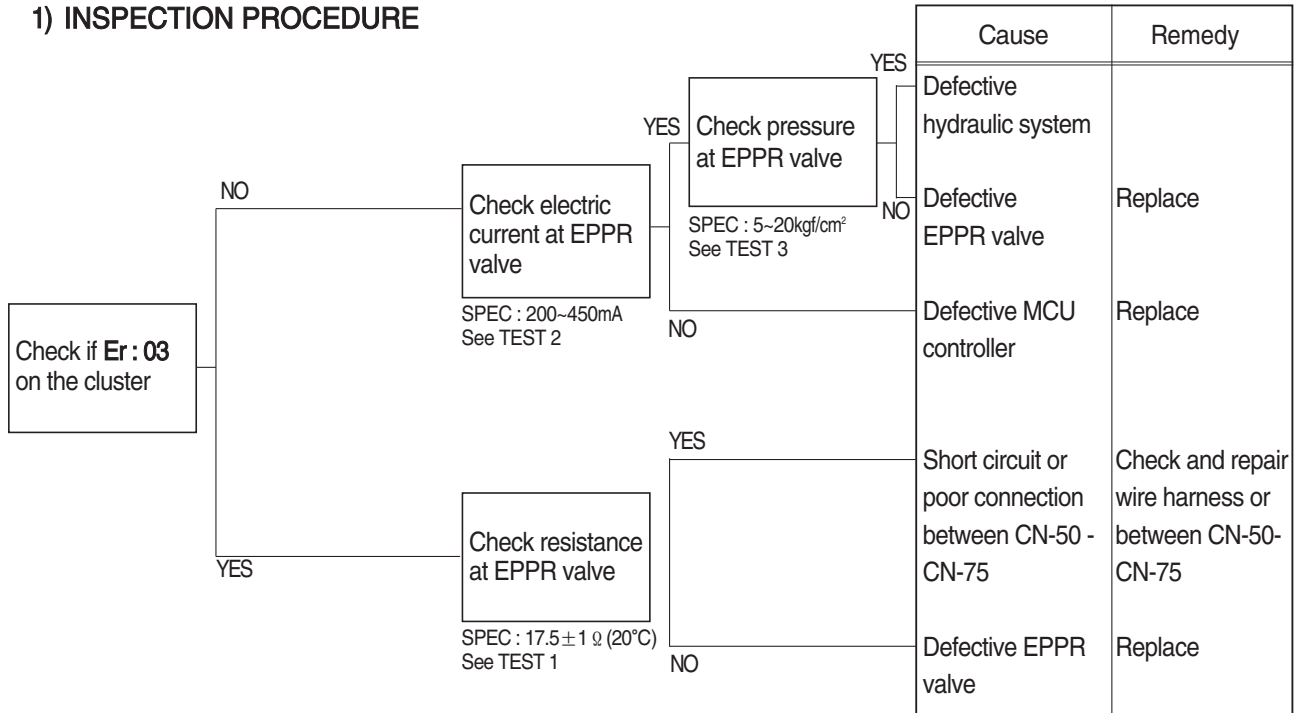


GROUP 4 MECHATRONICS SYSTEM

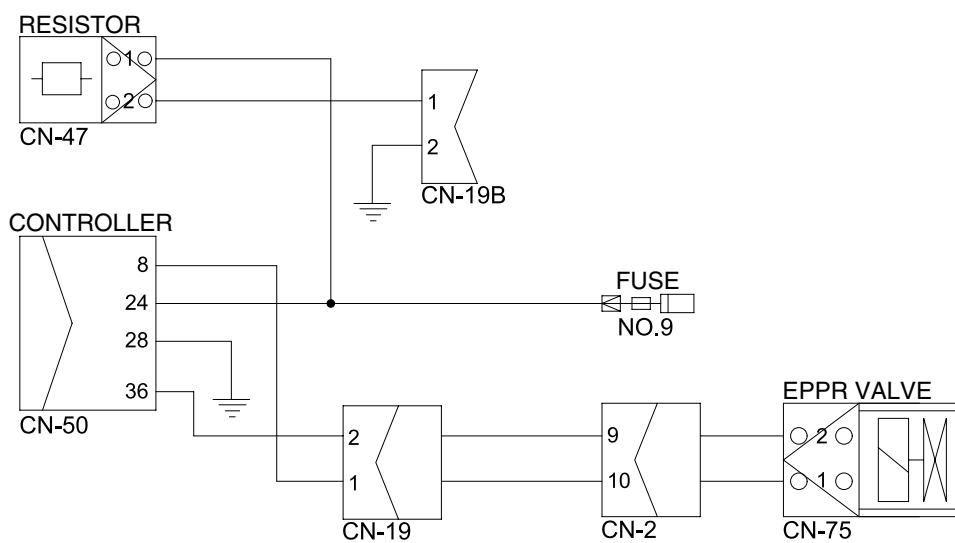
1. ALL ACTUATORS SPEED ARE SLOW

- ※ Boom, Arm, Bucket, Swing and travel speed are slow, but engine speed is good.
- ※ Spec : M-mode 1900±100rpm H-mode 1800±100rpm S-mode 1700±100rpm
- ※ Before carrying out below procedure, check all the related connectors are properly inserted.

1) INSPECTION PROCEDURE



Wiring diagram



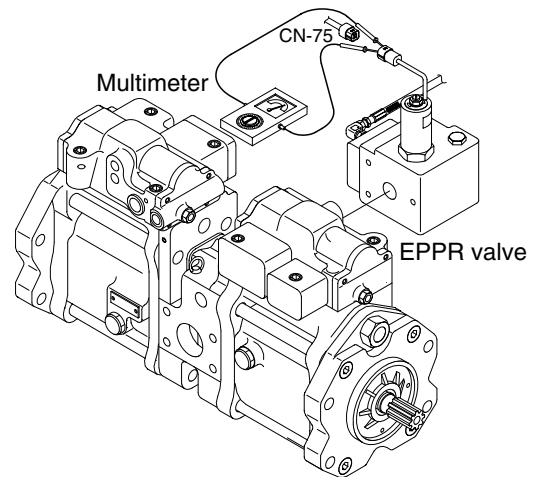
30076MS01

2) TEST PROCEDURE

(1) **Test 1** : 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.

SPEC : $17.5 \pm 1 \Omega$ (20°C)

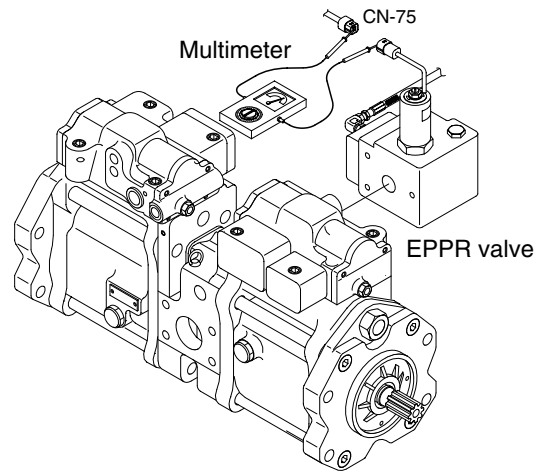


2507A5MS11

(2) **Test 2** : 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 1700 ± 100 rpm, check electric current.

SPEC : 200~450mA(S mode)

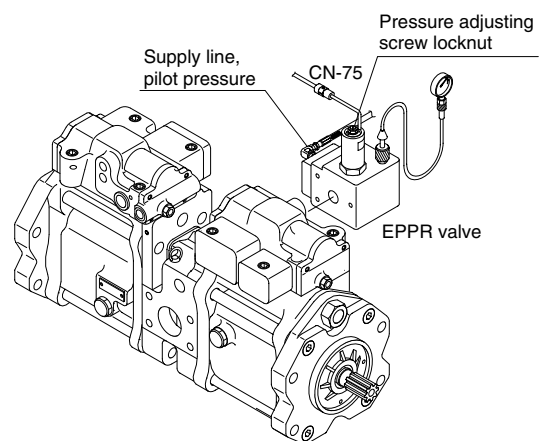


2507A5MS08

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

- ① Remove plug and connect pressure gauge as figure.
 - Gauge capacity : 0 to 40~50kgf/cm²
(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 1750 ± 50 rpm, check pressure.
- ⑥ If pressure is not correct, adjust it.
- ⑦ After adjust, test the machine.

SPEC : 5~20kgf/cm²(70~280psi)

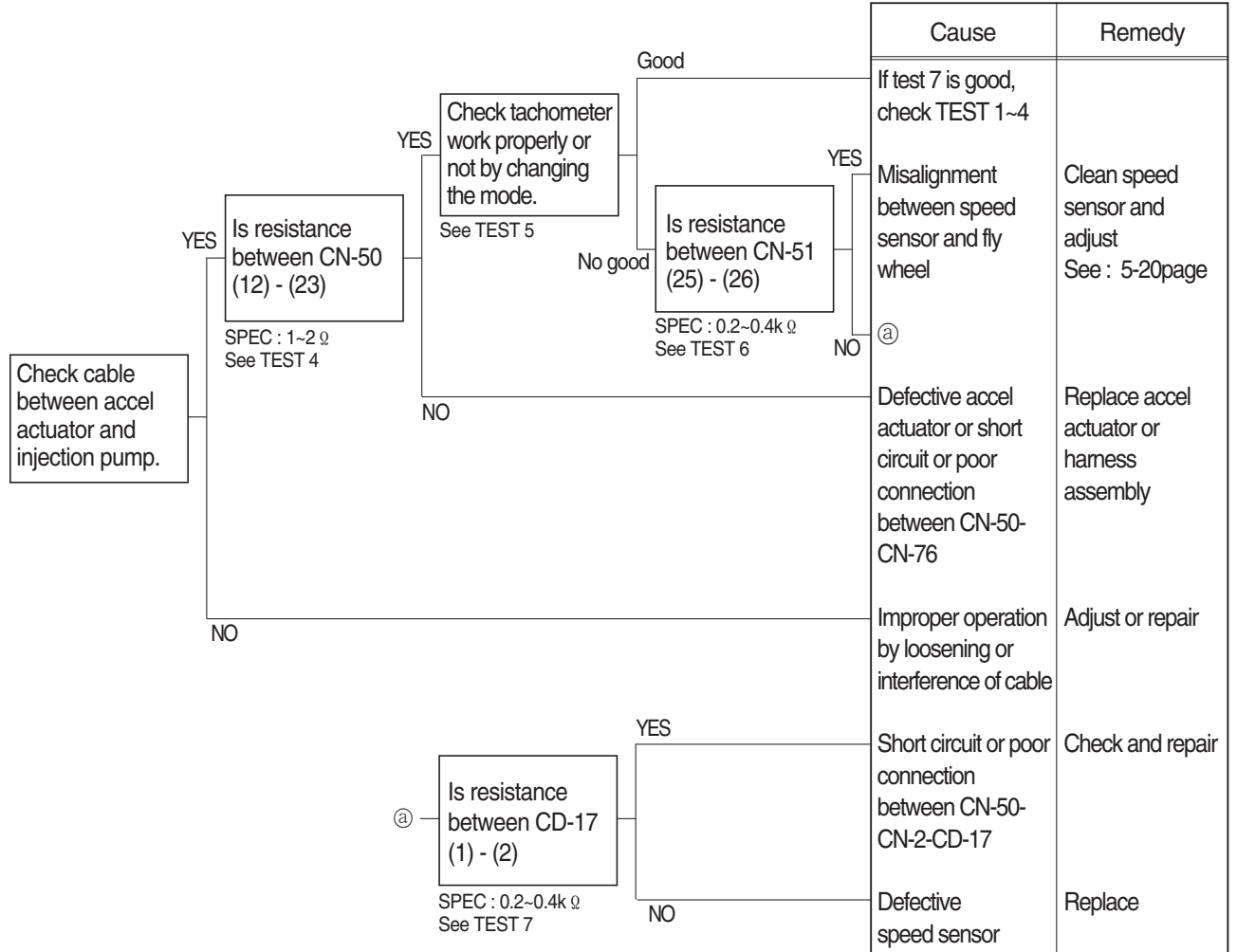


2507A5MS09

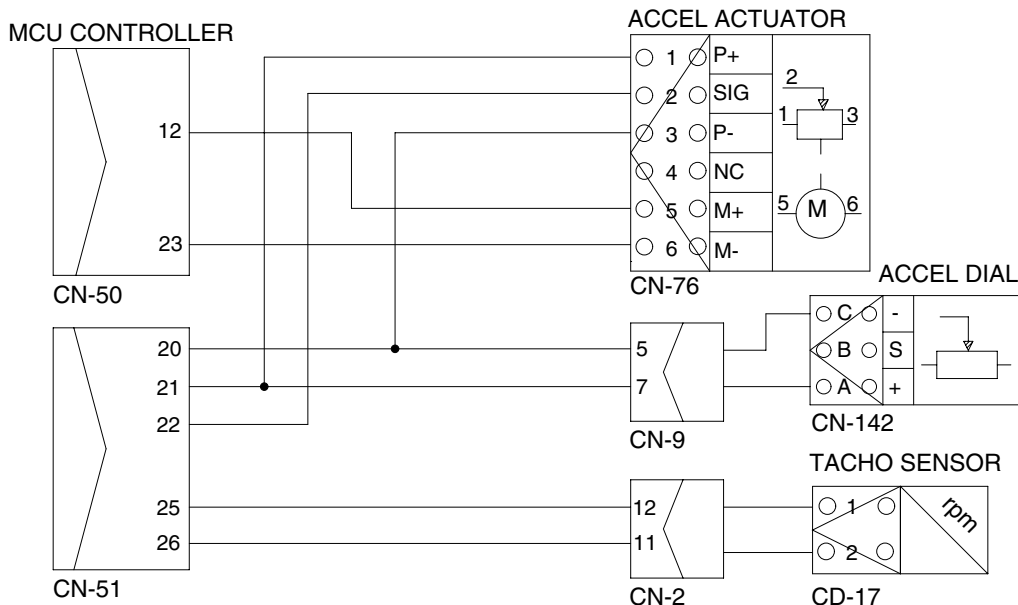
2. ENGINE SPEED IS SLOW AT ALL MODE

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

1) INSPECTION PROCEDURE



Wiring diagram

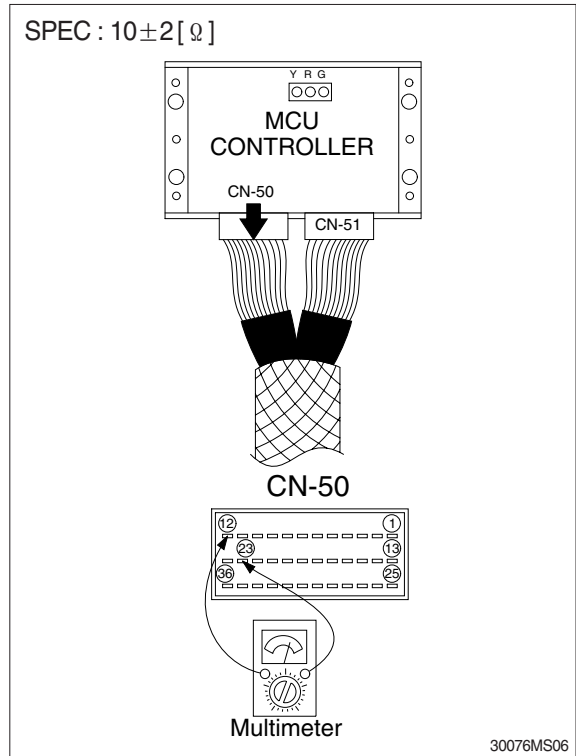


30076MS05

2) TEST PROCEDURE

(1) **Test 4** : Check resistance between CN-50 (12)-(23).

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



(2) **Test 5** : Check tachometer(Work properly or not)

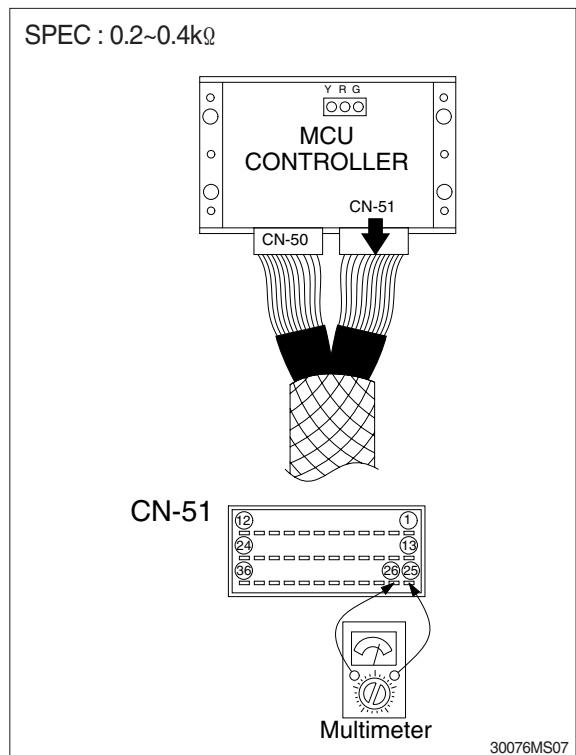
- ① Start engine.
- ② Check tachometer reading.

Unit : rpm

Spec		Remark
M mode	1900 ± 100	Check rpm after cancel the Auto decel mode.
H mode	1800 ± 100	
S mode	1700 ± 100	

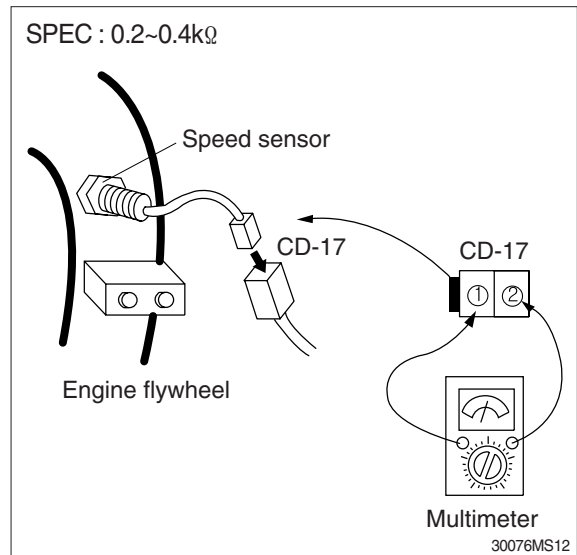
(3) **Test 6** : Check resistance between CN-51 (25) and CN-51(26).

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



(4) **Test 7**: Check resistance at speed sensor.

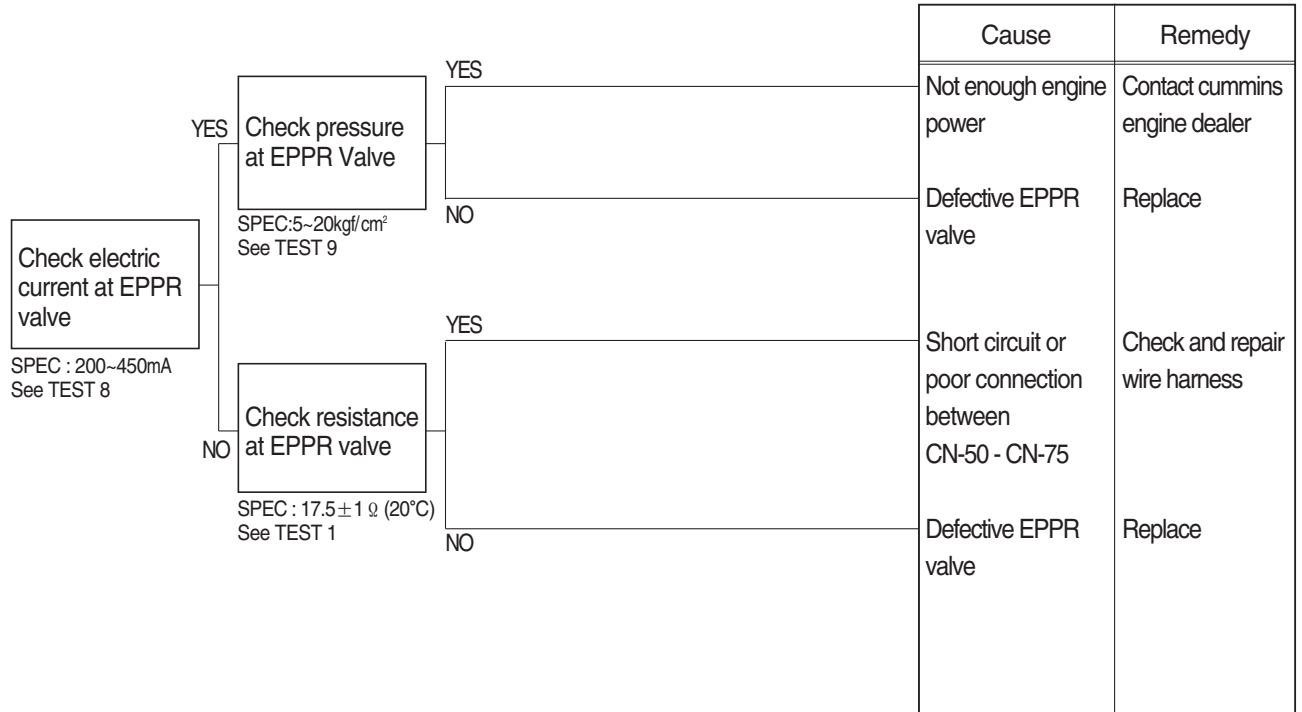
- ① Starting key OFF.
- ② Disconnect connector CD-17 of speed sensor at engine flywheel housing.
- ③ Check resistance as figure.



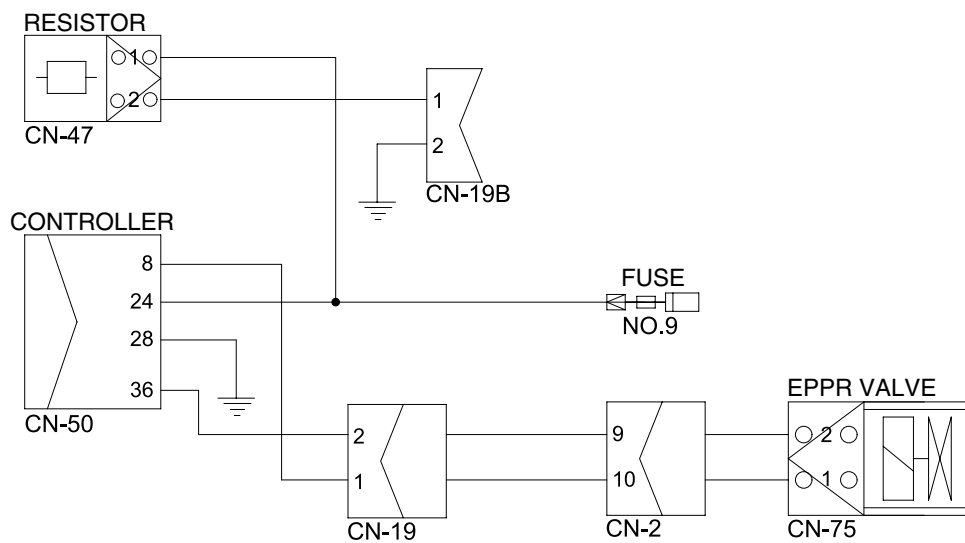
3. ENGINE STALL

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

1) INSPECTION PROCEDURE



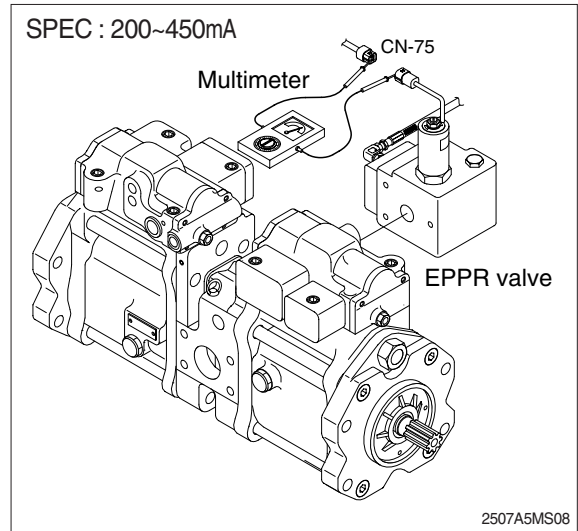
Wiring diagram



2) TEST PROCEDURE

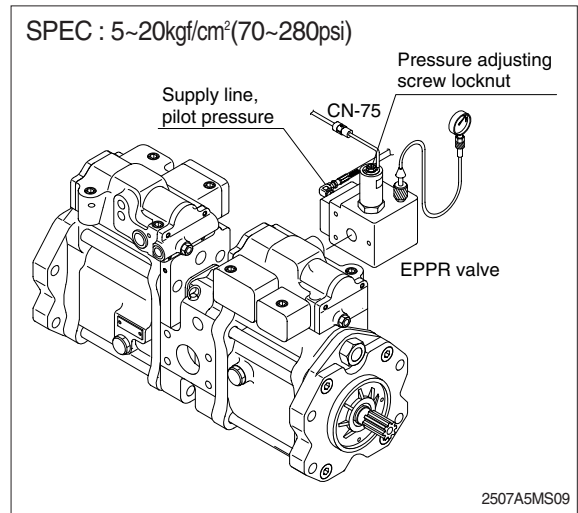
(1) Test 8 : Check electric current at EPPR valve at S-mode

- ① Install multimeter as figure.
- ② Start engine.
- ③ Set the accel dial at "10"(max)
- ④ Set S-mode with 1700 ± 100 rpm.
- ⑤ Check electric current.



(2) Test 9 : Check pressure at EPPR valve at S-mode

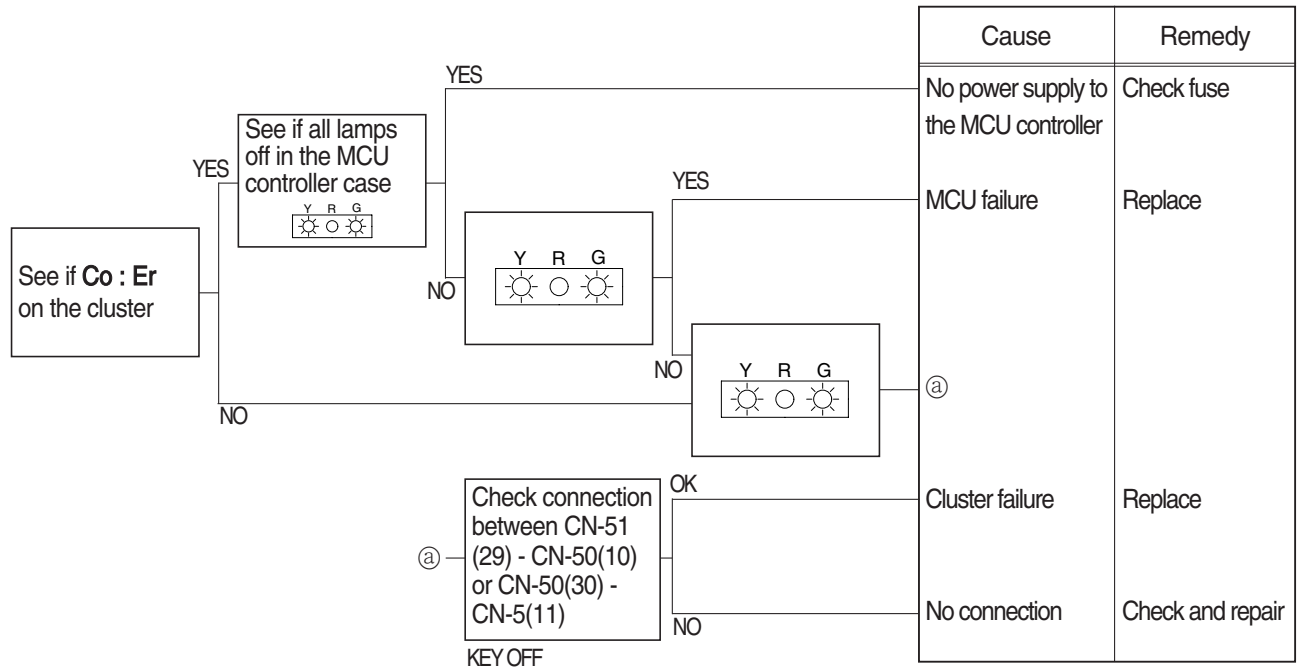
- ① Connect pressure gauge at EPPR valve.
- ② Start engine.
- ③ Set the accel dial at "10"(max)
- ④ Set S-mode with 1700 ± 100 rpm.
- ⑤ Operate bucket lever completely push or pull.
- ⑥ Hold arm lever at the end of stroke.
- ⑦ Check pressure at relief position.



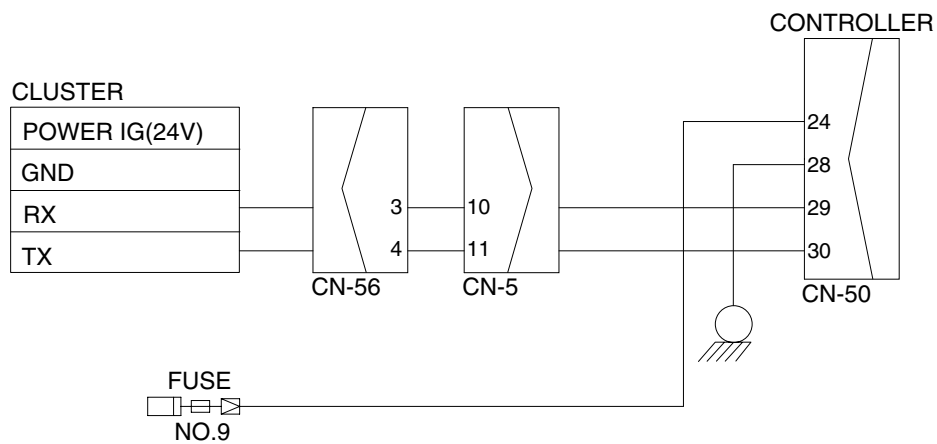
4. MALFUNCTION OF CLUSTER OR MODE SELECTION SYSTEM

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

1) INSPECTION PROCEDURE



Wiring diagram

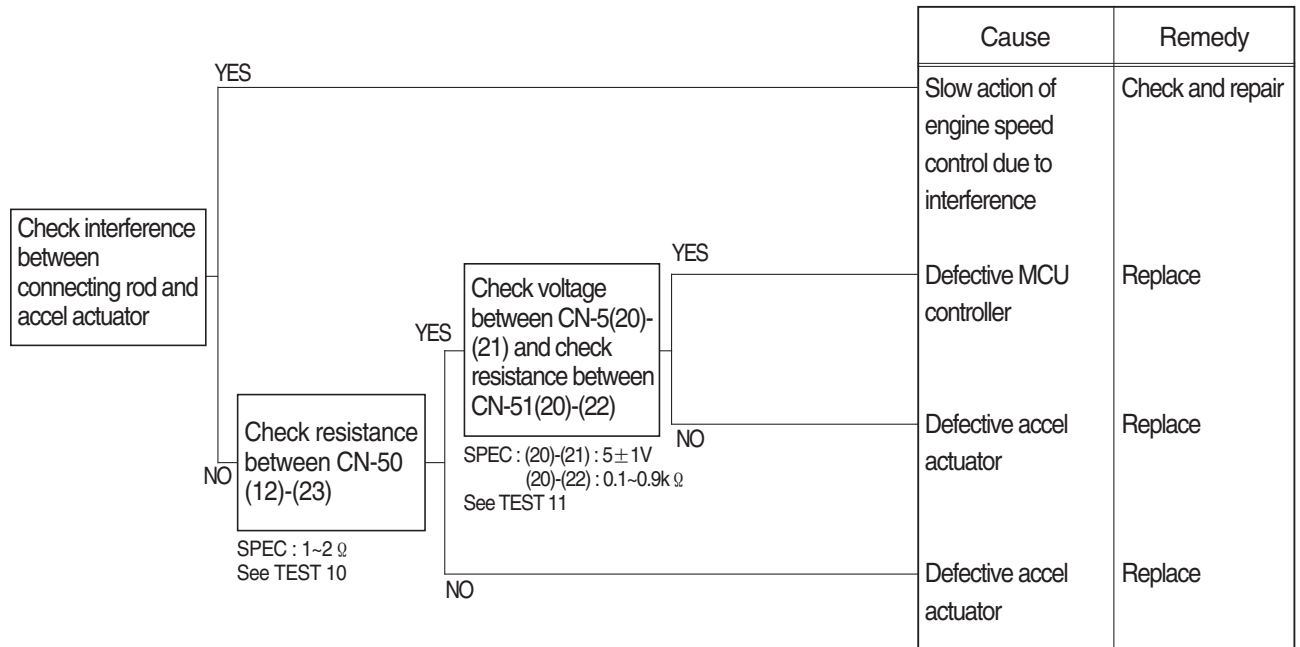


30076MS03

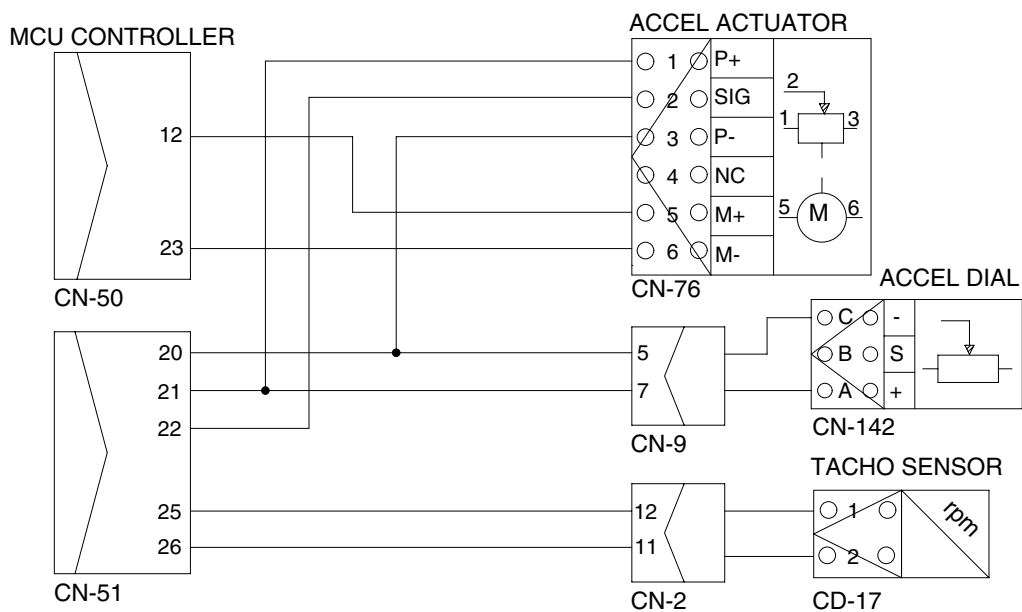
5. SLOW ACTION OF ENGINE SPEED CHANGE WHEN CHANGE THE MODE

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

1) INSPECTION PROCEDURE



Wiring diagram



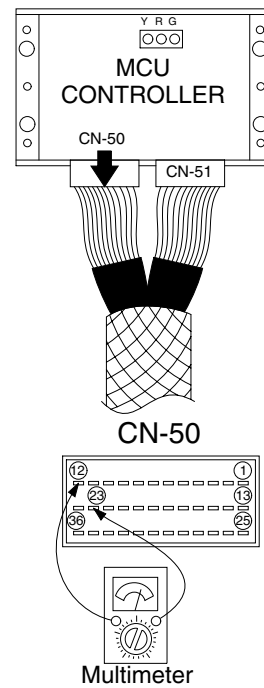
30076MS05

2) TEST PROCEDURE

(1) **Test 10** : Check resistance.

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

SPEC : $10 \pm 2 [\Omega]$

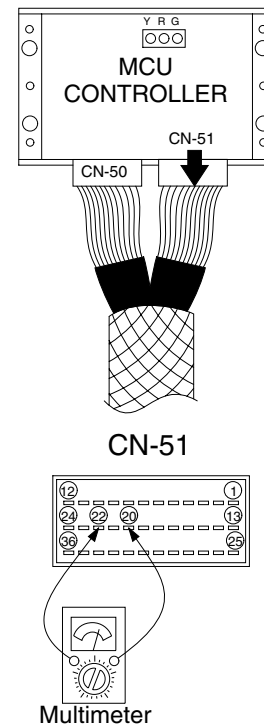


30076MS06

(2) **Test 11** : Check voltage and resistance.

- ① Check resistance between CN-51(20)-(22).
- Starting key OFF.
 - Disconnect connector CN-51 from MCU controller.
 - Check resistance value with multimeter as figure.

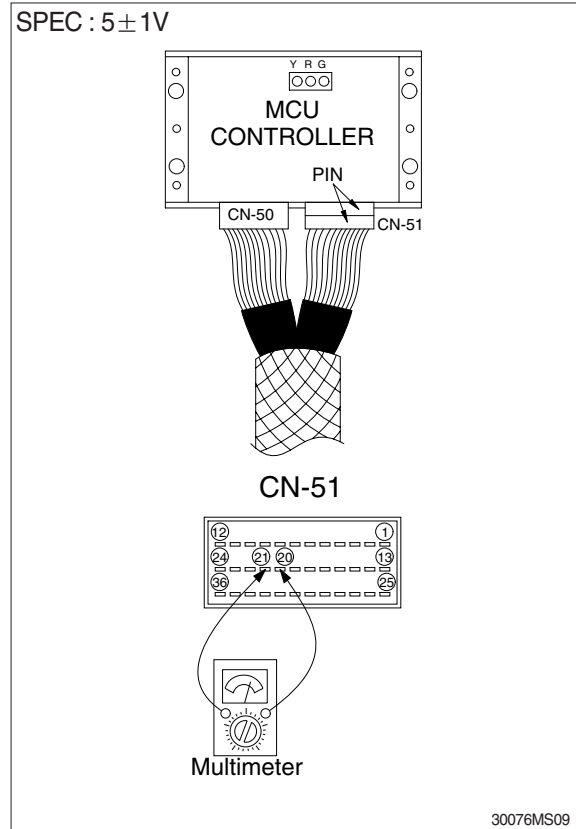
SPEC : $0.1 \sim 0.9 k\Omega$



30076MS08

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.

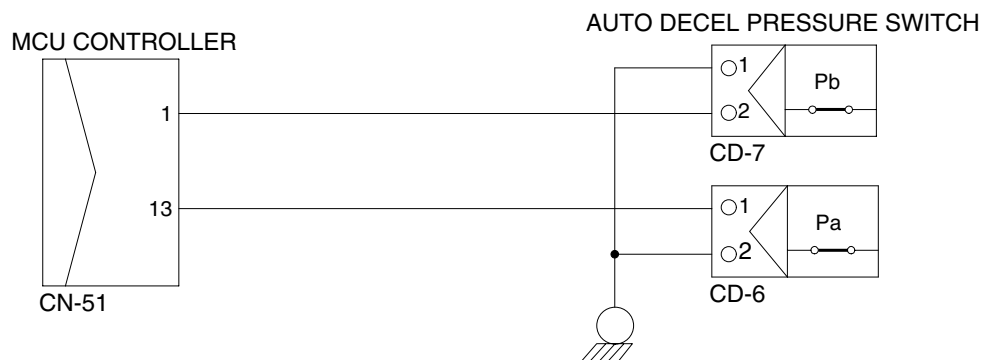
1) INSPECTION PROCEDURE

	Cause	Remedy
YES	Defective MCU 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

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

SPEC :
 Actuator operating : 11~13V
 Actuator stop : 0~2V
 See TEST 12
 See TEST 13

Wiring diagram



30076MS10

2) TEST PROCEDURE

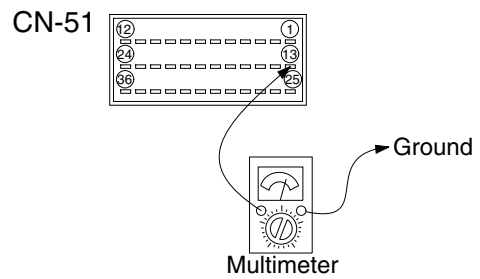
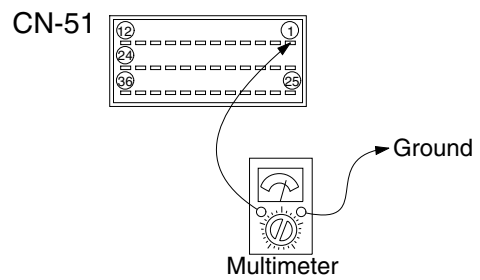
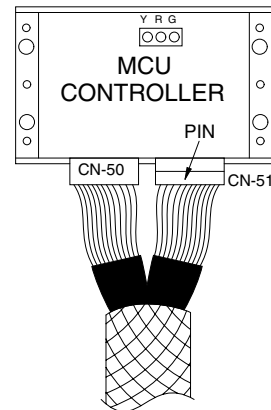
(1) **Test 12** : Check voltage at CN-51(1) and ground.

- 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 13** : 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 : 11~13V
Actuator operating : 0~2V

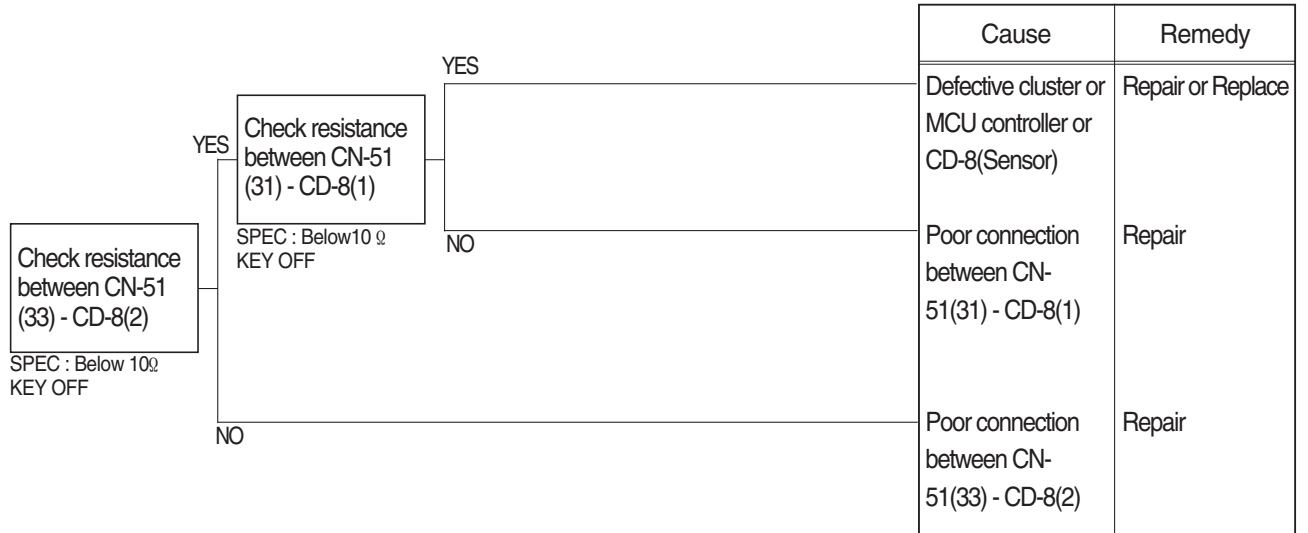


30076MS11

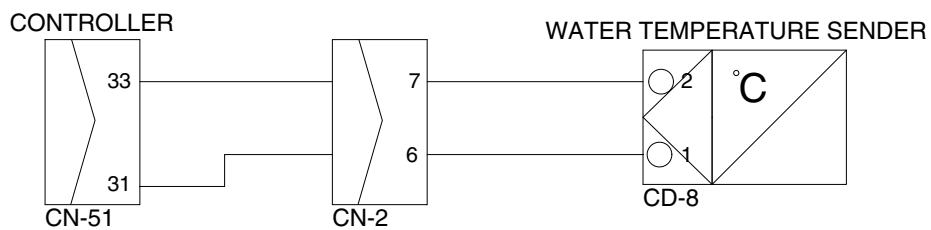
7. MALFUNCTION OF WARMING UP

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

1) INSPECTION PROCEDURE



Wiring diagram

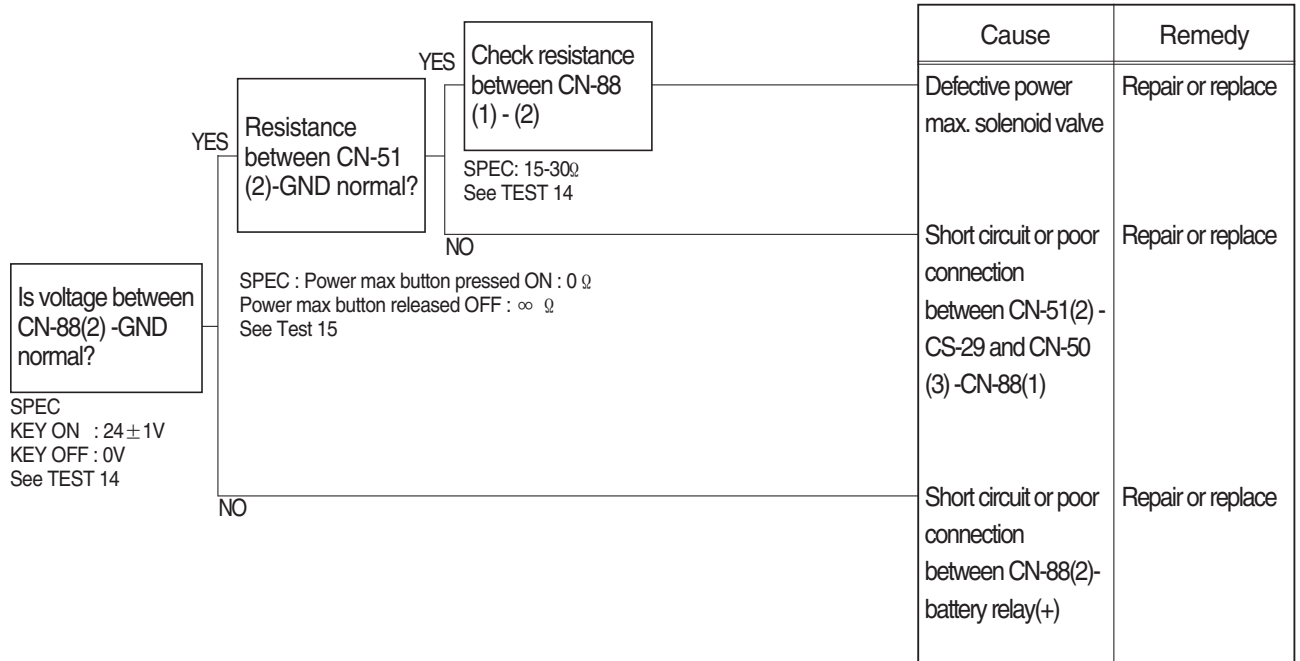


30076MS04

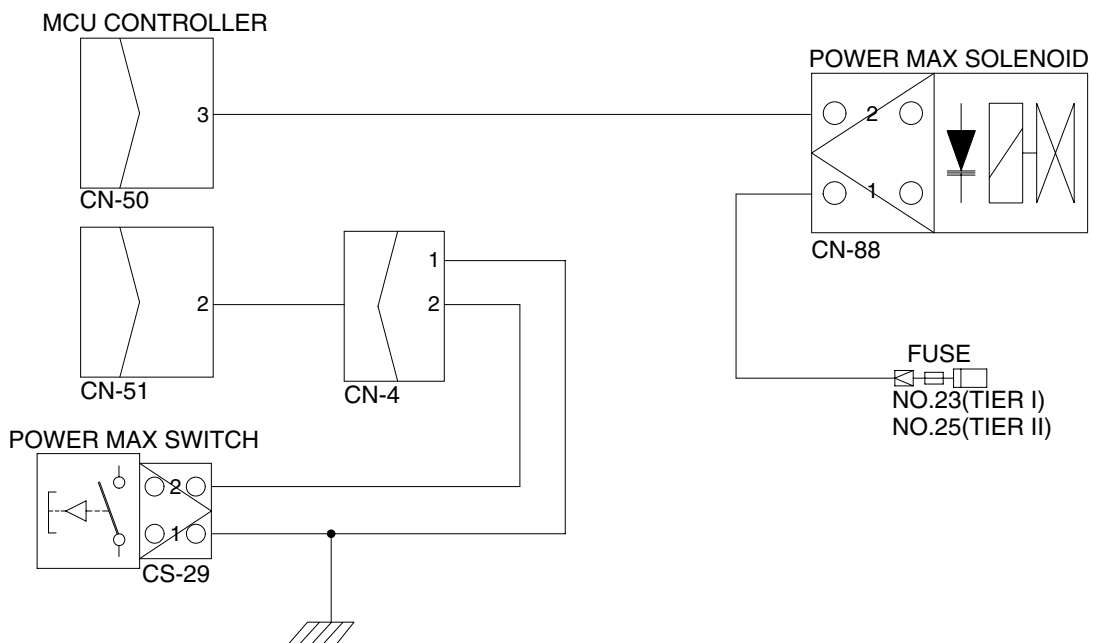
8. MALFUNCTION OF POWER MAX

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

1) INSPECTION PROCEDURE



Wiring diagram

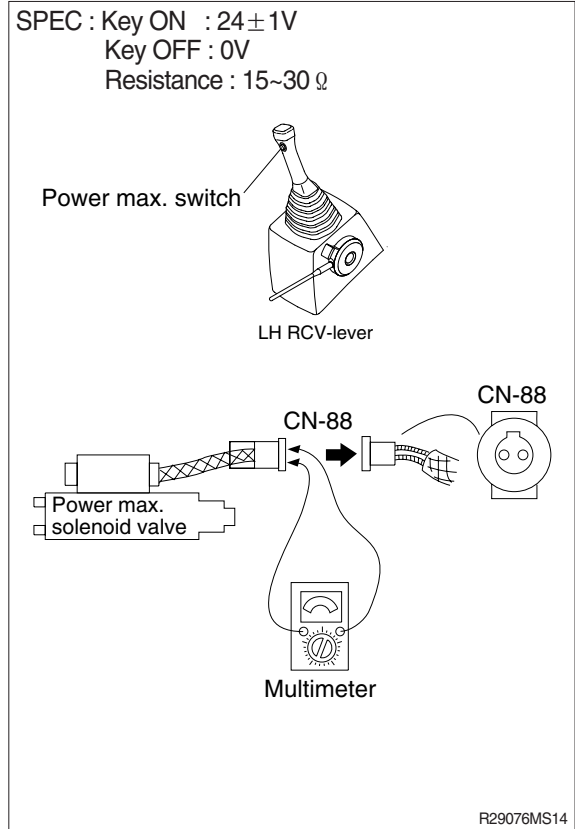


29076MS13

2) TEST PROCEDURE

(1) **Test 14:** 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 15:** Check resistance between connector CN-51(2)-GND.

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

