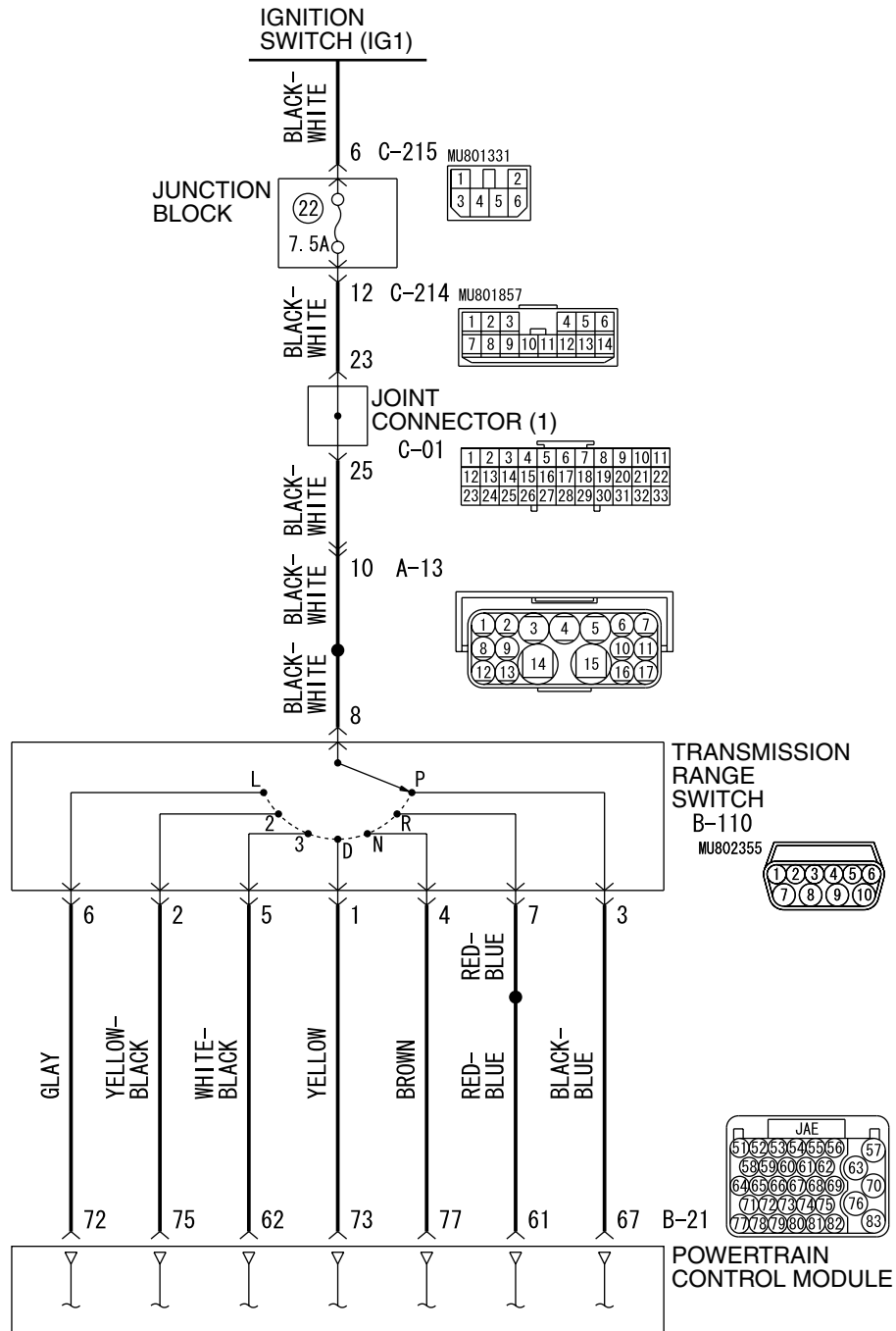


DTC 27 (P0705): Transmission Range Switch System (Open Circuit)

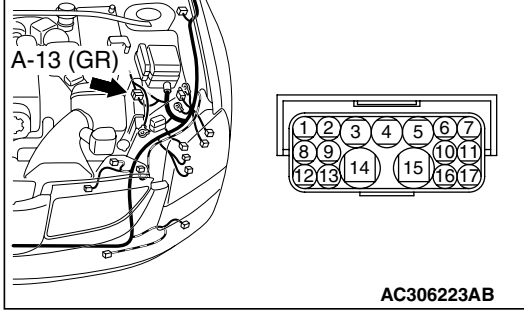
CAUTION

If DTC 27 (P0705) has been set, TCL related DTC C1397 is also set. After DTC 27 (P0705) has been diagnosed, don't forget to erase DTC C1397.

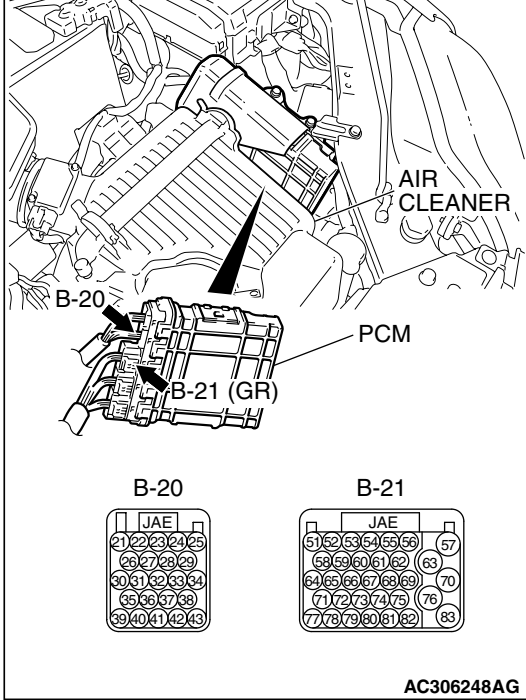
Transmission Range Switch System Circuit <Vehicles without Sport Mode>



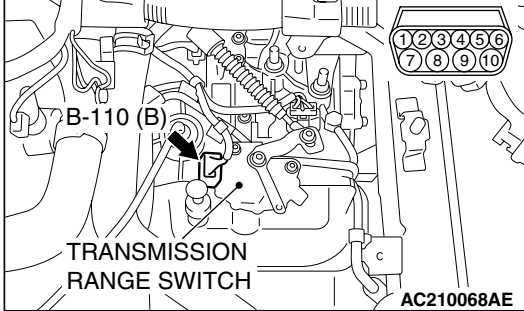
CONNECTOR: A-13



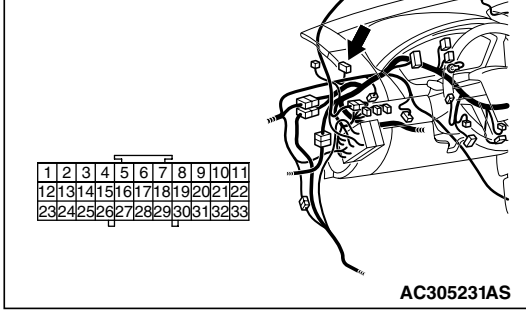
CONNECTORS: B-20, B-21



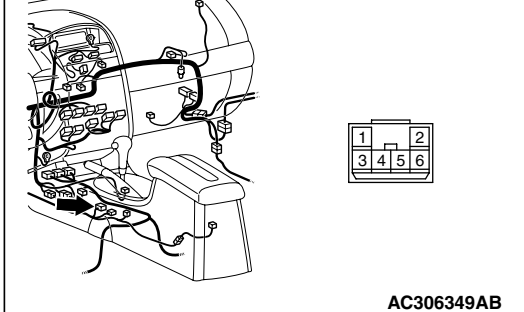
CONNECTOR: B-110

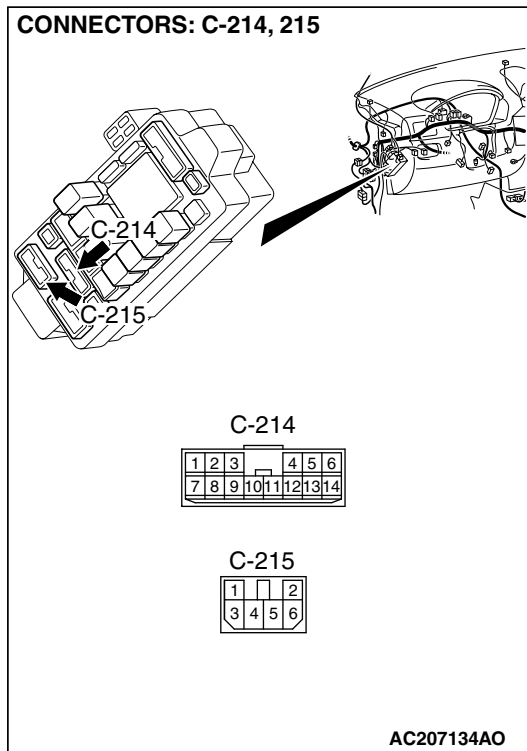


CONNECTOR: C-01



CONNECTOR: C-20





CIRCUIT OPERATION

- Battery positive voltage is applied to the transmission range switch (terminal 8) when the ignition switch is turned "ON."
- Battery positive voltage is applied to the PCM (terminal 67) when the transmission range is in the "P" range. The PCM judges that the transmission range is in the "P" range when the battery positive voltage is applied.
- Battery positive voltage is applied to the PCM terminal 61 (77, 73, 62, 75 or 72) when the selector lever is in the "R" range ("N," "D," "3," "2" or "L" range). The PCM judges that the selector lever is in the "R" range ("N," "D," "3," "2" or "L" range) when the battery positive voltage is applied.

DESCRIPTIONS OF MONITOR METHODS

- If no signal is input from transmission range switch for more than 30 seconds, PCM judges that transmission range switch has a failure.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

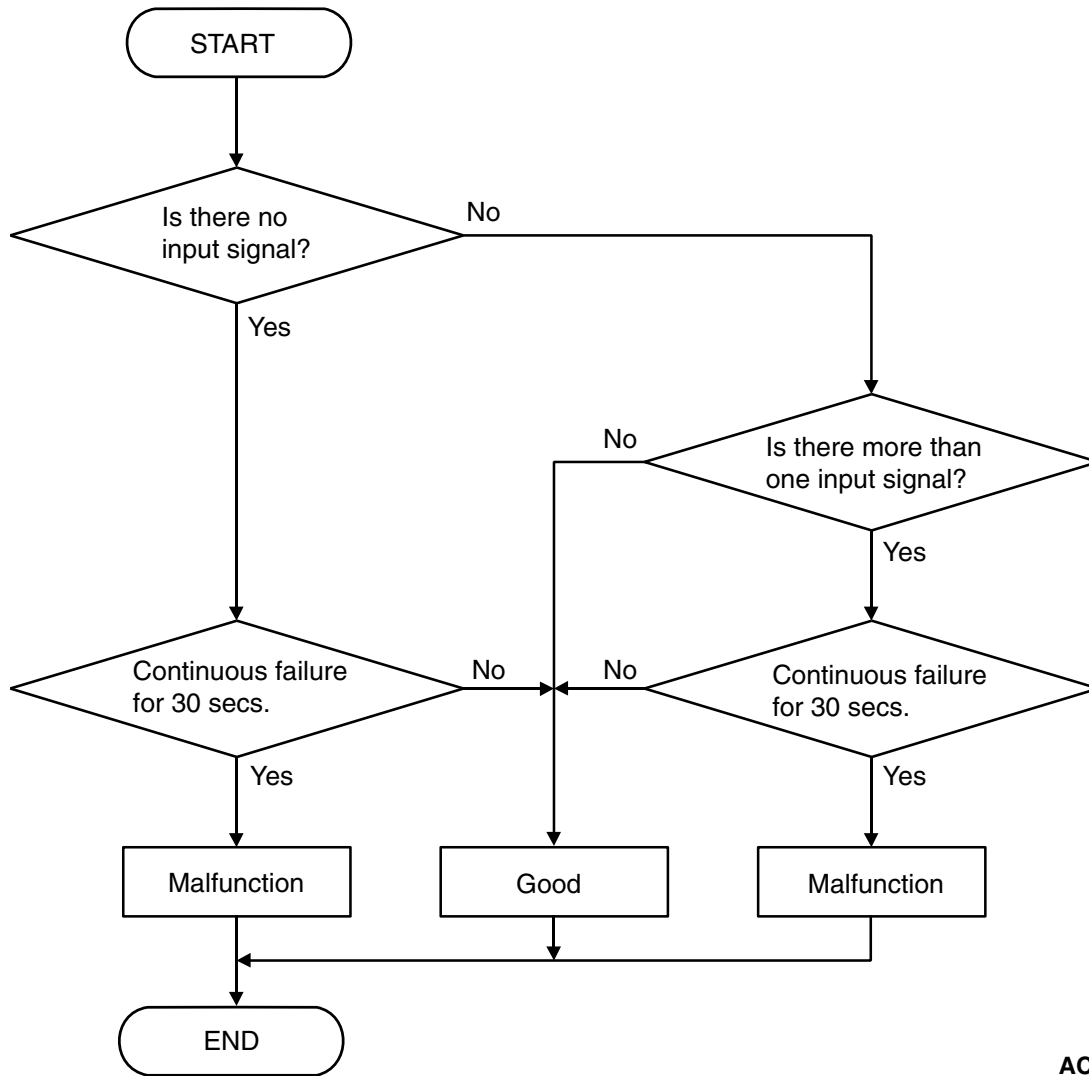
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- Not applicable

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



AC205064

DTC SET CONDITIONS

Check Conditions, Judgement Criteria

- Transmission range switch: no signal detected. (30 seconds)

OBD-II DRIVE CYCLE PATTERN

Start the engine, keep the vehicle stopped in "P," "R," "N," "D," "3," "2" and "L" ranges respectively for more than one minute, and turn "LOCK" (OFF) the ignition switch. Then restart the engine, and stop the vehicle in "P," "R," "N," "D," "3," "2" and "L" ranges respectively for more than one minute.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the transmission range switch
- Malfunction of the ignition switch
- Damaged harness or connector
- Malfunction of the PCM

DIAGNOSIS

Required Special Tool:

- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: MUT-III USB Cable
 - MB991910: MUT-III Main Harness A

STEP 1. Using scan tool MB991958, check data list item 61: Transmission Range Switch.

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Set scan tool MB991958 to the data reading mode.
 - Item 61: Transmission Range Switch.
 - Move the selector lever to "P," "R," "N," "D," "3," "2," "L" and sport mode positions and confirm that the selected transmission range match the positions shown on scan tool MB991958. (Vehicles with sport mode is indicated as "D" on the scan tool).
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Does the scan tool indication correspond to the actual transmission range?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction [P.00-14](#).

NO (no correct transmission range is displayed) : Go to Step 2.

NO (Only "P" position is not displayed correctly) : Go to Step 6.

NO (Only "R" position is not displayed correctly) : Go to Step 12.

NO (Only "N" position is not displayed correctly) : Go to Step 17.

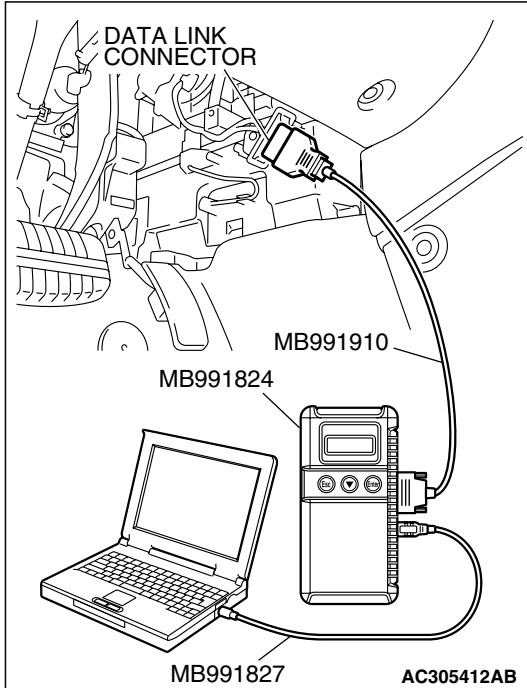
NO (Only "D" position is not displayed correctly) : Go to Step 22.

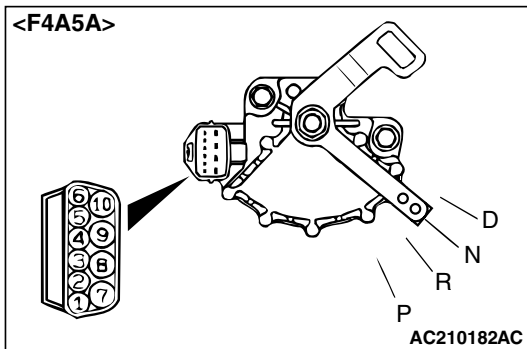
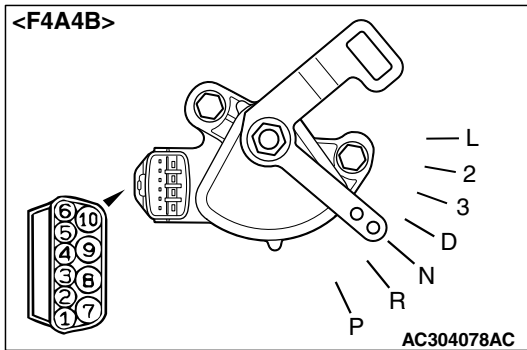
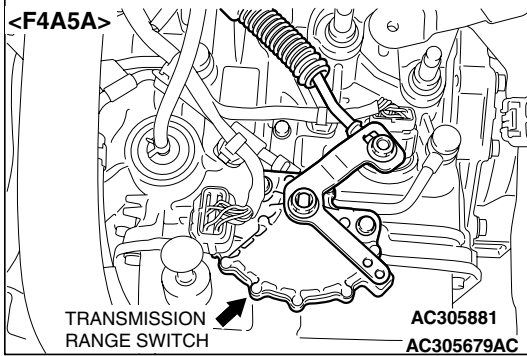
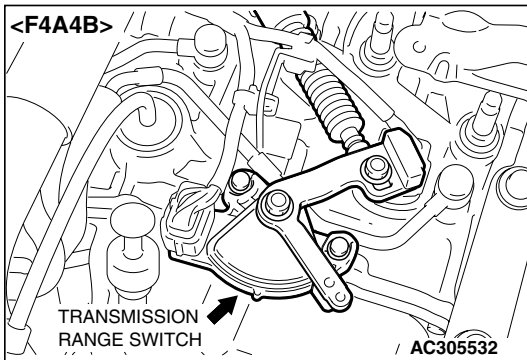
NO (Only "3" position is not displayed correctly) <Vehicles without sport mode> : Go to Step 29.

NO (Only "2" position is not displayed correctly) <Vehicles without sport mode> : Go to Step 34.

NO (Only "L" position is not displayed correctly) <Vehicles without sport mode> : Go to Step 39.

NO [Only sport mode position is not displayed correctly ("D" is not displayed.)] <Vehicles with sport mode> : Go to Step 44.





STEP 2. Check the transmission range switch.

Measure the resistance between the terminals for each transmission range as indicated in the table below.

TRANSMISSION RANGE	TERMINAL CONNECTION OF TESTER	SPECIFIED CONDITION
P	3 – 8, 9 – 10	Less than 2 ohms.
R	7 – 8	
N	4 – 8, 9 – 10	
D	1 – 8	
3	5 – 8	
2	2 – 8	
L	6 – 8	

NOTE: For vehicles with sport mode, four positions (P, R, N, D) are used.

Q: Does the resistance measure less than 2 ohms for each transmission range?

YES : Go to Step 3.

NO : Replace the transmission range switch. Refer to GROUP 23B, Transaxle [P.23B-10](#).

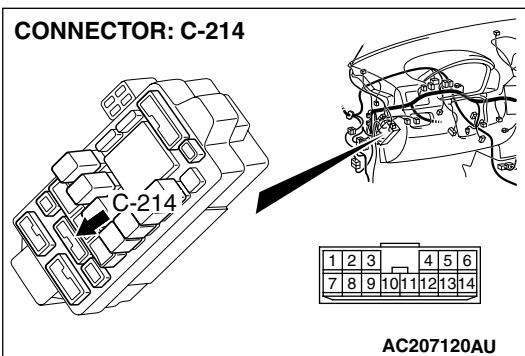
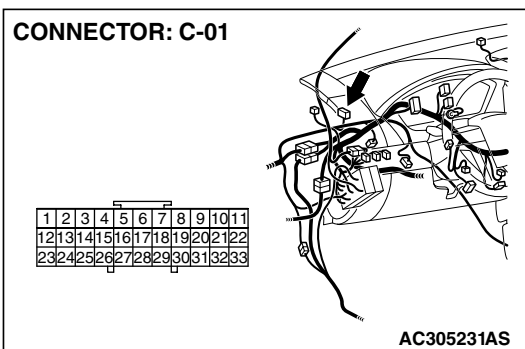
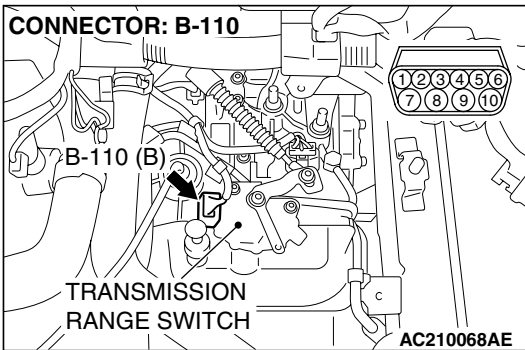
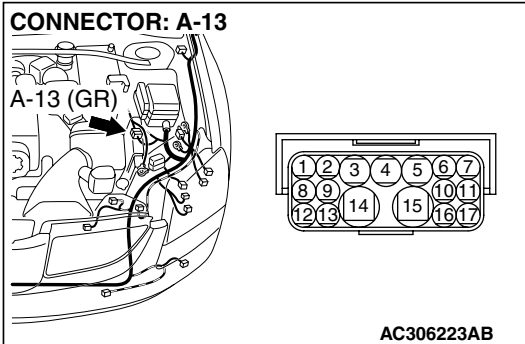
STEP 3. Check intermediate connector A-13, transmission range switch connector B-110, joint connector (1) C-01 and junction block connector C-214 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

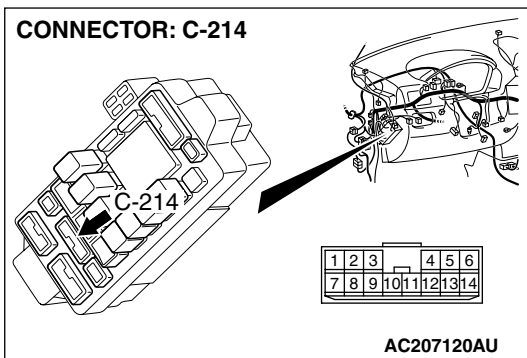
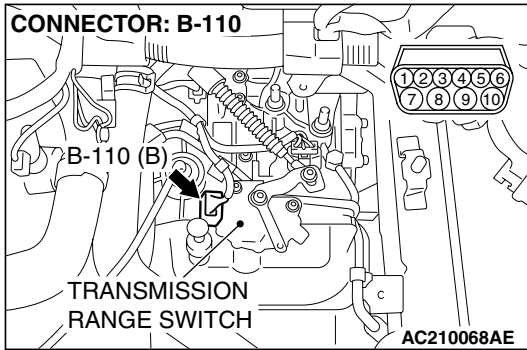
Q: Are the connectors and terminals in good condition?

YES : Go to Step 4.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

P.00E-2.

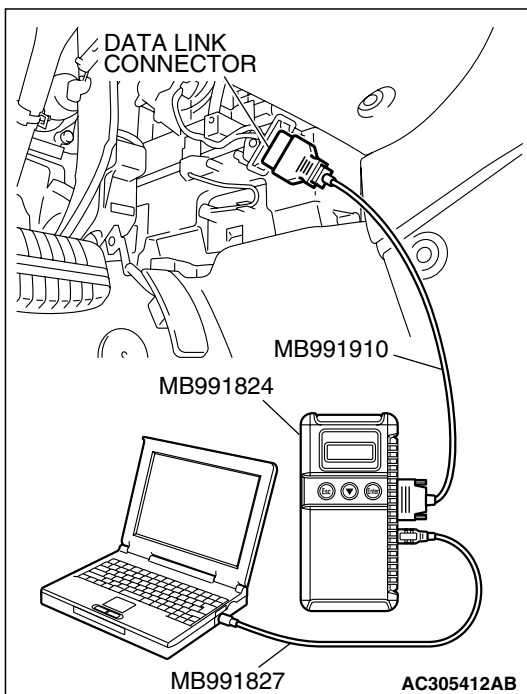




STEP 4. Check harness for open or short circuit to ground between transmission range switch connector B-110 terminal 8 and junction block connector C-214 terminal 12.
Q: Is the harness wire in good condition?

YES : Go to Step 5.

NO : Repair or replace the harness wire.



STEP 5. Using scan tool MB991958, check data list item 61:Transmission Range Switch.

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to "ON" position.
- (3) Set scan tool MB991958 to the data reading mode.

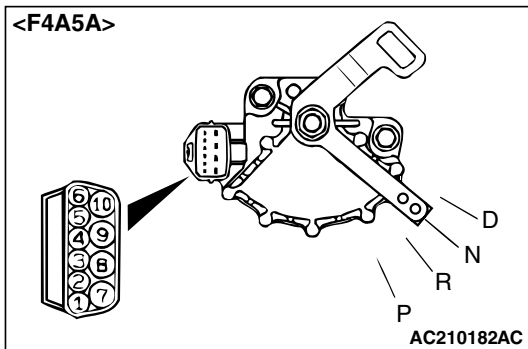
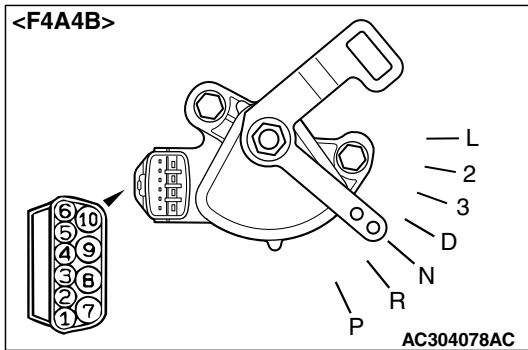
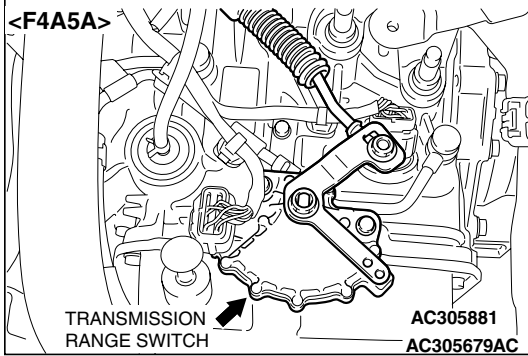
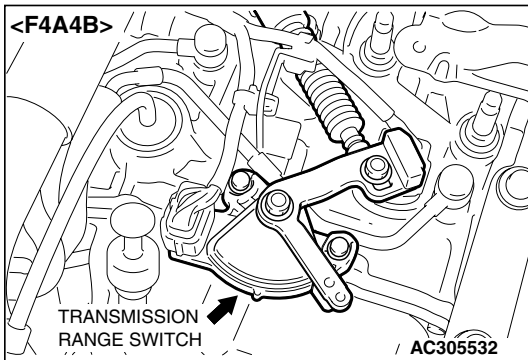
- Item 61: Transmission Range Switch.
 - Move the selector lever to "P," "R," "N," "D," "3," "2," "L" and sport mode positions and confirm that the selected transmission range match the positions shown on scan tool MB991958. (Vehicles with sport mode is indicated as "D" on the scan tool).

- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the switch operating properly?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction P.00-14.

NO : Replace the PCM.



STEP 6. Check the transmission range switch.

Measure the resistance between the terminals for each transmission range as indicated in the table below.

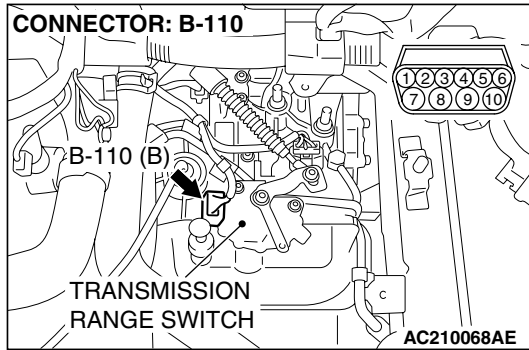
TRANSMISSION RANGE	TERMINAL CONNECTION OF TESTER	SPECIFIED CONDITION
P	3 – 8, 9 – 10	Less than 2 ohms.
R	7 – 8	
N	4 – 8, 9 – 10	
D	1 – 8	
3	5 – 8	
2	2 – 8	
L	6 – 8	

NOTE: For vehicles with sport mode, four positions (P, R, N, D) are used.

Q: Does the resistance measure less than 2 ohms for each transmission range?

YES : Go to Step 7.

NO : Replace the transmission range switch. Refer to GROUP 23B, Transaxle [P.23B-10](#).



STEP 7. Check transmission range switch connector B-110 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connector and terminals in good condition?

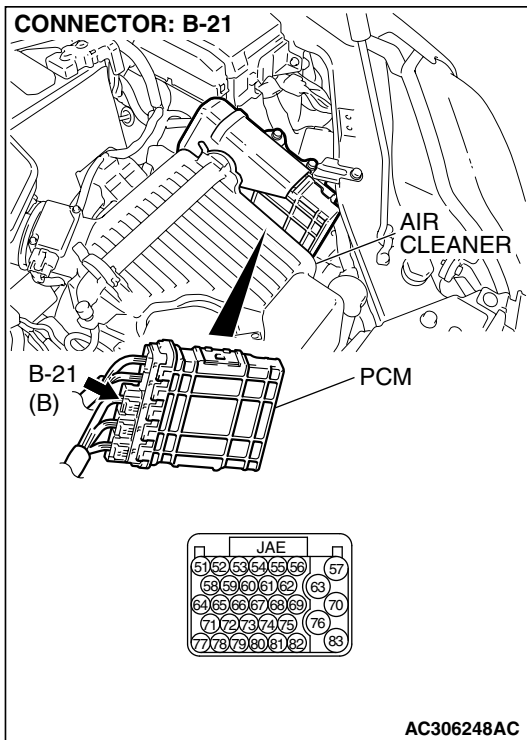
YES : Go to Step 8.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

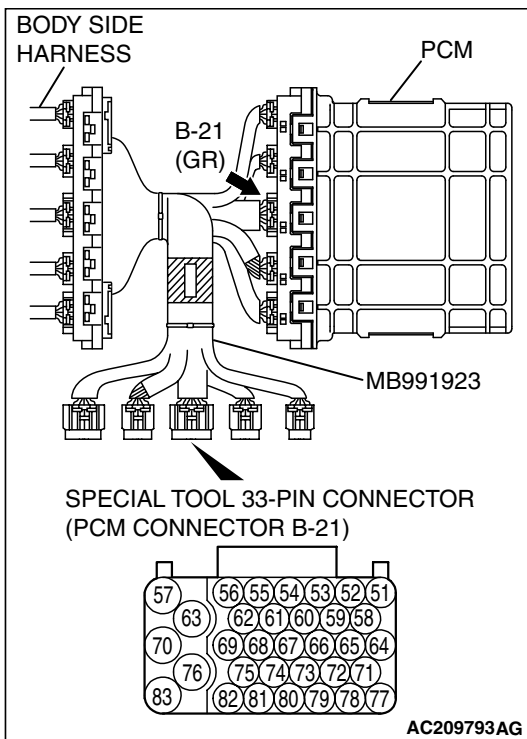
[P.00E-2.](#)

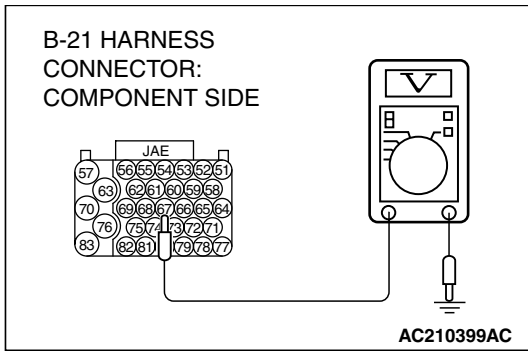
STEP 8. Measure the transmission range switch output voltage at PCM connector B-21 by using check harness special tool MB991923.

(1) Disconnect all the connectors from the PCM.



- (2) Connect special tool MB991923 (check harness) between the PCM and the body-side harness connector.
- (3) Turn the ignition switch to the "ON" position.
- (4) Move the selector lever to the "P" position.

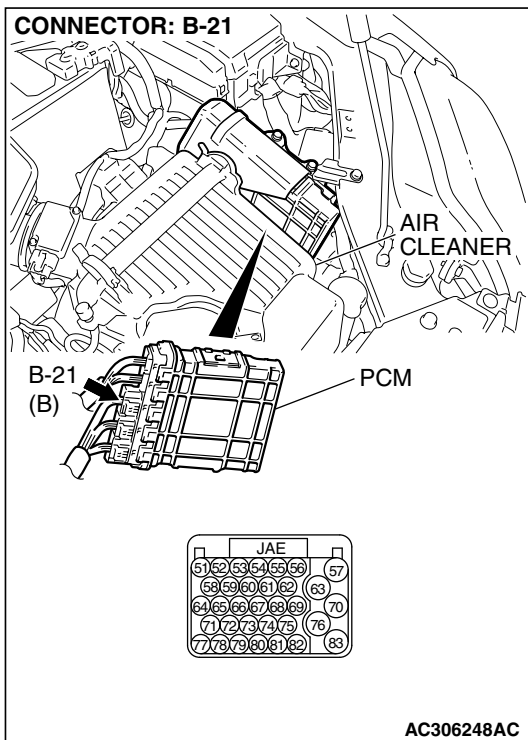




- (5) Measure the voltage between terminal 67 and ground.
 - The voltage should measure battery positive voltage.
- (6) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the measured voltage battery positive voltage?

- YES :** Go to Step 11.
- NO :** Go to Step 9.



STEP 9. Check PCM connector B-21 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connector and terminals in good condition?

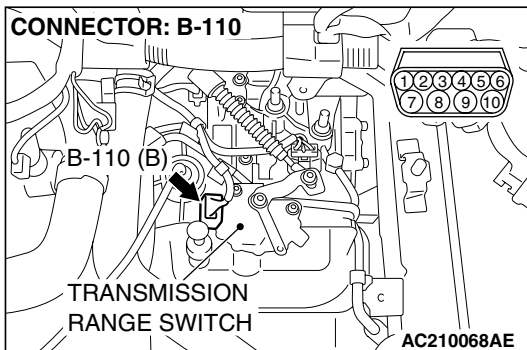
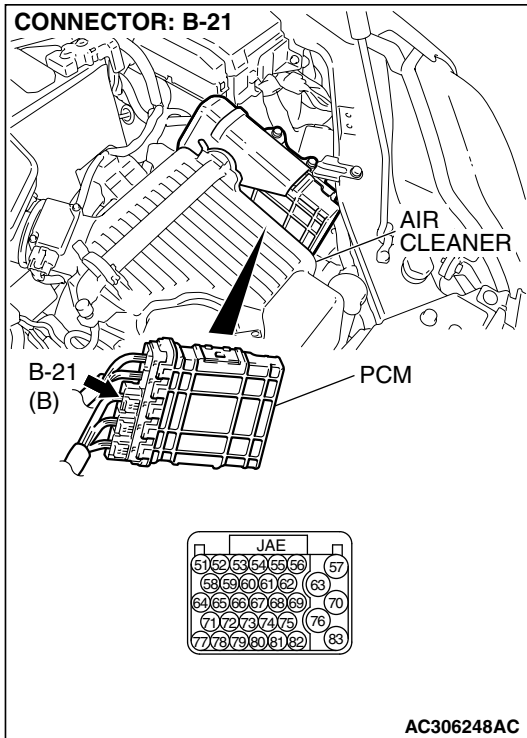
- YES :** Go to Step 10.
- NO :** Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#).

STEP 10. Check harness for open circuit or short circuit to ground between PCM connector B-21 terminal 67 and transmission range switch connector B-110 terminal 3.

Q: Is the harness wire in good condition?

YES : Go to Step 5.

NO : Repair or replace the harness wire.

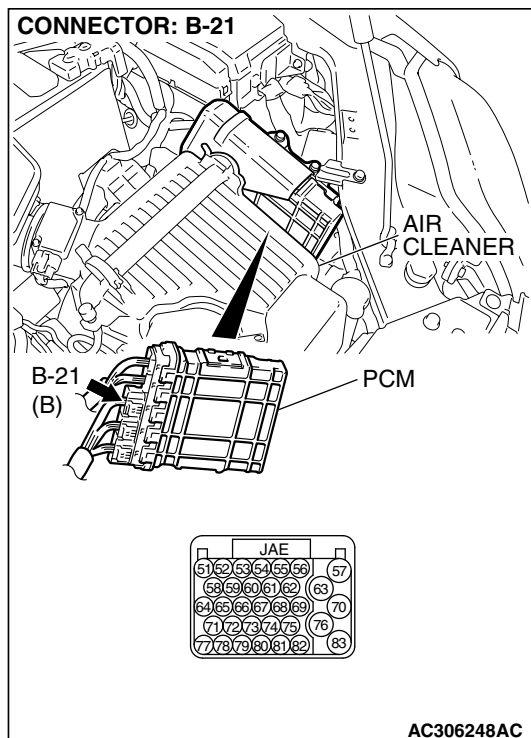


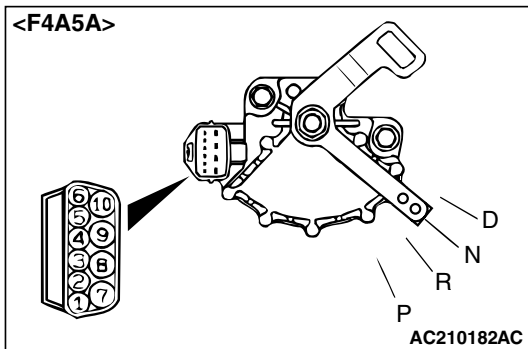
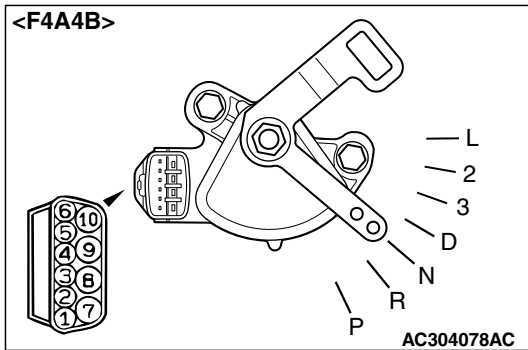
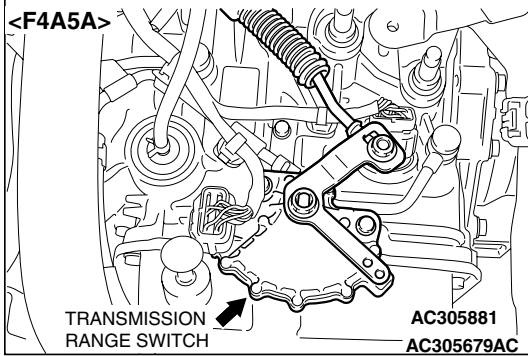
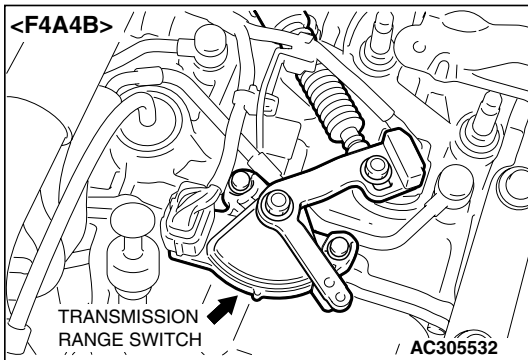
STEP 11. Check PCM connector B-21 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connector and terminals in good condition?

YES : Go to Step 5.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#).





STEP 12. Check the transmission range switch.

Measure the resistance between the terminals for each transmission range as indicated in the table below.

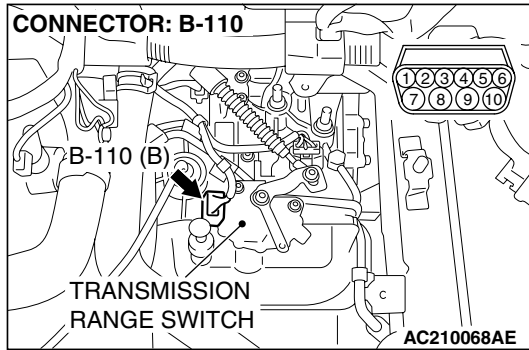
TRANSMISSION RANGE	TERMINAL CONNECTION OF TESTER	SPECIFIED CONDITION
P	3 – 8, 9 – 10	Less than 2 ohms.
R	7 – 8	
N	4 – 8, 9 – 10	
D	1 – 8	
3	5 – 8	
2	2 – 8	
L	6 – 8	

NOTE: For vehicles with sport mode, four positions (P, R, N, D) are used.

Q: Is the measured resistance less than 2 ohms for each transmission range?

YES : Go to Step 13.

NO : Replace the transmission range switch. Refer to GROUP 23B, Transaxle [P.23B-10](#).



STEP 13. Check transmission range switch connector B-110 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connector and terminals in good condition?

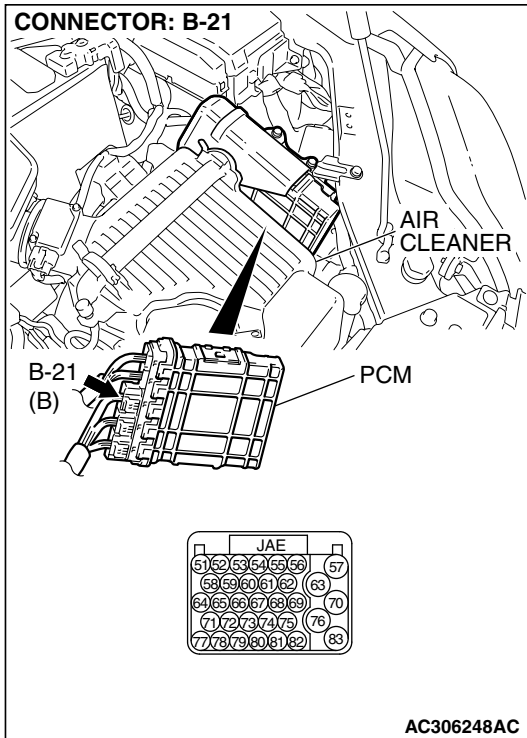
YES : Go to Step 14.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

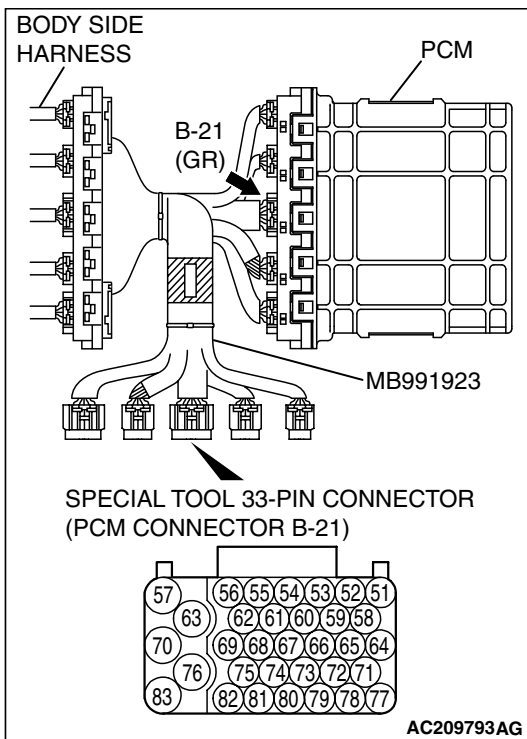
[P.00E-2.](#)

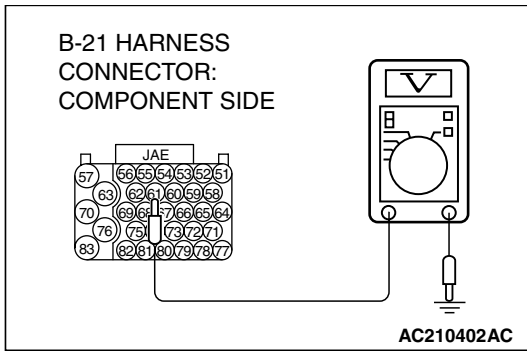
STEP 14. Measure the transmission range switch output voltage at PCM connector B-21 by using check harness special tool MB991923.

(1) Disconnect all the connectors from the PCM.



- (2) Connect special tool MB991923 (check harness) between the PCM and the body-side harness connector.
- (3) Turn the ignition switch to the "ON" position.
- (4) Move the selector lever to the "R" position.

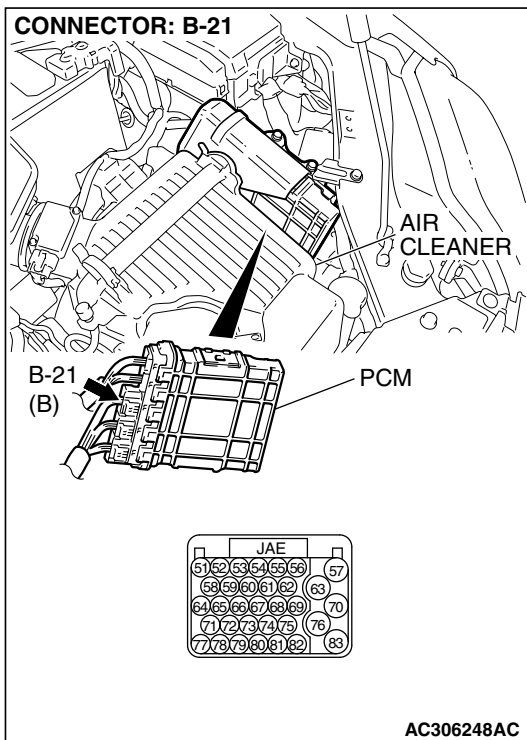




- (5) Measure the voltage between terminal 61 and ground.
- The voltage should measure below battery positive voltage.
- (6) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the measured voltage battery positive voltage?

- YES** : Go to Step 11.
NO : Go to Step 15.



STEP 15. Check PCM connector B-21 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connector and terminals in good condition?

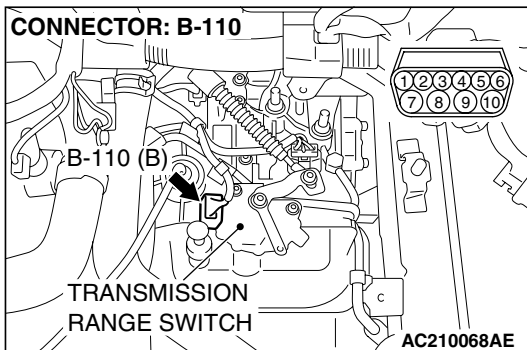
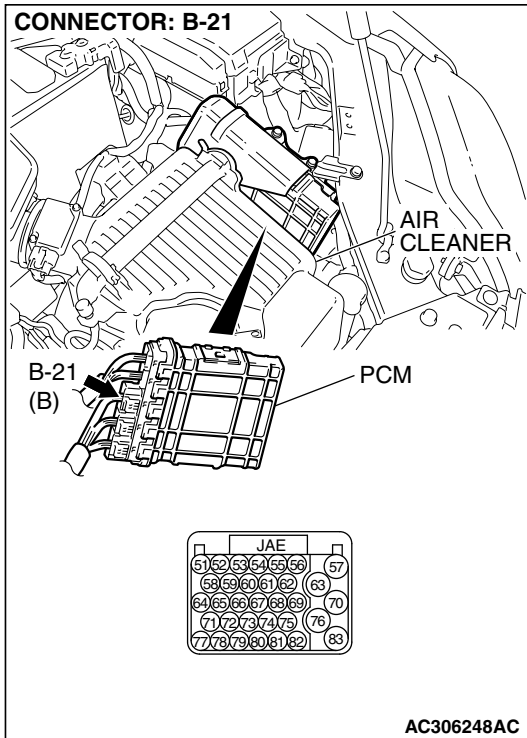
- YES** : Go to Step 16.
NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#).

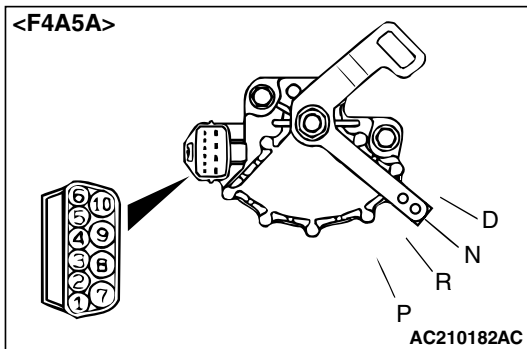
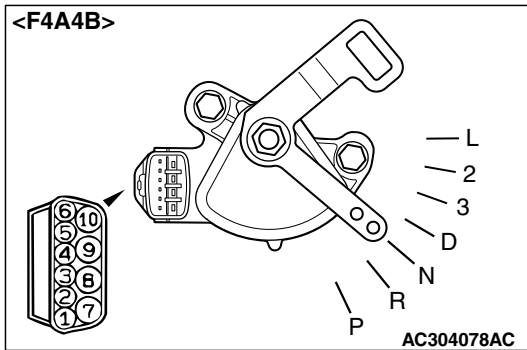
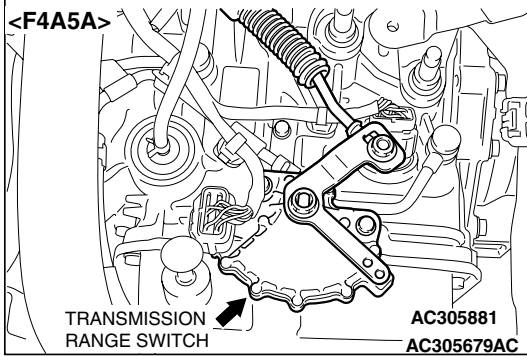
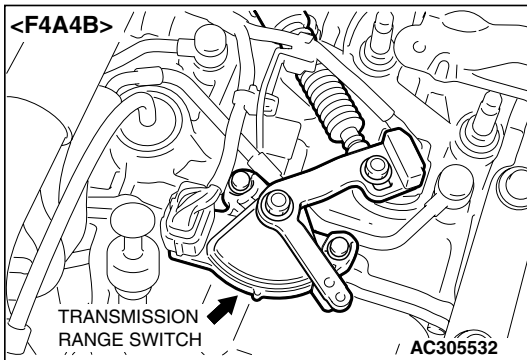
STEP 16. Check harness for open circuit or short circuit to ground between PCM connector B-21 terminal 61 and transmission range switch connector B-110 terminal 7.

Q: Is the harness wire in good condition?

YES : Go to Step 5.

NO : Repair or replace the harness wire.





STEP 17. Check the transmission range switch.

Measure the resistance between the terminals for each transmission range as indicated in the table below.

TRANSMISSION RANGE	TERMINAL CONNECTION OF TESTER	SPECIFIED CONDITION
P	3 – 8, 9 – 10	Less than 2 ohms.
R	7 – 8	
N	4 – 8, 9 – 10	
D	1 – 8	
3	5 – 8	
2	2 – 8	
L	6 – 8	

NOTE: For vehicles with sport mode, four positions (P, R, N, D) are used.

Q: Is the measured resistance less than 2 ohms for each transmission range?

YES : Go to Step 18.

NO : Replace the transmission range switch. Refer to GROUP 23B, Transaxle [P.23B-10](#).

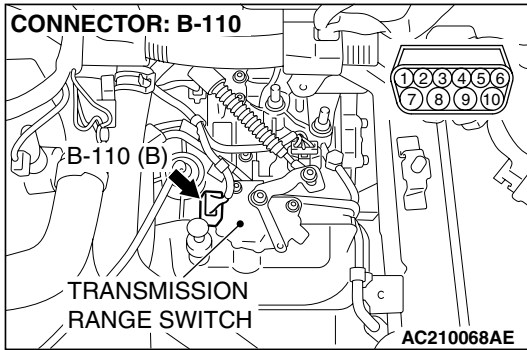
STEP 18. Check transmission range switch connector B-110 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connector and terminals in good condition?

YES : Go to Step 19.

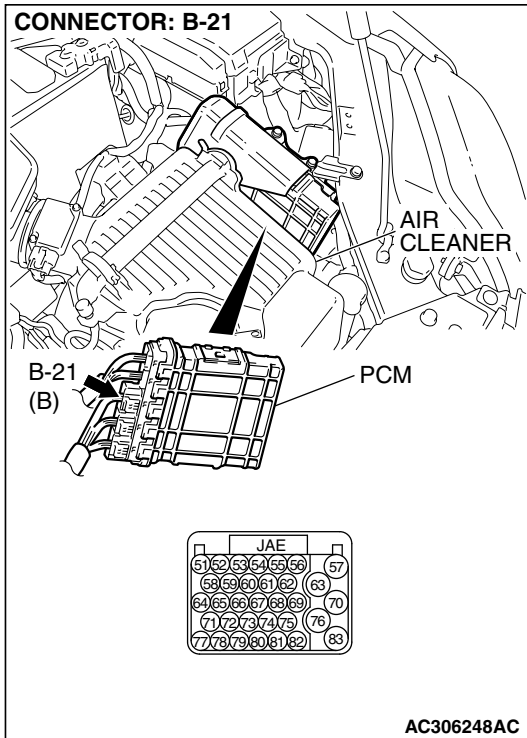
NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

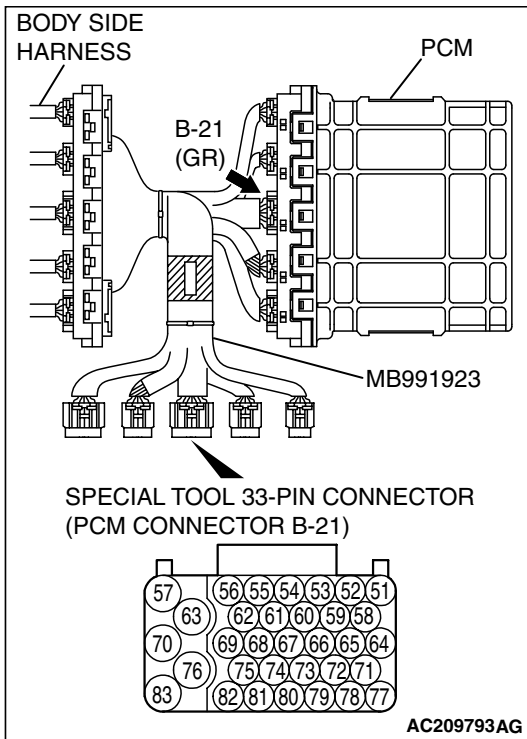


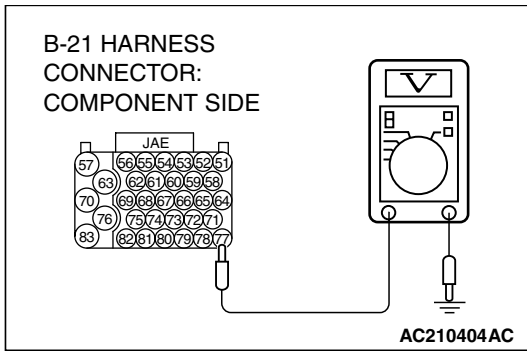
STEP 19. Measure the transmission range switch output voltage at PCM connector B-21 by using check harness special tool MB991923.

(1) Disconnect all the connectors from the PCM.



- (2) Connect special tool MB991923 (check harness) between the PCM and the body-side harness connector.
- (3) Turn the ignition switch to the "ON" position.
- (4) Move the selector lever to the "N" position.

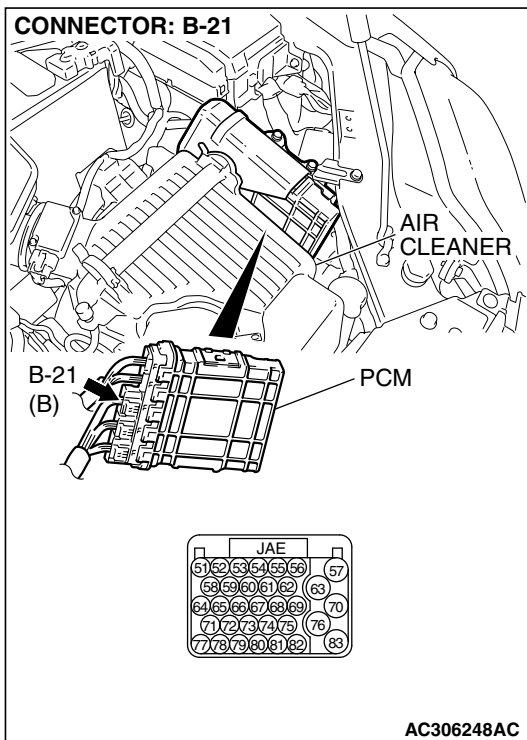




- (5) Measure the voltage between terminal 77 and ground.
 • The voltage should measure battery positive voltage.
 (6) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the measured voltage battery positive voltage?

- YES :** Go to Step 11.
NO : Go to Step 20.



STEP 20. Check PCM connector B-21 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connector and terminals in good condition?

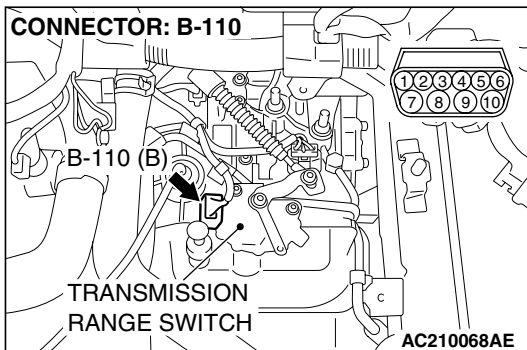
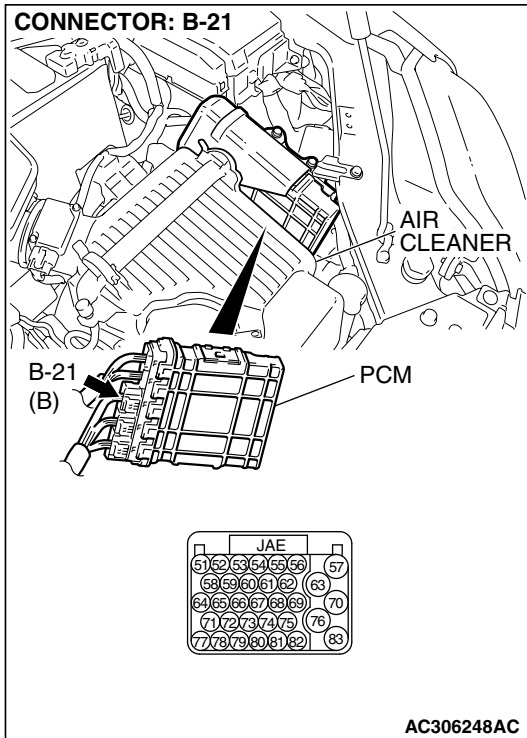
- YES :** Go to Step 21.
NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#).

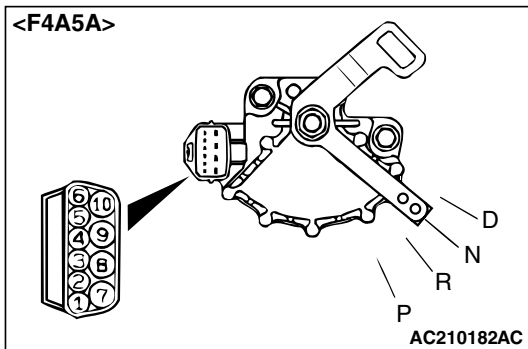
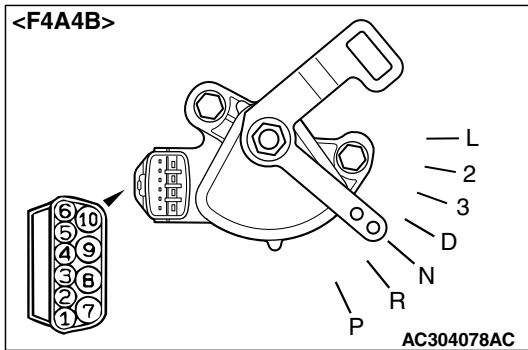
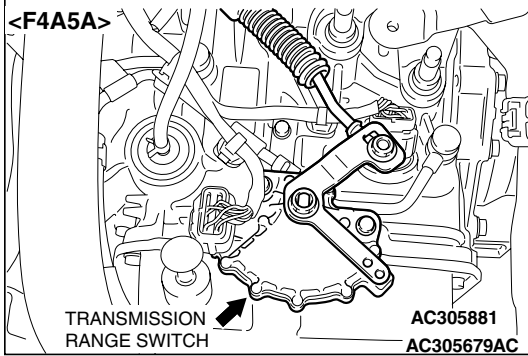
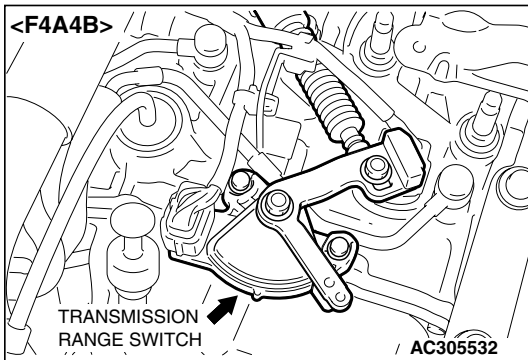
STEP 21. Check harness for open circuit or short circuit to ground between PCM connector B-21 terminal 77 and transmission range switch connector B-110 terminal 4.

Q: Is the harness wire in good condition?

YES : Go to Step 5.

NO : Repair or replace the harness wire.





STEP 22. Check the transmission range switch.

Measure the resistance between the terminals for each transmission range as indicated in the table below.

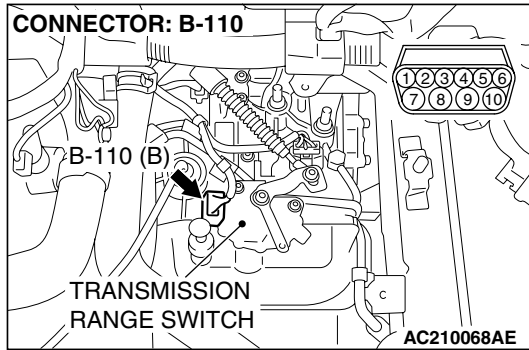
TRANSMISSION RANGE	TERMINAL CONNECTION OF TESTER	SPECIFIED CONDITION
P	3 – 8, 9 – 10	Less than 2 ohms.
R	7 – 8	
N	4 – 8, 9 – 10	
D	1 – 8	
3	5 – 8	
2	2 – 8	
L	6 – 8	

NOTE: For vehicles with sport mode, four positions (P, R, N, D) are used.

Q: Is the measured resistance less than 2 ohms for each transmission range?

YES : Go to Step 23.

NO : Replace the transmission range switch. Refer to GROUP 23B, Transaxle [P.23B-10](#).



STEP 23. Check transmission range switch connector B-110 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connector and terminals in good condition?

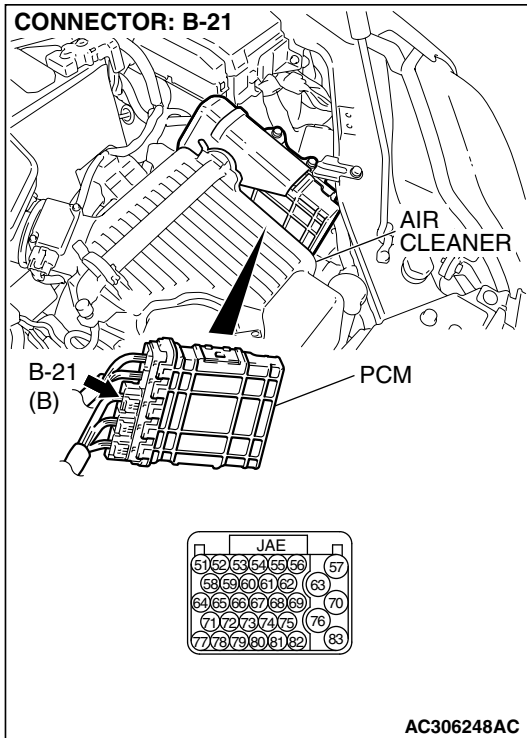
YES : Go to Step 24.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

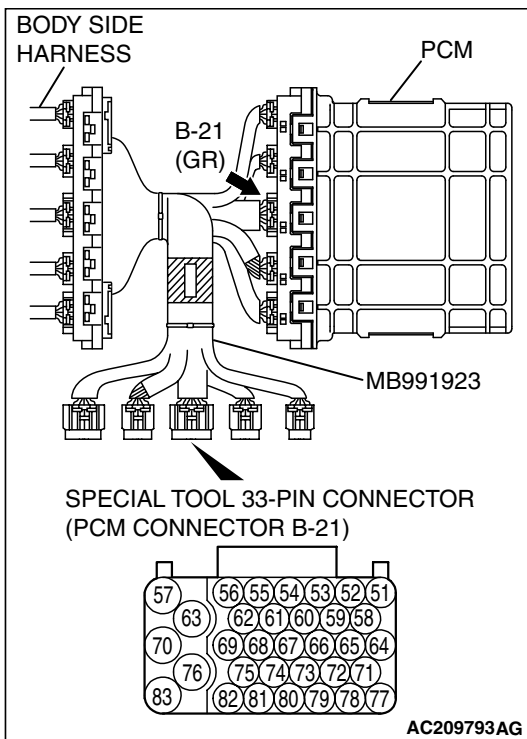
[P.00E-2.](#)

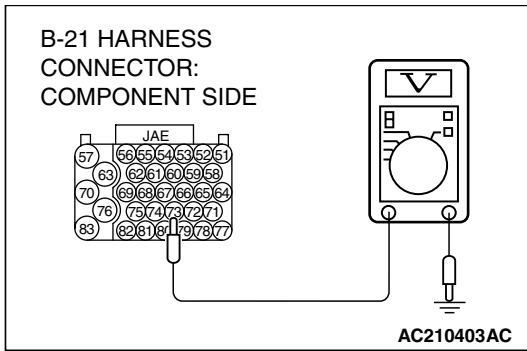
STEP 24. Measure the transmission range switch output voltage at PCM connector B-21 by using check harness special tool MB991923.

(1) Disconnect all the connectors from the PCM.



- (2) Connect special tool MB991923 (check harness) between the PCM and the body-side harness connector.
- (3) Turn the ignition switch to the "ON" position.
- (4) Move the selector lever to the "D" position.

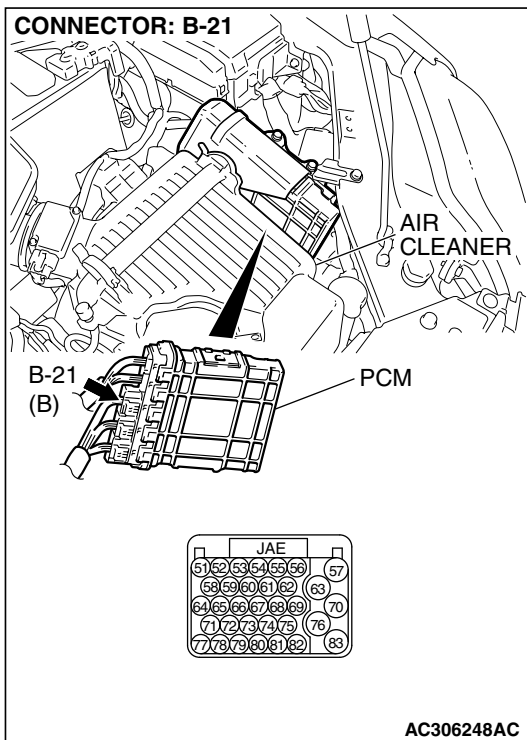




- (5) Measure the voltage between terminal 73 and ground.
- The voltage should equal battery voltage (approximately 12 volts).
- (6) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Does the voltage measure battery positive voltage?

- YES :** Go to Step 11.
NO : Go to Step 25.



STEP 25. Check PCM connector B-21 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connector and terminals in good condition?

- YES :** Go to Step 26.
NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#).

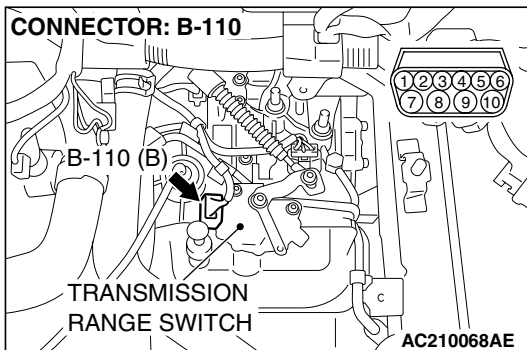
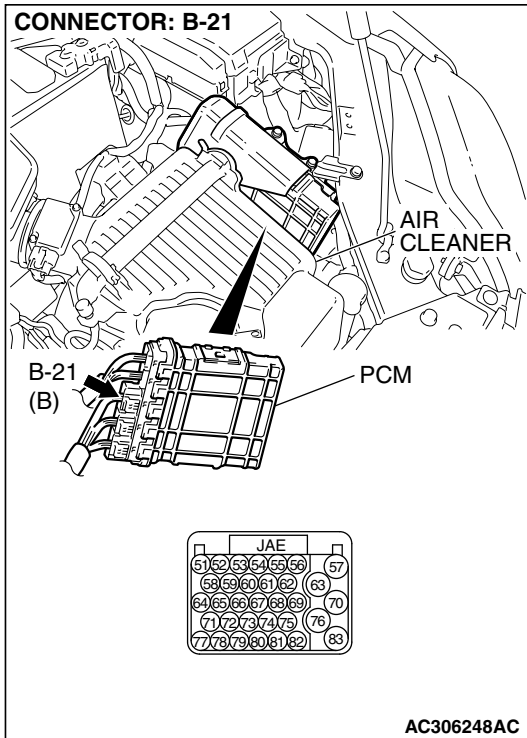
STEP 26. Check harness for open circuit or short circuit to ground between PCM connector B-21 terminal 73 and transmission range switch connector B-110 terminal 1.

Q: Is the harness wire in good condition?

YES <Vehicles without sport mode> : Go to Step 5.

YES <Vehicles with sport mode> : Go to Step 27.

NO : Repair or replace the harness wire.



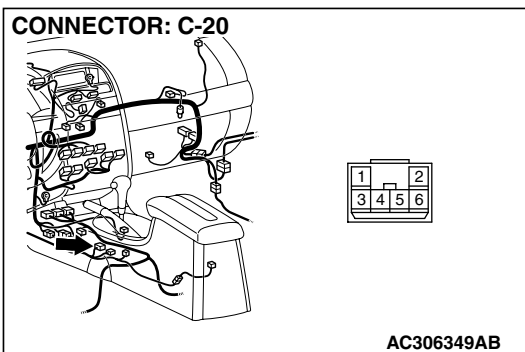
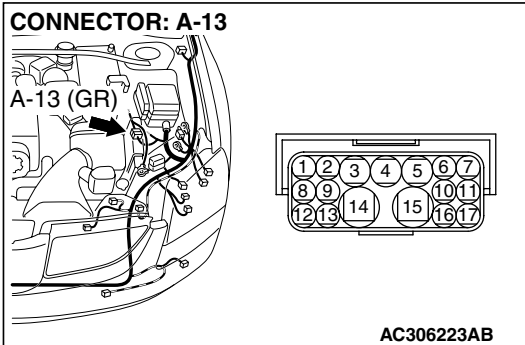
STEP 27. Check intermediate connector A-13 and shift switch assembly connector C-20 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connector and terminals in good condition?

YES : Go to Step 28.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

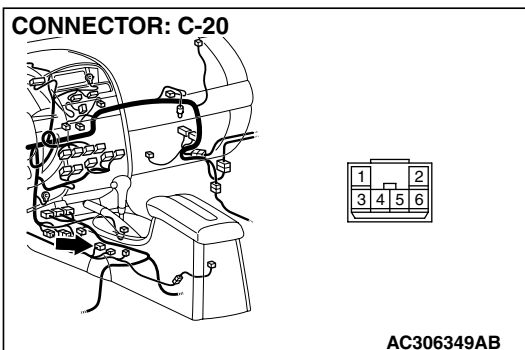
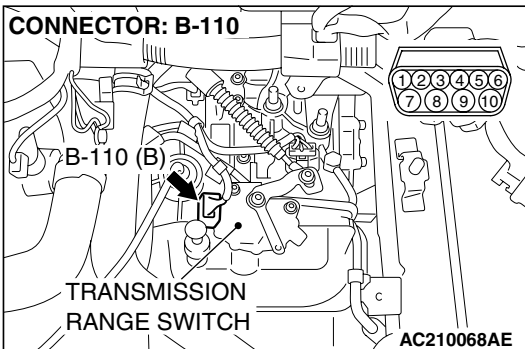


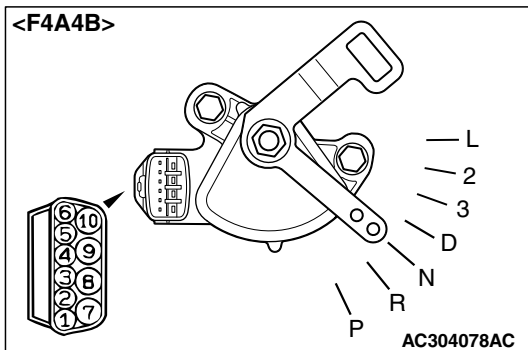
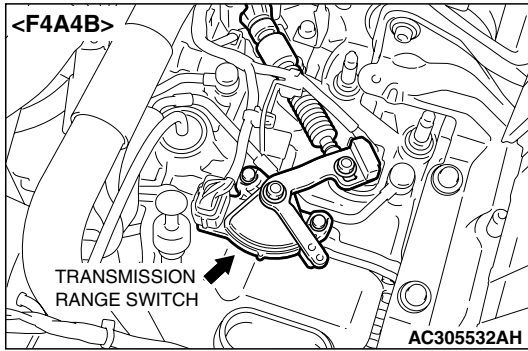
STEP 28. Check harness for short circuit to ground between transmission range switch connector B-110 terminal 1 and shift switch assembly connector C-20 terminal 6.

Q: Is the harness wire in good condition?

YES : Go to Step 5.

NO : Repair or replace the harness wire.





STEP 29. Check the transmission range switch.

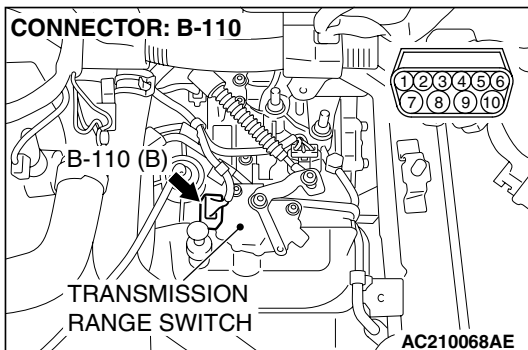
Measure the resistance between the terminals for each transmission range as indicated in the table below.

TRANSMISSION RANGE	TERMINAL CONNECTION OF TESTER	SPECIFIED CONDITION
P	3 – 8, 9 – 10	Less than 2 ohms.
R	7 – 8	
N	4 – 8, 9 – 10	
D	1 – 8	
3	5 – 8	
2	2 – 8	
L	6 – 8	

Q: Is the measured resistance less than 2 ohms for each transmission range?

YES : Go to Step 30.

NO : Replace the transmission range switch. Refer to GROUP 23B, Transaxle [P.23B-10](#).



STEP 30. Check transmission range switch connector B-110 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

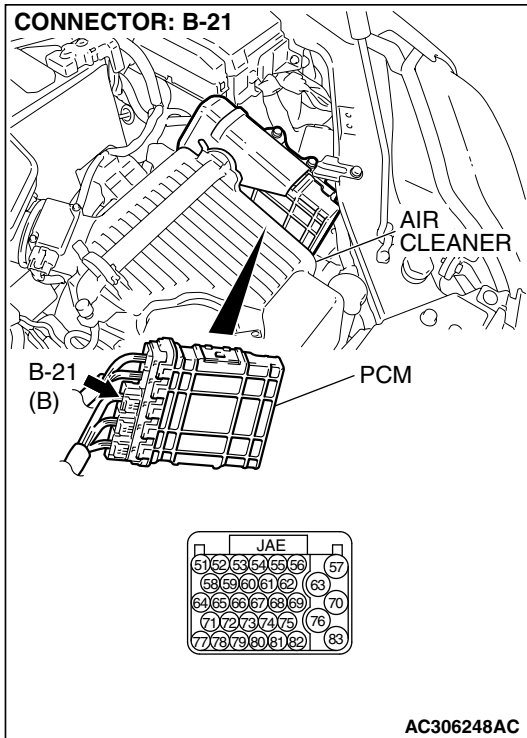
Q: Are the connector and terminals in good condition?

YES : Go to Step 31.

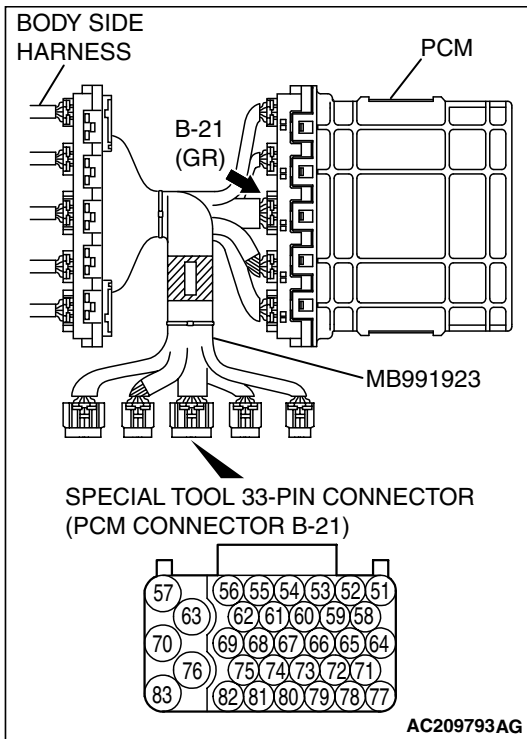
NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#).

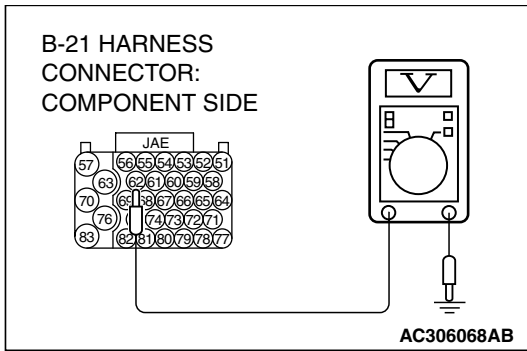
STEP 31. Measure the transmission range switch output voltage at PCM connector B-21 by using check harness special tool MB991923.

(1) Disconnect all the connectors from the PCM.



- (2) Connect special tool MB991923 (check harness) between the PCM and the body-side harness connector.
- (3) Turn the ignition switch to the "ON" position.
- (4) Move the selector lever to the "3" position.

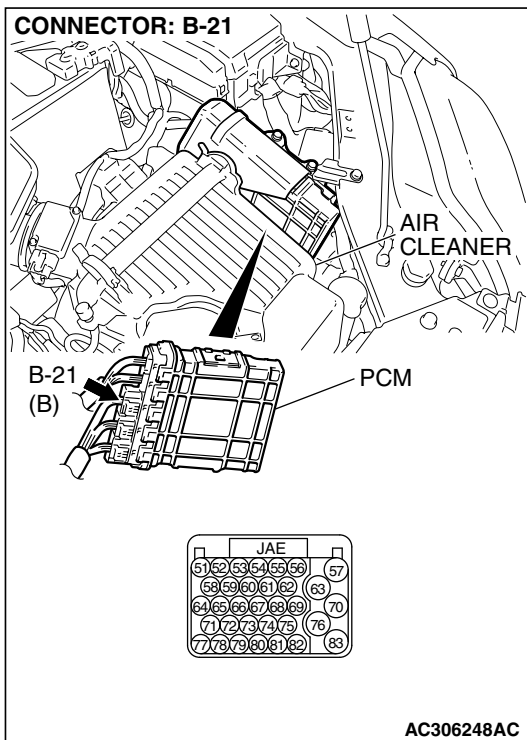




- (5) Measure the voltage between terminal 62 and ground.
 - The voltage should measure battery positive voltage.
- (6) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the measured voltage battery positive voltage?

- YES :** Go to Step 11.
NO : Go to Step 32.



STEP 32. Check PCM connector B-21 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connector and terminals in good condition?

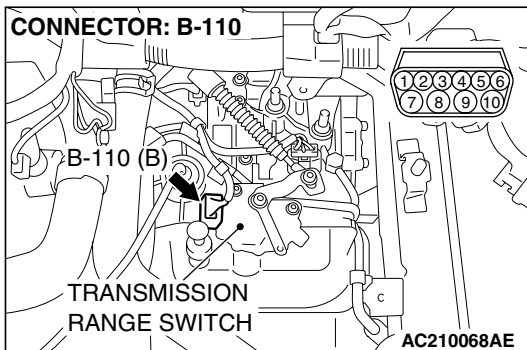
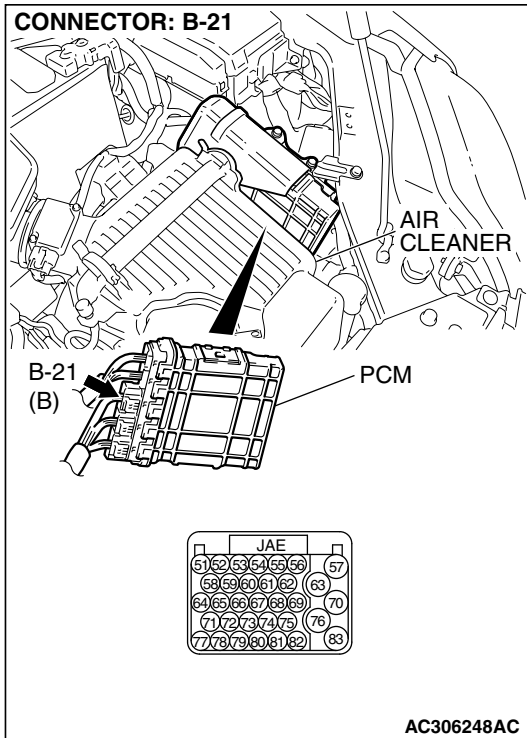
- YES :** Go to Step 33.
NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#).

STEP 33. Check harness for open circuit or short circuit to ground between PCM connector B-21 terminal 62 and transmission range switch connector B-110 terminal 5.

Q: Is the harness wire in good condition?

YES : Go to Step 5.

NO : Repair or replace the harness wire.



STEP 34. Check the transmission range switch.

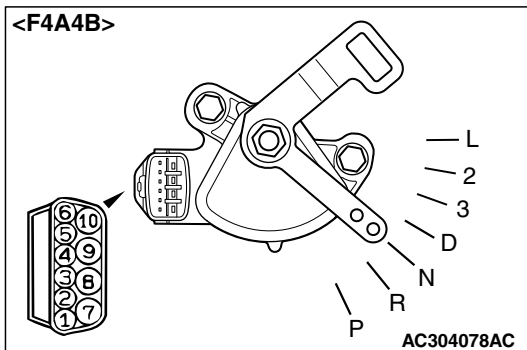
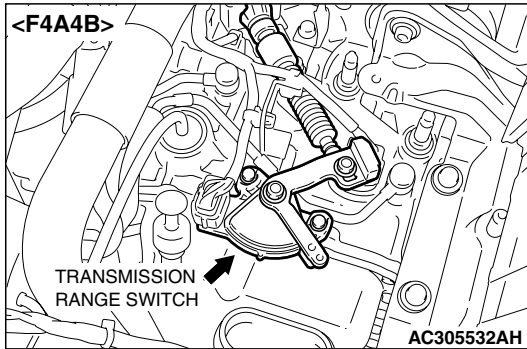
Measure the resistance between the terminals for each transmission range as indicated in the table below.

TRANSMISSION RANGE	TERMINAL CONNECTION OF TESTER	SPECIFIED CONDITION
P	3 – 8, 9 – 10	Less than 2 ohms.
R	7 – 8	
N	4 – 8, 9 – 10	
D	1 – 8	
3	5 – 8	
2	2 – 8	
L	6 – 8	

Q: Is the measured resistance less than 2 ohms for each transmission range?

YES : Go to Step 35.

NO : Replace the transmission range switch. Refer to GROUP 23B, Transaxle [P.23B-10](#).

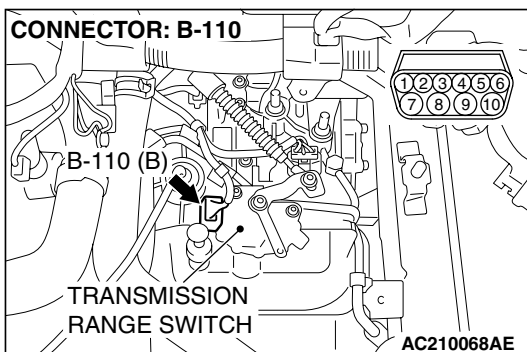


STEP 35. Check transmission range switch connector B-110 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connector and terminals in good condition?

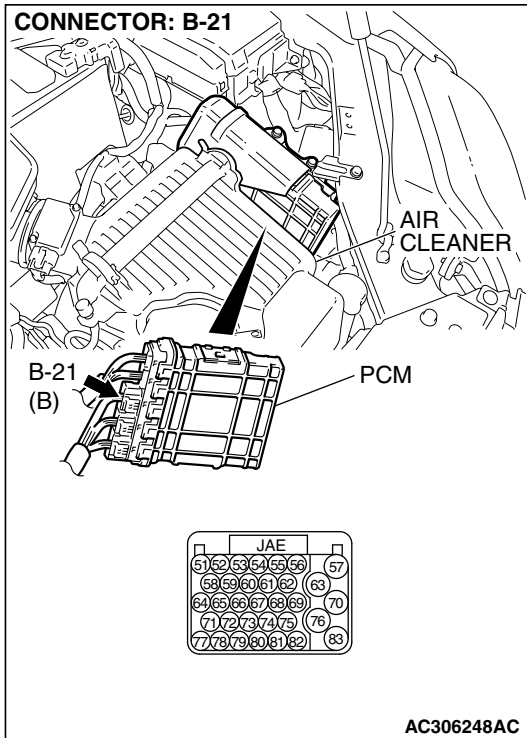
YES : Go to Step 36.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#).

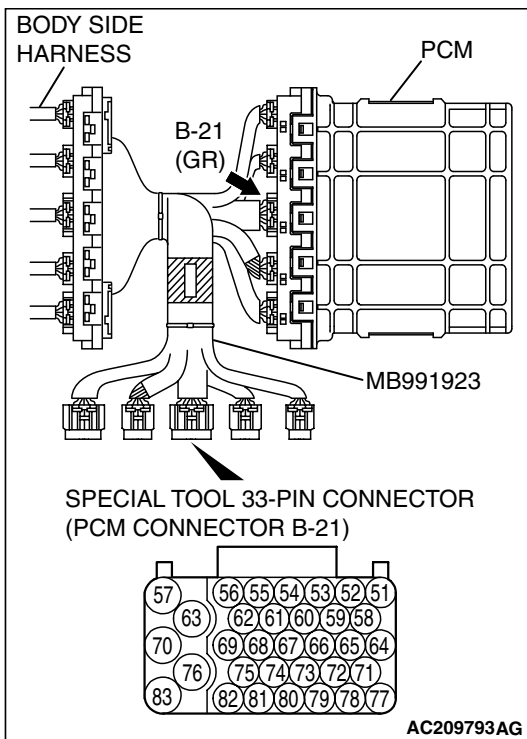


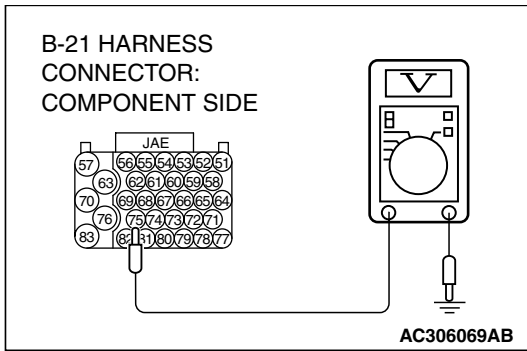
STEP 36. Measure the transmission range switch output voltage at PCM connector B-21 by using check harness special tool MB991923.

(1) Disconnect all the connectors from the PCM.



- (2) Connect special tool MB991923 (check harness) between the PCM and the body-side harness connector.
- (3) Turn the ignition switch to the "ON" position.
- (4) Move the selector lever to the "2" position.

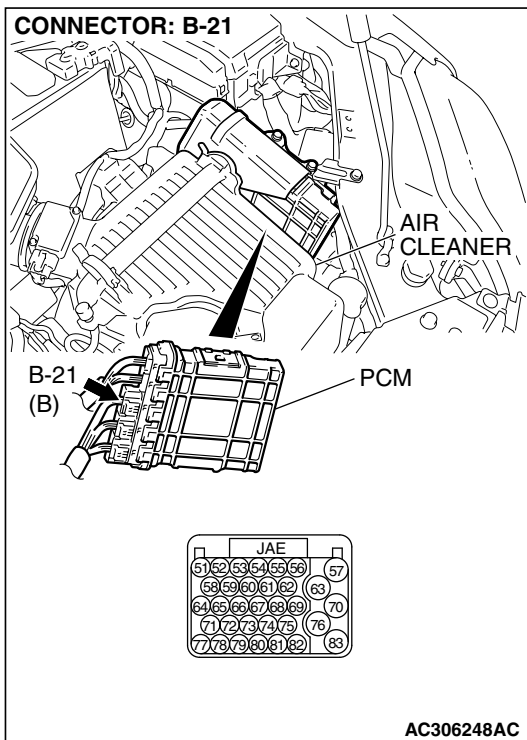




- (5) Measure the voltage between terminal 75 and ground.
 • The voltage should measure battery positive voltage.
 (6) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the measured voltage battery positive voltage?

- YES :** Go to Step 11.
NO : Go to Step 37.



STEP 37. Check PCM connector B-21 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connector and terminals in good condition?

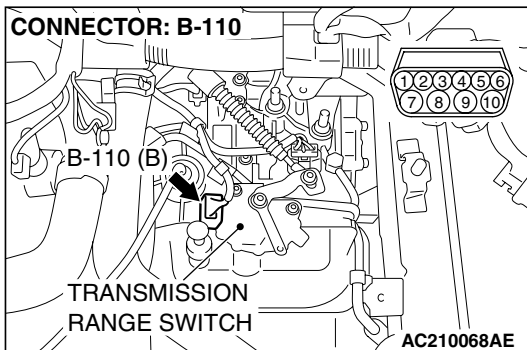
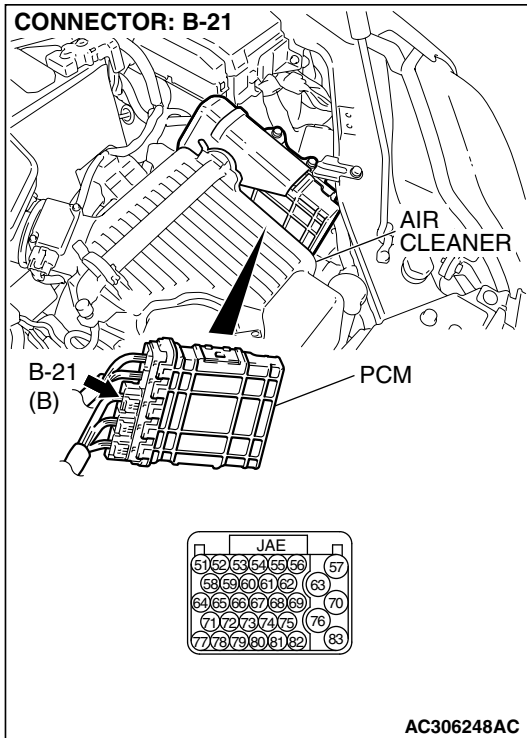
- YES :** Go to Step 38.
NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#).

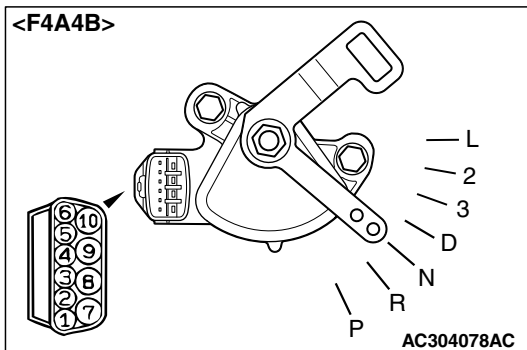
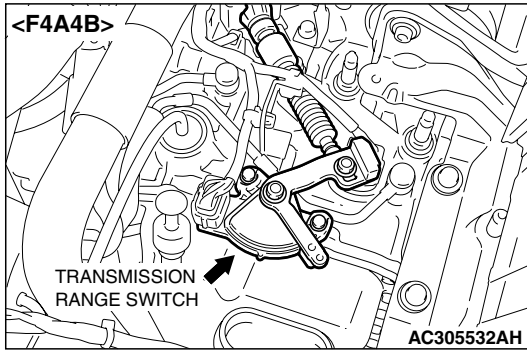
STEP 38. Check harness for open circuit or short circuit to ground between PCM connector B-21 terminal 75 and transmission range switch connector B-110 terminal 2.

Q: Is the harness wire in good condition?

YES : Go to Step 5.

NO : Repair or replace the harness wire.





STEP 39. Check the transmission range switch.

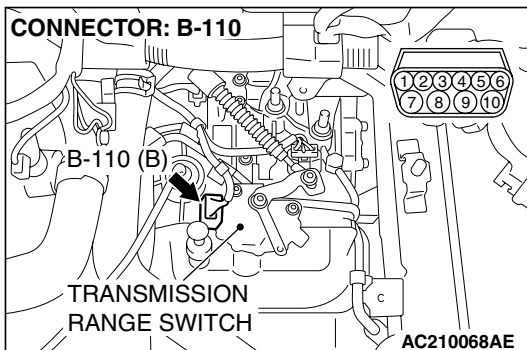
Measure the resistance between the terminals for each transmission range as indicated in the table below.

TRANSMISSION RANGE	TERMINAL CONNECTION OF TESTER	SPECIFIED CONDITION
P	3 – 8, 9 – 10	Less than 2 ohms.
R	7 – 8	
N	4 – 8, 9 – 10	
D	1 – 8	
3	5 – 8	
2	2 – 8	
L	6 – 8	

Q: Is the measured resistance less than 2 ohms for each transmission range?

YES : Go to Step 40.

NO : Replace the transmission range switch. Refer to GROUP 23B, Transaxle [P.23B-10](#).



STEP 40. Check transmission range switch connector B-110 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

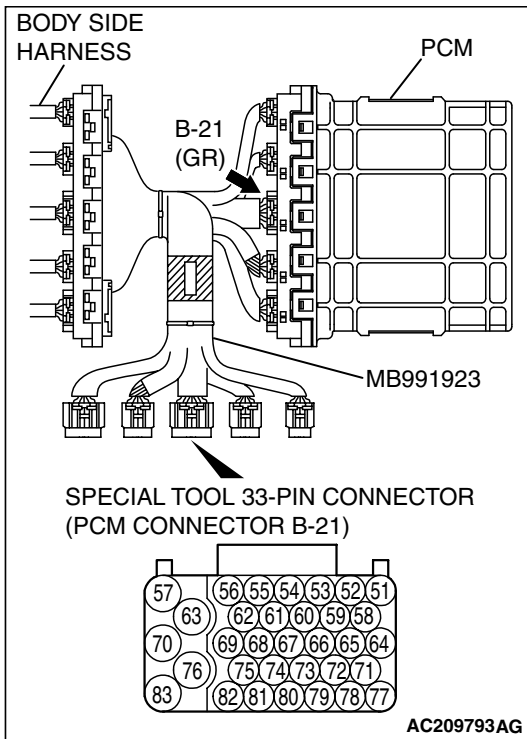
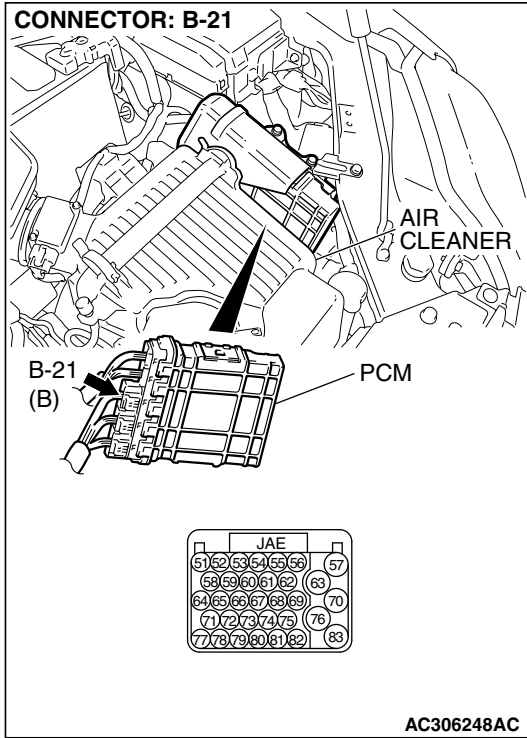
Q: Are the connector and terminals in good condition?

YES : Go to Step 41.

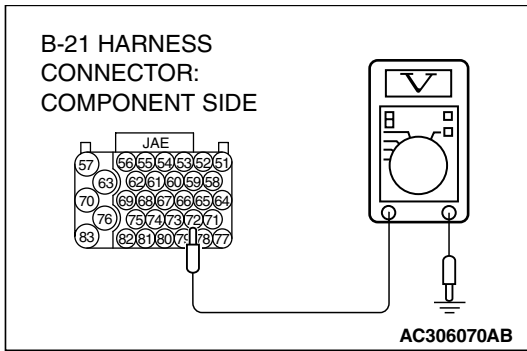
NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#).

STEP 41. Measure the transmission range switch output voltage at PCM connector B-21 by using check harness special tool MB991923.

(1) Disconnect all the connectors from the PCM.



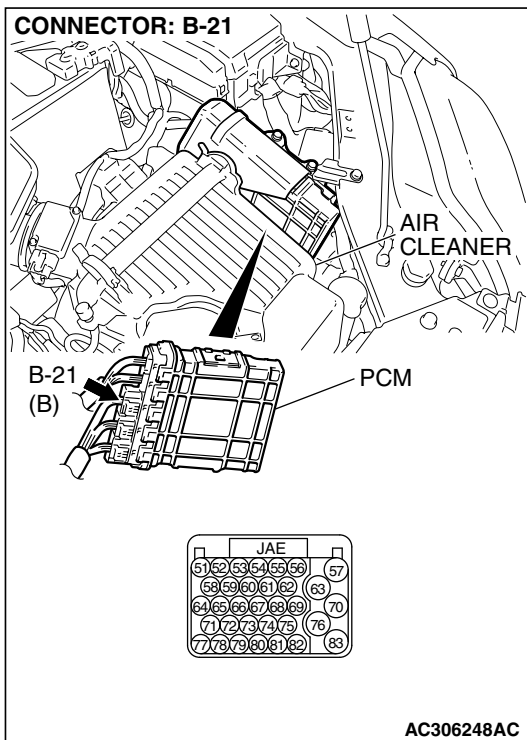
- (2) Connect special tool MB991923 (check harness) between the PCM and the body-side harness connector.
- (3) Turn the ignition switch to the "ON" position.
- (4) Move the selector lever to the "L" position.



- (5) Measure the voltage between terminal 72 and ground.
 • The voltage should measure battery positive voltage.
 (6) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the measured voltage battery positive voltage?

- YES :** Go to Step 11.
NO : Go to Step 42.



STEP 42. Check PCM connector B-21 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connector and terminals in good condition?

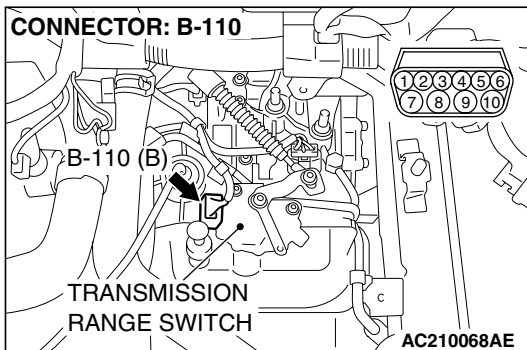
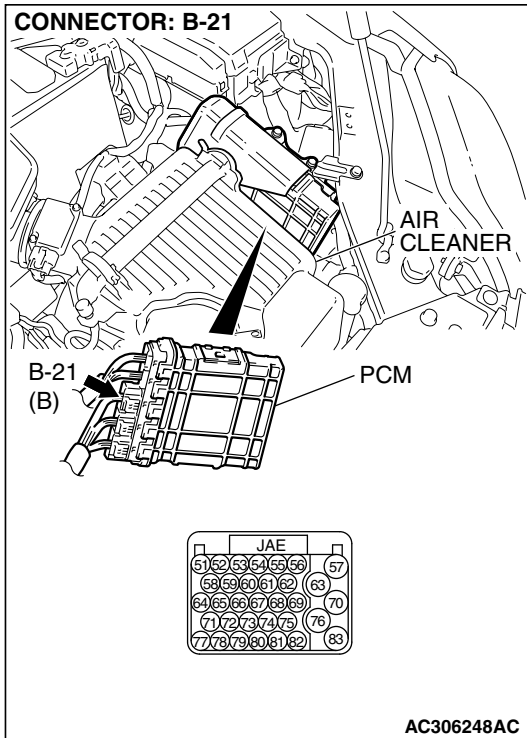
- YES :** Go to Step 43.
NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#).

STEP 43. Check harness for open circuit or short circuit to ground between PCM connector B-21 terminal 72 and transmission range switch connector B-110 terminal 6.

Q: Is the harness wire in good condition?

YES : Go to Step 5.

NO : Repair or replace the harness wire.



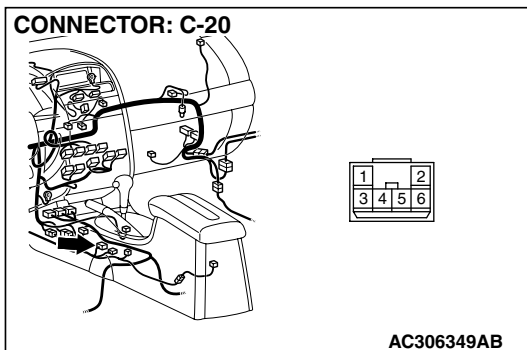
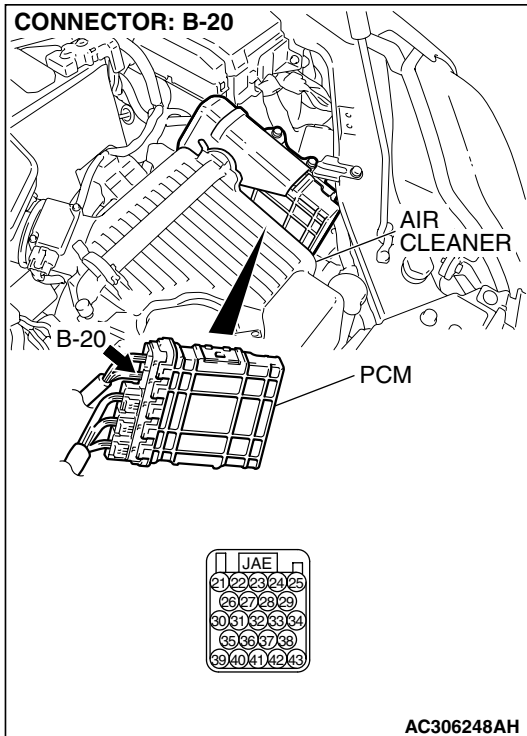
STEP 44. Check PCM connector B-20 and shift switch assembly connector C-20 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connector and terminals in good condition?

YES : Go to Step 45.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

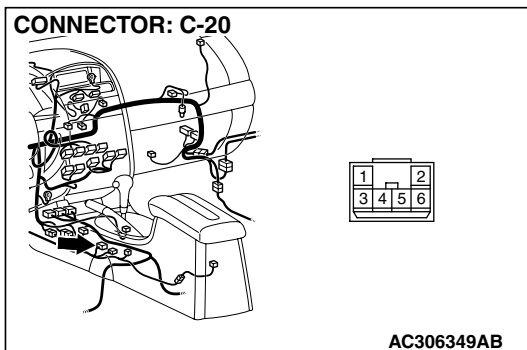
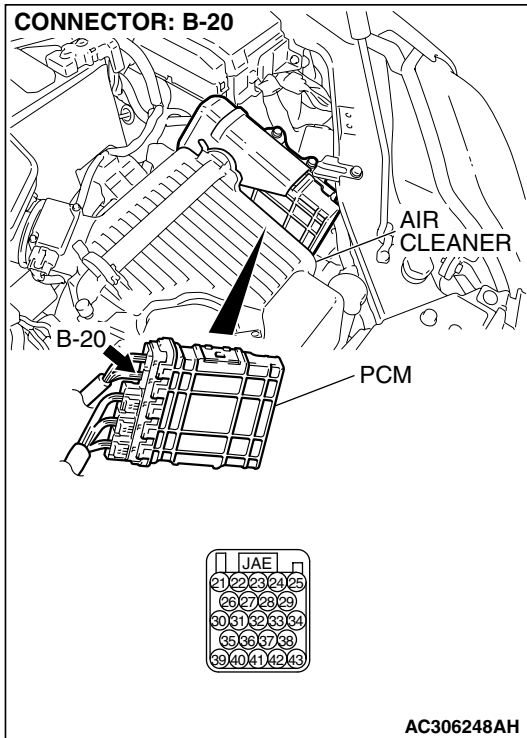


STEP 45 . Check harness for short circuit to ground between PCM connector B-20 terminal 39 and shift switch assembly connector C-20 terminal 3.

Q: Is the harness wire in good condition?

YES : Go to Step 5.

NO : Repair or replace the harness wire.



DTC 28 (P0705): Transmission Range Switch System (Short Circuit)

⚠ CAUTION

If DTC 28 (P0705) has been set, TCL related DTC C1397 is also set. After DTC 28 (P0705) has been diagnosed, don't forget to erase DTC C1397.

**TRANSMISSION RANGE SWITCH
SYSTEM CIRCUIT**

Refer to [P.23A-120](#).

CIRCUIT OPERATION

Refer to [P.23A-120](#).

DESCRIPTIONS OF MONITOR METHODS

- If two types or more of signals are input from transmission range switch for more than 30 seconds, PCM judges that transmission range switch has a failure.

MONITOR EXECUTION

- Continuous

**MONITOR EXECUTION CONDITIONS
(OTHER MONITOR AND SENSOR)**

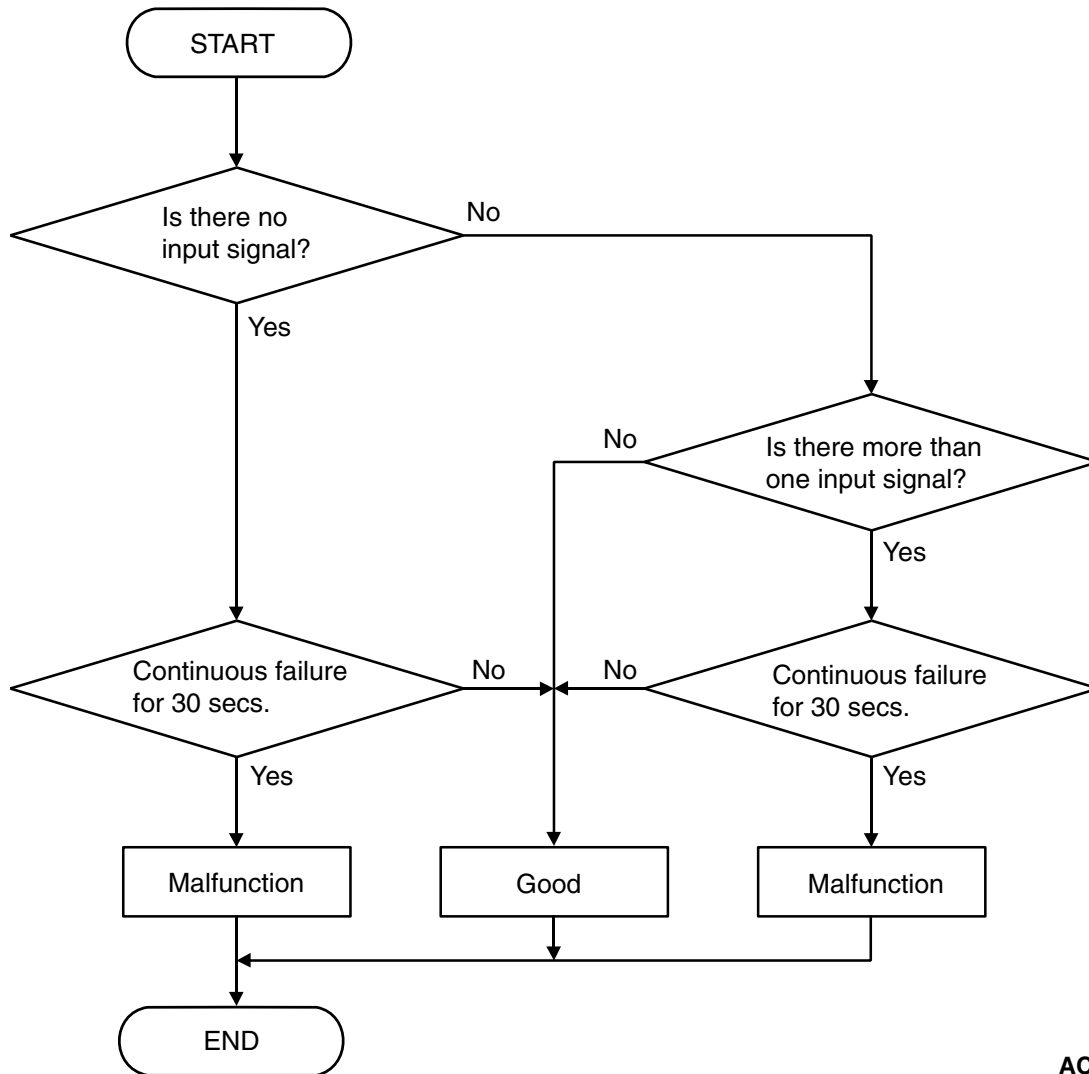
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- Not applicable

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



AC205064

DTC SET CONDITIONS

Check Conditions, Judgement Criteria

- Transmission range switch: multiple signal. (30 seconds)

OBD-II DRIVE CYCLE PATTERN

Start the engine, keep the vehicle stopped in "P," "R," "N," "D," "3," "2" and "L" ranges respectively for more than one minute, and turn "LOCK" (OFF) the ignition switch. Then restart the engine, and stop the vehicle in "P," "R," "N," "D," "3," "2" and "L" ranges respectively for more than one minute.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the transmission range switch circuit
- Damaged harness or connector
- Malfunction of the PCM

DIAGNOSIS

Required Special Tool:

- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: MUT-III USB Cable
 - MB991910: MUT-III Main harness A

STEP 1. Check the transmission range switch.

Measure the resistance between the terminals for each transmission range as indicated in the table below.

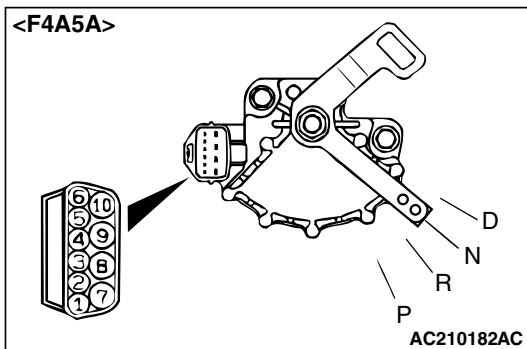
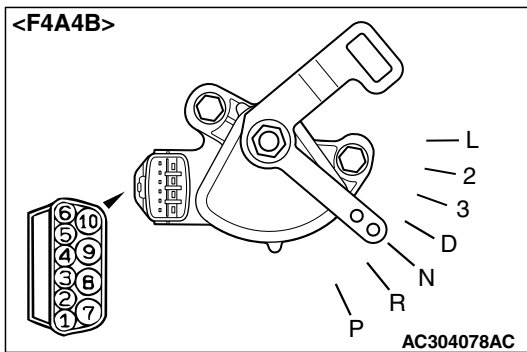
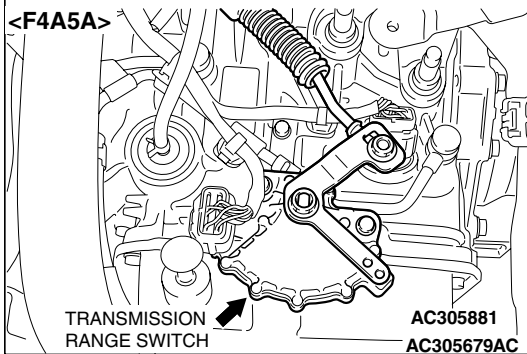
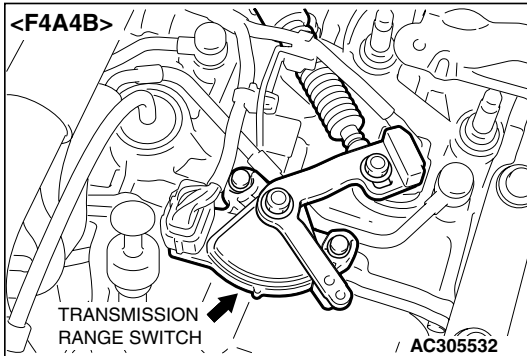
TRANSMISSION RANGE	TERMINAL CONNECTION OF TESTER	SPECIFIED CONDITION
P	3 – 8, 9 – 10	Less than 2 ohms.
R	7 – 8	
N	4 – 8, 9 – 10	
D	1 – 8	
3	5 – 8	
2	2 – 8	
L	6 – 8	

NOTE: For vehicles with sport mode, four positions (P, R, N, D) are used.

Q: Does the resistance measure less than 2 ohms for each selector position?

YES : Go to Step 2.

NO : Replace the transmission range switch. Refer to GROUP 23B, Transaxle [P.23B-10](#).

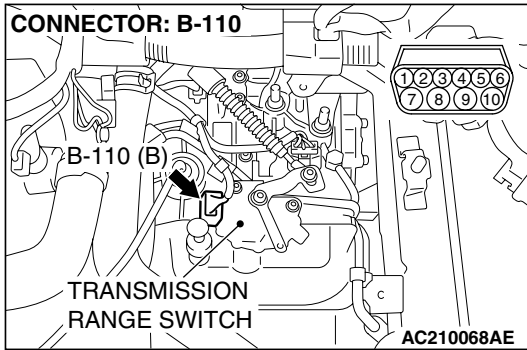


STEP 2. Check transmission range switch connector B-110 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connector and terminals in good condition?

YES : Go to Step 3.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#).

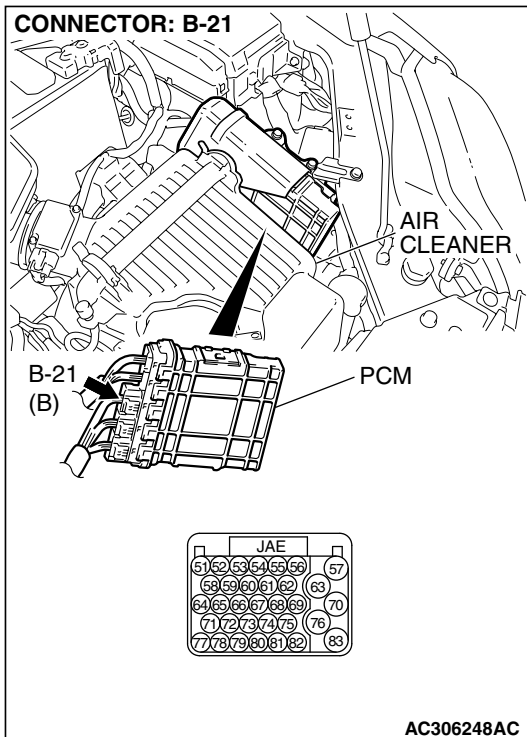


STEP 3. Check PCM connector B-21 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connector and terminals in good condition?

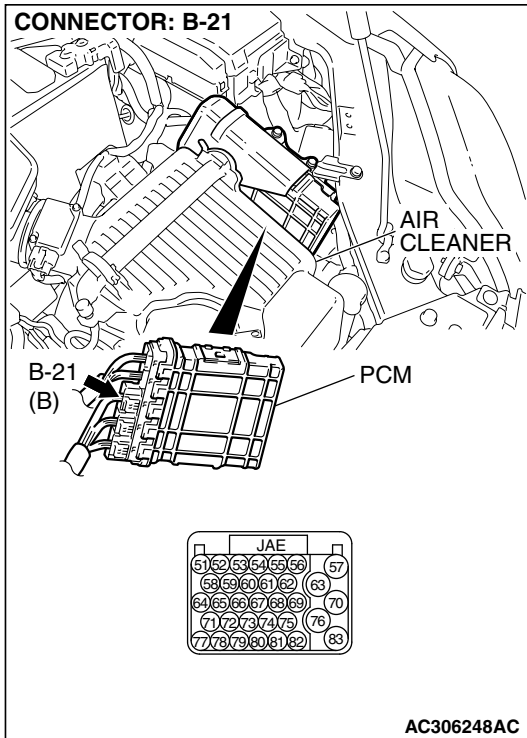
YES : Go to Step 4.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#).

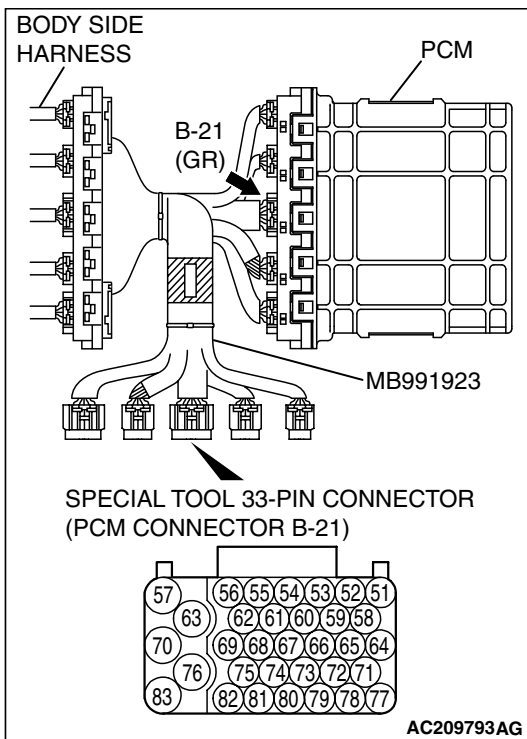


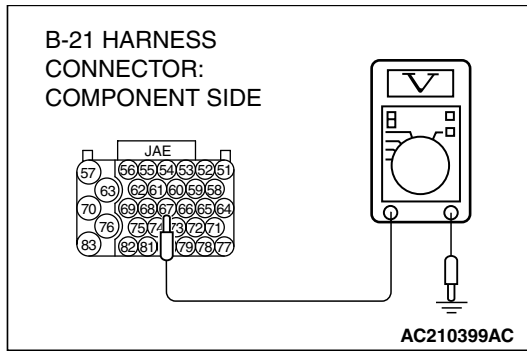
STEP 4. Measure the transmission range switch output voltage at PCM connector B-21 by using check harness special tool MB991923. ("P" position)

(1) Disconnect all the connectors from the PCM.



- (2) Connect special tool MB991923 (check harness) between the PCM and the body-side harness connector.
- (3) Turn the ignition switch to the "ON" position.





- (4) Measure the voltage between terminal 67 and ground.
- When transmission range is "P," voltage should equal battery positive voltage.
 - When transmission range is "R," voltage should measure 0.5 volt or less.
 - When transmission range is "N," voltage should measure 0.5 volt or less.
 - When transmission range is "D," voltage should measure 0.5 volt or less.
 - When transmission range is "3," voltage should measure 0.5 volt or less. <Vehicles without sport mode>
 - When transmission range is "2," voltage should measure 0.5 volt or less. <Vehicles without sport mode>
 - When transmission range is "L," voltage should measure 0.5 volt or less. <Vehicles without sport mode>
 - When transmission range is sport mode, voltage should measure 0.5 volt or less. <Vehicles with sport mode>

Q: Is the measured voltage within the specified range?

YES : Go to Step 6.

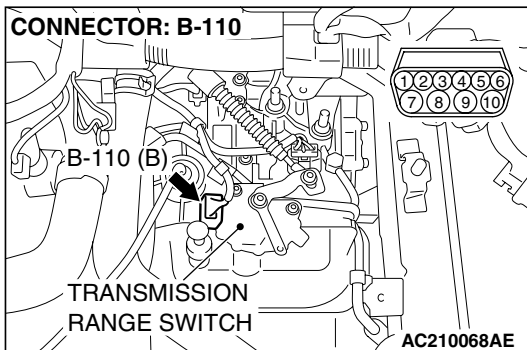
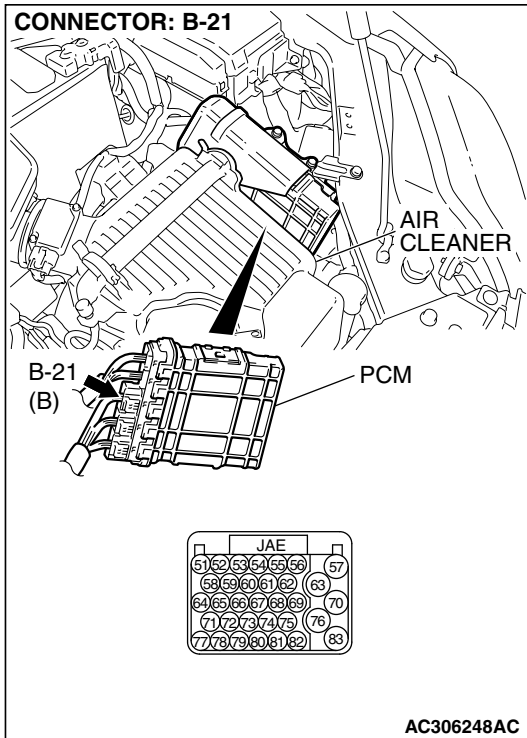
NO : Turn the ignition switch to the "LOCK" (OFF) position.
Go to Step 5.

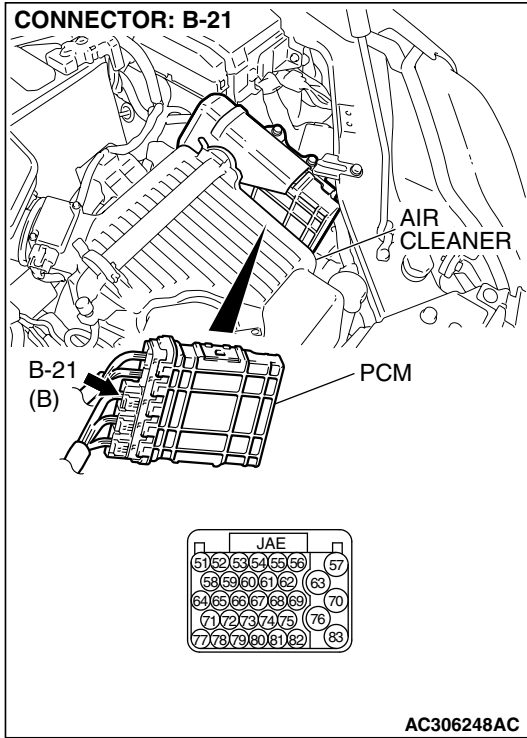
STEP 5. Check harness for damage between PCM connector B-21 terminal 67 and transmission range switch connector B-110 terminal 3.

Q: Is the harness wire in good condition?

YES : Go to Step 20.

NO : Repair or replace the harness wire.





STEP 6. Measure the transmission range switch output voltage at PCM connector B-21 by using check harness special tool MB991923. ("R" position)

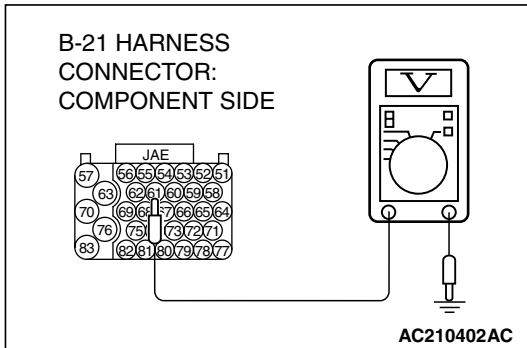
Measure the voltage between terminal 61 and ground.

- When transmission range is "P," voltage should measure 0.5 volt or less.
- When transmission range is "R," voltage should equal battery positive voltage.
- When transmission range is "N," voltage should measure 0.5 volt or less.
- When transmission range is "D," voltage should measure 0.5 volt or less.
- When transmission range is "3," voltage should measure 0.5 volt or less. <Vehicles without sport mode>
- When transmission range is "2," voltage should measure 0.5 volt or less. <Vehicles without sport mode>
- When transmission range is "L," voltage should measure 0.5 volt or less. <Vehicles without sport mode>
- When transmission range is sport mode, voltage should measure 0.5 volt or less. <Vehicles with sport mode>

Q: Is the measured voltage within the specified range?

YES : Go to Step 8.

NO : Turn the ignition switch to the "LOCK" (OFF) position. Go to Step 7.

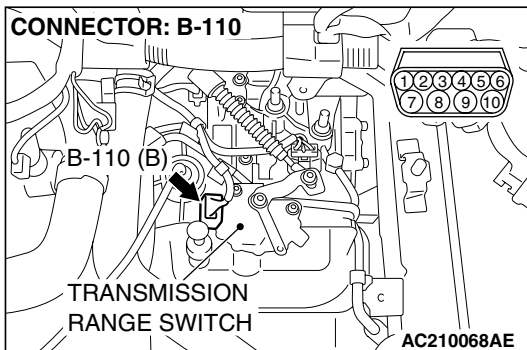
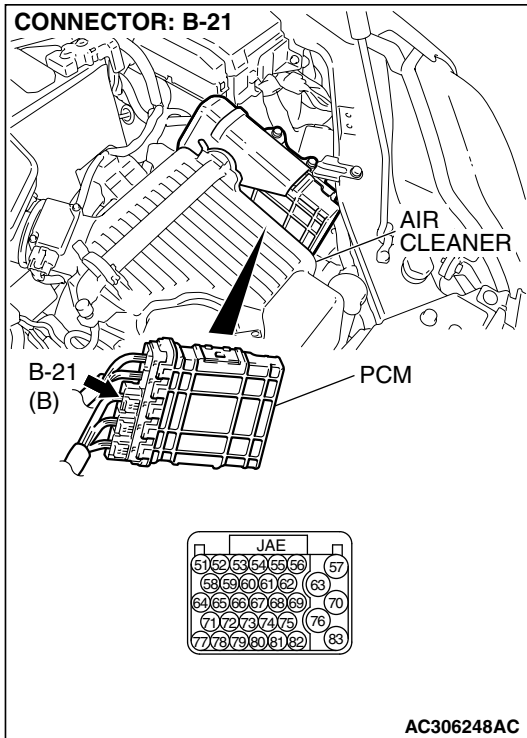


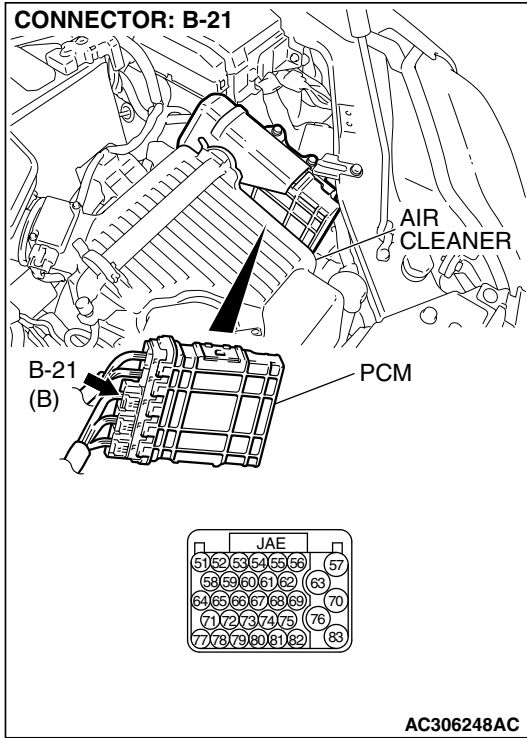
STEP 7. Check the harness for damage between PCM connector B-21 terminal 61 and transmission range switch connector B-110 terminal 7.

Q: Is the harness wire in good condition?

YES : Go to Step 20.

NO : Repair or replace the harness wire.





STEP 8. Measure the transmission range switch output voltage at PCM connector B-21 by using check harness special tool MB991923. ("N" position)

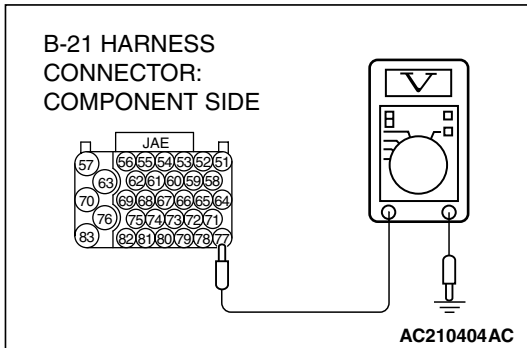
Measure the voltage between terminal 77 and ground.

- When transmission range is "P," voltage should measure 0.5 volt or less.
- When transmission range is "R," voltage should measure 0.5 volt or less.
- When transmission range is "N," voltage should equal battery positive voltage.
- When transmission range is "D," voltage should measure 0.5 volt or less.
- When transmission range is "3," voltage should measure 0.5 volt or less. <Vehicles without sport mode>
- When transmission range is "2," voltage should measure 0.5 volt or less. <Vehicles without sport mode>
- When transmission range is "L," voltage should measure 0.5 volt or less. <Vehicles without sport mode>
- When transmission range is sport mode, voltage should measure 0.5 volt or less. <Vehicles with sport mode>

Q: Is the measured voltage within the specified range?

YES : Go to Step 10.

NO : Turn the ignition switch to the "LOCK" (OFF) position. Go to Step 9.

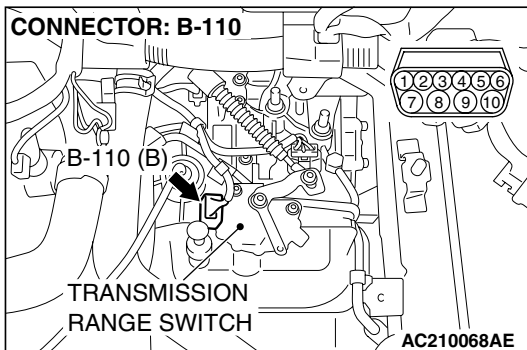
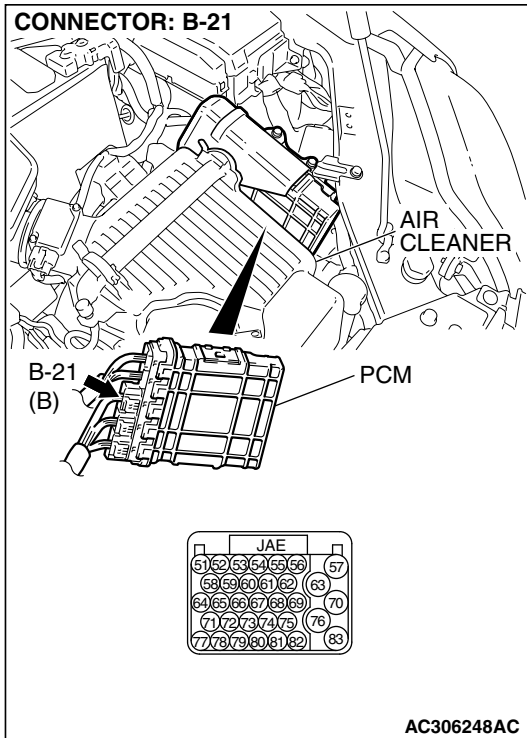


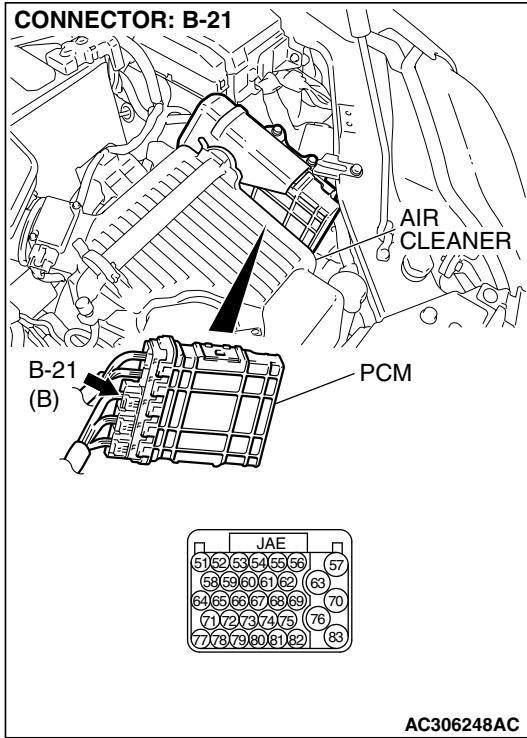
STEP 9. Check the harness for damage between PCM connector B-21 terminal 77 and transmission range switch connector B-110 terminal 4.

Q: Is the harness wire in good condition?

YES : Go to Step 20.

NO : Repair or replace the harness wire.





STEP 10. Measure the transmission range switch output voltage at PCM connector B-21 by using check harness special tool MB991923. ("D" position)

Measure the voltage between terminal 73 and ground.

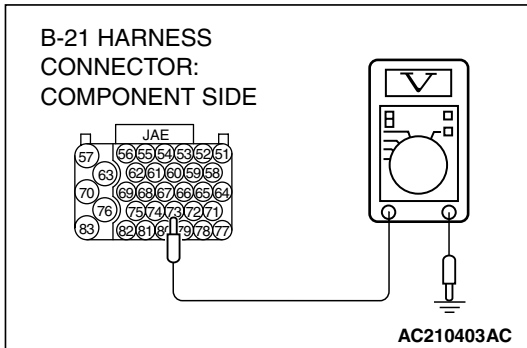
- When transmission range is "P," voltage should measure 0.5 volt or less.
- When transmission range is "R," voltage should measure 0.5 volt or less.
- When transmission range is "N," voltage should measure 0.5 volt or less.
- When transmission range is "D," voltage should equal battery positive voltage.
- When transmission range is "3," voltage should measure 0.5 volt or less. <Vehicles without sport mode>
- When transmission range is "2," voltage should measure 0.5 volt or less. <Vehicles without sport mode>
- When transmission range is "L," voltage should measure 0.5 volt or less. <Vehicles without sport mode>
- When transmission range is sport mode, voltage should equal battery positive voltage. <Vehicles with sport mode>

Q: Is the measured voltage within the specified range?

YES <Vehicles without sport mode> : Go to Step 14.

YES <Vehicles with sport mode> : Go to Step 20.

NO : Turn the ignition switch to the "LOCK" (OFF) position.
Go to Step 11.



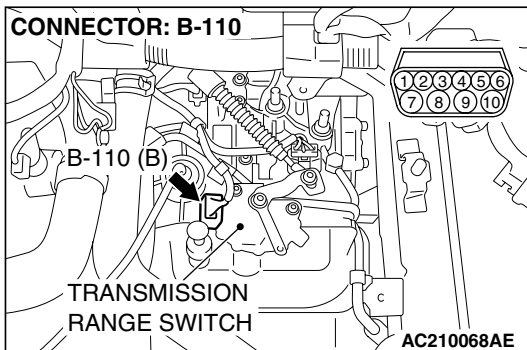
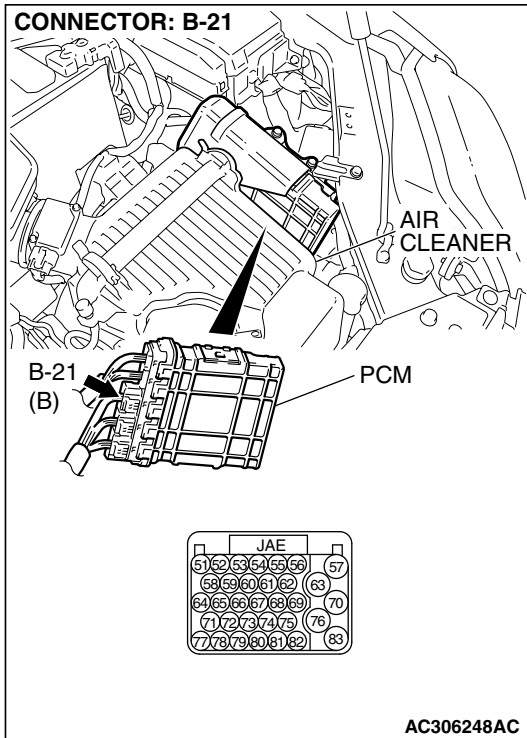
STEP 11. Check the harness for damage between PCM connector B-21 terminal 73 and transmission range switch connector B-110 terminal 1.

Q: Is the harness wire in good condition?

YES <Vehicles without sport mode> : Go to Step 20.

YES <Vehicles with sport mode> : Go to Step 12.

NO : Repair or replace the harness wire.



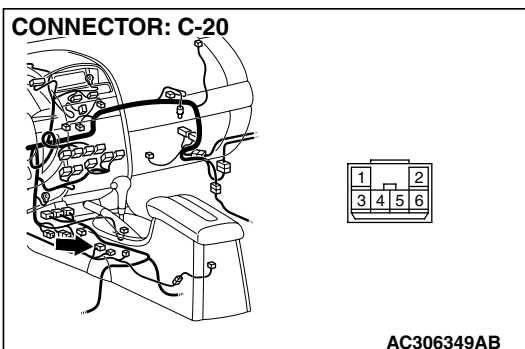
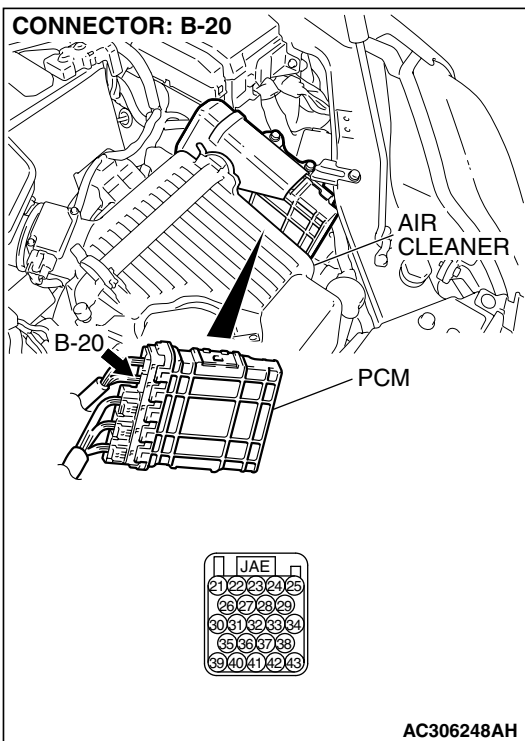
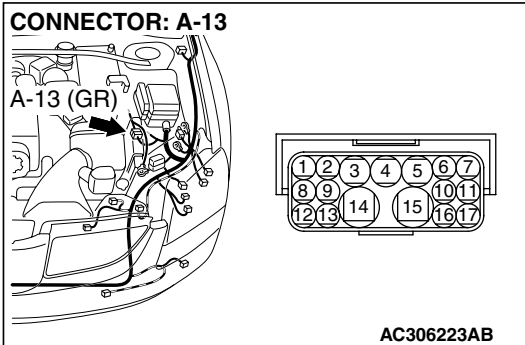
STEP 12. Check intermediate connector A-13, PCM connector B-20 and shift switch assembly connector C-20 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connectors and terminals in good condition?

YES : Go to Step 13.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

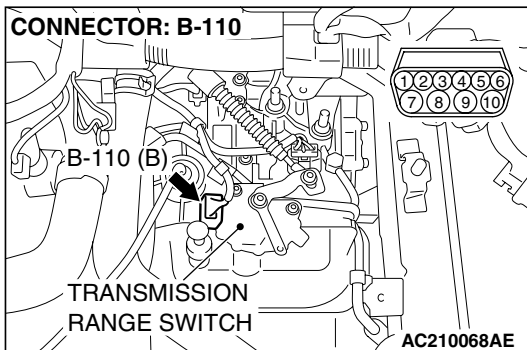
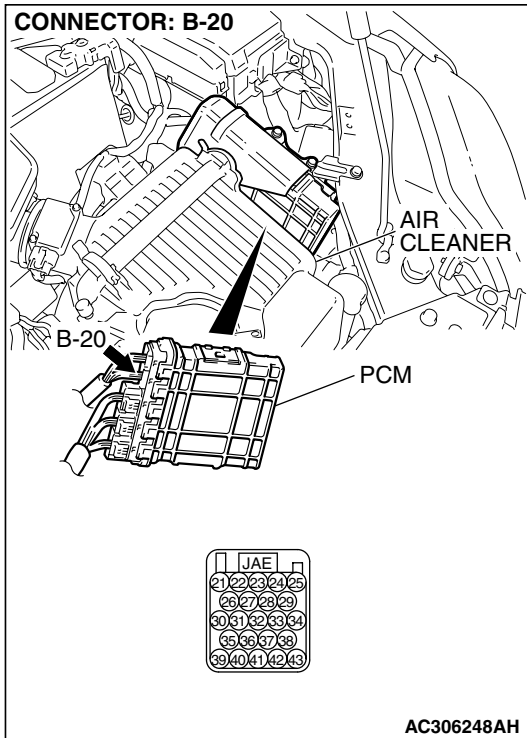


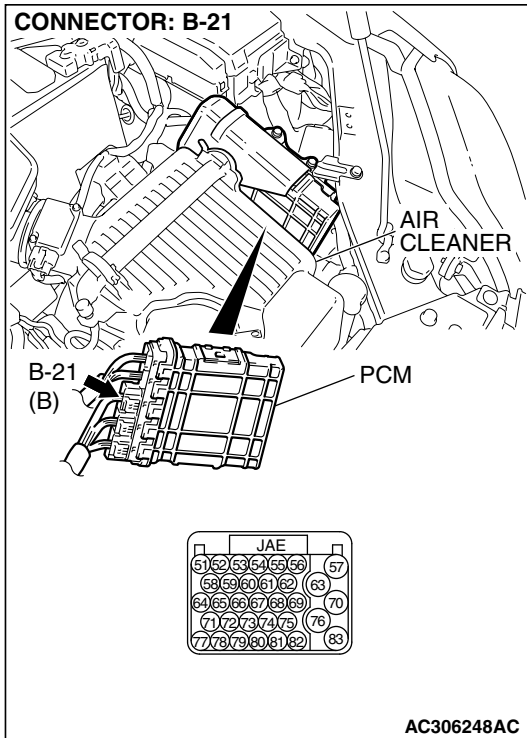
STEP 13. Check the harness for damage between PCM connector B-20 terminal 39 and transmission range switch connector B-110 terminal 1.

Q: Is the harness wire in good condition?

YES : Go to Step 20.

NO : Repair or replace the harness wire.





STEP 14. Measure the transmission range switch output voltage at PCM connector B-21 by using check harness special tool MB991923. ("3" position)

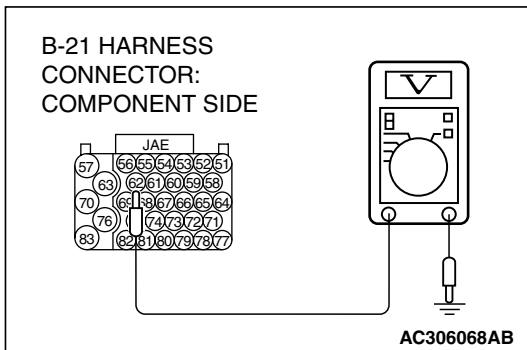
Measure the voltage between terminal 62 and ground.

- When transmission range is "P," voltage should measure 0.5 volt or less.
- When transmission range is "R," voltage should measure 0.5 volt or less.
- When transmission range is "N," voltage should measure 0.5 volt or less.
- When transmission range is "D," voltage should measure 0.5 volt or less.
- When transmission range is "3," voltage should equal battery positive voltage.
- When transmission range is "2," voltage should measure 0.5 volt or less.
- When transmission range is "L," voltage should measure 0.5 volt or less.

Q: Is the measured voltage within the specified range?

YES : Go to Step 16.

NO : Turn the ignition switch to the "LOCK" (OFF) position. Go to Step 15.

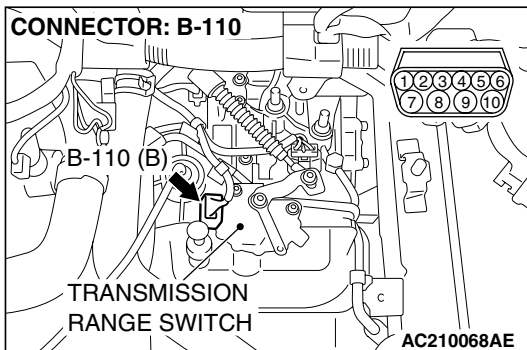
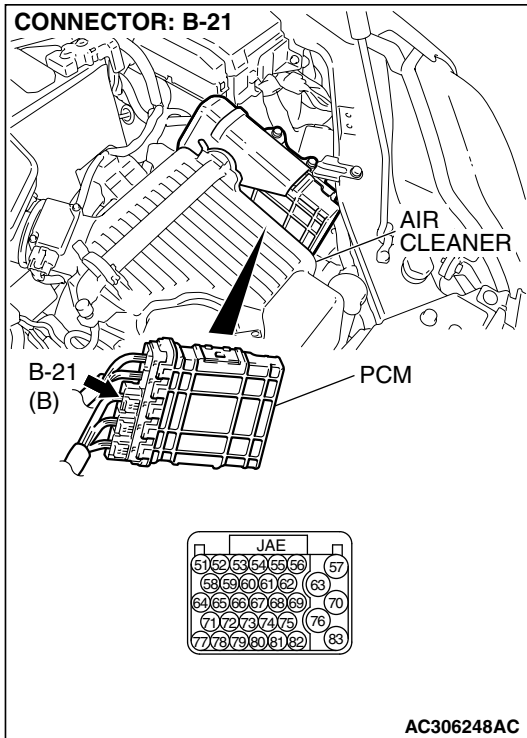


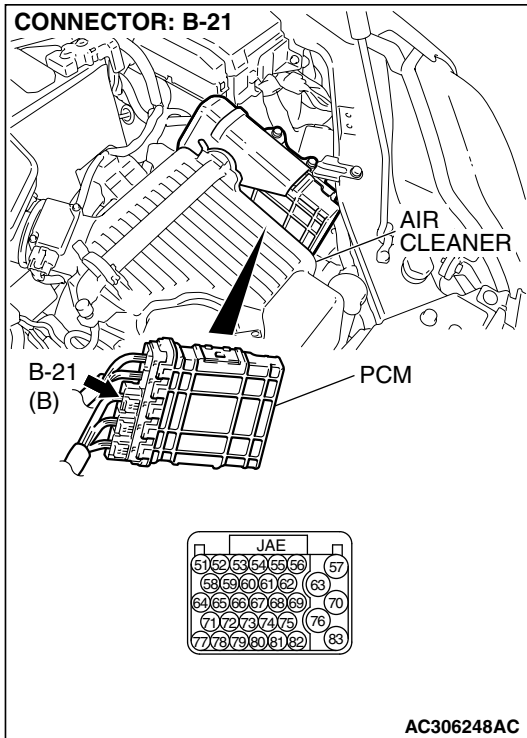
STEP 15. Check the harness for damage between PCM connector B-21 terminal 62 and transmission range switch connector B-110 terminal 5.

Q: Is the harness wire in good condition?

YES : Go to Step 20.

NO : Repair or replace the harness wire.





STEP 16. Measure the transmission range switch output voltage at PCM connector B-21 by using check harness special tool MB991923. ("2" position)

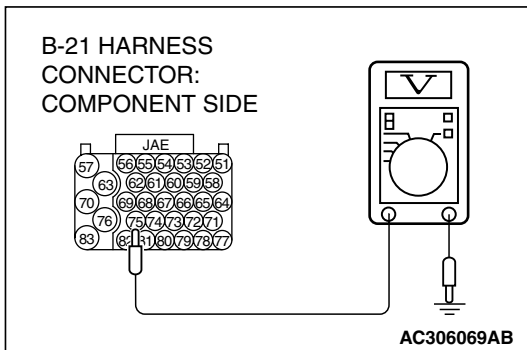
Measure the voltage between terminal 75 and ground.

- When transmission range is "P," voltage should measure 0.5 volt or less.
- When transmission range is "R," voltage should measure 0.5 volt or less.
- When transmission range is "N," voltage should measure 0.5 volt or less.
- When transmission range is "D," voltage should measure 0.5 volt or less.
- When transmission range is "3," voltage should measure 0.5 volt or less.
- When transmission range is "2," voltage should equal battery positive voltage.
- When transmission range is "L," voltage should measure 0.5 volt or less.

Q: Is the measured voltage within the specified range?

YES : Go to Step 18.

NO : Turn the ignition switch to the "LOCK" (OFF) position. Go to Step 17.

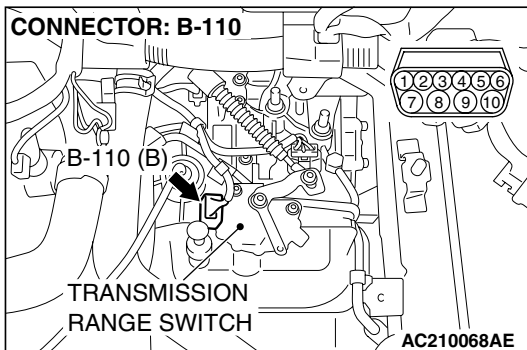
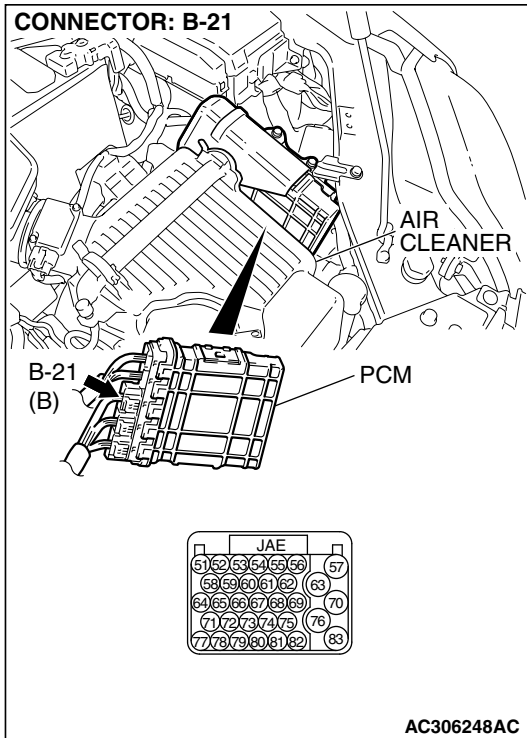


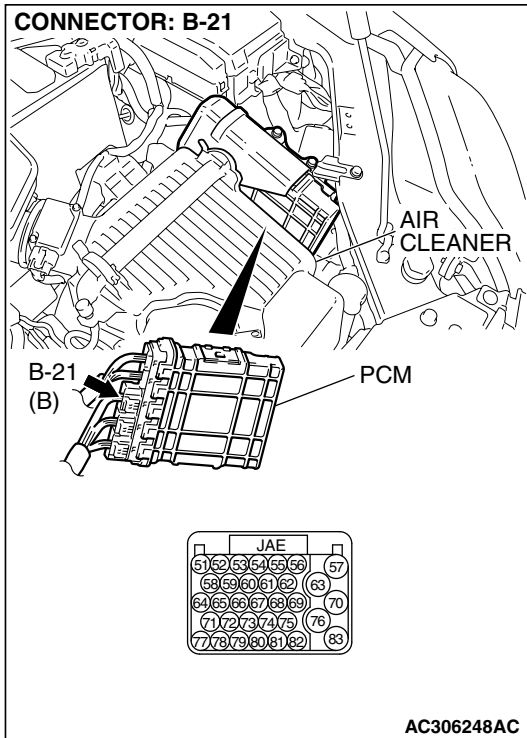
STEP 17. Check the harness for damage between PCM connector B-21 terminal 75 and transmission range switch connector B-110 terminal 2.

Q: Is the harness wire in good condition?

YES : Go to Step 20.

NO : Repair or replace the harness wire.





STEP 18. Measure the transmission range switch output voltage at PCM connector B-21 by using check harness special tool MB991923. ("L" position)

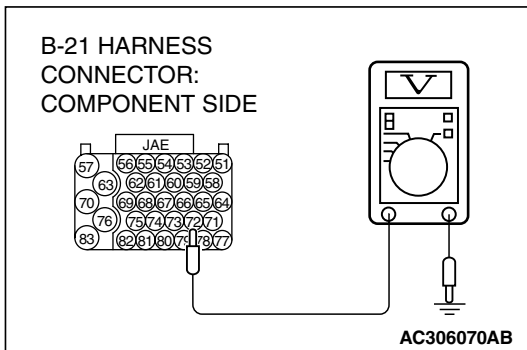
Measure the voltage between terminal 72 and ground.

- When transmission range is "P," voltage should measure 0.5 volt or less.
- When transmission range is "R," voltage should measure 0.5 volt or less.
- When transmission range is "N," voltage should measure 0.5 volt or less.
- When transmission range is "D," voltage should measure 0.5 volt or less.
- When transmission range is "3," voltage should measure 0.5 volt or less.
- When transmission range is "2," voltage should measure 0.5 volt or less.
- When transmission range is "L," voltage should equal battery positive voltage.

Q: Is the measured voltage within the specified range?

YES : Go to Step 20.

NO : Turn the ignition switch to the "LOCK" (OFF) position. Go to Step 19.

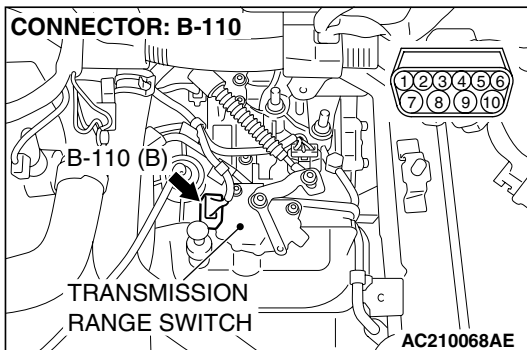
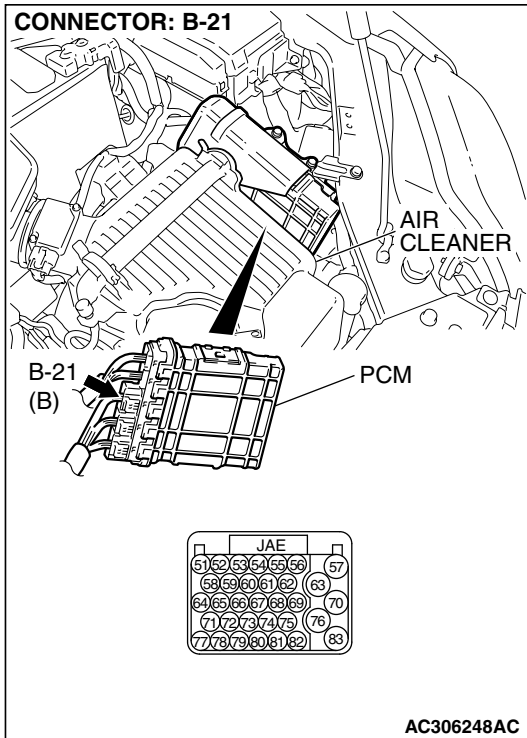


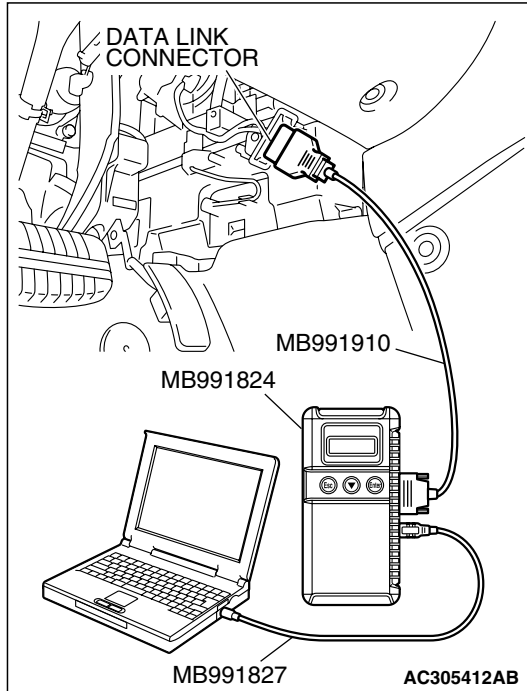
STEP 19. Check the harness for damage between PCM connector B-21 terminal 72 and transmission range switch connector B-110 terminal 6.

Q: Is the harness wire in good condition?

YES : Go to Step 20.

NO : Repair or replace the harness wire.





STEP 20. Using scan tool MB991958, check data list item 61: Transmission Range Switch.

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

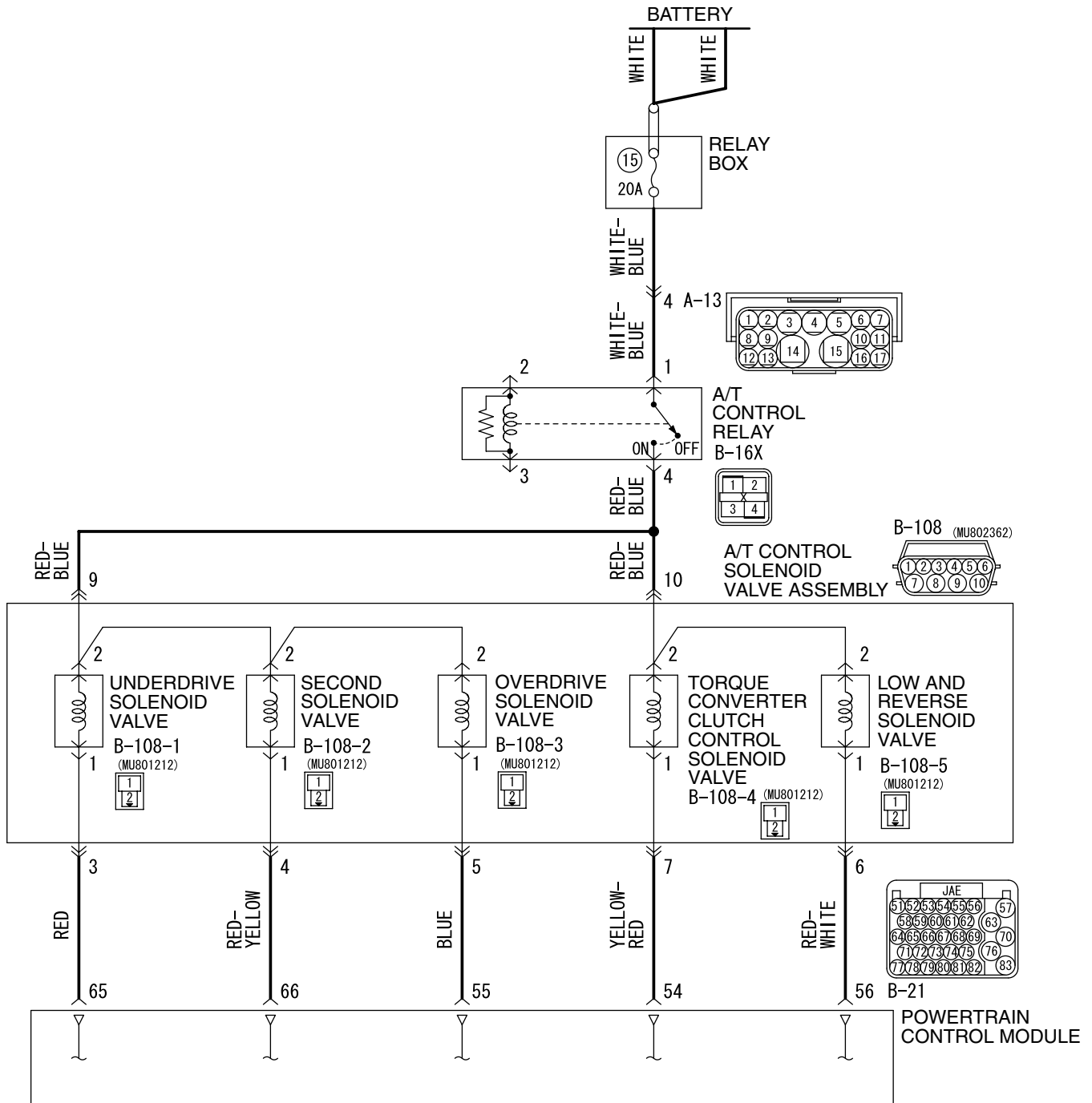
- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Set scan tool MB991958 to data reading mode.
 - Item 61: Transmission Range Switch.
 - Move the selector lever to "P," "R," "N," "D" and sport mode positions and confirm that the selected transmission ranges match the positions. (Sport mode is indicated as "D" on the scan tool MB991958).
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the switch operating properly?

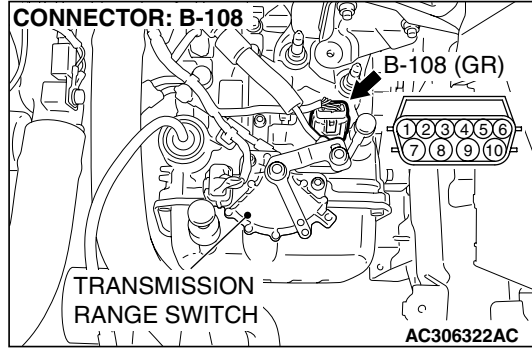
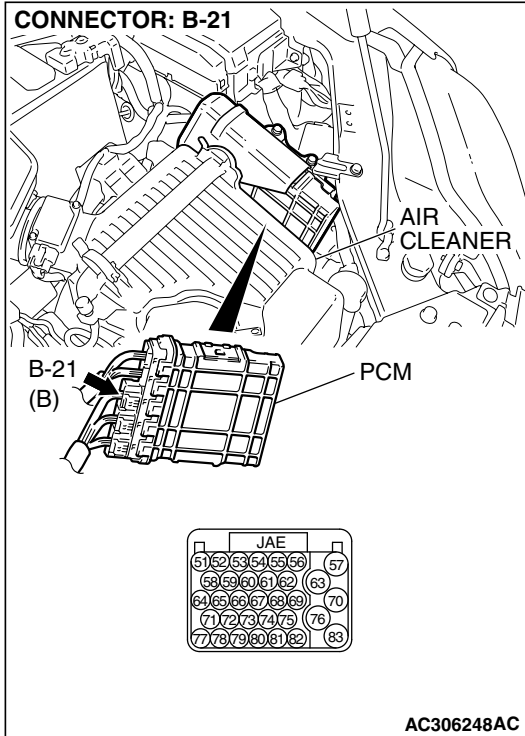
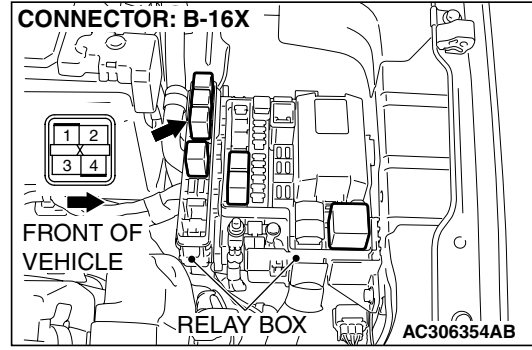
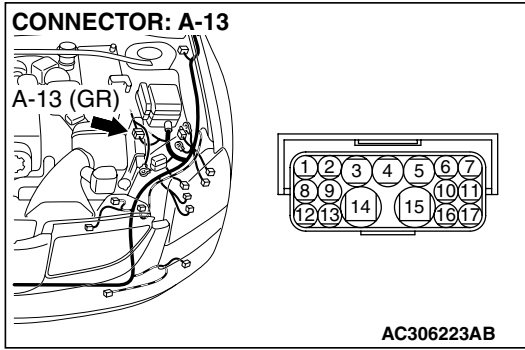
- YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction [P.00-14](#).
- NO :** Replace the PCM.

DTC 31 (P0753): Low-Reverse Solenoid Valve System

Solenoid Valve System Circuit



W4P06M06AA
AC209759AC



CIRCUIT OPERATION

- The A/T control relay supplies battery positive voltage to the solenoid valve assembly (terminals 9 and 10).
- The solenoid valve closes when energized (on), and opens when not energized (off). The PCM energizes the solenoid valve based on input data from sensors such as the Throttle Position Sensor, Transmission Range Switch, Stoplight Switch, Input Shaft Speed Sensor, Output Shaft Speed Sensor, and Transmission Fluid Temperature Sensor.
- The PCM provides the ground to energize the solenoid. The amount of time that the circuit is grounded is displayed on scan tool MB991958 in percent.
- When the solenoid is energized or de-energized, fluid passes through the valve body and transaxle passages to apply and release components.

DESCRIPTIONS OF MONITOR METHODS

- If solenoid terminal voltage is below specified value when shift control is not in progress, PCM judges that low-reverse solenoid valve has a failure.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

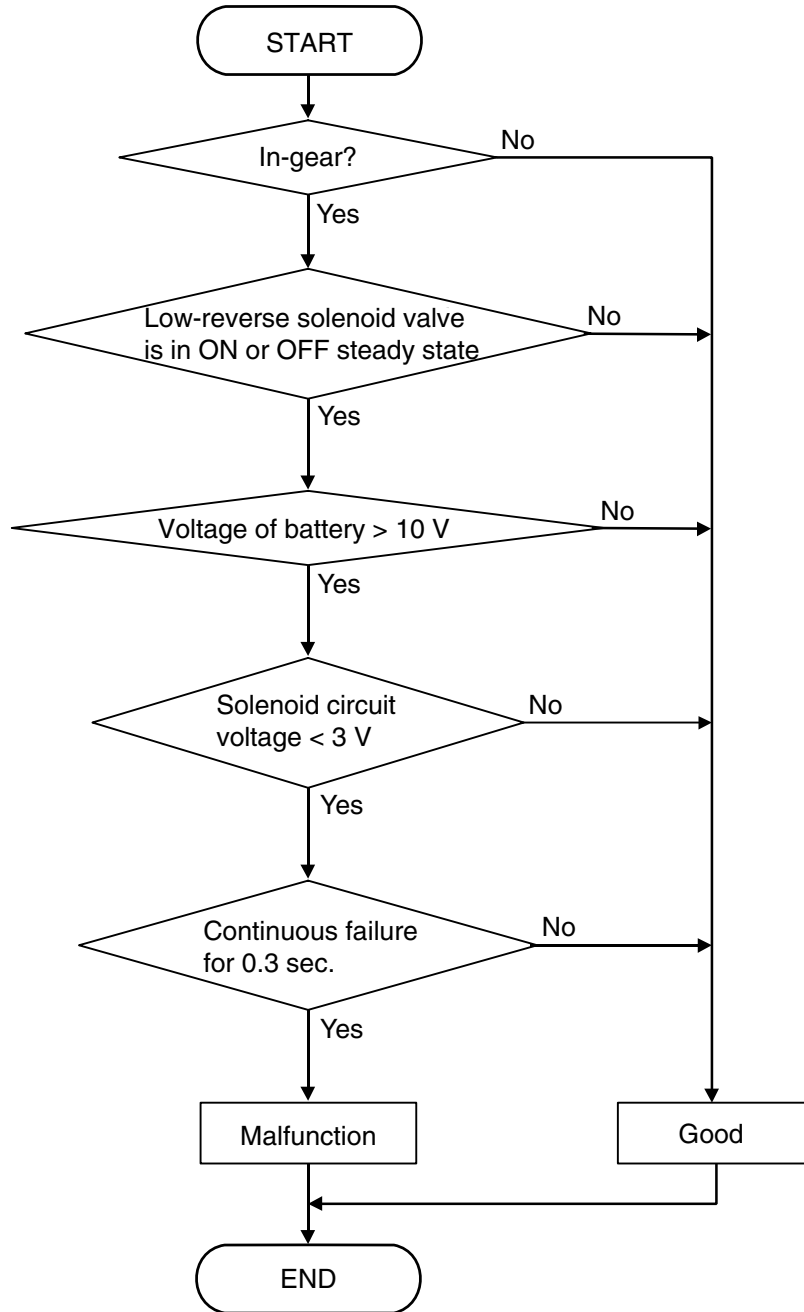
- DTC 41 (P0731): 1st gear incorrect ratio
- DTC 42 (P0732): 2nd gear incorrect ratio
- DTC 43 (P0733): 3rd gear incorrect ratio

- DTC 44 (P0734): 4th gear incorrect ratio
- DTC 46 (P0736): Reverse gear incorrect ratio
- DTC 36 (P0743): Torque converter clutch solenoid malfunction
- DTC 32 (P0758): Underdrive solenoid malfunction
- DTC 33 (P0763): Second solenoid malfunction
- DTC 34 (P0768): Overdrive solenoid malfunction
- DTC 54 (P1751): A/T control relay malfunction

Sensor (The sensor below is determined to be normal)

- Torque converter clutch solenoid
- Underdrive solenoid
- Second solenoid
- Overdrive solenoid
- A/T control relay

LOGIC FLOW CHARTS (Monitor Sequence)



AC205281AB

DTC SET CONDITIONS

Check Conditions

- Solenoid status: either solid ON or OFF.
- Shift status: in-gear.
- Voltage of battery: 10 volts or more.

Judgement Criteria

- Solenoid voltage: 3 volts or less. (0.3 second)
- If DTC 31 (P0753) is set consecutively four times, the transaxle is locked into 3rd gear as a fail-safe measure, and the "N" range light flashes once per second.

OBD-II DRIVE CYCLE PATTERN

Start the engine, and keep the vehicle stopped in "P" range for 5 seconds.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the low-reverse solenoid valve
- Damaged harness or connector
- Malfunction of the PCM

DIAGNOSIS

Required Special Tool:

- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: MUT-III USB Cable
 - MB991910: MUT-III Main Harness A

STEP 1. Using scan tool MB991958, check actuator test item 01: Low-Reverse Solenoid Valve.

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

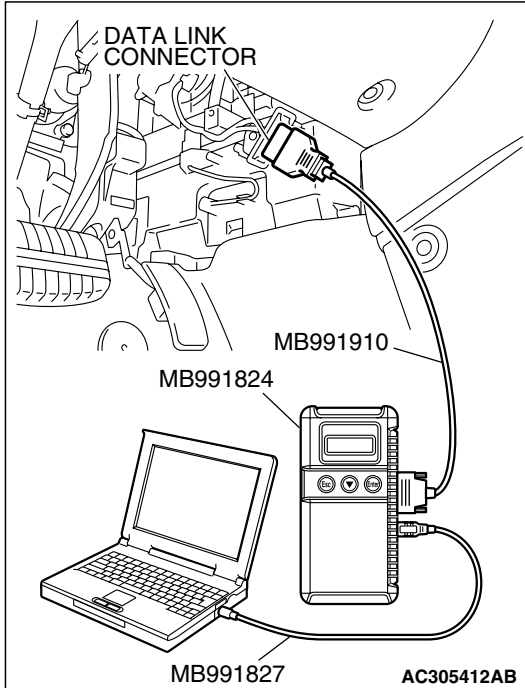
- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Set scan tool MB991958 to the actuator test mode.
 - Item 01: Low-Reverse Solenoid Valve.
 - An audible clicking or buzzing should be heard when the low-reverse solenoid valve is energized.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

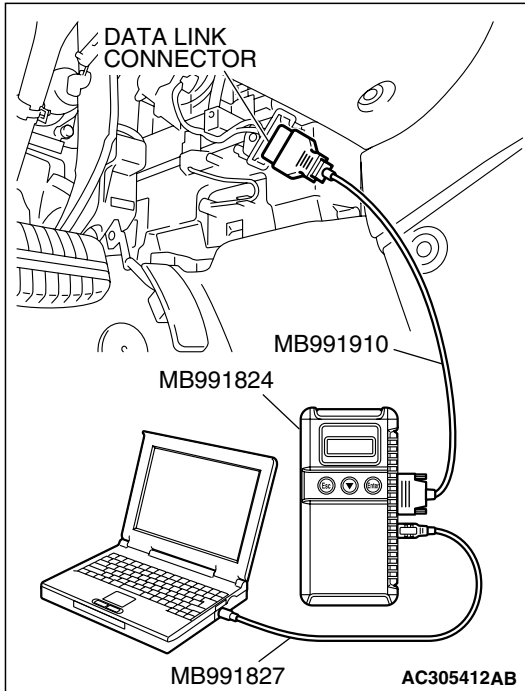
Q: Is the solenoid valve operating properly?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use

Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-14](#).

NO : Go to Step 2.





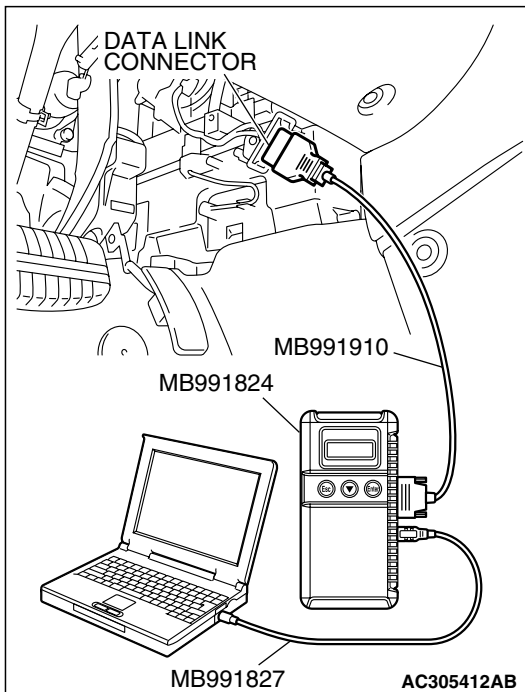
STEP 2. Using scan tool MB991958, read the A/T diagnostic trouble code.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Check for A/T diagnostic trouble code.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is DTC 54 set? (DTC 54 may be set along with multiple DTCs).

YES : Refer to [P 23A-267](#) DTC 54: A/T Control Relay System.

NO : Go to Step 3.



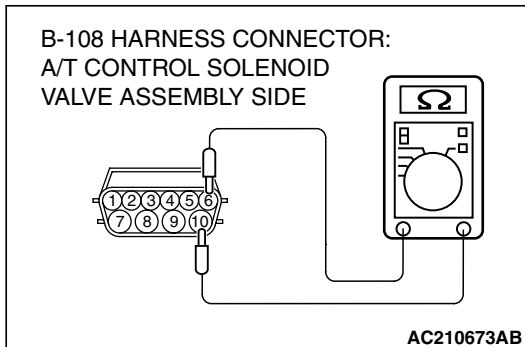
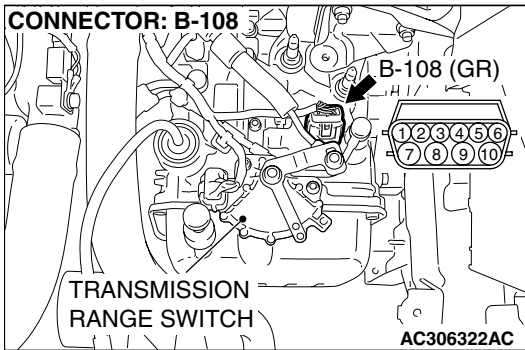
STEP 3. Using scan tool MB991958, read the A/T diagnostic trouble code.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Check for A/T diagnostic trouble code.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is DTC 36 set?

YES : Go to Step 8.

NO : Go to Step 4.



STEP 4. Measure the low-reverse solenoid valve resistance at A/T control solenoid valve assembly connector B-108.

(1) Disconnect connector B-108 and measure at the solenoid valve side.

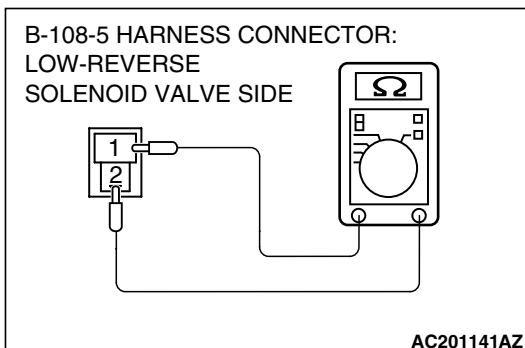
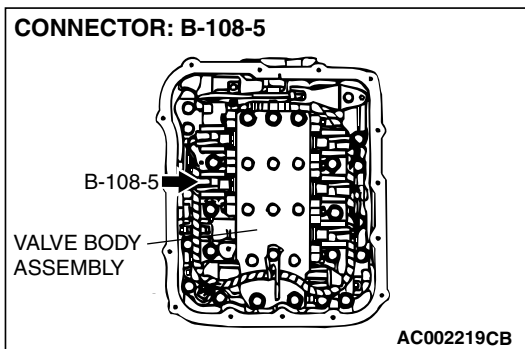
(2) Measure the resistance between solenoid valve assembly connector B-108 terminals 6 and 10.

Resistance value: 2.7–3.4 Ω [at 20°C (68°F)]

Q: Is the measured resistance 2.7–3.4 Ω [at 20°C (68°F)]?

YES : Go to Step 6.

NO : Go to Step 5.



STEP 5. Measure the solenoid valve resistance at the low-reverse solenoid valve assembly inside the transaxle.

(1) Disconnect connector B-108-5 and measure at the solenoid valve side.

(2) Measure the resistance between low-reverse solenoid valve terminals 1 and 2.

Resistance value: 2.7–3.4 Ω [at 20°C (68°F)]

Q: Is the measured resistance 2.7–3.4 Ω [at 20°C (68°F)]?

YES : Replace the harness wire between A/T control solenoid valve assembly connector B-108 and the solenoid valves.

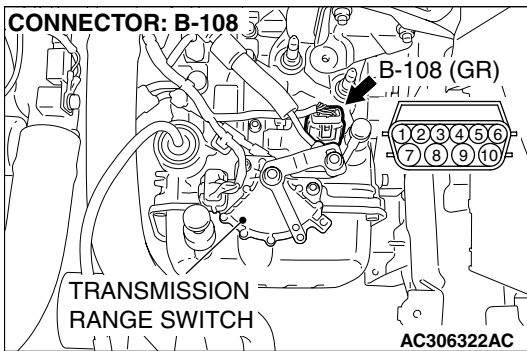
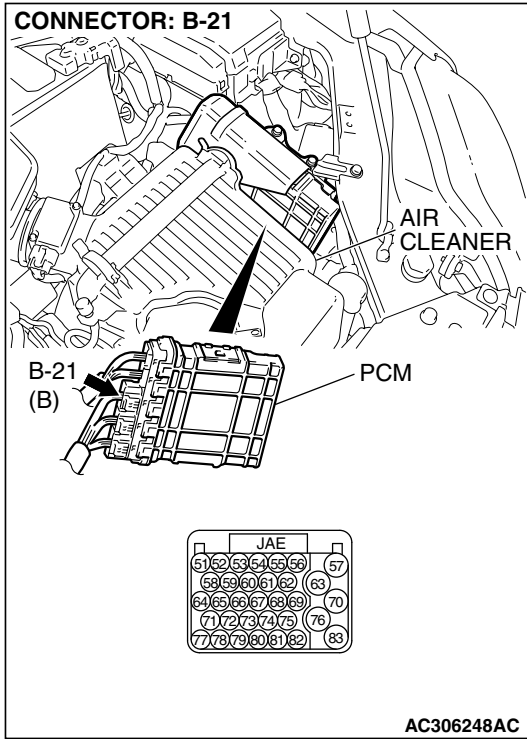
NO : Replace the low-reverse solenoid valve. Refer to GROUP 23B, Valve Body [P.23B-80](#).

STEP 6. Check PCM connector B-21 and A/T control solenoid valve assembly connector B-108 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connectors and terminals in good condition?

YES : Go to Step 7.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#).

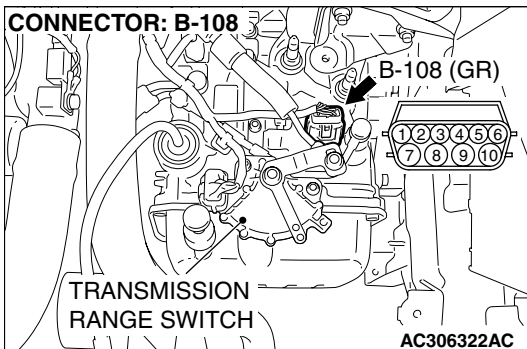
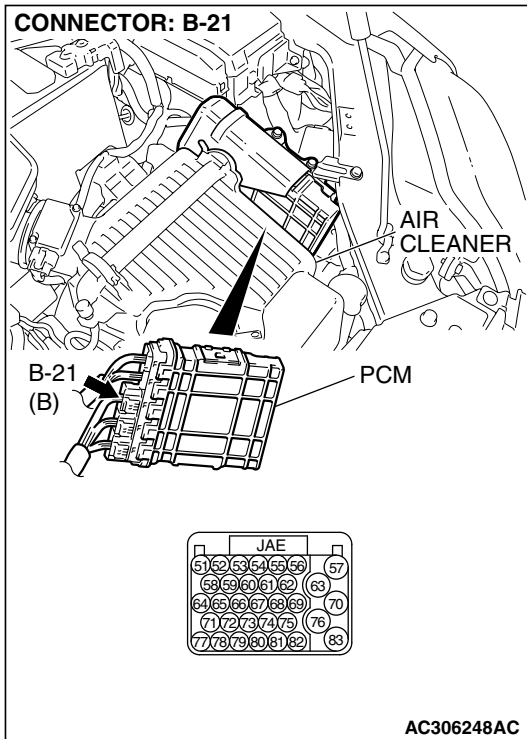


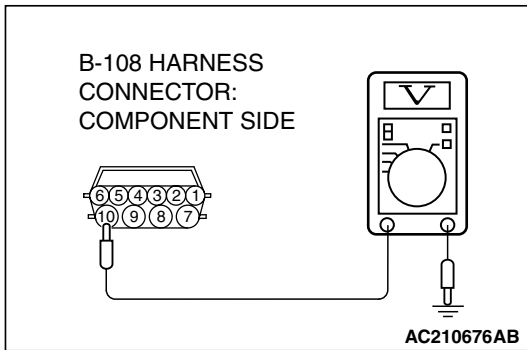
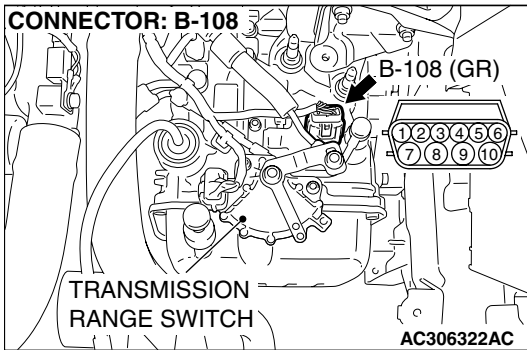
STEP 7. Check the harness for an open or short circuit to ground between PCM connector B-21 terminal 56 and A/T control solenoid valve assembly connector B-108 terminal 6.

Q: Is the harness wire in good condition?

YES : Replace the PCM.

NO : Repair or replace the harness wire.





STEP 8. Measure the supply voltage at A/T control solenoid valve assembly connector B-108.

- (1) Disconnect solenoid valve assembly harness connector B-108.
- (2) Turn the ignition switch to the "ON" position.

- (3) Measure the voltage between harness connector B-108 terminal 10 and ground.
 - The voltage should equal battery positive voltage.

- (4) Turn the ignition switch to the "LOCK" (OFF) position.

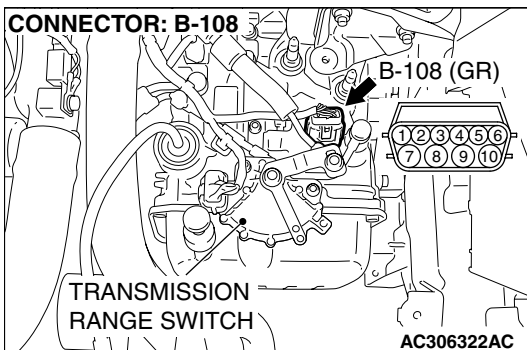
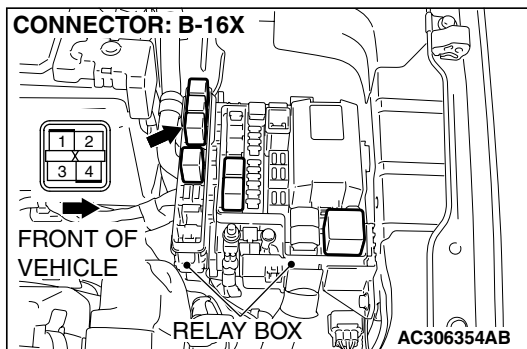
Q: Is the measured voltage battery positive voltage?

- YES :** Go to Step 11.
- NO :** Go to Step 9.

STEP 9. Check A/T control relay connector B-16X in the engine component relay box and A/T control solenoid valve assembly connector B-108 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connectors and terminals in good condition?

- YES :** Go to Step 10.
- NO :** Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#).

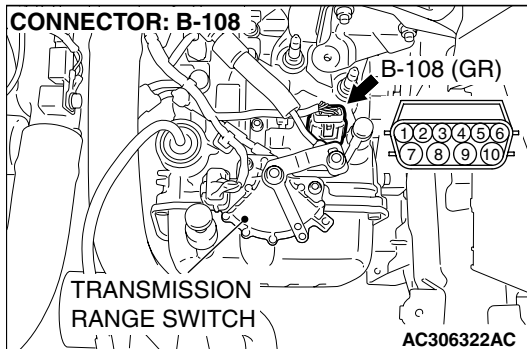
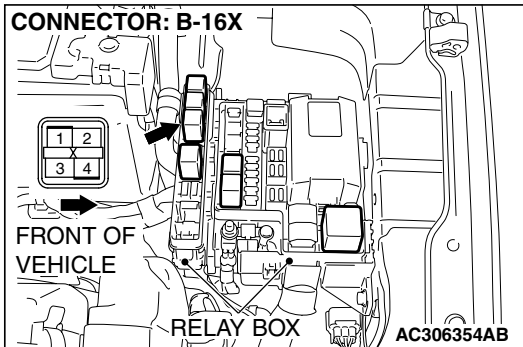


STEP 10. Check the harness for an open circuit or short circuit to ground between A/T control relay connector B-16X terminal 4 in the engine component relay box and A/T control solenoid valve assembly connector B-108 terminal 10.

Q: Is the harness wire in good condition?

YES : Go to Step 11.

NO : Repair or replace the harness wire.



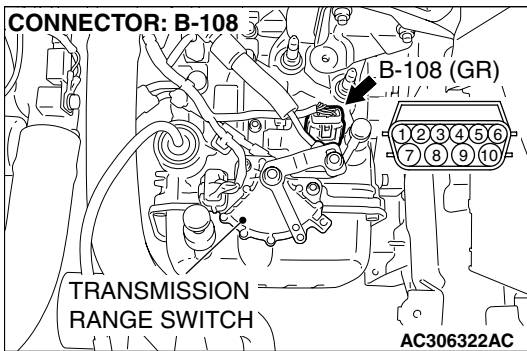
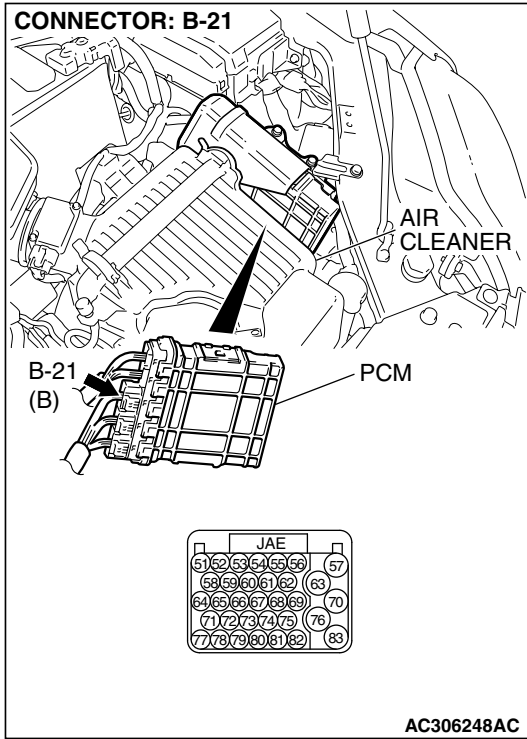
STEP 11. Check PCM connector B-21 and A/T control solenoid valve assembly connector B-108 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connectors and terminals in good condition?

YES : Go to Step 12.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

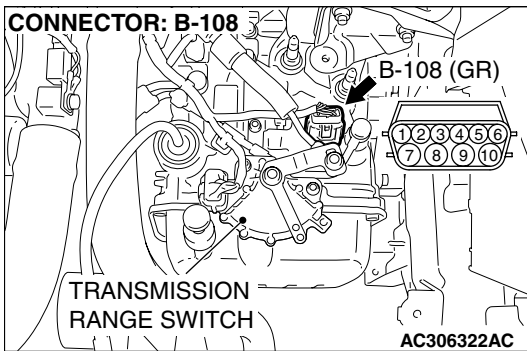
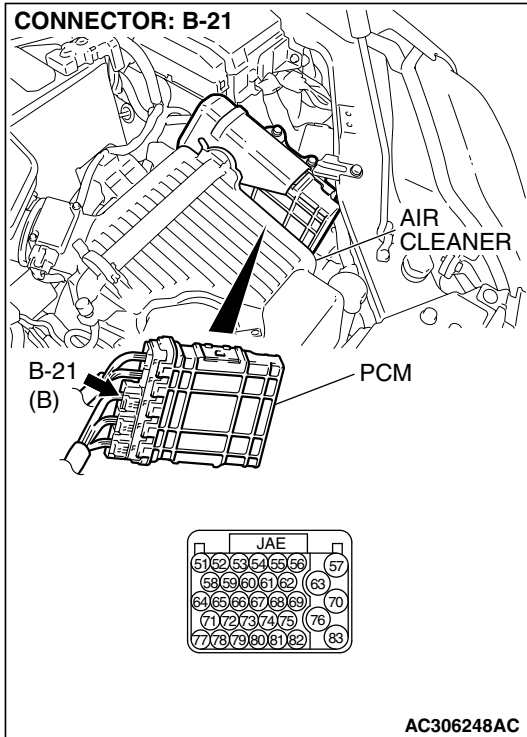


STEP 12. Check the harness for an open or short circuit to ground between PCM connector B-21 (terminals 54 and 56) and A/T control solenoid valve assembly connector B-108 (terminals 6 and 7).

Q: Are the harness wires in good condition?

YES : Go to Step 13.

NO : Repair or replace the harness wire.

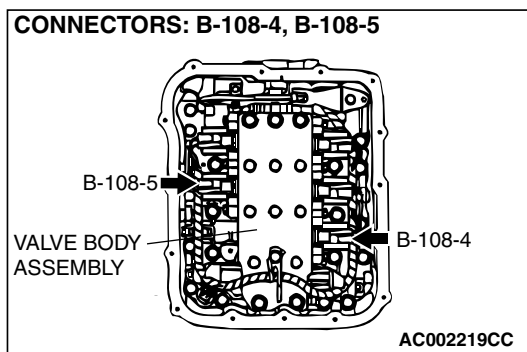
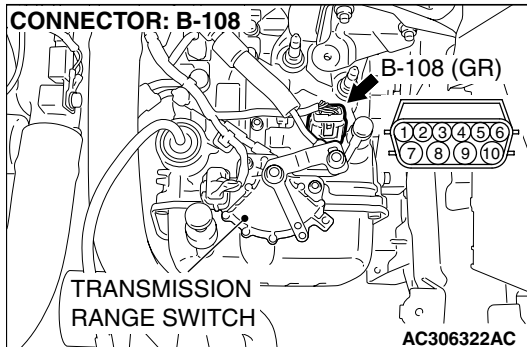


STEP 13. Check the harness for an open or short circuit to ground between A/T control solenoid valve assembly connector B-108 (terminals 6, 7, and 10) and solenoid valve connectors B-108-4 and B-108-5.

Q: Is the harness wire in good condition?

YES : Replace the PCM.

NO : Replace the harness wire.



DTC 32 (P0758): Underdrive Solenoid Valve System

SOLENOID VALVE SYSTEM CIRCUIT

Refer to [P.23A-187](#).

CIRCUIT OPERATION

Refer to [P.23A-187](#).

DESCRIPTIONS OF MONITOR METHODS

- If solenoid terminal voltage is below specified value when shift control is not in progress, PCM judges that underdrive solenoid valve has a failure.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

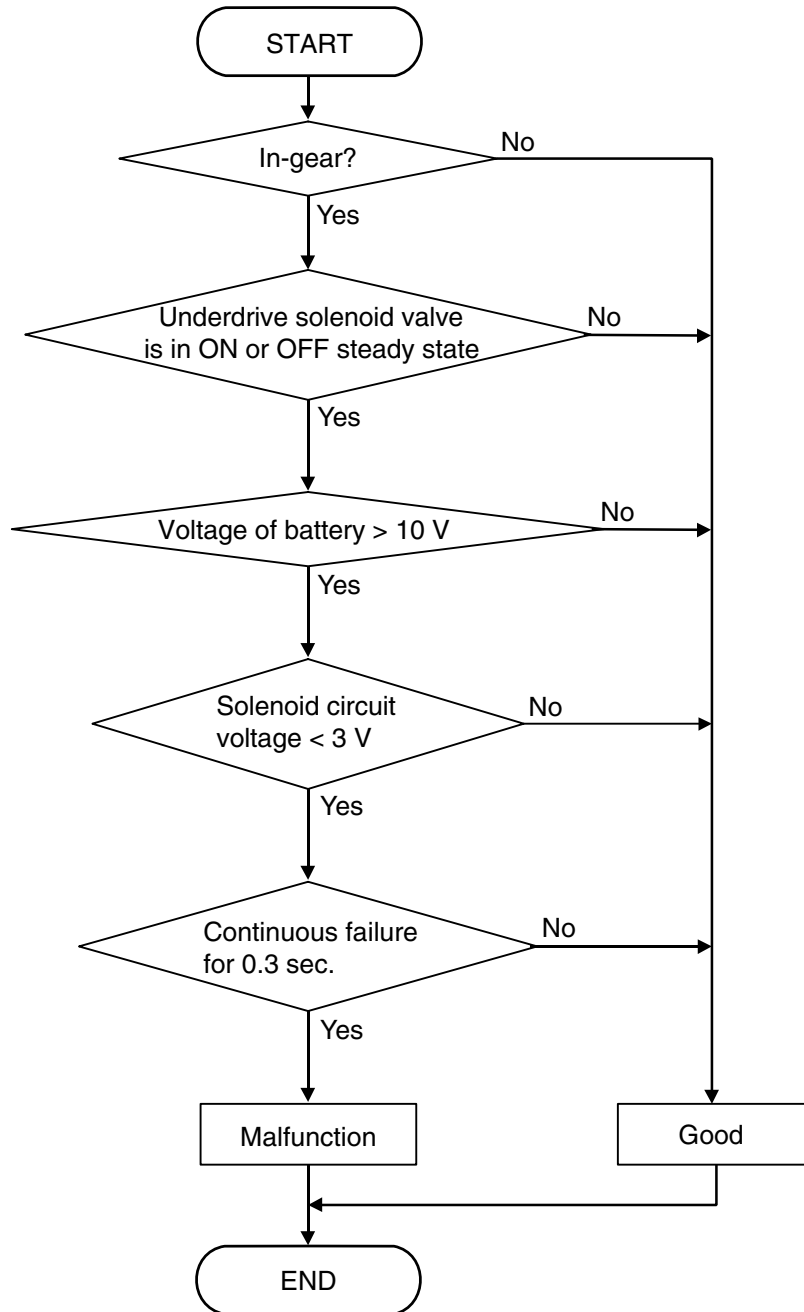
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- DTC 41 (P0731): 1st gear incorrect ratio
- DTC 42 (P0732): 2nd gear incorrect ratio
- DTC 43 (P0733): 3rd gear incorrect ratio
- DTC 44 (P0734): 4th gear incorrect ratio
- DTC 46 (P0736): Reverse gear incorrect ratio
- DTC 36 (P0743): Torque converter clutch solenoid malfunction
- DTC 31 (P0753): Low-reverse solenoid malfunction
- DTC 33 (P0763): Second solenoid malfunction
- DTC 34 (P0768): Overdrive solenoid malfunction
- DTC 54 (P1751): A/T control relay malfunction

Sensor (The sensor below is determined to be normal)

- Torque converter clutch solenoid
- Low-reverse solenoid
- Second solenoid
- Overdrive solenoid
- A/T control relay

LOGIC FLOW CHARTS (Monitor Sequence)



AC205282AB

DTC SET CONDITIONS

Check Conditions

- Solenoid status: either solid ON or OFF.
- Shift status: in-gear.
- Voltage of battery: 10 volts or more.

Judgement Criteria

- Solenoid voltage: 3 volts or less. (0.3 second)
- If DTC 32 (P0758) is set consecutively four times, the transaxle is locked into 3rd gear as a fail-safe measure, and the "N" range light flashes once per second.

OBD-II DRIVE CYCLE PATTERN

Start the engine, and keep the vehicle stopped in "P" range for 5 seconds.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the underdrive solenoid valve
- Damaged harness or connector
- Malfunction of the PCM

DIAGNOSIS**Required Special Tool:**

- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: MUT-III USB Cable
 - MB991910: MUT-III Main Harness A

STEP 1. Using scan tool MB991958, check actuator test item 02: Underdrive Solenoid Valve.

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

(1) Connect scan tool MB991958 to the data link connector.

(2) Turn the ignition switch to the "ON" position.

(3) Set scan tool MB991958 to the actuator test mode.

- Item 02: Underdrive Solenoid Valve.
 - An audible clicking or buzzing should be heard when the underdrive solenoid valve is energized.

(4) Turn the ignition switch to the "LOCK" (OFF) position.

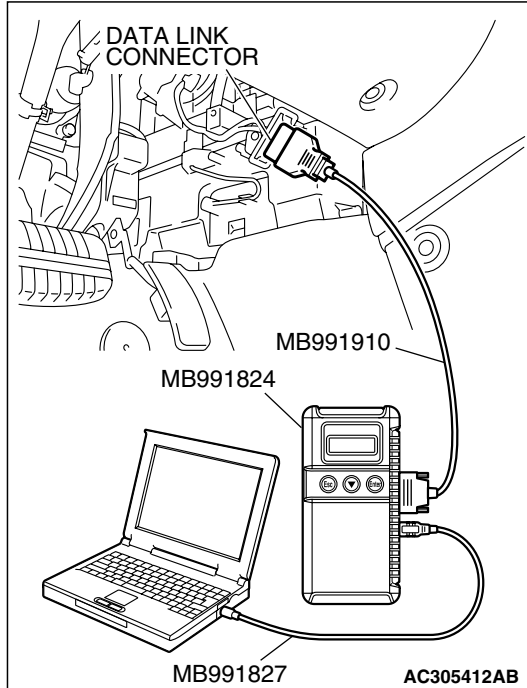
Q: Is the solenoid valve operating properly?

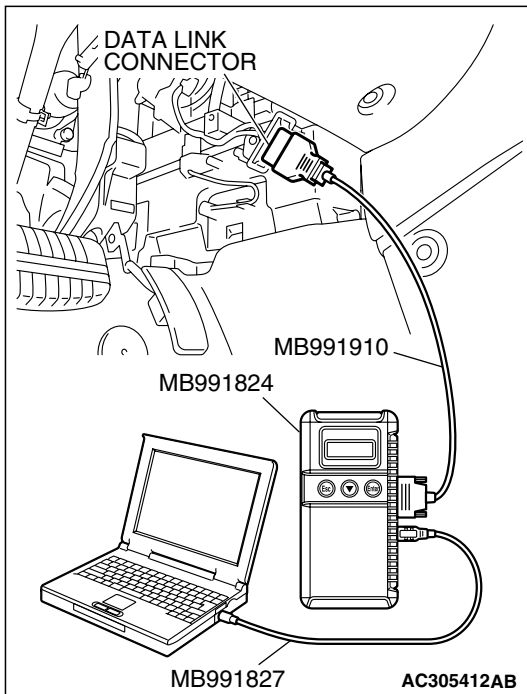
YES : It can be assumed that this malfunction is intermittent.

Refer to GROUP 00, How to Use

Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-14](#).

NO : Go to Step 2.





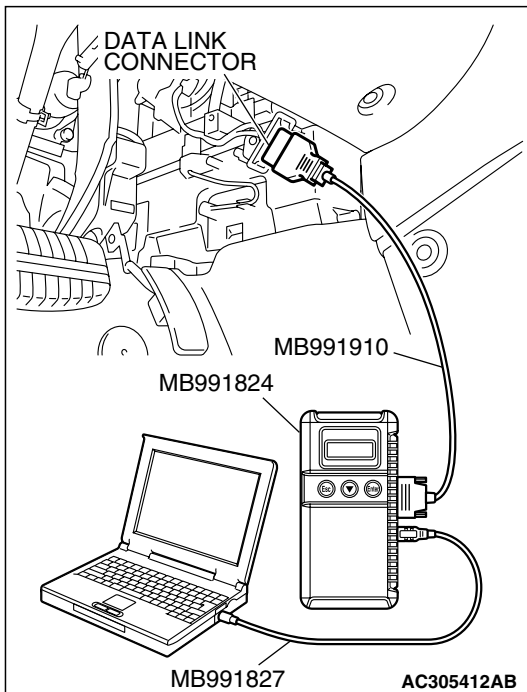
STEP 2. Using scan tool MB991958, read the A/T diagnostic trouble code.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Check for A/T diagnostic trouble code.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is DTC 54 set? (DTC 54 may be set along with multiple DTCs).

YES : Refer to [P 23A-267](#) DTC 54: A/T Control Relay System.

NO : Go to Step 3.



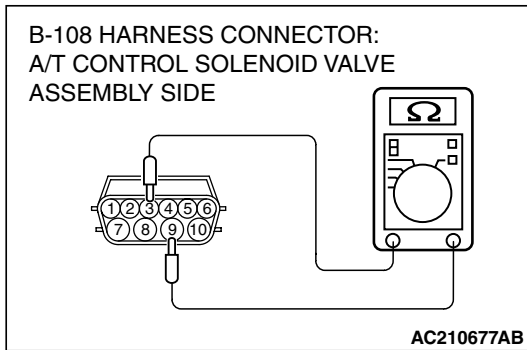
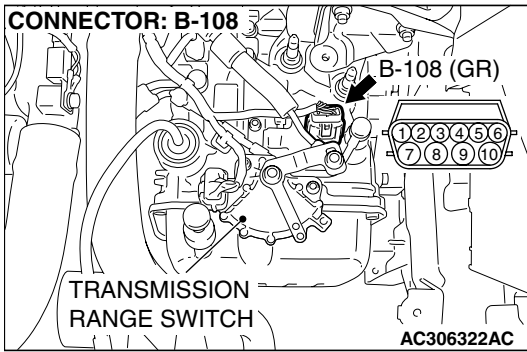
STEP 3. Using scan tool MB991958, read the A/T diagnostic trouble code.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Check for A/T diagnostic trouble code.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Are DTC 33 and DTC 34 set? (Multiple DTCs may be set).

YES : Go to Step 8.

NO : Go to Step 4.



STEP 4. Measure the underdrive solenoid valve resistance at A/T control solenoid valve assembly connector B-108.

(1) Disconnect connector B-108 and measure at the solenoid valve side.

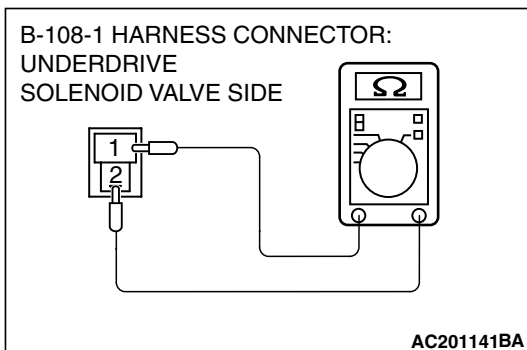
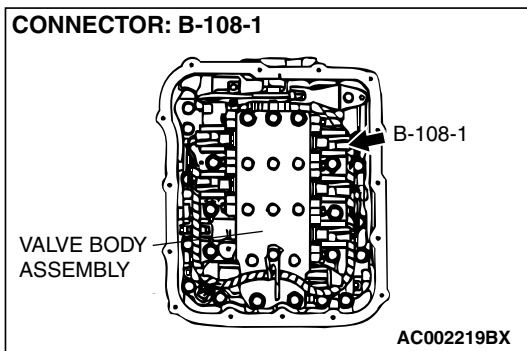
(2) Measure the resistance between solenoid valve assembly connector B-108 terminals 3 and 9.

Resistance value: 2.7–3.4 Ω [at 20°C (68°F)]

Q: Is the measured resistance 2.7–3.4 Ω [at 20°C (68°F)]?

YES : Go to Step 6.

NO : Go to Step 5.



STEP 5. Measure the solenoid valve resistance at the underdrive solenoid valve assembly inside the transaxle.

(1) Disconnect connector B-108-1 and measure at the solenoid valve side.

(2) Measure the resistance between Underdrive solenoid valve terminals 1 and 2.

Resistance value: 2.7–3.4 Ω [at 20°C (68°F)]

Q: Is the measured resistance 2.7–3.4 Ω [at 20°C (68°F)]?

YES : Replace the harness wire between A/T control solenoid valve assembly connector B-108 and the solenoid valves.

NO : Replace the Underdrive solenoid valve. Refer to GROUP 23B, Valve Body [P.23B-80](#).

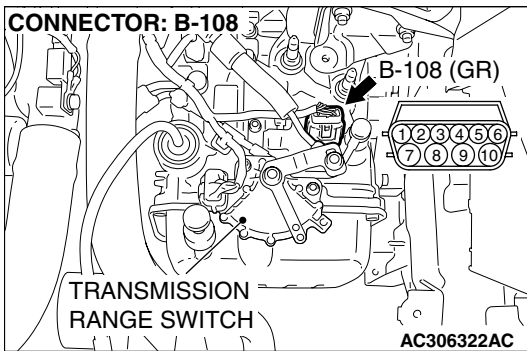
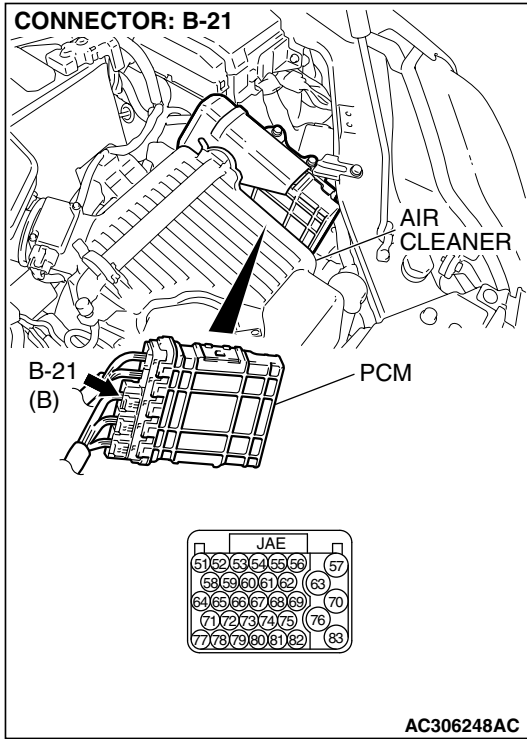
STEP 6. Check PCM connector B-21 and A/T control solenoid valve assembly connector B-108 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connectors and terminals in good condition?

YES : Go to Step 7.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

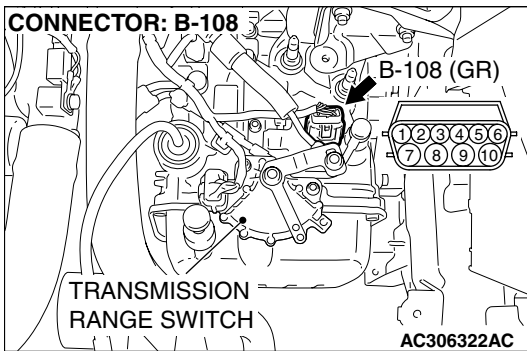
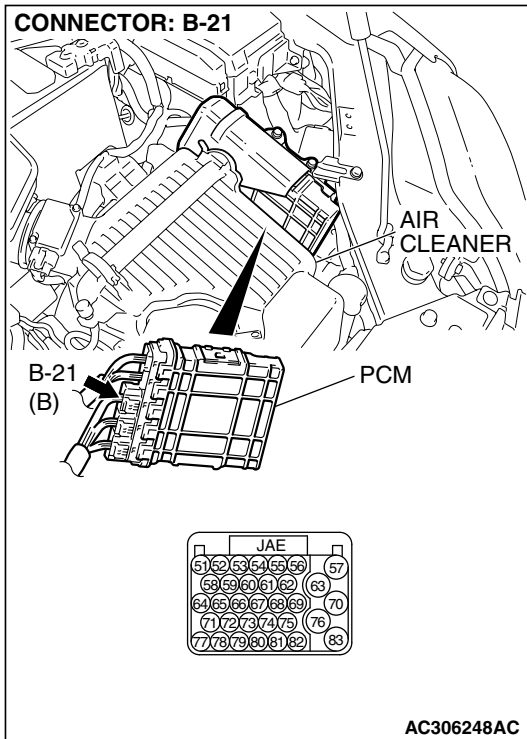


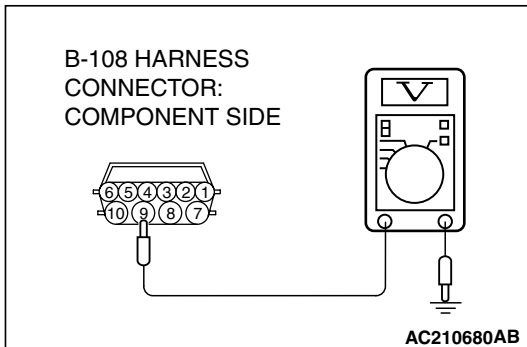
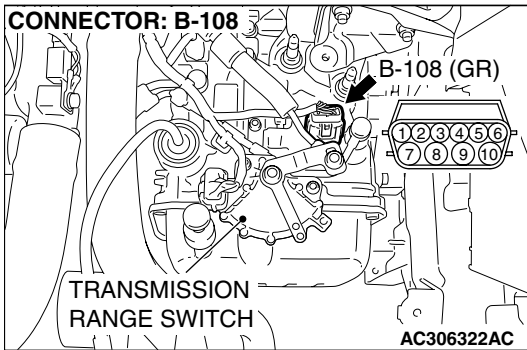
STEP 7. Check the harness for an open or short circuit to ground between PCM connector B-21 terminal 65 and A/T control solenoid valve assembly connector B-108 terminal 3.

Q: Is the harness wire in good condition?

YES : Replace the PCM.

NO : Repair or replace the harness wire.





STEP 8. Measure the supply voltage at A/T control solenoid valve assembly connector B-108.

- (1) Disconnect solenoid valve assembly harness connector B-108.
- (2) Turn the ignition switch to the "ON" position.

- (3) Measure the voltage between harness connector B-108 terminal 9 and ground.
 - The voltage should equal battery positive voltage.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

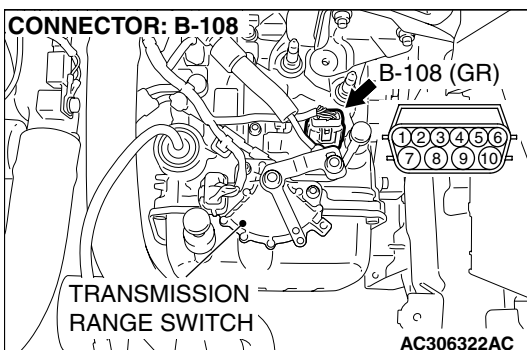
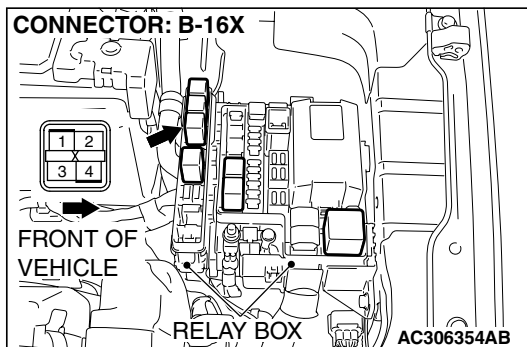
Q: Is the measured voltage battery positive voltage?

- YES :** Go to Step 11.
- NO :** Go to Step 9.

STEP 9. Check A/T control relay connector B-16X in the engine component relay box and A/T control solenoid valve assembly connector B-108 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connectors and terminals in good condition?

- YES :** Go to Step 10.
- NO :** Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#).

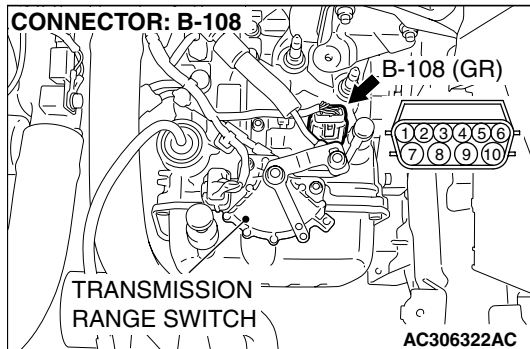
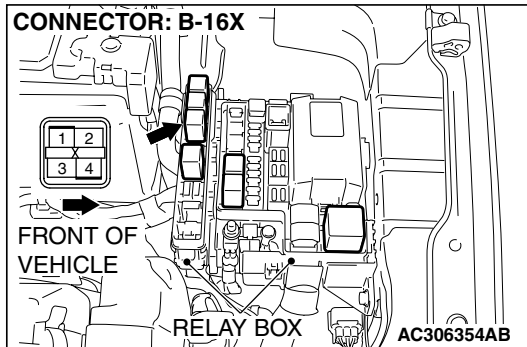


STEP 10. Check the harness for an open circuit or short circuit to ground between A/T control relay connector B-16X terminal 4 in the engine component relay box and A/T control solenoid valve assembly connector B-108 terminal 9.

Q: Is the harness wire in good condition?

YES : Go to Step 11.

NO : Repair or replace the harness wire.



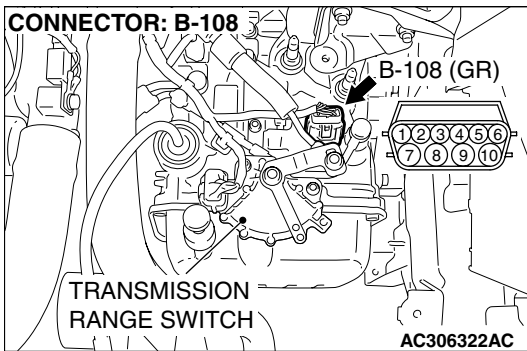
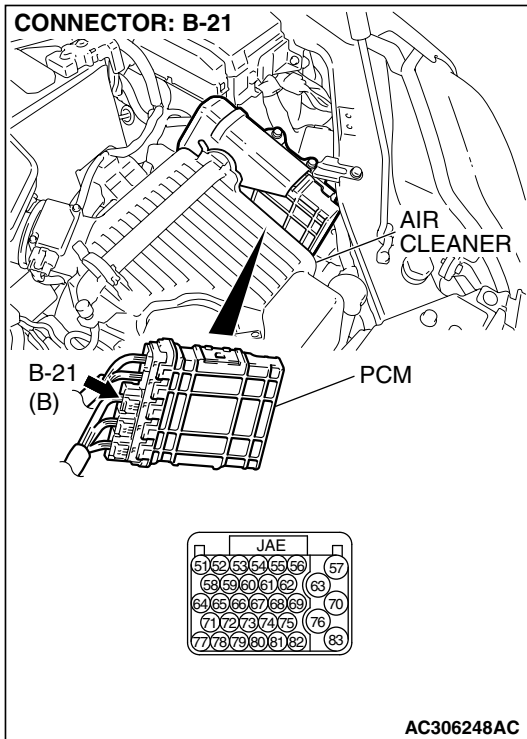
STEP 11. Check PCM connector B-21 and A/T control solenoid valve assembly connector B-108 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connectors and terminals in good condition?

YES : Go to Step 12.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

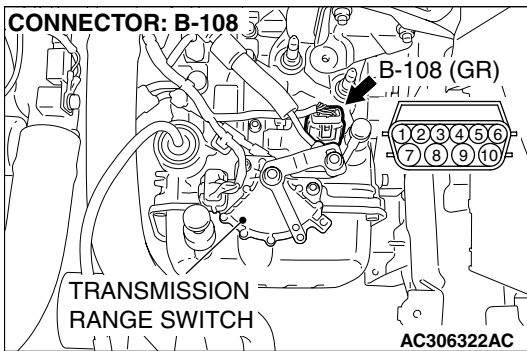
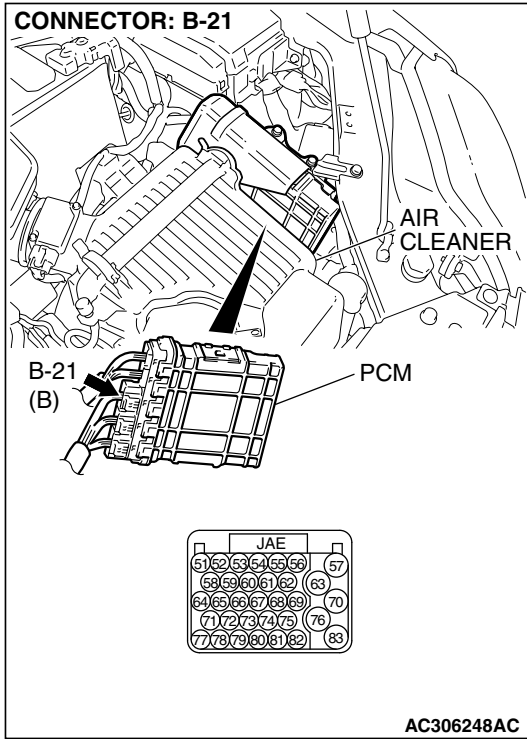


STEP 12. Check the harness for an open or short circuit to ground between PCM connector B-21 (terminals 65, 66 and 55) and A/T control solenoid valve assembly connector B-108 (terminals 3, 4 and 5).

Q: Are the harness wires in good condition?

YES : Go to Step 13.

NO : Repair or replace the harness wire.

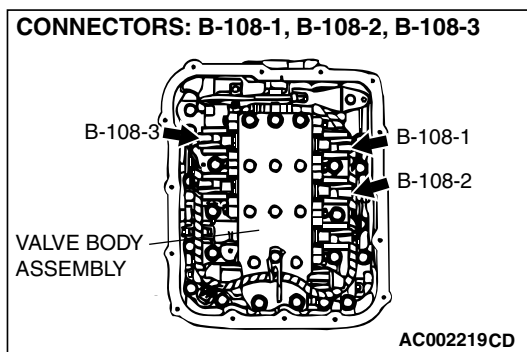
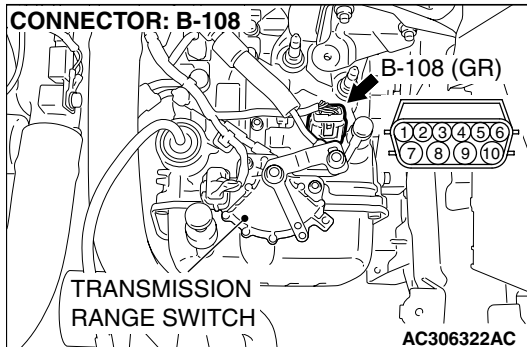


STEP 13. Check the harness for an open or short circuit to ground between A/T control solenoid valve assembly connector B-108 (terminals 3, 4, 5, and 9) and solenoid valve connectors B-108-1, B-108-2 and B-108-3.

Q: Is the harness wire in good condition?

YES : Replace the PCM.

NO : Replace the harness wire.



DTC 33 (P0763): Second Solenoid Valve System

SOLENOID VALVE SYSTEM CIRCUIT

Refer to [P.23A-187](#).

CIRCUIT OPERATION

Refer to [P.23A-187](#).

DESCRIPTIONS OF MONITOR METHODS

- If solenoid terminal voltage is below specified value when shift control is not in progress, PCM judges that second solenoid valve has a failure.

MONITOR EXECUTION

- Continuous

**MONITOR EXECUTION CONDITIONS
(OTHER MONITOR AND SENSOR)**

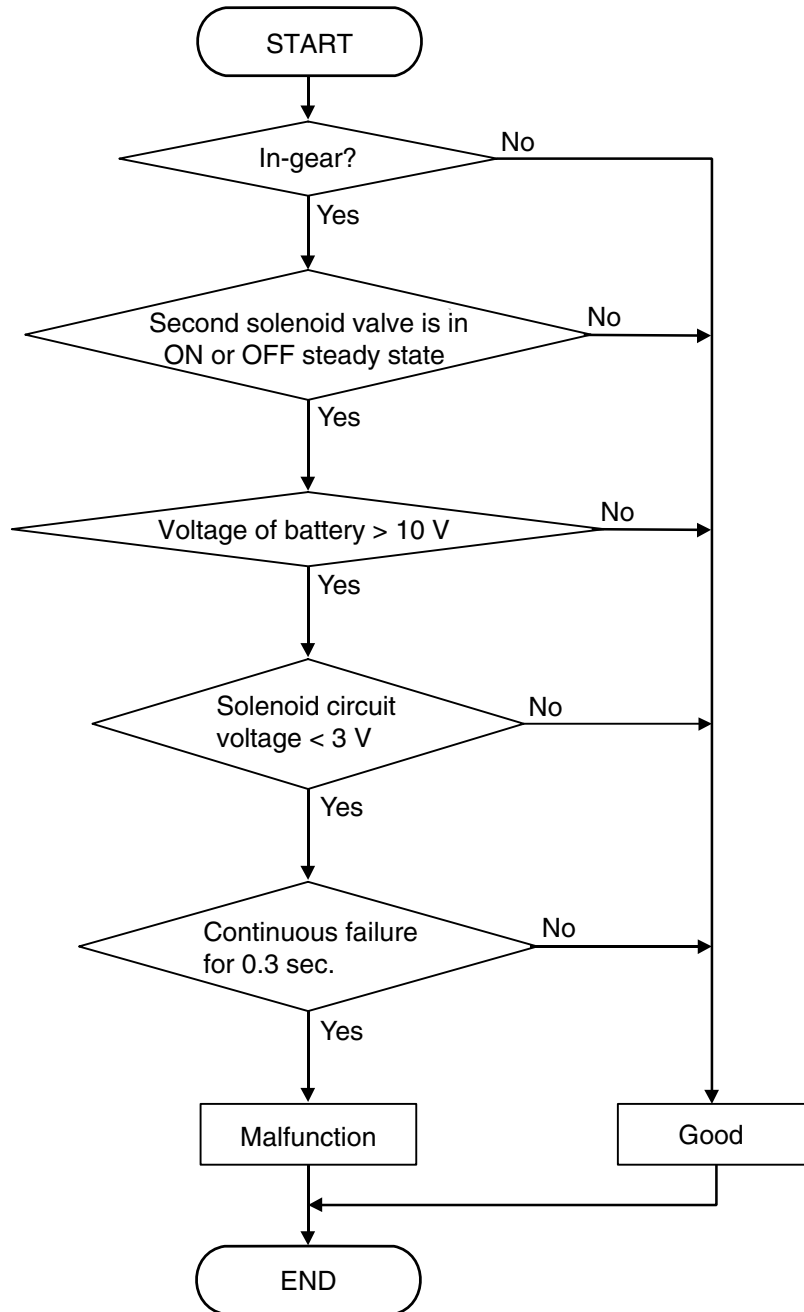
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- DTC 41 (P0731): 1st gear incorrect ratio
- DTC 42 (P0732): 2nd gear incorrect ratio
- DTC 43 (P0733): 3rd gear incorrect ratio
- DTC 44 (P0734): 4th gear incorrect ratio
- DTC 46 (P0736): Reverse gear incorrect ratio
- DTC 36 (P0743): Torque converter clutch solenoid malfunction
- DTC 31 (P0753): Low-reverse solenoid malfunction
- DTC 32 (P0758): Underdrive solenoid malfunction
- DTC 34 (P0768): Overdrive solenoid malfunction
- DTC 54 (P1751): A/T control relay malfunction

Sensor (The sensor below is determined to be normal)

- Torque converter clutch solenoid
- Low-reverse solenoid
- Underdrive solenoid
- Overdrive solenoid
- A/T control relay

LOGIC FLOW CHARTS (Monitor Sequence)



AC205283AB

DTC SET CONDITIONS

Check Conditions

- Solenoid status: either solid ON or OFF.
- Shift status: in-gear.
- Voltage of battery: 10 volts or more.

Judgement Criteria

- Solenoid voltage: 3 volts or less. (0.3 second)
- If DTC 33 (P0763) is set consecutively four times, the transaxle is locked into 3rd gear as a fail-safe measure, and the "N" range light flashes once per second.

OBD-II DRIVE CYCLE PATTERN

Start the engine, and keep the vehicle stopped in "P" range for 5 seconds.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the second solenoid valve
- Damaged harness or connector
- Malfunction of the PCM

DIAGNOSIS

Required Special Tool:

- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: MUT-III USB Cable
 - MB991910: MUT-III Main Harness A

STEP 1. Using scan tool MB991958, check actuator test item 03: Second Solenoid Valve.

⚠ CAUTION

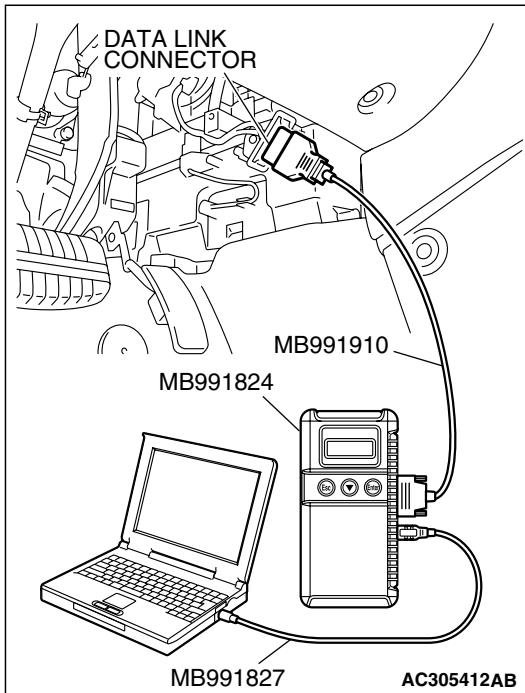
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

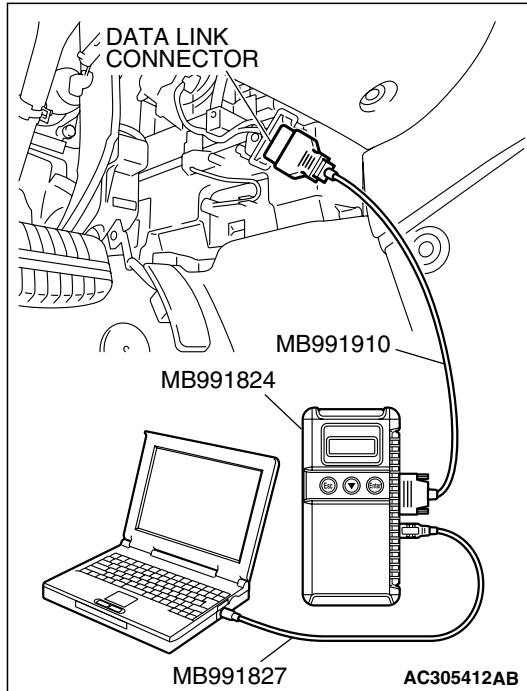
- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Set scan tool MB991958 to the actuator test mode.
 - Item 03: Second Solenoid Valve.
 - An audible clicking or buzzing should be heard when the second solenoid valve is energized.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the solenoid valve operating properly?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-14](#).

NO : Go to Step 2.





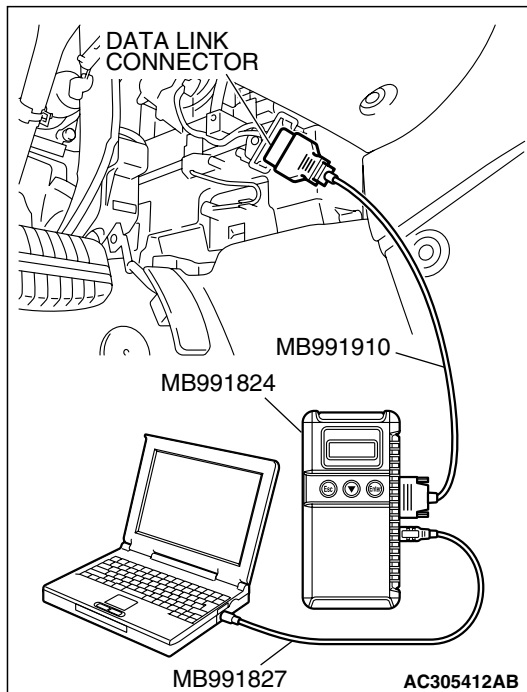
STEP 2. Using scan tool MB991958, read the A/T diagnostic trouble code.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Check for A/T diagnostic trouble code.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is DTC 54 set? (DTC 54 may be set along with multiple DTCs).

YES : Refer to [P 23A-267](#) DTC 54: A/T Control Relay System.

NO : Go to Step 3.



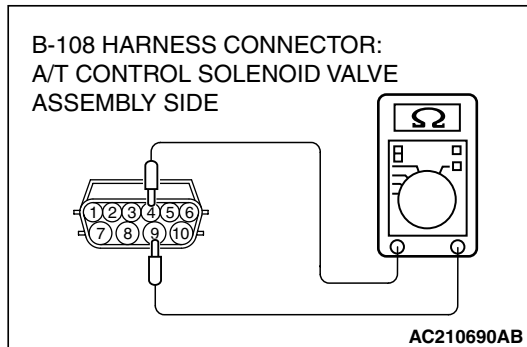
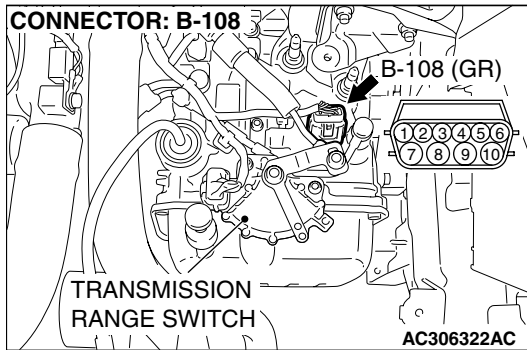
STEP 3. Using scan tool MB991958, read the A/T diagnostic trouble code.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Check for A/T diagnostic trouble code.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Are DTC 32 and DTC 34 set? (Multiple DTCs may be set).

YES : Go to Step 8.

NO : Go to Step 4.



STEP 4. Measure the Second solenoid valve resistance at A/T control solenoid valve assembly connector B-108.

(1) Disconnect connector B-108 and measure at the solenoid valve side.

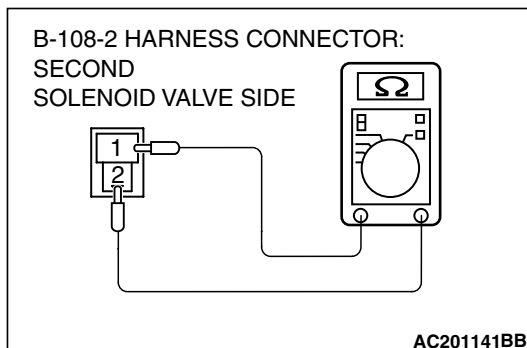
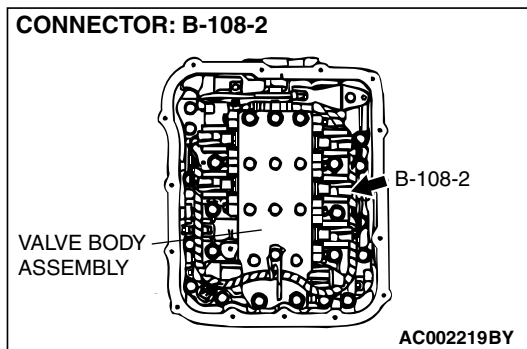
(2) Measure the resistance between solenoid valve assembly connector B-108 terminals 4 and 9.

Resistance value: 2.7–3.4 Ω [at 20°C (68°F)]

Q: Is the measured resistance 2.7–3.4 Ω [at 20°C (68°F)]?

YES : Go to Step 6.

NO : Go to Step 5.



STEP 5. Measure the solenoid valve resistance at the second solenoid valve assembly inside the transaxle.

(1) Disconnect connector B-108-2 and measure at the solenoid valve side.

(2) Measure the resistance between Second solenoid valve terminals 1 and 2.

Resistance value: 2.7–3.4 Ω [at 20°C (68°F)]

Q: Is the measured resistance 2.7–3.4 Ω [at 20°C (68°F)]?

YES : Replace the harness wire between A/T control solenoid valve assembly connector B-108 and the solenoid valves.

NO : Replace the Second solenoid valve. Refer to GROUP 23B, Valve Body P.23B-80.

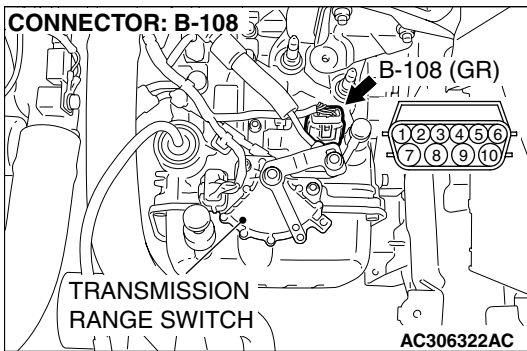
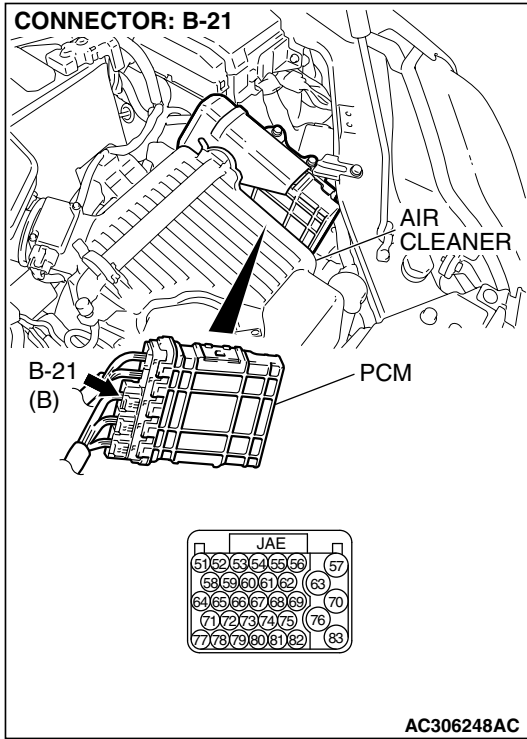
STEP 6. Check PCM connector B-21 and A/T control solenoid valve assembly connector B-108 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connectors and terminals in good condition?

YES : Go to Step 7.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

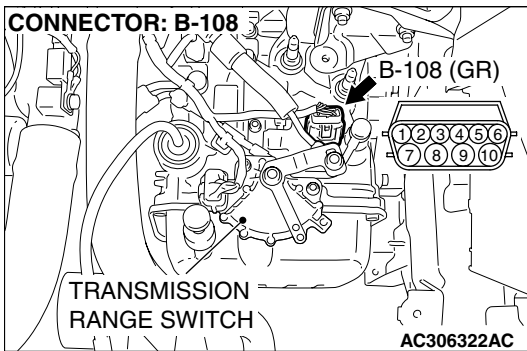
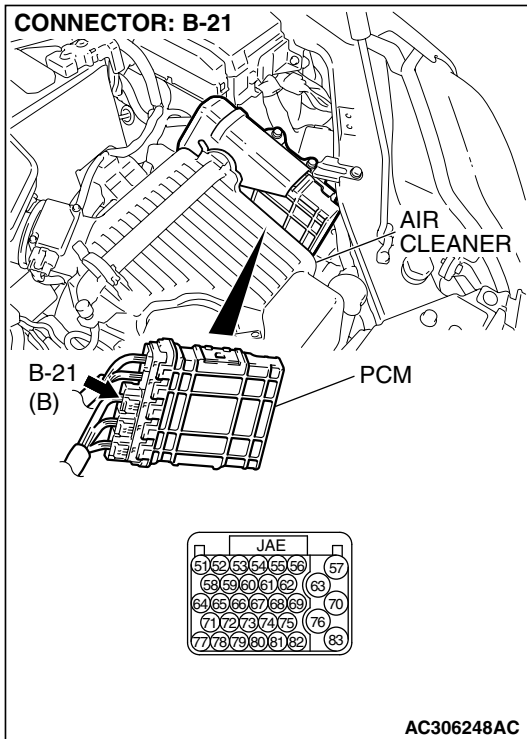


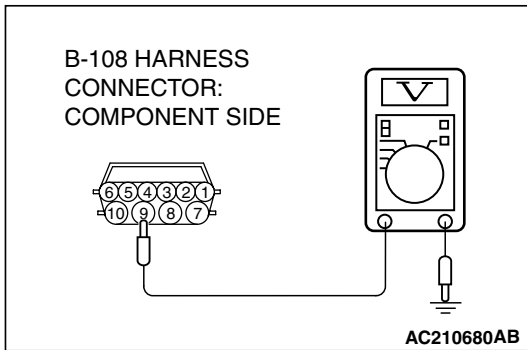
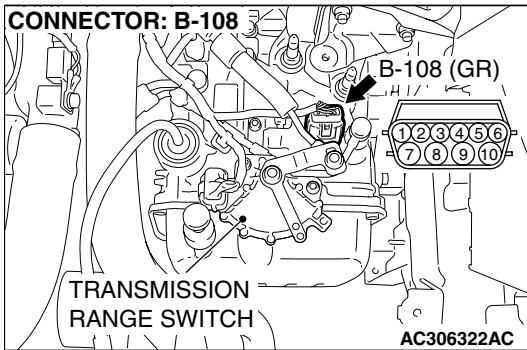
STEP 7. Check the harness for an open or short circuit to ground between PCM connector B-21 terminal 66 and A/T control solenoid valve assembly connector B-108 terminal 4.

Q: Is the harness wire in good condition?

YES : Replace the PCM.

NO : Repair or replace the harness wire.





STEP 8. Measure the supply voltage at A/T control solenoid valve assembly connector B-108.

- (1) Disconnect solenoid valve assembly harness connector B-108.
- (2) Turn the ignition switch to the "ON" position.

- (3) Measure the voltage between harness connector B-108 terminal 9 and ground.
 - The voltage should equal battery positive voltage.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

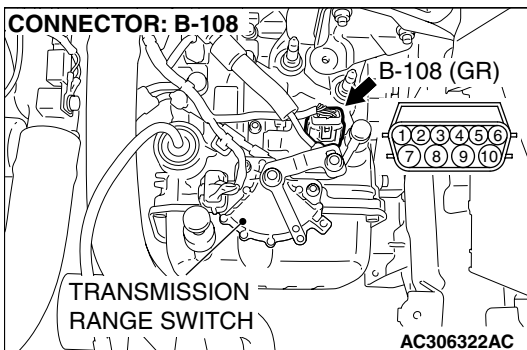
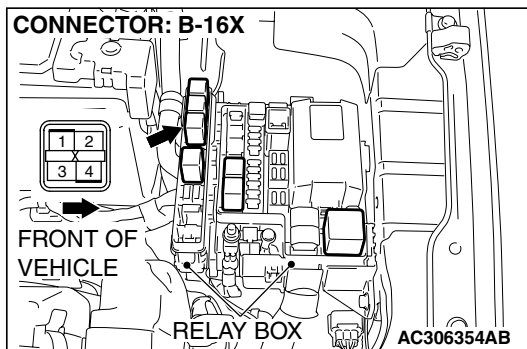
Q: Is the measured voltage battery positive voltage?

- YES :** Go to Step 11.
- NO :** Go to Step 9.

STEP 9. Check A/T control relay connector B-16X in the engine component relay box and A/T control solenoid valve assembly connector B-108 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connectors and terminals in good condition?

- YES :** Go to Step 10.
- NO :** Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#).

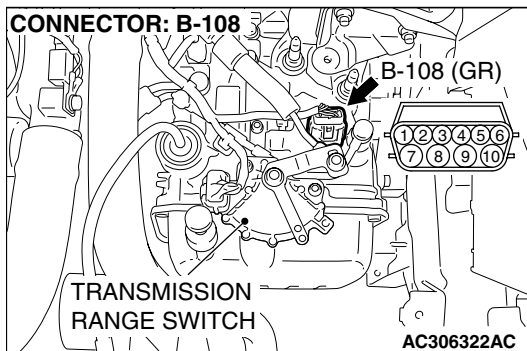
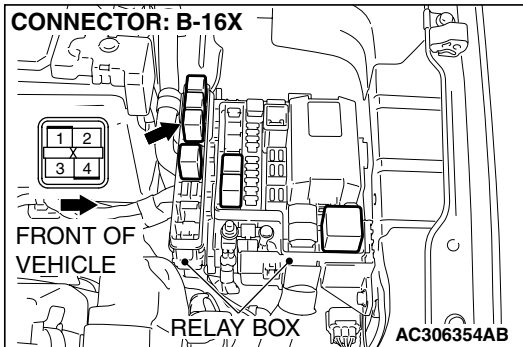


STEP 10. Check the harness for an open circuit or short circuit to ground between A/T control relay connector B-16X terminal 4 in the engine component relay box and A/T control solenoid valve assembly connector B-108 terminal 9.

Q: Is the harness wire in good condition?

YES : Go to Step 11.

NO : Repair or replace the harness wire.



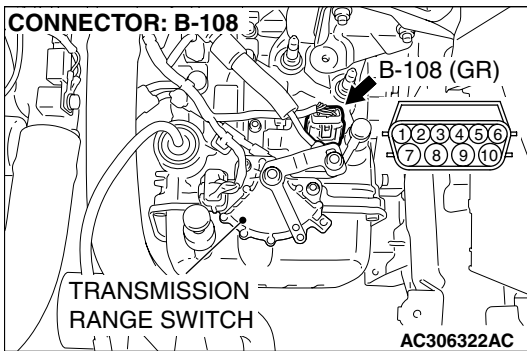
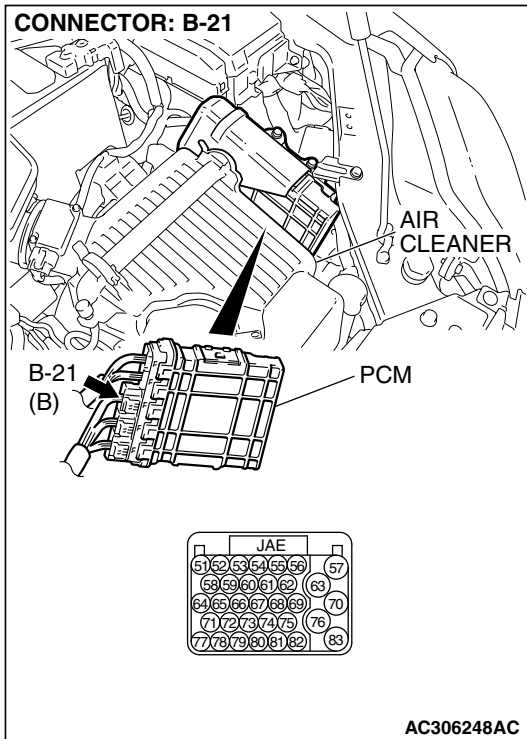
STEP 11. Check PCM connector B-21 and A/T control solenoid valve assembly connector B-108 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connectors and terminals in good condition?

YES : Go to Step 12.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

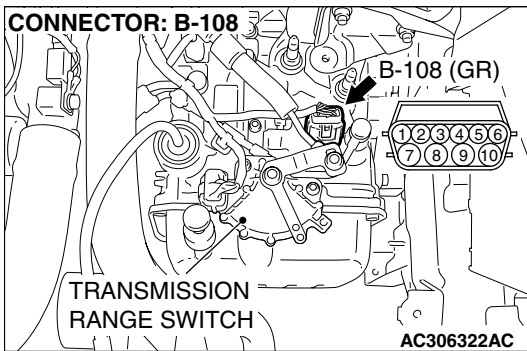
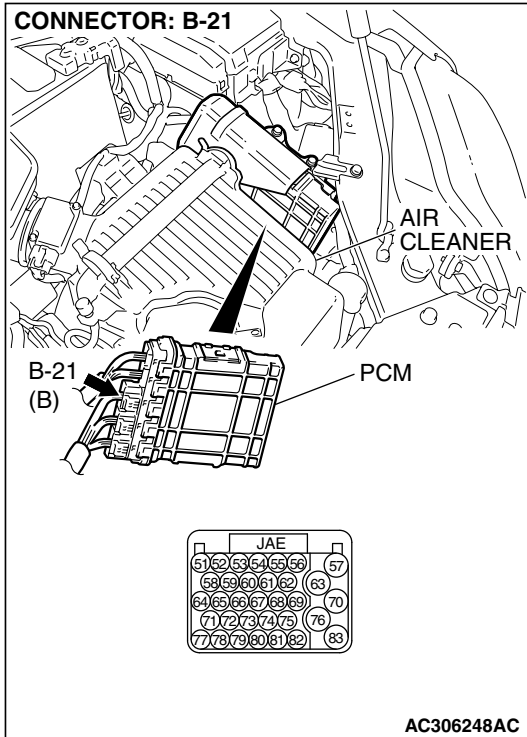


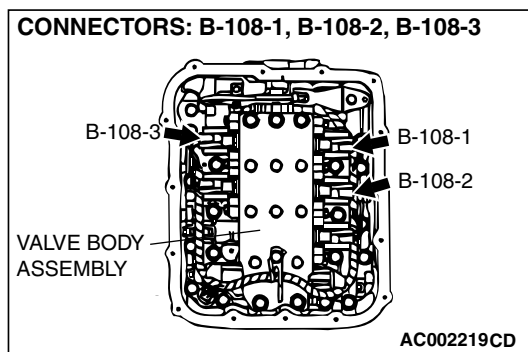
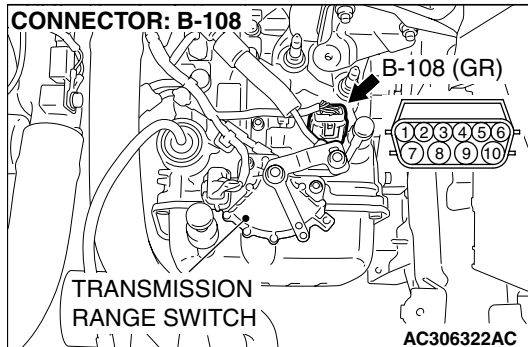
STEP 12. Check the harness for an open or short circuit to ground between PCM connector B-21 (terminals 65, 66 and 55) and A/T control solenoid valve assembly connector B-108 (terminals 3, 4 and 5).

Q: Are the harness wires in good condition?

YES : Go to Step 13.

NO : Repair or replace the harness wire.





STEP 13. Check the harness for an open or short circuit to ground between A/T control solenoid valve assembly connector B-108 (terminals 3, 4, 5, and 9) and solenoid valve connectors B-108-1, B-108-2 and B-108-3.

Q: Is the harness wire in good condition?

YES : Replace the PCM.

NO : Replace the harness wire.

DTC 34 (P0768): Overdrive Solenoid Valve System

SOLENOID VALVE SYSTEM CIRCUIT

Refer to [P.23A-187](#).

CIRCUIT OPERATION

Refer to [P.23A-187](#).

DESCRIPTIONS OF MONITOR METHODS

- If solenoid terminal voltage is below specified value when shift control is not in progress, PCM judges that overdrive solenoid valve has a failure.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

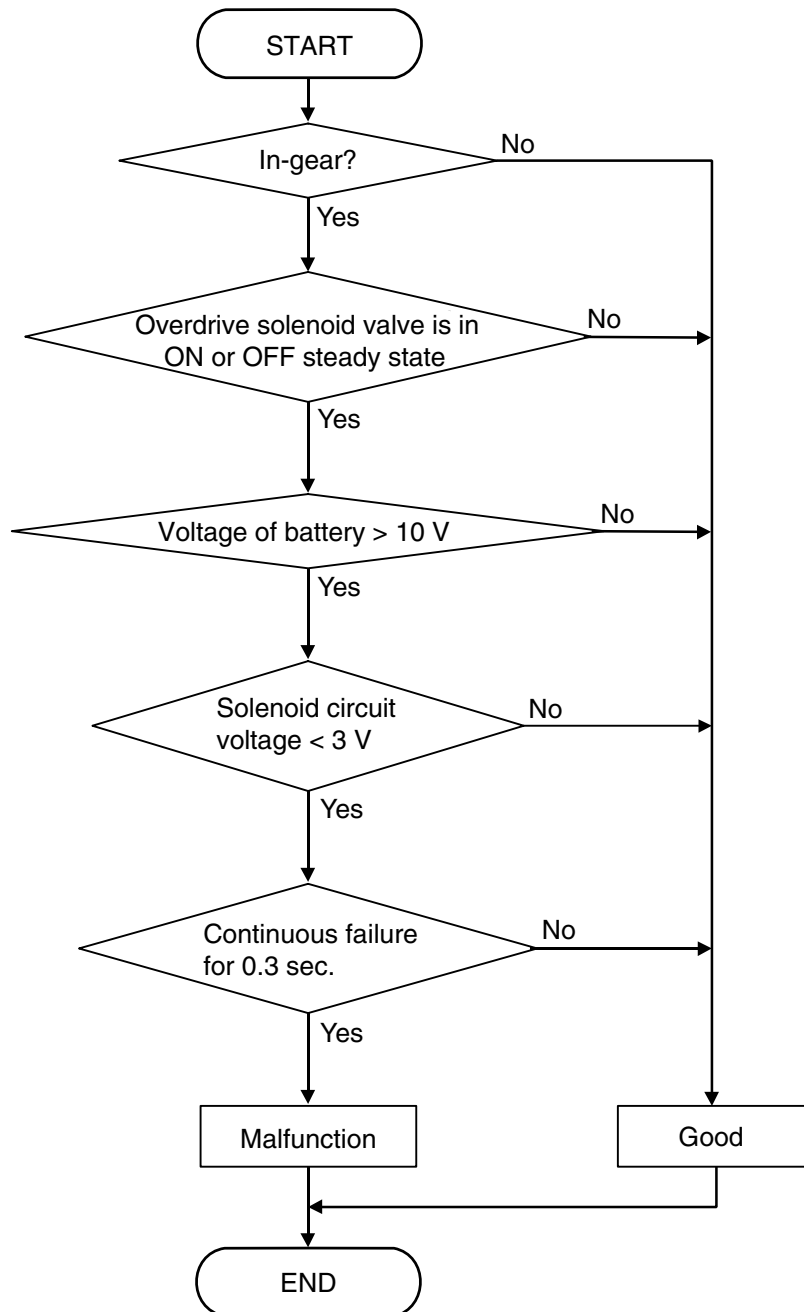
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- DTC 41 (P0731): 1st gear incorrect ratio
- DTC 42 (P0732): 2nd gear incorrect ratio
- DTC 43 (P0733): 3rd gear incorrect ratio
- DTC 44 (P0734): 4th gear incorrect ratio
- DTC 46 (P0736): Reverse gear incorrect ratio
- DTC 36 (P0743): Torque converter clutch solenoid malfunction
- DTC 31 (P0753): Low-reverse solenoid malfunction
- DTC 32 (P0758): Underdrive solenoid malfunction
- DTC 33 (P0763): Second solenoid malfunction
- DTC 54 (P1751): A/T control relay malfunction

Sensor (The sensor below is determined to be normal)

- Torque converter clutch solenoid
- Low-reverse solenoid
- Underdrive solenoid
- Second solenoid
- A/T control relay

LOGIC FLOW CHARTS (Monitor Sequence)



AC205284AB

DTC SET CONDITIONS

Check Conditions

- Solenoid status: either solid ON or OFF.
- Shift status: in-gear.
- Voltage of battery: 10 volts or more.

Judgement Criteria

- Solenoid voltage: 3 volts or less. (0.3 second)
- If DTC 34 (P0768) is set consecutively four times, the transaxle is locked into 3rd gear as a fail-safe measure, and the "N" range light flashes once per second.

OBD-II DRIVE CYCLE PATTERN

Start the engine, and keep the vehicle stopped in "P" range for 5 seconds.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the overdrive solenoid valve
- Damaged harness or connector
- Malfunction of the PCM

DIAGNOSIS**Required Special Tool:**

- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: MUT-III USB Cable
 - MB991910: MUT-III Main Harness A

STEP 1. Using scan tool MB991958, check actuator test item 04: Overdrive Solenoid Valve.

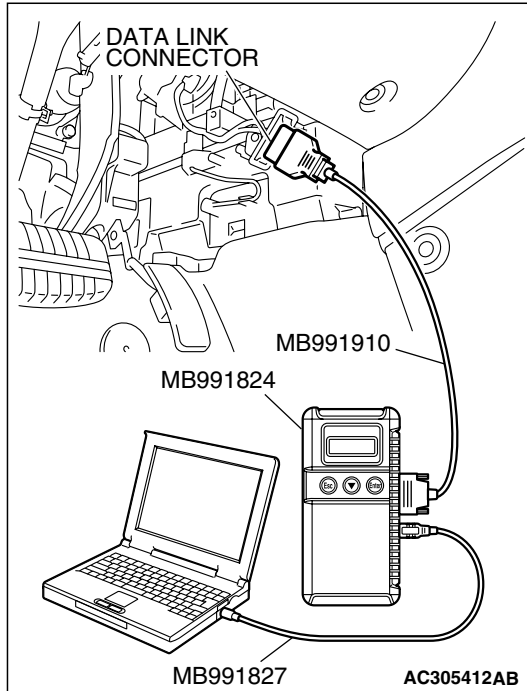
⚠ CAUTION

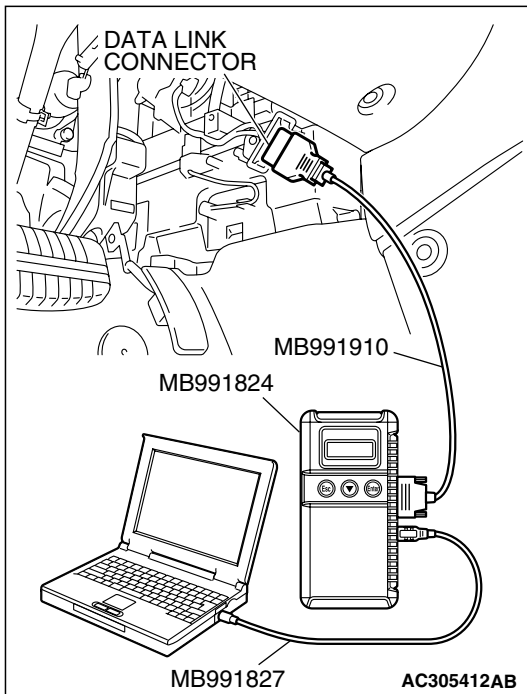
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Set scan tool MB991958 to the actuator test mode.
 - Item 04: Overdrive Solenoid Valve.
 - An audible clicking or buzzing should be heard when the overdrive solenoid valve is energized.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the solenoid valve operating properly?

- YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.
- NO :** Go to Step 2.





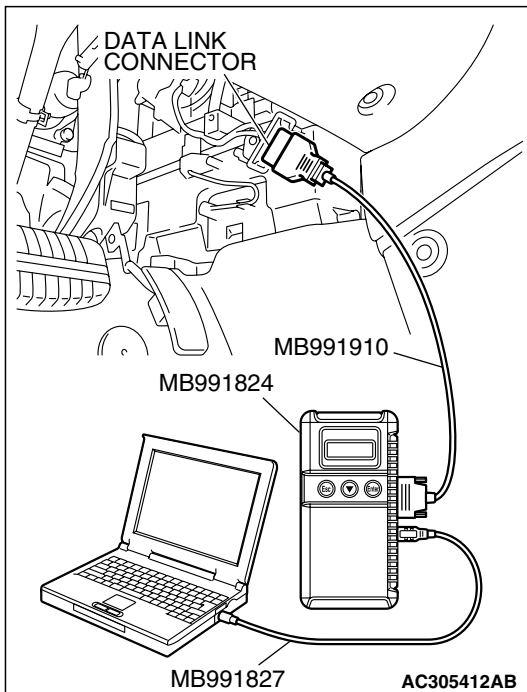
STEP 2. Using scan tool MB991958, read the A/T diagnostic trouble code.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Check for A/T diagnostic trouble code.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is DTC 54 set? (DTC 54 may be set along with multiple DTCs).

YES : Refer to [P 23A-267](#) DTC 54: A/T Control Relay System.

NO : Go to Step 3.



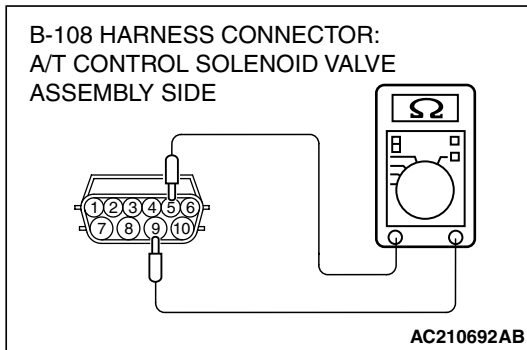
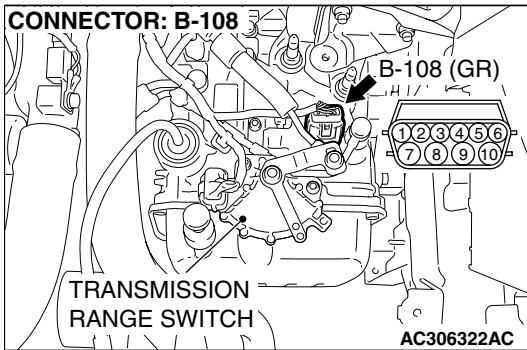
STEP 3. Using scan tool MB991958, read the A/T diagnostic trouble code.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Check for A/T diagnostic trouble code.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Are DTC 32 and DTC 33 set? (Multiple DTCs may be set).

YES : Go to Step 8.

NO : Go to Step 4.



STEP 4. Measure the Overdrive solenoid valve resistance at A/T control solenoid valve assembly connector B-108.

(1) Disconnect connector B-108 and measure at the solenoid valve side.

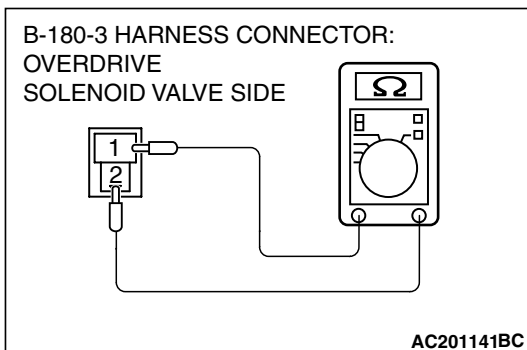
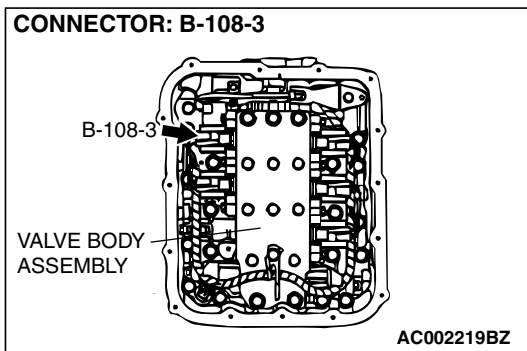
(2) Measure the resistance between solenoid valve assembly connector B-108 terminals 5 and 9.

Resistance value: 2.7–3.4 Ω [at 20°C (68°F)]

Q: Is the measured resistance 2.7–3.4 Ω [at 20°C (68°F)]?

YES : Go to Step 6.

NO : Go to Step 5.



STEP 5. Measure the solenoid valve resistance at the overdrive solenoid valve assembly inside the transaxle.

(1) Disconnect connector B-108-3 and measure at the solenoid valve side.

(2) Measure the resistance between Overdrive solenoid valve terminals 1 and 2.

Resistance value: 2.7–3.4 Ω [at 20°C (68°F)]

Q: Is the measured resistance 2.7–3.4 Ω [at 20°C (68°F)]?

YES : Replace the harness wire between A/T control solenoid valve assembly connector B-108 and the solenoid valves.

NO : Replace the Overdrive solenoid valve. Refer to GROUP 23B, Valve Body [P.23B-80](#).

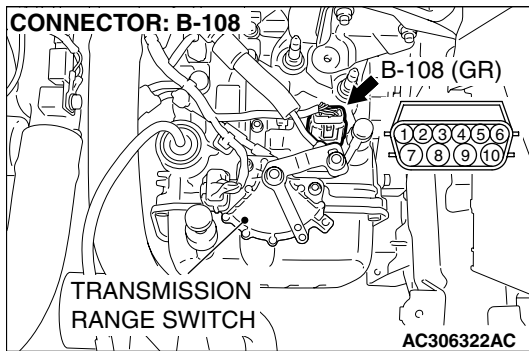
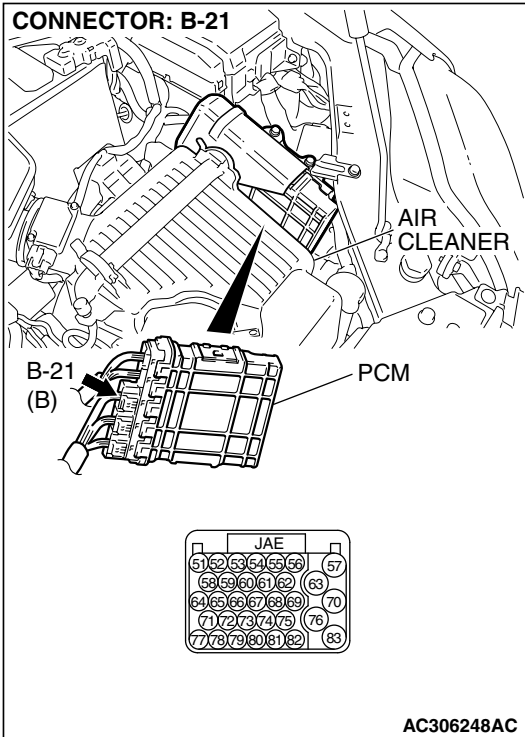
STEP 6. Check PCM connector B-21 and A/T control solenoid valve assembly connector B-108 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connectors and terminals in good condition?

YES : Go to Step 7.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

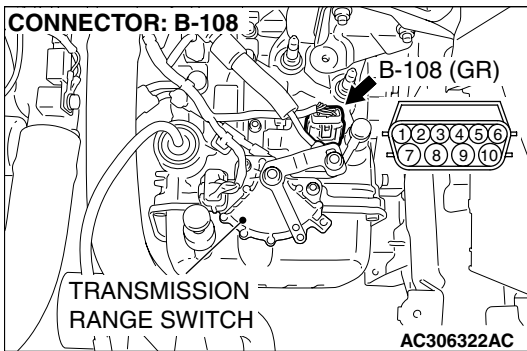
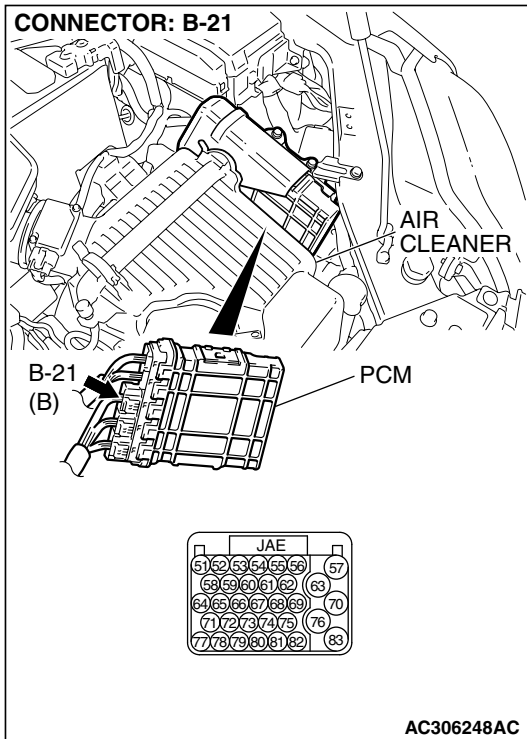


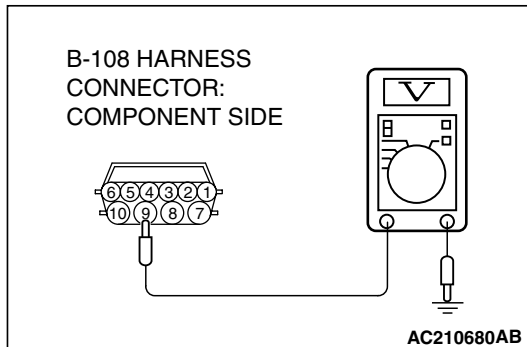
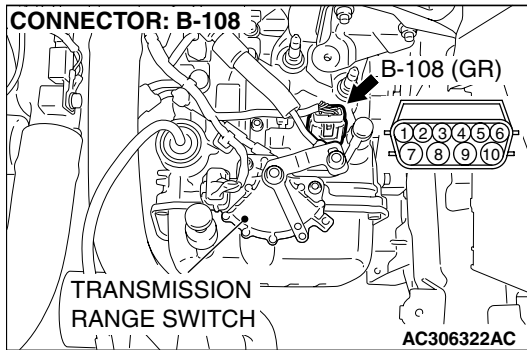
STEP 7. Check the harness for an open or short circuit to ground between PCM connector B-20 terminal 55 and A/T control solenoid valve assembly connector B-108 terminal 5.

Q: Is the harness wire in good condition?

YES : Replace the PCM.

NO : Repair or replace the harness wire.





STEP 8. Measure the supply voltage at A/T control solenoid valve assembly connector B-108.

- (1) Disconnect solenoid valve assembly harness connector B-108.
- (2) Turn the ignition switch to the "ON" position.

- (3) Measure the voltage between harness connector B-108 terminal 9 and ground.
 - The voltage should equal battery positive voltage.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

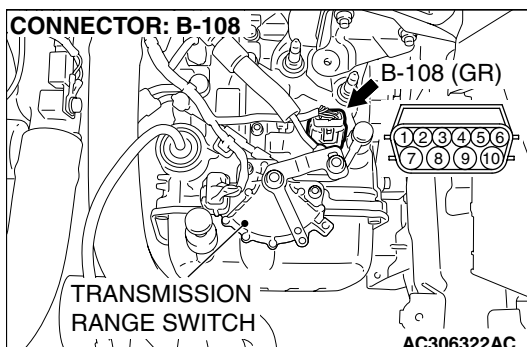
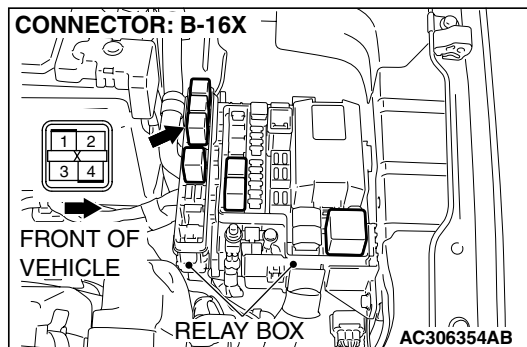
Q: Is the measured voltage battery positive voltage?

- YES :** Go to Step 11.
NO : Go to Step 9.

STEP 9. Check A/T control relay connector B-16X in the engine component relay box and A/T control solenoid valve assembly connector B-108 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connectors and terminals in good condition?

- YES :** Go to Step 10.
NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#).

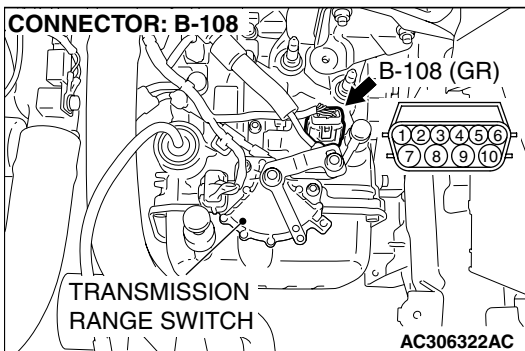
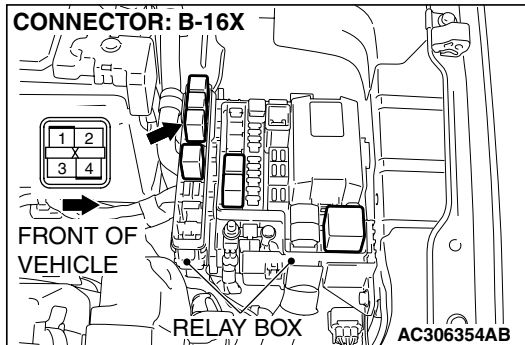


STEP 10. Check the harness for an open circuit or short circuit to ground between A/T control relay connector B-16X terminal 4 in the engine component relay box and A/T control solenoid valve assembly connector B-108 terminal 9.

Q: Is the harness wire in good condition?

YES : Go to Step 11.

NO : Repair or replace the harness wire.



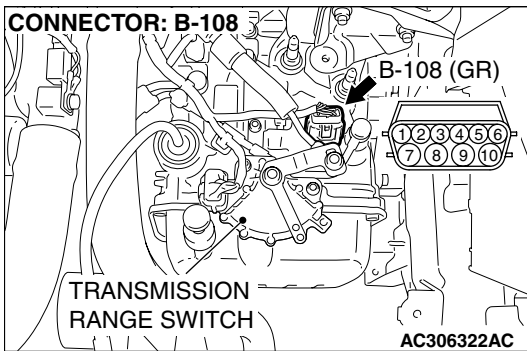
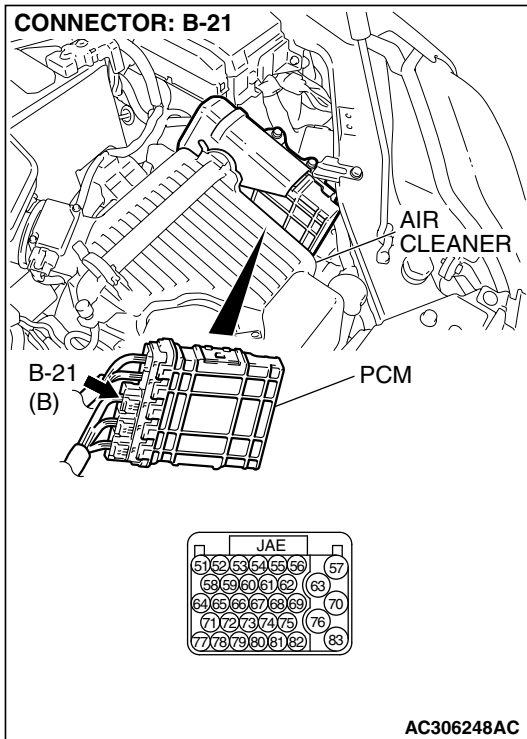
STEP 11. Check PCM connector B-21 and A/T control solenoid valve assembly connector B-108 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connectors and terminals in good condition?

YES : Go to Step 12.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

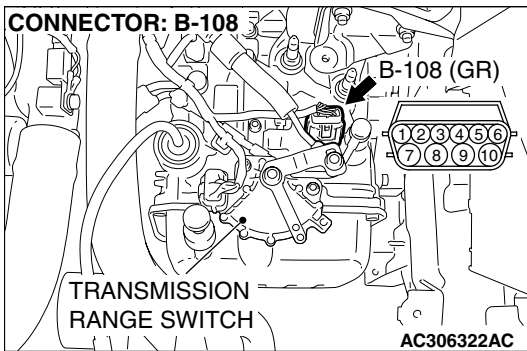
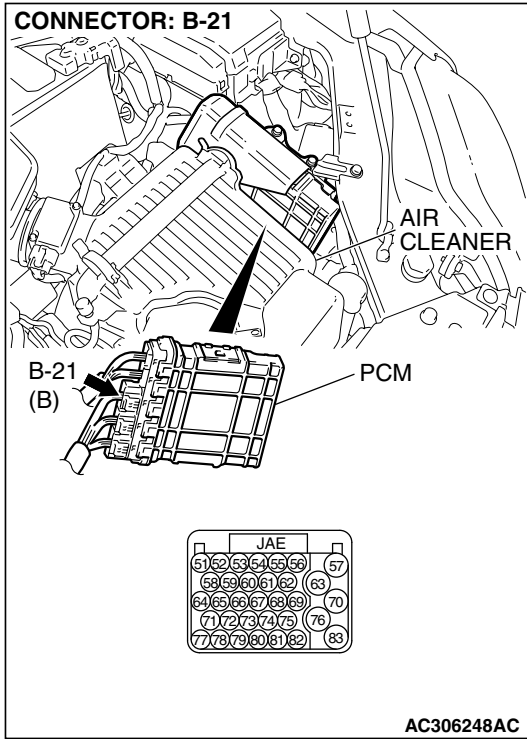


STEP 12. Check the harness for an open or short circuit to ground between PCM connector B-21 (terminals 65, 66 and 55) and A/T control solenoid valve assembly connector B-108 (terminals 3, 4 and 5).

Q: Are the harness wires in good condition?

YES : Go to Step 13.

NO : Repair or replace the harness wire.

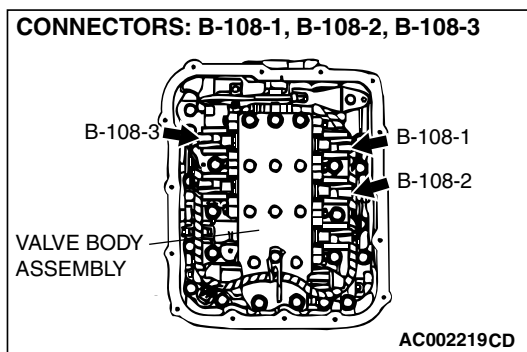
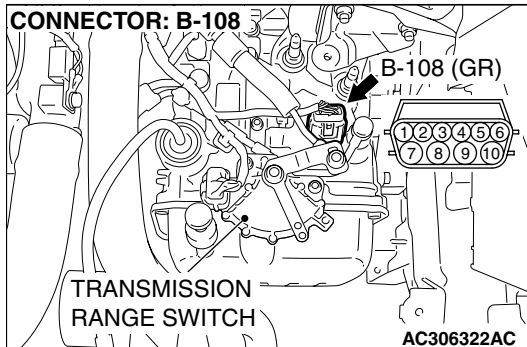


STEP 13. Check the harness for an open or short circuit to ground between A/T control solenoid valve assembly connector B-108 (terminals 3, 4, 5, and 9) and solenoid valve connectors B-108-1, B-108-2 and B-108-3.

Q: Is the harness wire in good condition?

YES : Replace the PCM.

NO : Replace the harness wire.



DTC 36 (P0743): Torque Converter Clutch Solenoid Valve System

SOLENOID VALVE SYSTEM CIRCUIT

Refer to [P.23A-187](#).

CIRCUIT OPERATION

Refer to [P.23A-187](#).

DESCRIPTIONS OF MONITOR METHODS

- If lock-up is not engaged, and solenoid terminal voltage is below specified value, PCM judges that torque converter clutch solenoid valve has a failure.

MONITOR EXECUTION

- Continuous

**MONITOR EXECUTION CONDITIONS
(OTHER MONITOR AND SENSOR)**

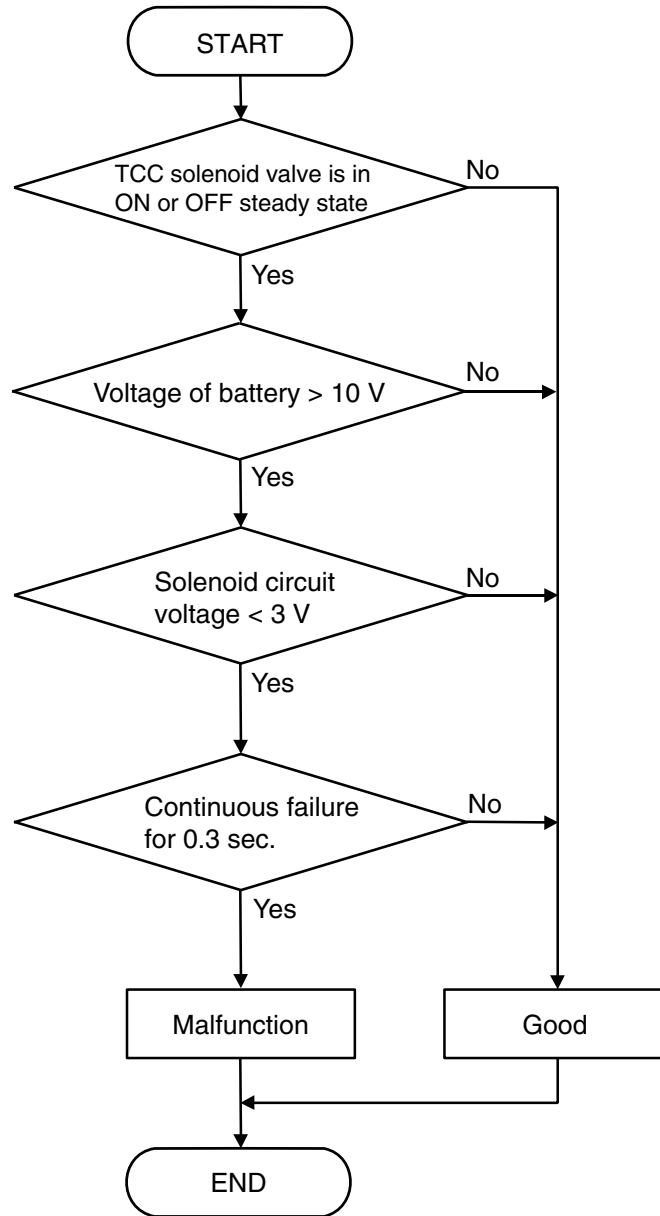
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- DTC 41 (P0731): 1st gear incorrect ratio
- DTC 42 (P0732): 2nd gear incorrect ratio
- DTC 43 (P0733): 3rd gear incorrect ratio
- DTC 44 (P0734): 4th gear incorrect ratio
- DTC 46 (P0736): Reverse gear incorrect ratio
- DTC 31 (P0753): Low-reverse solenoid malfunction
- DTC 32 (P0758): Underdrive solenoid malfunction
- DTC 33 (P0763): Second solenoid malfunction
- DTC 34 (P0768): Overdrive solenoid malfunction
- DTC 54 (P1751): A/T control relay malfunction

Sensor (The sensor below is determined to be normal)

- Low-reverse solenoid
- Underdrive solenoid
- Second solenoid
- Overdrive solenoid
- A/T control relay

LOGIC FLOW CHARTS (Monitor Sequence)



AC205240AC

DTC SET CONDITIONS**Check Conditions**

- Solenoid status: either solid ON or OFF.
- Voltage of battery: 10 volts or more.

Judgement Criteria

- Solenoid voltage: 3 volts or less. (0.3 second)
- If DTC 36 (P0743) is set consecutively four times, the transaxle is locked into 3rd gear as a fail-safe measure, and the "N" range light flashes once per second.

OBD-II DRIVE CYCLE PATTERN

Start the engine, and keep the vehicle stopped in "P" range for 5 seconds.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the torque converter clutch solenoid valve
- Damaged harness or connector
- Malfunction of the PCM

DIAGNOSIS

Required Special Tool:

- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: MUT-III USB Cable
 - MB991910: MUT-III Main Harness A

STEP 1. Using scan tool MB991958, check actuator test item 06: Torque Converter Clutch Solenoid Valve.

⚠ CAUTION

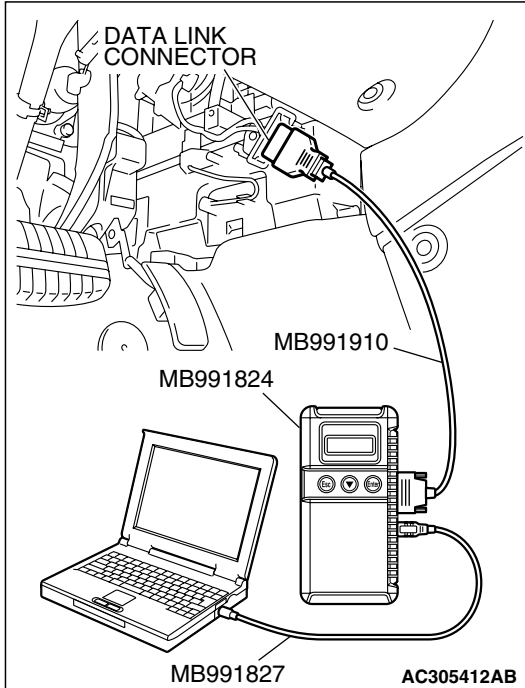
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

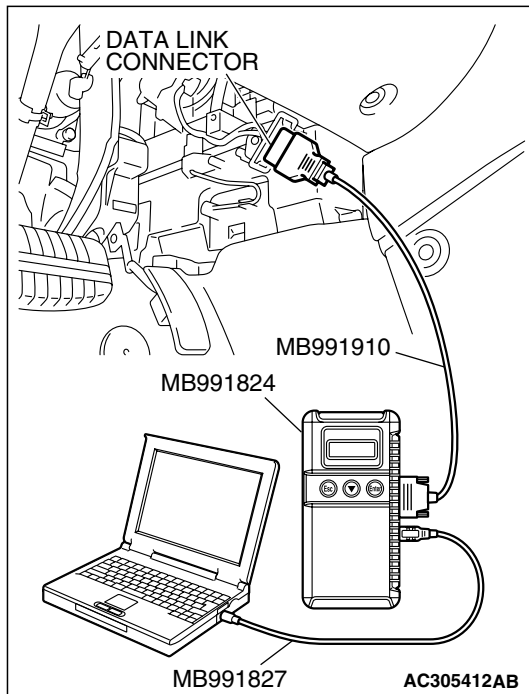
- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Set scan tool MB991958 to the actuator test mode.
 - Item 06: Torque Converter Clutch Solenoid Valve.
 - An audible clicking or buzzing should be heard when the torque converter clutch solenoid valve is energized.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the solenoid valve operating properly?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-14](#).

NO : Go to Step 2.





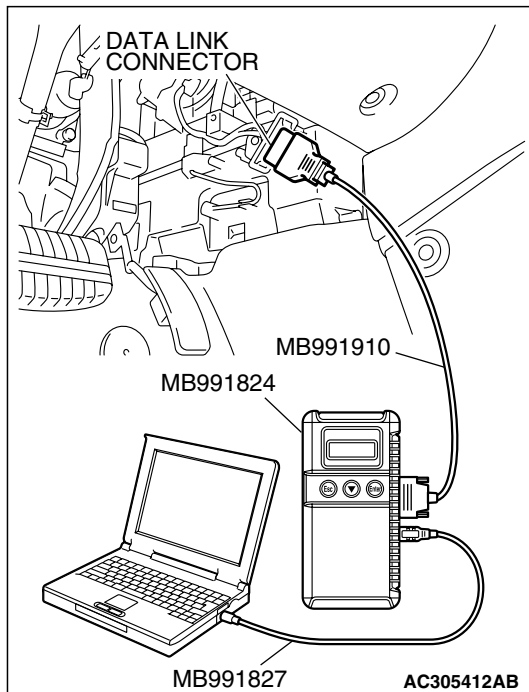
STEP 2. Using scan tool MB991958, read the A/T diagnostic trouble code.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Check for A/T diagnostic trouble code.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is DTC 54 set? (DTC 54 may be set along with multiple DTCs).

YES : Refer to [P 23A-267](#) DTC 54: A/T Control Relay System.

NO : Go to Step 3.



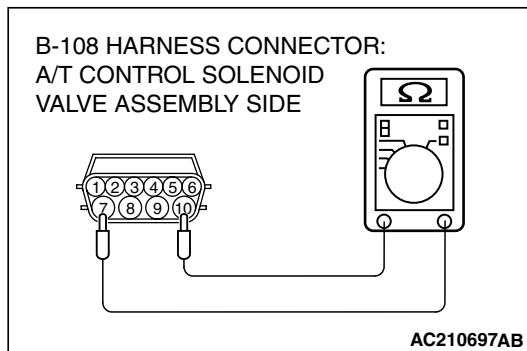
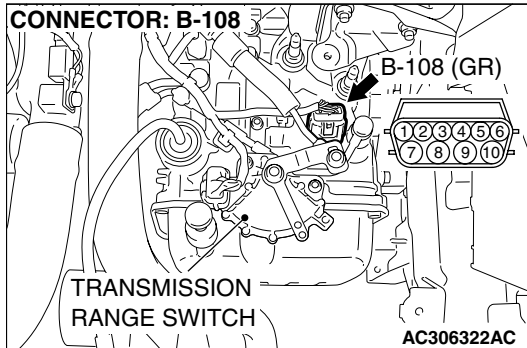
STEP 3. Using scan tool MB991958, read the A/T diagnostic trouble code.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Check for A/T diagnostic trouble code.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is DTC 31 set?

YES : Go to Step 8.

NO : Go to Step 4.



STEP 4. Measure the torque converter clutch solenoid valve resistance at A/T control solenoid valve assembly connector B-108.

(1) Disconnect connector B-108 and measure at the solenoid valve side.

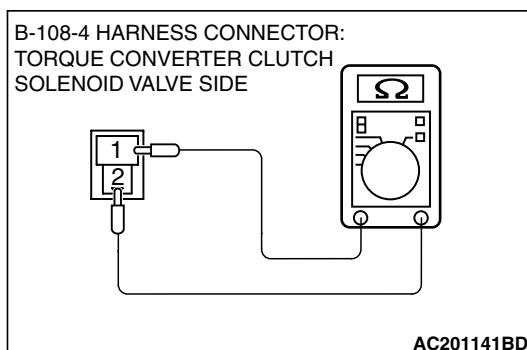
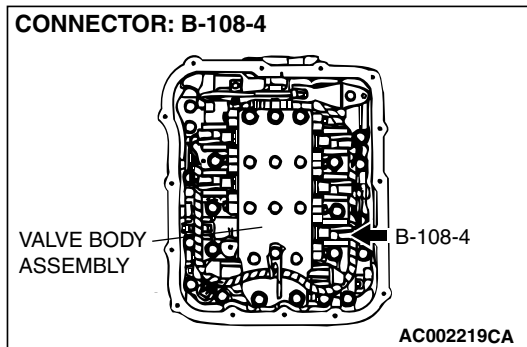
(2) Measure the resistance between solenoid valve assembly connector B-108 terminals 7 and 10.

Resistance value: 2.7–3.4 Ω [at 20°C (68°F)]

Q: Is the measured resistance 2.7–3.4 Ω [at 20°C (68°F)]?

YES : Go to Step 6.

NO : Go to Step 5.



STEP 5. Measure the solenoid valve resistance at the torque converter clutch solenoid valve assembly inside the transaxle.

(1) Disconnect connector B-108-4 and measure at the solenoid valve side.

(2) Measure the resistance between torque converter clutch solenoid valve terminals 1 and 2.

Resistance value: 2.7–3.4 Ω [at 20°C (68°F)]

Q: Is the measured resistance 2.7–3.4 Ω [at 20°C (68°F)]?

YES : Replace the harness wire between A/T control solenoid valve assembly connector B-108 and the solenoid valves.

NO : Replace the torque converter clutch solenoid valve. Refer to GROUP 23B, Valve Body P.23B-80.

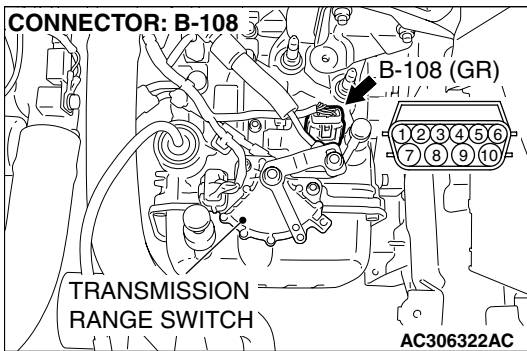
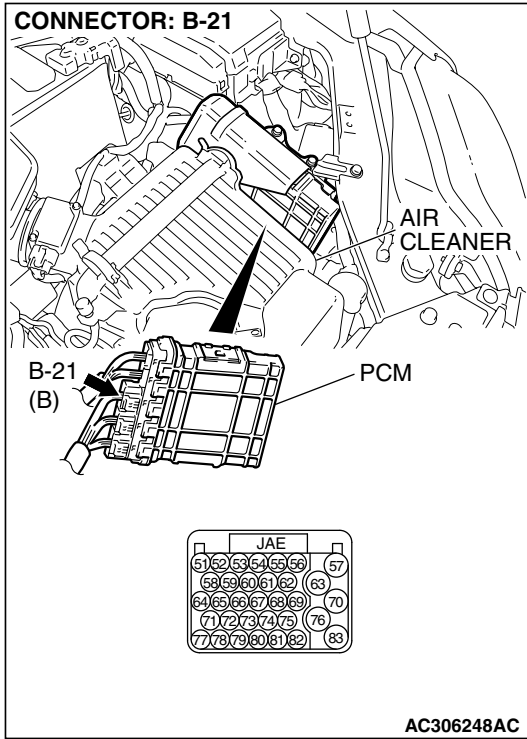
STEP 6. Check PCM connector B-21 and A/T control solenoid valve assembly connector B-108 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connectors and terminals in good condition?

YES : Go to Step 7.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

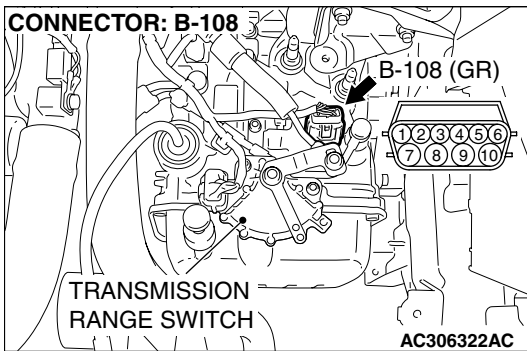
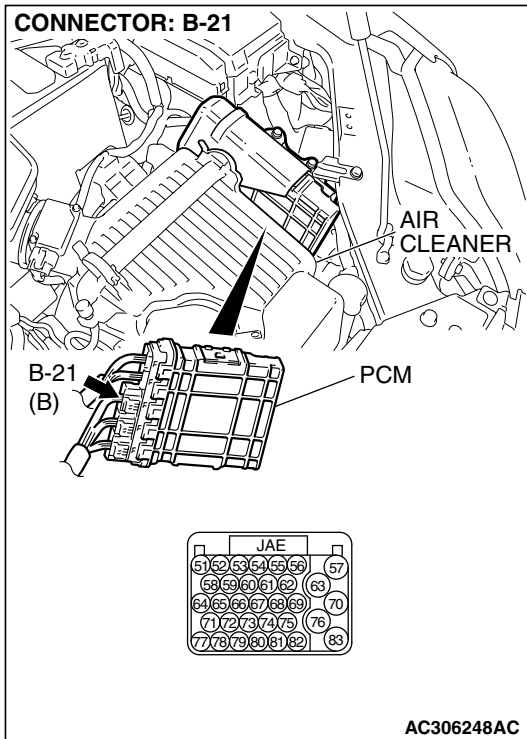


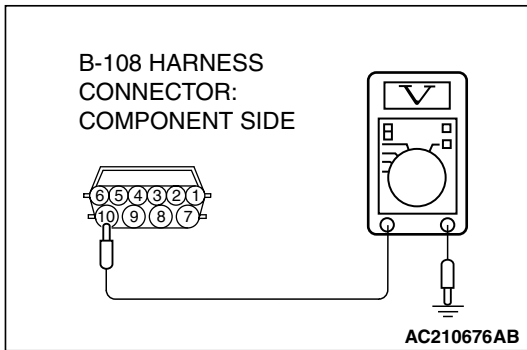
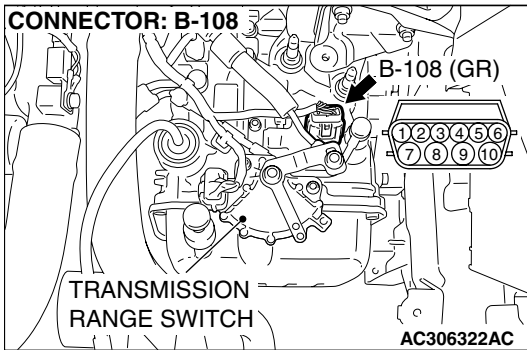
STEP 7. Check the harness for an open or short circuit to ground between PCM connector B-21 terminal 54 and A/T control solenoid valve assembly connector B-108 terminal 7.

Q: Is the harness wire in good condition?

YES : Replace the PCM.

NO : Repair or replace the harness wire.





STEP 8. Measure the supply voltage at A/T control solenoid valve assembly connector B-108.

- (1) Disconnect solenoid valve assembly harness connector B-108.
- (2) Turn the ignition switch to the "ON" position.

- (3) Measure the voltage between harness connector B-108 terminal 10 and ground.
 - The voltage should equal battery positive voltage.

- (4) Turn the ignition switch to the "LOCK" (OFF) position.

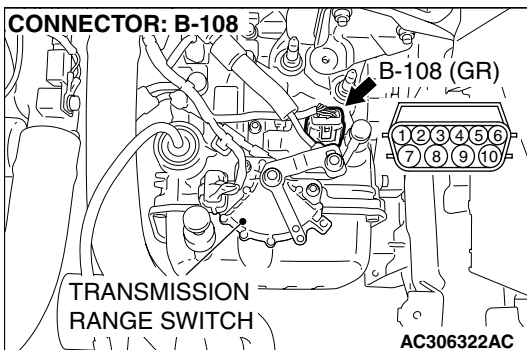
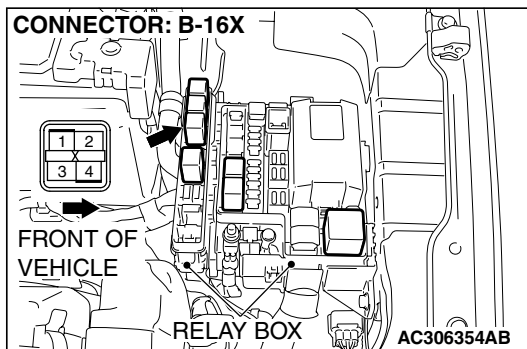
Q: Is the measured voltage battery positive voltage?

- YES :** Go to Step 11.
- NO :** Go to Step 9.

STEP 9. Check A/T control relay connector B-16X in the engine component relay box and A/T control solenoid valve assembly connector B-108 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connectors and terminals in good condition?

- YES :** Go to Step 10.
- NO :** Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#).

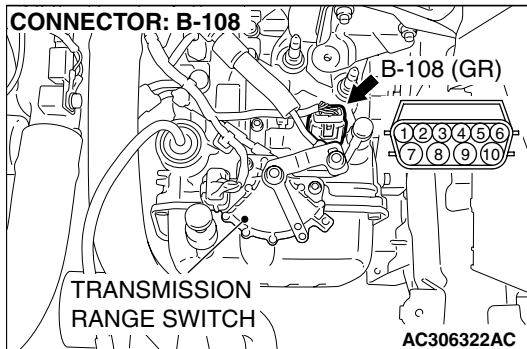
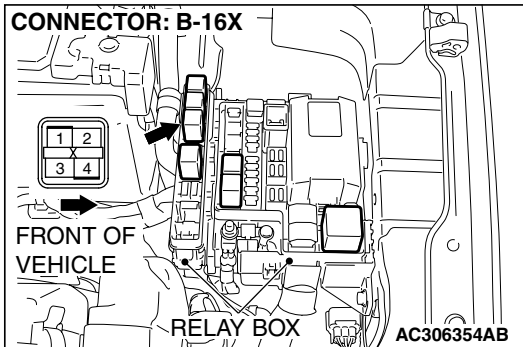


STEP 10. Check the harness for an open circuit or short circuit to ground between A/T control relay connector B-16X terminal 4 in the engine component relay box and A/T control solenoid valve assembly connector B-108 terminal 10.

Q: Is the harness wire in good condition?

YES : Go to Step 11.

NO : Repair or replace the harness wire.

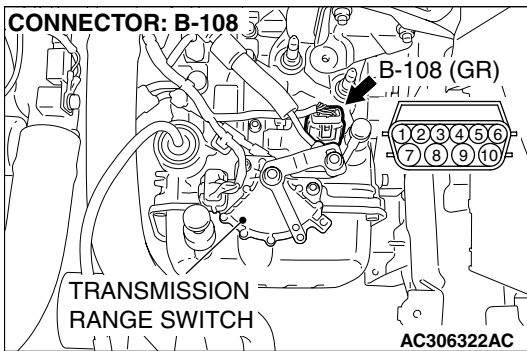
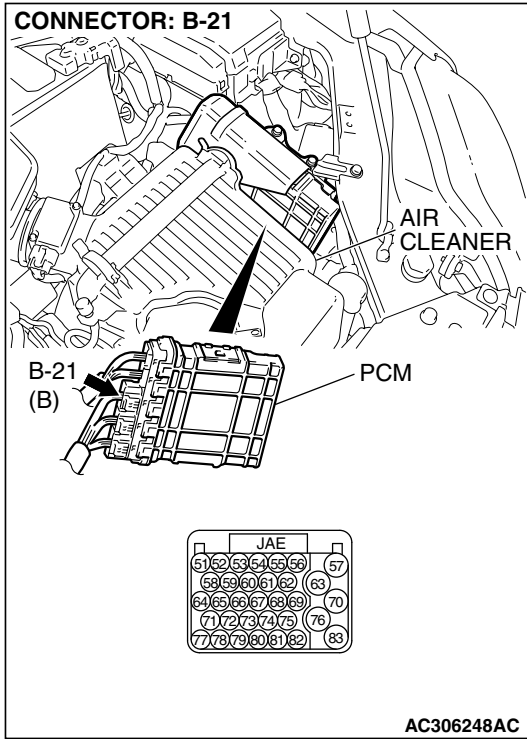


STEP 11. Check PCM connector B-21 and A/T control solenoid valve assembly connector B-108 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connectors and terminals in good condition?

YES : Go to Step 12.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#).

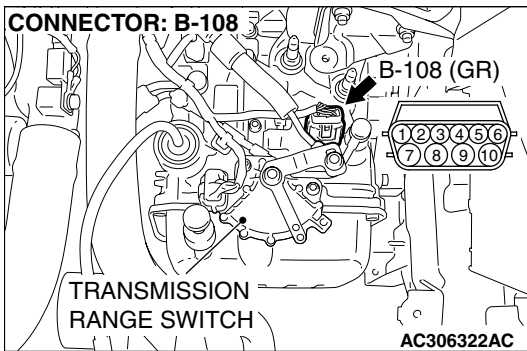
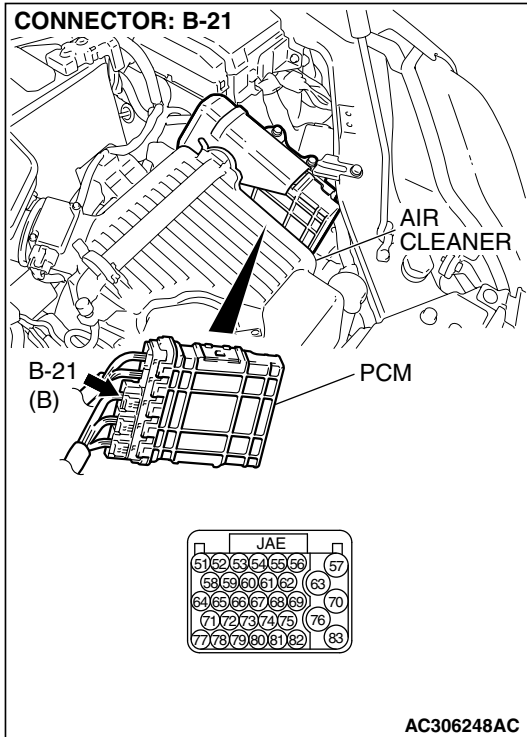


STEP 12. Check the harness for an open or short circuit to ground between PCM connector B-21 (terminals 54 and 56) and A/T control solenoid valve assembly connector B-108 (terminals 6 and 7).

Q: Are the harness wires in good condition?

YES : Go to Step 13.

NO : Repair or replace the harness wire.

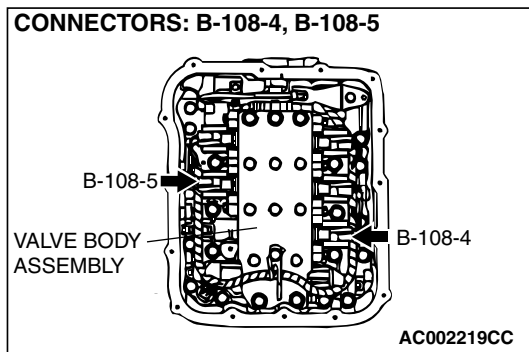
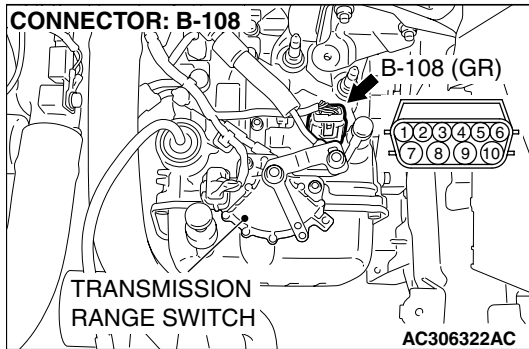


STEP 13. Check the harness for an open or short circuit to ground between A/T control solenoid valve assembly connector B-108 (terminals 6, 7, and 10) and solenoid valve connectors B-108-4 and B-108-5.

Q: Is the harness wire in good condition?

YES : Replace the PCM.

NO : Replace the harness wire.



DTC 41 (P0731): 1st Gear Incorrect Ratio
DTC 42 (P0732): 2nd Gear Incorrect Ratio
DTC 43 (P0733): 3rd Gear Incorrect Ratio
DTC 44 (P0734): 4th Gear Incorrect Ratio
DTC 46 (P0736): Reverse Gear Incorrect Ratio

CIRCUIT OPERATION

- The input shaft speed sensor generates a pulsed signal of 0 ⇔ 5 volts. The pulsed signal frequency increases with an increase in the input shaft speed.
- The PCM continuously monitors the input shaft speed signal.

DESCRIPTIONS OF MONITOR METHODS

<DTC 41 (P0731)>

- In 1st gear, if a difference between turbine revolution and that value calculated from output revolution equals or exceeds specified value, PCM judges that step-out in 1st gear has occurred.

MONITOR EXECUTION <DTC 41 (P0731)>

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR) <DTC 41 (P0731)>

Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- DTC 27, 28 (P0705): Transmission range switch malfunction
- DTC 22 (P0715): Input shaft speed sensor malfunction

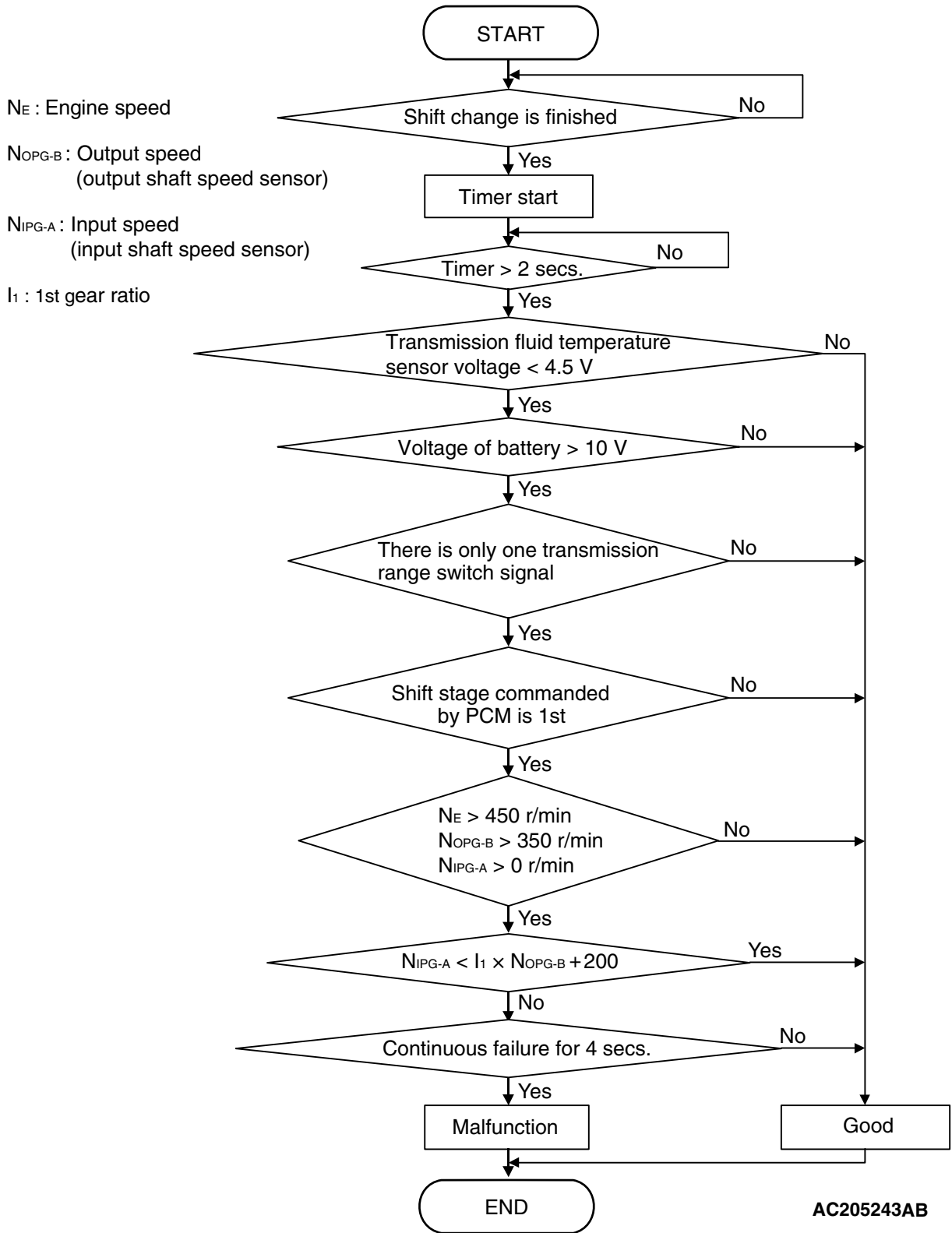
- The output shaft speed sensor generates a pulsed signal of 0 ⇔ 5 volts. The pulsed signal frequency increases with an increase in the output shaft speed.
- The PCM continuously monitors the output shaft speed signal.

- DTC 23 (P0720): Output shaft speed sensor malfunction
- DTC 36 (P0743): Torque converter clutch solenoid malfunction
- DTC 31 (P0753): Low-reverse solenoid malfunction
- DTC 32 (P0758): Underdrive solenoid malfunction
- DTC 33 (P0763): Second solenoid malfunction
- DTC 34 (P0768): Overdrive solenoid malfunction
- DTC 54 (P1751): A/T control relay malfunction

Sensor (The sensor below is determined to be normal)

- Input shaft speed sensor
- Output shaft speed sensor
- Transmission range switch
- Torque converter clutch solenoid
- Low-reverse solenoid
- Underdrive solenoid
- Second solenoid
- Overdrive solenoid
- A/T control relay

LOGIC FLOW CHARTS (Monitor Sequence) <DTC 41 (P0731)>



DTC SET CONDITIONS <DTC 41 (P0731)>

Check Conditions

- Engine speed: 450 r/min or more.
- Output speed: 350 r/min or more.
- Shift stage: 1st gear.
- Input speed: more than 0 r/min.
- Transmission fluid temperature sensor voltage: 4.5 volts or less.
- Voltage of battery: 10 volts or more.
- Transmission range switch rationality: only one signal.
- Time after shift changing finish: 2 seconds or more.

DESCRIPTIONS OF MONITOR METHODS <DTC 42 (P0732)>

- In 2nd gear, if a difference between turbine revolution and that value calculated from output revolution equals or exceeds specified value, PCM judges that step-out in 2nd gear has occurred.

MONITOR EXECUTION <DTC 42 (P0732)>

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR) <DTC 42 (P0732)>

Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- DTC 27, 28 (P0705): Transmission range switch malfunction
- DTC 22 (P0715): Input shaft speed sensor malfunction

Judgement Criteria

- Output speed: [(input speed - 200 r/min) / 1st gear ratio] or less. (4 seconds)
- If DTC 41 (P0731) is set consecutively four times, the transaxle is locked into 3rd gear as a fail-safe measure, and the "N" range light flashes once per second.

OBD-II DRIVE CYCLE PATTERN <DTC 41 (P0731)>

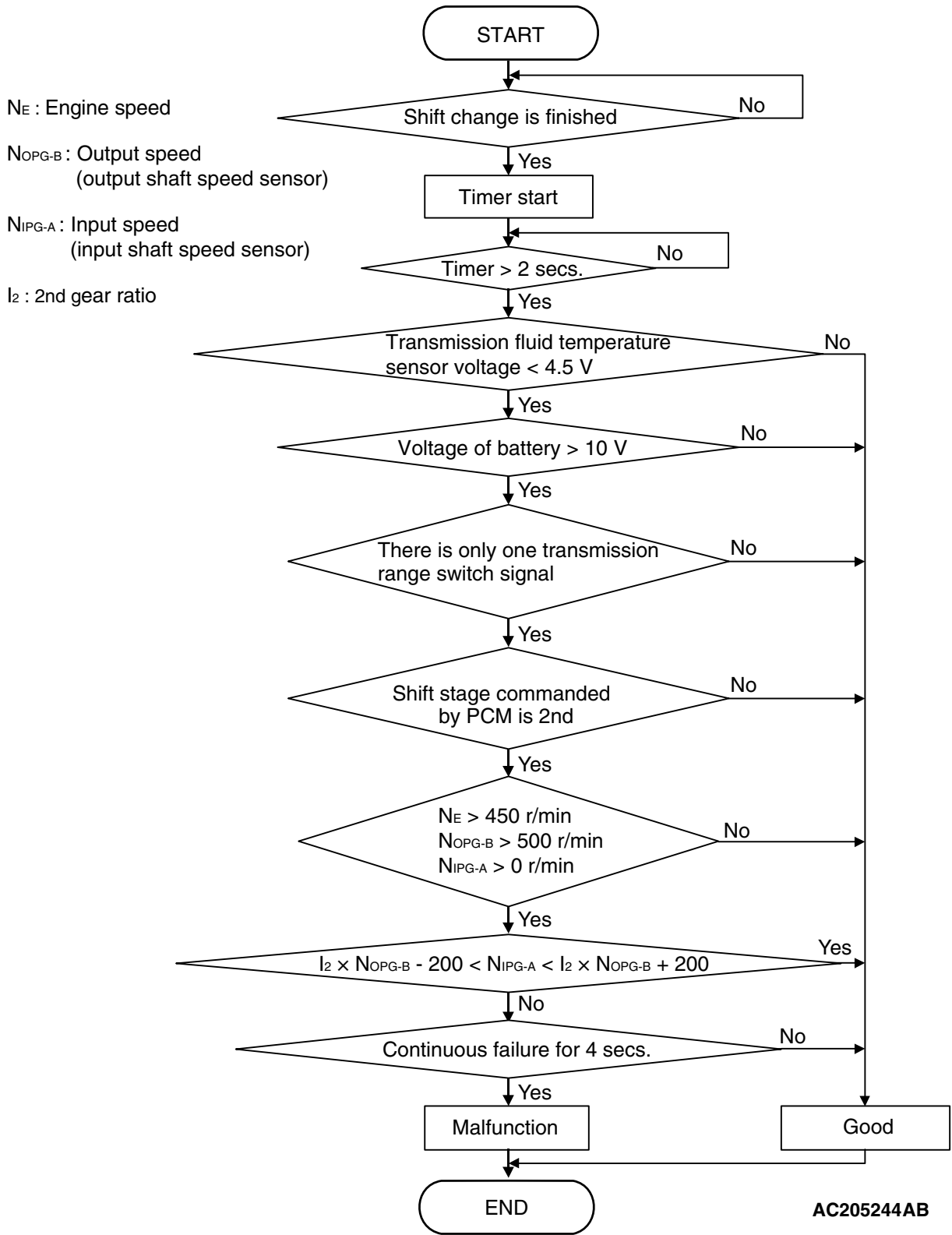
Start the engine, and drive at 20 km/h (12 mph) or more for 10 seconds, with 1st gear fixed (1st gear in sport mode).

- DTC 23 (P0720): Output shaft speed sensor malfunction
- DTC 36 (P0743): Torque converter clutch solenoid malfunction
- DTC 31 (P0753): Low-reverse solenoid malfunction
- DTC 32 (P0758): Underdrive solenoid malfunction
- DTC 33 (P0763): Second solenoid malfunction
- DTC 34 (P0768): Overdrive solenoid malfunction
- DTC 54 (P1751): A/T control relay malfunction

Sensor (The sensor below is determined to be normal)

- Input shaft speed sensor
- Output shaft speed sensor
- Transmission range switch
- Torque converter clutch solenoid
- Low-reverse solenoid
- Underdrive solenoid
- Second solenoid
- Overdrive solenoid
- A/T control relay

LOGIC FLOW CHARTS (Monitor Sequence) <DTC 42 (P0732)>



DTC SET CONDITIONS <DTC 42 (P0732)>

Check Conditions

- Engine speed: 450 r/min or more.
- Output speed: 500 r/min or more.
- Shift stage: 2nd gear.
- Input speed: more than 0 r/min.
- Transmission fluid temperature sensor voltage: 4.5 volts or less.
- Voltage of battery: 10 volts or more.
- Transmission range switch rationality: only one signal.
- Time after shift changing finish: 2 seconds or more.

DESCRIPTIONS OF MONITOR METHODS <DTC 43 (P0733)>

- In 3rd gear, if a difference between turbine revolution and that value calculated from output revolution equals or exceeds specified value, PCM judges that step-out in 3rd gear has occurred.

MONITOR EXECUTION <DTC 43 (P0733)>

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR) <DTC 43 (P0733)>

Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- DTC 27, 28 (P0705): Transmission range switch malfunction
- DTC 22 (P0715): Input shaft speed sensor malfunction

Judgement Criteria

- Output speed: [(input speed + 200 r/min) / 2nd gear ratio] or more. (4 seconds)
- Output speed: [(input speed - 200 r/min) / 2nd gear ratio] or less. (4 seconds)
- If DTC 42 (P0732) is set consecutively four times, the transaxle is locked into 3rd gear as a fail-safe measure, and the "N" range light flashes once per second.

OBD-II DRIVE CYCLE PATTERN <DTC 42 (P0732)>

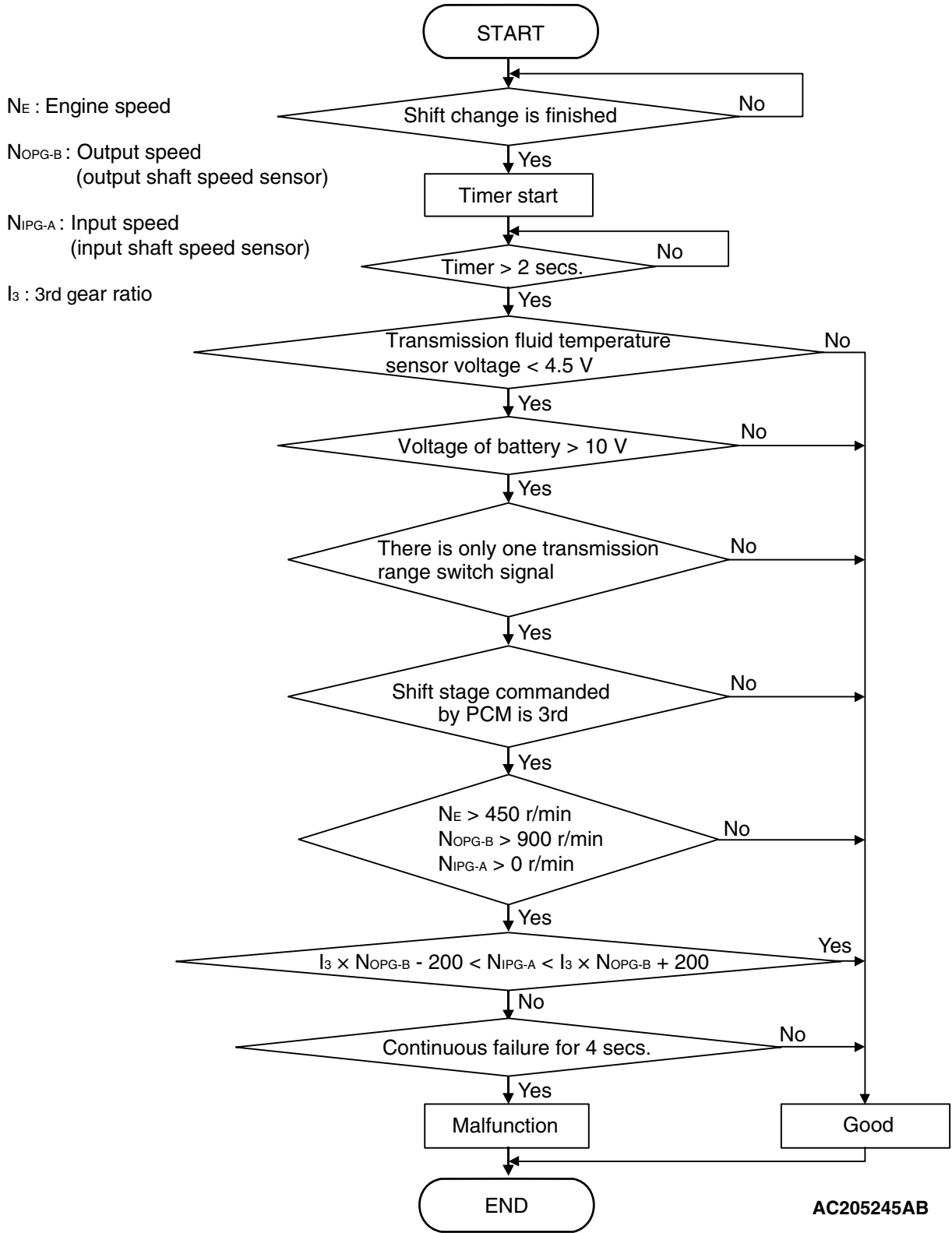
Start the engine, and drive at 30 km/h (19 mph) or more for 10 seconds, with 2nd gear fixed (2nd gear in sport mode).

- DTC 23 (P0720): Output shaft speed sensor malfunction
- DTC 36 (P0743): Torque converter clutch solenoid malfunction
- DTC 31 (P0753): Low-reverse solenoid malfunction
- DTC 32 (P0758): Underdrive solenoid malfunction
- DTC 33 (P0763): Second solenoid malfunction
- DTC 34 (P0768): Overdrive solenoid malfunction
- DTC 54 (P1751): A/T control relay malfunction

Sensor (The sensor below is determined to be normal)

- Input shaft speed sensor
- Output shaft speed sensor
- Transmission range switch
- Torque converter clutch solenoid
- Low-reverse solenoid
- Underdrive solenoid
- Second solenoid
- Overdrive solenoid
- A/T control relay

LOGIC FLOW CHARTS (Monitor Sequence) <DTC 43 (P0733)>



DTC SET CONDITIONS <DTC 43 (P0733)>

Check Conditions

- Engine speed: 450 r/min or more.
- Output speed: 900 r/min or more.
- Shift stage: 3rd gear.
- Input speed: more than 0 r/min.
- Transmission fluid temperature sensor voltage: 4.5 volts or less.
- Voltage of battery: 10 volts or more.
- Transmission range switch rationality: only one signal.
- Time after shift changing finish: 2 seconds or more.

DESCRIPTIONS OF MONITOR METHODS <DTC 44 (P0734)>

- In 4th gear, if a difference between turbine revolution and that value calculated from output revolution equals or exceeds specified value, PCM judges that step-out in 4th gear has occurred.

MONITOR EXECUTION <DTC 44 (P0734)>

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR) <DTC 44 (P0734)>

Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- DTC 27, 28 (P0705): Transmission range switch malfunction
- DTC 22 (P0715): Input shaft speed sensor malfunction

Judgement Criteria

- Output speed: [(input speed + 200 r/min) / 3rd gear ratio] or more. (4 seconds)
- Output speed: [(input speed - 200 r/min) / 3rd gear ratio] or less. (4 seconds)
- If DTC 43 (P0733) is set consecutively four times, the transaxle is locked into 3rd gear as a fail-safe measure, and the "N" range light flashes once per second.

OBD-II DRIVE CYCLE PATTERN <DTC 43 (P0733)>

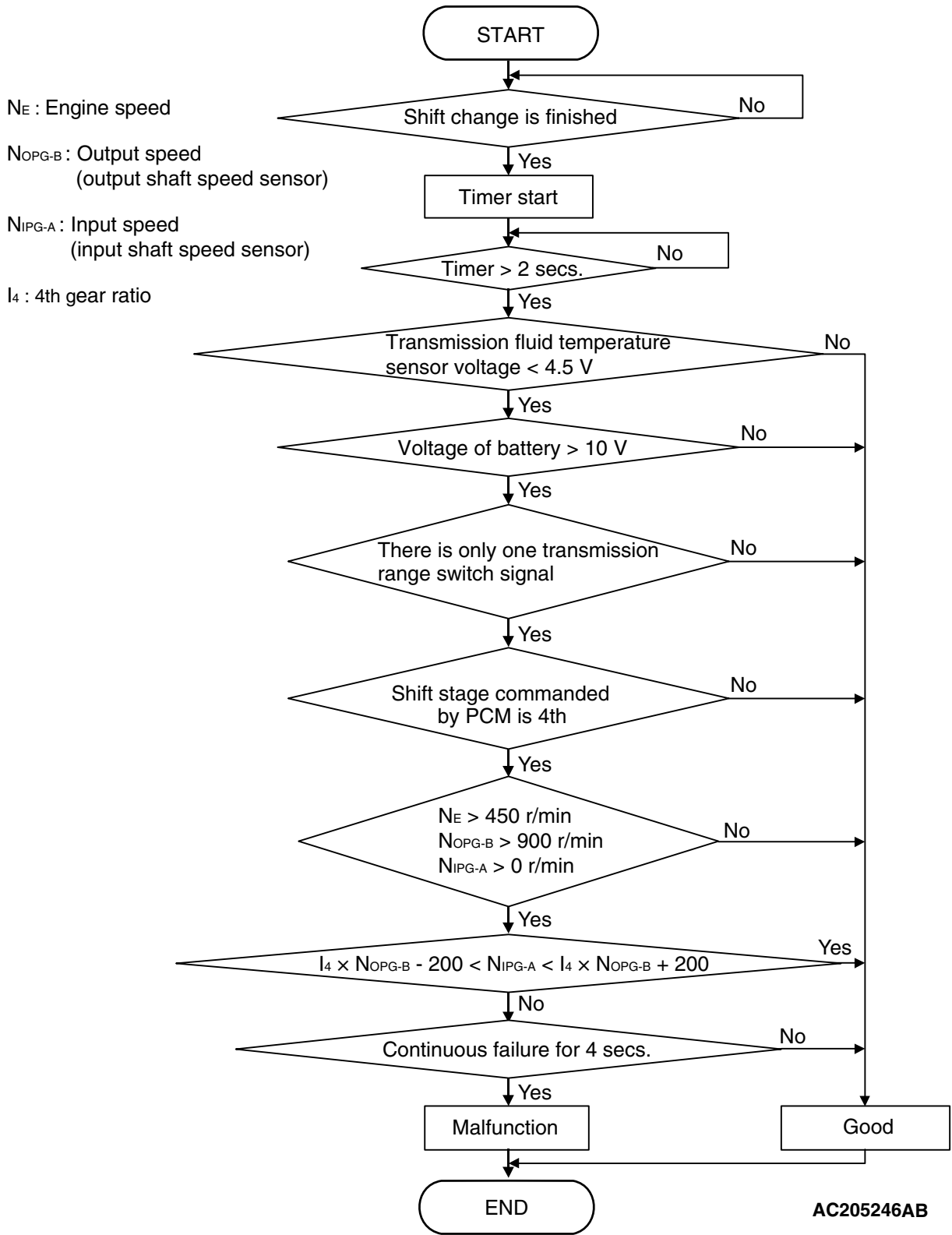
Start the engine, and drive at 40 km/h (25 mph) or more for 10 seconds, with 3rd gear fixed (3rd gear in sport mode).

- DTC 23 (P0720): Output shaft speed sensor malfunction
- DTC 36 (P0743): Torque converter clutch solenoid malfunction
- DTC 31 (P0753): Low-reverse solenoid malfunction
- DTC 32 (P0758): Underdrive solenoid malfunction
- DTC 33 (P0763): Second solenoid malfunction
- DTC 34 (P0768): Overdrive solenoid malfunction
- DTC 54 (P1751): A/T control relay malfunction

Sensor (The sensor below is determined to be normal)

- Input shaft speed sensor
- Output shaft speed sensor
- Transmission range switch
- Torque converter clutch solenoid
- Low-reverse solenoid
- Underdrive solenoid
- Second solenoid
- Overdrive solenoid
- A/T control relay

LOGIC FLOW CHARTS (Monitor Sequence) <DTC 44 (P0734)>



DTC SET CONDITIONS <DTC 44 (P0734)>

Check Conditions

- Engine speed: 450 r/min or more.
- Output speed: 900 r/min or more.
- Shift stage: 4th gear.
- Input speed: more than 0 r/min.
- Transmission fluid temperature sensor voltage: 4.5 volts or less.
- Voltage of battery: 10 volts or more.
- Transmission range switch rationality: only one signal.
- Time after shift changing finish: 2 seconds or more.

DESCRIPTIONS OF MONITOR METHODS <DTC 46 (P0736)>

- In reverse gear, if a difference between turbine revolution and that value calculated from output revolution equals or exceeds specified value, PCM judges that step-out in reverse gear has occurred.

MONITOR EXECUTION <DTC 46 (P0736)>

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR) <DTC 46 (P0736)>

Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- DTC 27, 28 (P0705): Transmission range switch malfunction
- DTC 22 (P0715): Input shaft speed sensor malfunction

Judgement Criteria

- Output speed: [(input speed + 200 r/min) / 4th gear ratio] or more. (4 seconds)
- Output speed: [(input speed - 200 r/min) / 4th gear ratio] or less. (4 seconds)
- If DTC 44 (P0734) is set consecutively four times, the transaxle is locked into 3rd gear as a fail-safe measure, and the "N" range light flashes once per second.

OBD-II DRIVE CYCLE PATTERN <DTC 44 (P0734)>

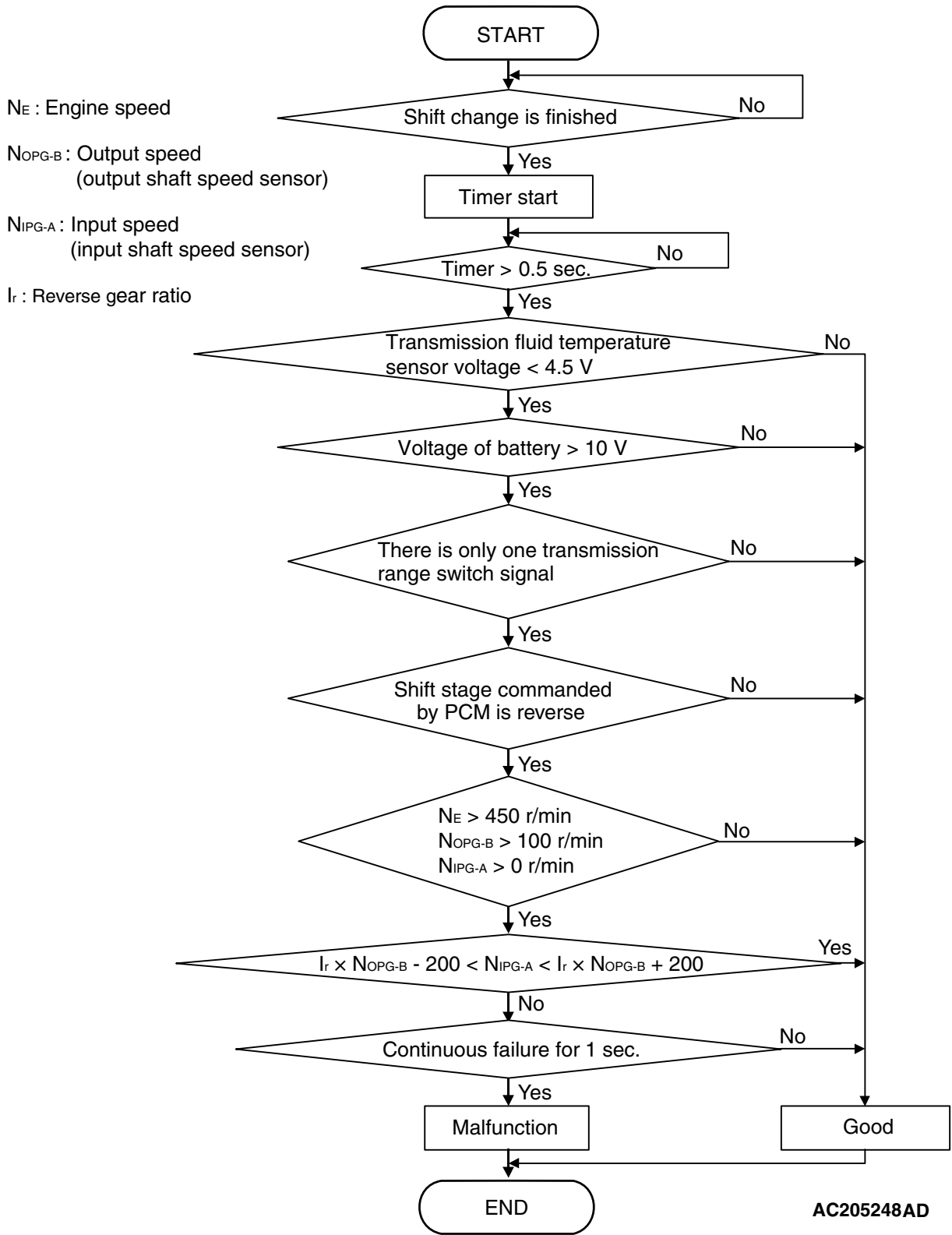
Start the engine, and drive at 40 km/h (25 mph) or more for 10 seconds, with 4th gear fixed (4th gear in sport mode).

- DTC 23 (P0720): Output shaft speed sensor malfunction
- DTC 36 (P0743): Torque converter clutch solenoid malfunction
- DTC 31 (P0753): Low-reverse solenoid malfunction
- DTC 32 (P0758): Underdrive solenoid malfunction
- DTC 33 (P0763): Second solenoid malfunction
- DTC 34 (P0768): Overdrive solenoid malfunction
- DTC 54 (P1751): A/T control relay malfunction

Sensor (The sensor below is determined to be normal)

- Input shaft speed sensor
- Output shaft speed sensor
- Transmission range switch
- Torque converter clutch solenoid
- Low-reverse solenoid
- Underdrive solenoid
- Second solenoid
- Overdrive solenoid
- A/T control relay

LOGIC FLOW CHARTS (Monitor Sequence) <DTC 46 (P0736)>



DTC SET CONDITIONS <DTC 46 (P0736)>

Check Conditions

- Engine speed: 450 r/min or more.
- Output speed: 100 r/min or more.
- Shift stage: reverse gear.
- Input speed: more than 0 r/min.
- Transmission fluid temperature sensor voltage: 4.5 volts or less.
- Voltage of battery: 10 volts or more.
- Transmission range switch rationality: only one signal.
- Time after shift changing finish: 0.5 second or more.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the input shaft speed sensor
- Malfunction of the output shaft speed sensor
- Malfunction of the PCM
- Malfunction of the underdrive clutch retainer
- Malfunction of the transfer drive gear or driven gear

Judgement Criteria

- Output speed: [(input speed + 200 r/min) / reverse gear ratio] or more. (1 second)
- Output speed: [(input speed - 200 r/min) / reverse gear ratio] or less. (1 second)
- If DTC 46 (P0736) is set consecutively four times, the transaxle is locked into 3rd gear as a fail-safe measure, and the "N" range light flashes once per second.

OBD-II DRIVE CYCLE PATTERN <DTC 46 (P0736)>

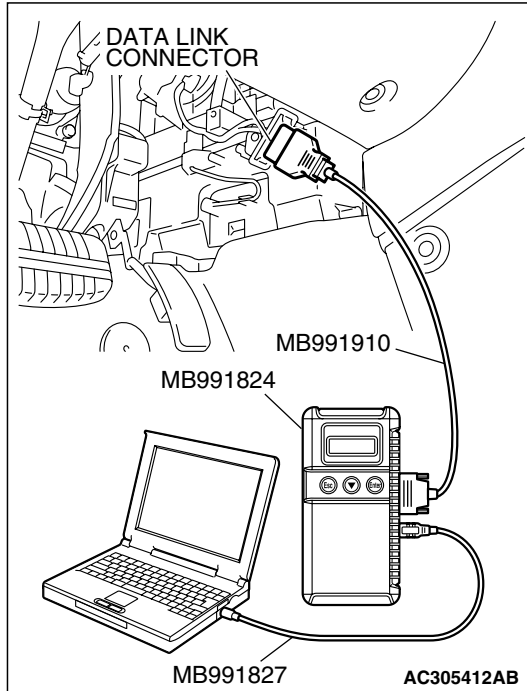
Start the engine, and drive in "R" range at 15 km/h (9 mph) or more for 10 seconds.

- Malfunction of the low-reverse brake system (DTC 41 or DTC 46)
- Malfunction of the underdrive clutch system (DTC 41, DTC 42, or DTC 43)
- Malfunction of the second brake system (DTC 42 or DTC 44)
- Malfunction of the overdrive clutch system (DTC 43 or DTC 44)
- Malfunction of the reverse clutch system (DTC 46)
- Electrical noise generated

DIAGNOSIS

Required Special Tool:

- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: MUT-III USB Cable
 - MB991910: MUT-III Main Harness A



STEP 1. Using scan tool MB991958, read the A/T diagnostic trouble code.

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Check for A/T diagnostic trouble code.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is DTC set?

- YES <DTC 22 set>** : Refer to [P.23A-69](#), DTC 22: Input Shaft Speed Sensor System.
- YES <DTC 23 set>** : Refer to [P.23A-90](#), DTC 23: Output Shaft Speed Sensor System.
- YES <DTC 31 set>** : Refer to [P.23A-187](#), DTC 31: Low-Reverse Solenoid Valve System.
- YES <DTC 32 set>** : Refer to [P.23A-200](#), DTC 32: Underdrive Solenoid Valve System.
- YES <DTC 33 set>** : Refer to [P.23A-211](#), DTC 33: Second Solenoid Valve System.
- YES <DTC 34 set>** : Refer to [P.23A-222](#), DTC 34: Overdrive Solenoid Valve System.
- NO** : Go to Step 2.

STEP 2. Check the hydraulic pressure.

Each hydraulic pressure of the elements below, which DTCs indicate, should be within the standard value. [P.23A-29](#).

- DTC 41: Underdrive clutch and low-reverse brake.
- DTC 42: Underdrive clutch and second brake
- DTC 43: Underdrive clutch and overdrive clutch
- DTC 44: Overdrive clutch and second brake
- DTC 46: Reverse clutch and low-reverse brake

Q: Does the hydraulic pressures meet the standard value range?

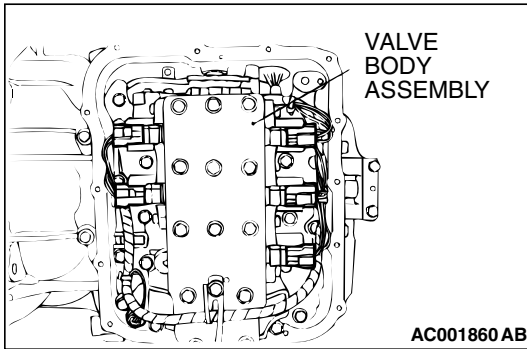
- YES** : Go to Step 5.
- NO <out of the range in one place>** : Go to Step 4.
- NO <out of the range in all places>** : Go to Step 3.

STEP 3. Adjust the line pressure.

Adjust the line pressure. Refer to [P.23A-42](#), Line Pressure Adjustment. Then check the symptom.

Q: Is the symptom eliminated?

- YES** : The procedure is complete.
- NO** : Go to Step 4.



STEP 4. Disassemble and clean the valve body.

Check the O-ring installation bolts for looseness and the valve body for damage. Repair or replace the faulty parts. Refer to GROUP 23B, Valve Body [P.23B-80](#).

Replace the valve body assembly if the damages are thought to be irreparable. Then check the symptom.

Q: Is the symptom eliminated?

YES : The procedure is complete.

NO : Go to Step 6.

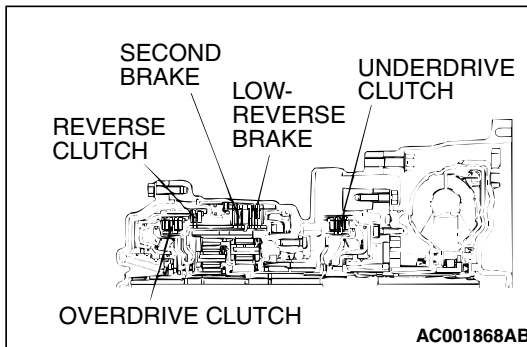
STEP 5. Replace the PCM.

- (1) Replace the PCM.
- (2) Test drive the vehicle.
- (3) Check for A/T diagnostic trouble code.

Q: Were any A/T DTCs set?

YES : Go to Step 6.

NO : The procedure is complete.



STEP 6. Overhaul the A/T.

- (1) Replace the following parts.
 - If DTC 41, DTC 42, or DTC 43 are set individually or in a group, replace the underdrive clutch. Refer to GROUP 23B, Underdrive Clutch and Input Shaft [P.23B-60](#).
 - If DTC 43 or DTC 44 are set individually or in a group, replace the overdrive clutch. Refer to GROUP 23B, Reverse and Overdrive Clutch [P.23B-62](#).
 - If DTC 46 is set, replace the reverse clutch. Refer to GROUP 23B, Reverse and Overdrive Clutch [P.23B-62](#).
 - If DTC 41 or DTC 46 are set individually or in a group, replace the low-reverse brake. Refer to GROUP 23B, Transaxle [P.23B-10](#).
 - If DTC 42 or DTC 44 are set individually or in a group, replace the second brake. Refer to GROUP 23B, Transaxle [P.23B-10](#).
 - If DTC 41 is set, replace the one-way clutch. Refer to GROUP 23B, Planetary Gear [P.23B-71](#).
- (2) Test drive the vehicle.
- (3) Check for A/T diagnostic trouble code.

Q: Are any A/T DTCs set again?

YES : An A/T DTC may have set due to external radio frequency interference (RFI) possibly caused by cellular phone activity, or aftermarket components installed on the vehicle.

NO : The procedure is complete.

DTC 52 (P0741): Torque Converter Clutch System**DESCRIPTIONS OF MONITOR METHODS**

- At start of lock-up operation, if lock-up clutch cannot be engaged even when duty ratio of torque converter clutch solenoid remains 100% for more than specified time, PCM judges that torque converter clutch is stuck OFF.

MONITOR EXECUTION

- Continuous

**MONITOR EXECUTION CONDITIONS
(Other monitor and Sensor)****Other Monitor (There is no temporary DTC stored in memory for the item monitored below)**

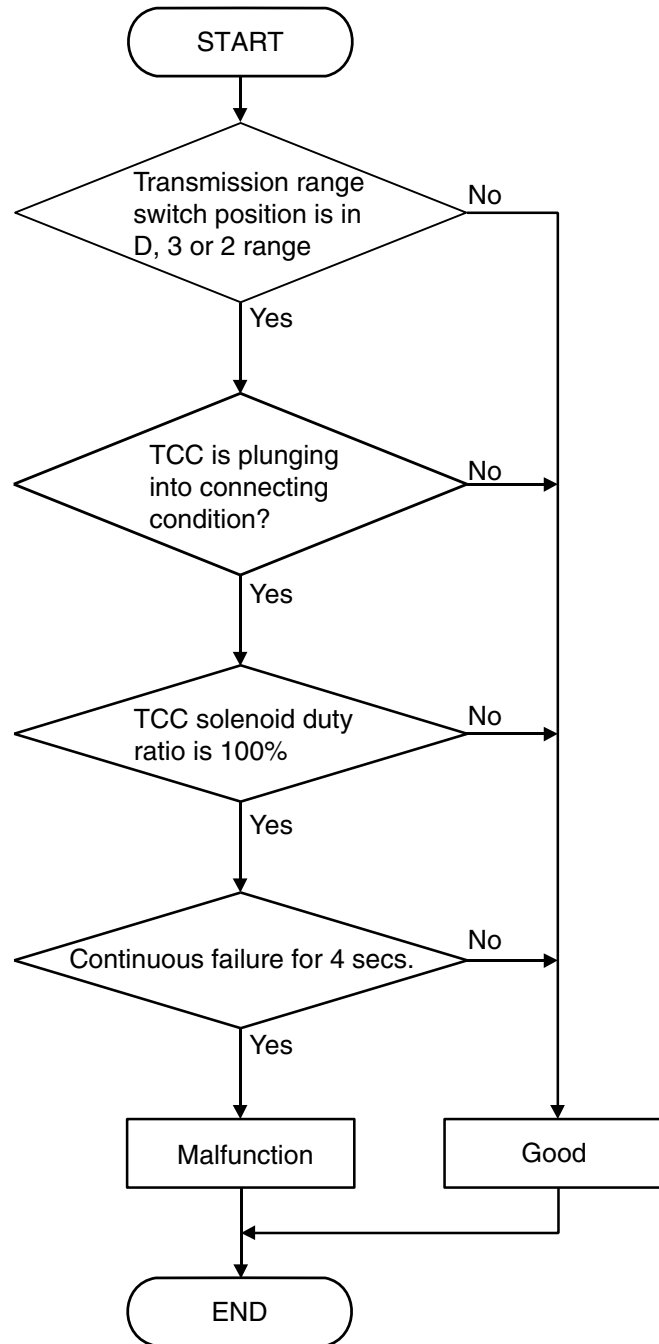
- DTC 21 (P0335): Crankshaft position sensor malfunction
- DTC 22 (P0715): Input shaft speed sensor malfunction
- DTC 23 (P0720): Output shaft speed sensor malfunction

- DTC 53 (P0742): Torque converter clutch system malfunction (Stuck ON)
- DTC 36 (P0743): Torque converter clutch solenoid malfunction
- DTC 31 (P0753): Low-reverse solenoid malfunction
- DTC 32 (P0758): Underdrive solenoid malfunction
- DTC 33 (P0763): Second solenoid malfunction
- DTC 34 (P0768): Overdrive solenoid malfunction
- DTC 54 (P1751): A/T control relay malfunction

Sensor (The sensor below is determined to be normal)

- Input shaft speed sensor
- Output shaft speed sensor
- Crankshaft position sensor
- Torque converter clutch solenoid
- Low-reverse solenoid
- Underdrive solenoid
- Second solenoid
- Overdrive solenoid
- A/T control relay

LOGIC FLOW CHARTS (Monitor Sequence)



AC205238

DTC SET CONDITIONS

Check Conditions

- Solenoid status: plunging into connecting condition.
- Transmission range switch position: D, 3 or 2.

Judgement Criteria

- Time during 100% duty: 4 seconds or more.

OBD-II DRIVE CYCLE PATTERN

Start the engine, and drive at 100 km/h (62 mph) for 10 seconds. Then stop the vehicle, and turn OFF the ignition switch. After that, restart the engine, and drive again at 100 km/h (62 mph) for 10 seconds.

TROUBLESHOOTING HINTS (The most likely causes for this code to be set are:)

- Malfunction of the torque converter clutch solenoid valve
- Malfunction of the input shaft speed sensor
- Malfunction of the valve body
- Damaged harness or connector
- Malfunction of the PCM
- Malfunction of the torque converter

DIAGNOSIS**Required Special Tool:**

- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: MUT-III USB Cable
 - MB991910: MUT-III Main Harness A

STEP 1. Using scan tool MB991958, read the A/T diagnostic trouble code.**⚠ CAUTION**

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

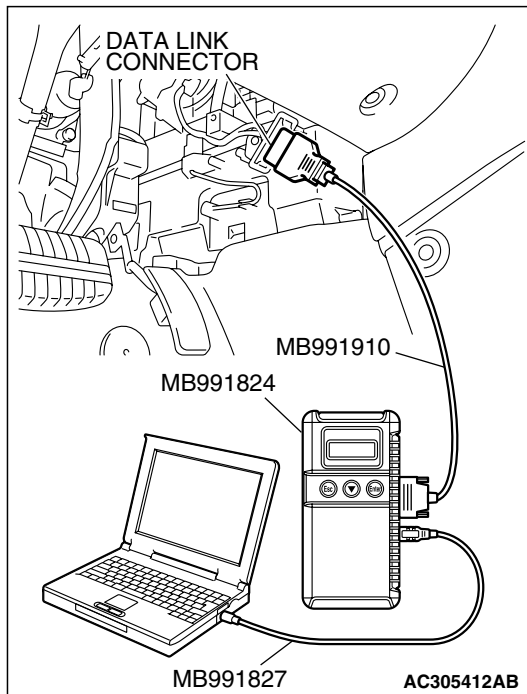
- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Check for A/T diagnostic trouble code.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is DTC 22 or 36 set?

YES <DTC 22 set> : Refer to [P.23A-69](#), DTC 22: Input Shaft Speed Sensor System.

YES <DTC 36 set> : Refer to [P.23A-233](#), DTC 36: Torque Converter Clutch Solenoid Valve System.

NO : Go to Step 2.



STEP 2. Using scan tool MB991958, check data list item 36: Torque Converter Clutch Solenoid Valve Duty%.

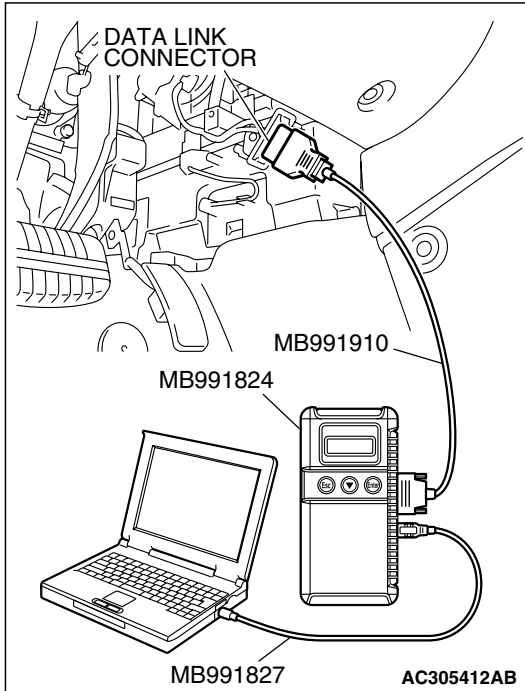
⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Start the engine. (Warming up engine)
- (3) Set scan tool MB991958 to the data reading mode.
 - Item 36: Torque Converter Clutch Solenoid Valve Duty%.
 - When driving at constant speed of 60 km/h (37 mph), the display should be "70 – 99.6%" (Gear range: 3rd gear).
 - When the accelerator pedal is released [at less than 50 km/h (31 mph)], the display should be "70 – 99.6% → 0%" (decreases gradually as the vehicle speed decreases) (Gear range: 3rd gear).
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the solenoid valve operating properly?

- YES** : Go to Step 3.
NO : Go to Step 5.



STEP 3. Using scan tool MB991958, check data list item 52: Torque Converter Clutch Amount of Slippage.

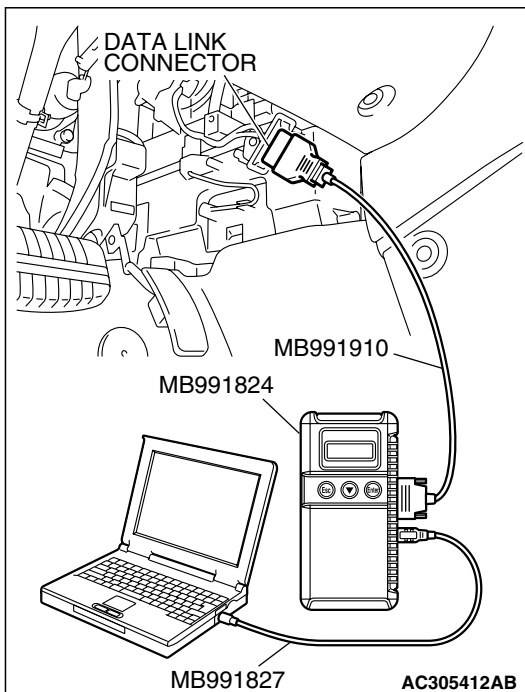
⚠ CAUTION

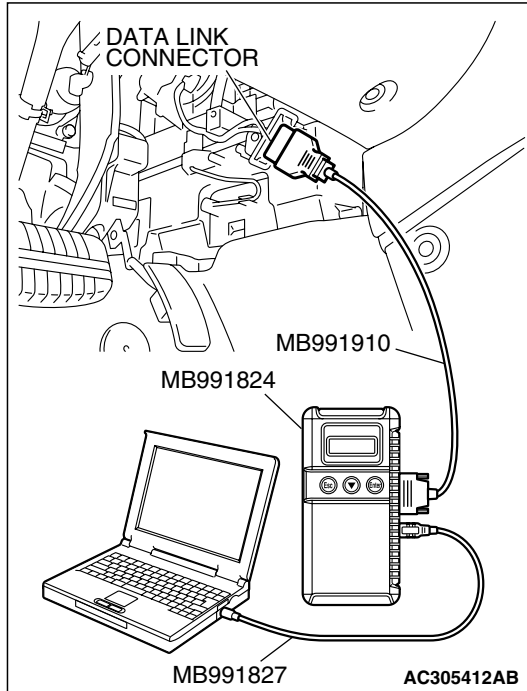
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Start the engine. (Warming up engine)
- (3) Set scan tool MB991958 to the data reading mode.
 - Item 52: Torque Converter Clutch Amount of Slippage.
 - Driving at a constant speed of 60 km/h (37 mph), the display should be "– 10 to 10 r/min."
 - If the accelerator pedal is released, the display on the scan tool changes (50 km/h (31 mph) and less).
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the clutch operating properly?

- YES** : Go to Step 4.
NO : Go to Step 5.





STEP 4. Using scan tool MB991958, read the A/T diagnostic trouble code.

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Check for A/T diagnostic trouble code.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is DTC 52 set?

YES : Replace the PCM.

NO : The procedure is complete.

STEP 5. Check the hydraulic pressure (for torque converter).

Measure the hydraulic pressure for torque converter. Check if the hydraulic pressure is within the standard value. Refer to [P.23A-29](#), Hydraulic Pressure Test.

Q: Is the hydraulic pressure within the standard value?

YES : Go to Step 7.

NO : Go to Step 6.

STEP 6. Adjust line pressure.

Adjust line pressure. Refer to [P.23A-42](#), Line Pressure Adjustment. Then check the symptom.

Q: Is the symptom eliminated?

YES : The procedure is complete.

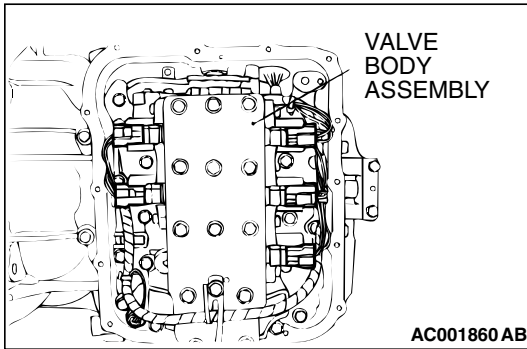
NO : Go to Step 8.

STEP 7. Replace the PCM.

Q: Is the symptom eliminated?

YES : The procedure is complete.

NO : Go to Step 8.



STEP 8. Replace the valve body.

- (1) Replace the valve body. Refer to GROUP 23B, Transaxle [P.23B-10](#).
- (2) Test drive the vehicle.
- (3) Check for A/T diagnostic trouble code.

Q: Is DTC 52 set?

YES : Replace the torque converter. Refer to GROUP 23B, Transaxle [P.23B-10](#).

NO : The procedure is complete.

DTC 53 (P0742): Torque Converter Clutch is Stuck On

DESCRIPTIONS OF MONITOR METHODS

- With PCM signal for no lock-up engagement, if vehicle speed equals or exceeds specified value, accelerator is ON, and torque converter slip amount is below specified value, PCM judges that torque converter clutch is stuck ON.

MONITOR EXECUTION

- Continuous

**MONITOR EXECUTION CONDITIONS
(OTHER MONITOR AND SENSOR)**

Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

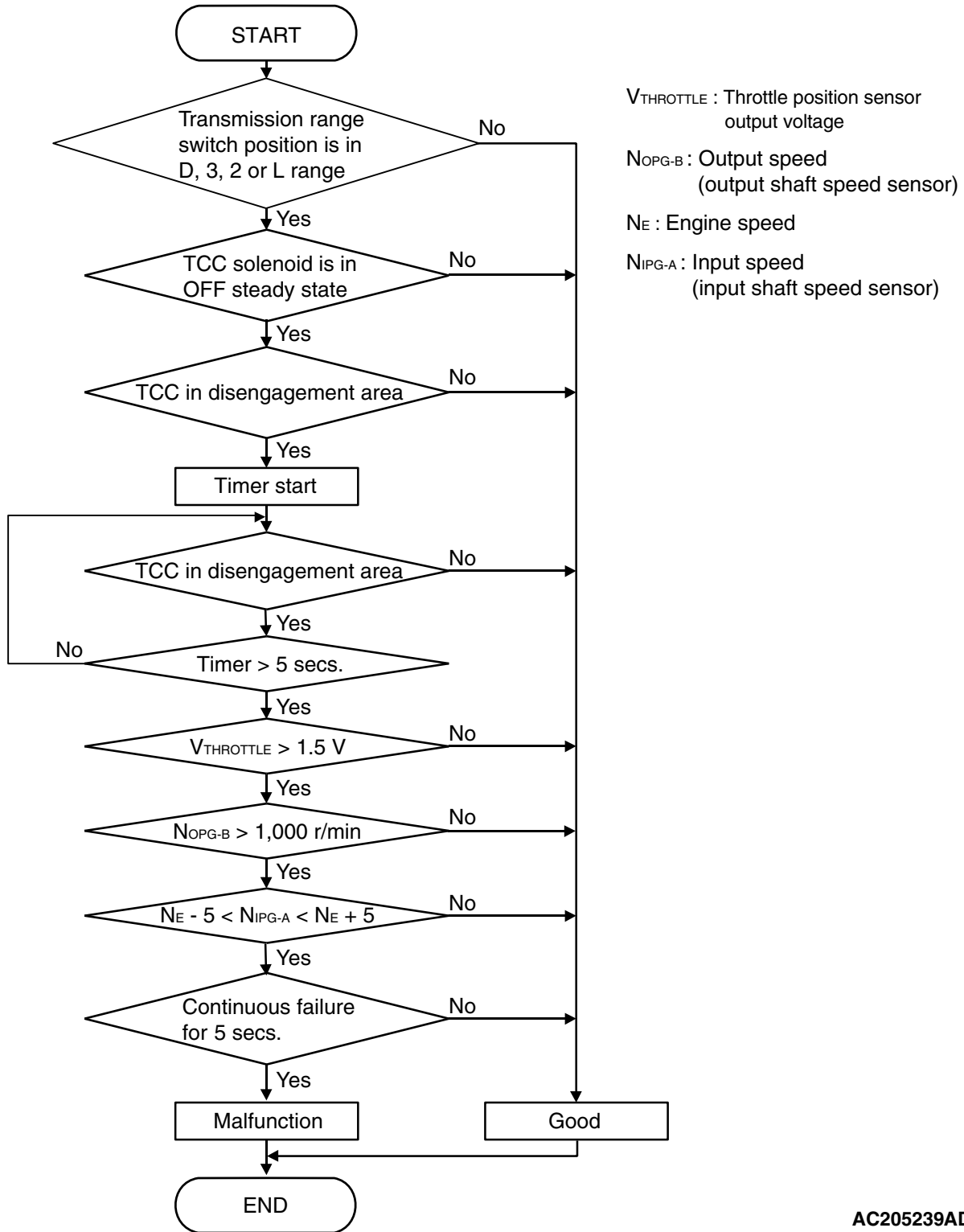
- DTC 21 (P0335): Crankshaft position sensor malfunction
- DTC 22 (P0715): Input shaft speed sensor malfunction
- DTC 23 (P0720): Output shaft speed sensor malfunction
- DTC 52 (P0741): Torque converter clutch system malfunction (Stuck OFF)
- DTC 36 (P0743): Torque converter clutch solenoid malfunction
- P0122: Throttle position sensor (main) malfunction (Low input)
- P0123: Throttle position sensor (main) malfunction (High input)
- P0222: Throttle position sensor (sub) malfunction (Low input)
- P0223: Throttle position sensor (sub) malfunction (High input)
- P2135: Throttle position sensor (main and sub) range/performance problem

- P0638: Throttle actuator control motor circuit range/performance problem
- P0642: Throttle position sensor power supply
- P1601: Communication malfunction (Between PCM and throttle actuator control module)
- P0606: PCM main processor malfunction
- P2108: Throttle actuator control module processor malfunction
- P2100: Throttle actuator control motor circuit (Open)
- P2101: Throttle actuator control motor magneto malfunction
- P2102: Throttle actuator control motor circuit (Shorted low)
- P2103: Throttle actuator control motor circuit (Shorted high)
- P2122: Accelerator pedal position sensor (main) circuit low input
- P2123: Accelerator pedal position sensor (main) circuit high input
- P2127: Accelerator pedal position sensor (sub) circuit low input
- P2128: Accelerator pedal position sensor (sub) circuit high input
- P2138: Accelerator pedal position sensor (main and sub) range/performance problem

Sensor (The sensor below is determined to be normal)

- Input shaft speed sensor
- Output shaft speed sensor
- Crankshaft position sensor
- Torque converter clutch solenoid
- Throttle position sensor
- Accelerator pedal position sensor

LOGIC FLOW CHARTS (Monitor Sequence)



AC205239AD

DTC SET CONDITIONS

Check Conditions

- Throttle position sensor voltage: 1.5 volts or more.
- Output speed: 1,000 r/min or more.
- Solenoid status: OFF.
- Transmission range switch position: D, 3, 2 or L.
- Time after lock up clutch release: 5 seconds or more.

Judgement Criteria

- Calculated slip (engine speed - input speed): 5 r/min or more. (5 seconds)
- Calculated slip (engine speed - input speed): -5 r/min or less. (5 seconds)

OBD-II DRIVE CYCLE PATTERN

Start the engine, and drive at 30 km/h (19 mph) for 30 seconds. Then stop the vehicle, and turn "LOCK" (OFF) the ignition switch. After that, restart the engine, and drive again at 30 km/h (19 mph) for 30 seconds.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the torque converter clutch solenoid valve
- Malfunction of the valve body
- Damaged harness or connector
- Malfunction of the PCM

DIAGNOSIS

Required Special Tool:

- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: MUT-III USB Cable
 - MB991910: MUT-III Main Harness A

STEP 1. Using scan tool MB991958, read the A/T diagnostic trouble code.

⚠ CAUTION

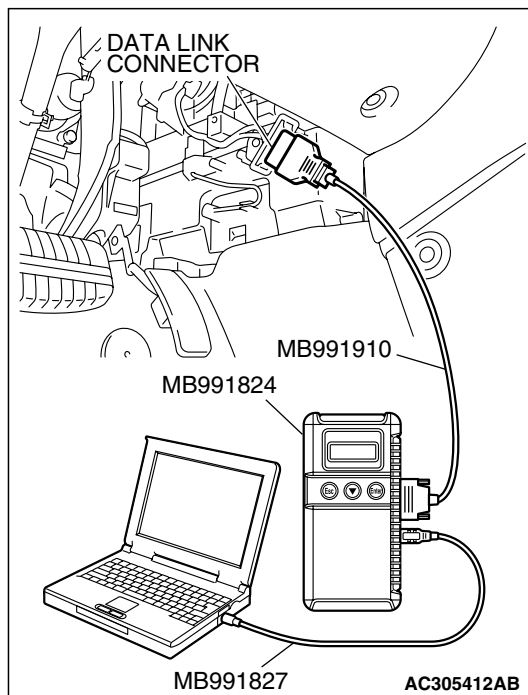
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

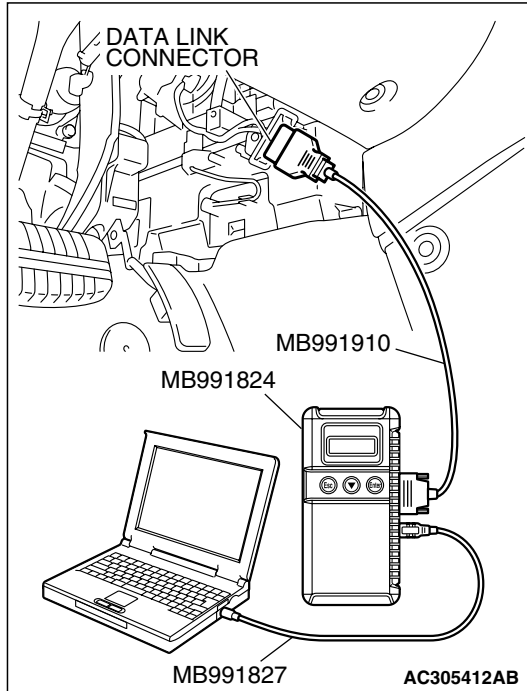
- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Check for A/T diagnostic trouble code.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is DTC 36 set?

YES : Refer to [P.23A-233](#), DTC 36: Torque Converter Clutch Solenoid Valve System.

NO : Go to Step 2.





STEP 2. Using scan tool MB991958, check data list item 52: Amount of Torque Converter Clutch Slippage.

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Start the engine. (Warming up engine)
- (3) Set scan tool MB991958 to the data reading mode.
 - Item 52: Torque Converter Clutch Amount of Slippage.
 - Driving at a constant speed of 60 km/h (37 mph), the display should be "-10 to 10 r/min."
 - If the accelerator pedal is released, the display on the scan tool changes (50 km/h (31 mph) and less).
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the torque converter clutch slippage within the specified range?

- YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction [P.00-14](#).
- NO :** Go to Step 3.

STEP 3. Replace the PCM.

- (1) Replace the PCM.
- (2) Test drive the vehicle.
- (3) Check for A/T diagnostic trouble code.

Q: Is DTC 53 set?

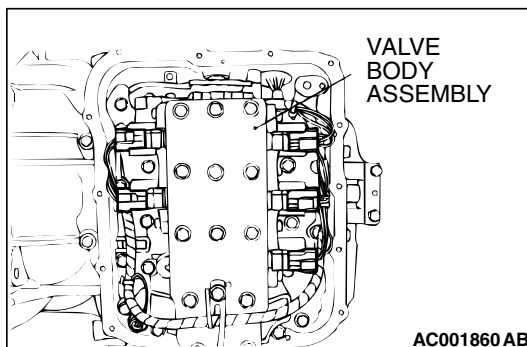
- YES :** Go to Step 4.
- NO :** The procedure is complete.

STEP 4. Replace the valve body.

- (1) Replace the valve body. Refer to GROUP 23B, Transaxle [P.23B-10](#).
- (2) Test drive the vehicle.
- (3) Check for A/T diagnostic trouble code.

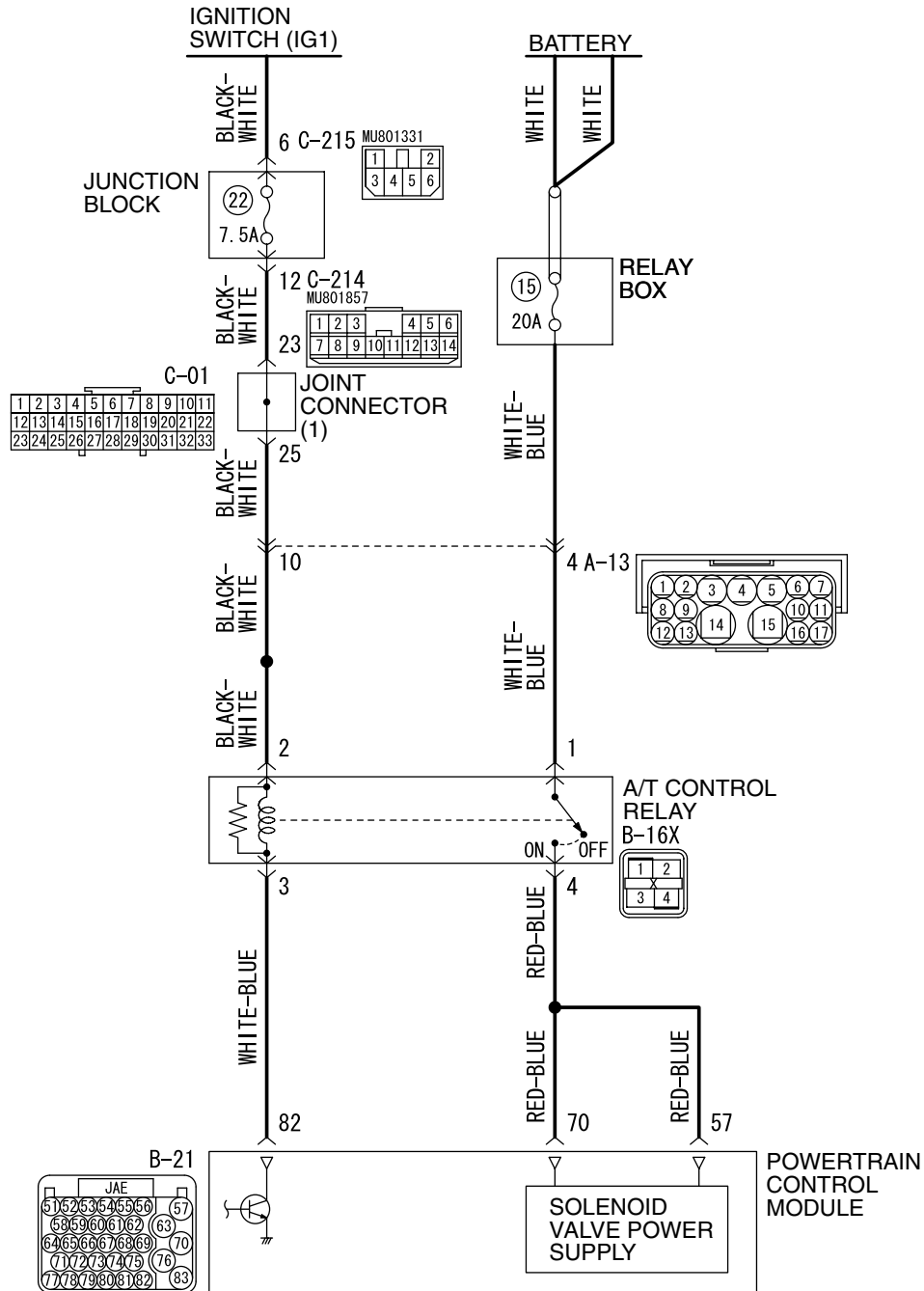
Q: Is DTC 53 set?

- YES :** Replace the Torque Converter. Refer to GROUP 23B, Transaxle [P.23B-10](#).
- NO :** The procedure is complete.

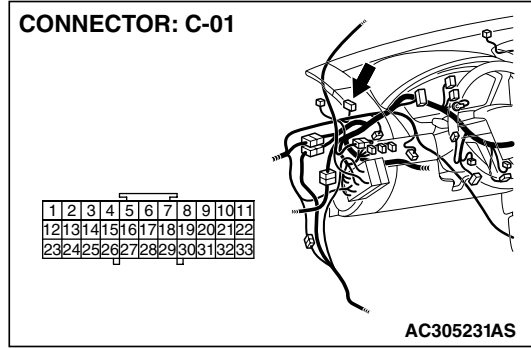
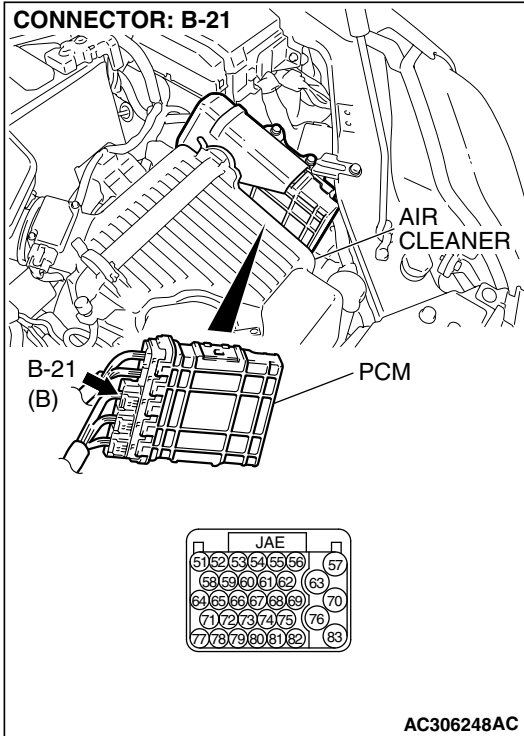
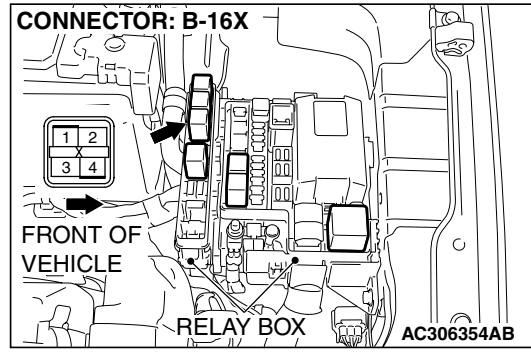
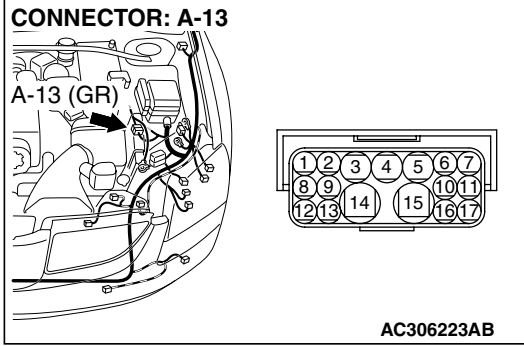


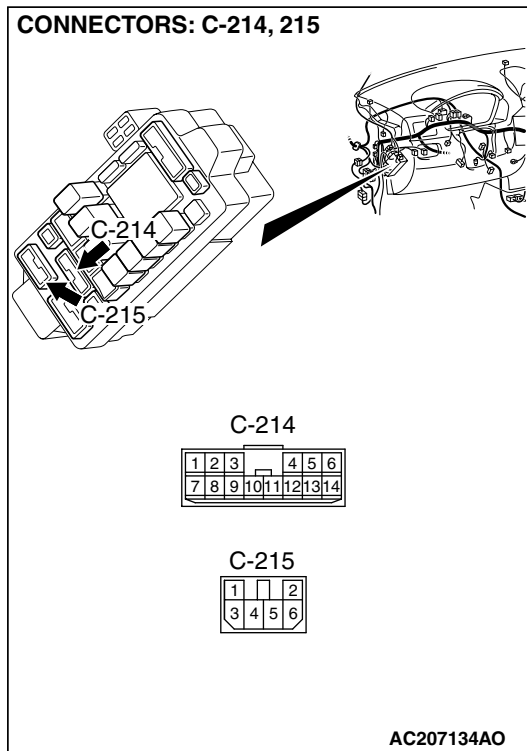
DTC 54 (P1751): A/T Control Relay System

A/T Control Relay System Circuit



W4P06M08AA
AC209761AC





CIRCUIT OPERATION

- A/T control relay (terminal 1) receives the battery positive voltage through a dedicated 20 amp fuse.
- When the ignition switch is turned to the "ON" position, the PCM (terminal 82) receives battery voltage from the ignition switch. The PCM (terminal 82) applies voltage to energize the A/T control relay (terminal 3). With the A/T control relay energized, system voltage is applied to the PCM (terminals 70 and 57).

DESCRIPTIONS OF MONITOR METHODS

- If relay output voltage is below specified value, PCM judges that A/T control relay has a failure.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

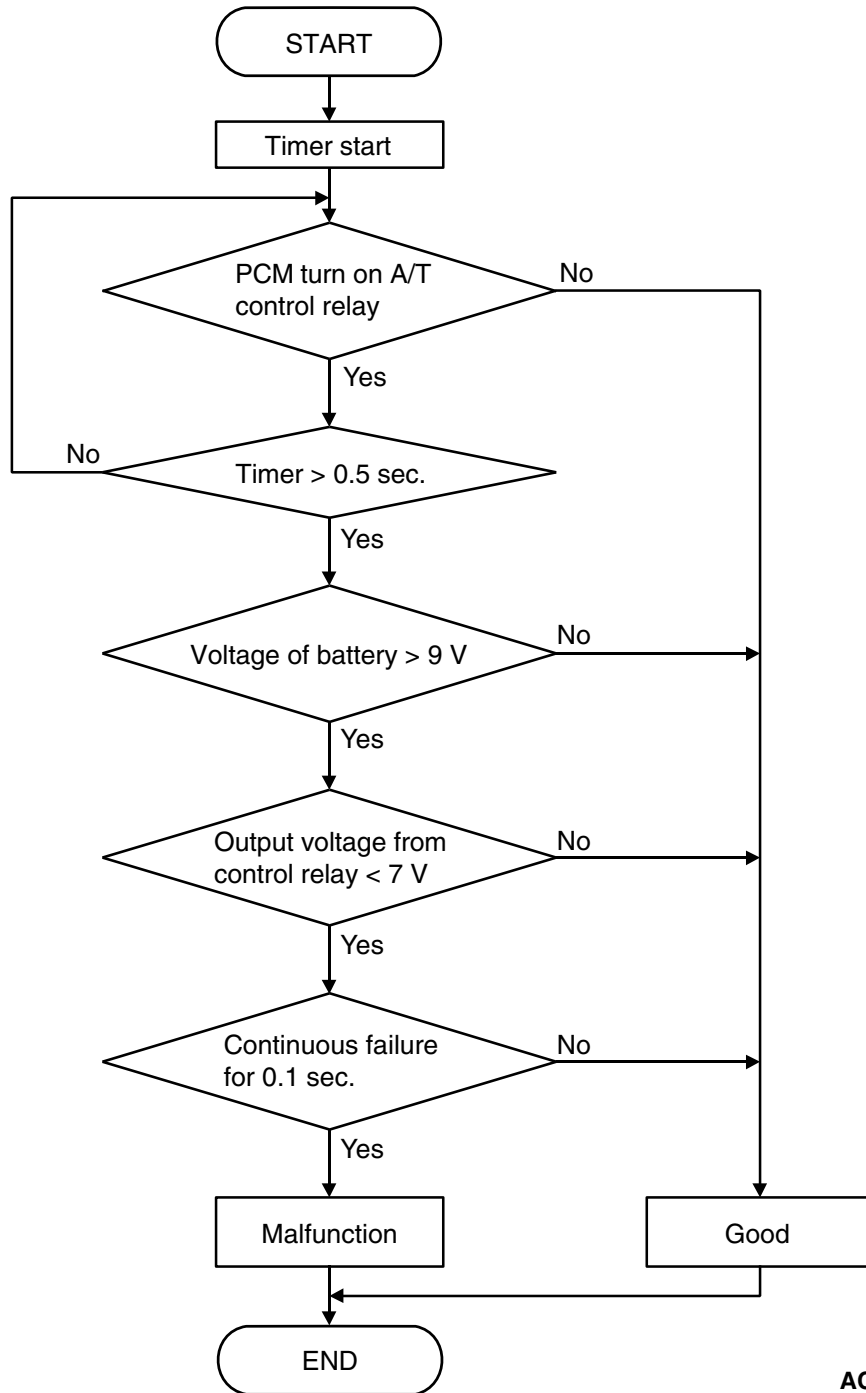
- DTC 41 (P0731): 1st gear incorrect ratio

- DTC 42 (P0732): 2nd gear incorrect ratio
- DTC 43 (P0733): 3rd gear incorrect ratio
- DTC 44 (P0734): 4th gear incorrect ratio
- DTC 46 (P0736): Reverse gear incorrect ratio
- DTC 36 (P0743): Torque converter clutch solenoid malfunction
- DTC 31 (P0753): Low-reverse solenoid malfunction
- DTC 32 (P0758): Underdrive solenoid malfunction
- DTC 33 (P0763): Second solenoid malfunction
- DTC 34 (P0768): Overdrive solenoid malfunction

Sensor (The sensor below is determined to be normal)

- Torque converter clutch solenoid
- Low-reverse solenoid
- Underdrive solenoid
- Second solenoid
- Overdrive solenoid

LOGIC FLOW CHARTS (Monitor Sequence)



AC205241AB

DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 9 volts or more.
- Time after PCM turns on A/T control relay: 0.5 second or more.

Judgement Criteria

- A/T control relay output voltage: 7 volts or less. (0.1 second)

- If DTC 54 (P1751) is set consecutively four times, the transaxle is locked into 3rd gear as a fail-safe measure, and the "N" range light flashes once per second.

OBD-II DRIVE CYCLE PATTERN

Start the engine, and keep the vehicle stopped in "P" range for 5 seconds.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the A/T control relay
- Damaged harness or connector
- Malfunction of the PCM

DIAGNOSIS

Required Special Tool:

- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: MUT-III USB Cable
 - MB991910: MUT-III Main Harness A

STEP 1. Using scan tool MB991958, check data list item 54: A/T Control Relay Output Voltage.

⚠ CAUTION

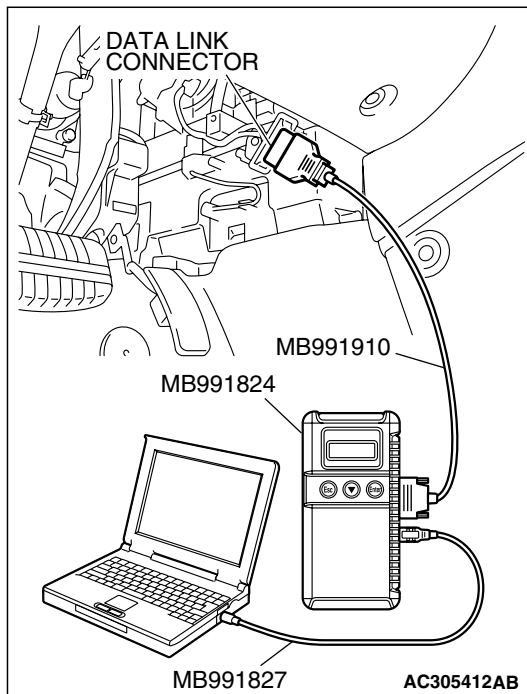
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

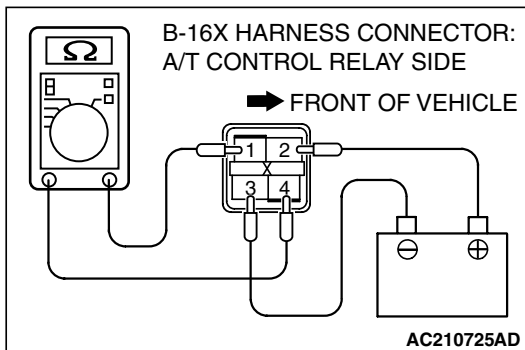
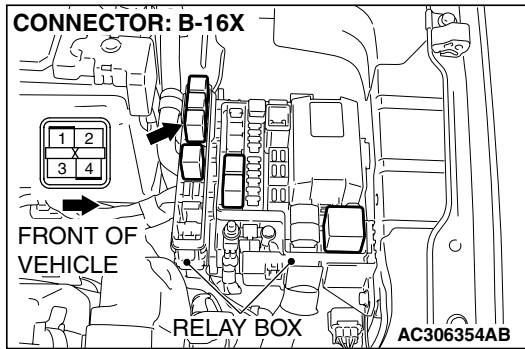
- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Set scan tool MB991958 to the data reading mode.
 - Item 54: A/T Control Relay Output Voltage.
 - The voltage should equal battery positive voltage.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the measured voltage equal battery positive voltage?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction [P.00-14](#).

NO : Go to Step 2.



**STEP 2. Check the A/T control relay.**

(1) Remove the A/T control relay from the engine component relay box connector B-16X.

(2) Using jumper wires, connect terminal 2 to the positive battery terminal, and terminal 3 to the negative battery terminal.

(3) Measure the resistance between terminals 1 and 4 of the A/T control relay.

- The resistance should be measured less than 2 ohms.
- Disconnect the jumper wires. The resistance between terminals 1 and 4 should measure over limits (open circuit).

Q: Is the measured resistance less than 2 ohms when the relay is energized, and open circuit when the relay is de-energized?

YES : Go to Step 3.

NO : Replace the A/T control relay.

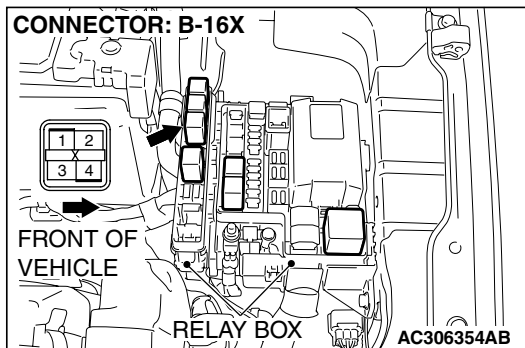
STEP 3. Check A/T control relay socket B-16X in the engine compartment relay box for loose, corroded or damaged terminals, or terminals pushed back in the socket.

Q: Is the relay connector in good condition?

YES : Go to Step 4.

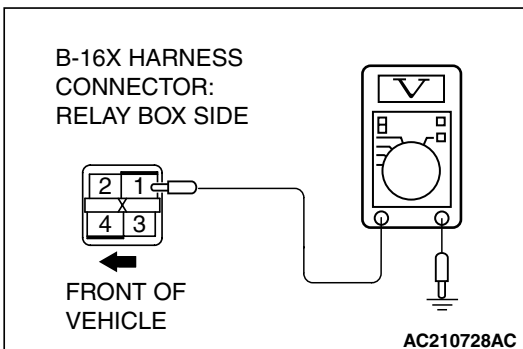
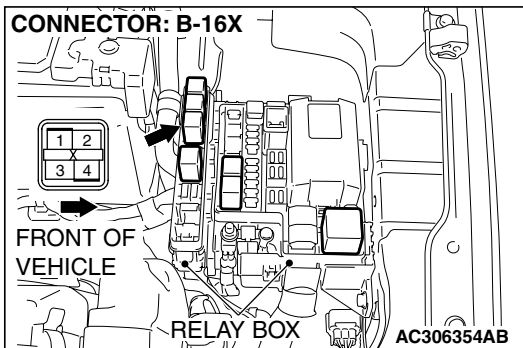
NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)



STEP 4. Measure the supply voltage at A/T control relay connector B-16X in the engine component relay box.

(1) Disconnect the A/T control relay.



(2) Measure the voltage between terminal 1 and ground.
 • The measured voltage should equal battery positive voltage.

Q: Is the measured voltage equal to battery positive voltage?

YES : Go to Step 7.
NO : Go to Step 5.

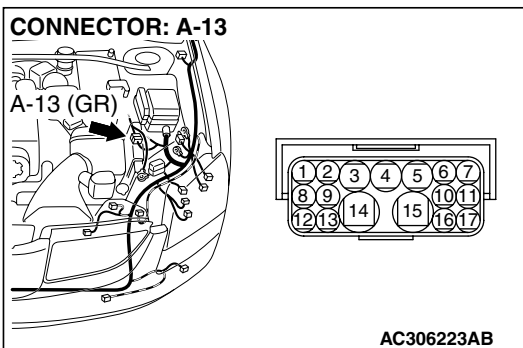
STEP 5. Check intermediate connector A-13 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connector and terminals in good condition?

YES : Go to Step 6.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

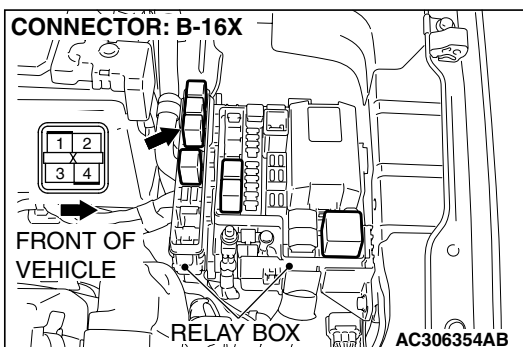


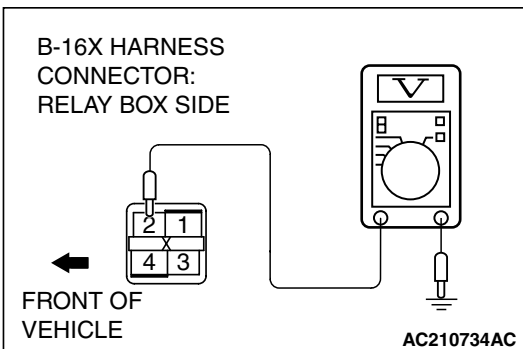
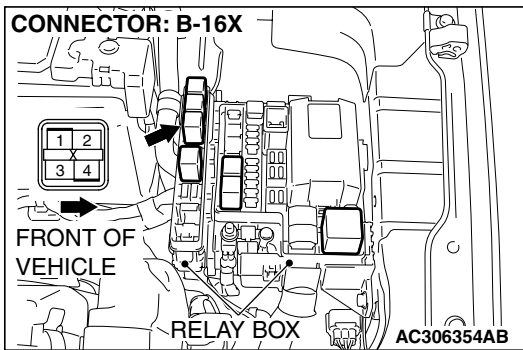
STEP 6. Check the harness for open circuit or short circuit to ground between A/T control relay connector B-16X terminal 1 in the engine component relay box and battery.

Q: Is the harness wire in good condition?

YES : Go to Step 15.

NO : Repair or replace the harness wire.





STEP 7. Measure the supply voltage at A/T control relay connector B-16X in the engine component relay box.

- (1) Disconnect the A/T control relay.
- (2) Turn the ignition switch to the "ON" position.

- (3) Measure the voltage between terminal 2 and ground.
 - The measured voltage should equal battery positive voltage.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the measured voltage equal to battery positive voltage?

YES : Go to Step 10.

NO : Go to Step 8.

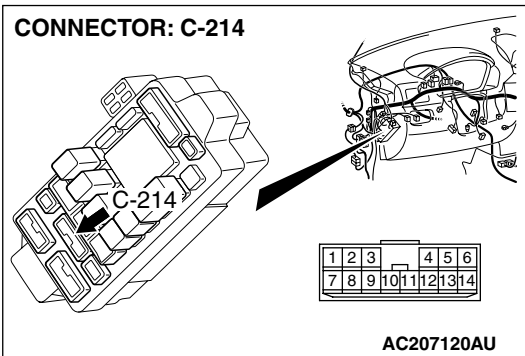
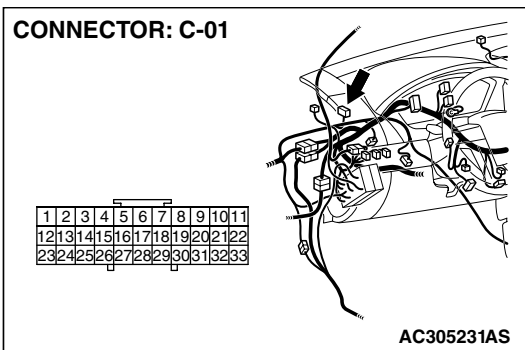
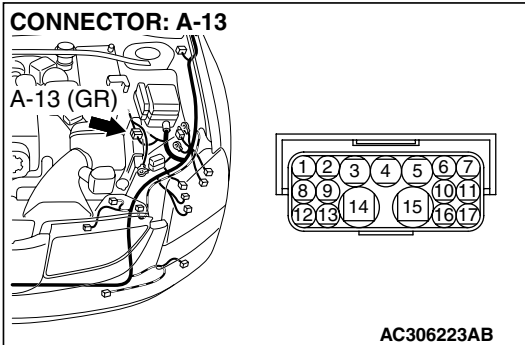
STEP 8. Check intermediate connector A-13, joint connector (1) C-01 and junction block connector C-214 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connectors in good condition?

YES : Go to Step 9.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

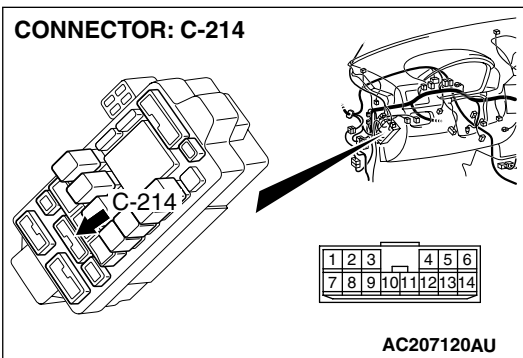
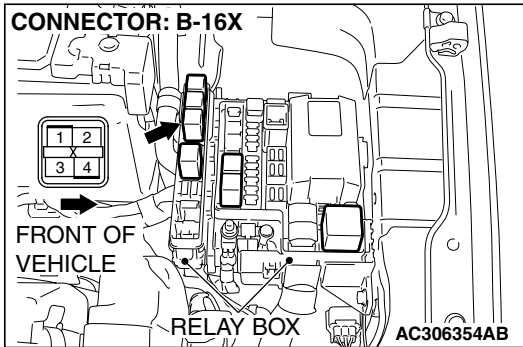


STEP 9. Check the harness for open circuit or short circuit to ground between A/T control relay connector B-16X terminal 2 in the engine component relay box and junction block connector C-214 terminal 12.

Q: Is the harness wire in good condition?

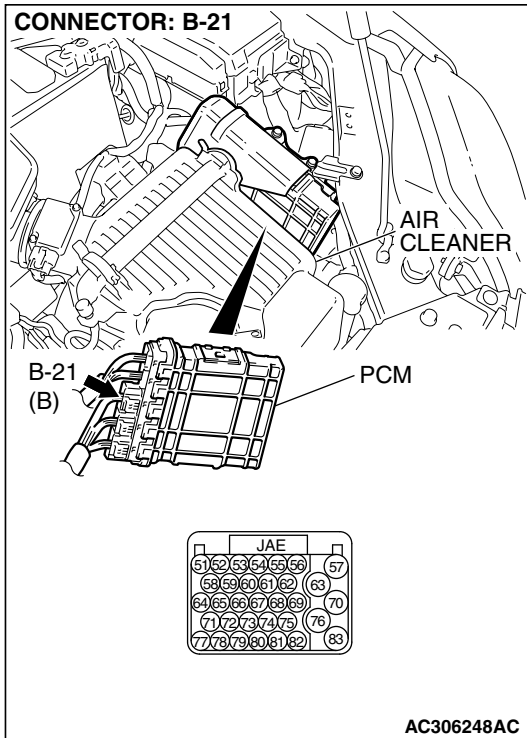
YES : Go to Step 15.

NO : Repair or replace the harness wire.

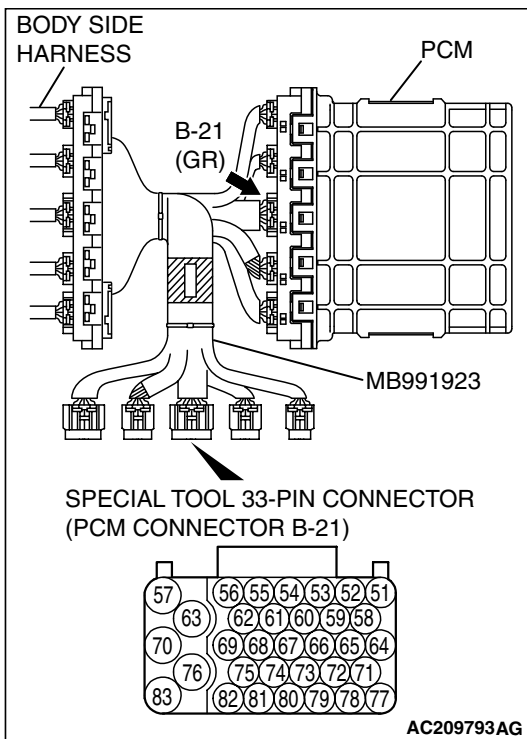


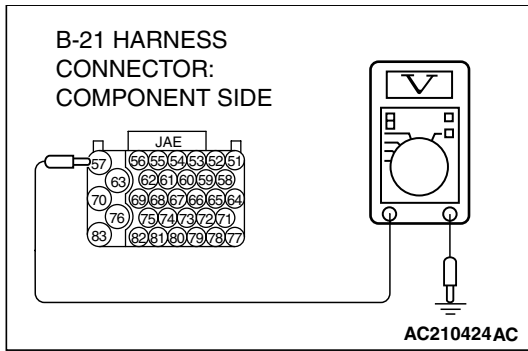
STEP 10. Measure the A/T control relay output voltage at PCM connector B-21 by using check harness special tool MB991923.

(1) Disconnect all the connectors from the PCM.

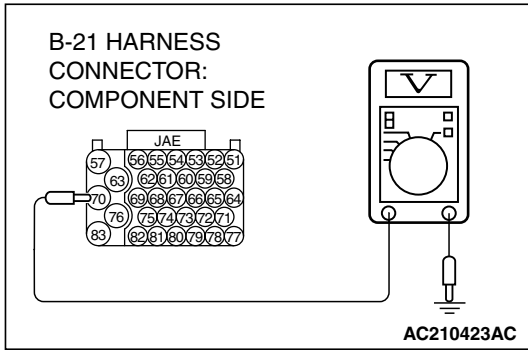


(2) Connect special tool MB991923 (check harness) between the PCM and the body-side harness connector.
 (3) Turn the ignition switch to the "ON" position.





- (4) Measure the voltage between terminal 57 and ground.
- The measured voltage should equal battery positive voltage.



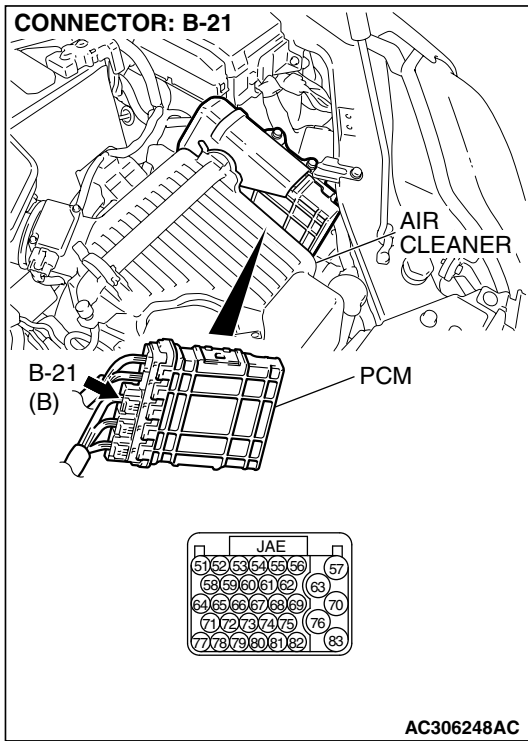
- (5) Measure the voltage between terminal 70 and ground.
- The measured voltage should equal battery positive voltage.

(6) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the measured voltage equal to battery positive voltage between terminal 57 and ground, and between terminal 70 and ground?

YES : Go to Step 13.

NO : Go to Step 11.



STEP 11. Check PCM connector B-21 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connector and terminals in good condition?

YES : Go to Step 12.

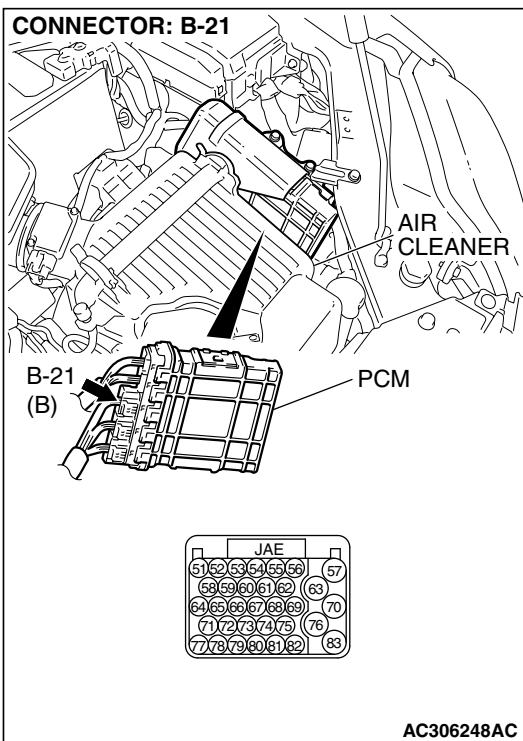
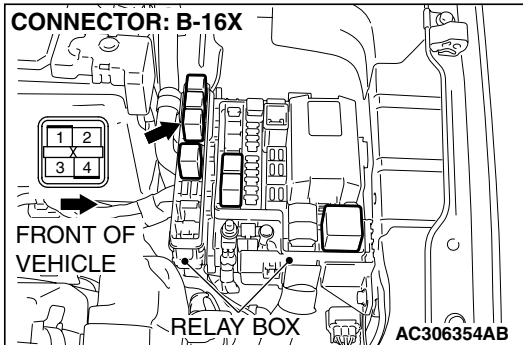
NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

STEP 12. Check harness for open circuit or short circuit to ground between A/T control relay connector B-16X (terminal 4) in the engine component relay box and PCM connector B-21 (terminals 57 and 70).

Q: Is the harness wire in good condition?

YES : Go to Step 15.

NO : Repair or replace the harness wire.



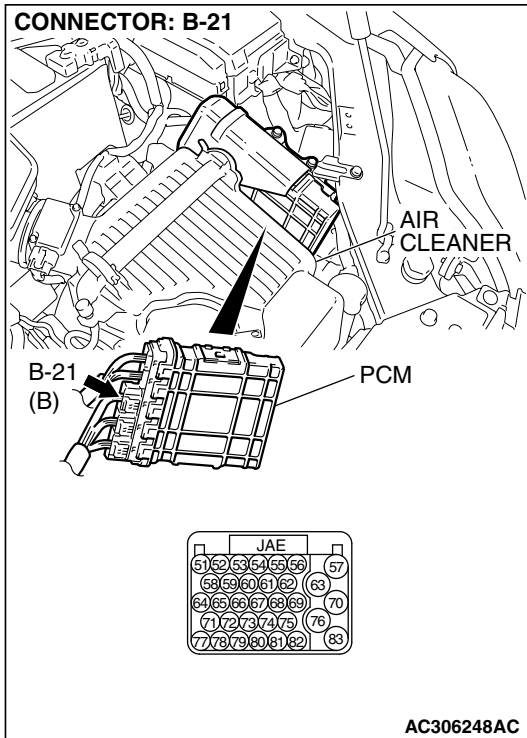
STEP 13. Check PCM connector B-21 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are the connector and terminals in good condition?

YES : Go to Step 14.

NO : Repair or replace the damaged components. Refer to GROUP 00E, Harness Connector Inspection

[P.00E-2.](#)

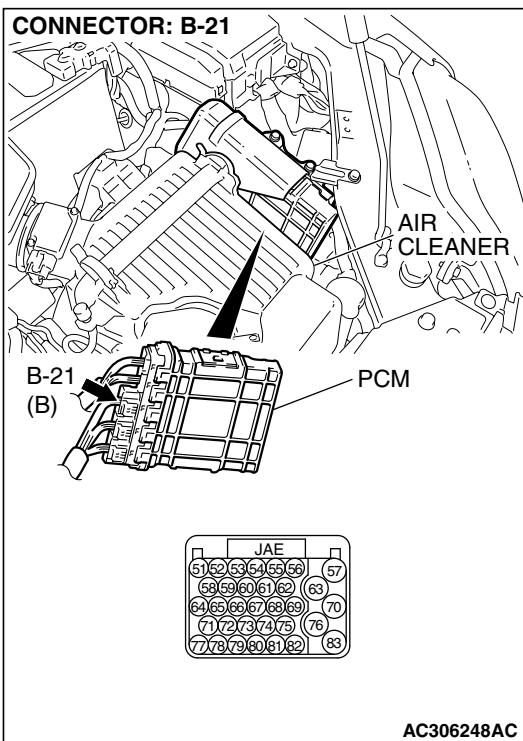
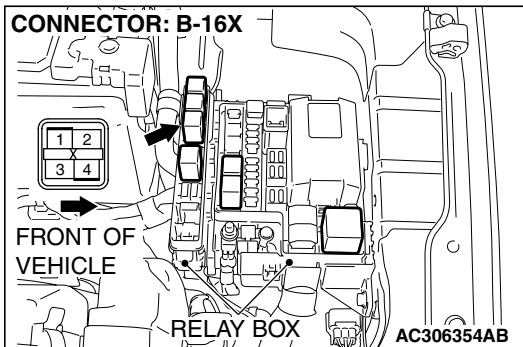


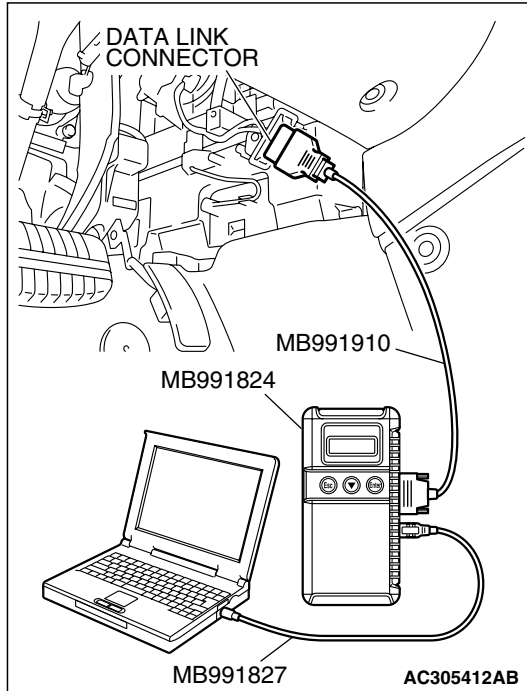
STEP 14. Check harness for open circuit or short circuit to ground between A/T control relay connector B-16X terminal 3 in the engine component relay box and PCM connector B-21 terminal 82.

Q: Is the harness wire in good condition?

YES : Go to Step 15.

NO : Repair or replace the harness wire.





STEP 15. Using scan tool MB991958, check data list item 54: A/T control relay output Voltage.

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Set scan tool MB991958 to the data reading mode.
 - Item 54: A/T Control Relay Output Voltage.
 - The voltage should equal battery positive voltage.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the measured voltage equal battery positive voltage?

YES : It can be that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction P.00-14.

NO : Replace the PCM.

SYMPTOM PROCEDURES

INSPECTION PROCEDURE 1: Engine does not Crank

COMMENT

If the engine does not crank when the selector lever is placed in the "P" or "N" position, the cause is probably a malfunction of the transmission range switch system, transaxle control cable assembly, engine system, torque converter or transaxle oil pump.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CONDITION:)

- Malfunction of the transmission range switch
- Malfunction of the transaxle control cable assembly
- Malfunction of the engine system
- Malfunction of the torque converter
- Malfunction of the transaxle oil pump
- Malfunction of the PCM

DIAGNOSIS

Required Special Tool:

- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: MUT-III USB Cable
 - MB991910: MUT-III Main Harness A

STEP 1. Using scan tool MB991958, read the A/T diagnostic trouble code.

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

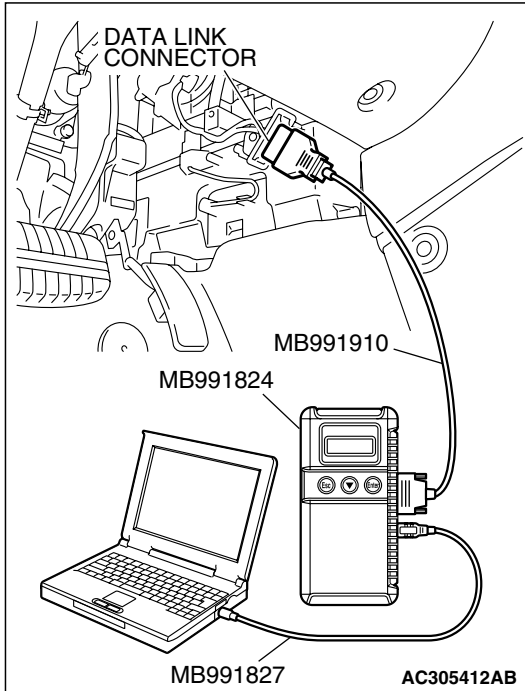
- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Check for A/T diagnostic trouble code.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is A/T DTCs "27" or "28" set?

YES <DTC 27 set> : Refer to [P.23A-120](#), DTC 27:
Transmission Range Switch System (Open Circuit).

YES <DTC 28 set> : Refer to [P.23A-165](#), DTC 28:
Transmission Range Switch System (Short Circuit).

NO : Go to Step 2.



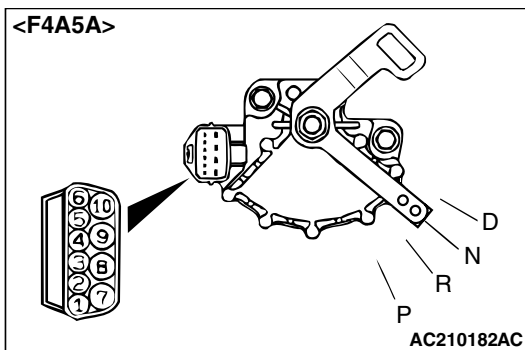
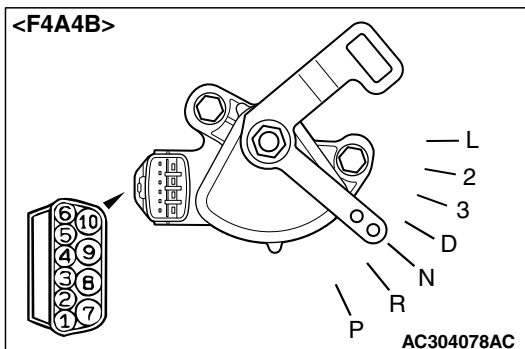
STEP 2. Check the transaxle control cable assembly.

Move the selector lever to each position. The manual control lever position of the transmission range switch should match the transmission range.

Q: Is the manual control lever position correct?

YES : Go to Step 3.

NO : Repair the transaxle control cable. Refer to [P.23A-379](#), Transmission Range Switch and Control Cable Adjustment. Retest the system to verify the repair.



STEP 3. Check the engine.

Refer to GROUP 13A <2.4L Engine>, Diagnosis – Trouble Symptom Chart – Starting [P.13A-38](#).

Refer to GROUP 13B <3.8L Engine>, Diagnosis – Trouble Symptom Chart – Starting [P.13B-38](#).

Q: Is the inspection result good?

YES : Go to Step 4.

NO : Repair or replace the appropriate engine components.

STEP 4. Check the torque converter.

(1) Remove the starter.

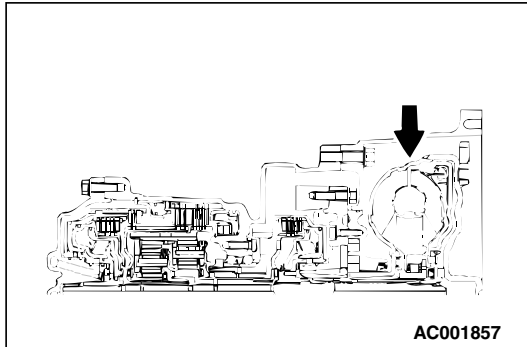
(2) Turn the torque converter and check for a binding or sticking condition. Check the ring gear for damaged or missing teeth.

NOTE: Since the torque converter drives the oil pump, turning the torque converter also check for a binding oil pump. If either of these components are damaged the transaxle will need to be removed for inspection.

Q: Does the torque converter turn freely without any missing or damaged teeth?

YES : Go to Step 5.

NO : Replace the torque converter. Refer to GROUP 23B, Transaxle [P.23B-10](#).

**STEP 5. Repair or replace the starter.****Q: Is the symptom eliminated?**

YES : The procedure is complete.

NO : Go to Step 6.

STEP 6. Check the oil pump.

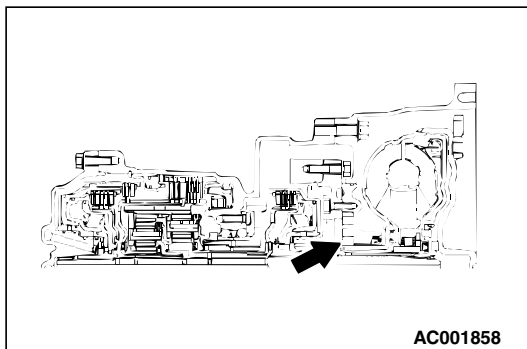
(1) Remove the transaxle assembly.

(2) Check the oil pump (incorrect installation, damage and etc.) and replace the oil pump assembly if necessary (The oil pump cannot be disassembly). Refer to GROUP 23B, Transaxle [P.23B-10](#). Confirm that the malfunction symptom is eliminated.

Q: Is the symptom eliminated?

YES : The procedure is complete.

NO : Go to Step 7.

**STEP 7. Replace the PCM.****Q: Does the engine crank when the selector lever is placed in the "P" or "N" position?**

YES : The procedure is complete.

NO : Start over at Step 1.

INSPECTION PROCEDURE 2: Does not Move Forward

COMMENT

If the engine is idling and the selector lever is shifted from "N" to "D" range and the vehicle does not drive forward then the cause is due to line pressure defect, under drive clutch or valve body malfunction.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CONDITION:)

- Abnormal line pressure
- Malfunction of the underdrive solenoid valve
- Malfunction of the underdrive clutch
- Malfunction of the oil pump
- Malfunction of the valve body
- Malfunction of the PCM

DIAGNOSIS

Required Special Tool:

- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: MUT-III USB Cable
 - MB991910: MUT-III Main Harness A

STEP 1. Using scan tool MB991958, check actuator test item 02: Underdrive Solenoid Valve.

⚠ CAUTION

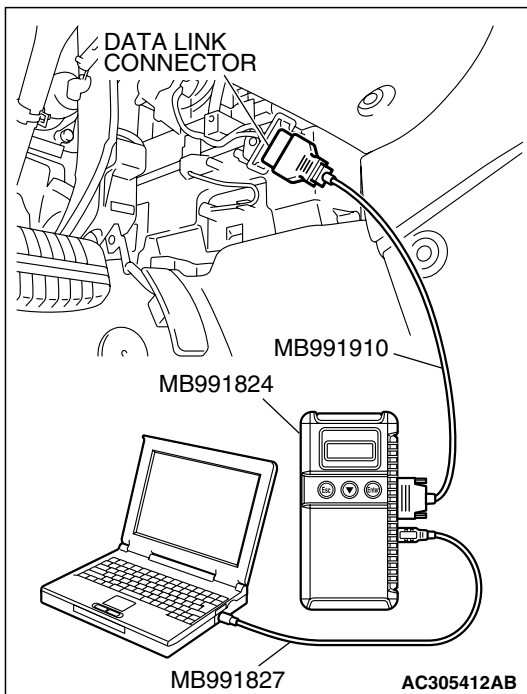
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Set scan tool MB991958 to the actuator test mode.
 - Item 02: Underdrive Solenoid Valve.
 - An audible clicking or buzzing should be heard when the underdrive solenoid valve is energized.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the solenoid valve operating properly?

YES : Go to Step 2.

NO : Repair or replace the underdrive solenoid valve. Refer to GROUP 23B, Valve Body P.23B-80. Then confirm that the symptom is eliminated.



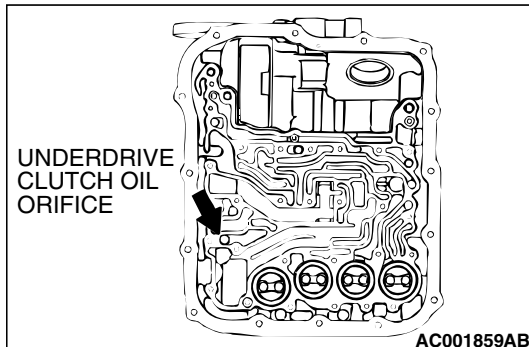
STEP 2. Check the hydraulic pressure.

Shift the selector lever to the sport mode then measure the hydraulic pressure of each element in 1st speed to check and see if each respective hydraulic pressure is within the range of standard pressure. Refer to P.23A-29, Hydraulic Pressure Test.

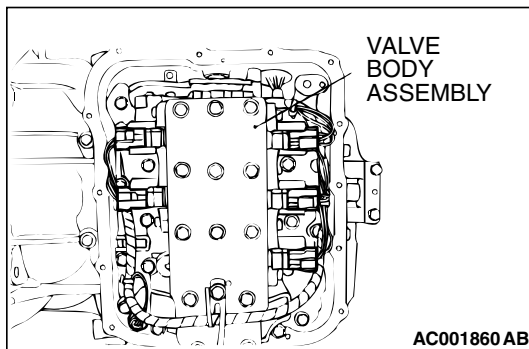
Q: Is the hydraulic pressure within the standard value?

YES : Go to Step 3.

NO : Go to Step 4.

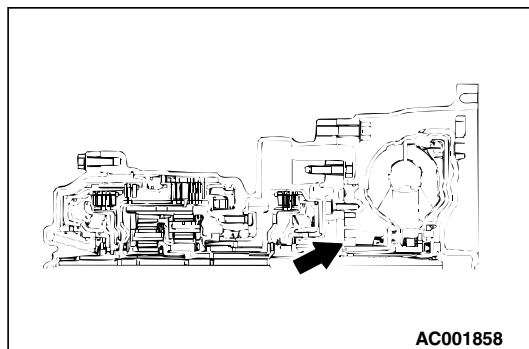
**STEP 3. Check the underdrive clutch system.**

- (1) Remove the valve body cover and valve body. Refer to [P.23A-387](#) <F4A4B> or [P.23A-395](#) <F4A5A>, Transaxle Assembly and GROUP 23B, Transaxle [P.23B-10](#).
- (2) Blow 108 kPa (15psi) compressed air into the underdrive clutch oil orifice of the transaxle case, and check if the underdrive clutch piston moves and air pressure is maintained in that condition.

Q: Is the air pressure maintained?**YES** : Go to Step 4.**NO** : Go to Step 6.**STEP 4. Disassemble and clean the valve body.**

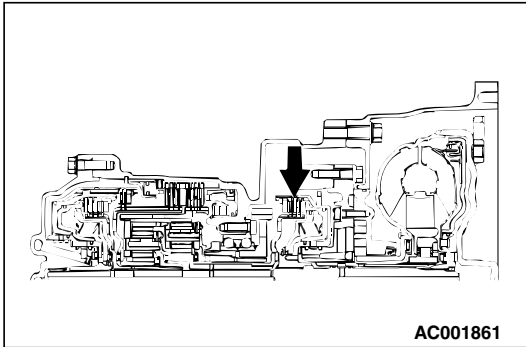
Check the O-ring installation bolts for looseness and valve body for damage. Repair or replace the faulty parts. Refer to GROUP 23B, Valve Body [P.23B-80](#).

Replace the valve body assembly if the damages are thought to be irreparable. Then check the symptom.

Q: Is the symptom eliminated?**YES** : The procedure is complete.**NO** : Go to Step 5.**STEP 5. Check the oil pump.**

- (1) Remove the transaxle assembly.
- (2) Check the oil pump (incorrect installation, damage and etc.) and replace the oil pump assembly if necessary (The oil pump cannot be disassembly). Refer to GROUP 23B, Transaxle [P.23B-10](#). Then check the symptom.

Q: Is the symptom eliminated?**YES** : The procedure is complete.**NO** : Go to Step 7.



STEP 6. Check the underdrive clutch.

- (1) Remove the transaxle assembly.
- (2) Check the facing for seizure and the piston seal ring for damage and interference with the retainer. Repair or replace the faulty parts. Refer to GROUP 23B, Underdrive Clutch and Input Shaft P.23B-60. Then check the symptom.

Q: Is the symptom eliminated?

YES : The procedure is complete.

NO : Go to Step 7.

STEP 7. Replace the PCM.

Q: Is the symptom eliminated?

YES : The procedure is complete.

NO : Start over at Step 1.

INSPECTION PROCEDURE 3: Does not Move Backward

COMMENT

If the vehicle does not move backward when the selector lever is shifted from "N" to "R" range while the engine is idling, the cause is probably abnormal pressure or a malfunction of the reverse clutch, low-reverse brake, or valve body.

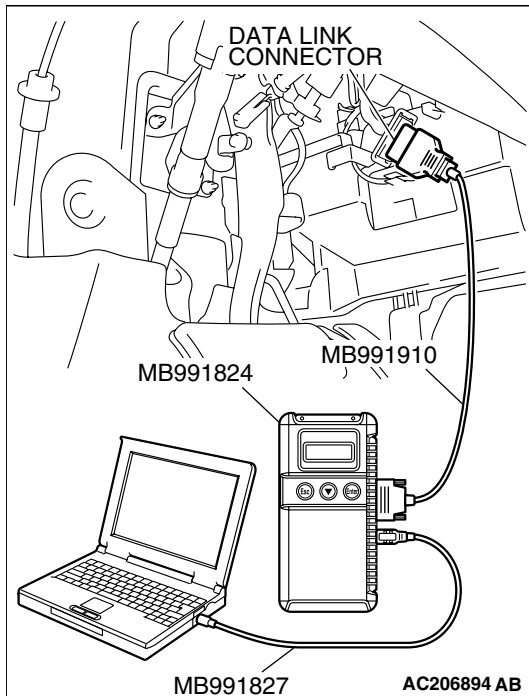
TROUBLESHOOTING HINTS (The most likely causes for this condition:)

- Abnormal reverse clutch pressure
- Abnormal low-reverse brake pressure
- Malfunction of the low-reverse solenoid valve
- Malfunction of the reverse clutch
- Malfunction of the low-reverse brake
- Malfunction of the valve body
- Malfunction of the PCM

DIAGNOSIS

Required Special Tool:

- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: MUT-III USB Cable
 - MB991910: MUT-III Main Harness A



STEP 1. Using scan tool MB991958, check actuator test item 01: Low-Reverse Solenoid Valve.

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Set scan tool MB991958 to the actuator test mode.
 - Item 01: Low-Reverse Solenoid Valve.
 - An audible clicking or buzzing should be heard when the low-reverse solenoid valve is energized.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the solenoid valve operating properly?

YES : Go to Step 2.

NO : Repair or replace the low-reverse solenoid valve. Refer to GROUP 23B, Valve Body P.23B-80. Then confirm that the symptom is eliminated.

STEP 2. Check the hydraulic pressure (for reverse clutch).

Measure the hydraulic pressure for the reverse clutch when the selector lever is at the "R" range, and check if the hydraulic pressure is within the standard value. Refer to P.23A-29, Hydraulic Pressure Test.

Q: Is the hydraulic pressure within the standard value?

YES : Go to Step 3.

NO : Go to Step 5.

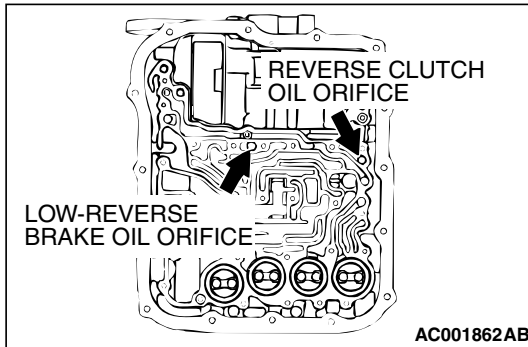
STEP 3. Check the hydraulic pressure (for low-reverse brake).

Measure the hydraulic pressure for the low-reverse brake when the selector lever is at the "R" range, and check if the hydraulic pressure is within the standard value. Refer to P.23A-29, Hydraulic Pressure Test.

Q: Is the hydraulic pressure within the standard value?

YES : Go to Step 4.

NO : Go to Step 5.

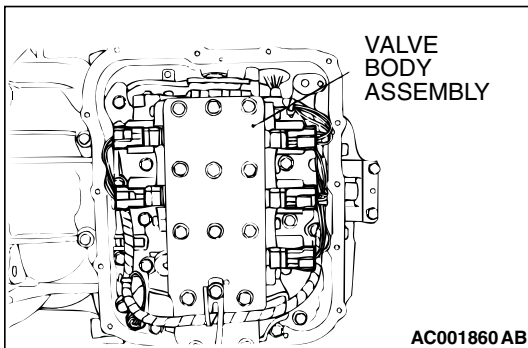


STEP 4. Check the reverse clutch system and low-reverse brake system.

- (1) Remove the valve body cover and valve body. Refer to [P.23A-387](#) <F4A4B> or [P.23A-395](#) <F4A5A>, Transaxle Assembly and GROUP 23B, Transaxle [P.23B-10](#).
- (2) Blow 108 kPa (15psi) compressed air into the reverse clutch oil orifice of the transaxle case. Then check if the reverse clutch piston moves and air pressures are maintained in that condition. Repeat for the low-reverse brake.

Q: Are the reverse clutch, low-reverse brake or both air pressures maintained?

- YES** : Go to Step 5.
NO : Go to Step 6.



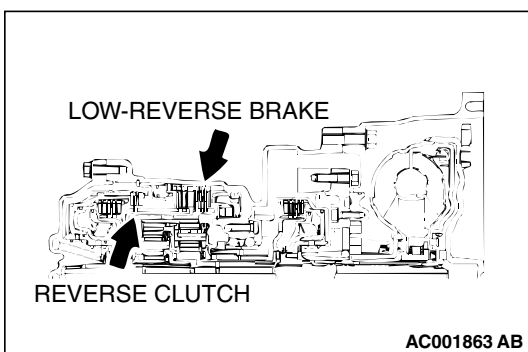
STEP 5. Disassemble and clean the valve body.

Check the O-ring installation bolts for looseness and valve body for damage. Repair or replace the faulty parts. Refer to GROUP 23B, Valve Body [P.23B-80](#).

Replace the valve body assembly if the damages are thought to be irreparable. Then check the symptom.

Q: Is the symptom eliminated?

- YES** : The procedure is complete.
NO : Go to Step 7.



STEP 6. Check the reverse clutch, low-reverse brake or both. Remove the transaxle.

Check the facing for seizure and the piston seal ring for damage and interference with the retainer. Repair or replace the faulty parts. Refer to GROUP 23B, Transaxle [P.23B-10](#), Reverse and Overdrive Clutch [P.23B-62](#). Then check the symptom.

Q: Is the symptom eliminated?

- YES** : The procedure is complete.
NO : Go to Step 7.

STEP 7. Replace the PCM.

Q: Is the symptom eliminated?

- YES** : The procedure is complete.
NO : Start over at Step 1.

INSPECTION PROCEDURE 4: Does not Move (Forward or Backward)**COMMENT**

If the vehicle does not move forward or backward when the selector lever is shifted to any position while the engine is idling, the cause is probably abnormal line pressure, or a malfunction of the powertrain, oil pump or valve body.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CONDITION:)

- Abnormal line pressure
- Malfunction of the powertrain
- Malfunction of the oil pump
- Malfunction of the valve body
- Low transmission fluid level
- Malfunction of the PCM

DIAGNOSIS**STEP 1. Check the hydraulic pressure.**

Measure the hydraulic pressure of each element when the transaxle is in 1st, 2nd or reverse. Check if each hydraulic pressure is within the standard value. Refer to [P.23A-29](#), Hydraulic Pressure Test. If some elements pressures are within the standard value and some are not, recheck the symptom.

Q: Are all pressures within the standard value?

YES : Check transmission fluid level and condition. If not OK, repair or replace as necessary, then retest the system. If OK, go to Step 3.

NO : Go to Step 2.

STEP 2. Disassemble and clean the valve body.

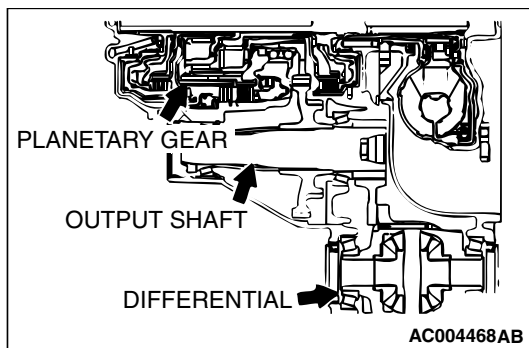
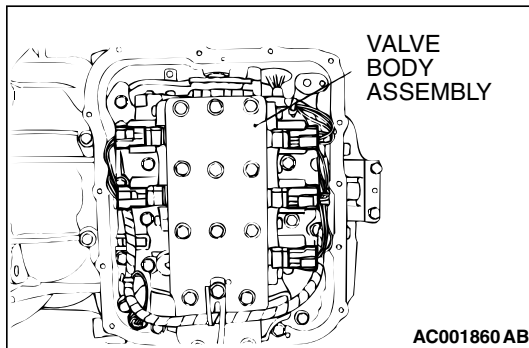
Check the O-ring installation bolts for looseness and valve body for damage. Repair or replace the faulty parts. Refer to GROUP 23B, Valve Body [P.23B-80](#).

Replace the valve body assembly if the damages are thought to be irreparable. Then retest the symptom.

Q: Is the symptom eliminated?

YES : The procedure is complete.

NO : Go to Step 4.

**STEP 3. Check the transaxle powertrain components.**

Disassemble the transaxle and check the planetary gear and output shaft, etc. Repair or replace the damaged parts. Refer to GROUP 23B, Transaxle [P.23B-10](#), Planetary Gear [P.23B-69](#), Output Shaft [P.23B-73](#), Differential [P.23B-76](#). Then check the symptom.

Q: Is the symptom eliminated?

YES : The procedure is complete.

NO : Go to Step 5.

STEP 4. Check the oil pump.

- (1) Remove the transaxle.
- (2) Check the oil pump (incorrect installation, damage and etc.) and replace the oil pump assembly if necessary (The oil pump cannot be disassembly). Refer to GROUP 23B, Transaxle P.23B-10. Confirm that the malfunction symptom is eliminated.

Q: Is the symptom eliminated?

- YES :** The procedure is complete.
NO : Go to Step 5.

STEP 5. Replace the PCM.

Q: Is the symptom eliminated?

- YES :** The procedure is complete.
NO : Start over at Step 1.

INSPECTION PROCEDURE 5: Engine Stalls when Moving Selector Lever from "N" to "D" or "N" to "R"

COMMENT

If the engine stalls when the selector lever is shifted from "N" to "D" or "R" range while the engine is idling, the cause is probably a malfunction of the engine system, torque converter clutch solenoid valve, valve body or torque converter (torque converter clutch malfunction).

TROUBLESHOOTING HINTS (The most likely causes for this condition:)

- Malfunction of the engine system
- Malfunction of the torque converter clutch solenoid
- Malfunction of the valve body
- Malfunction of the torque converter (Malfunction of the torque converter clutch)
- Malfunction of the PCM

DIAGNOSIS

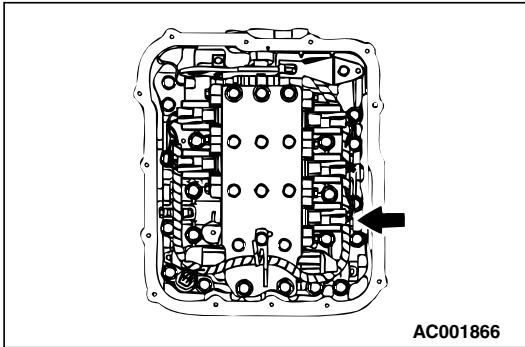
STEP 1. Check the engine system.

Refer to GROUP 13A <2.4L Engine>, Diagnosis – Trouble Symptom Chart – When the engine is hot, it stalls at idle P.13A-38.

Refer to GROUP 13B <3.8L Engine>, Diagnosis – Trouble Symptom Chart – When the engine is hot, it stalls at idle P.13B-38.

Q: Is the inspection result good?

- YES :** Go to Step 2.
NO : Repair or replace the engine components.



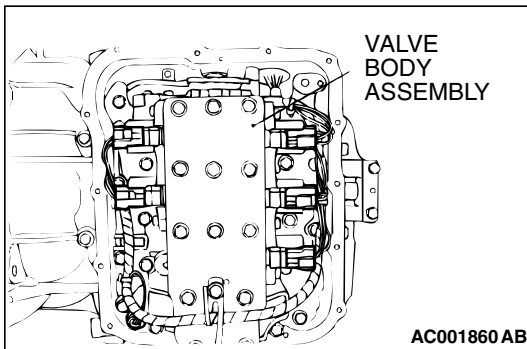
STEP 2. Replace the torque converter clutch solenoid valve.

Replace the torque converter clutch solenoid valve. Refer to GROUP 23B, Valve Body P.23B-80. Then check the symptom.

Q: Is the symptom eliminated?

YES : The procedure is complete.

NO : Go to Step 3.



STEP 3. Disassemble and clean the valve body.

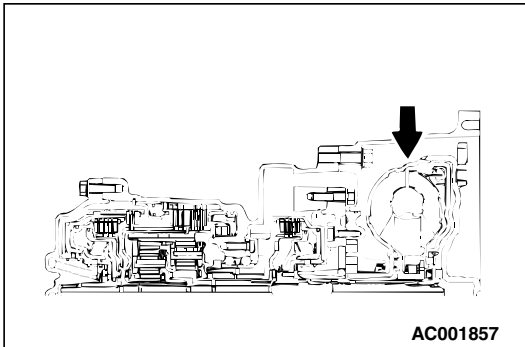
Check the O-ring installation bolts for looseness and valve body for damage. Repair or replace the faulty parts. Refer to GROUP 23B, Valve Body P.23B-80.

Replace the valve body assembly if the damages are thought to be irreparable. Then check the symptom.

Q: Is the repair possible and the symptom eliminated?

YES : The procedure is complete.

NO : Go to Step 4.



STEP 4. Replace the torque converter assembly.

(1) Remove the transaxle.

(2) Replace the torque converter assembly. Refer to GROUP 23B, Transaxle P.23B-10. Then check the symptom.

Q: Is the symptom eliminated?

YES : The procedure is complete.

NO : Go to Step 5.

STEP 5. Replace the PCM.
Q: Is the symptom eliminated?

YES : The procedure is complete.

NO : Start over at Step 1.

INSPECTION PROCEDURE 6: Shift Shock when Shifting from "N" to "D" and Long Delay

COMMENT

If abnormal shock or delay of two seconds or more occurs when the selector lever is shifted from "N" to "D" range while the engine is idling, the cause is probably abnormal underdrive clutch pressure or a malfunction of the underdrive clutch, valve body or TP sensor.

TROUBLESHOOTING HINTS (The most likely causes for this condition:)

- Abnormal underdrive clutch pressure
- Malfunction of the underdrive solenoid valve
- Malfunction of the underdrive clutch
- Malfunction of the valve body
- Malfunction of the TP sensor
- Malfunction of the PCM

DIAGNOSIS

Required Special Tool:

- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: MUT-III USB Cable
 - MB991910: MUT-III Main Harness A

STEP 1. Using scan tool MB991958, check actuator test item 02: Underdrive Solenoid Valve.

⚠ CAUTION

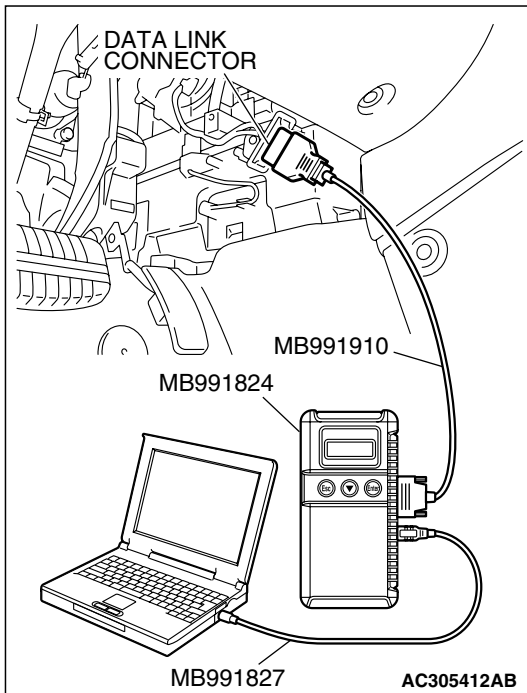
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Set scan tool MB991958 to the actuator test mode.
 - Item 02: Underdrive Solenoid Valve.
 - An audible clicking or buzzing should be heard when the underdrive solenoid valve is energized.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the solenoid valve operating properly?

YES : Go to Step 2.

NO : Repair or replace the underdrive solenoid valve. Refer to GROUP 23B, Valve Body [P.23B-80](#). Then confirm that the symptom is eliminated.



STEP 2. Check when shift shock occurs.

Q: When does the shift shock occur?

When engaging from "N" to "D" : Go to Step 3.

When the vehicle starts moving : Go to Step 6.

STEP 3. Check the hydraulic pressure (for underdrive clutch).

Measure the hydraulic pressure for underdrive clutch when the selector lever is shifted from "N" to "D" range. Check if the hydraulic pressure is within the standard value. Refer to [P.23A-29](#), Hydraulic Pressure Test.

Q: Is the hydraulic pressure within the standard value?

YES : Go to Step 4.

NO : Go to Step 8.

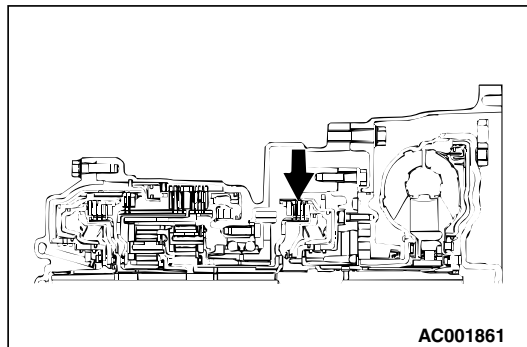
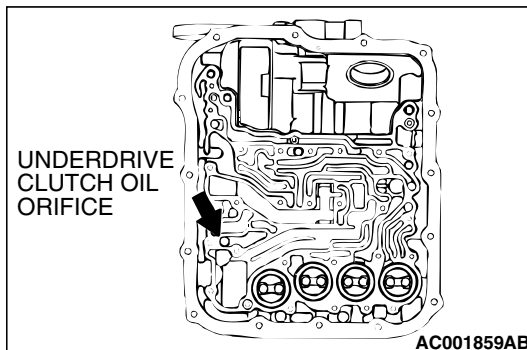
STEP 4. Check the underdrive clutch system.

- (1) Remove the valve body cover and valve body. Refer to [P.23A-387](#) <F4A4B> or [P.23A-395](#) <F4A5A>, Transaxle Assembly and GROUP 23B, Transaxle [P.23B-10](#).
- (2) Blow 108 kPa (15 psi) compressed air into the underdrive clutch oil orifice of the transaxle case, and check if the underdrive clutch piston moves and air pressure is maintained in that condition.

Q: Is the air pressure maintained?

YES : Go to Step 8.

NO : Go to Step 5.

**STEP 5. Check the underdrive clutch.**

- (1) Remove the transaxle assembly.
- (2) Check the facing for seizure and the piston seal ring for damage and interference with the retainer. Repair or replace the faulty parts. Refer to GROUP 23B [P.23B-60](#), Underdrive Clutch and Input Shaft. Then check the symptom.

Q: Is the symptom eliminated?

YES : The procedure is complete.

NO : Go to Step 9.

STEP 6. Check shift shock.**Q: Does shift shock occur?**

YES : Go to Step 7.

NO : Go to Step 8.

STEP 7. Using scan tool MB991958, check data list item 11: TP Sensor.

⚠ CAUTION

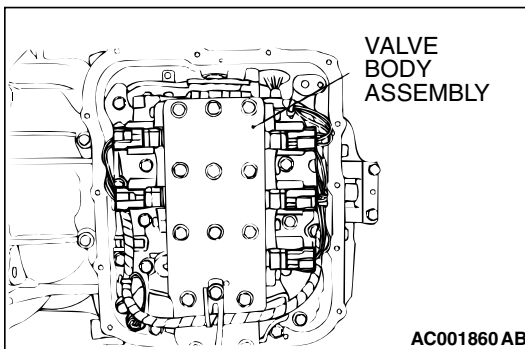
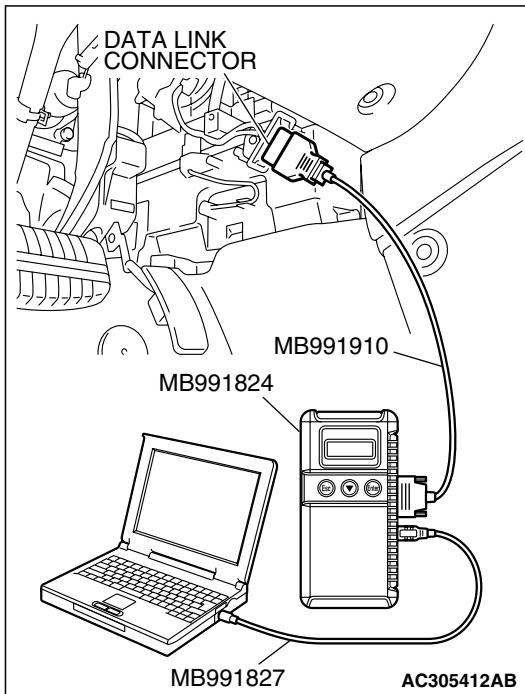
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Set scan tool MB991958 to the data reading mode.
 - Item 11: TP Sensor.
 - With the throttle valve in idle position, voltage should measure between 300 and 700 mV.
 - With the throttle valve in full-open position, voltage should measure 4,000 mV or more.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the measured voltage between 300 and 700 mV at idle, and 4,000 mV or more at the full-open position?

YES : Go to Step 8.

NO : Check the TP sensor. Refer to GROUP13A <2.4L Engine>, Diagnostic Trouble Code Procedures [P.13A-159](#), [P.13A-169](#), DTCs P0122, P0123: TP Sensor System or refer to GROUP13B <3.8L Engine>, Diagnostic Trouble Code Procedures [P.13B-162](#), [P.13B-172](#), DTCs P0122, P0123: TP Sensor System. Then check the symptom.



STEP 8. Disassemble and clean the valve body.

Check the O-ring installation bolts for looseness and the valve body for damage. Repair or replace the faulty parts. Refer to GROUP 23B, Valve Body [P.23B-80](#).

Replace the valve body assembly if the damages are thought to be irreparable. Then check the symptom.

Q: Is the symptom eliminated?

YES : The procedure is complete.

NO : Replace the valve body assembly. Then check the symptom. Go to Step 9.

STEP 9. Replace the PCM.

Q: Is the symptom eliminated?

YES : The procedure is complete.

NO : Start over at Step 1.

INSPECTION PROCEDURE 7: Shift Shock when Shifting from "N" to "R" and Long Delay**COMMENT**

If abnormal shock or delay of two seconds or more occurs when the selector lever is shifted from "N" to "R" range while the engine is idling, the cause is probably abnormal reverse clutch pressure or low-reverse brake pressure, or a malfunction of the reverse clutch, low-reverse brake, valve body or TP sensor.

TROUBLESHOOTING HINTS (The most likely causes for this condition:)

- Abnormal reverse clutch pressure
- Abnormal low-reverse brake pressure
- Malfunction of the low-reverse solenoid valve
- Malfunction of the reverse clutch
- Malfunction of the low-reverse brake
- Malfunction of the valve body
- Malfunction of the TP sensor
- Malfunction of the PCM

DIAGNOSIS**Required Special Tool:**

- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: MUT-III USB Cable
 - MB991910: MUT-III Main Harness A

STEP 1. Using scan tool MB991958, check actuator test item 01: Low-Reverse Solenoid Valve.**⚠ CAUTION**

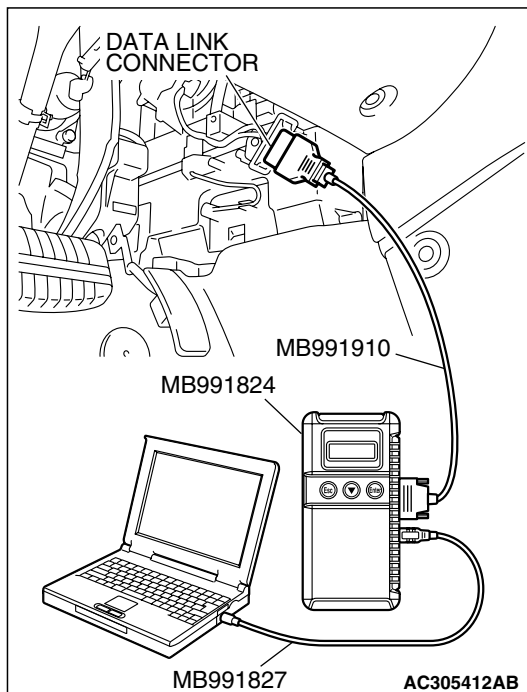
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Set scan tool MB991958 to the actuator test mode.
 - Item 01: Low-Reverse Solenoid Valve.
 - An audible clicking or buzzing should be heard when the low-reverse solenoid valve is energized.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the solenoid valve operating properly?

YES : Go to Step 2.

NO : Repair or replace the low-reverse solenoid valve. Refer to GROUP 23B, Valve Body P.23B-80. Then confirm that the symptom is eliminated.

**STEP 2. Check when shift shock occurs.****Q: When does the shift shock occur?**

When engaging from "N" to "R" : Go to Step 3.

When the vehicle starts moving : Go to Step 7.

STEP 3. Check the hydraulic pressure (for reverse clutch).

Measure the hydraulic pressure for reverse clutch when the selector lever is at the "R" range. Check if the hydraulic pressure is within the standard value. Refer to [P.23A-29](#), Hydraulic Pressure Test.

Q: Is the hydraulic pressure within the standard value?

YES : Go to Step 4.

NO : Go to Step 9.

STEP 4. Check the hydraulic pressure (for low-reverse brake).

Measure the hydraulic pressure for low-reverse brake when the selector lever is at the "R" range. Check if the hydraulic pressure is within the standard value. Refer to [P.23A-29](#), Hydraulic Pressure Test.

Q: Is the hydraulic pressure within the standard value?

YES : Go to Step 5.

NO : Go to Step 9.

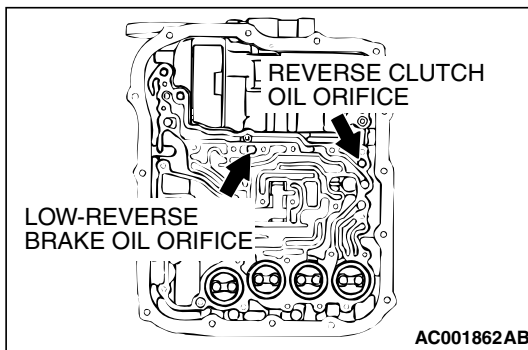
STEP 5. Check the reverse clutch system and low-reverse brake system.

- (1) Remove the valve body cover and valve body. Refer to [P.23A-387](#) <F4A4B> or [P.23A-395](#) <F4A5A>, Transaxle Assembly and GROUP 23B, Transaxle [P.23B-10](#).
- (2) Blow 108 kPa (15 psi) compressed air into the reverse clutch oil orifice of the transaxle case, and check if the reverse clutch piston moves and air pressures are maintained in that condition. Repeat for the low-reverse brake.

Q: Are both air pressures maintained?

YES : Go to Step 6.

NO : Go to Step 9.



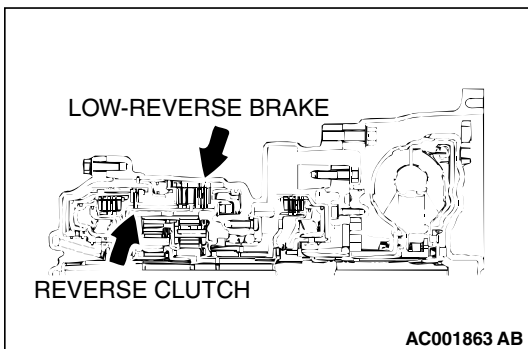
STEP 6. Check the reverse clutch and low-reverse brake.

- (1) Remove the transaxle assembly.
- (2) Check the facing for seizure and the piston seal ring for damage and interference with the retainer. Repair or replace the faulty parts. Refer to GROUP 23B, Transaxle [P.23B-10](#), Reverse and Overdrive Clutch [P.23B-62](#). Then Retest the system.

Q: Is the symptom eliminated?

YES : The procedure is complete.

NO : Go to Step 10.



STEP 7. Check shift shock.**Q: Does shift shock occur sometimes ?****YES :** Go to Step 8.**NO :** Go to Step 9.**STEP 8. Using scan tool MB991958, check data list item 11: TP Sensor.****⚠ CAUTION****To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.**

(1) Connect scan tool MB991958 to the data link connector.

(2) Turn the ignition switch to the "ON" position.

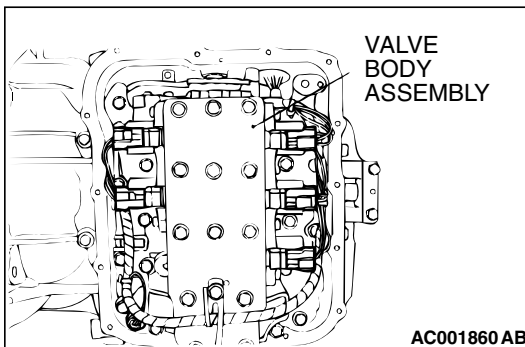
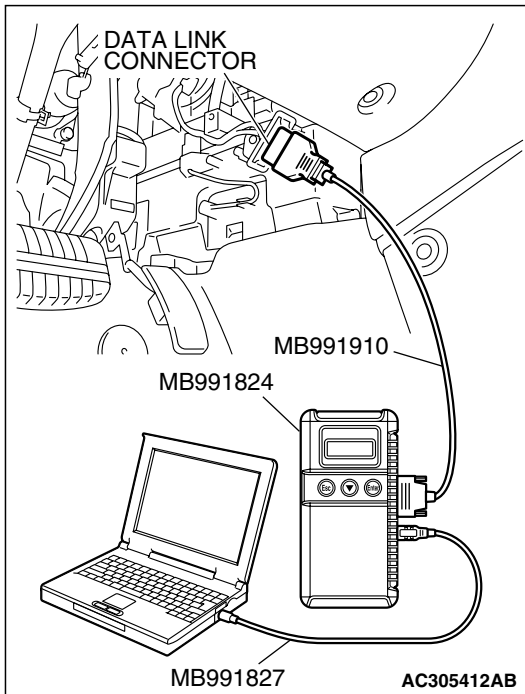
(3) Set scan tool MB991958 to the data reading mode.

- Item 11: TP Sensor.

- With the throttle valve in idle position, voltage should measure between 300 and 700 mV.

- With the throttle valve in full-open position, voltage should measure 4,000 mV or more.

(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the measured voltage between 300 and 700 mV at idle, and 4,000 mV or more at the full-open position?**YES :** Go to Step 9.**NO :** Check the TP sensor. Refer to GROUP13A <2.4L Engine>, Diagnostic Trouble Code Procedures [P.13A-159](#), [P.13A-169](#), DTCs P0122, P0123: TP Sensor System or refer to GROUP13B <3.8L Engine>, Diagnostic Trouble Code Procedures [P.13B-162](#), [P.13B-172](#), DTCs P0122, P0123: TP Sensor System. Then check the symptom.**STEP 9. Disassemble and clean the valve body.**Check the O-ring installation bolts for looseness and the valve body for damage. Repair or replace the faulty parts. Refer to GROUP 23B, Valve Body [P.23B-80](#).

Replace the valve body assembly if the damages are thought to be irreparable. Then check the symptom.

Q: Is the symptom eliminated?**YES :** The procedure is complete.**NO :** Go to Step 10.**STEP 10. Replace the PCM.****Q: Is the symptom eliminated?****YES :** The procedure is complete.**NO :** Start over at Step 1.

INSPECTION PROCEDURE 8: Shift Shock when Shifting from "N" to "D," "N" to "R" and Long Delay

COMMENT

If abnormal shock or delay of two seconds or more occurs when the selector lever is moved from "N" to "D" range or from "N" to "R" range while the engine is idling, the cause is probably abnormal line pressure or a malfunction of the oil pump or valve body.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CONDITION:)

- Abnormal line pressure
- Malfunction of the oil pump
- Malfunction of the valve body
- Malfunction of the PCM

DIAGNOSIS

STEP 1. Check the hydraulic pressure.

- (1) Measure the hydraulic pressure of each element when the transaxle is in 1st, 2nd or reverse. Check if each hydraulic pressure is within the standard value. Refer to [P.23A-29](#), Hydraulic Pressure Test.
- (2) If some elements pressures are within the standard value and some are not, recheck the symptom.

Q: Are all hydraulic pressures within the standard value?

YES : Go to Step 3.

NO : Go to Step 2.

STEP 2. Adjust line pressure.

Adjust line pressure. Refer to [P.23A-42](#), Line Pressure Adjustment. Then check the symptom.

Q: Is the symptom eliminated?

YES : The procedure is complete.

NO : Go to Step 3.

STEP 3. Check when shift shock occurs.

Q: When does the shift shock occur?

When engaging from "N" to "D" and "N" to "R" : Go to Step 4.

When the vehicle starts moving : Go to Step 5.

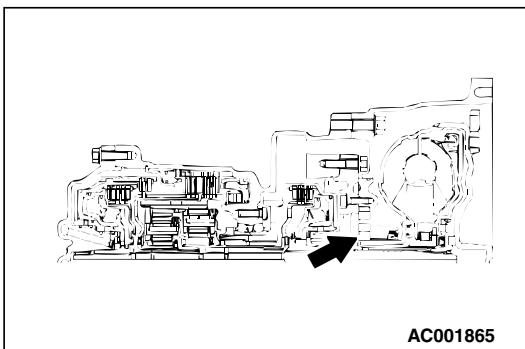
STEP 4. Check the oil pump.

- (1) Remove the transaxle.
- (2) Check the oil pump (incorrect installation, damage and etc.) and replace the oil pump assembly if necessary (The oil pump cannot be disassembly). Refer to GROUP 23B, Transaxle [P.23B-10](#). Confirm that the malfunction symptom is eliminated.

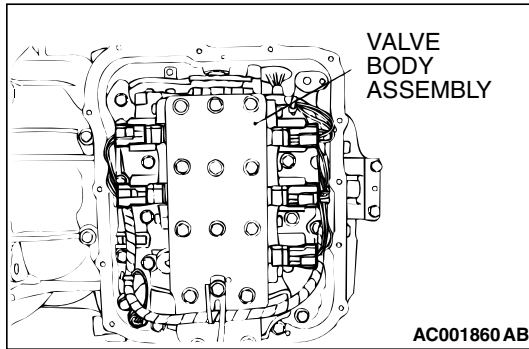
Q: Is the symptom eliminated?

YES : The procedure is complete.

NO : Go to Step 6.



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**STEP 5. Disassemble and clean the valve body.**

Check the installation bolts for looseness and the O-ring, valves and valve body for damage. Repair or replace the faulty parts. Refer to GROUP 23B, Valve Body P.23B-80.

Replace the valve body assembly if the damages are thought to be irreparable. Then check the symptom.

Q: Is the symptom eliminated?

YES : The procedure is complete.

NO : Go to Step 6.

STEP 6. Replace the PCM.**Q: Is the symptom eliminated?**

YES : The procedure is complete.

NO : Start over at Step 1.

INSPECTION PROCEDURE 9: Shift Shock and Slipping**COMMENT**

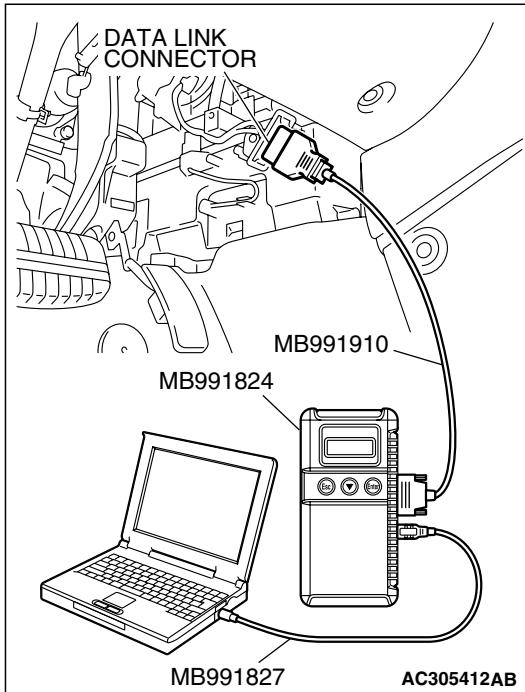
If shift shock when driving is due to upshifting or downshifting and the transaxle speed become higher than the engine speed, the cause is probably abnormal line pressure or a malfunction of a solenoid valve, oil pump, valve body or of a brake or clutch.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CONDITON:)

- Abnormal line pressure
- Malfunction of each solenoid valve
- Malfunction of the oil pump
- Malfunction of the valve body
- Malfunction of each brake or each clutch
- Malfunction of the PCM

DIAGNOSIS**Required Special Tool:**

- MB991958: Scan Tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: MUT-III USB Cable
 - MB991910: MUT-III Main Harness A



STEP 1. Using scan tool MB991958, check actuator test.

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

- (1) Connect scan tool MB991958 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Set scan tool MB991958 to the actuator test mode for following items.

- a. Item 01: Low-reverse solenoid valve
- b. Item 02: Underdrive solenoid valve
- c. Item 03: Second solenoid valve
- d. Item 04: Overdrive solenoid valve

- An audible clicking or buzzing should be heard when the solenoid valves are energized.

- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Are the solenoid valves operating properly?

YES : Go to Step 2.

NO : Repair or replace the solenoid valves. Refer to GROUP 23B, Valve Body P.23B-80. Then confirm that the symptom is eliminated.

STEP 2. Check the hydraulic pressure.

- (1) Measure the hydraulic pressure of each element. Check if each hydraulic pressure is within the standard value. Refer to P.23A-29, Hydraulic Pressure Test.
- (2) If some elements pressure are within the standard value and some are not, recheck the symptom.

Q: Are all hydraulic pressures within the standard value?

YES : Go to Step 6.

NO : Go to Step 3.

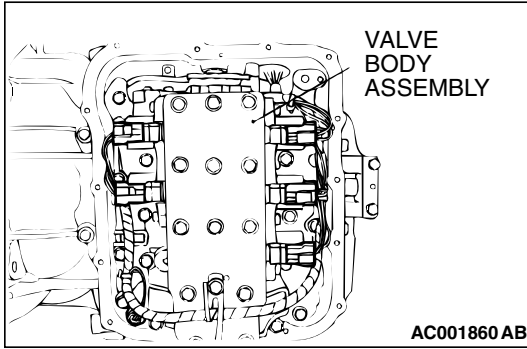
STEP 3. Adjust the line pressure.

Adjust the line pressure. Refer to P.23A-42, Line Pressure Adjustment. Then check the symptom.

Q: Is the symptom eliminated?

YES : The procedure is complete.

NO : Go to Step 4.



STEP 4. Disassemble and clean the valve body.

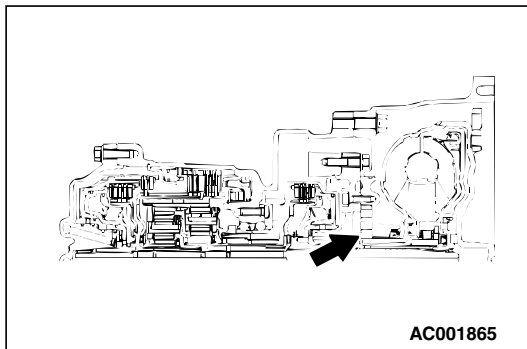
Check the O-ring installation bolts for looseness and the valve body for damage. Repair or replace the faulty parts. Refer to GROUP 23B, Valve Body P.23B-80.

Replace the valve body assembly if the damages are thought to be irreparable. Then check the symptom.

Q: Is the symptom eliminated?

YES : The procedure is complete.

NO : Go to Step 5.



STEP 5. Check the oil pump.

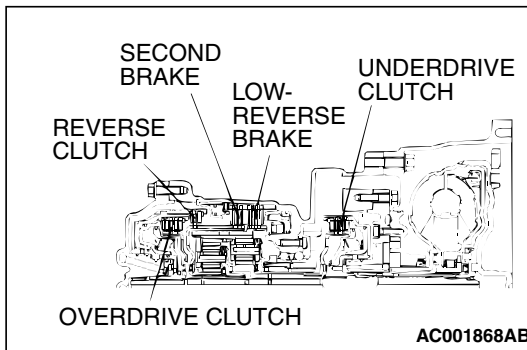
(1) Remove the transaxle.

(2) Check the oil pump (incorrect installation, damage and etc.) and replace the oil pump assembly if necessary (The oil pump cannot be disassembly). Refer to GROUP 23B, Transaxle P.23B-10. Confirm that the malfunction symptom is eliminated.

Q: Is the symptom eliminated?

YES : The procedure is complete.

NO : Go to Step 7.



STEP 6. Check each brake and clutch.

(1) Remove the transaxle.

(2) Check the facing for seizure and piston seal ring for damage and interference with retainer. Repair or replace the faulty parts. Refer to GROUP 23B, Transaxle P.23B-10, Underdrive Clutch and Input Shaft P.23B-60, Reverse and Overdrive Clutch P.23B-62. Then Retest the system.

Q: Is the symptom eliminated?

YES : The procedure is complete.

NO : Go to Step 7.

STEP 7. Replace the PCM.

Q: Is the symptom eliminated?

YES : The procedure is complete.

NO : Start over at Step 1.

NEXT>>