
AUTOMATIC TRANSMISSION

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GENERAL

OUTLINE OF CHANGES

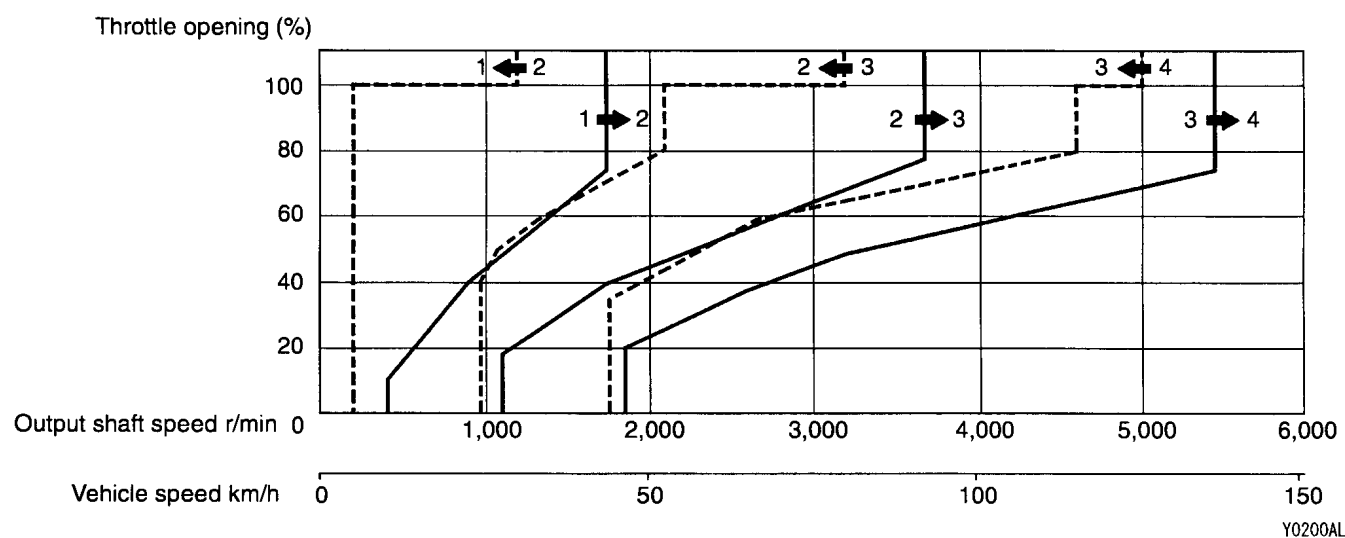
The following service procedures for items which are different from before have been established to correspond to the following changes:

- The A/T-ECU has been changed.
- The shift pattern has been changed.

TROUBLESHOOTING <A/T>

SHIFT PATTERN

D range (Overdrive switch: ON)



INSPECTION CHART FOR DIAGNOSIS CODE

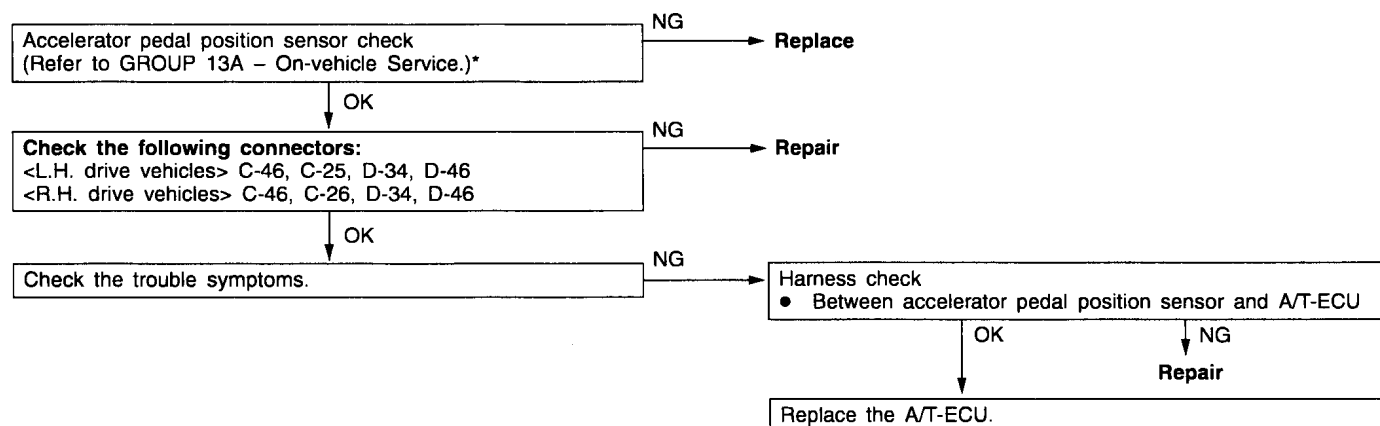
Code	Diagnosis item		Reference page
13	Accelerator pedal position sensor system (Throttle opening voltage)	Sensor malfunction/ open circuit/short circuit	23-3
14	Accelerator pedal position sensor system (Throttle power supply voltage)	Open circuit/short circuit	23-3
15	A/T fluid temperature sensor system	Open circuit	23-4
16	A/T fluid temperature sensor system	Short circuit	23-4
22	Wide open throttle system	Open circuit/short circuit	23-4
29	Inhibitor switch system	Open circuit	23-5
30	Inhibitor switch system	Short circuit	23-5
31	Input shaft speed sensor system	Open circuit	23-6
32	Output shaft speed sensor system	Open circuit	23-6
38	Vehicle speed sensor system	Open circuit	23-7
41	Solenoid valve No. 1 system	Open circuit	23-8
42	Solenoid valve No. 1 system	Short circuit	23-8

Code	Diagnosis item		Reference page
43	Solenoid valve No. 2 system	Open circuit	23-8
44	Solenoid valve No. 2 system	Short circuit	23-8
47	Solenoid valve No. 3 system	Open circuit	23-8
48	Solenoid valve No. 3 system	Short circuit	23-8
55	Abnormal communication with engine-ECU	Open circuit	23-9

INSPECTION PROCEDURES FOR DIAGNOSIS CODES

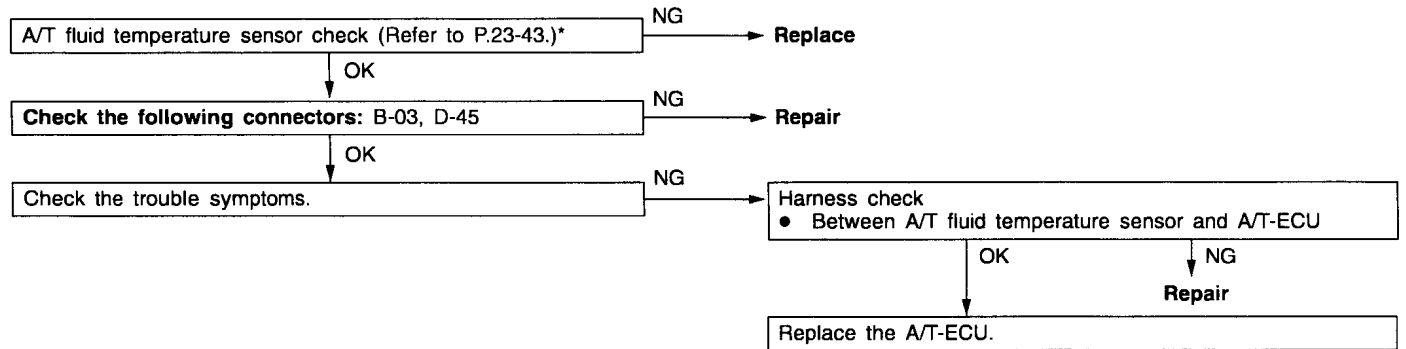
Code No. 13, 14 Accelerator pedal position sensor (APS)	Probable cause
If the APS output voltage (APS opening voltage) is 4.8 V or higher when the engine is idling, the output voltage is judged to be too high and diagnosis code No. 13 is output. If the APS output voltage (APS opening voltage) is 0.335 V or lower when the engine is idling, the output voltage is judged to be too low and diagnosis code No. 14 is output. If the APS output voltage (APS power supply voltage) is 3.0 V or lower or if it is 5.7 V or higher when the engine is idling, the APS is judged to be faulty and diagnosis code No. 14 is output.	• Malfunction of the accelerator pedal position sensor • Malfunction of harness or connector • Malfunction of the A/T-ECU

*: Refer to '00 PAJERO PININ Workshop Manual (Pub. No. CKRE00E1).



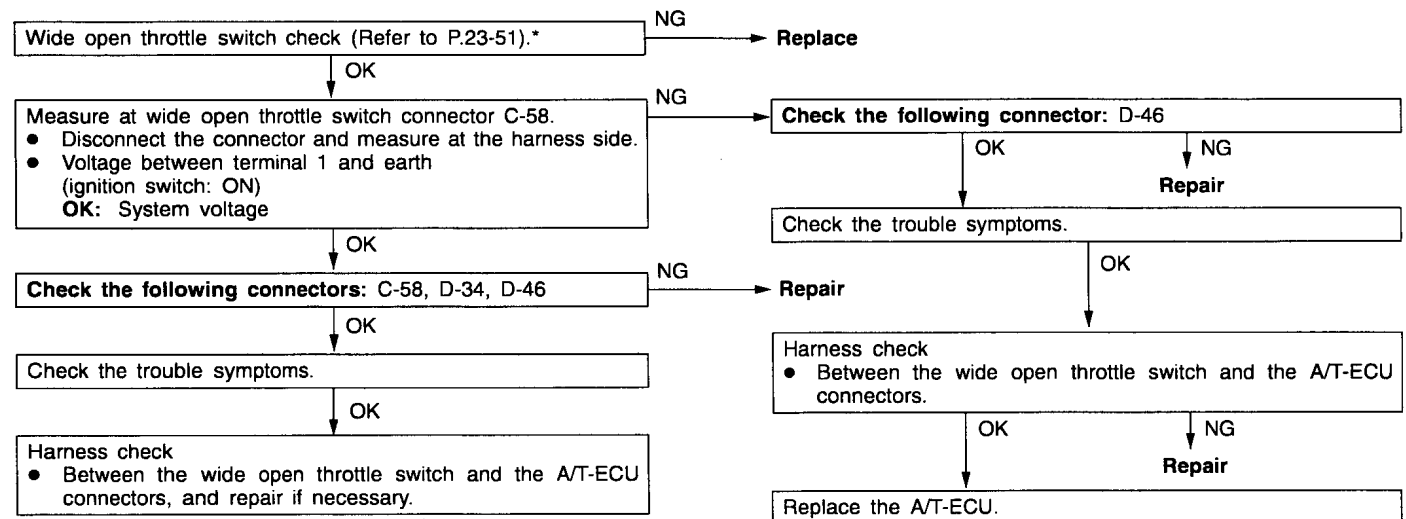
Code No. 15, 16 A/T fluid temperature sensor system	Probable cause
If the A/T fluid temperature sensor output is 10°C or less (5.6 kΩ or more) even after running the engine for 15 minutes or more, it is judged that there is an open circuit in the A/T fluid temperature sensor and diagnosis code No. 15 is output. If the A/T fluid temperature sensor output is 240°C or more (10 kΩ or less), it is judged that there is a short circuit in the A/T fluid temperature sensor and diagnosis code No. 16 is output.	• Malfunction of the A/T fluid temperature sensor • Malfunction of harness or connector • Malfunction of the A/T-ECU

*: Refer to '00 PAJERO PININ Workshop Manual (Pub. No. CKRE00E1).



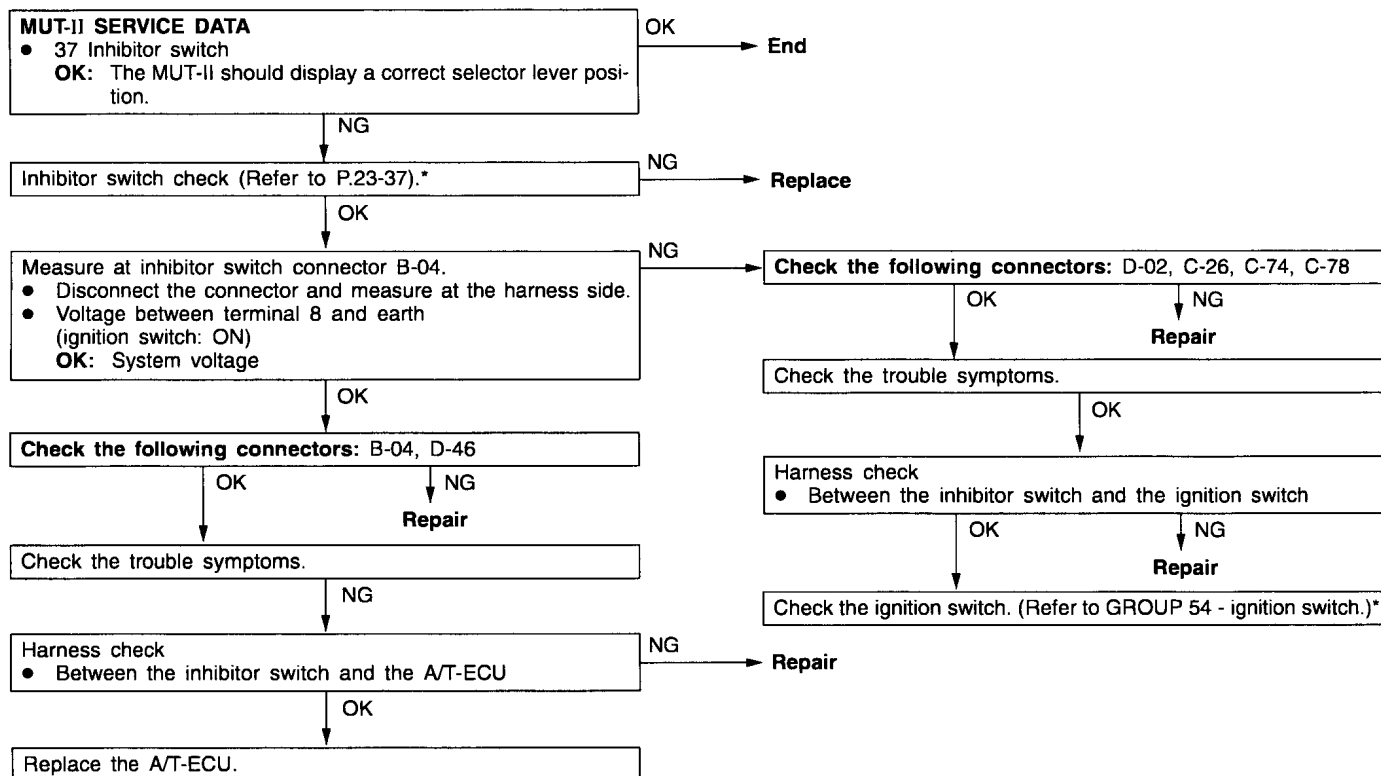
Code No. 22 Wide open throttle switch system	Probable cause
If the wide open throttle switch dose not turn OFF with the accelerator pedal is not depressed, there is a short circuit in the wide open throttle switch and diagnosis code No. 22 is output.	• Malfunction of the wide open throttle switch • Malfunction of harness or connector • Malfunction of the A/T-ECU

*: Refer to '00 PAJERO PININ Workshop Manual (Pub. No. CKRE00E1).



Code No. 29, 30 Inhibitor switch system	Probable cause
If the inhibitor switch has not sent any signal for 2 seconds while the ignition switch is on, it is judged that there is an open circuit in the inhibitor switch and diagnosis code No.29 is set. If the inhibitor switch has sent at least two signals simultaneously for 2 seconds while the ignition switch is on, it is judged that there is a short circuit in the inhibitor switch and diagnosis code No.30 is set.	● Malfunction of the inhibitor switch ● Malfunction of harness or ● Malfunction of the A/T-ECU

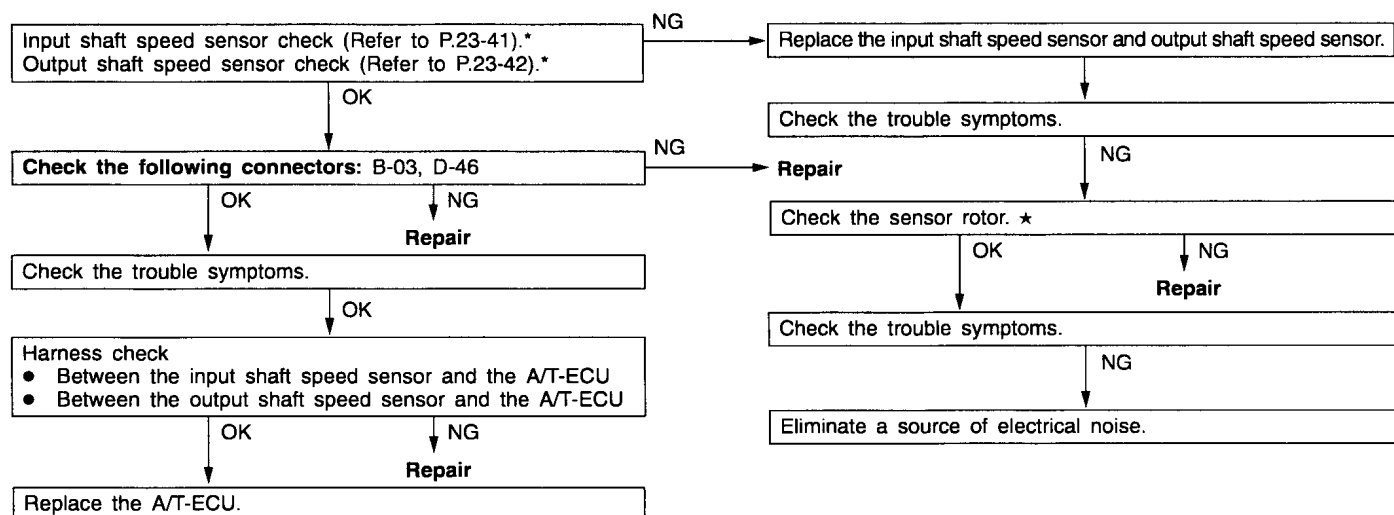
*: Refer to '00 PAJERO PININ Workshop Manual (Pub. No. CKRE00E1).



Code No. 31, 32 Input shaft speed sensor system, output shaft speed sensor system	Probable cause
If no output pulse is detected from the input shaft speed sensor for 120 seconds or more while driving in 3rd gear at a speed of 60 km/h or more, there is judged to be an open circuit in the input shaft speed sensor and diagnosis code No. 31 is output. If not output pulse is detected from the output shaft speed sensor for 120 seconds or more while driving in 3rd gear at a speed of 60 km/h or more, there is judged to be an open circuit in the output shaft speed sensor and diagnosis code No. 32 is output.	● Malfunction of the input shaft speed sensor ● Malfunction of the output shaft speed sensor ● Malfunction of harness or connector ● Malfunction of the sensor rotor ● Malfunction of A/T-ECU ● Electrical noise

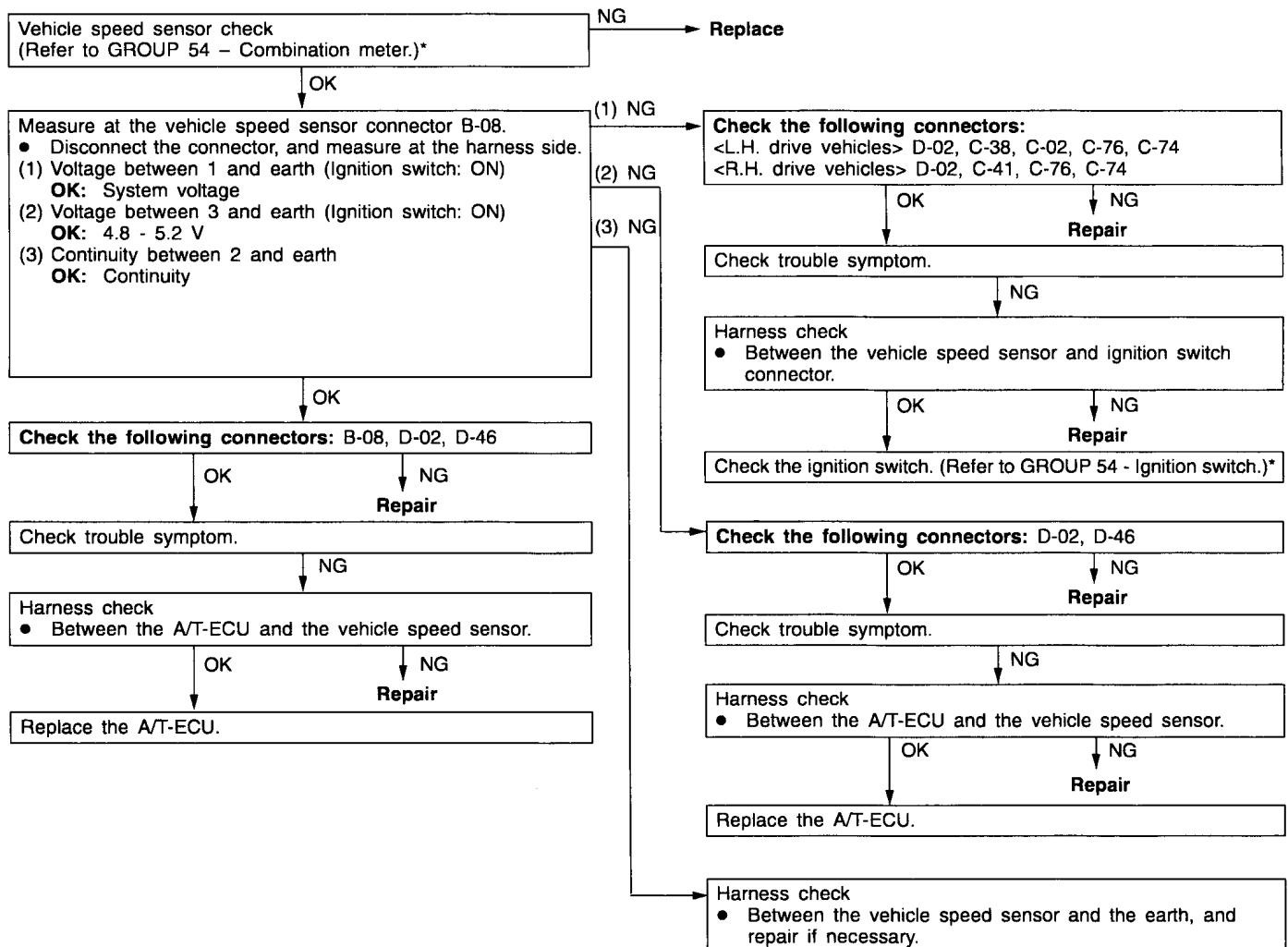
*: Refer to '00 PAJERO PININ Workshop Manual (Pub. No. CKRE00E1).

★: Refer to the Transmission Workshop Manual



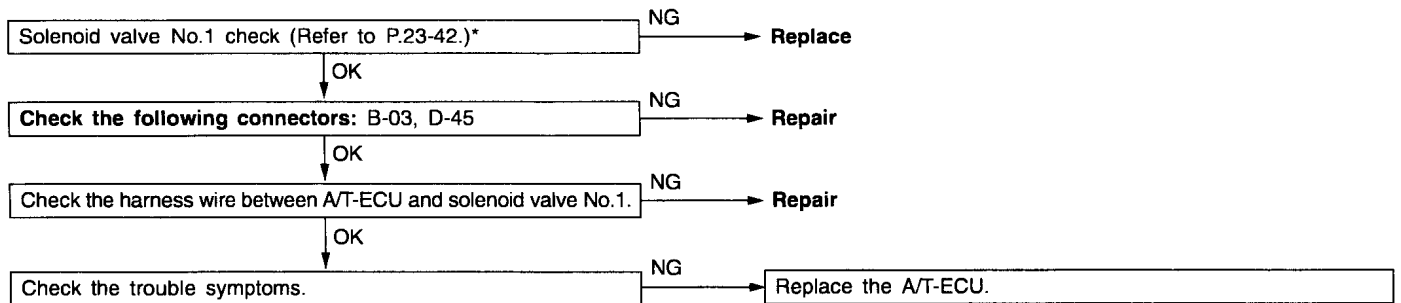
Code No. 38 Vehicle speed sensor system	Probable cause
If no output pulse is detected from the vehicle speed sensor for 120 seconds or more continuously while driving at a speed of 60 km/h or more, there is judged to be an open circuit in the vehicle speed sensor and diagnosis code No. 38 is output.	• Malfunction of the vehicle speed sensor • Malfunction of harness or connector • Malfunction of the A/T-ECU • Malfunction of the ignition switch

*: Refer to '00 PAJERO PININ Workshop Manual (Pub. No. CKRE00E1).



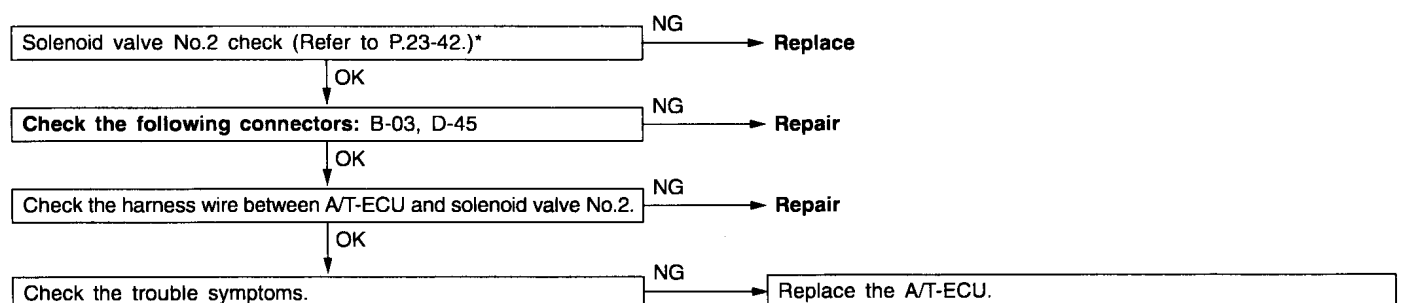
Code No. 41, 42 Solenoid valve No.1 system	Probable cause
If the resistance value for a solenoid valve No.1 is too large, it is judged that there is an open circuit in the solenoid valve No.1 and the diagnosis code No.41 is output. If the resistance value for a solenoid valve No.1 is too small, it is judged that there is a short-circuit in the solenoid valve No.1 and the diagnosis code No.42 is output.	● Malfunction of solenoid valve No.1 ● Malfunction of harness or connector ● Malfunction of the A/T-ECU

*: Refer to '00 PAJERO PININ Workshop Manual (Pub. No. CKRE00E1).



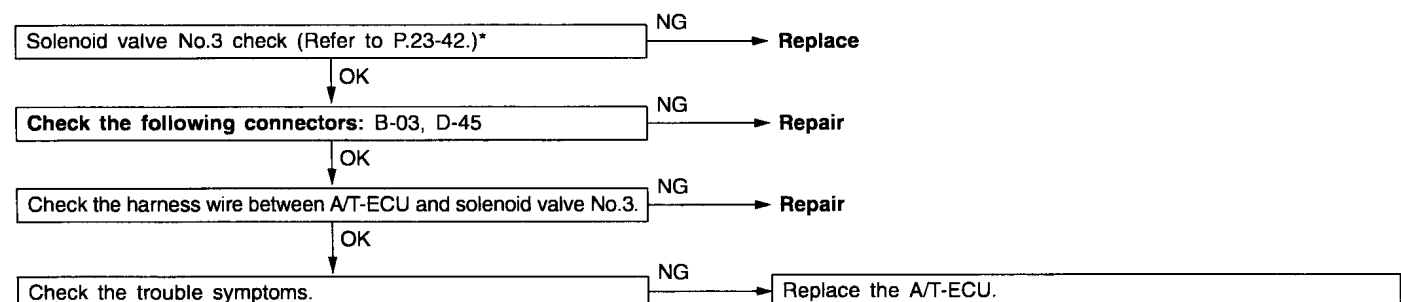
Code No. 43, 44 Solenoid valve No.2 system	Probable cause
If the resistance value for a solenoid valve No.2 is too large, it is judged that there is an open circuit in the solenoid valve No.2 and the diagnosis code No.43 is output. If the resistance value for a solenoid valve No.2 is too small, it is judged that there is a short-circuit in the solenoid valve No.2 and the diagnosis code No.44 is output.	● Malfunction of solenoid valve No.2 ● Malfunction of harness or connector ● Malfunction of the A/T-ECU

*: Refer to '00 PAJERO PININ Workshop Manual (Pub. No. CKRE00E1).

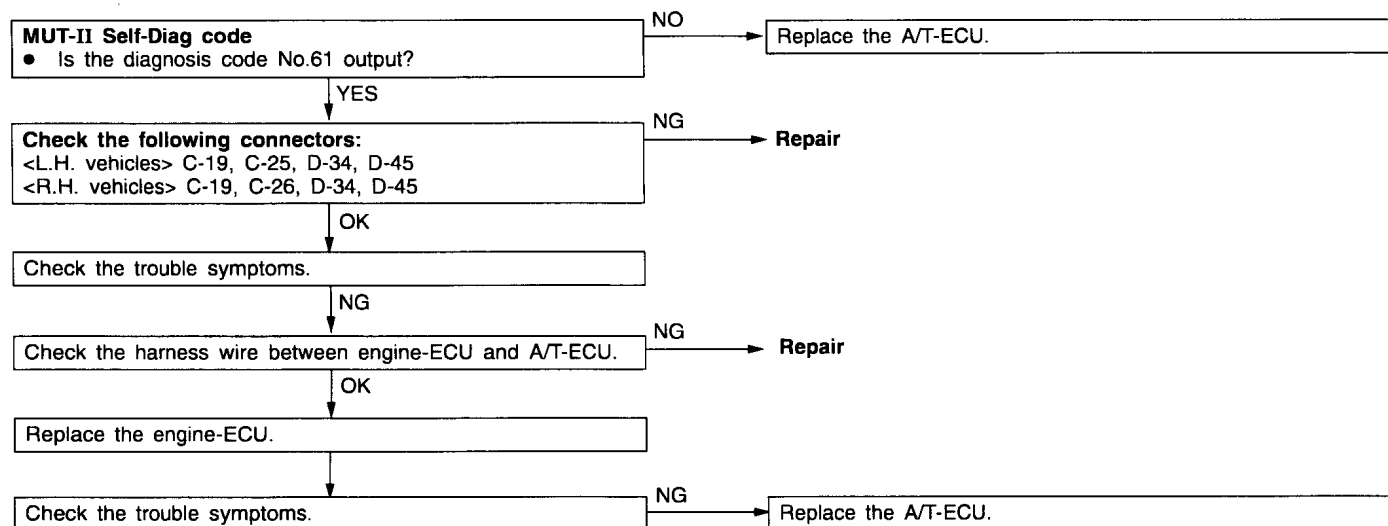


Code No. 47, 48 Solenoid valve No.3 system	Probable cause
If the resistance value for a solenoid valve No.3 is too large, it is judged that there is an open circuit in the solenoid valve No.3 and the diagnosis code No.47 is output. If the resistance value for a solenoid valve No.3 is too small, it is judged that there is a short-circuit in the solenoid valve No.3 and the diagnosis code No.48 is output.	● Malfunction of solenoid valve No.3 ● Malfunction of harness or connector ● Malfunction of the A/T-ECU

*: Refer to '00 PAJERO PININ Workshop Manual (Pub. No. CKRE00E1).



Code No. 55 Abnormal communication with engine-ECU	Probable cause
If normal communication is not possible for a continuous period of 1 second or more when the ignition switch is at the ON position and the battery voltage is 10 V or more, diagnosis code No. 55 is output. Diagnosis code No. 55 is also output if the data being received is abnormal for a continuous period of 1 second under the same conditions.	• Malfunction of harness or connector • Malfunction of the engine-ECU • Malfunction of the A/T-ECU



INSPECTION CHART FOR TROUBLE SYMPTOMS

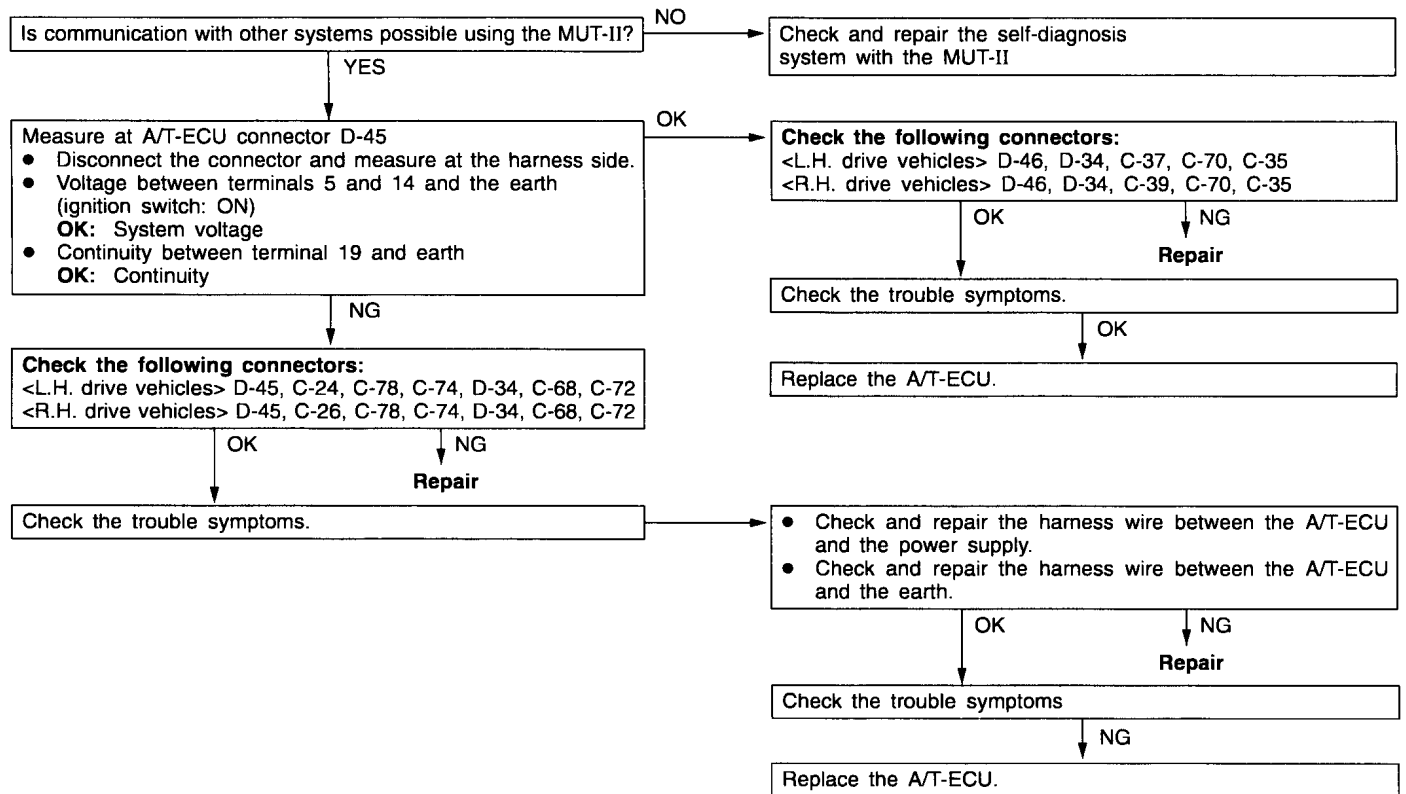
*: Refer to '00 PAJERO PININ Workshop Manual (Pub. No. CKRE00E1).

Trouble symptom		Inspection procedure No.	Reference page
Communication with the MUT-II is not possible		1	23-10
Does not move	Does not move forward and reverse	2	23-17*
	Does not move forward only	3	23-18*
	Does not reverse only	4	23-18*
Malfunction when shifting	Upshifting does not occur	5	23-19*
	Downshifting does not occur	6	23-20*
	Shifting point abnormality	7	23-20*
	Upshifting occurs spontaneously	8	23-21*
	Incorrect drive gear position	9	23-21*
Large shocks		10	23-22*
Slippage (vibration)		11	23-23*
Lockup malfunction		12	23-24*
Abnormal engine braking		13	23-24*
Electronic circuit systems	Overdrive switch system	14	23-11
	Stop lamp switch system	15	23-11

INSPECTION PROCEDURE FOR TROUBLE SYMPTOMS

INSPECTION PROCEDURE 1

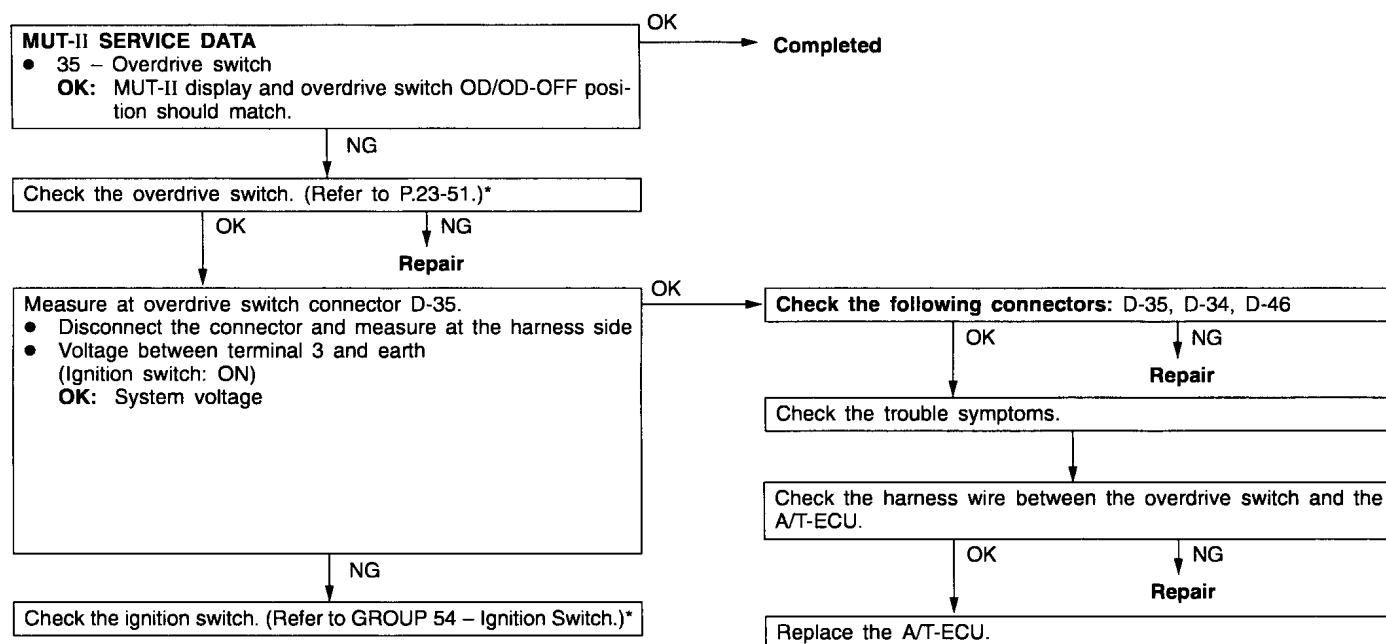
Communication with the MUT-II is not possible	Probable cause
If communication with the MUT-II is not possible, the cause is probably a malfunction in the self-diagnosis system or the A/T-ECU is not functioning.	• Malfunction of self-diagnosis system • Malfunction of A/T-ECU power circuit • Malfunction of A/T-ECU earth circuit • Malfunction of A/T-ECU • Malfunction of harness and connector



INSPECTION PROCEDURE 14

Overdrive switch system	Probable cause
If downshifting does not occur when overdrive switch is turned off while driving in 4th gear, or if shifting to 4th gear is not possible, the cause is probably a problem in the overdrive switch system.	• Malfunction of overdrive switch • Malfunction of harness or connector • Malfunction of A/T-ECU • Malfunction of ignition switch

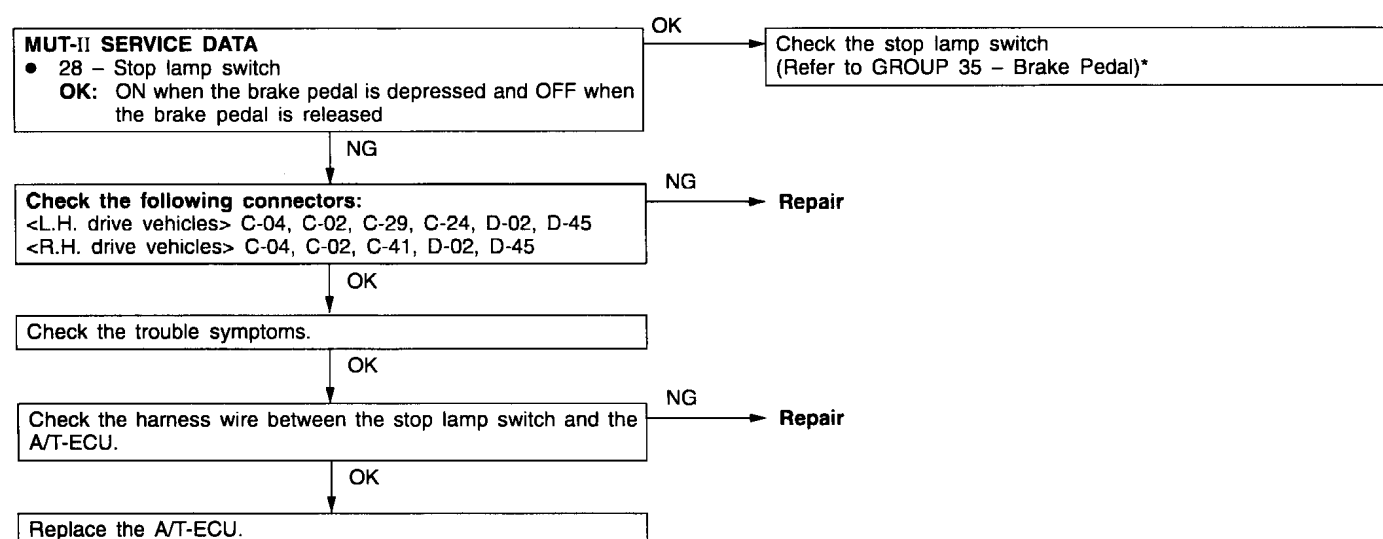
*: Refer to '00 PAJERO PININ Workshop Manual (Pub. No. CKRE00E1).



INSPECTION PROCEDURE 15

Stop lamp switch system	Probable cause
If large shocks occur during squat control, the cause is probably a problem with the stop lamp switch.	• Malfunction of stop lamp switch • Malfunction of harness or connector • Malfunction of A/T-ECU

*: Refer to '00 PAJERO PININ Workshop Manual (Pub. No. CKRE00E1).



SERVICE DATA REFERENCE TABLE

Item No. 37 has been changed since the A/T-ECU has been changed. The other SERVICE DATA are the same as before.

Item No.	Inspection item	Inspection conditions		Normal value
37	Inhibitor switch	Ignition switch: ON Engine: Stopped	Selector lever position: P	P
			Selector lever position: R	R
			Selector lever position: N	N
			Selector lever position: D	D
			Selector lever position: 2	2
			Selector lever position: L	L

A/T-ECU TERMINAL VOLTAGE REFERENCE CHART

1	2						3	4	21	22	23	24						25	26	27				
5	6	7	8	9	10	11	12	13	28	29	30	31	32	33	34	35	36	37	38	39				
14	15				16	17	18	19	20	40	41			42	43	44			45	46			47	48

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Terminal No.	Inspection item	Inspection conditions	Standard value
1	Solenoid valve No. 1	When in 1st or 2nd gear	System voltage
		When in 3rd or 4th gear	0 V
2	Solenoid valve No. 2	When in 2nd or 3rd gear	System voltage
		When in 1st or 4th gear	0 V
3	Free-wheeling engage switch	Transfer lever position: Other than 4WD	System voltage
		Transfer lever position: 4WD	0 V
5	Back-up power supply	Ignition switch: OFF	System voltage
6	Solenoid valve No. 3	When lockup clutch is operating	System voltage
		When lockup clutch is not operating	0 V
11	Communication with input signals from engine-ECU	Engine: Idling Selector lever position: D	Other than 0 V
13	A/T fluid temperature sensor	ATF temperature: 120°C	Approx. 0.3 V
		ATF temperature: 150°C	Approx. 0.15 V
14	Power supply	Ignition switch: OFF	0 V
		Ignition switch: ON	System voltage
17	Communication with output signals to engine-ECU	Engine: Idling Selector lever position: D	Other than 0 V

Terminal No.	Inspection item	Inspection conditions	Standard value
18	Stop lamp switch	Brake pedal: Depressed	System voltage
		Brake pedal: Released	0 V
19	Earth	Engine: Idling	0 V
20	A/T fluid temperature sensor earth	–	–
21	Diagnostic output terminal	–	–
23	Input shaft speed sensor	Ignition switch: OFF	0 V
		Ignition switch: ON	2.5 V
24	Output shaft speed sensor	Vehicle: Stopped	Approx. 2.5 V
		Vehicle: Driving	Other than 2.5 V
25	Overdrive switch	Overdrive switch: ON	System voltage
		Overdrive switch: OFF	0 V
26	Inhibitor switch P	Selector lever position: P	System voltage
		Selector lever position: Other than P	0 V
27	Inhibitor switch R	Selector lever position: R	System voltage
		Selector lever position: Other than R	0 V
30	Input shaft speed sensor earth	–	–
31	Output shaft speed sensor earth	–	–
33	Wide open throttle switch	Accelerator pedal: Released	4.5 – 5.5 V
		Accelerator pedal: Depressed	Less than 0.4 V
34	Dual-pressure switch	A/C switch: OFF	0 V
		A/C switch: ON	System voltage
37	N range lamp	Ignition switch: ON	System voltage
		Ignition switch: OFF	0 V
38	Inhibitor switch N	Selector lever position: N	System voltage
		Selector lever position: Other than N	0 V
39	Inhibitor switch D	Selector lever position: D	System voltage
		Selector lever position: Other than D	0 V
41	Diagnosis control terminal	–	–
42	Accelerator pedal position sensor (power supply voltage)	Ignition switch: ON	Approx. 5 V
		Ignition switch: OFF	0 V

Terminal No.	Inspection item	Inspection conditions	Standard value
43	Accelerator pedal position sensor (throttle opening voltage)	Accelerator pedal: Released	Approx. 1 V
		Accelerator pedal: Fully depressed	Approx. 4 V
44	Vehicle speed sensor	Vehicle: Slowly moving forward	Alternates between 0↔Approx. 5 V
47	Inhibitor switch 2	Selector lever position: 2	System voltage
		Selector lever position: Other than 2	0 V
48	Inhibitor switch L	Selector lever position: L	System voltage
		Selector lever position: Other than L	0 V