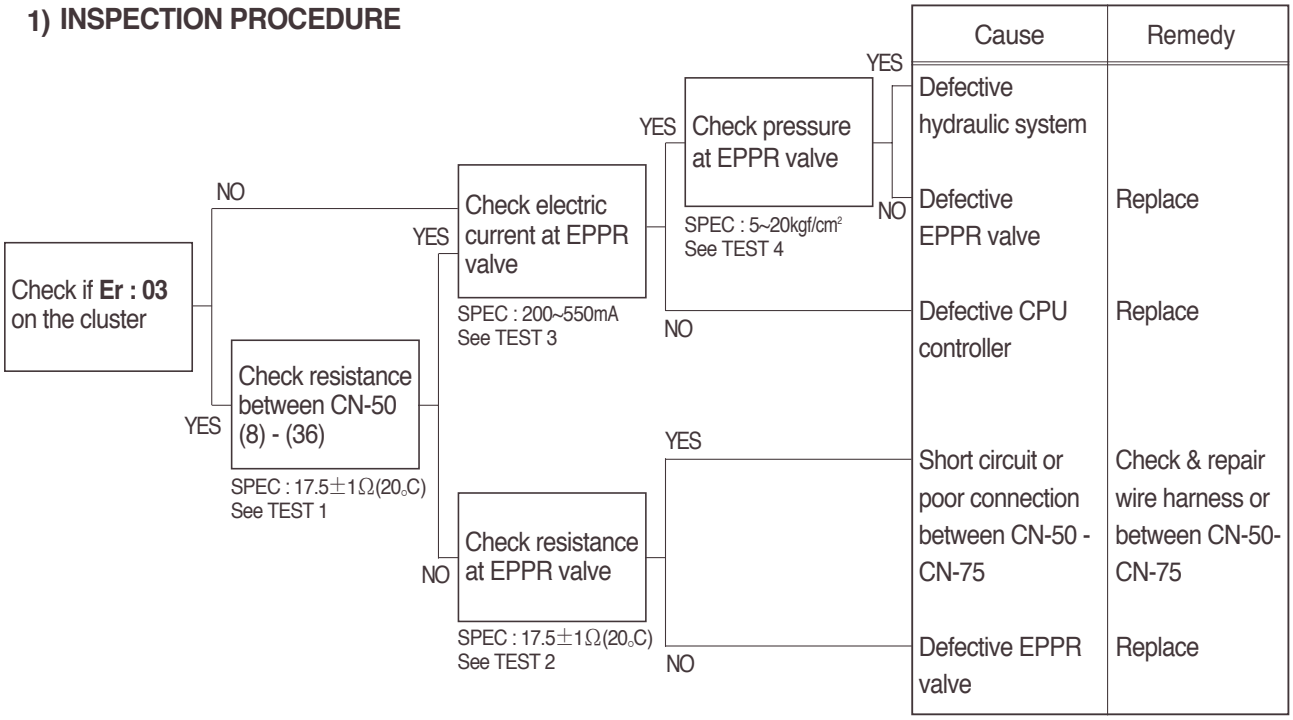
GROUP 4 MECHATRONICS SYSTEM(up to #1000)

1. ALL ACTUATORS SPEED ARE SLOW(up to #0179)

※ Boom, Arm, Bucket, Swing and travel speed are slow, but engine speed is good.
※ Spec : H-mode 2250± 50rpm S-mode 2150 ± 50rpm
※ Before carrying out below procedure, check all the related connectors are properly inserted.

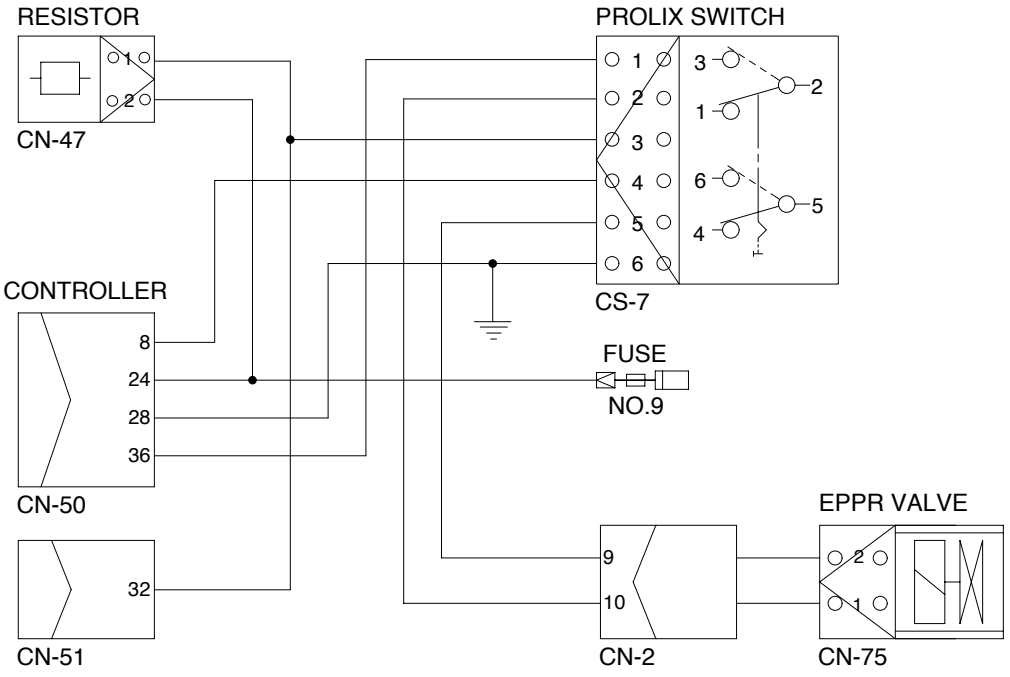
1) INSPECTION PROCEDURE



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

※ Normal : ————
Emergency : - - - - - - - -

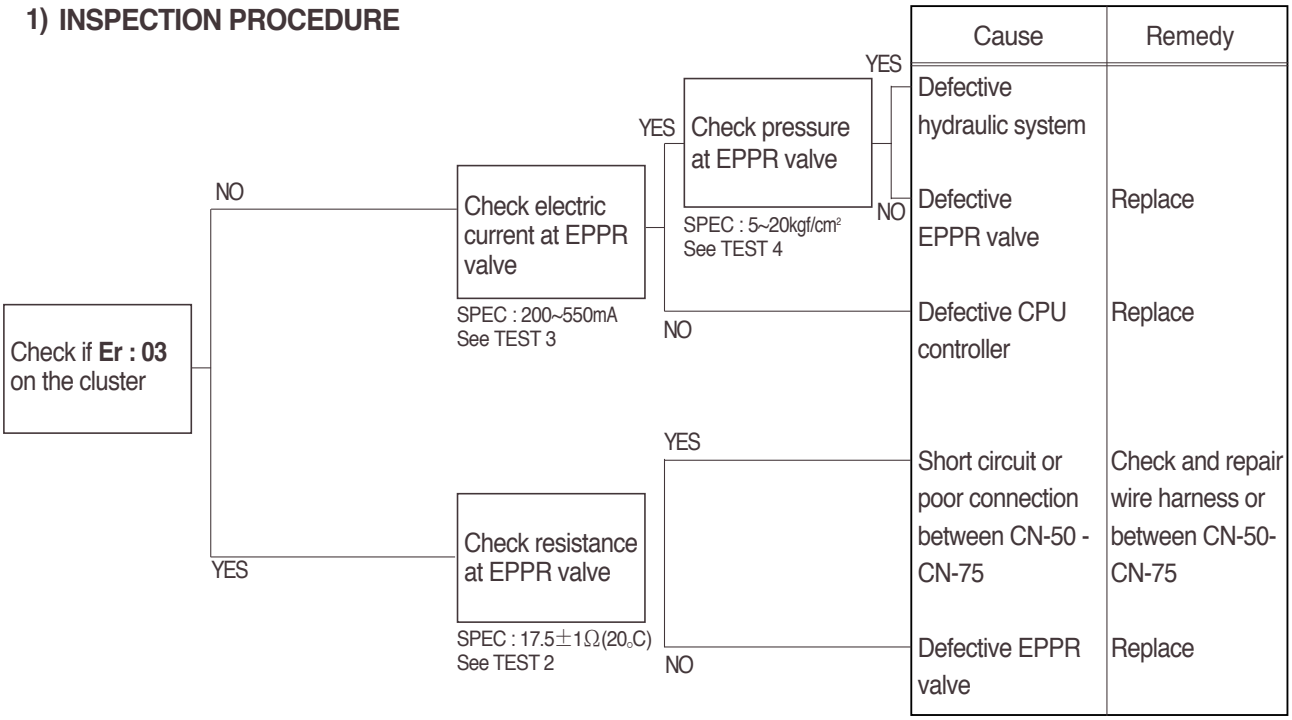


21076MS01

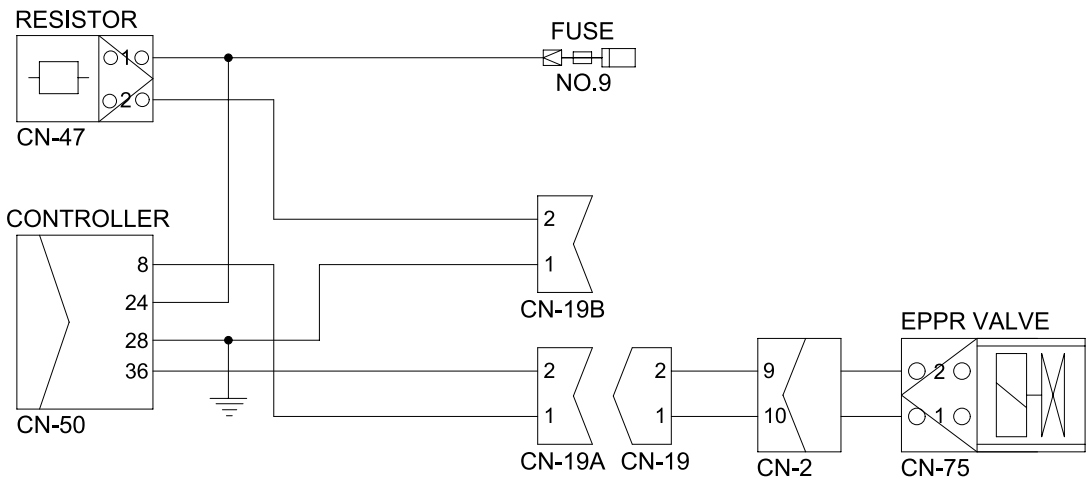
1-1. ALL ACTUATORS SPEED ARE SLOW(from #0180 to #1000)

※ Boom, Arm, Bucket, Swing and travel speed are slow, but engine speed is good.
※ Spec : H-mode 2250± 50rpm S-mode 2150 ± 50rpm
※ Before carrying out below procedure, check all the related connectors are properly inserted.

1) INSPECTION PROCEDURE



Wiring diagram



21076MS51

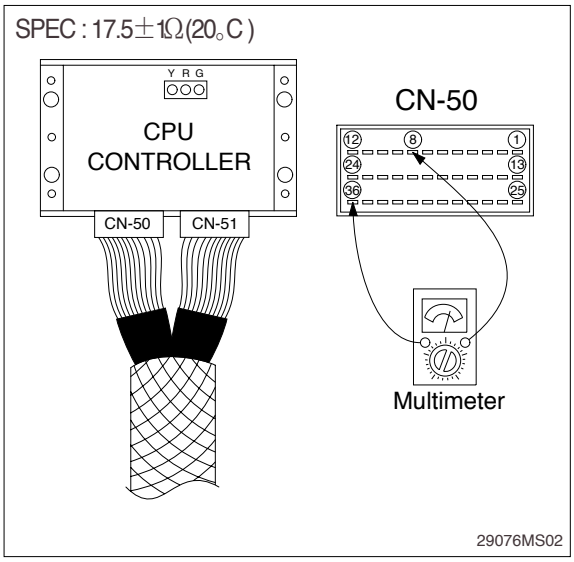
2) TEST PROCEDURE

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

① Starting key OFF.

② Disconnect connector CN-50.

③ Check resistance between pin and at connector CN-50(8)-(36).

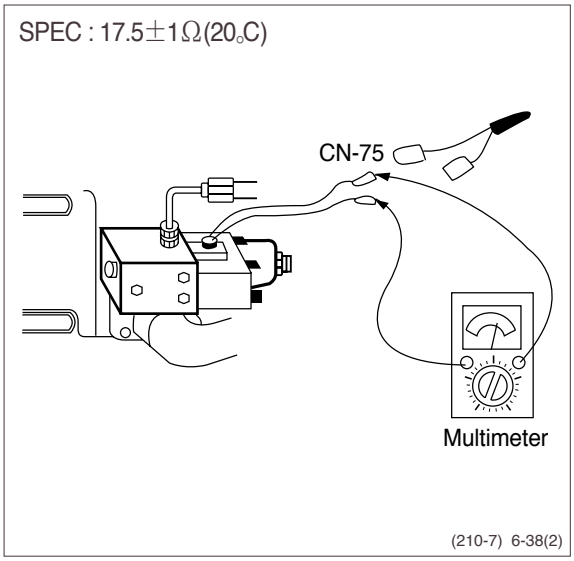


(2) **Test 2 :** Check resistance at connector CN-75.

① Starting key OFF.

② Disconnect connector CN-75 from EPPR valve at main hydraulic pump.

③ Check resistance between 2 lines as figure.



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

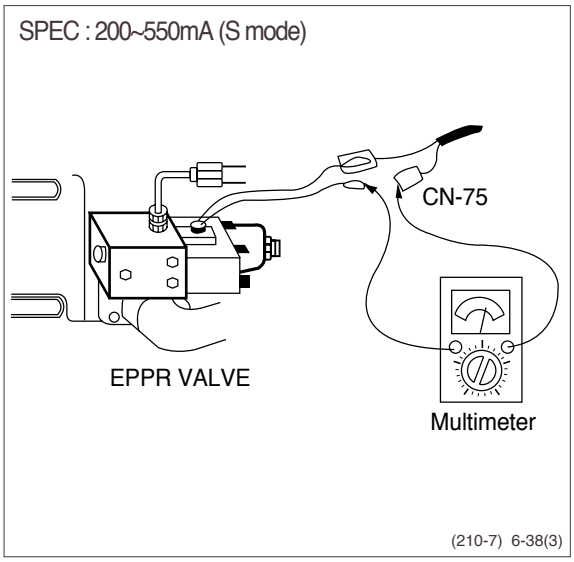
① Install multimeter as figure.

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 2150±50rpm, check electric current.



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

① Remove plug and connect pressure gauge as figure.

· Gauge capacity : 0 to 40~50kgf/cm^2
(0 to 570~710psi)

② Start engine.

③ Set the accel dial at "10"(Max)

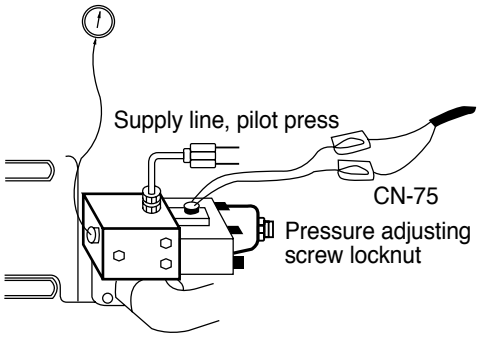
④ Set S-mode and cancel auto decel mode.

⑤ If tachometer show approx 2150±50rpm, check pressure.

⑥ If pressure is not correct, adjust it.

⑦ After adjust, test the machine.

SPEC : 5~20kgf/cm^2(70~280psi)

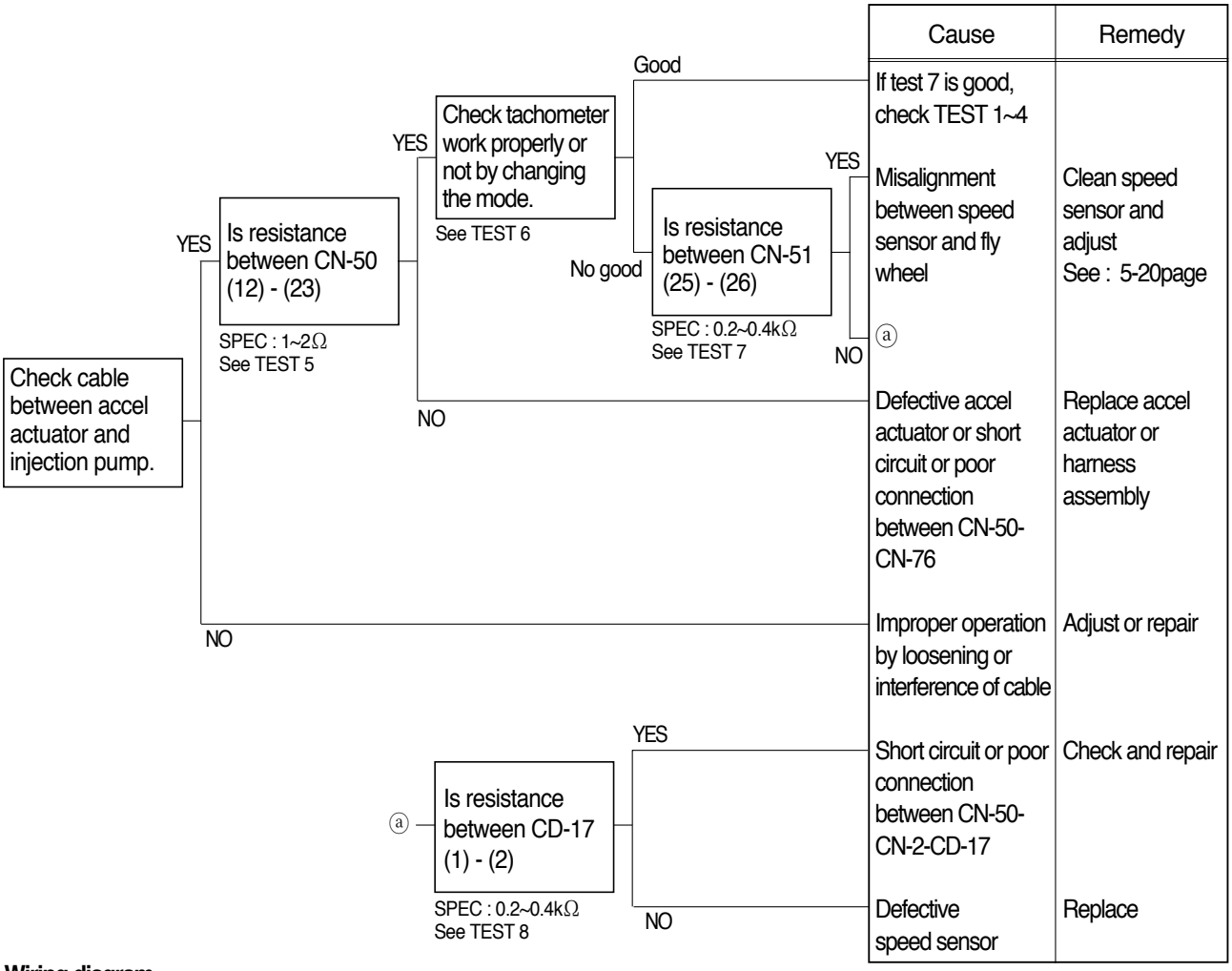


(210-7) 6-39(1)

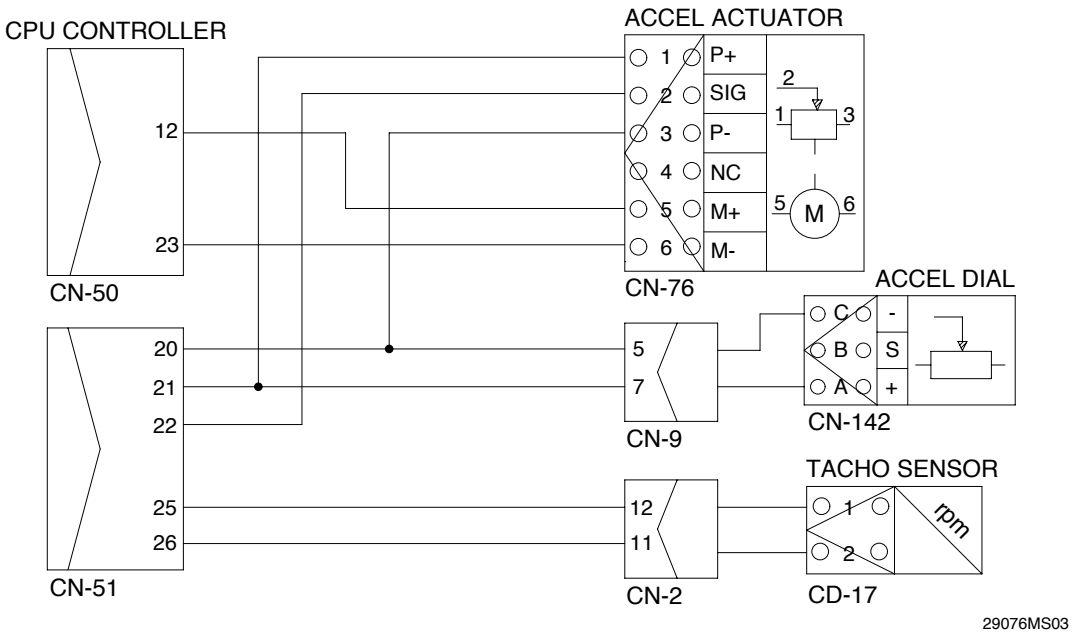
2. ENGINE SPEED IS SLOW AT ALL MODE

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

1) INSPECTION PROCEDURE



Wiring diagram



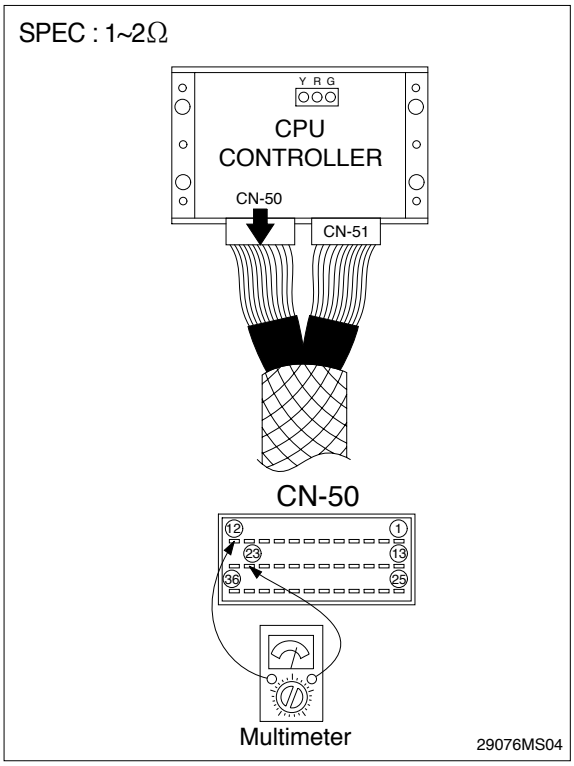
2) TEST PROCEDURE

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

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

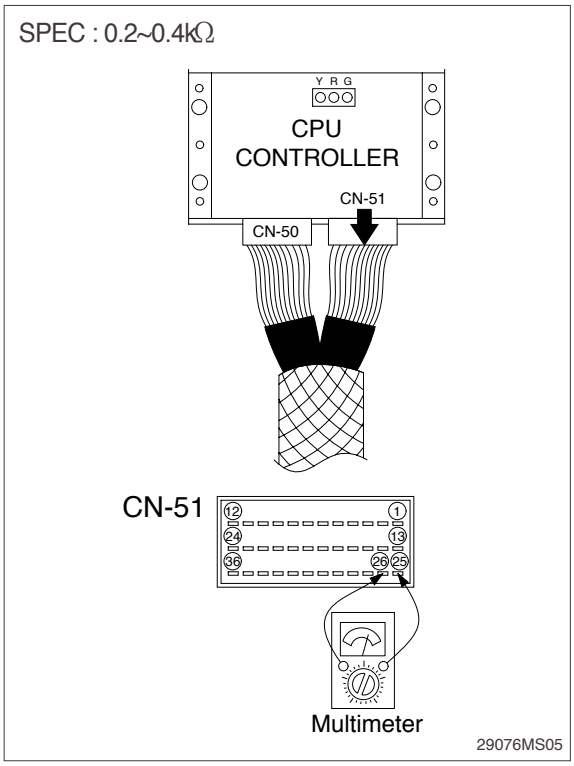
Spec			Remark
Tier-I (~#1000)	H	2250±50	Check rpm after cancel the Auto decel mode.
	S	2150±50	
Tier-II (#1001~)	H	2150±50	Check rpm after cancel the Auto decel mode.
	S	2050±50	

(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.

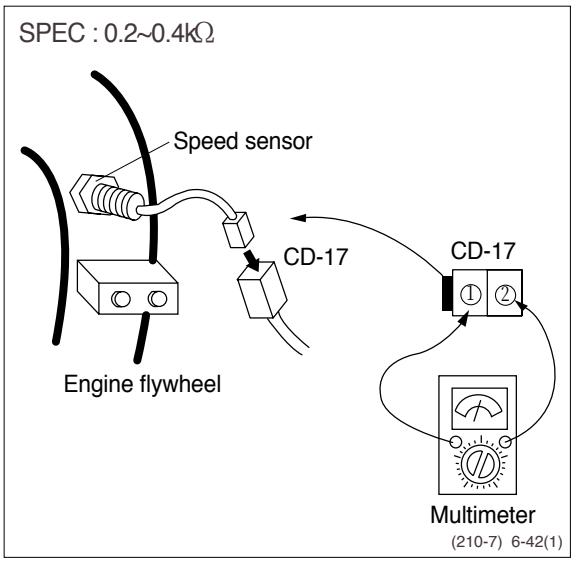


(4) **Test 8 :** Check resistance at speed sensor.

① Starting key OFF.

② Disconnect connector CD-17 of speed sensor at engine flywheel housing.

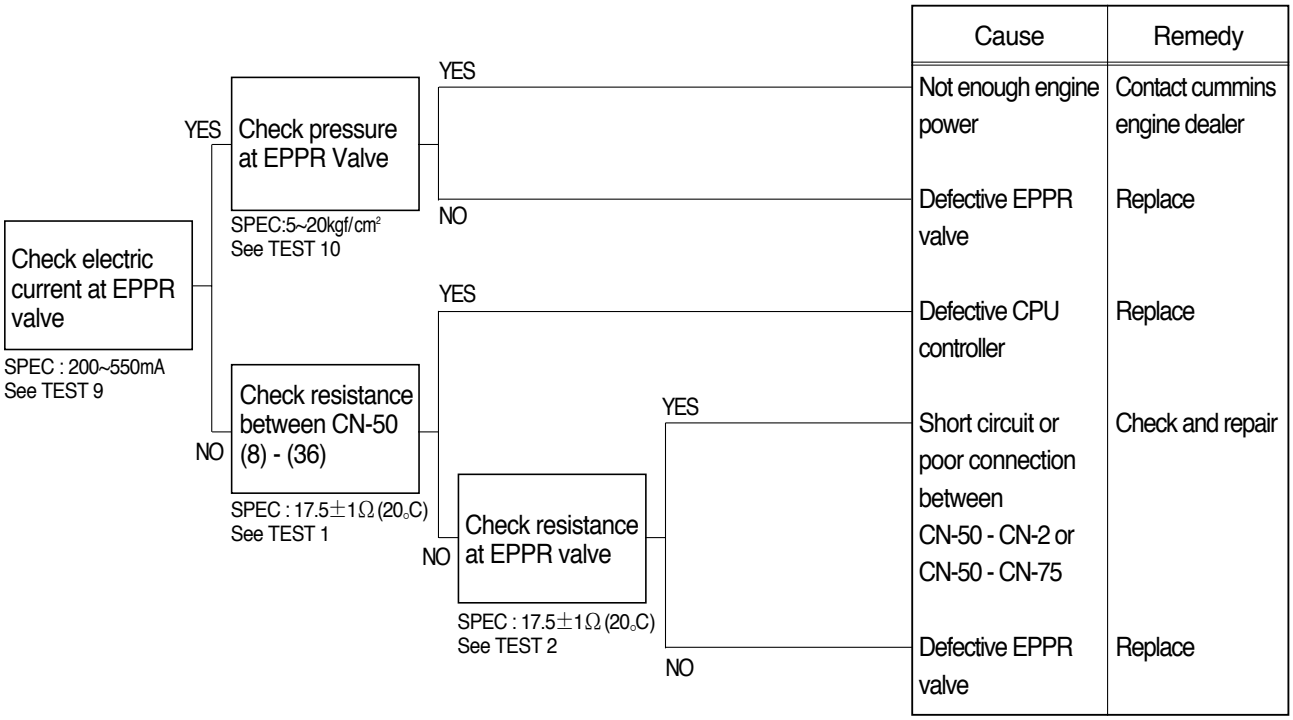
③ Check resistance as figure.



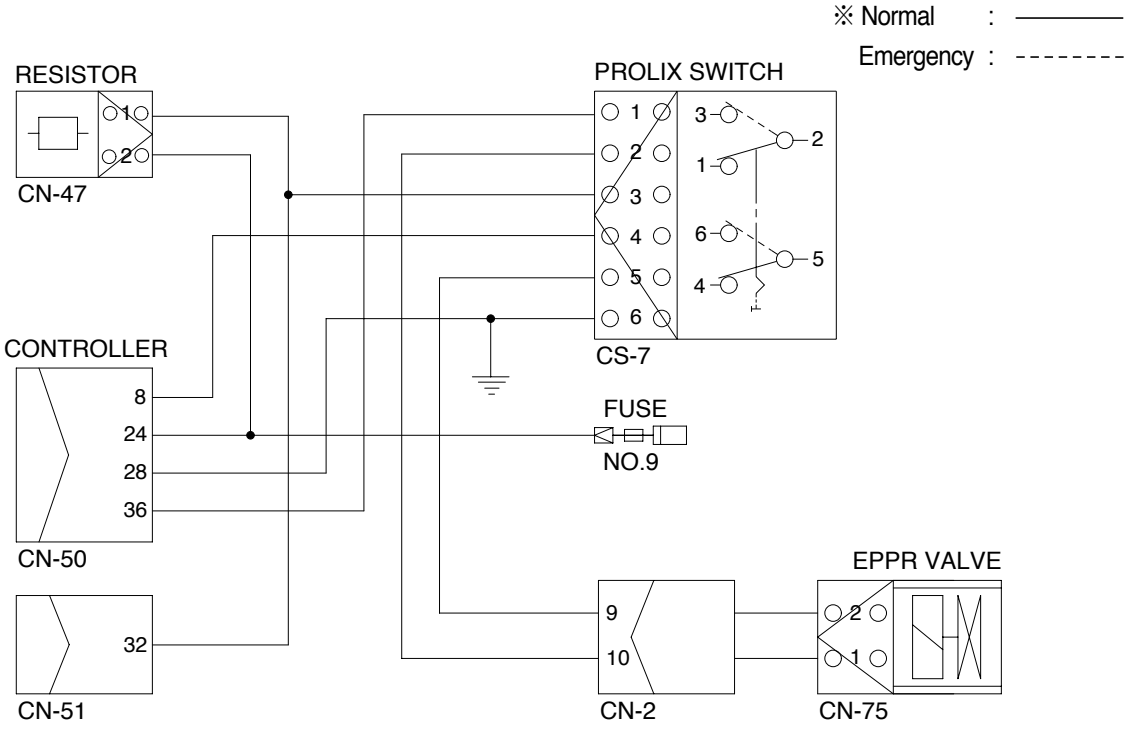
3. ENGINE STALL(up to #0179)

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

1) INSPECTION PROCEDURE



Wiring diagram

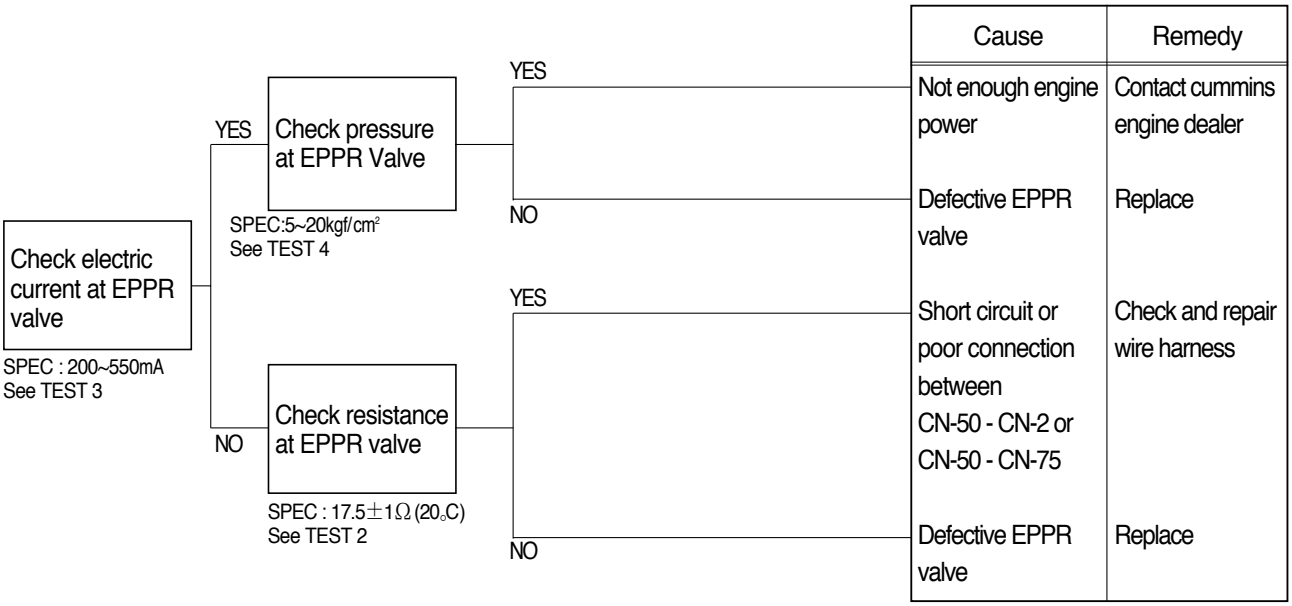


29076MS01

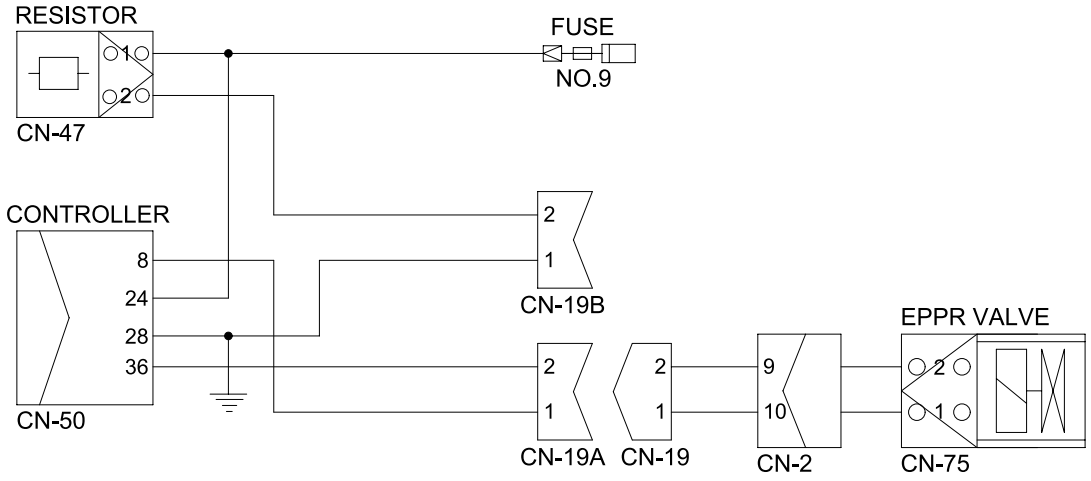
3-1. ENGINE STALL(from #0180 to #1000)

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

1) INSPECTION PROCEDURE



Wiring diagram

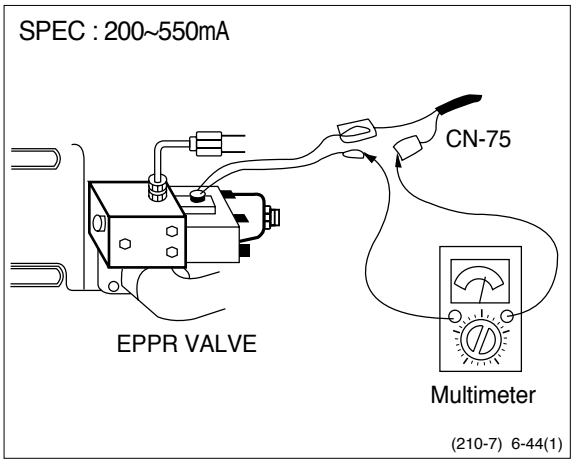


21076MS51

2) TEST PROCEDURE

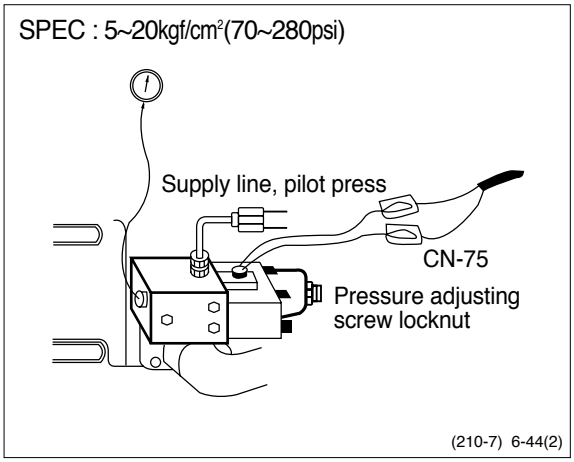
(1) **Test 9 :** Check electric current at EPPR valve at S-mode

① Install multimeter as figure.
② Start engine.
③ Set the accel dial at "10"(max)
④ Set S-mode with 2150±50rpm.
⑤ Check electric current.



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

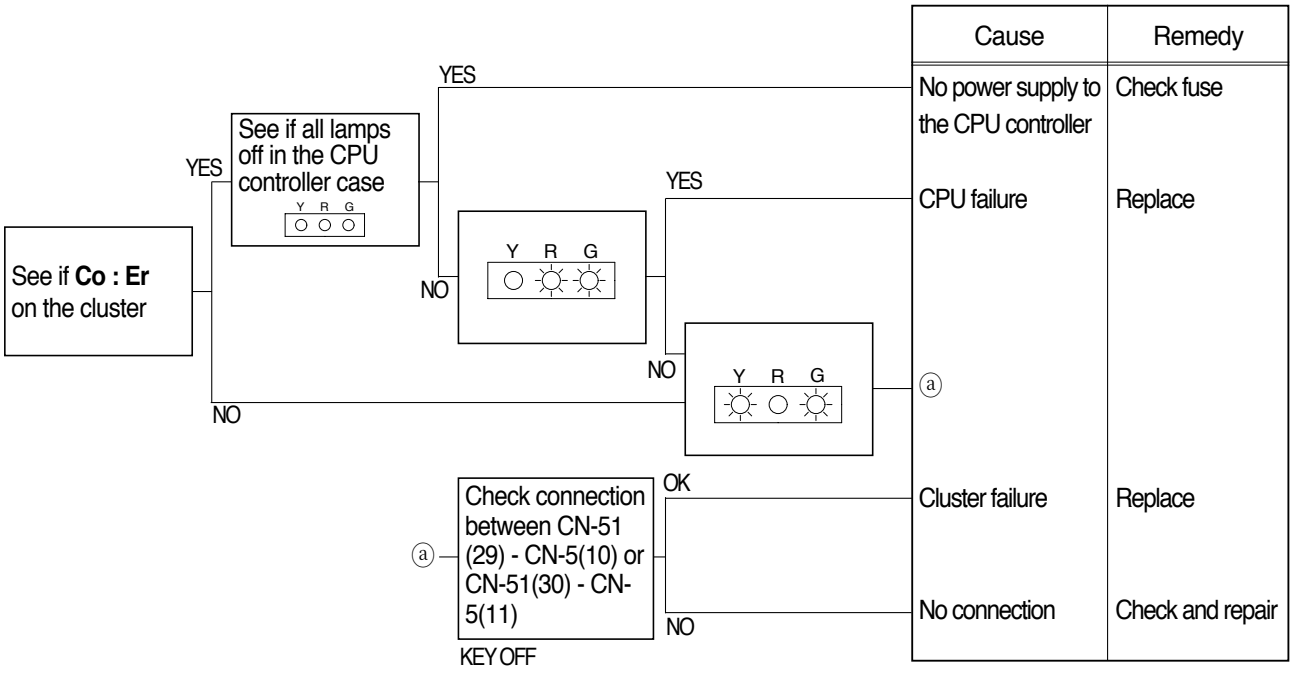
① Connect pressure gauge at EPPR valve.
② Start engine.
③ Set the accel dial at "10"(max)
④ Set S-mode with 2150±50rpm.
⑤ Operate bucket lever completely push or pull.
⑥ Hold arm lever at the end of stroke.
⑦ Check pressure at relief position.



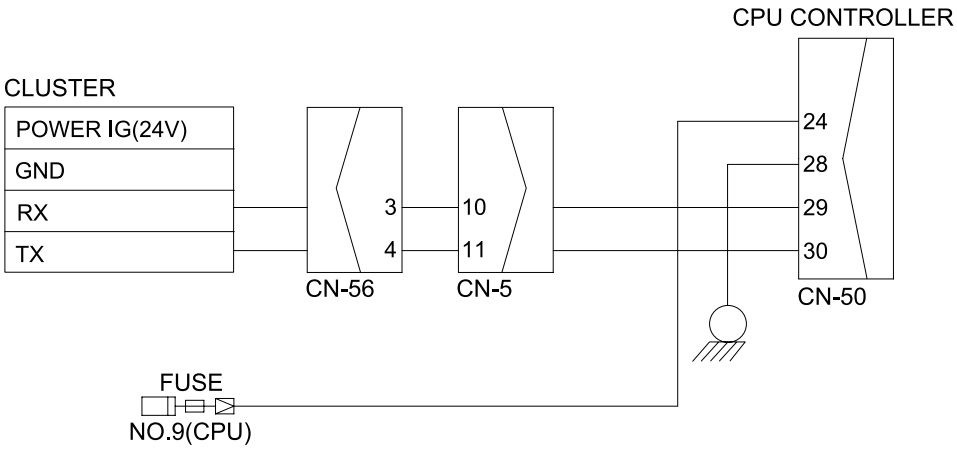
4. MALFUNCTION OF CLUSTER OR MODE SELECTION SYSTEM

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

1) INSPECTION PROCEDURE



Wiring diagram

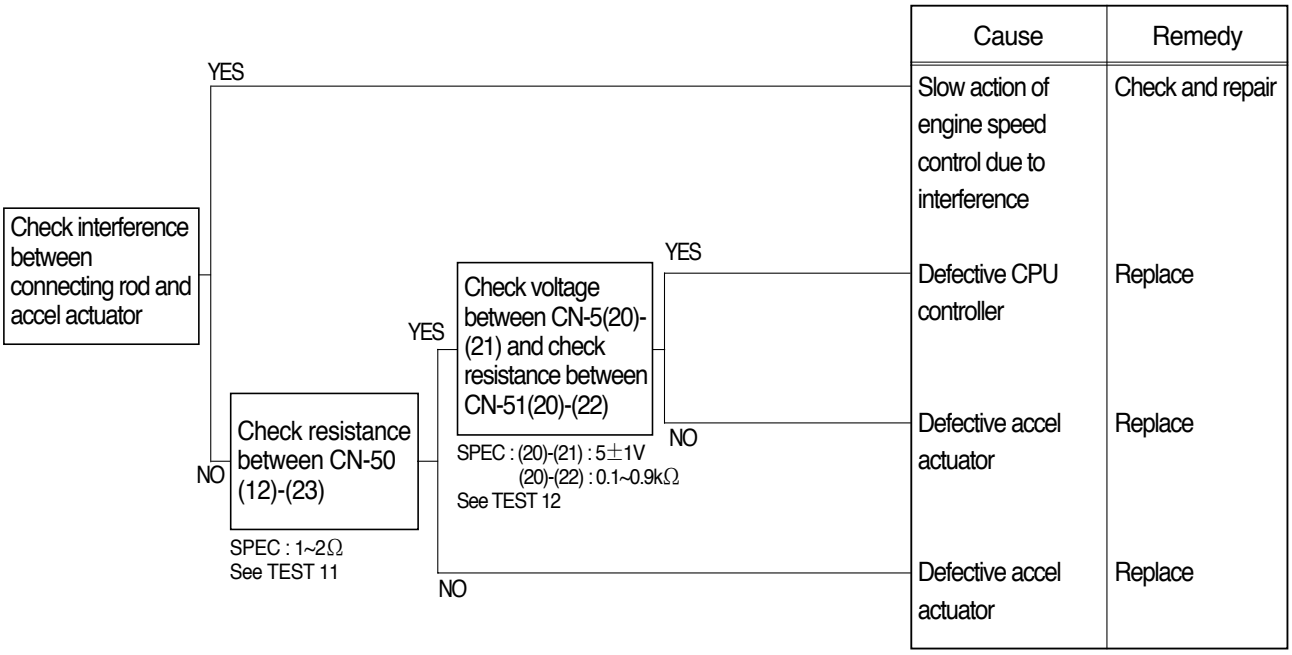


21076MS06

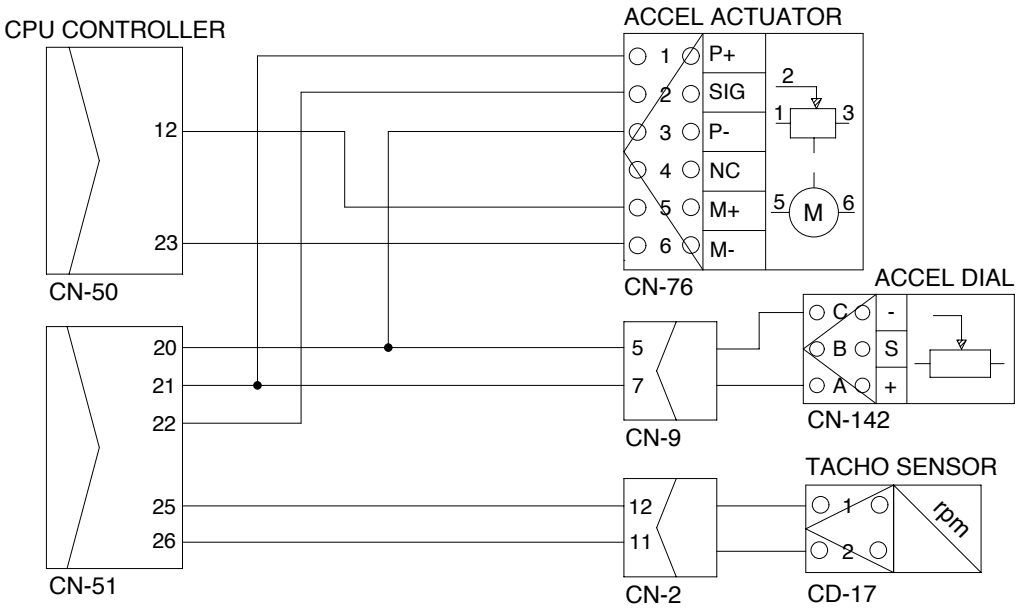
5. SLOW ACTION OF ENGINE SPEED CHANGE WHEN CHANGE THE MODE

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

1) INSPECTION PROCEDURE



Wiring diagram



29076MS03

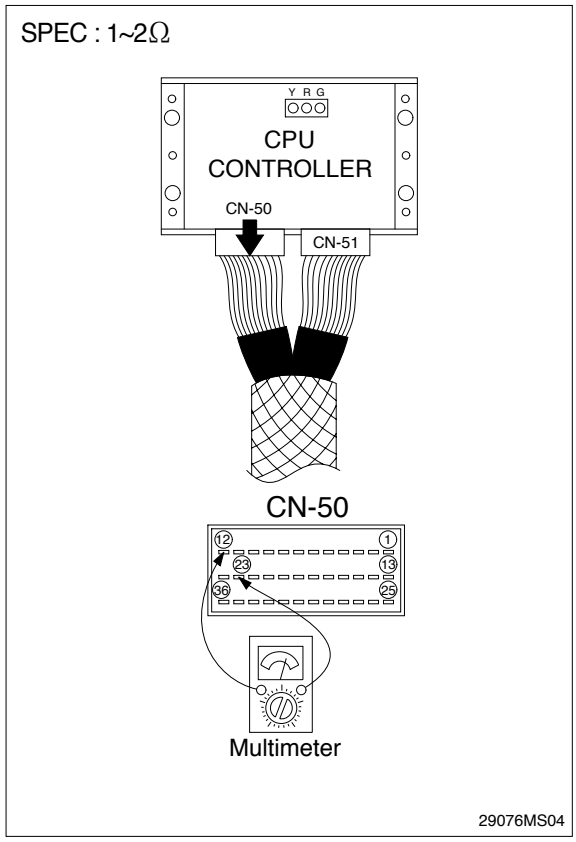
2) TEST PROCEDURE

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

① Starting key OFF.

② Disconnect connector CN-50 from CPU controller.

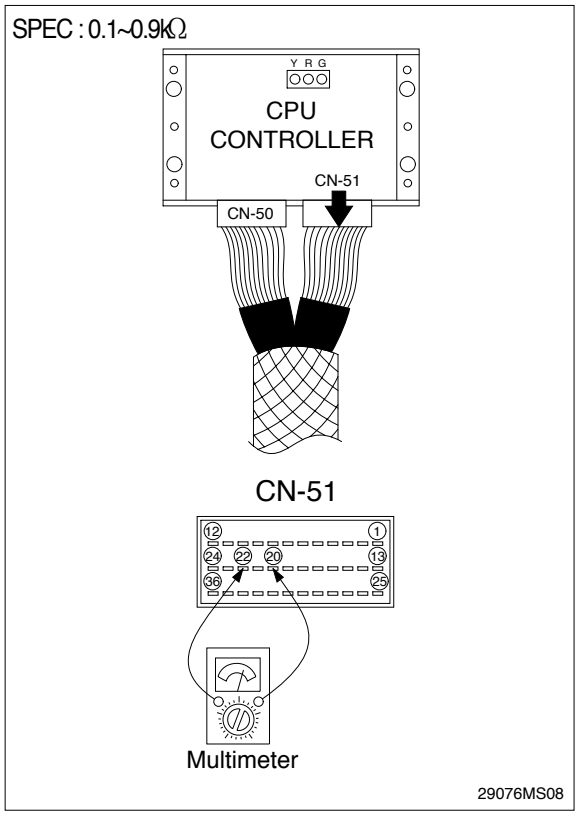
③ Check resistance between CN-50(12)-(23) as figure.



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

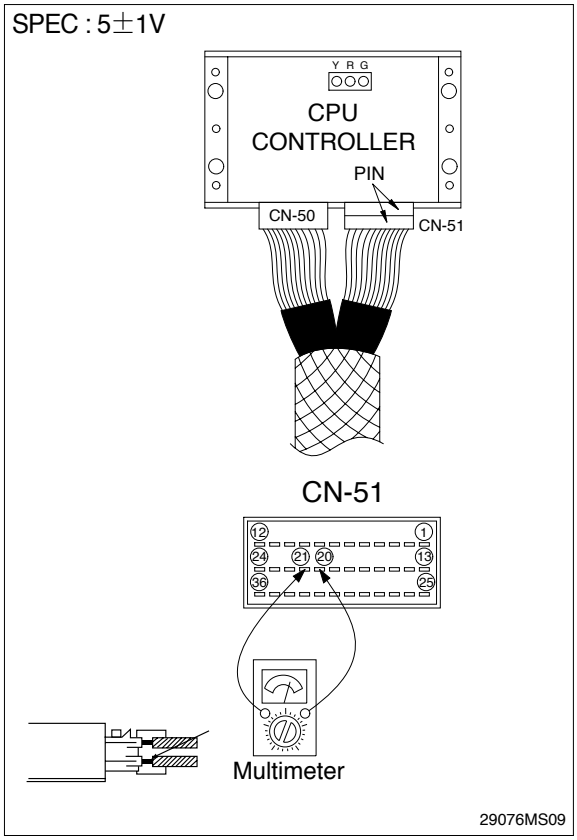
① Check resistance between CN-51(20)-(22).

- 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

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

SPEC :
Actuator operating : 4~5V
Actuator stop :0~1V
See TEST 13
See TEST 14

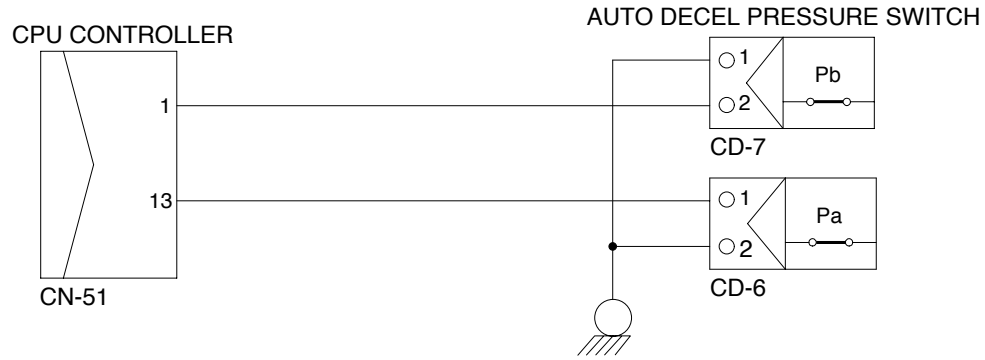
YES

NO

NO

Cause	Remedy
Defective CPU controller	Replace
Short circuit or poor connection vetween CN-51(1), (13)- pressure switches	Replace or repair
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.

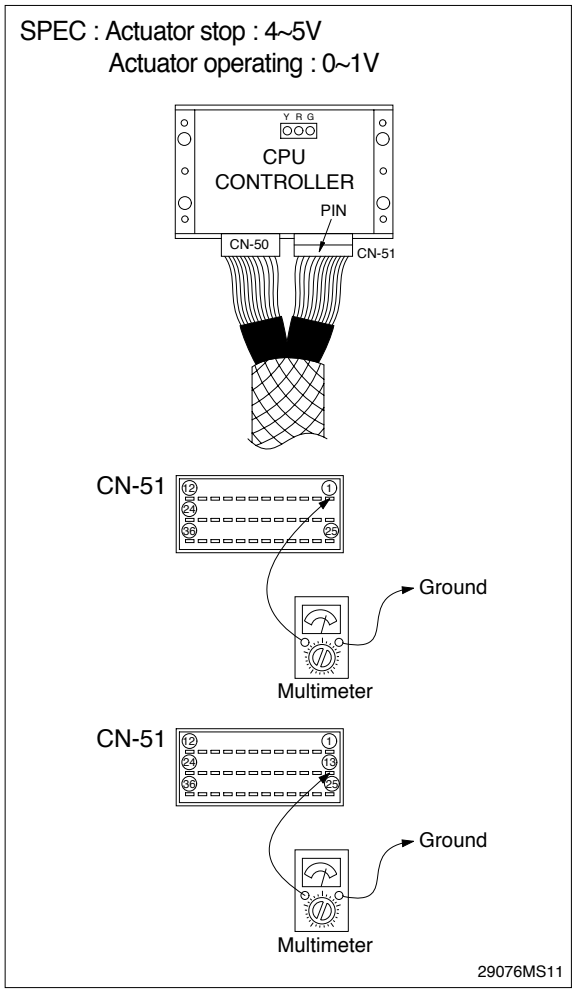
(2) **Test 14** : Check voltage at CN-51(13)and ground.

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.

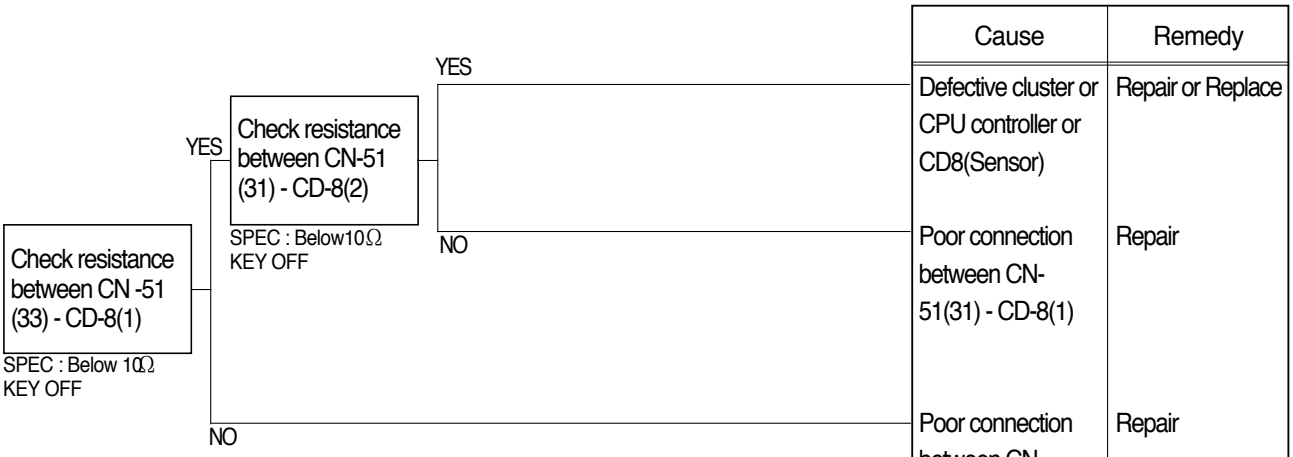
④ Check voltage as figure.



7. MALFUNCTION OF WARMING UP

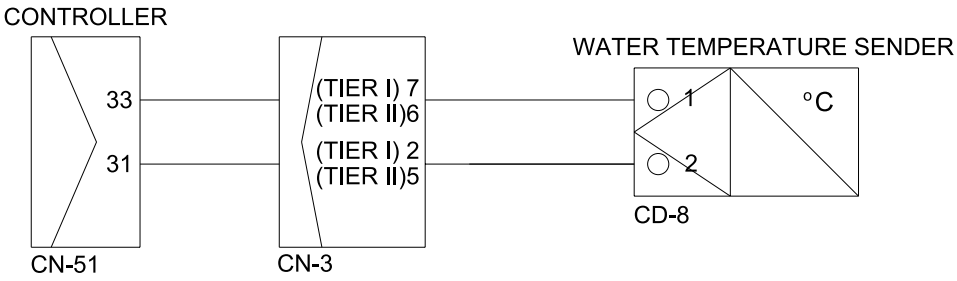
※ Before carrying out below procedure, check all the related connectors are properly inserted.

1) INSPECTION PROCEDURE



Cause	Remedy
Defective cluster or CPU controller or CD8(Sensor)	Repair or Replace
Poor connection between CN-51(31) - CD-8(1)	Repair
Poor connection between CN-51(33) - CD-8(2)	Repair

Wiring diagram

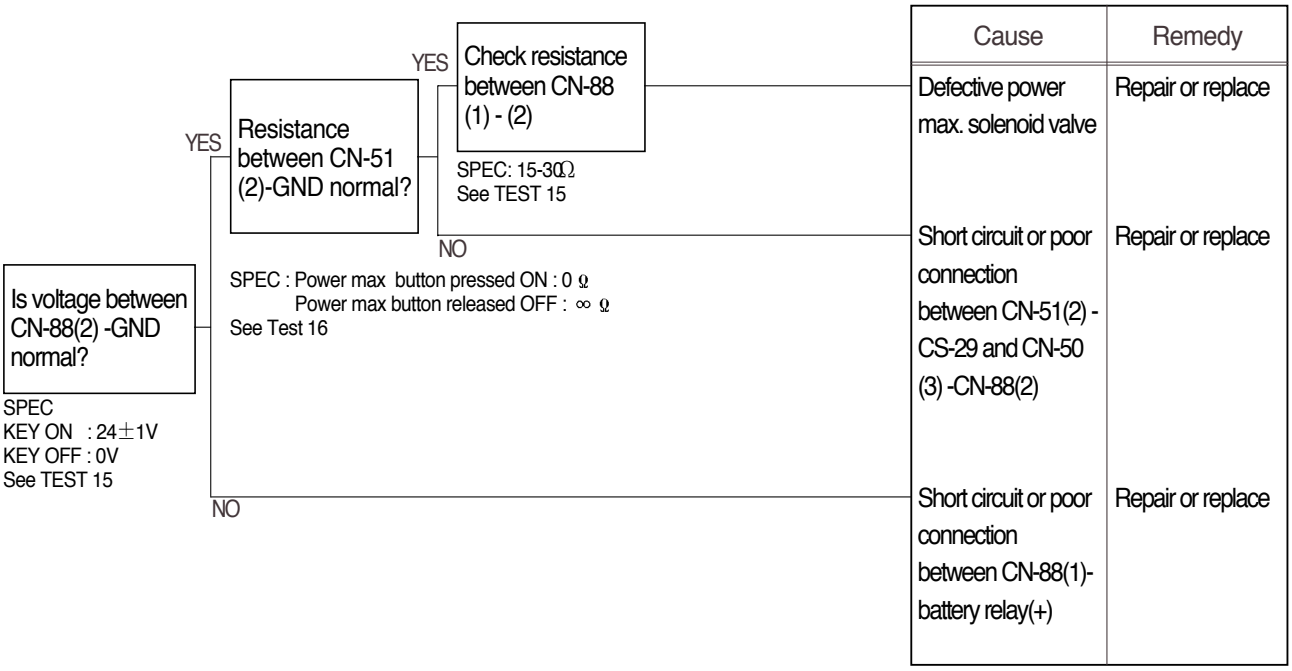


21076ES53

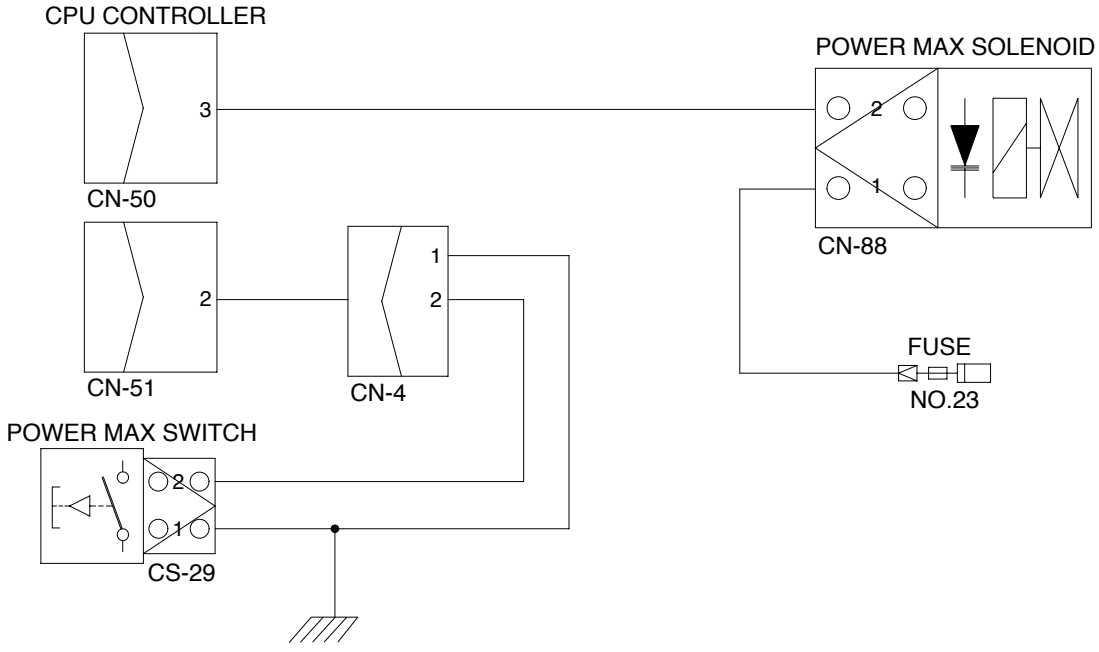
8. MALFUNCTION OF POWER MAX

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

1) INSPECTION PROCEDURE



Wiring diagram



29076MS13

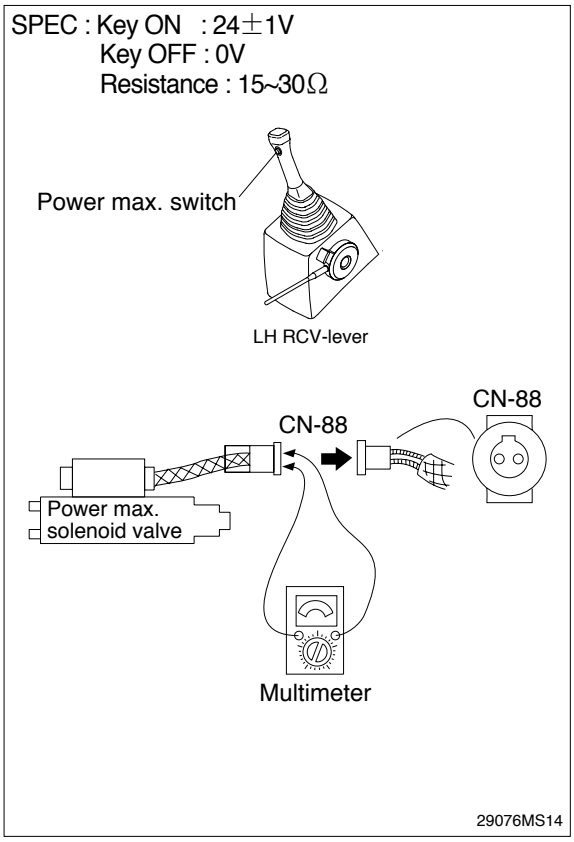
2) TEST PROCEDURE

(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.

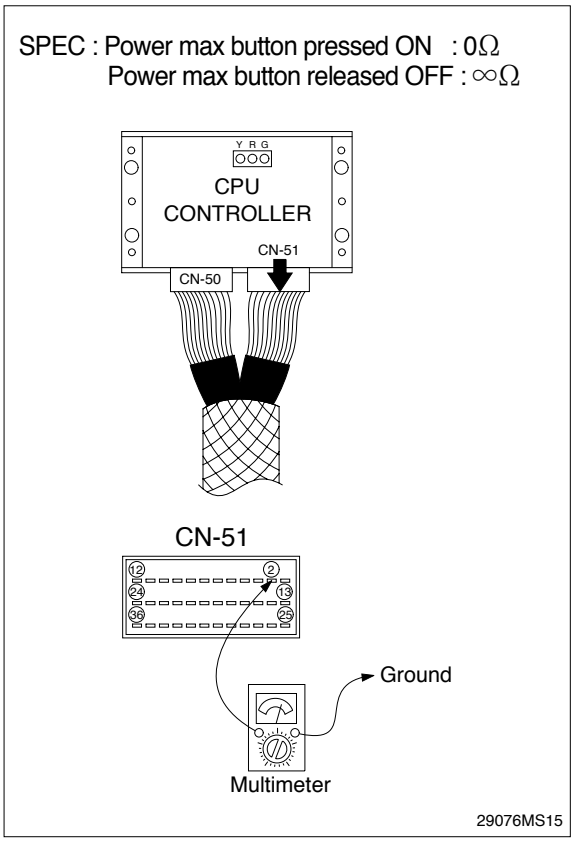


(2) **Test 16:** Check resistance between connector CN-51(2)-GND.

① Starting key OFF.

② Remove CPU controller and disconnect connector CN-51 from CPU controller.

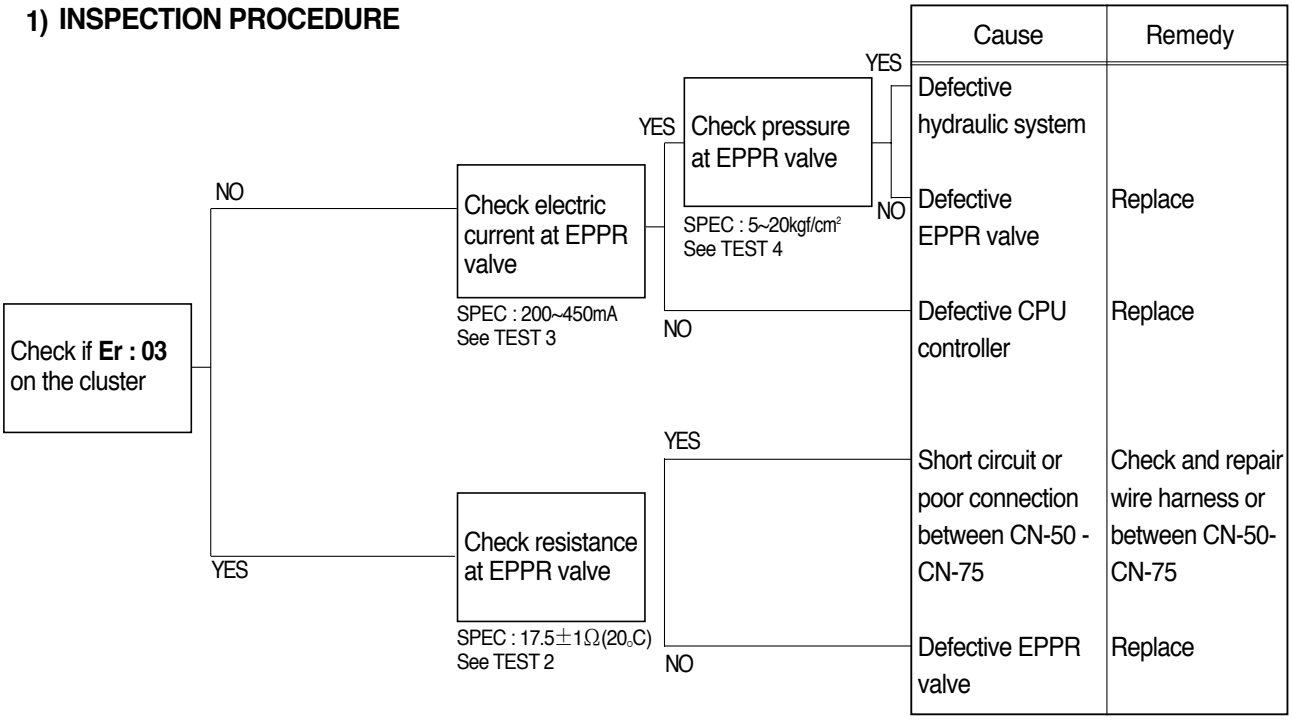
③ Check resistance as figure.



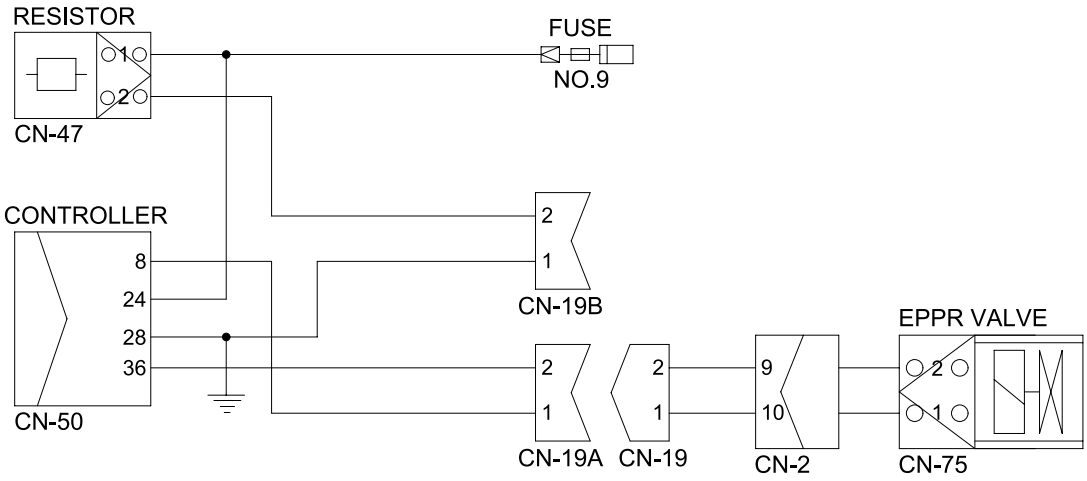
1. ALL ACTUATORS SPEED ARE SLOW

※ Boom, Arm, Bucket, Swing and travel speed are slow, but engine speed is good.
※ Spec : H-mode 2150± 50rpm S-mode 2050 ± 50rpm
※ Before carrying out below procedure, check all the related connectors are properly inserted.

1) INSPECTION PROCEDURE



Wiring diagram



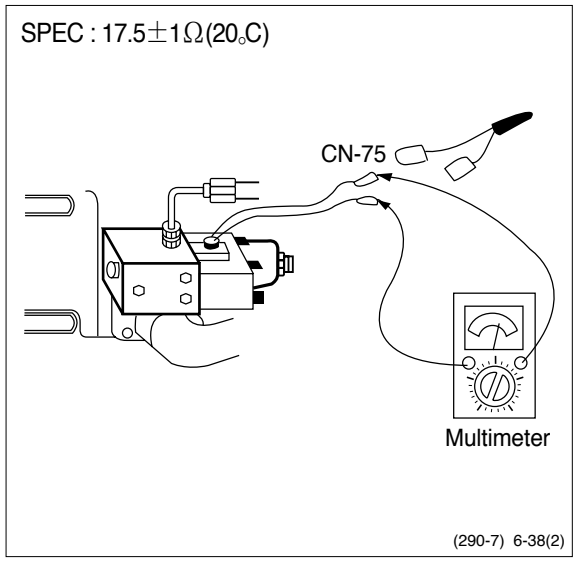
21076MS51

(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.

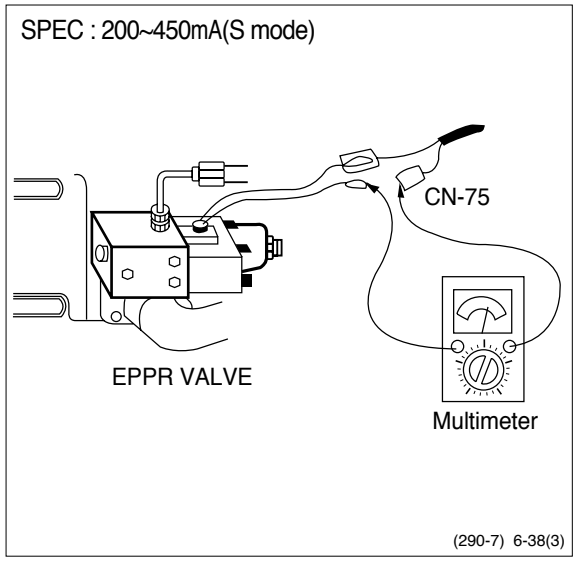
① Install multimeter as figure.

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 2050±50rpm 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^2 (0 to 570~710psi)

② Start engine.

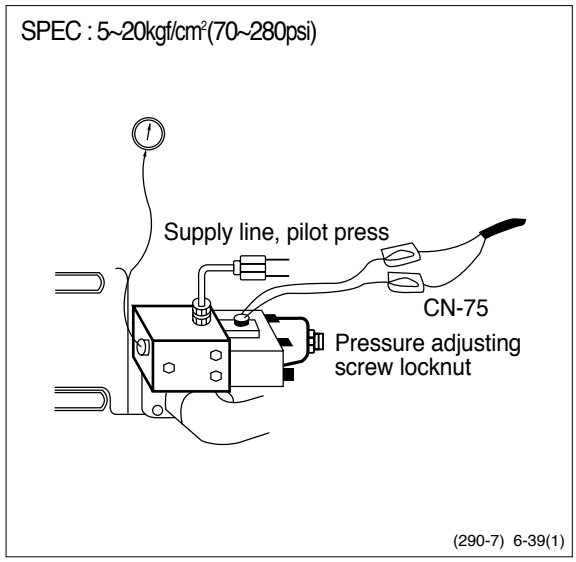
③ Set the accel dial at "10"(Max).

④ Set S-mode and cancel auto decel mode.

⑤ If tachometer show approx 2050±50rpm check pressure.

⑥ If pressure is not correct, adjust it.

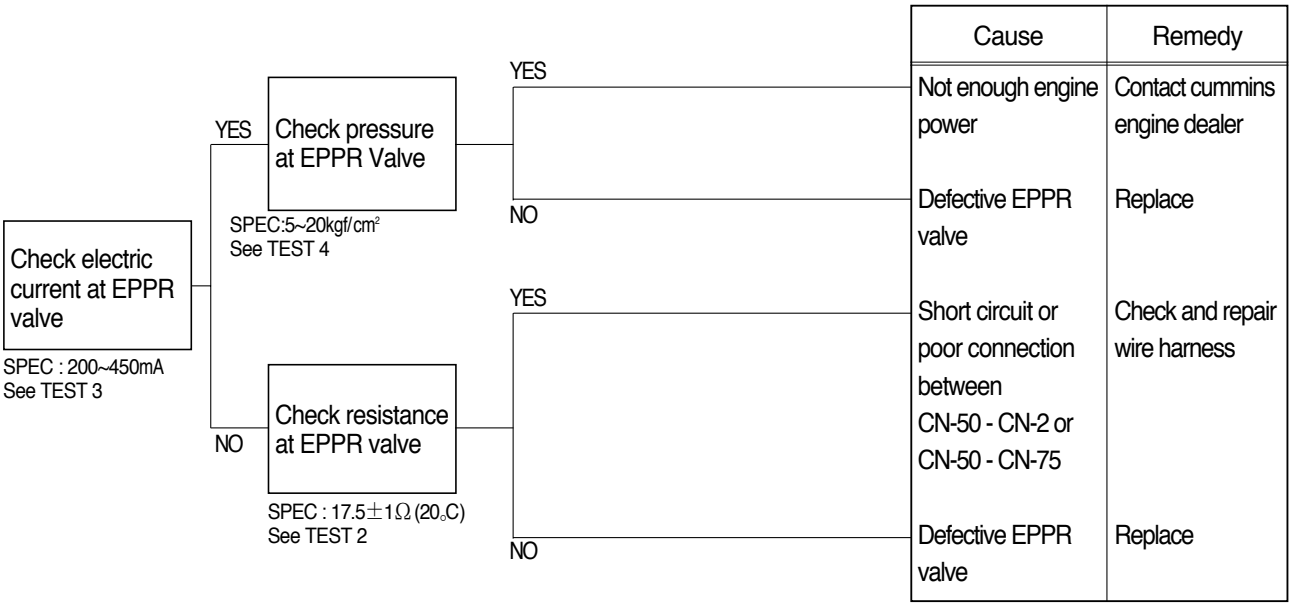
⑦ After adjust, test the machine.



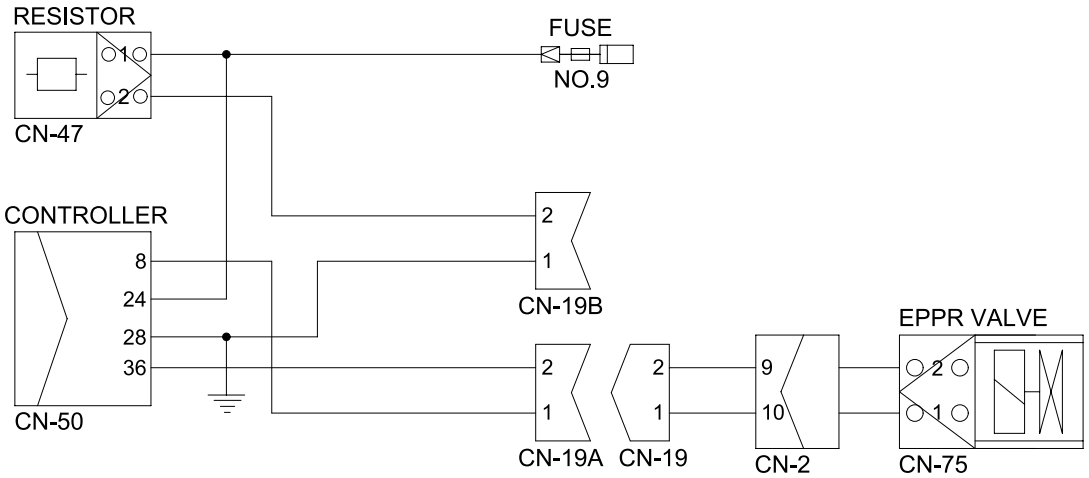
2. ENGINE STALL

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

1) INSPECTION PROCEDURE



Wiring diagram

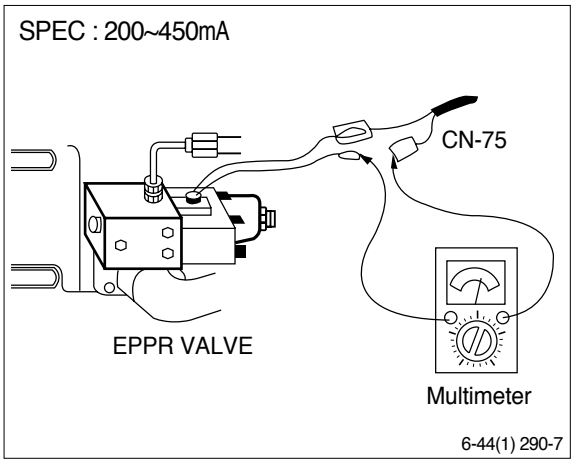


21076MS51

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 2050±50rpm.
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 2050±50rpm.
⑤ Operate bucket lever completely push or pull.
⑥ Hold arm lever at the end of stroke.
⑦ Check pressure at relief position.