON.
- ③ Insert prepared pin to rear side of connectors : One pin to (13) of CN-51.
- ④ Check voltage as figure.

SPEC : Actuator stop : 4~5V  
Actuator operating : 0~1V

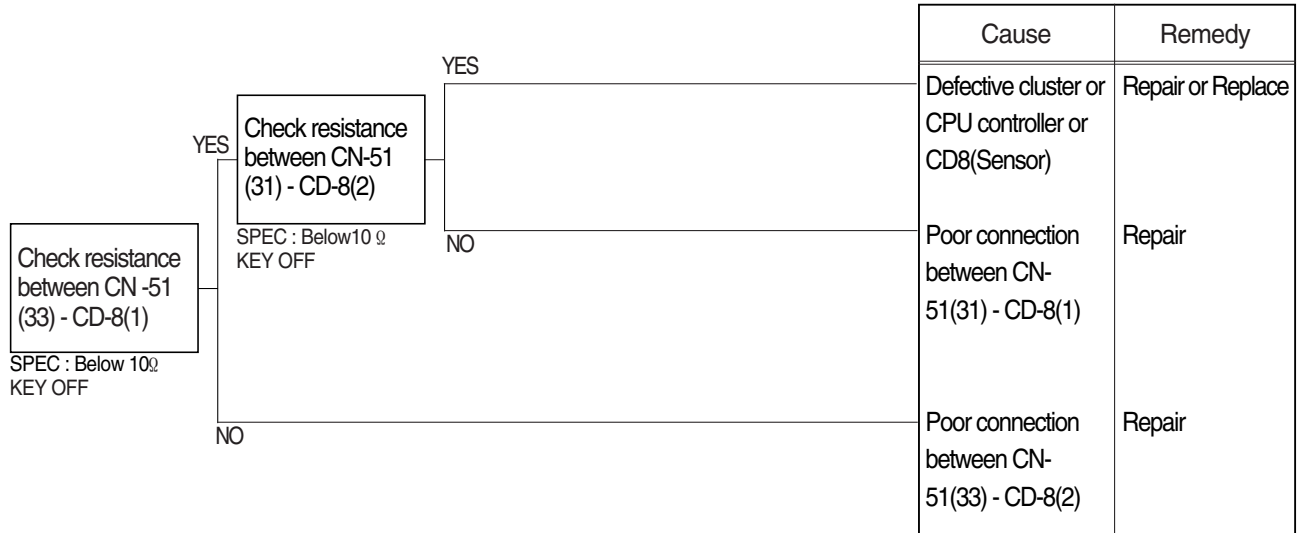


29076MS11

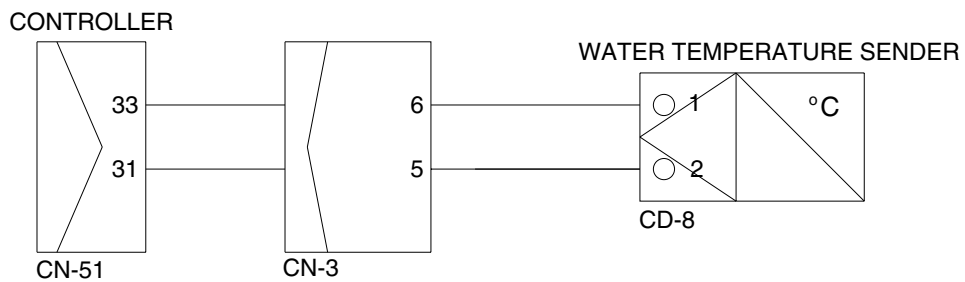
## 7. MALFUNCTION OF WARMING UP

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

### 1) INSPECTION PROCEDURE



### Wiring diagram

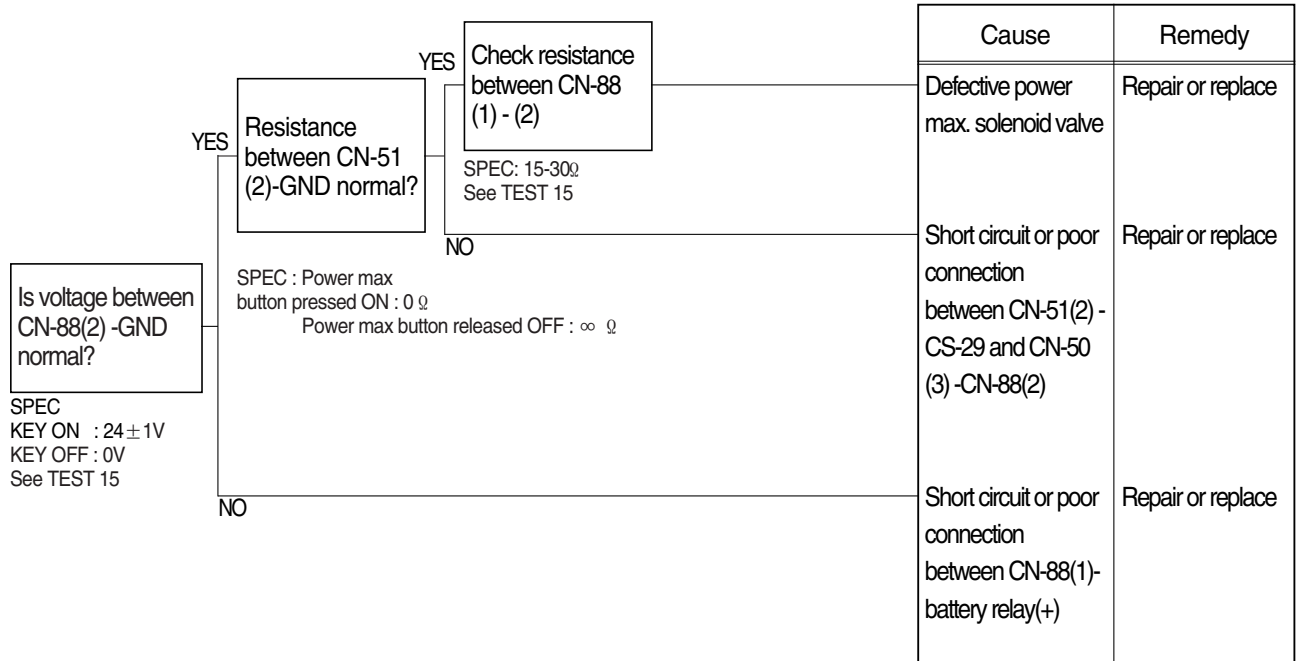


21076ES53A

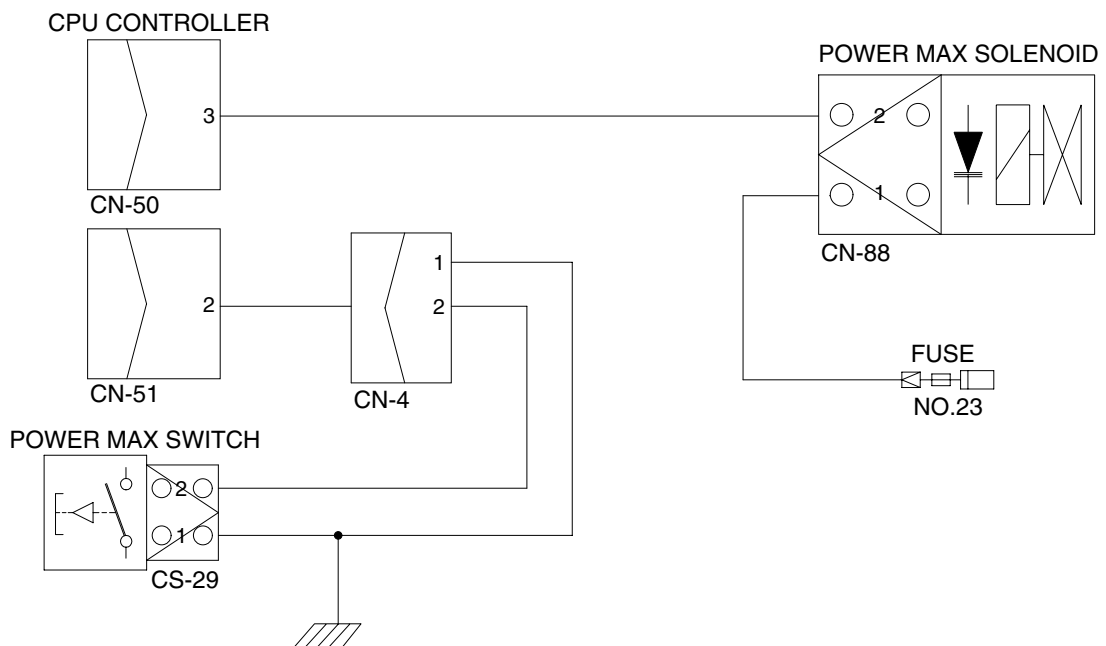
## 8. MALFUNCTION OF POWER MAX

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

### 1) INSPECTION PROCEDURE



### Wiring diagram

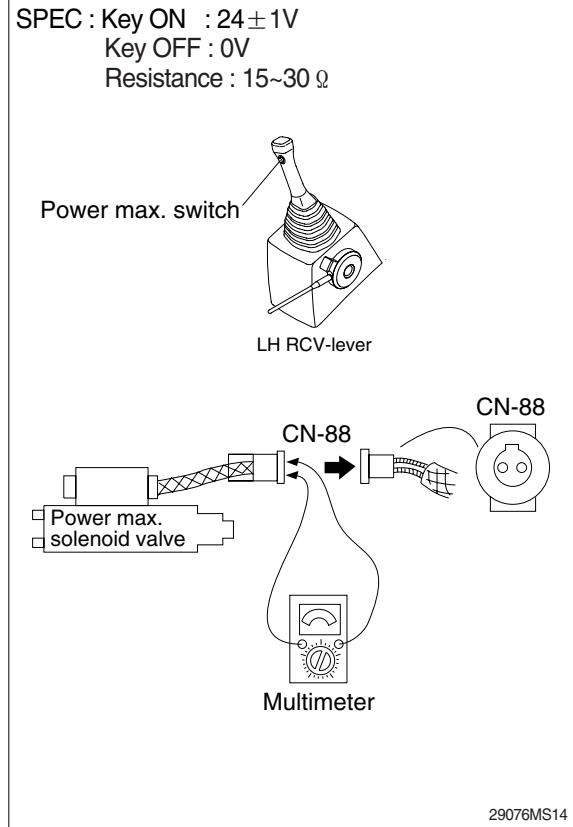


29076MS13

## 2) TEST PROCEDURE

(1) **Test 15:** Check voltage between connector CN-88 - GND.

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



(2) **Test 16:** Check resistance between connector CN-51(2)-GND.

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

