LUBRICANT

Items	Specified lubricant	Quantity (litres)
Transmission fluid	Mitsubishi ELC4–SP III	8.4

TROUBLESHOOTING

INSPECTION CHART FOR DIAGNOSIS CODES

Code	Diagnosis item	
11	Throttle position sensor system	Short circuit
12		Open circuit
14		Sensor maladjustment
15	Oil temperature sensor system	Open circuit
21	Crank angle sensor system	Open circuit
22	Input shaft speed sensor system	Short circuit/open circuit
23	Output shaft speed sensor system	Short circuit/open circuit
26	Stop light switch system	Short circuit/open circuit
31	Low and reverse solenoid valve system	Short circuit/open circuit
32	Underdrive solenoid valve system	Short circuit/open circuit
33	Second solenoid valve system	Short circuit/open circuit
34	Overdrive solenoid valve system	Short circuit/open circuit
35	RED solenoid valve system	Short circuit/open circuit
36	DCC solenoid valve system	Short circuit/open circuit
41	1st gear incorrect ratio	
42	2nd gear incorrect ratio	
43	3rd gear incorrect ratio	
44	4th gear incorrect ratio	
45	5th gear incorrect ratio	
46	Reverse gear incorrect ratio	
51	Abnormal communication with Engine-ECU / TCL ECU	
52	Damper clutch solenoid system	Defective system

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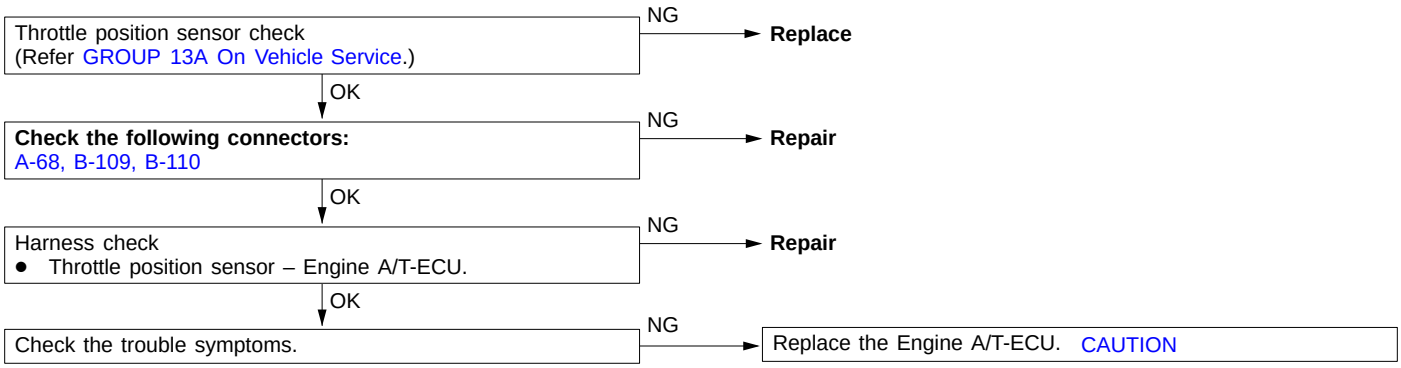
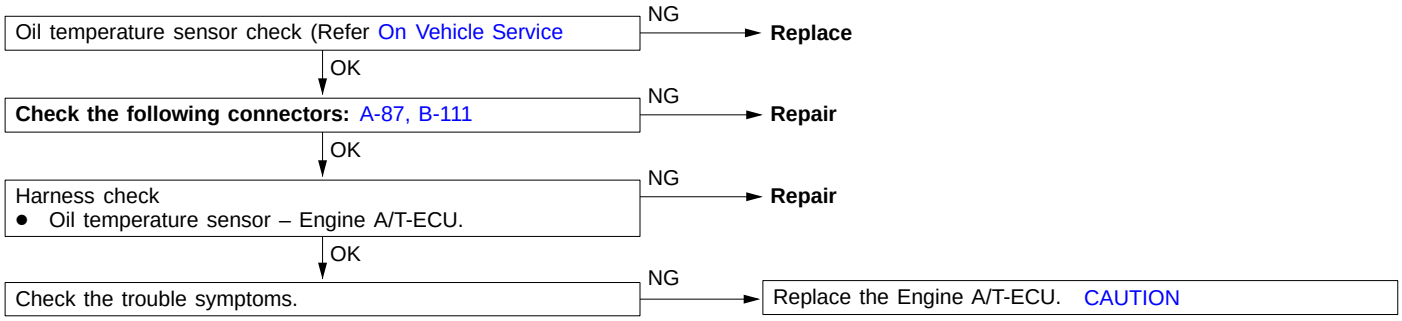
Code	Diagnosis item	
54	A/T Control relay system	Short circuit to ground/open circuit
55		Contact point melted
56	N range light system	Short circuit to ground
71	Malfunction of A/T-ECU	

INSPECTION PROCEDURES FOR DIAGNOSIS CODES

Code No. 11, 12, 14 Throttle position sensor system	Probable cause
If the TPS output voltage is 4.8 V or higher when the engine is idling, the output is judged to be too high and diagnosis code No. 11 is output. If the TPS output voltage is 0.2 V or lower at times other than when the engine is idling, the output is judged to be too low and diagnosis code No. 12 is output. If the TPS output voltage is 0.2 V or lower or if it is 1.2 V or higher when the engine is idling, the TPS adjustment is judged to be incorrect and diagnosis code No. 14 is output.	• Malfunction of the throttle position sensor • Malfunction of connector • Malfunction of the Engine A/T-ECU



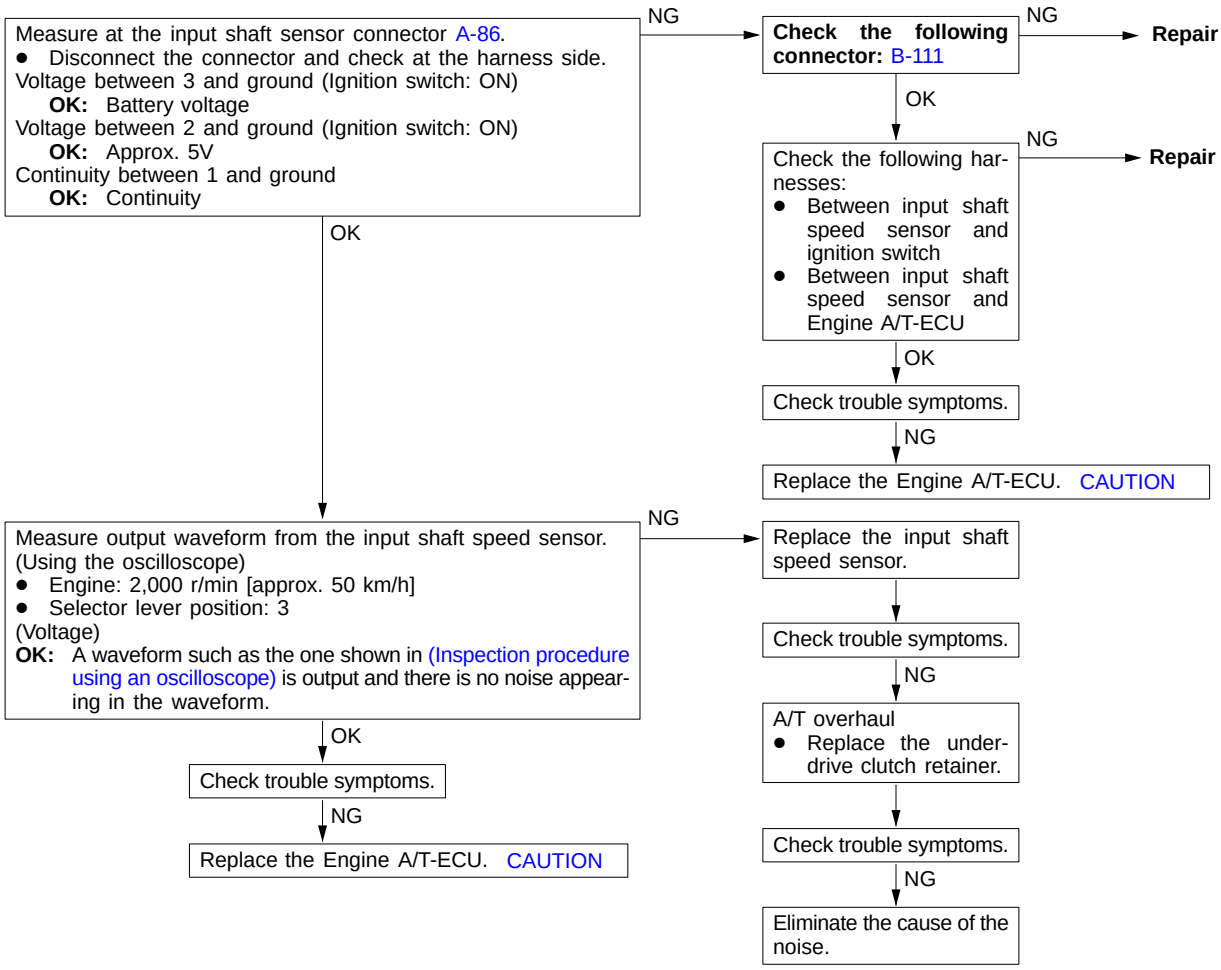
Code No. 15, Oil temperature sensor system	Probable cause
If the oil temperature sensor output voltage is 2.6 V or more even after driving for 10 minutes or more (if the oil temperature does not increase), it is judged that there is an open circuit in the oil temperature sensor and diagnosis code No. 15 is output to indicate that the oil temperature sensor is disconnected.	• Malfunction of the oil temperature sensor • Malfunction of connector • Malfunction of the Engine A/T-ECU



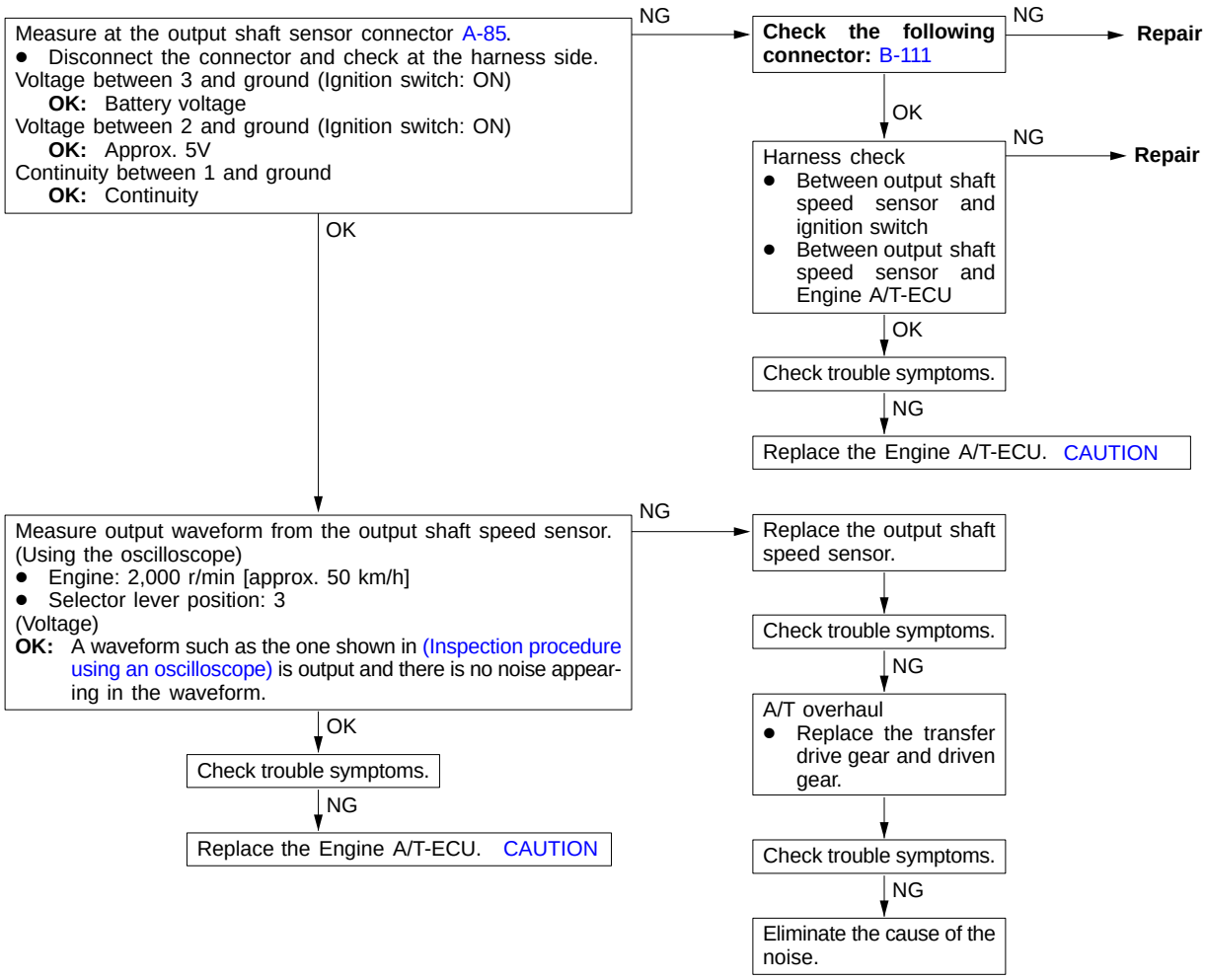
Code No. 21 Crank angle sensor system	Probable cause
If no output pulse is detected from the crank angle sensor for 5 seconds or more while driving at 40 km/h or more, it is judged that there is an open circuit in the crank angle sensor and diagnosis code No. 21 is output.	• Malfunction of the crank angle sensor • Malfunction of connector • Malfunction of the Engine A/T-ECU

Refer GROUP 13A On Vehicle Service

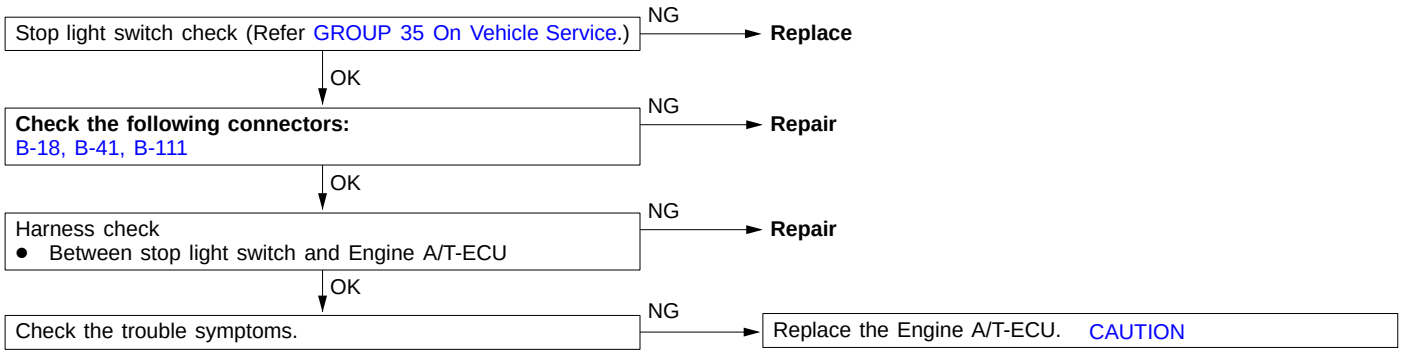
Code No. 22 Input shaft speed sensor system	Probable cause
If no output pulse is detected from the input shaft speed sensor for 1 second or more while driving in 3rd or 4th gear at a speed of 45 km/h or more, it is judged to be an open circuit or short-circuit in the input shaft speed sensor and diagnosis code No. 22 is output. If diagnosis code No. 22 is output four times, the transmission is locked into 3rd gear or 2nd gear as a fail-safe measure, and the N range light flashes at a frequency of 1 Hz.	● Malfunction of the input shaft speed sensor ● Malfunction of the underdrive clutch retainer ● Malfunction of connector ● Malfunction of the Engine A/T-ECU



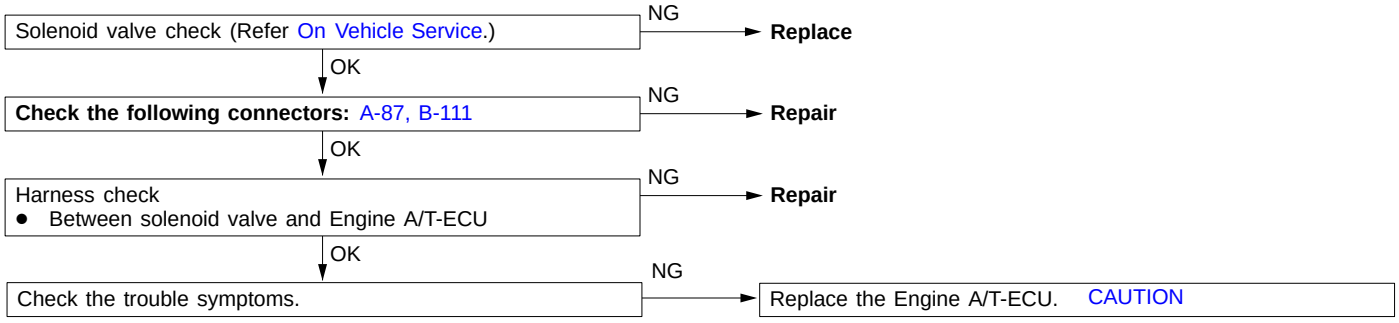
Code No. 23 Output shaft speed sensor system	Probable cause
If the output from the output shaft speed sensor is continuously 30% lower than the vehicle speed for 1 second or more while driving in 3rd or 4th gear at a speed of 45 km/h or more, it is judged to be an open circuit or short-circuit in the output shaft speed sensor and diagnosis code No. 23 is output. If diagnosis code No. 23 is output four times, the transmission is locked into 3rd gear or 2nd gear as a fail-safe measure, and the N range light flashes at a frequency of 1 Hz.	• Malfunction of the output shaft speed sensor • Malfunction of the direct planetary carrier • Malfunction of connector • Malfunction of the Engine A/T-ECU



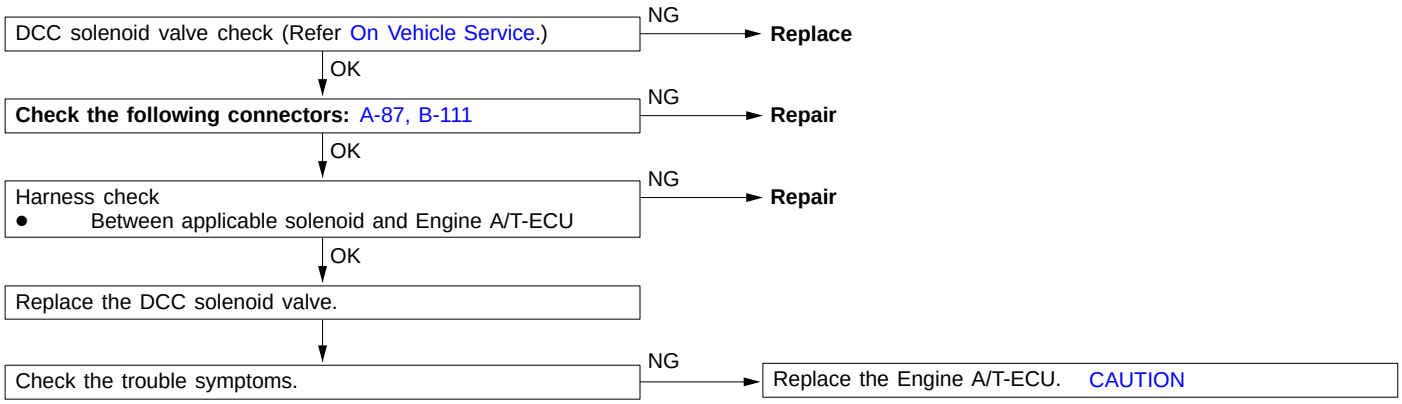
Code No. 26 Stop light switch system	Probable cause
If the stop light switch is on for 5 minutes or more while driving, it is judged that there is a short circuit in the stop light switch and diagnosis code No. 26 is output.	• Malfunction of the stop light switch • Malfunction of connector • Malfunction of the Engine A/T-ECU



Code No. 31 Low and reverse solenoid valve system Code No. 32 Underdrive solenoid valve system Code No. 33 Second solenoid valve system Code No. 34 Overdrive solenoid valve system Code No. 35 RED solenoid valve system	Probable cause
If the resistance value for a solenoid valve is too large or too small, it is judged that there is a short-circuit or an open circuit in the solenoid valve and the respective diagnosis code is output. The transmission is locked into 3rd gear as a fail-safe measure, and the N range light flashes at a frequency of 1 Hz.	• Malfunction of solenoid valve • Malfunction of connector • Malfunction of the Engine A/T-ECU



Code No. 36, 52, DCC solenoid valve system	Probable cause
If the DCC solenoid valve resistance value is too large or too small, it is judged that there is a short-circuit or an open circuit in the damper clutch solenoid and diagnosis code No. 36 is output. If the drive duty rate for the DCC solenoid valve is 100 % for a continuous period of 4 seconds or more, it is judged that there is an abnormality in the damper clutch system and diagnosis code No. 52 is output. When diagnosis code No. 36 is output, the transmission is locked into 3rd gear as a fail-safe measure, and the N range light flashes at a frequency of 1 Hz.	• Malfunction of the DCC solenoid valve • Malfunction of connector • Malfunction of the Engine A/T-ECU



Code No. 41 1st gear incorrect ratio	Probable cause
If the output from the output shaft speed sensor multiplied by the 1st gear ratio is not the same as the output from the input shaft speed sensor after shifting to 1st gear has been completed, diagnosis code No. 41 is output. If diagnosis code No. 41 is output four times, the transmission is locked into 3rd gear as a fail-safe measure, and the N range light flashes at a frequency of 1 Hz.	• Malfunction of the input shaft speed sensor • Malfunction of the output shaft speed sensor • Malfunction of the underdrive clutch retainer • Malfunction of the low and reverse brake system • Malfunction of the underdrive clutch system • Malfunction of the RED brake system • Noise generated

MUT-II Self Diagnosis
Is the diagnosis code No. 22 output?

Yes → Code No. 22 Check Input shaft speed sensor system.

No ↓

MUT-II Self Diagnosis
Is the diagnosis code No. 23 output?

Yes → Code No. 23 Check Output shaft speed sensor system.

No ↓

Measure output waveform from the input shaft speed sensor. (using an oscilloscope)
- Connect the connector B-109 and B-111 and measure voltage between 57 and 103 at the Engine A/T-ECU.
- Engine: 2,000 r/min [approx. 50 km/h]
- Selector lever position: 3
(Voltage)
OK: A waveform such as the one shown in (Inspection Procedure Using an Oscilloscope) is output (flashing 1.0V or higher) and there is no noise appearing in the waveform.

NG → Replace the input shaft speed sensor.
↓
Check the trouble symptoms.
NG ↓
A/T overhaul
- Replace the underdrive clutch retainer.
↓
Check the trouble symptoms.
NG ↓
Eliminate the cause of the noise.

OK ↓

Measure output waveform from the output shaft speed sensor. (using an oscilloscope)
- Connect the connector B-109 and B-111 and measure voltage between 57 and 103 at the Engine A/T-ECU.
- Engine: 2,000 r/min [approx. 50 km/h]
- Selector lever position: 3
(Voltage)
OK: A waveform such as the one shown in (Inspection procedure for using oscilloscope) is output (flashing 1.0V or higher) and there is no noise appearing in the waveform.

NG → Replace the output shaft speed sensor.
↓
Check the trouble symptoms.
NG ↓
A/T overhaul
- Replace the transfer drive gear and driven gear.
↓
Check the trouble symptoms.
NG ↓
Eliminate the cause of the noise.

OK ↓

A/T overhaul ★
- Replace the underdrive clutch. (No.41, No.43 or no diagnosis code is output.)
- Replace the second clutch. (No.44 or no diagnosis code is output.)
- Check RED brake system.

Code No. 42 2nd gear incorrect ratio	Probable cause
If the output from the output shaft speed sensor multiplied by the 2nd gear ratio is not the same as the output from the input shaft speed sensor after shifting to 2nd gear has been completed, diagnosis code No. 42 is output. If diagnosis code No. 42 is output four times, the transmission is locked into 3rd gear as a fail-safe measure, and the N range light flashes at a frequency of 1 Hz.	• Malfunction of the input shaft speed sensor • Malfunction of the output shaft speed sensor • Malfunction of the underdrive clutch retainer • Malfunction of the second brake system • Malfunction of the underdrive clutch system • Malfunction of the RED brake system • Noise generated

MUT-II Self Diagnosis
Is the diagnosis code No. 22 output?

Yes → Code No. 22 Check Input shaft speed sensor system.

No ↓

MUT-II Self Diagnosis
Is the diagnosis code No. 23 output?

Yes → Code No. 23 Check Output shaft speed sensor system.

No ↓

Measure output waveform from the input shaft speed sensor. (using an oscilloscope)
- Connect the connector B-109 and B-111 and measure voltage between 57 and 103 at the Engine A/T-ECU.
- Engine: 2,000 r/min [approx. 50 km/h]
- Selector lever position: 3
(Voltage)
OK: A waveform such as the one shown in (Inspection Procedure Using an Oscilloscope) is output (flashing 1.0V or higher) and there is no noise appearing in the waveform.

NG → Replace the input shaft speed sensor.
↓
Check the trouble symptoms.
NG ↓
A/T overhaul
- Replace the underdrive clutch retainer.
↓
Check the trouble symptoms.
NG ↓
Eliminate the cause of the noise.

OK ↓

Measure output waveform from the output shaft speed sensor. (using an oscilloscope)
- Connect the connector B-109 and B-111 and measure voltage between 57 and 103 at the Engine A/T-ECU.
- Engine: 2,000 r/min [approx. 50 km/h]
- Selector lever position: 3
(Voltage)
OK: A waveform such as the one shown in (Inspection procedure for using oscilloscope) is output (flashing 1.0V or higher) and there is no noise appearing in the waveform.

NG → Replace the output shaft speed sensor.
↓
Check the trouble symptoms.
NG ↓
A/T overhaul
- Replace the transfer drive gear and driven gear.
↓
Check the trouble symptoms.
NG ↓
Eliminate the cause of the noise.

OK ↓

A/T overhaul ★
- Replace the underdrive clutch. (No.41, No.43 or no diagnosis code is output.)
- Replace the second clutch. (No.44 or no diagnosis code is output.)
- Check RED brake system.

Code No. 43 3rd gear incorrect ratio	Probable cause
If the output from the output shaft speed sensor multiplied by the 3rd gear ratio is not the same as the output from the input shaft speed sensor after shifting to 3rd gear has been completed, diagnosis code No. 43 is output. If diagnosis code No. 43 is output four times, the transmission is locked into 3rd gear as a fail-safe measure, and the N range light flashes at a frequency of 1 Hz.	• Malfunction of the input shaft speed sensor • Malfunction of the output shaft speed sensor • Malfunction of the underdrive clutch retainer • Malfunction of the underdrive clutch system • Malfunction of the overdrive clutch system • Malfunction of the RED brake system • Noise generated

MUT-II Self Diagnosis
Is the diagnosis code No. 22 output?

Yes → Code No. 22 Check Input shaft speed sensor system.

No ↓

MUT-II Self Diagnosis
Is the diagnosis code No. 23 output?

Yes → Code No. 23 Check Output shaft speed sensor system.

No ↓

Measure output waveform from the input shaft speed sensor. (using an oscilloscope)
- Connect the connector B-109 and B-111 and measure voltage between 57 and 103 at the Engine A/T-ECU.
- Engine: 2,000 r/min [approx. 50 km/h]
- Selector lever position: 3
(Voltage)
OK: A waveform such as the one shown in (Inspection Procedure Using an Oscilloscope) is output (flashing 1.0V or higher) and there is no noise appearing in the waveform.

NG → Replace the input shaft speed sensor.
↓
Check the trouble symptoms.
NG ↓
A/T overhaul
- Replace the underdrive clutch retainer.
↓
Check the trouble symptoms.
NG ↓
Eliminate the cause of the noise.

OK ↓

Measure output waveform from the output shaft speed sensor. (using an oscilloscope)
- Connect the connector B-109 and B-111 and measure voltage between 57 and 103 at the Engine A/T-ECU.
- Engine: 2,000 r/min [approx. 50 km/h]
- Selector lever position: 3
(Voltage)
OK: A waveform such as the one shown in (Inspection Procedure Using an Oscilloscope) is output (flashing 1.0V or higher) and there is no noise appearing in the waveform.

NG → Replace the output shaft speed sensor.
↓
Check the trouble symptoms.
NG ↓
A/T overhaul
- Replace the transfer drive gear and driven gear.
↓
Check the trouble symptoms.
NG ↓
Eliminate the cause of the noise.

OK ↓

A/T overhaul
- Replace the underdrive clutch. (No.41, No.42 or no diagnosis code is output.)
- Replace the overdrive clutch. (No.44 or no diagnosis code is output.)
- Check RED brake system.

Code No. 44 4th gear incorrect ratio	Probable cause
If the output from the output shaft speed sensor multiplied by the 4th gear ratio is not the same as the output from the input shaft speed sensor after shifting to 4th gear has been completed, diagnosis code No. 44 is output. If diagnosis code No. 44 is output four times, the transmission is locked into 3rd gear as a fail-safe measure, and the N range light flashes at a frequency of 1 Hz.	• Malfunction of the input shaft speed sensor • Malfunction of the output shaft speed sensor • Malfunction of the underdrive clutch retainer • Malfunction of the DIR clutch system • Noise generated

MUT-II Self Diagnosis
Is the diagnosis code No. 22 output?

Yes → Code No. 22 Check Input shaft speed sensor system.

No ↓

MUT-II Self Diagnosis
Is the diagnosis code No. 23 output?

Yes → Code No. 23 Check Output shaft speed sensor system.

No ↓

Measure output waveform from the input shaft speed sensor. (using an oscilloscope)
- Connect the connector B-109 and B-111 and measure voltage between 57 and 103 at the Engine A/T-ECU.
- Engine: 2,000 r/min [approx. 50 km/h]
- Selector lever position: 3

(Voltage)
OK: A waveform such as the one shown in (Inspection Procedure Using an Oscilloscope) is output (flashing 1.0V or higher) and there is no noise appearing in the waveform.

NG → Replace the input shaft speed sensor.
↓
Check the trouble symptoms.
NG ↓
A/T overhaul
- Replace the underdrive clutch retainer.

↓
Check the trouble symptoms.
NG ↓
Eliminate the cause of the noise.

OK ↓

Measure output waveform from the output shaft speed sensor. (using an oscilloscope)
- Connect the connector B-109 and B-111 and measure voltage between 57 and 104 at the Engine A/T-ECU.
- Engine: 2,000 r/min [approx. 50 km/h]
- Selector lever position: 3

(Voltage)
OK: A waveform such as the one shown in (Inspection Procedure Using an Oscilloscope) is output (flashing 1.0V or higher) and there is no noise appearing in the waveform.

NG → Replace the output shaft speed sensor.
↓
Check the trouble symptoms.
NG ↓
A/T overhaul
- Replace the transfer drive gear and driven gear.

↓
Check the trouble symptoms.
NG ↓
Eliminate the cause of the noise.

OK ↓

A/T overhaul
- Check underdrive clutch system.
- Replace the overdrive clutch. (No.43 or no diagnosis code is output.)
- Check DIR clutch system.

Code No. 45 5th gear incorrect ratio	Probable cause
If the output from the output shaft speed sensor multiplied by the 5th gear ratio is not the same as the output from the input shaft speed sensor after shifting to 5th gear has been completed, diagnosis code No. 45 is output. If diagnosis code No. 45 is output four times, the transmission is locked into 3rd gear as a fail-safe measure, and the N range light flashes at a frequency of 1 Hz.	• Malfunction of the input shaft speed sensor • Malfunction of the output shaft speed sensor • Malfunction of the underdrive clutch retainer • Malfunction of the direct planetary carrier • Malfunction of the 2nd brake system • Malfunction of the overdrive clutch system • Malfunction of the DIR clutch system • Noise generated

MUT-II Self Diagnosis
Is the diagnosis code No. 22 output?
Yes → Code No. 22 Check Input shaft speed sensor system.
No ↓

MUT-II Self Diagnosis
Is the diagnosis code No. 23 output?
Yes → Code No. 23 Check Output shaft speed sensor system.
No ↓

Measure output waveform from the input shaft speed sensor. (using an oscilloscope)
- Connect the connector B-109 and B-111 and measure voltage between 57 and 103 at the Engine A/T-ECU.
- Engine: 2,000 r/min [approx. 50 km/h]
- Selector lever position: 3
(Voltage)
OK: A waveform such as the one shown in (Inspection Procedure Using an Oscilloscope) is output (flashing 1.0V or higher) and there is no noise appearing in the waveform.

NG → Replace the input shaft speed sensor.
↓
Check the trouble symptoms.
NG ↓
A/T overhaul
- Replace the underdrive clutch retainer.
↓
Check the trouble symptoms.
NG ↓
Eliminate the cause of the noise.

OK ↓

Measure output waveform from the output shaft speed sensor. (using an oscilloscope)
- Connect the connector B-109 and B-111 and measure voltage between 57 and 104 at the Engine A/T-ECU.
- Engine: 2,000 r/min [approx. 50 km/h]
- Selector lever position: 3
(Voltage)
OK: A waveform such as the one shown in (Inspection Procedure Using an Oscilloscope) is output (flashing 1.0V or higher) and there is no noise appearing in the waveform.

NG → Replace the output shaft speed sensor.
↓
Check the trouble symptoms.
NG ↓
A/T overhaul
- Replace the transfer drive gear and driven gear.
↓
Check the trouble symptoms.
NG ↓
Eliminate the cause of the noise.

OK ↓

A/T overhaul
- Check the 2nd brake system.
- Check the overdrive clutch system.
- Check the DIR clutch system.

Code No. 46 Reverse gear incorrect ratio	Probable cause
If the output from the output shaft speed sensor multiplied by the reverse gear ratio is not the same as the output from the input shaft speed sensor after shifting to reverse gear has been completed, diagnosis code No. 46 is output. If diagnosis code No. 46 is output four times, the transmission is locked into 3rd gear as a fail-safe measure, and the N range light flashes at a frequency of 1 Hz.	● Malfunction of the input shaft speed sensor ● Malfunction of the output shaft speed sensor ● Malfunction of the planetary carrier ● Malfunction of the RED clutch system ● Malfunction of the low and reverse brake system ● Malfunction of the reverse clutch system ● Noise generated

MUT-II Self Diagnosis
Is the diagnosis code No. 22 output?

Yes → Code No. 22 Check Input shaft speed sensor system.

No ↓

MUT-II Self Diagnosis
Is the diagnosis code No. 23 output?

Yes → Code No. 23 Check Output shaft speed sensor system.

No ↓

Measure output waveform from the input shaft speed sensor. (using an oscilloscope)
- Connect the connector B-109 and B-111 and measure voltage between 57 and 103 at the Engine A/T-ECU.
- Engine: 2,000 r/min [approx. 50 km/h]
- Selector lever position: 3
(Voltage)
OK: A waveform such as the one shown in (Inspection Procedure Using an Oscilloscope) is output (flashing 1.0V or higher) and there is no noise appearing in the waveform.

NG → Replace the input shaft speed sensor.
↓
Check the trouble symptoms.
NG ↓
A/T overhaul
- Replace the underdrive clutch retainer.

↓
Check the trouble symptoms.
NG ↓
Eliminate the cause of the noise.

OK ↓

Measure output waveform from the output shaft speed sensor. (using an oscilloscope)
- Connect the connector B-109 and B-111 and measure voltage between 57 and 104 at the Engine A/T-ECU.
- Engine: 2,000 r/min [approx. 50 km/h]
- Selector lever position: 3
(Voltage)
OK: A waveform such as the one shown in (Inspection Procedure Using an Oscilloscope) is output (flashing 1.0V or higher) and there is no noise appearing in the waveform.

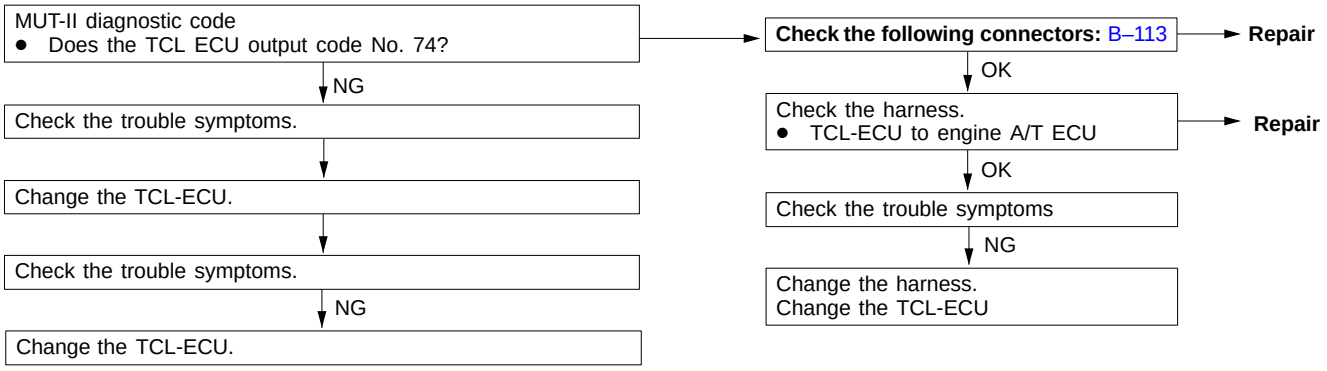
NG → Replace the output shaft speed sensor.
↓
Check the trouble symptoms.
NG ↓
A/T overhaul
- Replace the transfer drive gear and driven gear.

↓
Check the trouble symptoms.
NG ↓
Eliminate the cause of the noise.

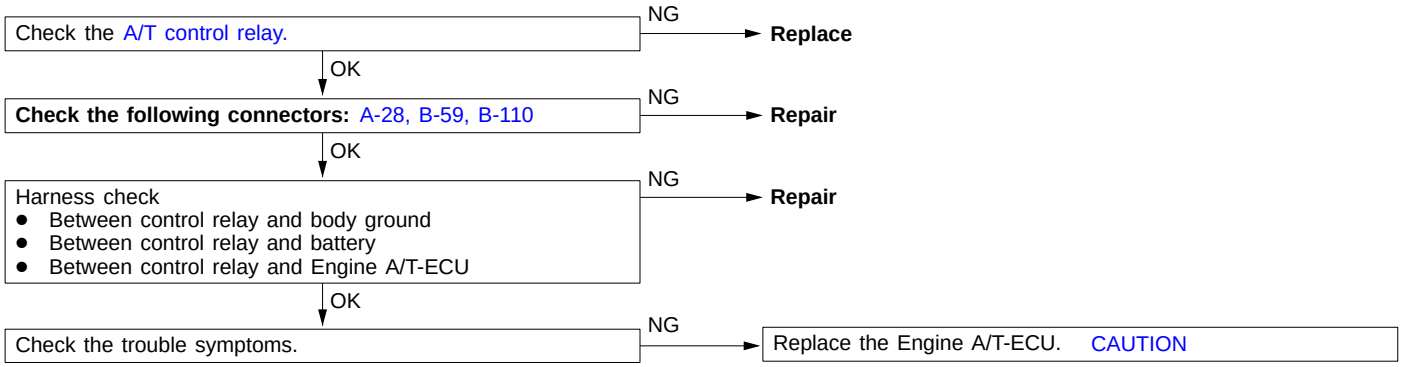
OK ↓

A/T overhaul
- Replace the low and reverse brake. (No.41 or no diagnosis code is output.)
- Replace the reverse clutch. (No diagnosis code is output.)
- Check the DIR clutch system.

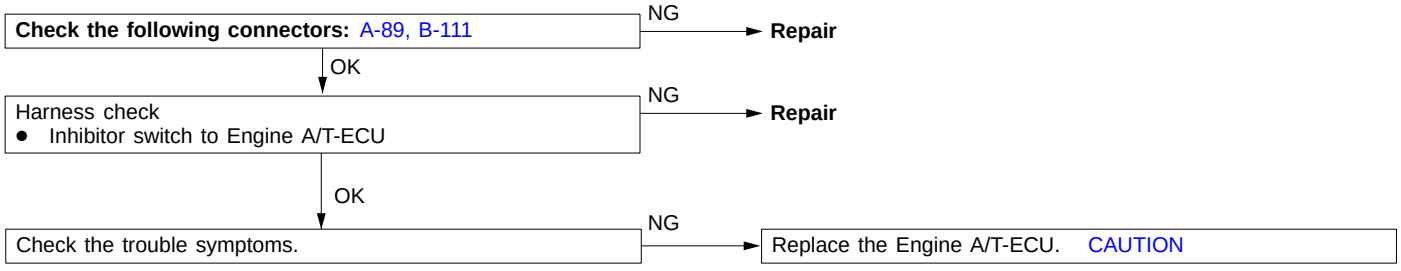
Code No. 51 Abnormal communication with Engine A/T-ECU	Probable cause
If normal communication is not possible for a continuous period of 1 second or more when the battery voltage is 10 V or more and the engine speed is 450 r/min or more, diagnosis code No. 51 is output. Diagnosis code No. 51 is also output if the data being received is abnormal for a continuous period of 4 seconds under the same conditions.	• Malfunction of the Engine A/T-ECU • Faulty connector



Code No. 54 and 55 A/T Control relay system	Probable cause
If the control relay voltage is less than 7 V after the ignition switch has been turned to ON, it is judged that there is an open circuit or a short-circuit in the A/T control relay earth and diagnosis code No. 54 is output. After the ignition switch is turned on, if the A/T voltage is 5 V or higher before the A/T ECU sends instructions for the relay to be turned on, Code 55 will be output to indicate a malfunction of the A/T control relay. The transmission is locked into 3rd gear as a fail-safe measure, and the N range light flashes at a frequency of 1 Hz.	• Malfunction of the A/T control relay • Malfunction of connector • Malfunction of the Engine A/T-ECU



Code No. 56 N range light system	Probable cause
If the N range signal is off after an N range light illumination instruction (ON instruction) has been given, it is judged that there is a short-circuit in the N range light earth and diagnosis code No. 56 is output.	• Malfunction of connector • Malfunction of the Engine A/T-ECU



Code No. 71 Malfunction of Engine A/T-ECU	Probable cause
There is an abnormality in the Engine A/T-ECU. The transmission is locked into 3rd gear as a fail-safe measure.	• Malfunction of the Engine A/T-ECU

Replace the Engine-A/T-ECU. CAUTION

INSPECTION CHART FOR TROUBLE SYMPTOMS

Trouble symptom		Inspection procedure No.
Communication with the MUT-II is not possible		1
Driving impossible	Starting impossible	2
	Does not move forward	3
	Does not reverse	4
	Does not move (forward or reverse)	5
Malfunction when starting	Engine stalling when shifting	6
	Shocks when changing from N to D and long time lag	7
	Shocks when changing from N to R and long time lag	8
	Shocks when changing from N to D, N to R and long time lag	9
Malfunction when shifting	Shocks and running up	10
Displaced shifting points	All points	11
	Some points	12
Does not shift	No diagnosis codes	13
Malfunction while driving	Poor acceleration	14
	Vibration	15
Inhibitor switch system		16
Sports mode switch system		17
Idle position switch system		18
Dual pressure switch system		19
Vehicle speed sensor system		20
Cruise control -ECU signal system		21

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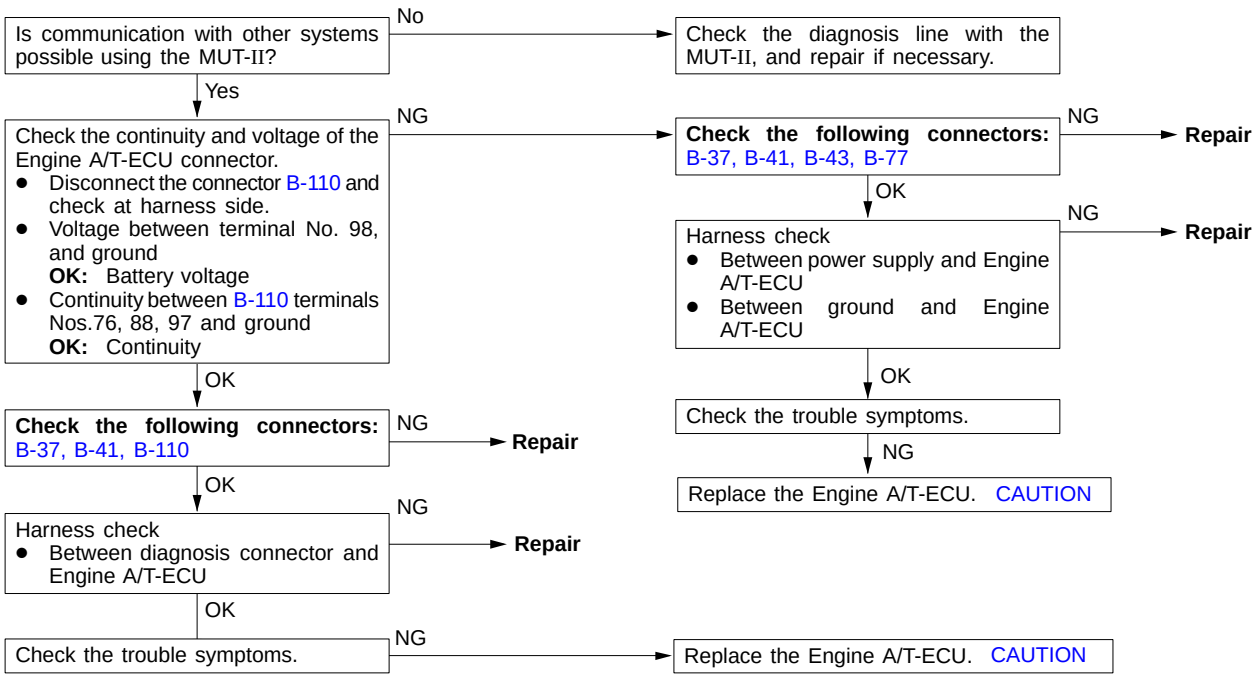
INSPECTION PROCEDURE FOR TROUBLE SYMPTOMS

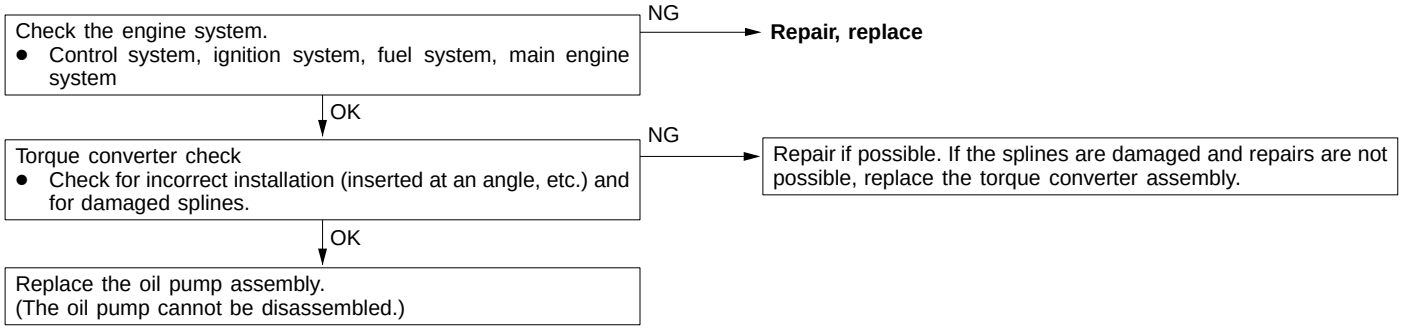
INSPECTION PROCEDURE 1

Communication with the MUT-II is not possible	Probable cause
If communication with the MUT-II is not possible, the cause is probably a defective diagnosis line or the Engine A/T-ECU is not functioning.	• Malfunction of diagnosis line • Malfunction of connector • Malfunction of the Engine A/T-ECU



INSPECTION PROCEDURE 2

Starting impossible	Probable cause
Starting is not possible when the selector lever is in P or N range. In such cases, the cause is probably a defective engine system, torque converter or oil pump or seized oil pump.	• Malfunction of the engine system • Malfunction of the torque converter • Malfunction of the oil pump



INSPECTION PROCEDURE 3

Does not move (forward)	Probable cause
If the vehicle does not move forward when the selector lever is shifted from N to D, 3, 2 or L range, sports mode 1st or 2nd while the engine is idling, the cause is probably abnormal line pressure or a malfunction of the underdrive clutch or valve body.	• Abnormal line pressure • Malfunction of the underdrive solenoid valve • Malfunction of the underdrive clutch • Malfunction of the valve body

MUT-II Actuator Test
- No. 2 Underdrive solenoid valve
  OK: Sound of operation can be heard.

NG → Replace the solenoid valve.

OK ↓

Check Hydraulic pressure
- Measure the hydraulic pressure for each element when in L range or sports mode 1st gear.
  Standard Value: Refer Specifications

NG → Valve body disassembly, cleaning and reassembly
- Pay particular attention to loosening of bolts, and to damage and slippage of O-rings, valves and valve bodies.
- If the damage cannot be repaired, replace the valve body assembly.

OK ↓

Underdrive clutch system check
- Remove the transmission assembly, valve body cover and valve body.
- Pistons should operate and pressure should be maintained when air is blown through the underdrive clutch oil hole in the transmission case.

OK → Valve body disassembly, cleaning and reassembly

NG → Underdrive clutch check
- Check for burning of the facing, defective piston seal rings and interference at the retainer.

INSPECTION PROCEDURE 4

Does not reverse	Probable cause
If the vehicle does not reverse when the selector lever is shifted from N to R range while the engine is idling, the cause is probably abnormal pressure in the reverse clutch or low and reverse brake or a malfunction of the reverse clutch, low and reverse brake or valve body.	• Abnormal reverse clutch pressure • Abnormal low and reverse brake pressure • Malfunction of the low and reverse solenoid valve • Malfunction of the reverse clutch • Malfunction of the low and reverse brake • Malfunction of the valve body

MUT-II Actuator Test
- No. 1 Low and reverse solenoid valve
  OK: Sound of operation can be heard.

NG → Replace the low and reverse solenoid valve.

OK ↓

Check Hydraulic pressure
- Measure the reverse clutch pressure in R range.
  Standard Value: Refer Specifications

NG → Valve body disassembly, cleaning and reassembly

OK ↓

Check Hydraulic pressure
- Measure the low and reverse brake pressure in R range.
  Standard Value: Refer Specifications

NG → Valve body disassembly, cleaning and reassembly
- Pay particular attention to loosening of bolts, and to damage and slippage of O-rings, valves and valve bodies.
- If the damage cannot be repaired, replace the valve body assembly.

OK ↓

Reverse clutch system and low and reverse brake system check ★
- Remove the transmission assembly, valve body cover and valve body.
- Pistons should operate and pressure should be maintained when air is blown through the reverse clutch oil hole and the low reverse brake oil hole in the transmission case.

OK → Reverse clutch and low and reverse brake check

NG → Reverse clutch and low and reverse brake check
- Check for burning of the facing, defective piston seal rings and interference at the retainer.

INSPECTION PROCEDURE 5

Does not move (forward or reverse)	Probable cause
If the vehicle does not move forward or reverse 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 power train, oil pump or valve body.	• Abnormal line pressure • Malfunction of power train • Malfunction of the oil pump • Malfunction of the valve body

Check Hydraulic pressure
- Measure the hydraulic pressure for each element when moving forward and back.
  Standard Value: Refer Specifications

OK → Power train check
- Disassemble the transmission, check the condition of the planetary carrier, output shaft and differential, etc.

NG → Replace the oil pump assembly.
(The oil pump cannot be disassembled.)

NG → Valve body disassembly, cleaning and reassembly
- Pay particular attention to loosening of bolts, and to damage and slippage of O-rings, valves and valve bodies.
- If the damage cannot be repaired, replace the valve body assembly.

INSPECTION PROCEDURE 6

Engine stalling when shifting	Probable cause
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, damper clutch control solenoid, valve body or torque converter (damper clutch malfunction).	• Malfunction of the engine system • Malfunction of the damper clutch control solenoid • Malfunction of the valve body • Malfunction of the torque converter (Malfunction of the damper clutch)

Engine system check
- Check the control system, ignition system, fuel system and main system.

NG → **Repair, replace**

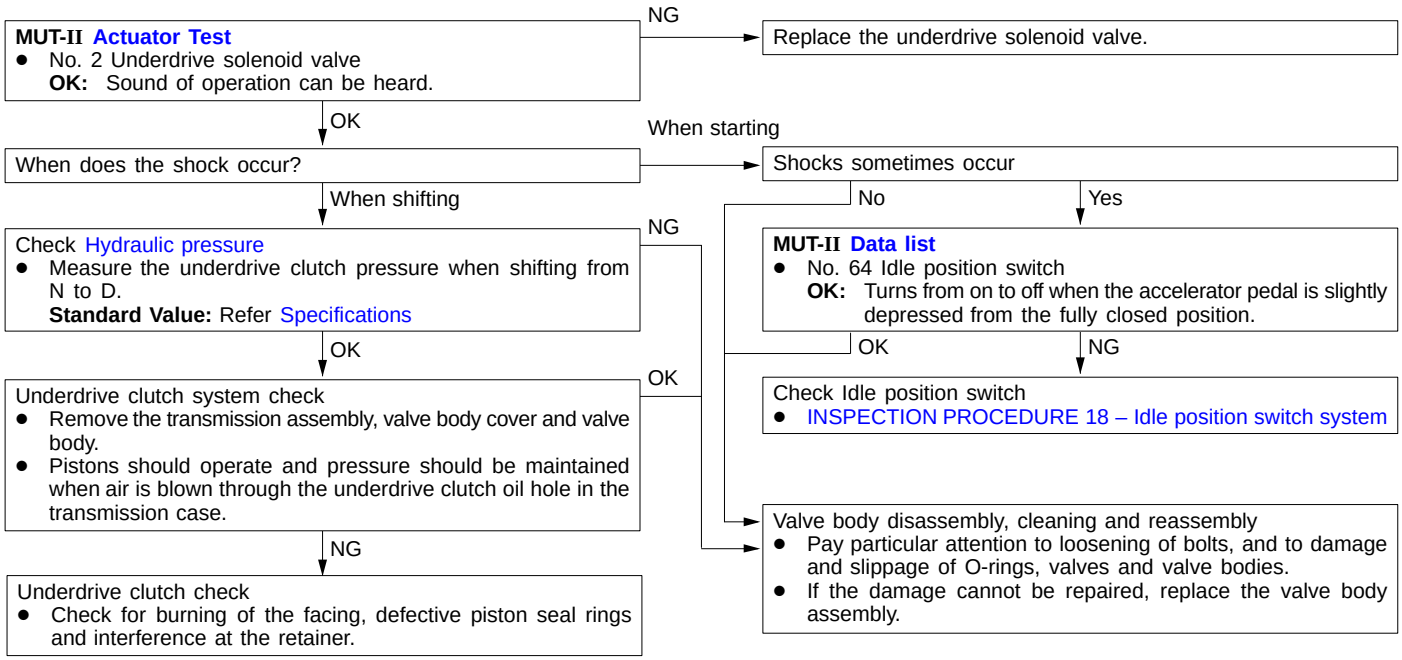
OK → Replace the damper clutch control solenoid.

Valve body disassembly, cleaning and reassembly
- Pay particular attention to loosening of bolts, and to damage and slippage of O-rings, valves and valve bodies.
- If the damage cannot be repaired, replace the valve body assembly.

NG → Replace the torque converter.

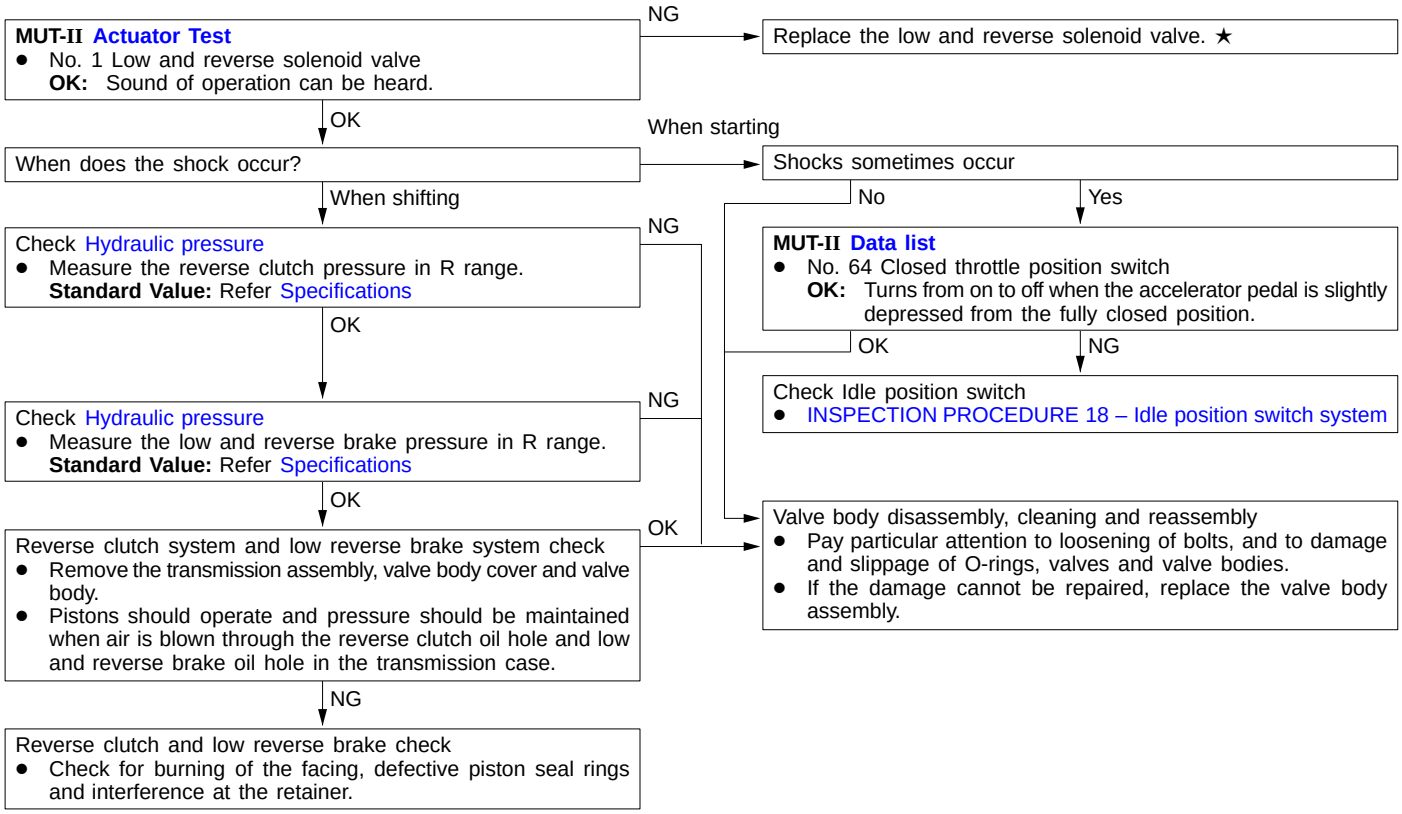
INSPECTION PROCEDURE 7

Shocks when changing from N to D and large time lag	Probable cause
If abnormal shocks or a time lag of 2 seconds or more occur 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 idle position switch.	• Abnormal underdrive clutch pressure • Malfunction of the underdrive solenoid valve • Malfunction of the underdrive clutch • Malfunction of the valve body • Malfunction of the idle position switch



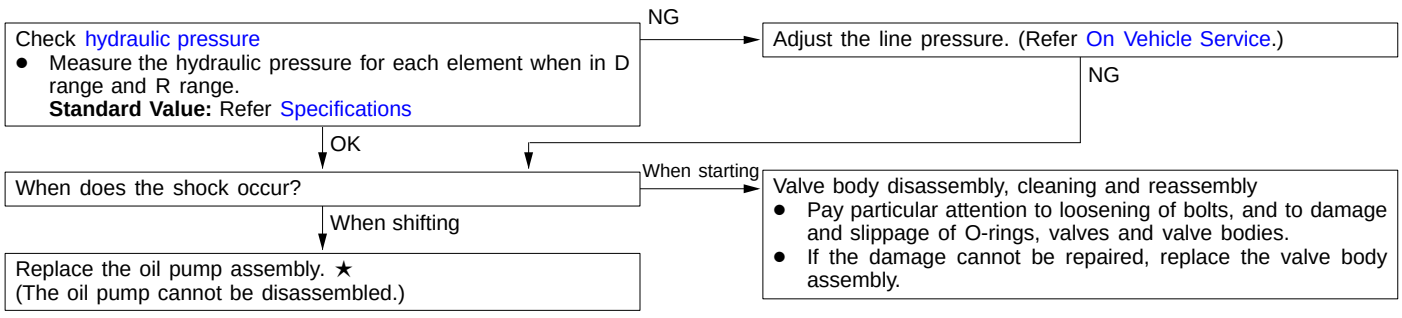
INSPECTION PROCEDURE 8

Shocks when changing from N to R and large time lag	Probable cause
If abnormal shocks or a time lag of 2 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 and reverse brake pressure, or a malfunction of the reverse clutch, low and reverse brake, valve body or idle position switch.	• Abnormal reverse clutch pressure • Abnormal low and reverse brake pressure • Malfunction of the low and reverse solenoid valve • Malfunction of the reverse clutch • Malfunction of the low and reverse brake • Malfunction of the valve body • Malfunction of the idle position switch



INSPECTION PROCEDURE 9

Shocks when changing from N to D, N to R and large time lag	Probable cause
If abnormal shocks or a time lag of 2 seconds or more occur when the selector lever is shifted from N to D range and 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.	• Abnormal line pressure • Malfunction of the oil pump • Malfunction of the valve body



INSPECTION PROCEDURE 10

Shocks and running up	Probable cause
If shocks occur when driving due to upshifting or downshifting and the transmission speed becomes 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.	• 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

MUT-II Actuator Test
- No. 1 Low and reverse solenoid valve
- No. 2 Underdrive solenoid valve
- No. 3 Second solenoid valve
- No. 4 Overdrive solenoid valve
- No. 5 RED solenoid valve

OK: Sound of operation can be heard.

NG → Replace the solenoid valve.

OK ↓

Adjust the line pressure.

NG → Replace the oil pump assembly. (The oil pump cannot be disassembled.)

NG ↓

Valve body disassembly, cleaning and reassembly
- Pay particular attention to loosening of bolts, and to damage and slippage of O-rings, valves and valve bodies.
- If the damage cannot be repaired, replace the valve body assembly.

OK ↓

Clutch and brake check ★
- Check for burning of the facing, defective piston seal rings and interference at the retainer.

INSPECTION PROCEDURE 11

All points (Displaced shifting points)	Probable cause
If all shift points are displaced while driving, the cause is probably a malfunction of the output shaft speed sensor, TPS or of a solenoid valve.	• Malfunction of the output shaft speed sensor • Malfunction of the throttle position sensor • Malfunction of each solenoid valve • Abnormal line pressure • Malfunction of the valve body • Malfunction of the Engine A/T-ECU

MUT-II Data list
- No. 23 Output shaft speed sensor

OK: Increases in proportion to vehicle speed.

NG → Code No. 23 – Check Output shaft speed sensor system.

OK ↓

MUT-II Data list
- No. 11 TPS

OK: Increases in proportion to accelerator pedal opening angle

NG → Code No. 11, 12, 14 Check TPS system.

OK ↓

MUT-II Data list
- No. 31 Low and reverse solenoid valve duty %
- No. 32 Underdrive solenoid valve duty %
- No. 33 Second solenoid valve duty %
- No. 34 Overdrive solenoid valve duty %
- No. 35 RED solenoid valve duty %

OK: Refer to the table on next page.

NG → Replace the solenoid valve.

NG ↓

Replace the Engine A/T-ECU. CAUTION

OK ↓

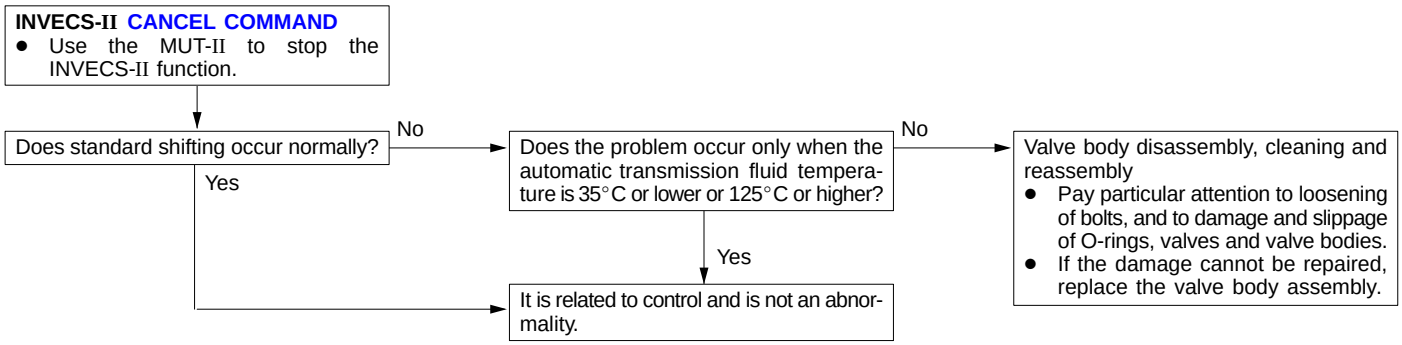
Adjust the line pressure. (Refer On Vehicle Service.)

NG → Valve body disassembly, cleaning and reassembly ★
- Pay particular attention to loosening of bolts, and to damage and slippage of O-rings, valves and valve bodies.
- If the damage cannot be repaired, replace the valve body assembly.

	No. 31	No. 32	No. 33	No. 34	No. 35
Driving at constant speed in 1st gear	100 %	0 %	100 %	100 %	0 %
Driving at constant speed in 2nd gear	100 %	0 %	0 %	100 %	0 %
Driving at constant speed in 3rd gear	100 %	0 %	100 %	0 %	0 %
Driving at constant speed in 4th gear	0 %	0 %	100 %	0 %	100 %
Driving at constant speed in 5th gear	0 %	100 %	0 %	0 %	100 %

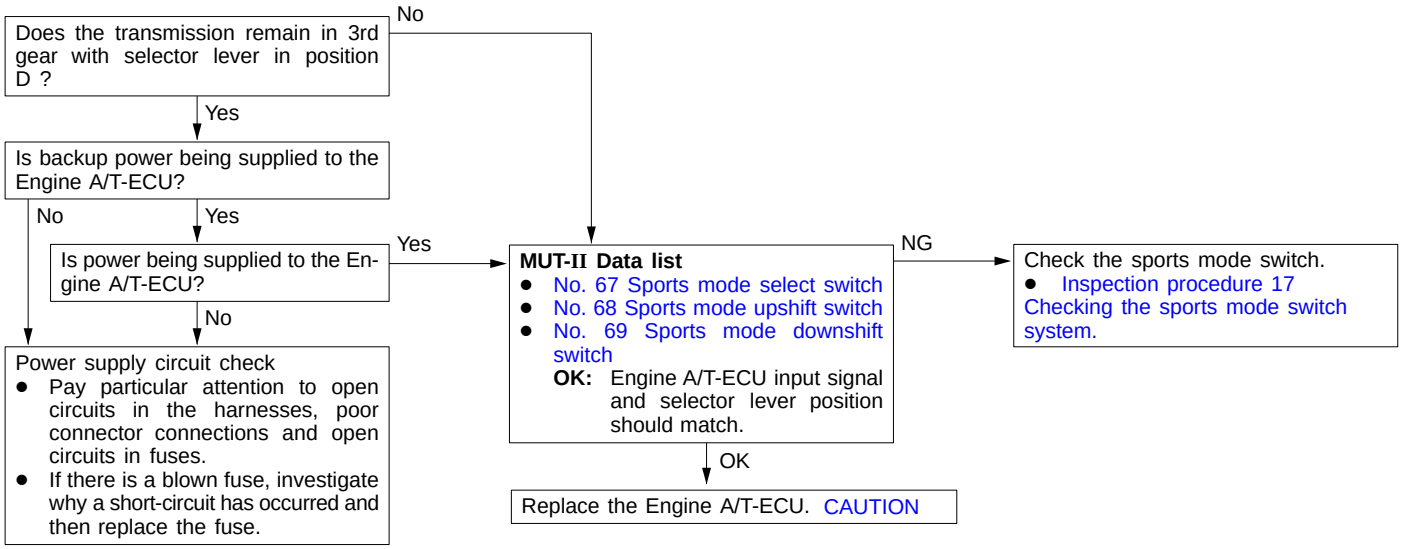
INSPECTION PROCEDURE 12

Some points (Displaced shifting points)	Probable cause
If some of the shift points are displaced while driving, the cause is probably a malfunction of the valve body, or it is related to control and is not an abnormality.	• Malfunction of the valve body



INSPECTION PROCEDURE 13

No diagnosis codes (Does not shift)	Probable cause
If shifting does not occur while driving and no diagnosis codes are output, the cause is probably a malfunction of the Inhibitor switch, or Engine A/T-ECU.	• Malfunction of the Inhibitor switch • Malfunction of the Engine A/T-ECU



INSPECTION PROCEDURE 14

Poor acceleration	Probable cause
If acceleration is poor even if downshifting occurs while driving, the cause is probably a malfunction of the engine system or of a brake or clutch.	• Malfunction of the engine system • Malfunction of the brake or clutch

Engine system check
- Check the control system, ignition system, fuel system and main system.

NG → **Replace, repair**

OK ↓

Brake or clutch check
- Check for burning of the facing, defective piston seal rings and interference at the retainer.

INSPECTION PROCEDURE 15

Vibration	Probable cause
If vibration occurs when driving at constant speed or when accelerating in top range, the cause is probably abnormal damper clutch pressure or a malfunction of the engine system, damper clutch solenoid, torque converter or valve body.	• Abnormal damper clutch pressure • Malfunction of the engine system • Malfunction of the damper clutch solenoid • Malfunction of the torque converter • Malfunction of the valve body

MUT-II Actuator Test
- No. 6 Damper clutch solenoid
  OK: Sound of operation can be heard.

NG → Replace the damper clutch solenoid valve.

OK ↓

Does the problem occur even when the oil temperature sensor connector is disconnected?

Yes → Engine system check
- Check the control system, ignition system, fuel system and main system.

No ↓

Check Hydraulic pressure
- Measure the damper clutch pressure.
  Standard Value: Refer Specifications

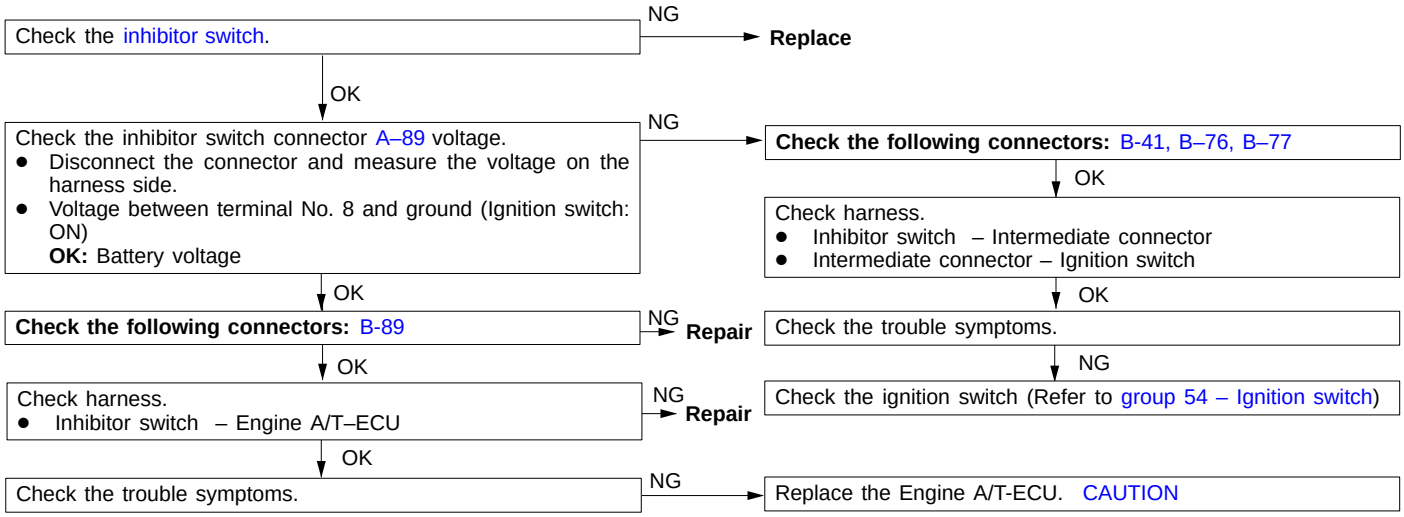
NG → Valve body disassembly, cleaning and reassembly
- Pay particular attention to loosening of bolts, and to damage and slippage of O-rings, valves and valve bodies.
- If the damage cannot be repaired, replace the valve body assembly.

OK ↓

Replace the torque converter assembly.

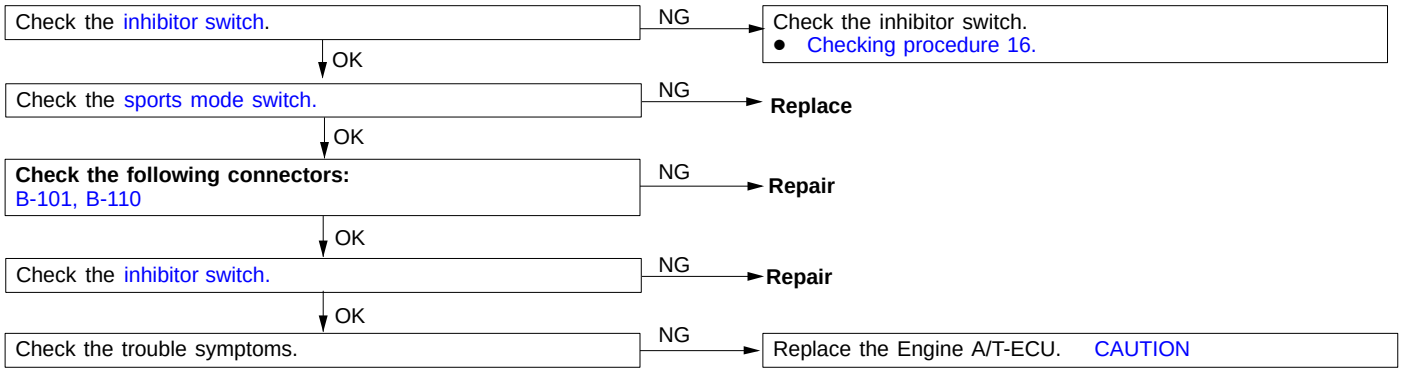
INSPECTION PROCEDURE 16

Inhibitor switch system	Probable cause
There may be defects with the inhibitor switch circuit or the ignition switch circuit.	• Malfunction of the inhibitor switch • Malfunction of connector • Malfunction of the ignition switch • Malfunction of the Engine A/T-ECU



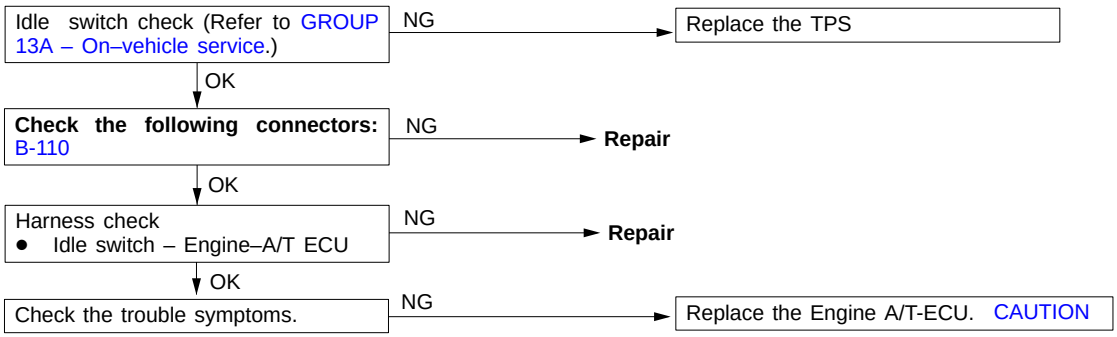
INSPECTION PROCEDURE 17

Sports mode switch system	Probable cause
A malfunction may exist with the inhibitor switch circuit, the sports mode switch circuit or the Engine–A/T ECU.	• Malfunction of inhibitor switch • Malfunction of the Engine A/T-ECU • Malfunction of the sports mode select switch • Malfunction of the sports mode upshift select switch • Malfunction of the sports mode downshift select switch



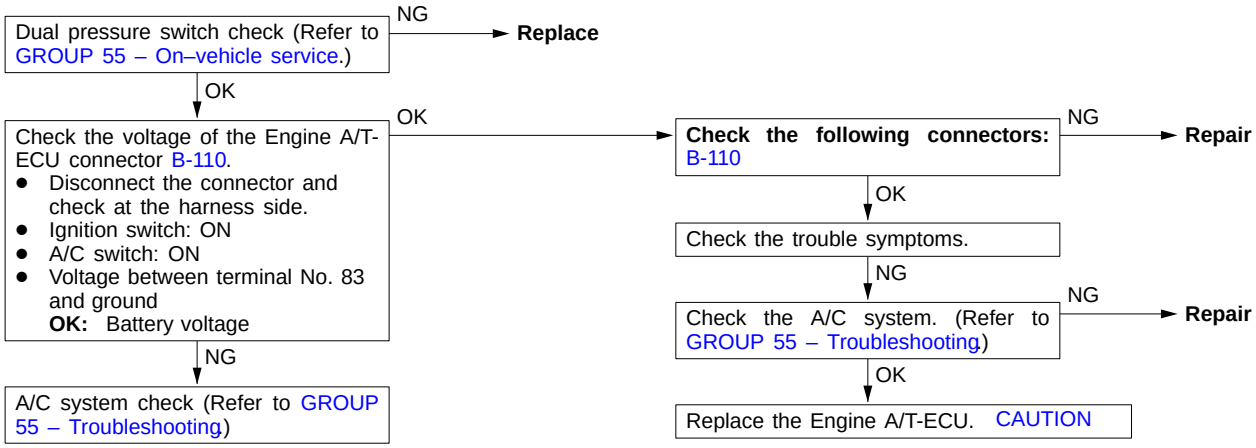
INSPECTION PROCEDURE 18

Idle switch circuit system	Probable cause
There may be a malfunction of the inhibitor switch circuit or the ignition switch circuit.	• Malfunction of the idle switch • Malfunction of connector • Malfunction of the Engine A/T-ECU



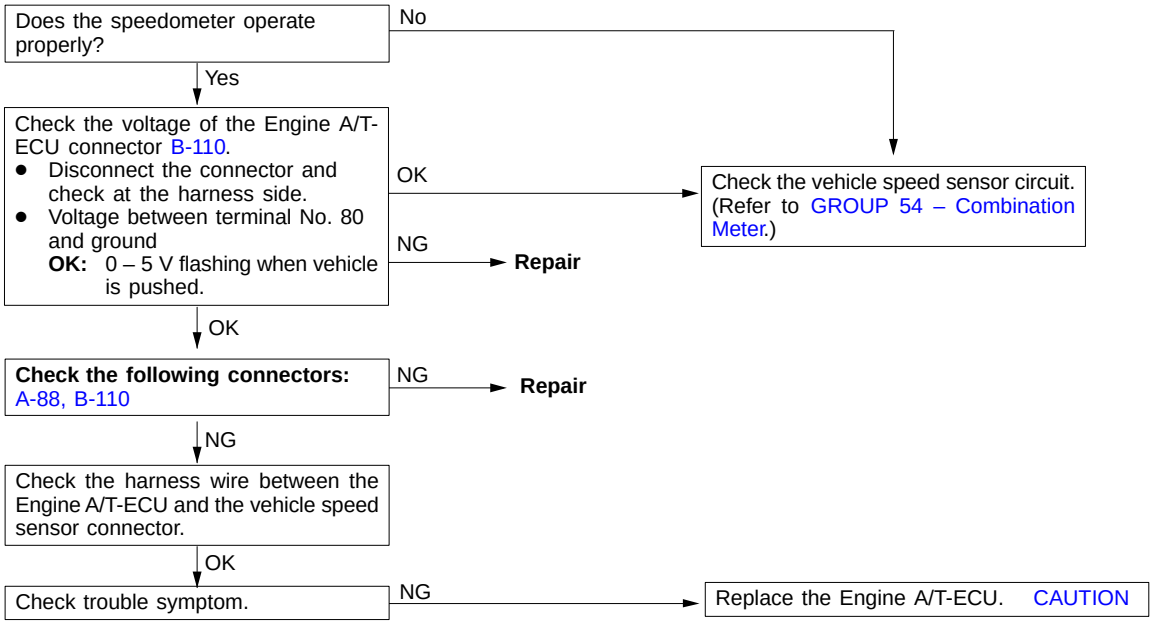
INSPECTION PROCEDURE 19

Dual pressure switch system	Probable cause
The cause is probably a defective dual pressure switch circuit or a defective Engine A/T-ECU.	• Malfunction of the dual pressure switch • Malfunction of connector • Malfunction of A/C system • Malfunction of the Engine A/T-ECU



INSPECTION PROCEDURE 20

Vehicle speed sensor system	Probable cause
A malfunction may exist in the speed sensor circuit or the Engine A/T-ECU.	• Malfunction of the vehicle speed sensor • Malfunction of the connector • Malfunction of the Engine A/T-ECU



INSPECTION PROCEDURE 21

Cruise control -ECU signal system	Probable cause
A malfunction may exist in the cruise control signal line circuit or the Engine A/T-ECU.	• Malfunction of connector • Malfunction of the Engine A/T-ECU • Malfunction of the cruise control ECU