

# GROUP 4 MECHATRONICS SYSTEM

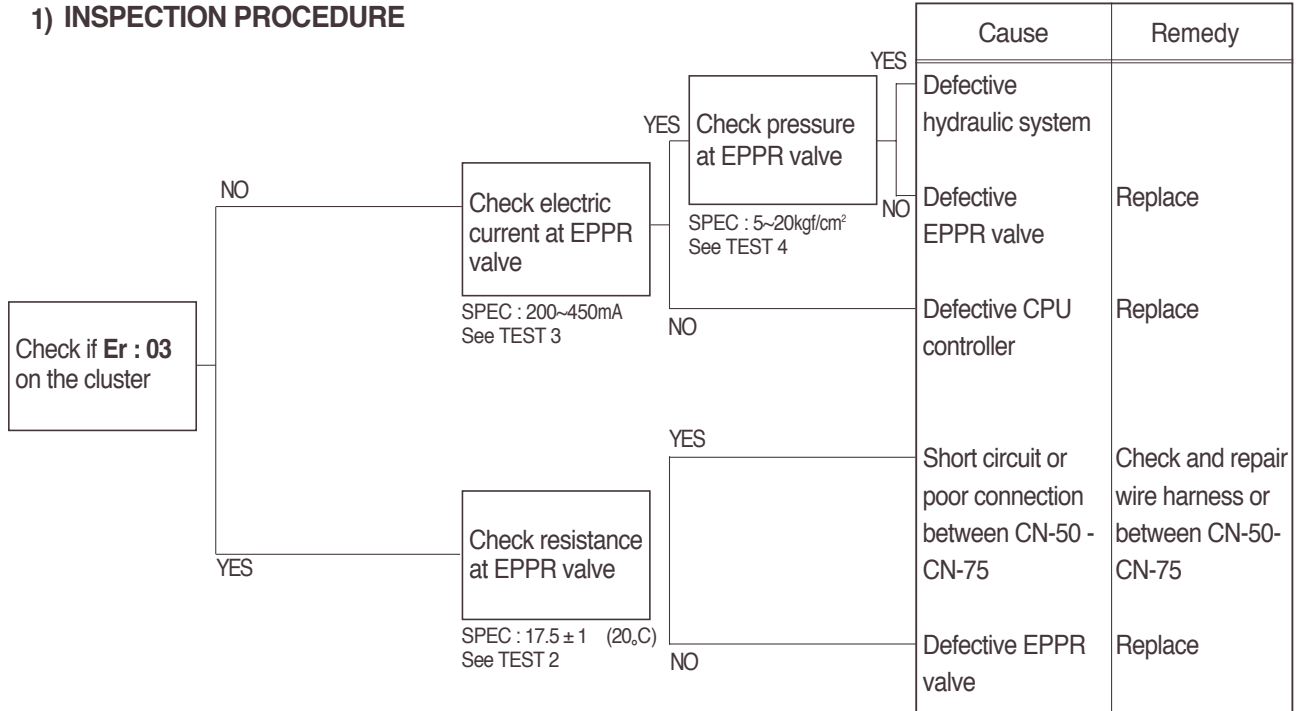
## 1. ALL ACTUATORS SPEED ARE SLOW

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

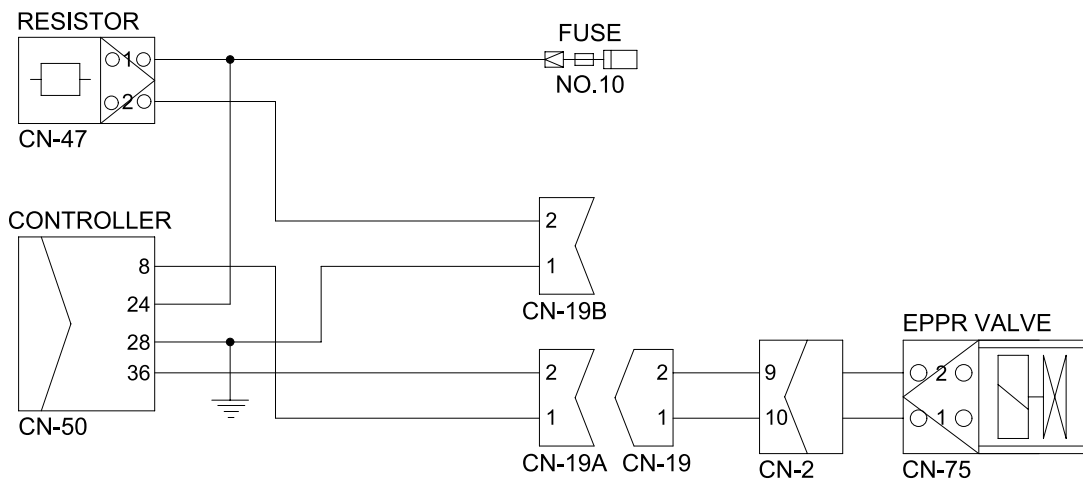
Spec : H-mode 1750 ± 50rpm                      S-mode 1650 ± 50rpm

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

### 1) INSPECTION PROCEDURE



### Wiring diagram



20W76MS01

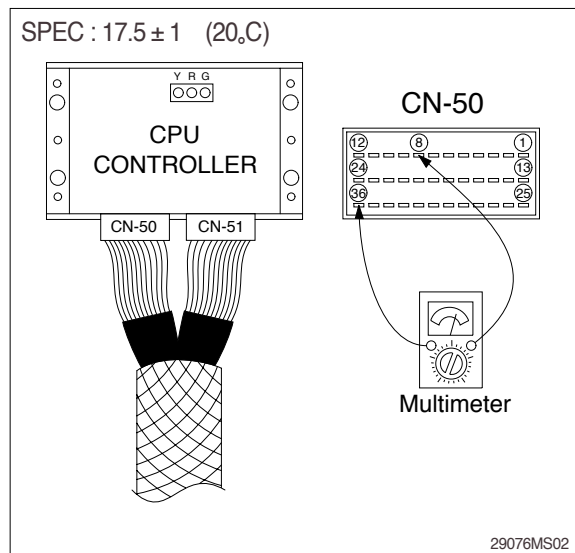
## 2) TEST PROCEDURE

- (1) **Test 1** : Check resistance at connector CN-50(8)-(36).

Starting key OFF.

Disconnect connector CN-50.

Check resistance between pin and at connector CN-50(8)-(36).

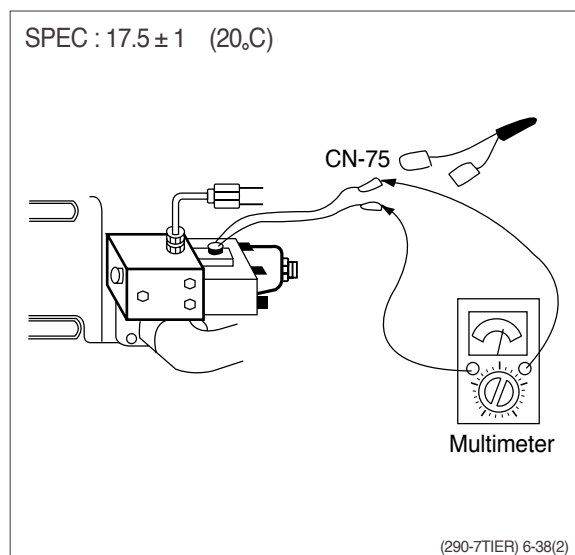


- (2) **Test 2** : Check resistance at connector CN-75.

Starting key OFF.

Disconnect connector CN-75 from EPPR valve at main hydraulic pump.

Check resistance between 2 lines as figure.



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

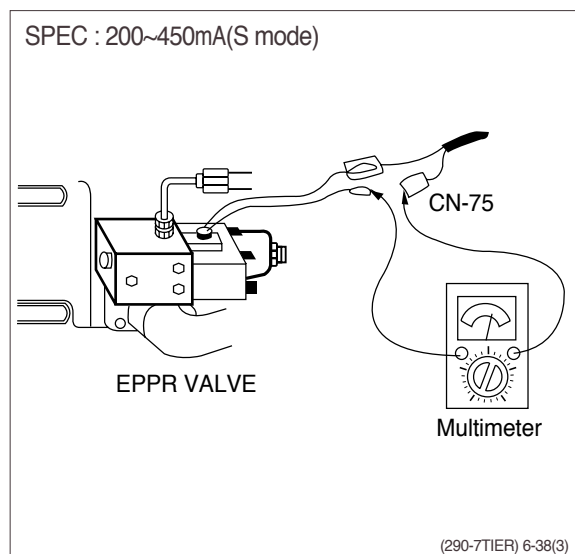
Install multimeter as figure.

Start engine.

Set the accel dial at "10"(MAX)

Set S-mode and cancel auto decel mode.

If tachometer show approx  $1650 \pm 50$ rpm, check electric current.



(2) **Test 4** : Check pressure at EPPR valve.  
Remove plug and connect pressure gauge as figure.

- Gauge capacity : 0 to 40~50kgf/cm<sup>2</sup>  
(0 to 570~710psi)

Start engine.

Set the accel dial at "10"(Max).

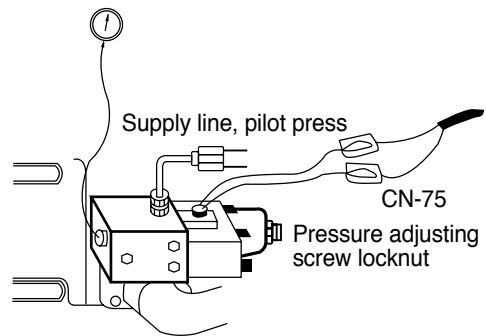
Set S-mode and cancel auto decel mode.

If tachometer show approx 1650 ± 50rpm,  
check pressure.

If pressure is not correct, adjust it.

After adjust, test the machine.

SPEC : 5~20kgf/cm<sup>2</sup>(70~280psi)

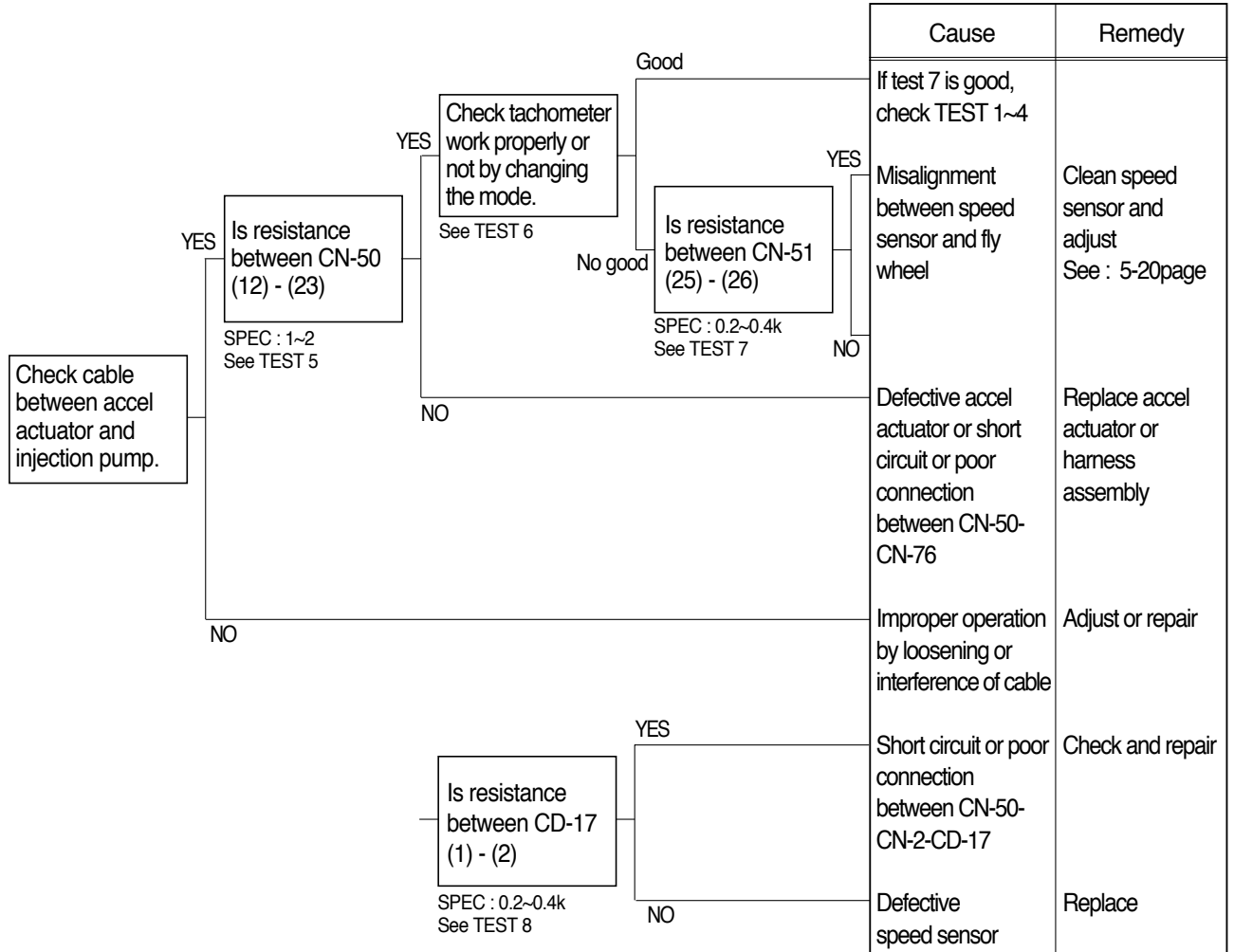


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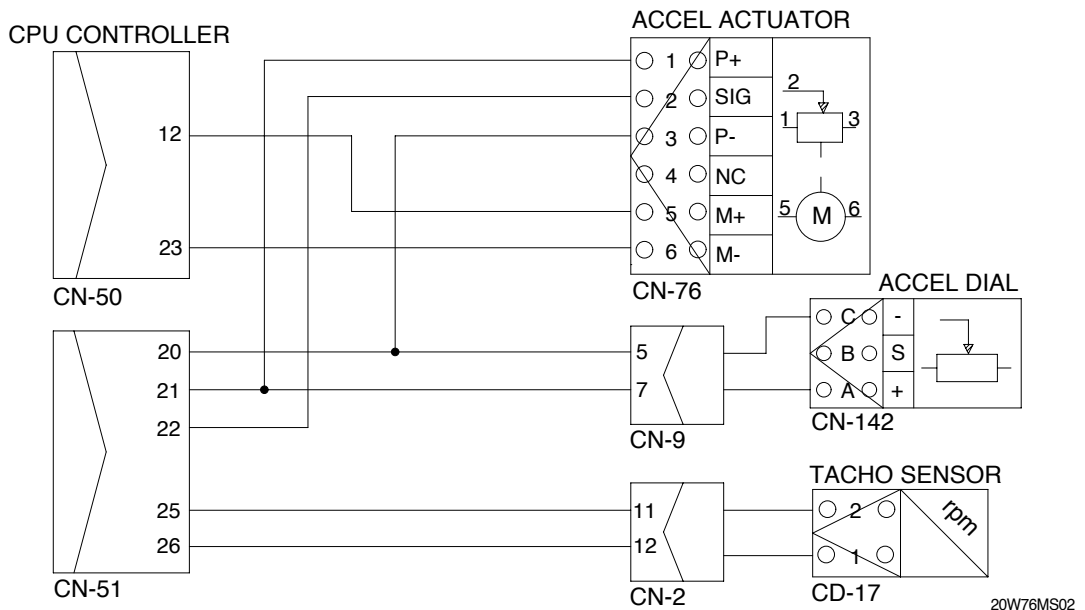
## 2. ENGINE SPEED IS SLOW AT ALL MODE

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

### 1) INSPECTION PROCEDURE



### Wiring diagram



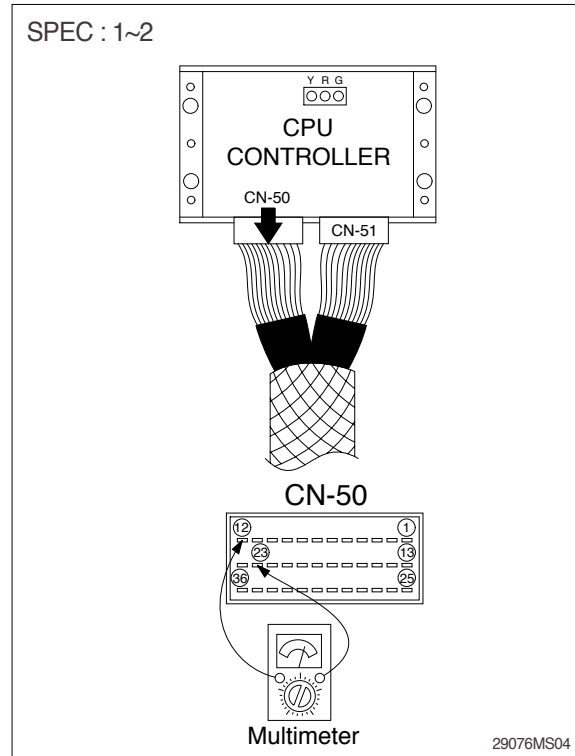
## 2) TEST PROCEDURE

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

Starting key OFF.

Disconnect connector CN-50 from CPU controller.

Check resistance as figure.



Unit : rpm

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

Start engine.

Check tachometer reading.

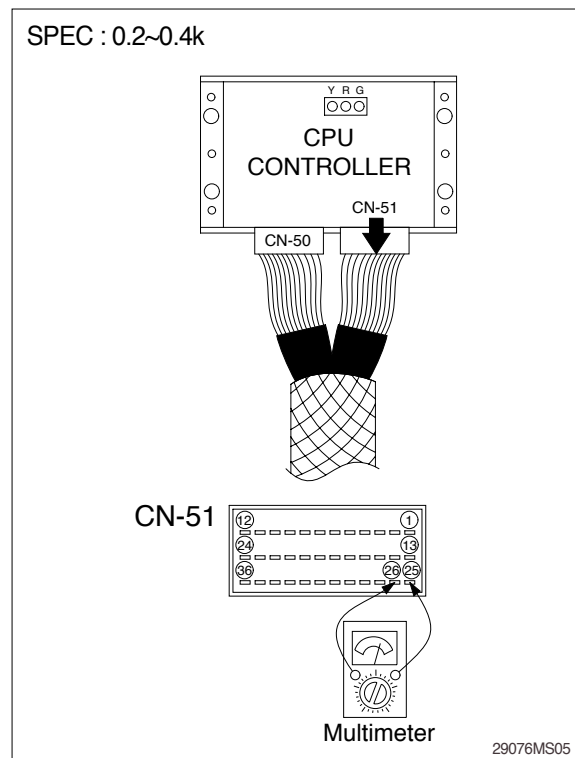
Spec		Remark
H-mode	2050 ± 50	Check rpm after cancel the Auto decel mode.
S-mode	1950 ± 50	

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

Starting key OFF.

Disconnect connector CN-51 from CPU controller.

Check resistance as figure.

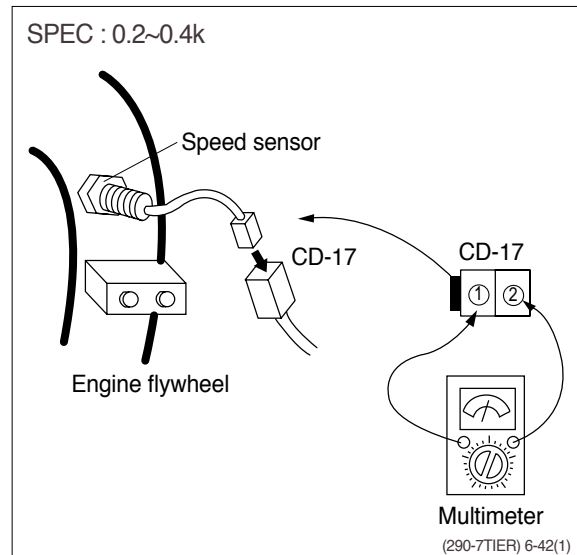


(4) **Test 8** : Check resistance at speed sensor.

Starting key OFF.

Disconnect connector CD-17 of speed sensor at engine flywheel housing.

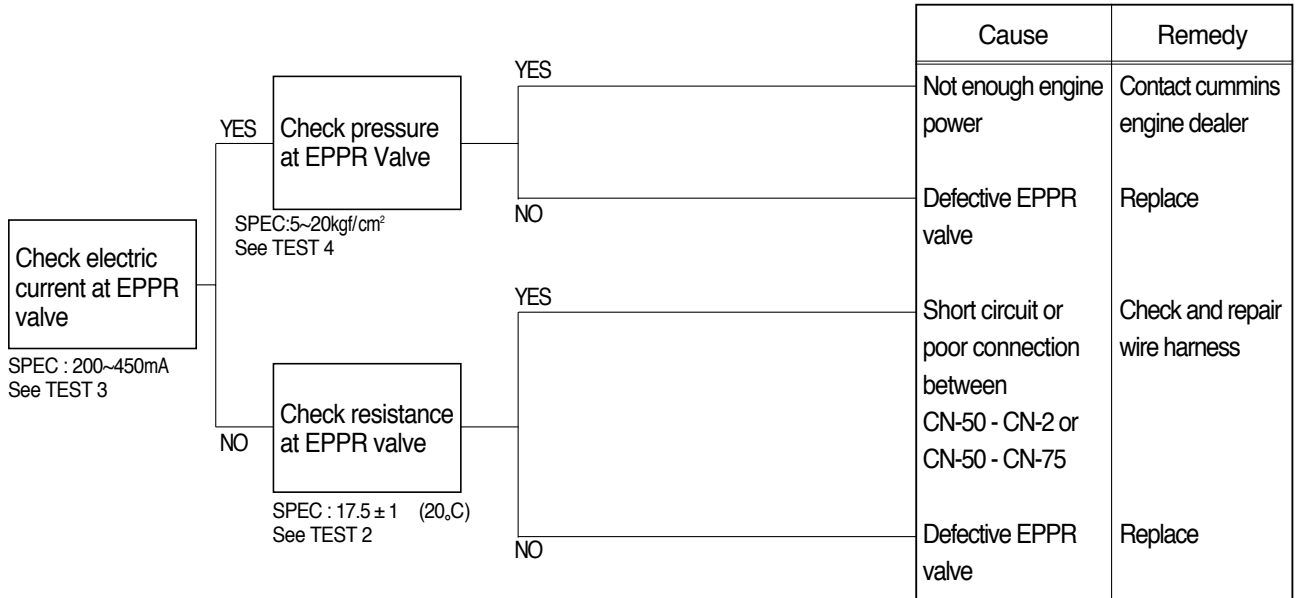
Check resistance as figure.



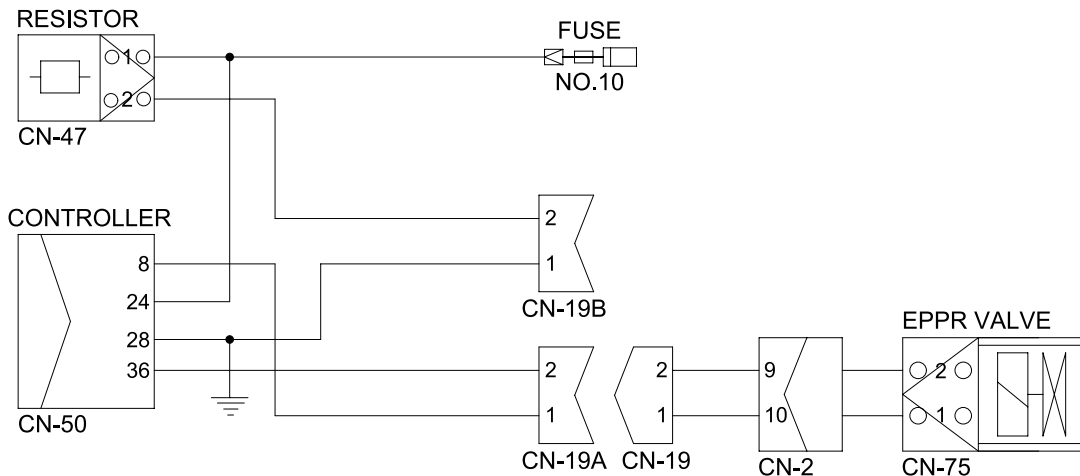
### 3. ENGINE STALL

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

#### 1) INSPECTION PROCEDURE



#### Wiring diagram



## 2) TEST PROCEDURE

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

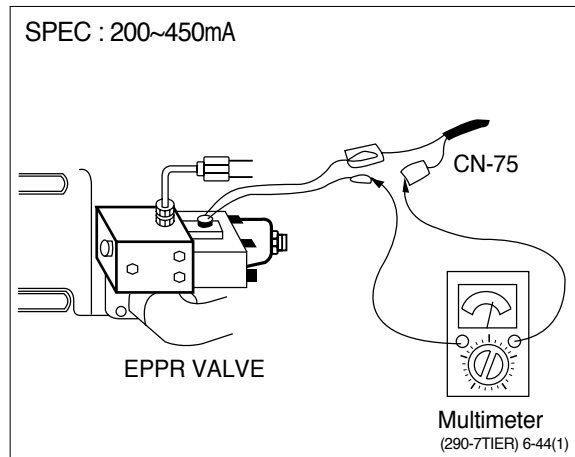
Install multimeter as figure.

Start engine.

Set the accel dial at "10"(max)

Set S-mode with  $1650 \pm 50$ rpm.

Check electric current.



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

Connect pressure gauge at EPPR valve.

Start engine.

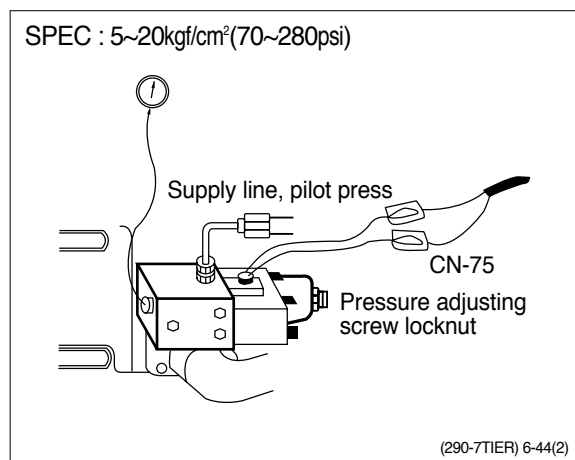
Set the accel dial at "10"(max)

Set S-mode with  $1650 \pm 50$ rpm.

Operate bucket lever completely push or pull.

Hold arm lever at the end of stroke.

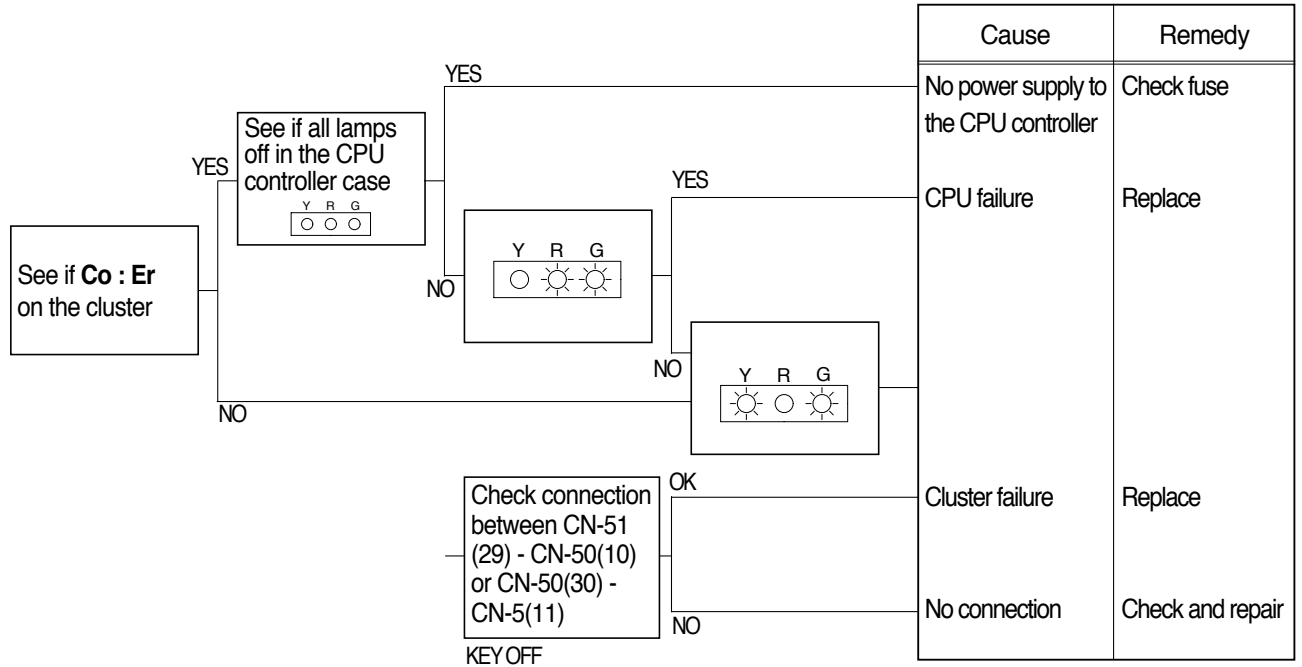
Check pressure at relief position.



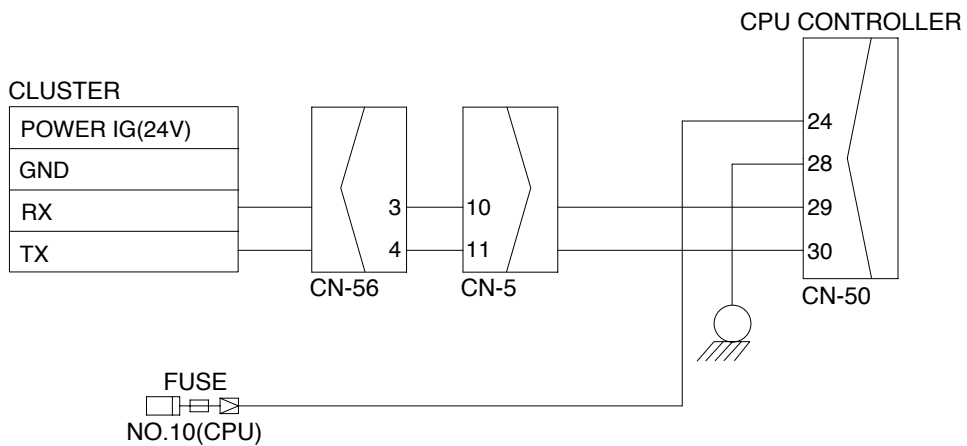
#### 4. MALFUNCTION OF CLUSTER OR MODE SELECTION SYSTEM

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

##### 1) INSPECTION PROCEDURE



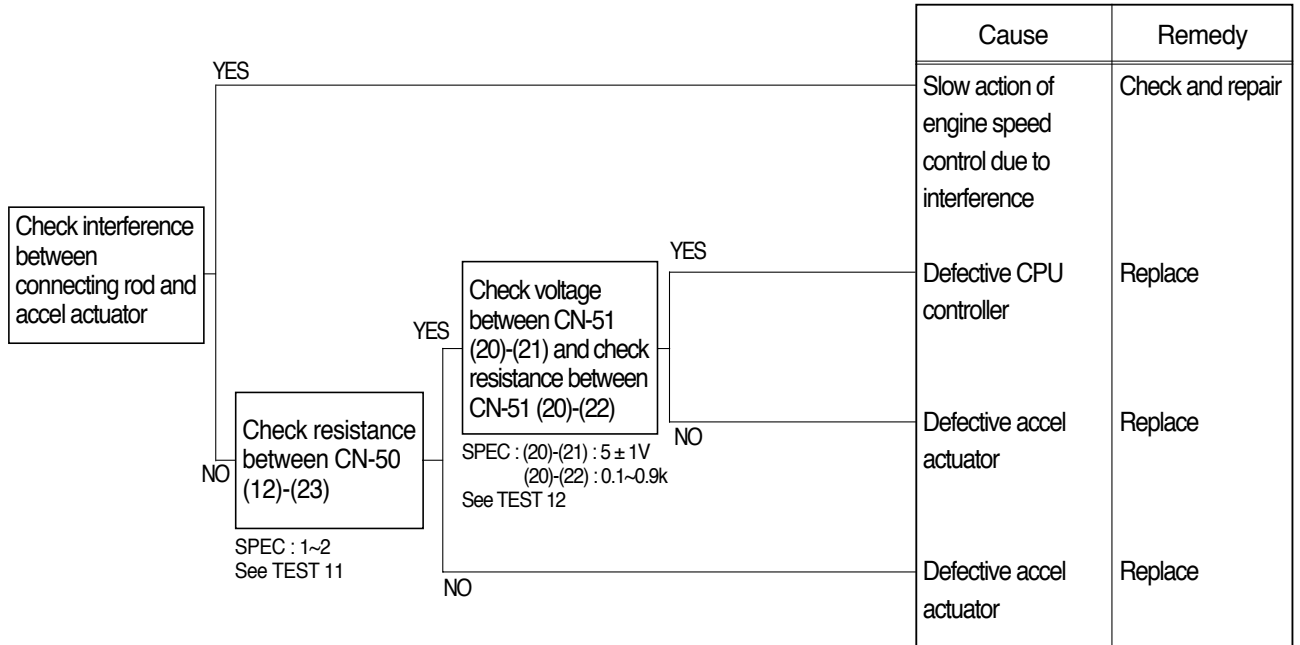
##### Wiring diagram



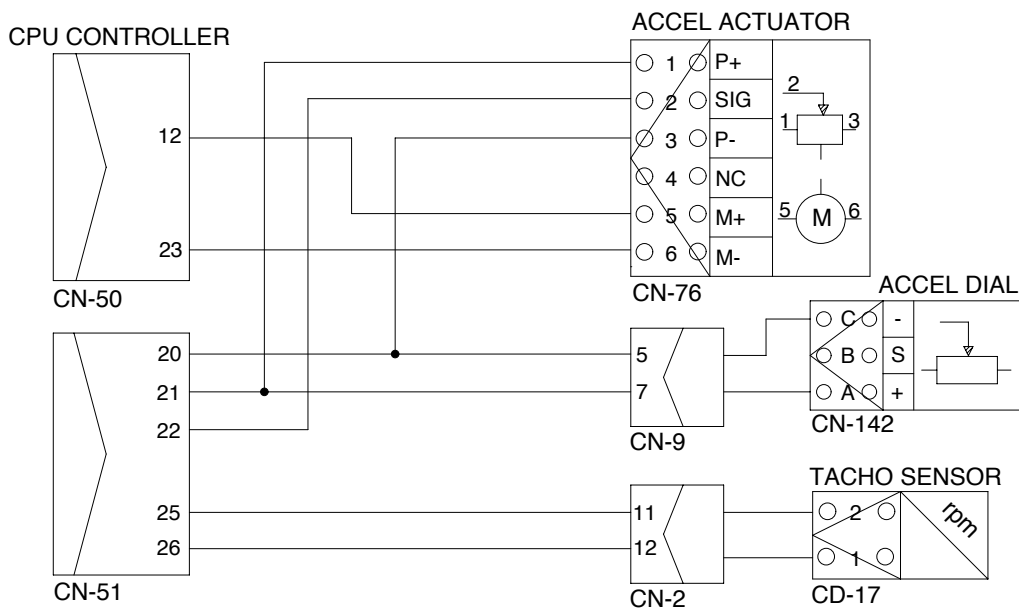
## 5. SLOW ACTION OF ENGINE SPEED CHANGE WHEN CHANGE THE MODE

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

### 1) INSPECTION PROCEDURE



### Wiring diagram

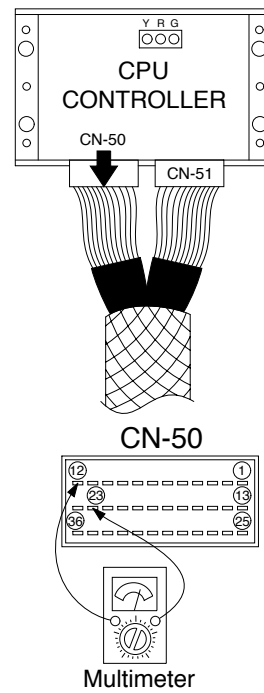


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## 2) TEST PROCEDURE

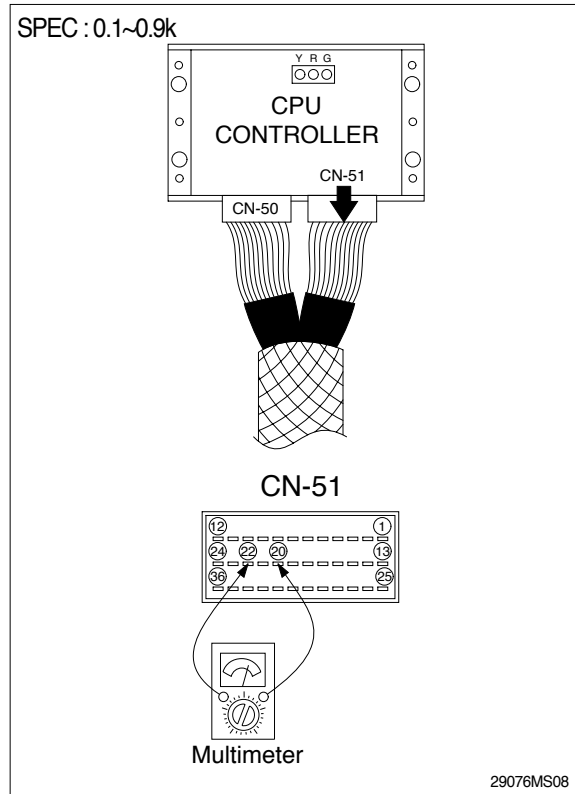
- (1) **Test 11** : Check resistance.  
Starting key OFF.  
Disconnect connector CN-50 from CPU controller.  
Check resistance between CN-50(12)-(23) as figure.

SPEC : 1~2



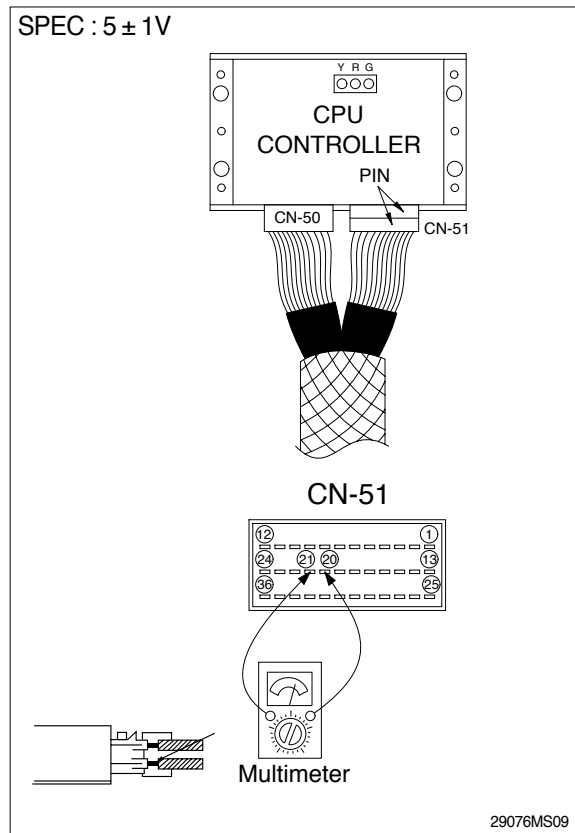
29076MS04

- (2) **Test 12** : Check voltage and resistance.  
 Check resistance between CN-51(20)-  
 (22).
- Starting key OFF.
  - Disconnect connector CN-51 from CPU controller.
  - Check resistance value with multimeter as figure.



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.

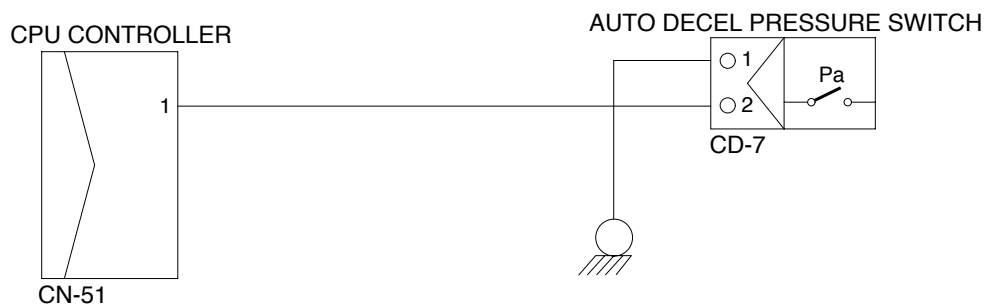
### 1) INSPECTION PROCEDURE

	Cause	Remedy
YES	Defective CPU controller	Replace
NO	Short circuit or poor connection between CN-51(1)-pressure switches	Replace or repair
NO	Defective auto decel pressure switch	Replace

Check resistance between CN-51 (1)-GND and CN-51(13)-GND

SPEC :  
 Actuator operating : 11~13V  
 Actuator stop : 0~2V  
 See TEST 13  
 See TEST 14

### Wiring diagram



20W76MS04

## 2) TEST PROCEDURE

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

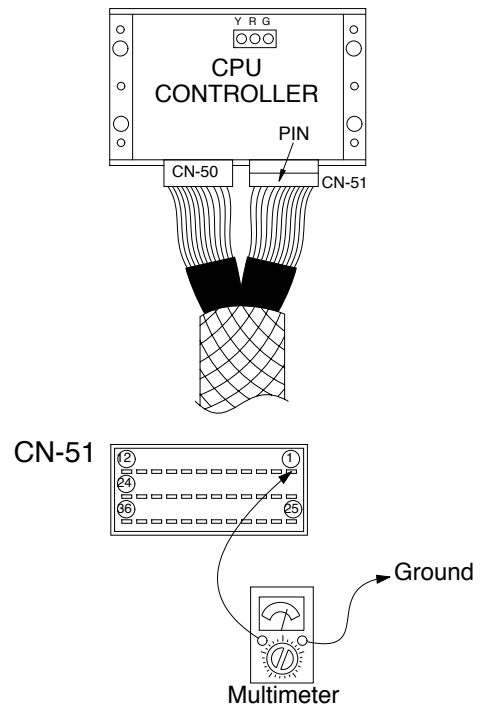
Prepare 1 piece of thin sharp pin, steel or copper.

Starting key ON.

Insert prepared pin to rear side of connectors : One pin to (1) of CN-51.

Check voltage as figure.

SPEC : Actuator stop : 11~13V  
Actuator operating : 0~2V

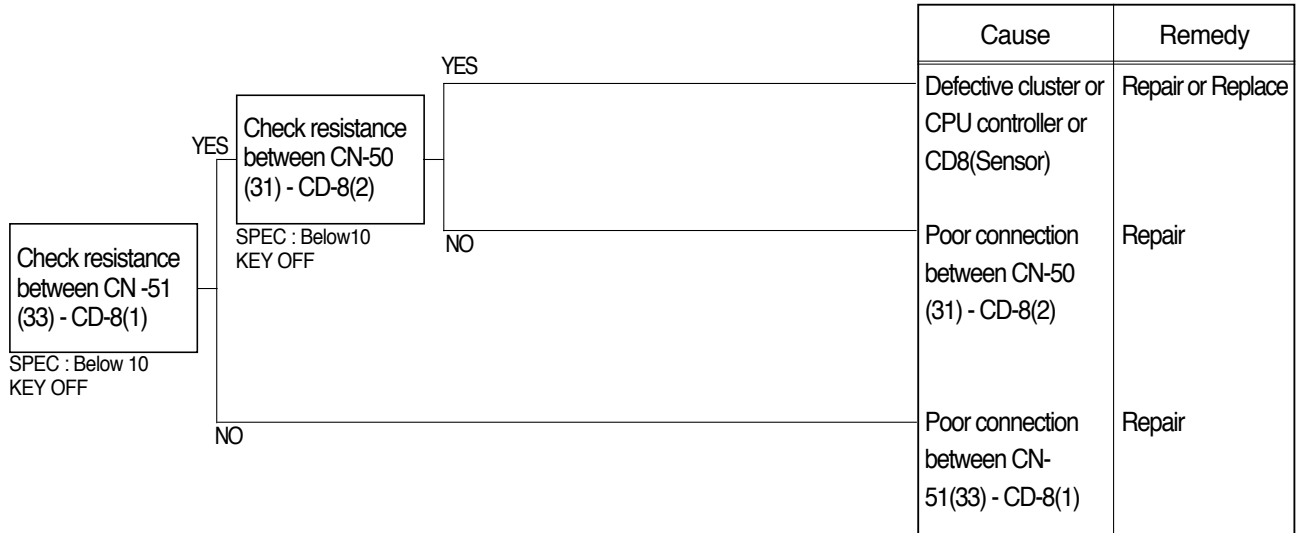


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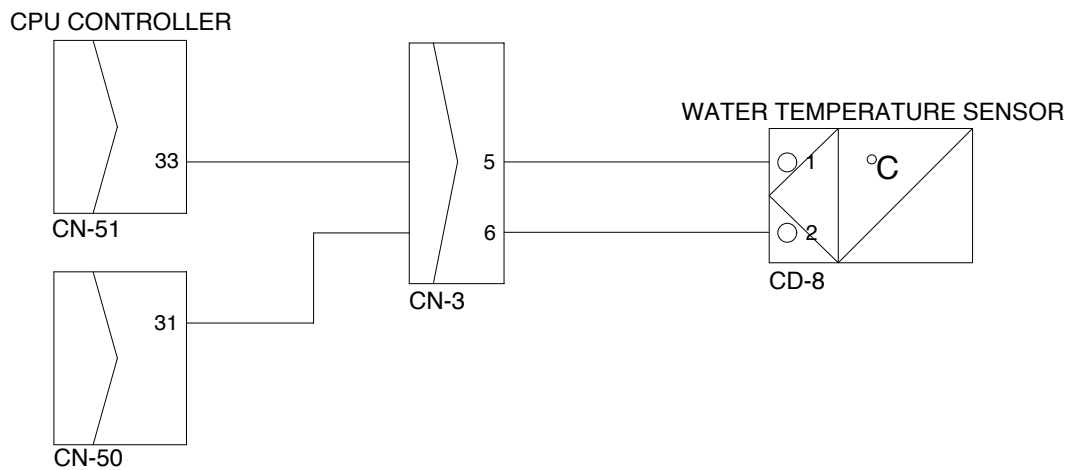
## 7. MALFUNCTION OF WARMING UP

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

### 1) INSPECTION PROCEDURE



### Wiring diagram

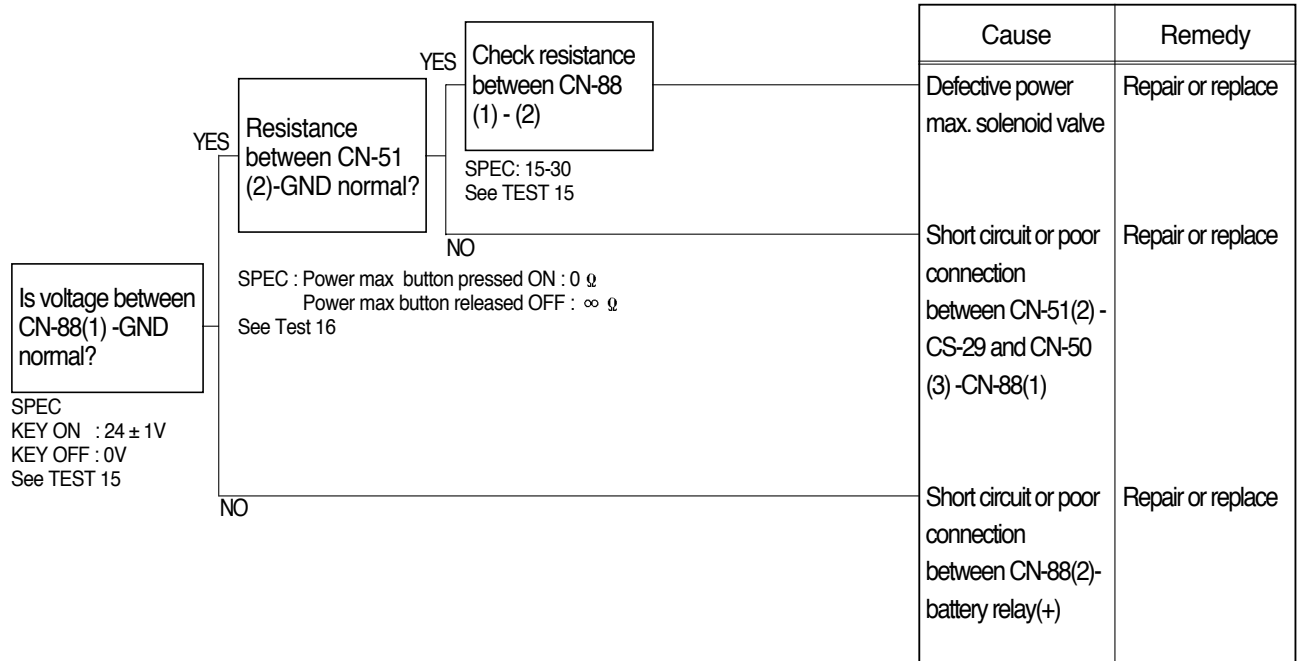


20W76MS05

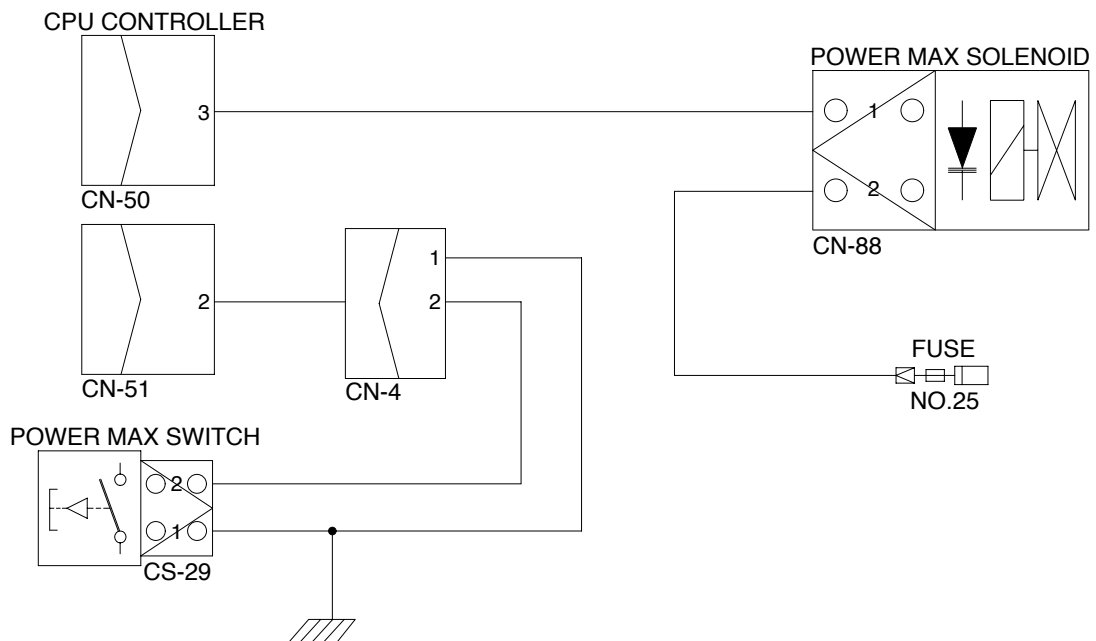
## 8. MALFUNCTION OF POWER MAX

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

### 1) INSPECTION PROCEDURE



### Wiring diagram



20W76MS06

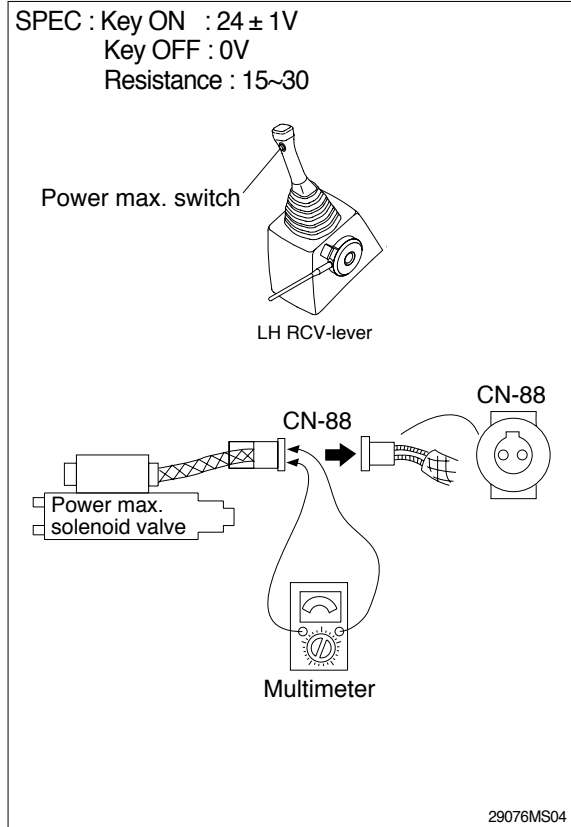
## 2) TEST PROCEDURE

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

Start key ON.

Disconnect connector CN-88 from power max solenoid valve.

Check voltage as figure.



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

Starting key OFF.

Remove CPU controller and disconnect connector CN-51 from CPU controller.

Check resistance as figure.

