

## LUBRICANT

Items	Specified lubricant	Quantity (litres)
Transmission fluid	Mitsubishi ELC4-SPIII.	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
16		Short 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
27	Inhibitor switch system	Open circuit
28		Short 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
36	Damper clutch solenoid 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	
46	Reverse gear incorrect ratio	
51	Abnormal communication with Engine-ECU	

## 23A AUTOMATIC TRANSMISSION from Aug 2001 – Troubleshooting

Main  
Index

23  
Index

23A  
08/01

Code	Diagnosis item	
52	Damper clutch solenoid system	Defective system
53		Lock-up stuck on
54	A/T Control relay system	Short circuit to ground/open circuit
56	N range light system	Short circuit to ground
71	Malfunction of A/T-ECU	

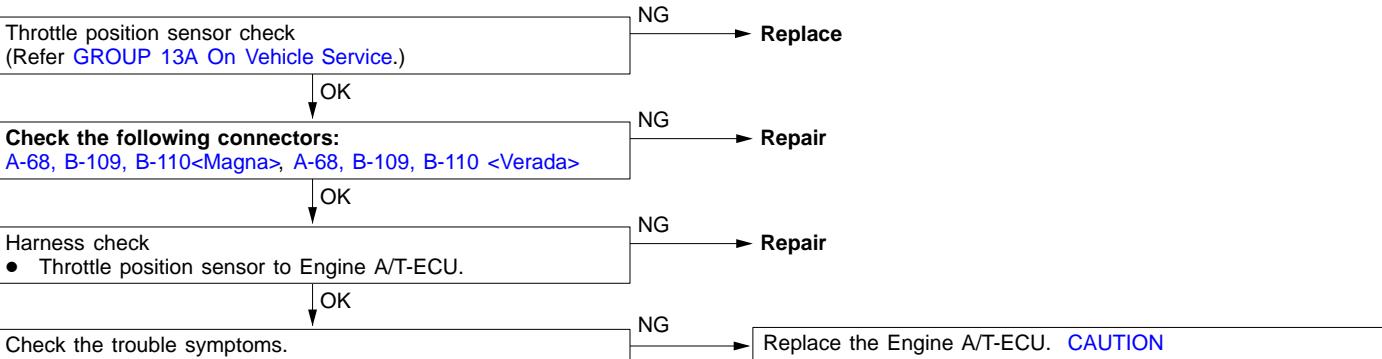
## INSPECTION PROCEDURES FOR DIAGNOSIS CODES

**Code No. 11, 12, 14 Throttle position sensor system**

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.

**Probable cause**

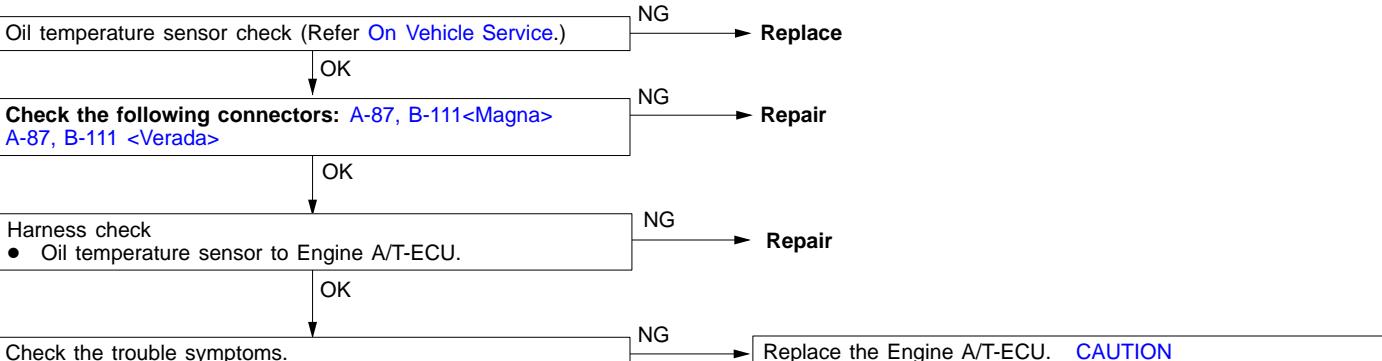
- Malfunction of the throttle position sensor
- Malfunction of connector
- Malfunction of the Engine A/T-ECU

**Code No. 15, 16 Oil temperature sensor system**

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. If the oil temperature sensor output detects the voltage which corresponds to 200°C or more for more than one second, it is judged that there is an open circuit in oil temperature sensor and diagnosis code No.16 is output.

**Probable cause**

- Malfunction of the oil temperature sensor
- Malfunction of connector
- Malfunction of the Engine A/T-ECU

**Code No. 21 Crank angle sensor system**

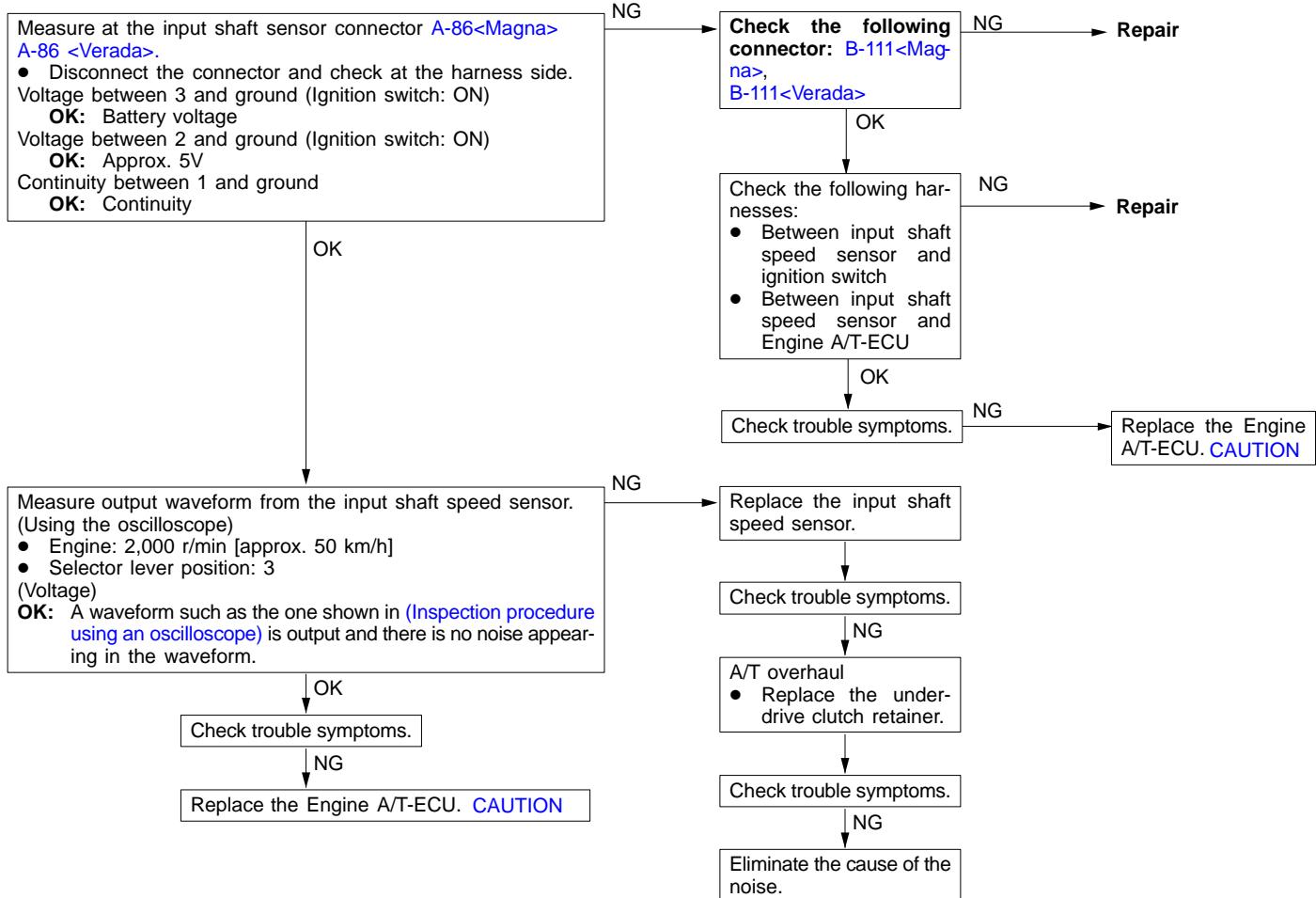
If no output pulse is detected from the crank angle sensor for 5 seconds or more while driving at 25 km/h or more, it is judged that there is an open circuit in the crank angle sensor and diagnosis code No. 21 is output.

**Probable cause**

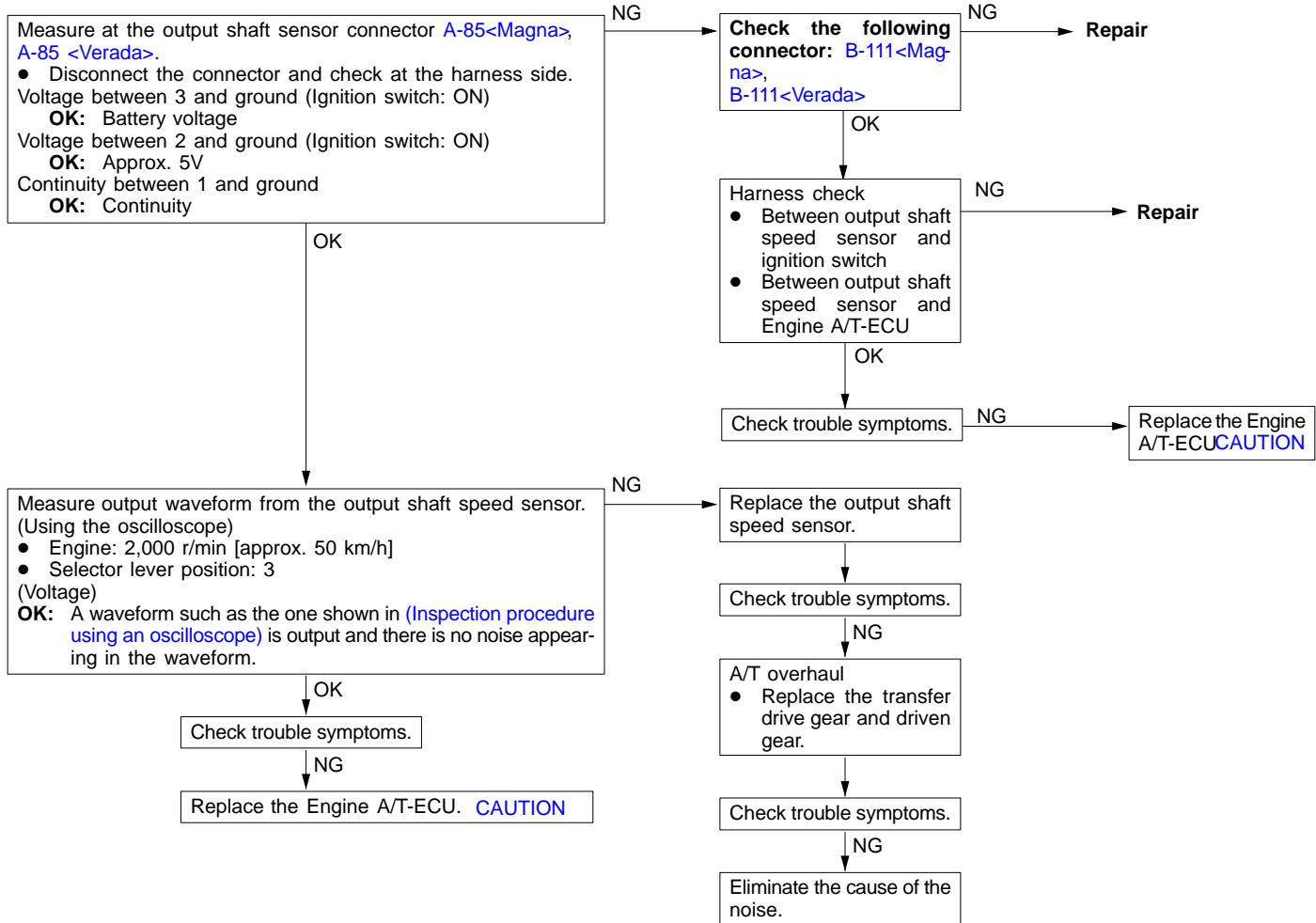
- Malfunction of the crank angle sensor
- Malfunction of connector
- Malfunction of the Engine A/T-ECU

Refer GROUP 13A.

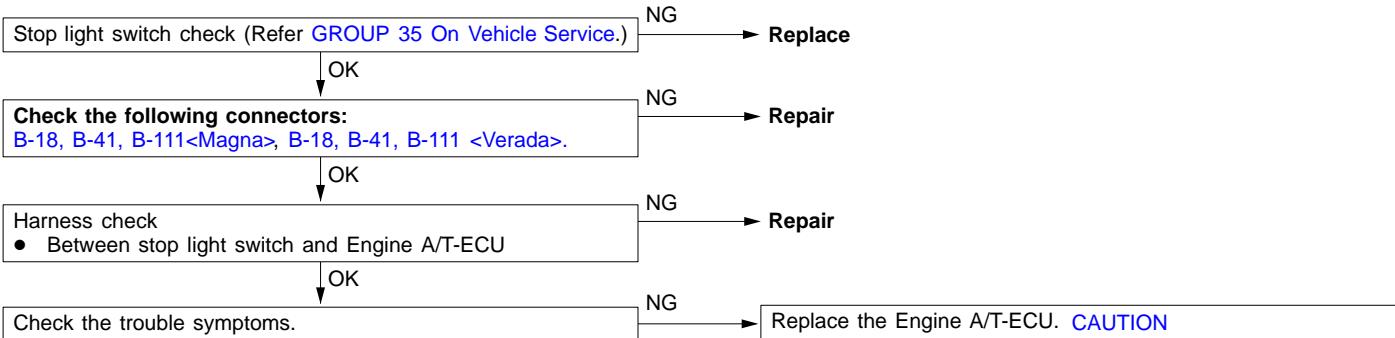
Code No. 22 Input shaft speed sensor system	Probable cause
<p>If no output pulse is detected from the input shaft speed sensor for 1 second or more while driving in 3rd or 4th gear at a speed of 30 km/h or more, it is judged to be an open circuit or short-circuit in the input shaft speed sensor and diagnosis 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.</p>	<ul style="list-style-type: none"> <li>• Malfunction of the input shaft speed sensor</li> <li>• Malfunction of the underdrive clutch retainer</li> <li>• Malfunction of connector</li> <li>• Malfunction of the Engine A/T-ECU</li> </ul>



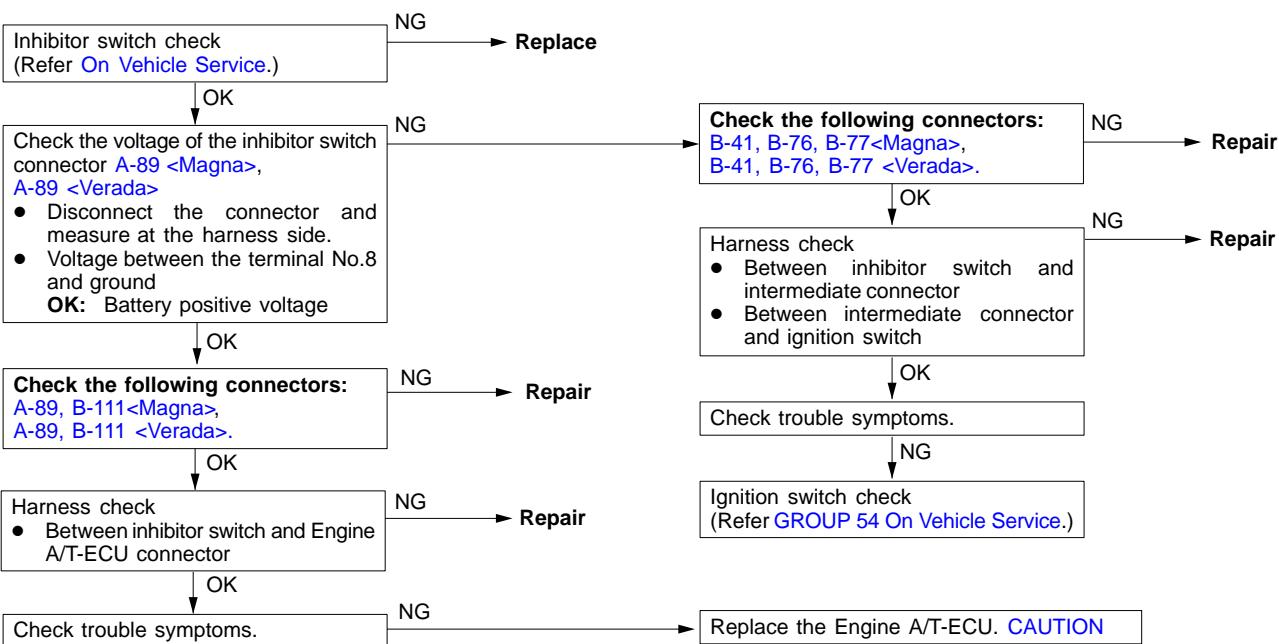
Code No. 23 Output shaft speed sensor system	Probable cause
<p>If the output from the output shaft speed sensor is continuously 50% lower than the vehicle speed for 1 second or more while driving in 3rd or 4th gear at a speed of 30 km/h or more, it is judged to be an open circuit or short-circuit in 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.</p>	<ul style="list-style-type: none"> <li>Malfunction of the output shaft speed sensor</li> <li>Malfunction of the transfer drive gear or driven gear</li> <li>Malfunction of connector</li> <li>Malfunction of the Engine A/T-ECU</li> </ul>



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.	<ul style="list-style-type: none"> <li>• Malfunction of the stop light switch</li> <li>• Malfunction of connector</li> <li>• Malfunction of the Engine A/T-ECU</li> </ul>



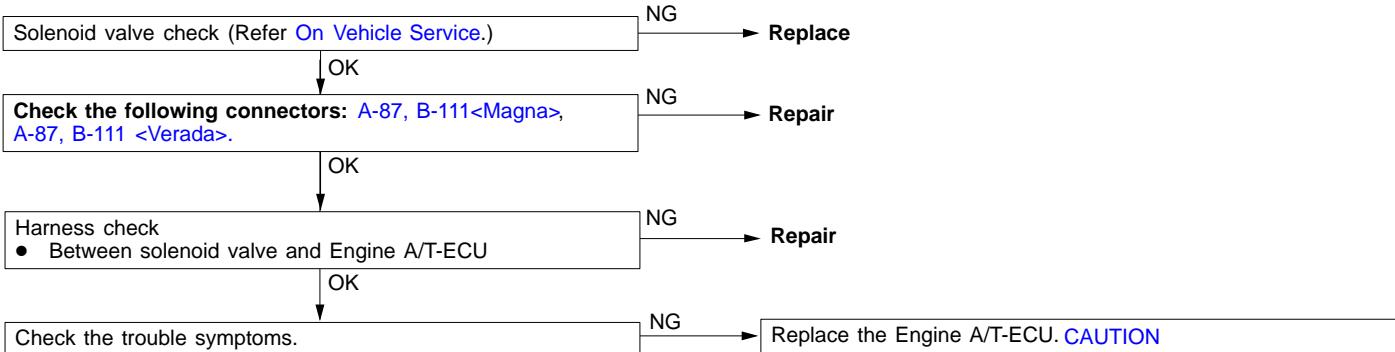
Code No. 27, 28 Inhibitor switch system	Probable cause
If the A/T-ECU detects no inhibitor switch input signal for a continuous period of 30 seconds, it is judged that there is an open circuit in the inhibitor switch and diagnosis code No.27 is output. If the Engine A/T-ECU detects more than two kinds of inhibitor switch input signals for a continuous period of 30 seconds, it is judged that there is an open circuit in the inhibitor switch and diagnosis code No.28 is output.	<ul style="list-style-type: none"> <li>• Malfunction of the inhibitor switch</li> <li>• Malfunction of the ignition switch</li> <li>• Malfunction of connector</li> <li>• Malfunction of the Engine A/T-ECU</li> </ul>



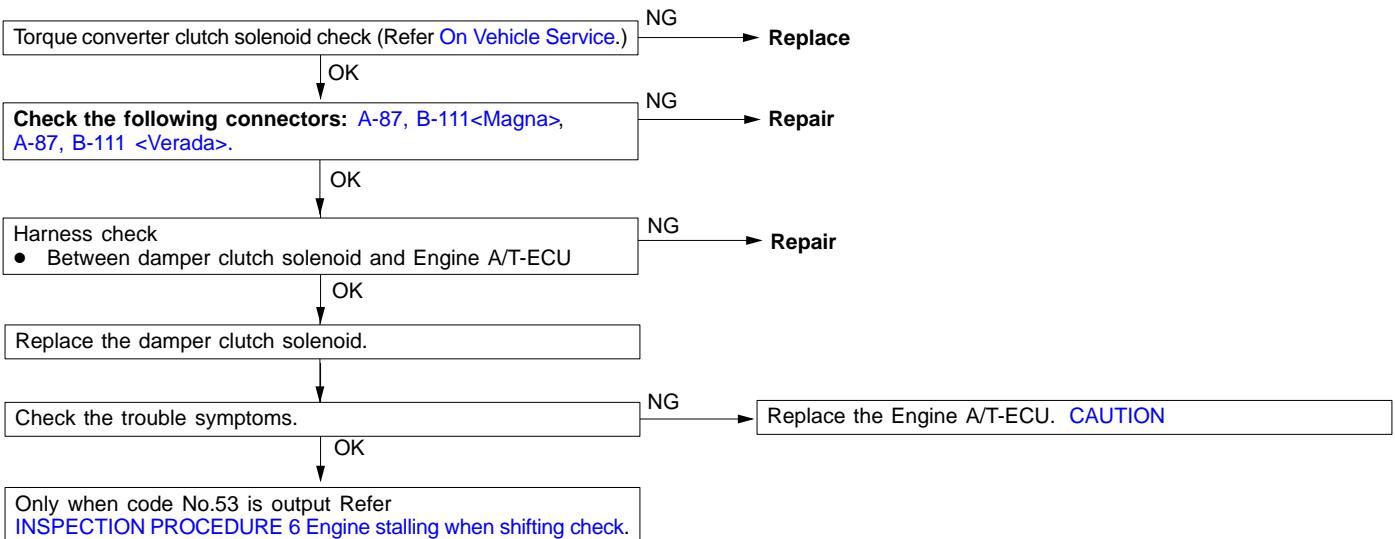
Code No. 31 Low and reverse solenoid valve system	Probable cause
Code No. 32 Underdrive solenoid valve system	
Code No. 33 Second solenoid valve system	
Code No. 34 Overdrive solenoid valve system	

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.

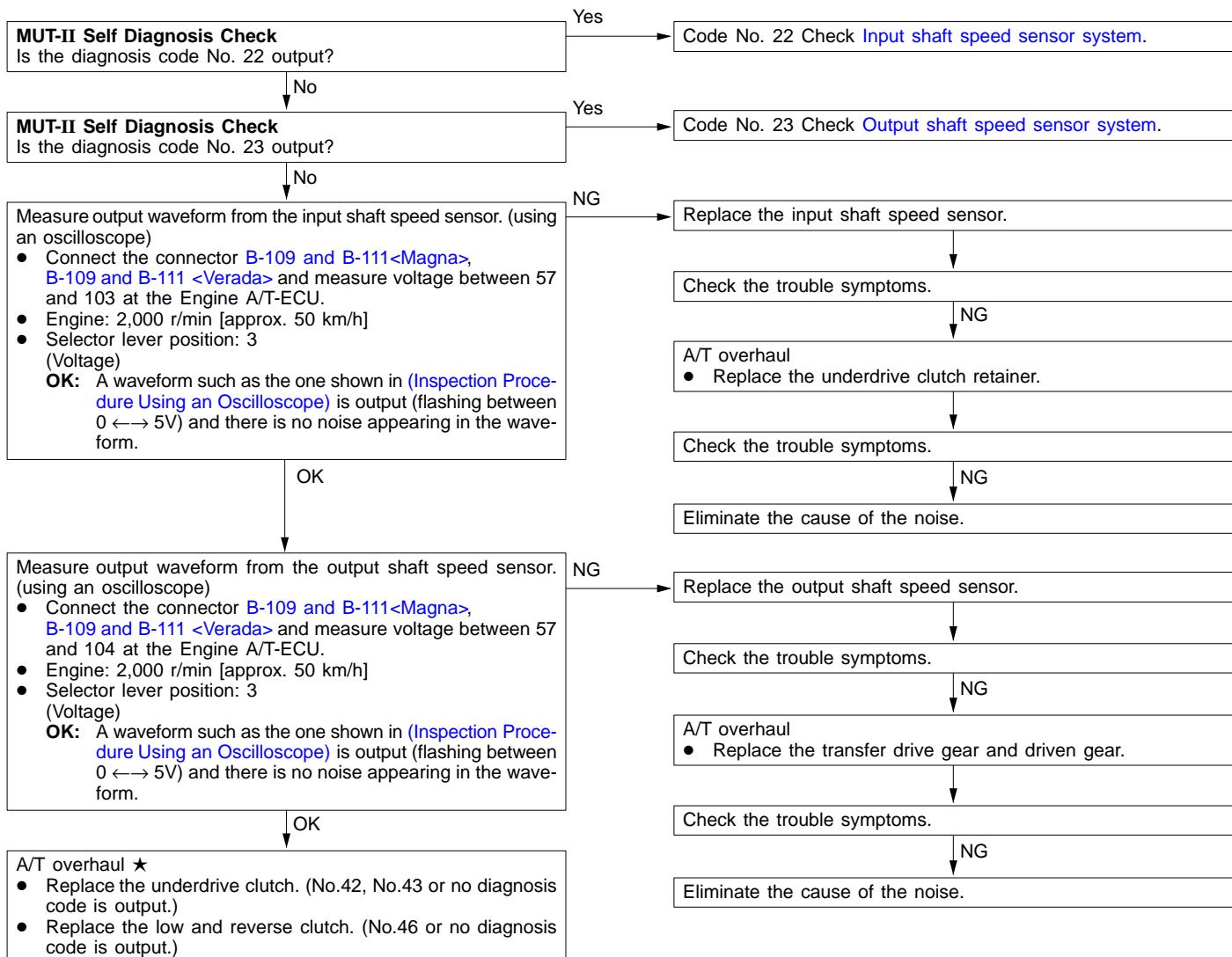
- Malfunction of solenoid valve
- Malfunction of connector
- Malfunction of the Engine A/T-ECU



Code No. 36, 52, 53 Damper clutch solenoid system	Probable cause
If the resistance value for the damper clutch solenoid 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 damper clutch solenoid 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. If the lock-up clutch remains engaged for a continuous period of 10 seconds when the Engine A/T-ECU is attempting to disengage the lock-up clutch, it is judged that the damper clutch is stuck on and diagnosis code No.53 is output.	<ul style="list-style-type: none"> <li>• Malfunction of the damper clutch solenoid</li> <li>• Malfunction of connector</li> <li>• Malfunction of the Engine A/T-ECU</li> </ul>



Code No. 41 1st gear incorrect ratio	Probable cause
<p>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.</p>	<ul style="list-style-type: none"> <li>Malfunction of the input shaft speed sensor</li> <li>Malfunction of the output shaft speed sensor</li> <li>Malfunction of the underdrive clutch retainer</li> <li>Malfunction of the transfer drive gear or driven gear</li> <li>Malfunction of the low and reverse brake system</li> <li>Malfunction of the underdrive clutch system</li> <li>Noise generated</li> </ul>



Code No. 42 2nd gear incorrect ratio	Probable cause
<p>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.</p>	<ul style="list-style-type: none"> <li>Malfunction of the input shaft speed sensor</li> <li>Malfunction of the output shaft speed sensor</li> <li>Malfunction of the underdrive clutch retainer</li> <li>Malfunction of the transfer drive gear or driven gear</li> <li>Malfunction of the second brake system</li> <li>Malfunction of the underdrive clutch system</li> <li>Noise generated</li> </ul>

**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 <Magnा>, B-109 and B-111 <Verада> 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 between 0 ↔ 5V) and there is no noise appearing in the waveform.

OK ↓

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.**

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.**

**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.)

Code No. 43 3rd gear incorrect ratio	Probable cause
<p>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.</p>	<ul style="list-style-type: none"> <li>Malfunction of the input shaft speed sensor</li> <li>Malfunction of the output shaft speed sensor</li> <li>Malfunction of the underdrive clutch retainer</li> <li>Malfunction of the transfer drive gear or driven gear</li> <li>Malfunction of the underdrive clutch system</li> <li>Malfunction of the overdrive clutch system</li> <li>Noise generated</li> </ul>

**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** <Magnा>, **B-109** and **B-111** <Verada> 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 between 0 ↔ 5V) 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.

OK → Check the trouble symptoms.

Eliminate the cause of the noise.

NG → Replace the output shaft speed sensor.

OK → Check the trouble symptoms.

A/T overhaul

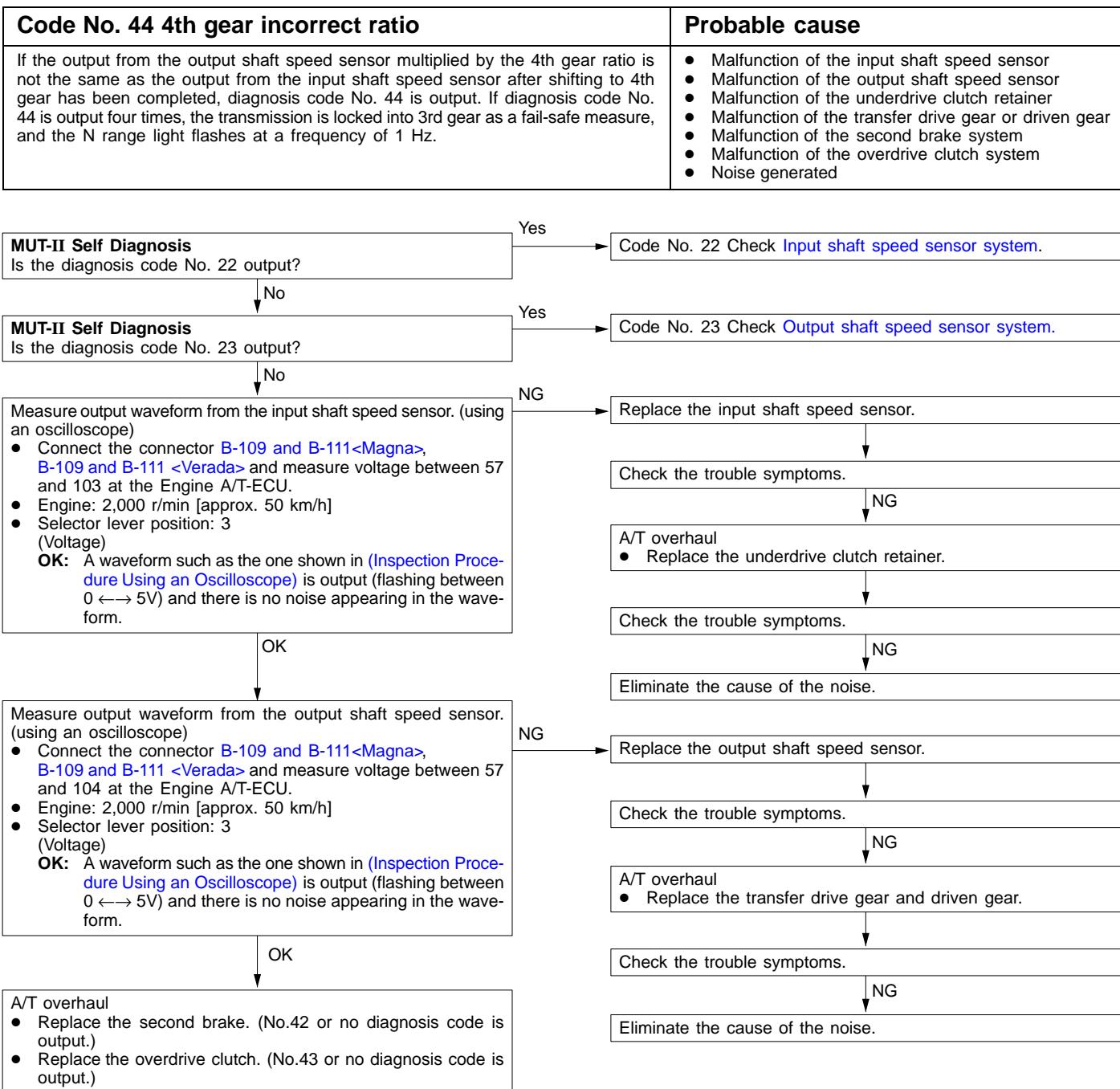
- Replace the underdrive clutch. (No.41, No.42 or no diagnosis code is output.)
- Replace the overdrive clutch. (No.44 or no diagnosis code is output.)

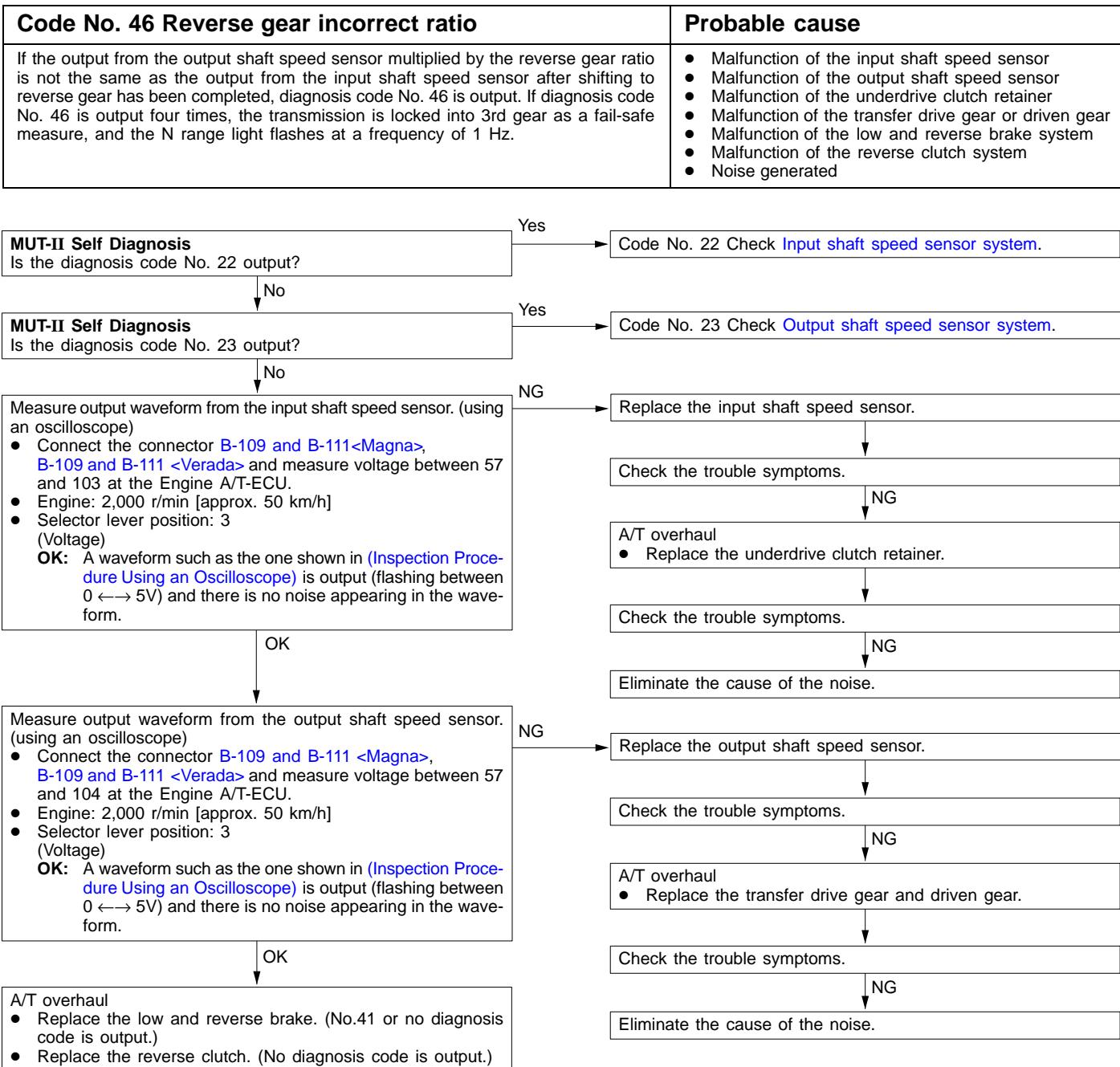
NG → Replace the transfer drive gear and driven gear.

Check the trouble symptoms.

NG → Eliminate the cause of the noise.

OK → A/T overhaul





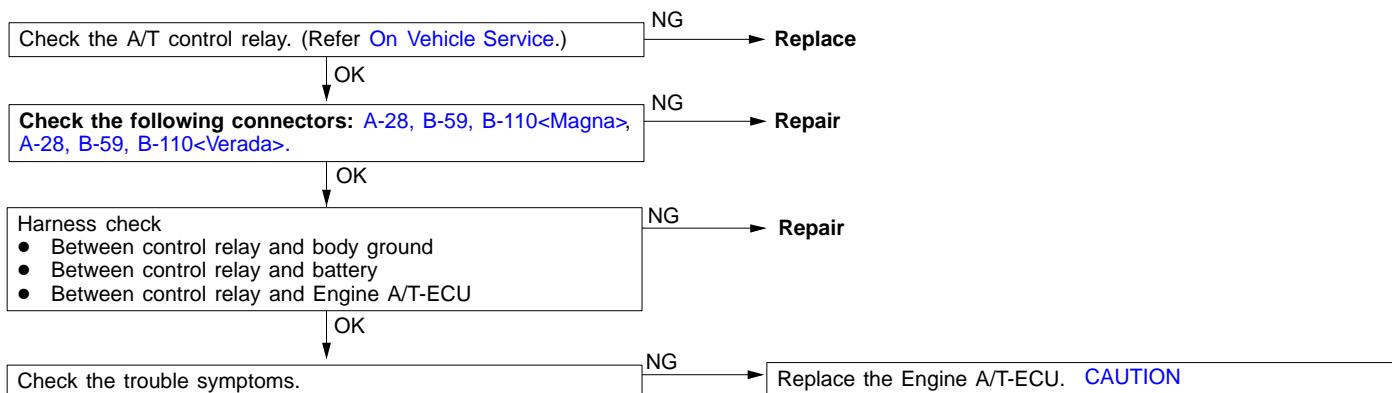
**A/T overhaul**

- Replace the low and reverse brake. (No.41 or no diagnosis code is output.)
- Replace the reverse clutch. (No diagnosis code is output.)

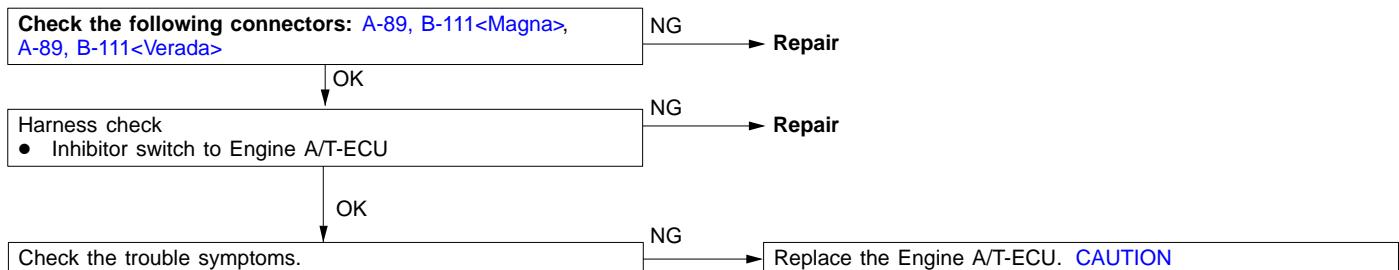
Code No. 51 Abnormal communication with Engine A/T-ECU	Probable cause
<p>If normal communication is not possible for a continuous period of 1 second or more when the battery voltage is 10 V or more and the engine speed is 450 r/min or more, diagnosis code No. 51 is output. Diagnosis code No. 51 is also output if the data being received is abnormal for a continuous period of 4 seconds under the same conditions.</p>	<ul style="list-style-type: none"> <li>Malfunction of the Engine A/T-ECU</li> </ul>

Replace the Engine A/T-ECU. [CAUTION](#)

Code No. 54 A/T Control relay system	Probable cause
<p>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. The transmission is locked into 3rd gear as a fail-safe measure, and the N range light flashes at a frequency of 1 Hz.</p>	<ul style="list-style-type: none"> <li>Malfunction of the A/T control relay</li> <li>Malfunction of connector</li> <li>Malfunction of the Engine A/T-ECU</li> </ul>



Code No. 56 N range light system	Probable cause
<p>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.</p>	<ul style="list-style-type: none"> <li>Malfunction of connector</li> <li>Malfunction of the Engine A/T-ECU</li> </ul>



Code No. 71 Malfunction of Engine A/T-ECU	Probable cause
<p>There is an abnormality in the Engine A/T-ECU. The transmission is locked into 3rd gear as a fail-safe measure.</p>	<ul style="list-style-type: none"> <li>Malfunction of the Engine A/T-ECU</li> </ul>

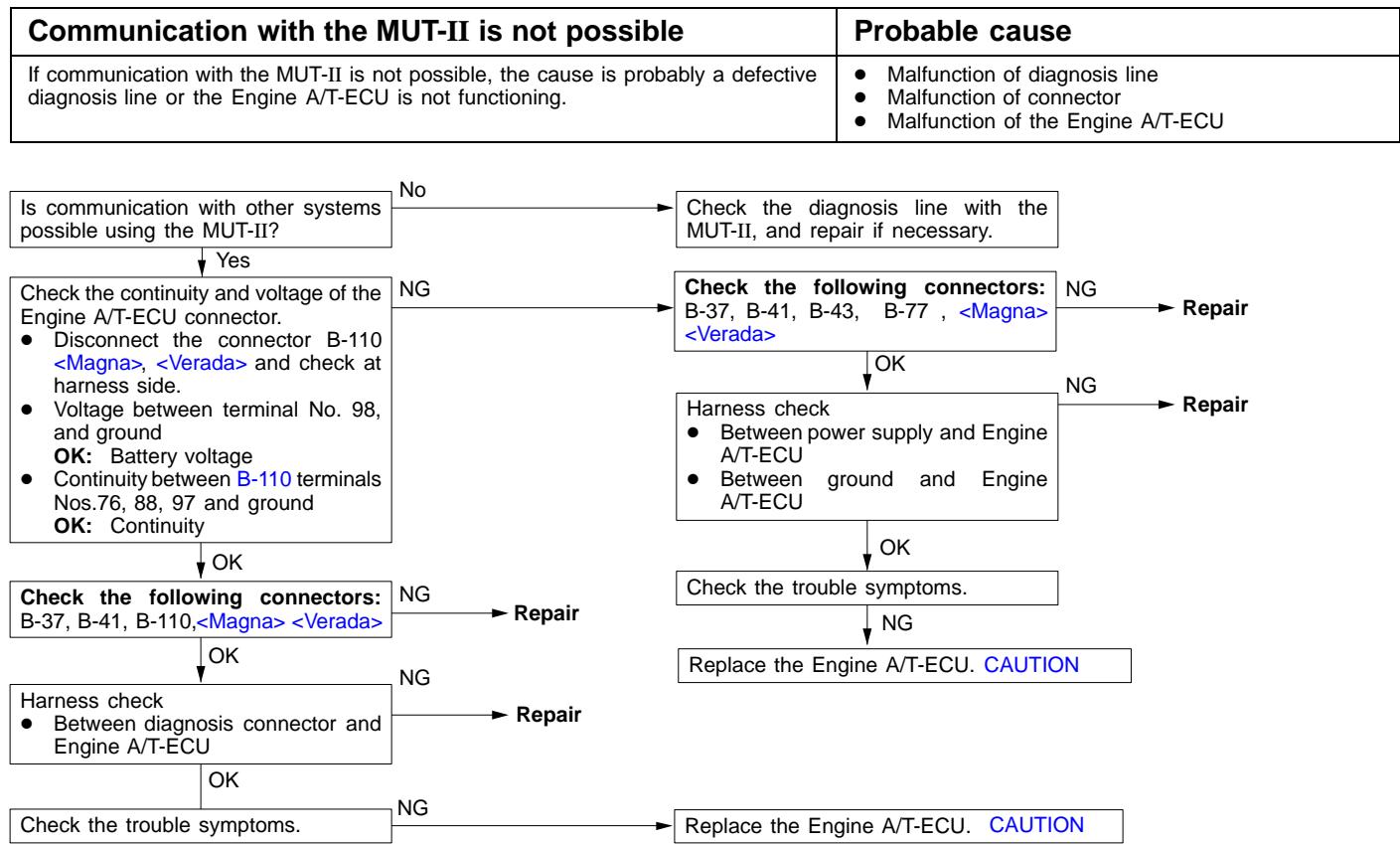
Replace the Engine A/T-ECU. [CAUTION](#)

## INSPECTION CHART FOR TROUBLE SYMPTOMS

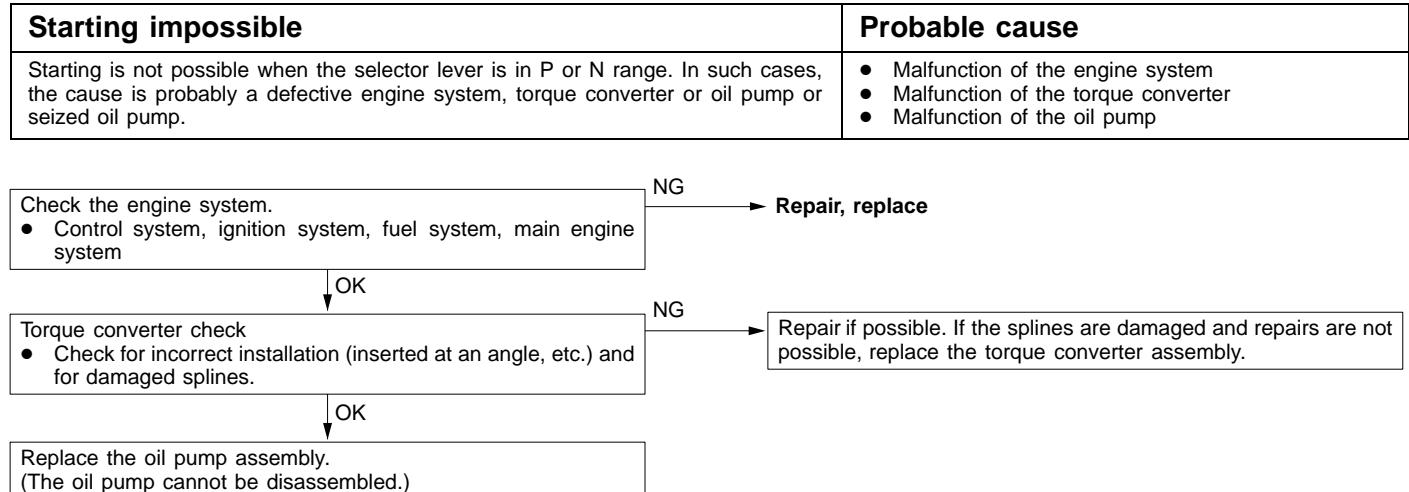
Trouble symptom		Inspection procedure No.
Communication with the MUT-II is not possible		1
Driving impossible	Starting impossible	2
	Does not move forward	3
	Does not reverse	4
	Does not move (forward or reverse)	5
Malfunction when starting	Engine stalling when shifting	6
	Shocks when changing from N 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
Idle position switch system		16
Dual pressure switch system		17
Vehicle speed sensor system		18
Cruise control -ECU signal system		19

## INSPECTION PROCEDURE FOR TROUBLE SYMPTOMS

## INSPECTION PROCEDURE 1

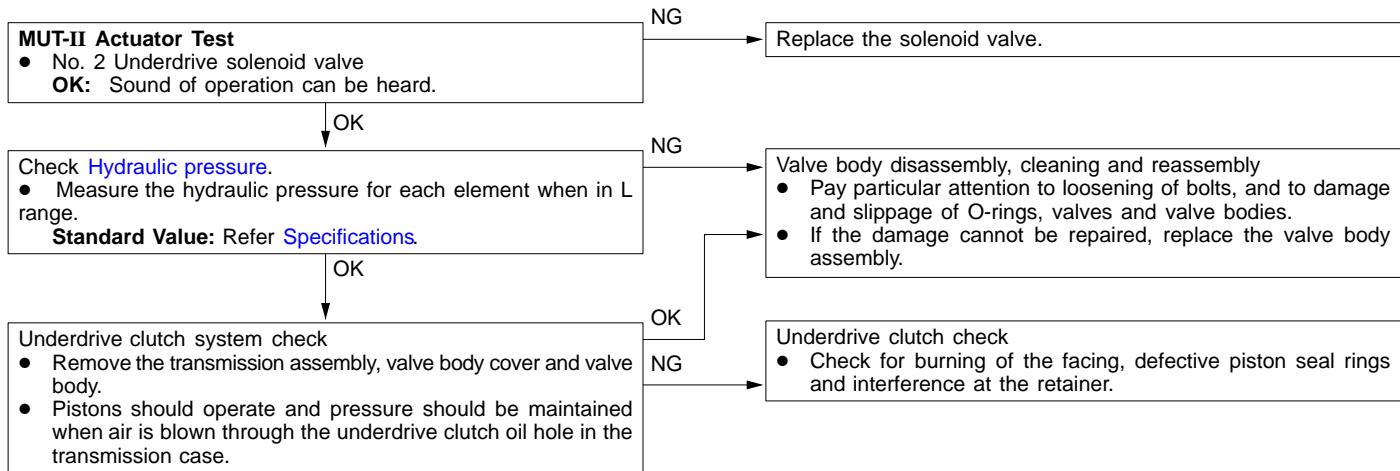


## INSPECTION PROCEDURE 2



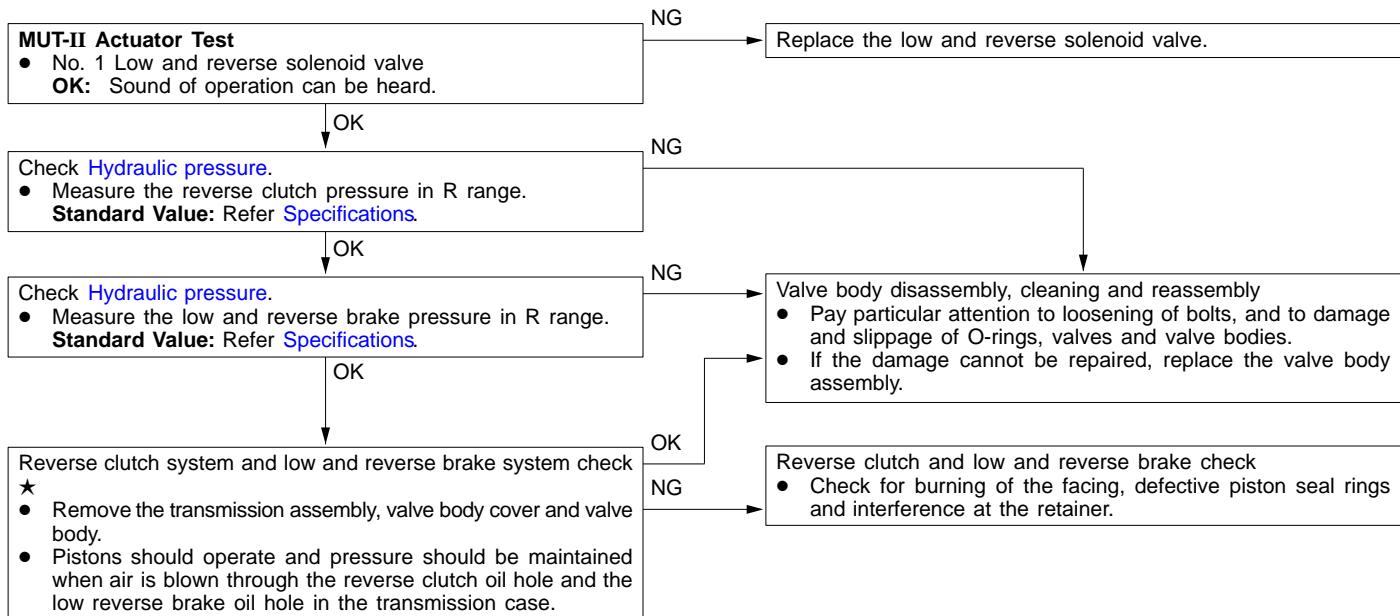
## INSPECTION PROCEDURE 3

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 while the engine is idling, the cause is probably abnormal line pressure or a malfunction of the underdrive clutch or valve body.	<ul style="list-style-type: none"> <li>Abnormal line pressure</li> <li>Malfunction of the underdrive solenoid valve</li> <li>Malfunction of the underdrive clutch</li> <li>Malfunction of the valve body</li> </ul>



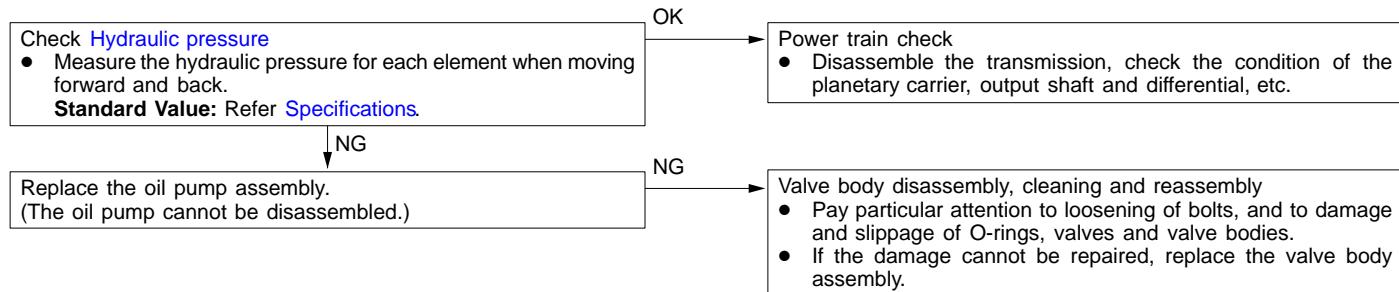
## INSPECTION PROCEDURE 4

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.	<ul style="list-style-type: none"> <li>Abnormal reverse clutch pressure</li> <li>Abnormal low and reverse brake pressure</li> <li>Malfunction of the low and reverse solenoid valve</li> <li>Malfunction of the reverse clutch</li> <li>Malfunction of the low and reverse brake</li> <li>Malfunction of the valve body</li> </ul>



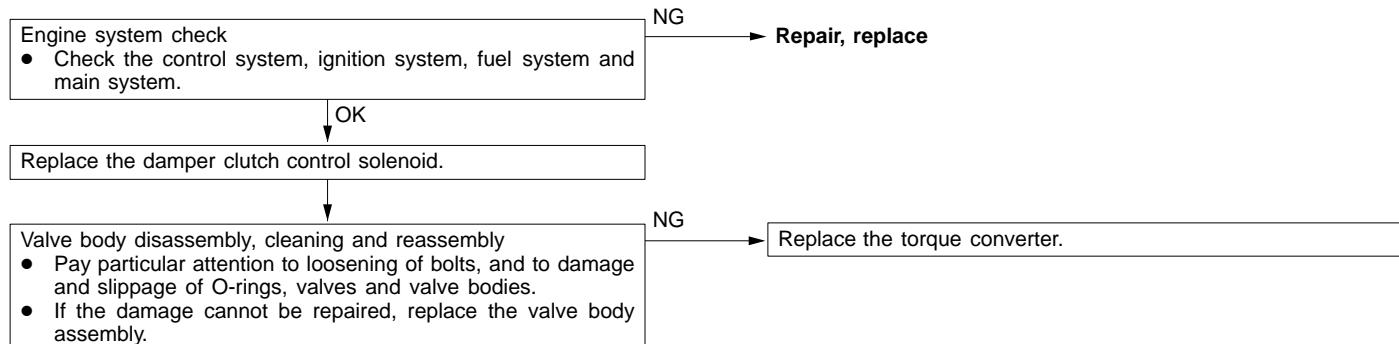
## INSPECTION PROCEDURE 5

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.	<ul style="list-style-type: none"> <li>Abnormal line pressure</li> <li>Malfunction of power train</li> <li>Malfunction of the oil pump</li> <li>Malfunction of the valve body</li> </ul>



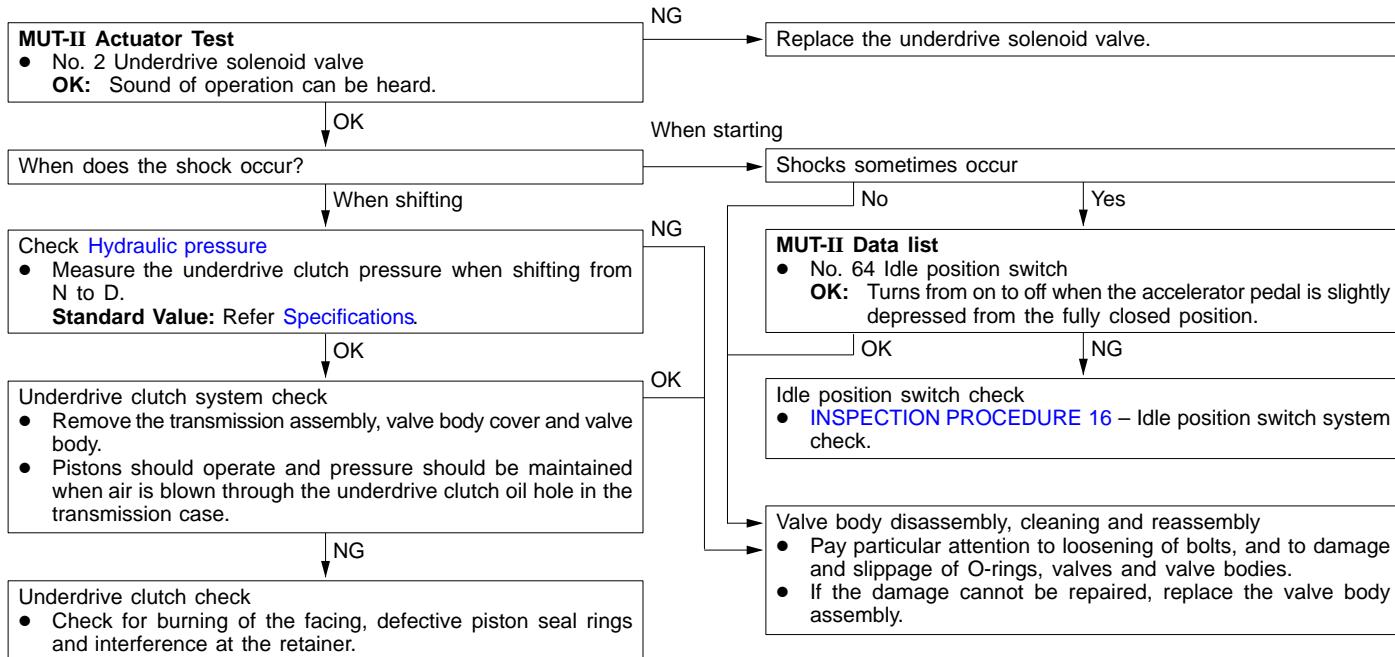
## INSPECTION PROCEDURE 6

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).	<ul style="list-style-type: none"> <li>Malfunction of the engine system</li> <li>Malfunction of the damper clutch control solenoid</li> <li>Malfunction of the valve body</li> <li>Malfunction of the torque converter (Malfunction of the damper clutch)</li> </ul>



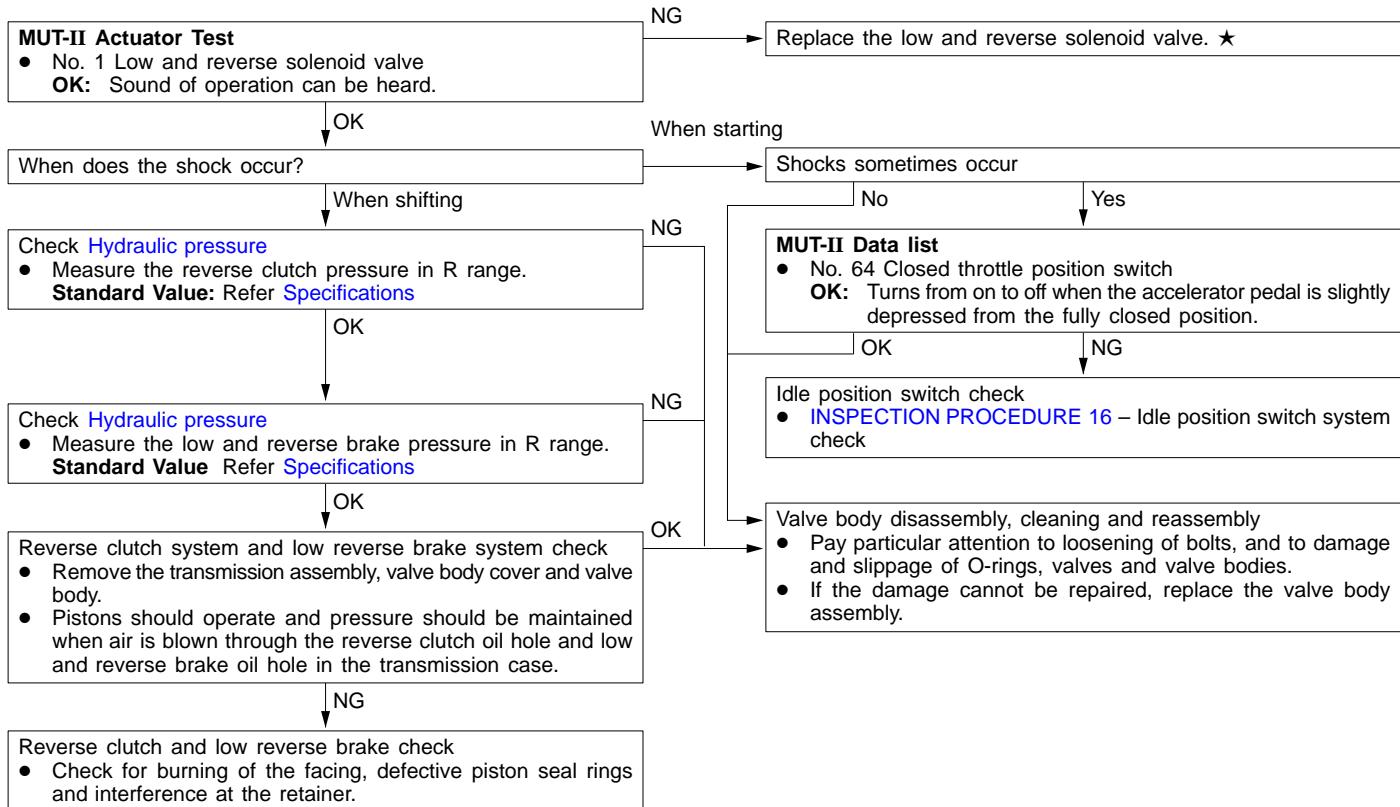
## INSPECTION PROCEDURE 7

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.	<ul style="list-style-type: none"> <li>Abnormal underdrive clutch pressure</li> <li>Malfunction of the underdrive solenoid valve</li> <li>Malfunction of the underdrive clutch</li> <li>Malfunction of the valve body</li> <li>Malfunction of the idle position switch</li> </ul>



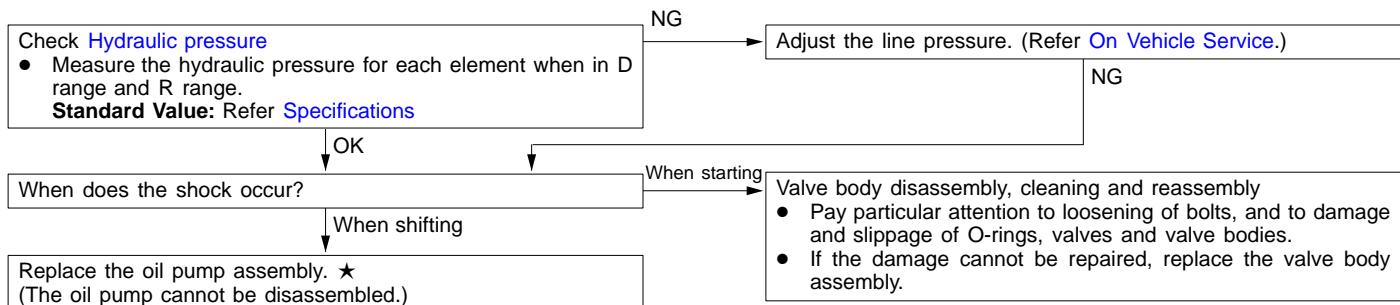
## INSPECTION PROCEDURE 8

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.	<ul style="list-style-type: none"> <li>Abnormal reverse clutch pressure</li> <li>Abnormal low and reverse brake pressure</li> <li>Malfunction of the low and reverse solenoid valve</li> <li>Malfunction of the reverse clutch</li> <li>Malfunction of the low and reverse brake</li> <li>Malfunction of the valve body</li> <li>Malfunction of the idle position switch</li> </ul>



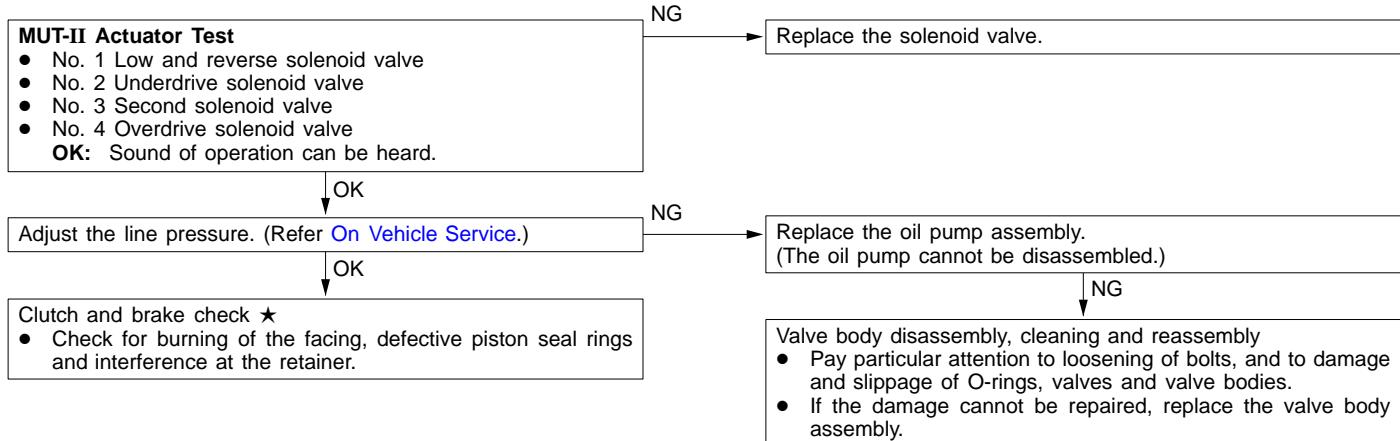
## INSPECTION PROCEDURE 9

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.	<ul style="list-style-type: none"> <li>Abnormal line pressure</li> <li>Malfunction of the oil pump</li> <li>Malfunction of the valve body</li> </ul>



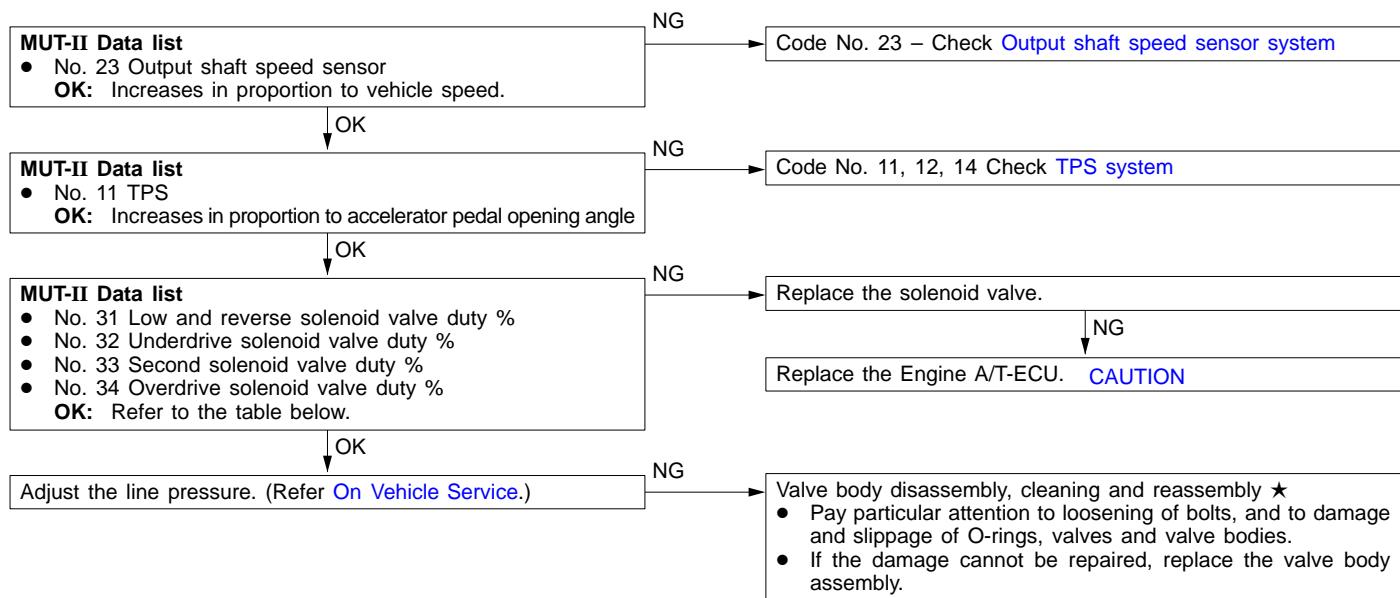
## INSPECTION PROCEDURE 10

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.	<ul style="list-style-type: none"> <li>• Abnormal line pressure</li> <li>• Malfunction of each solenoid valve</li> <li>• Malfunction of the oil pump</li> <li>• Malfunction of the valve body</li> <li>• Malfunction of each brake or each clutch</li> </ul>



## INSPECTION PROCEDURE 11

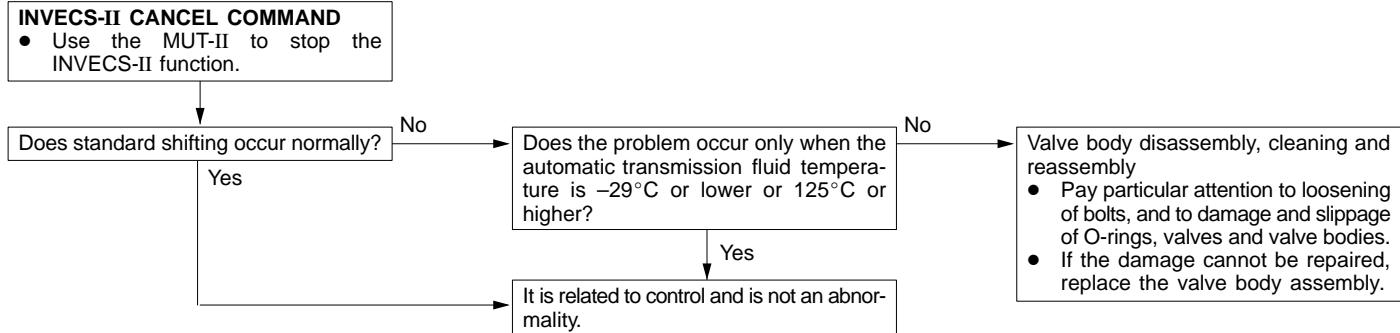
All points (Displaced shifting points)	Probable cause
If all shift points are displaced while driving, the cause is probably a malfunction of the output shaft speed sensor, TPS or of a solenoid valve.	<ul style="list-style-type: none"> <li>• Malfunction of the output shaft speed sensor</li> <li>• Malfunction of the throttle position sensor</li> <li>• Malfunction of each solenoid valve</li> <li>• Abnormal line pressure</li> <li>• Malfunction of the valve body</li> <li>• Malfunction of the Engine A/T-ECU</li> </ul>



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

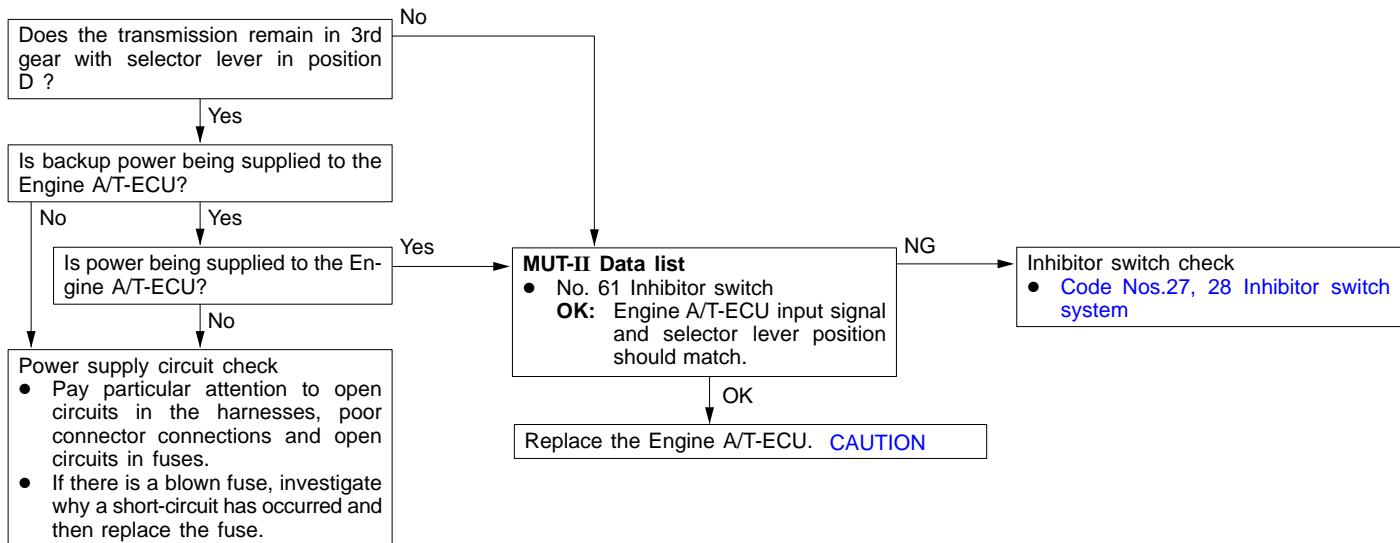
## INSPECTION PROCEDURE 12

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.	<ul style="list-style-type: none"> <li>Malfunction of the valve body</li> </ul>



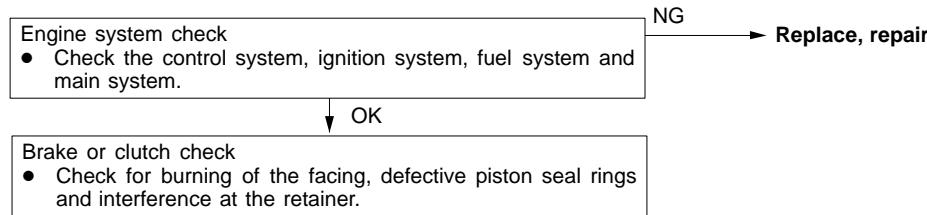
## INSPECTION PROCEDURE 13

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.	<ul style="list-style-type: none"> <li>Malfunction of the Inhibitor switch</li> <li>Malfunction of the Engine A/T-ECU</li> </ul>



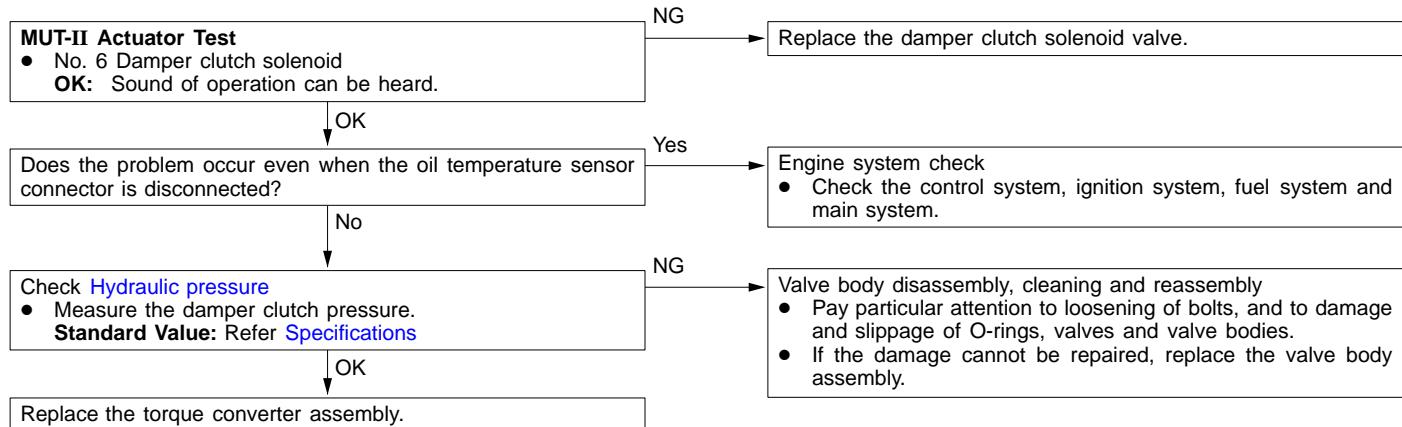
## INSPECTION PROCEDURE 14

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.	<ul style="list-style-type: none"> <li>Malfunction of the engine system</li> <li>Malfunction of the brake or clutch</li> </ul>



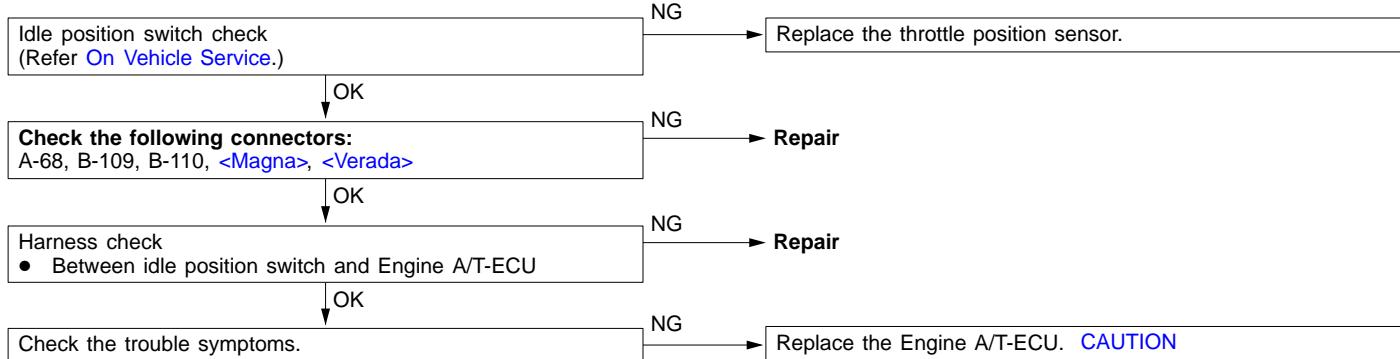
## INSPECTION PROCEDURE 15

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.	<ul style="list-style-type: none"> <li>Abnormal damper clutch pressure</li> <li>Malfunction of the engine system</li> <li>Malfunction of the damper clutch solenoid</li> <li>Malfunction of the torque converter</li> <li>Malfunction of the valve body</li> </ul>



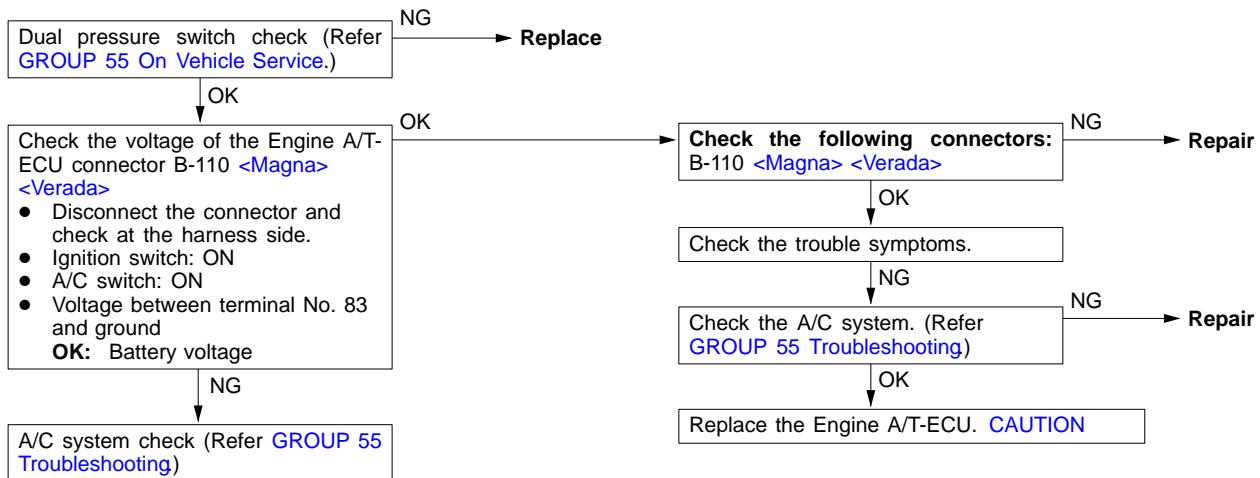
## INSPECTION PROCEDURE 16

Idle position switch system	Probable cause
The cause is probably a defective idle position switch circuit or a defective Engine A/T-ECU circuit.	<ul style="list-style-type: none"> <li>Malfunction of the idle position switch</li> <li>Malfunction of connector</li> <li>Malfunction of the Engine A/T-ECU</li> </ul>

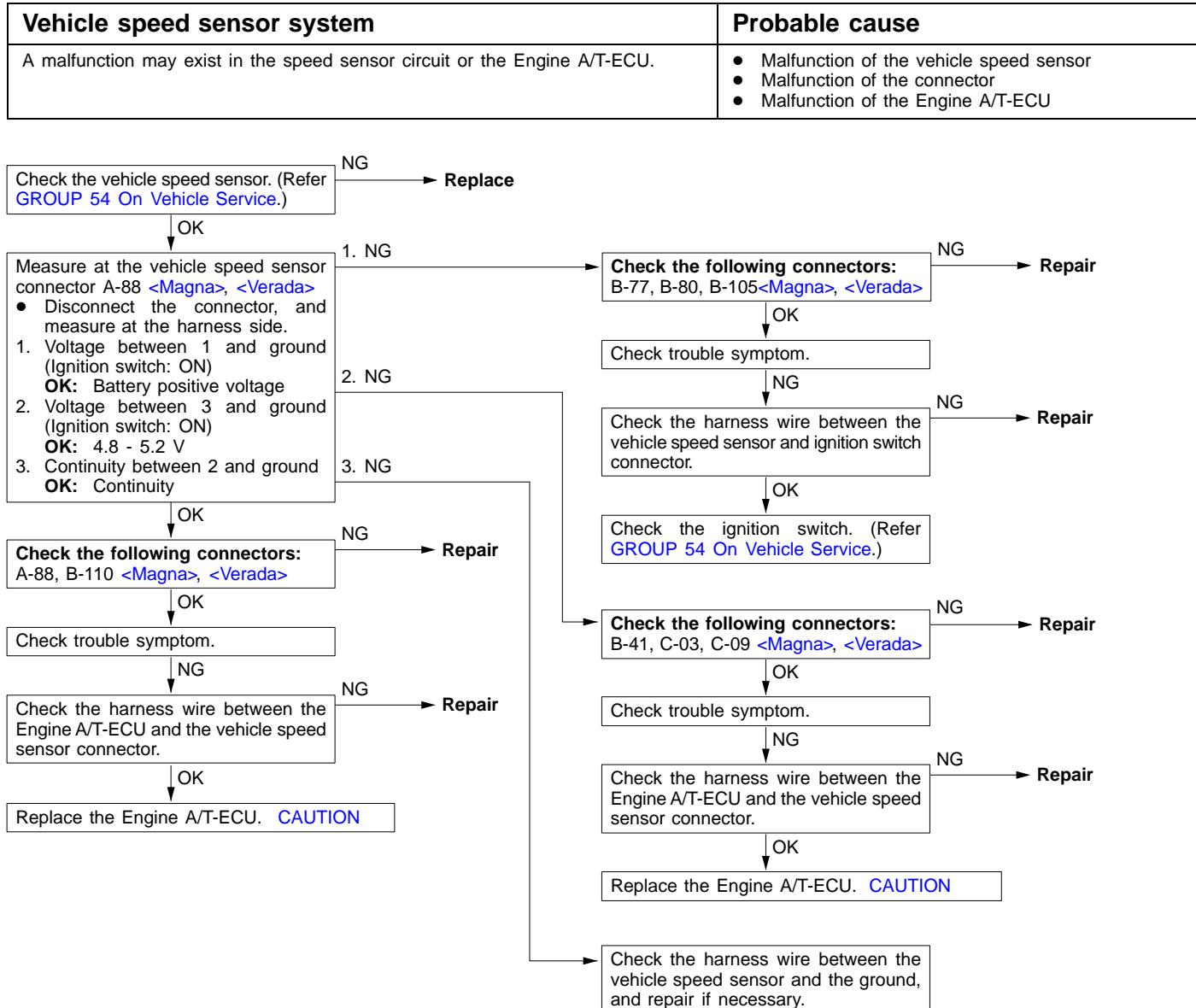


## INSPECTION PROCEDURE 17

Dual pressure switch system	Probable cause
The cause is probably a defective dual pressure switch circuit or a defective Engine A/T-ECU.	<ul style="list-style-type: none"> <li>Malfunction of the dual pressure switch</li> <li>Malfunction of connector</li> <li>Malfunction of A/C system</li> <li>Malfunction of the Engine A/T-ECU</li> </ul>



## INSPECTION PROCEDURE 18



## INSPECTION PROCEDURE 19

