

SECTION **AT**

AUTOMATIC TRANSMISSION

A
B
AT

D
E
F
G
H
I
J
K
L
M

CONTENTS

INDEX FOR DTC	5	Accurate Repair	44
Alphabetical Index	5	A/T Electrical Parts Location	49
DTC No. Index	6	Circuit Diagram	50
PRECAUTIONS	7	Inspections Before Trouble Diagnosis	51
Precautions for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"	7	Check Before Engine is Started	55
Precautions for On Board Diagnostic (OBD) System of A/T and Engine	7	Check at Idle	55
Precautions for A/T Assembly Replacement	8	Cruise Test - Part 1	56
Precautions	9	Cruise Test - Part 2	58
Service Notice or Precautions	10	Cruise Test - Part 3	59
Wiring Diagrams and Trouble Diagnosis	11	Vehicle Speed When Shifting Gears	60
PREPARATION	12	Vehicle Speed When Performing and Releasing Complete Lock-up	60
Special Service Tools	12	Vehicle Speed When Performing and Releasing Slip Lock-up	60
Commercial Service Tools	13	Symptom Chart	60
A/T FLUID	14	TCM Input/Output Signal Reference Values	84
Changing A/T Fluid	14	CONSULT-II	86
Checking A/T Fluid	14	Diagnostic Procedure Without CONSULT-II	98
A/T CONTROL SYSTEM	16	DTC U1000 CAN COMMUNICATION LINE	100
Cross-Sectional View	16	Description	100
Shift Mechanism	17	On Board Diagnosis Logic	100
TCM Function	28	Possible Cause	100
CAN Communication	29	DTC Confirmation Procedure	100
Input/Output Signal of TCM	31	Wiring Diagram — AT — CAN	101
Line Pressure Control	32	Diagnostic Procedure	102
Shift Control	34	DTC P0615 START SIGNAL CIRCUIT	103
Lock-Up Control	35	Description	103
Engine Brake Control	36	On Board Diagnosis Logic	103
Control Valve	36	Possible Cause	103
ON BOARD DIAGNOSTIC (OBD) SYSTEM	38	DTC Confirmation Procedure	103
Introduction	38	Wiring Diagram — AT — STSIG	104
OBD-II Function for A/T System	38	Diagnostic Procedure	105
One or Two Trip Detection Logic of OBD-II	38	DTC P0705 PARK/NEUTRAL POSITION SWITCH	106
OBD-II Diagnostic Trouble Code (DTC)	38	Description	106
Malfunction Indicator Lamp (MIL)	41	On Board Diagnosis Logic	106
TROUBLE DIAGNOSIS	42	Possible Cause	106
DTC Inspection Priority Chart	42	DTC Confirmation Procedure	106
Fail-Safe	42	Wiring Diagram — AT — PNP/SW	107
How To Perform Trouble Diagnosis For Quick and		Diagnostic Procedure	108
		Component Inspection	110

DTC P0720 VEHICLE SPEED SENSOR A/T (REVOLUTION SENSOR)	111	On Board Diagnosis Logic	141
Description	111	Possible Cause	141
On Board Diagnosis Logic	111	DTC Confirmation Procedure	141
Possible Cause	111	Diagnostic Procedure	142
DTC Confirmation Procedure	111	DTC P1704 TRANSMISSION CONTROL MODULE (EEPROM)	143
Wiring Diagram — AT — VSSA/T	112	Description	143
Diagnostic Procedure	113	On Board Diagnosis Logic	143
DTC P0725 ENGINE SPEED SIGNAL	116	Possible Cause	143
Description	116	DTC Confirmation Procedure	143
On Board Diagnosis Logic	116	Diagnostic Procedure	144
Possible Cause	116	DTC P1705 THROTTLE POSITION SENSOR	145
DTC Confirmation Procedure	116	Description	145
Diagnostic Procedure	116	On Board Diagnosis Logic	145
DTC P0740 TORQUE CONVERTER CLUTCH SOLENOID VALVE	118	Possible Cause	145
Description	118	DTC Confirmation Procedure	145
CONSULT-II Reference Value	118	Diagnostic Procedure	145
On Board Diagnosis Logic	118	DTC P1710 A/T FLUID TEMPERATURE SENSOR CIRCUIT	147
Possible Cause	118	Description	147
DTC Confirmation Procedure	118	CONSULT-II Reference Value	147
Wiring Diagram — AT — TCV	119	On Board Diagnosis Logic	147
Diagnostic Procedure	120	Possible Cause	147
Component Inspection	121	DTC Confirmation Procedure	147
DTC P0744 A/T TCC S/V FUNCTION (LOCK-UP)	123	Wiring Diagram — AT — FTS	148
Description	123	Diagnostic Procedure	149
On Board Diagnosis Logic	123	Component Inspection	152
Possible Cause	123	DTC P1716 TURBINE REVOLUTION SENSOR	153
DTC Confirmation Procedure	123	Description	153
Wiring Diagram — AT — TCCSIG	124	On Board Diagnosis Logic	153
Diagnostic Procedure	125	Possible Cause	153
Component Inspection	126	DTC Confirmation Procedure	153
DTC P0745 LINE PRESSURE SOLENOID VALVE	128	Wiring Diagram — AT — TRSA/T	154
Description	128	Diagnostic Procedure	155
On Board Diagnosis Logic	128	DTC P1721 VEHICLE SPEED SENSOR MTR	158
Possible Cause	128	Description	158
DTC Confirmation Procedure	128	On Board Diagnosis Logic	158
Wiring Diagram — AT — LPSV	129	Possible Cause	158
Diagnostic Procedure	130	DTC Confirmation Procedure	158
Component Inspection	131	Diagnostic Procedure	158
DTC P1701 TRANSMISSION CONTROL MODULE (POWER SUPPLY)	133	DTC P1730 A/T INTERLOCK	160
Description	133	Description	160
On Board Diagnosis Logic	133	On Board Diagnosis Logic	160
Possible Cause	133	Possible Cause	160
DTC Confirmation Procedure	133	DTC Confirmation Procedure	160
Wiring Diagram — AT — POWER	134	Wiring Diagram — AT — I/LOCK	161
Diagnostic Procedure	137	Judgement of A/T Interlock	165
Component Inspection	138	Diagnostic Procedure	165
DTC P1702 TRANSMISSION CONTROL MODULE (RAM)	139	DTC P1731 A/T 1ST ENGINE BRAKING	167
Description	139	Description	167
On Board Diagnosis Logic	139	On Board Diagnosis Logic	167
Possible Cause	139	Possible Cause	167
DTC Confirmation Procedure	139	DTC Confirmation Procedure	167
Diagnostic Procedure	140	Wiring Diagram — AT — E/BRE	168
DTC P1703 TRANSMISSION CONTROL MODULE (ROM)	141	Diagnostic Procedure	169
Description	141	DTC P1752 INPUT CLUTCH SOLENOID VALVE	171
		Description	171
		On Board Diagnosis Logic	171
		Possible Cause	171

DTC Confirmation Procedure	171	Wiring Diagram — AT — HLR/CF	204
Wiring Diagram — AT — I/C	172	Diagnostic Procedure	205
Diagnostic Procedure	173	DTC P1772 LOW COAST BRAKE SOLENOID VALVE	207
Component Inspection	175	Description	207
DTC P1754 INPUT CLUTCH SOLENOID VALVE FUNCTION	176	On Board Diagnosis Logic	207
Description	176	Possible Cause	207
On Board Diagnosis Logic	176	DTC Confirmation Procedure	207
Possible Cause	176	Wiring Diagram — AT — LC/B	208
DTC Confirmation Procedure	176	Diagnostic Procedure	209
Wiring Diagram — AT — I/CF	177	Component Inspection	211
Diagnostic Procedure	178	DTC P1774 LOW COAST BRAKE SOLENOID VALVE FUNCTION	212
DTC P1757 FRONT BRAKE SOLENOID VALVE	180	Description	212
Description	180	On Board Diagnosis Logic	212
On Board Diagnosis Logic	180	Possible Cause	212
Possible Cause	180	DTC Confirmation Procedure	212
DTC Confirmation Procedure	180	Wiring Diagram — AT — LC/BF	213
Wiring Diagram — AT — FR/B	181	Diagnostic Procedure	214
Diagnostic Procedure	182	DTC P1815 MANUAL MODE SWITCH	216
Component Inspection	184	Description	216
DTC P1759 FRONT BRAKE SOLENOID VALVE FUNCTION	185	CONSULT-II Reference Value in Data Monitor Mode	216
Description	185	On Board Diagnosis Logic	216
On Board Diagnosis Logic	185	Possible Cause	216
Possible Cause	185	DTC Confirmation Procedure	216
DTC Confirmation Procedure	185	Wiring Diagram — AT — MMSW	217
Wiring Diagram — AT — FR/BF	186	Diagnostic Procedure	218
Diagnostic Procedure	187	Component Inspection	219
DTC P1762 DIRECT CLUTCH SOLENOID VALVE	189	Position Indicator Lamp	219
Description	189	DTC P1841 ATF PRESSURE SWITCH 1	220
On Board Diagnosis Logic	189	Description	220
Possible Cause	189	On Board Diagnosis Logic	220
DTC Confirmation Procedure	189	Possible Cause	220
Wiring Diagram — AT — D/C	190	DTC Confirmation Procedure	220
Diagnostic Procedure	191	Wiring Diagram — AT — FPSW1	221
Component Inspection	193	Diagnostic Procedure	222
DTC P1764 DIRECT CLUTCH SOLENOID VALVE FUNCTION	194	DTC P1843 ATF PRESSURE SWITCH 3	224
Description	194	Description	224
On Board Diagnosis Logic	194	On Board Diagnosis Logic	224
Possible Cause	194	Possible Cause	224
DTC Confirmation Procedure	194	DTC Confirmation Procedure	224
Wiring Diagram — AT — D/CF	195	Wiring Diagram — AT — FPSW3	225
Diagnostic Procedure	196	Diagnostic Procedure	226
DTC P1767 HIGH AND LOW REVERSE CLUTCH SOLENOID VALVE	198	DTC P1845 ATF PRESSURE SWITCH 5	228
Description	198	Description	228
On Board Diagnosis Logic	198	On Board Diagnosis Logic	228
Possible Cause	198	Possible Cause	228
DTC Confirmation Procedure	198	DTC Confirmation Procedure	228
Wiring Diagram — AT — HLR/C	199	Wiring Diagram — AT — FPSW5	229
Diagnostic Procedure	200	Diagnostic Procedure	230
Component Inspection	202	DTC P1846 ATF PRESSURE SWITCH 6	232
DTC P1769 HIGH AND LOW REVERSE CLUTCH SOLENOID VALVE FUNCTION	203	Description	232
Description	203	On Board Diagnosis Logic	232
On Board Diagnosis Logic	203	Possible Cause	232
Possible Cause	203	DTC Confirmation Procedure	232
DTC Confirmation Procedure	203	Wiring Diagram — AT — FPSW6	233
		Diagnostic Procedure	234
		PARK/NEUTRAL POSITION, MANUAL MODE,	

BRAKE AND THROTTLE POSITION SWITCH CIRCUIT	236	AIR BREATHER HOSE	296
Diagnostic Procedure	236	Removal and Installation	296
TROUBLE DIAGNOSIS FOR SYMPTOMS	238	TRANSMISSION ASSEMBLY	297
Wiring Diagram — AT — NONDTC	238	Removal and Installation	297
A/T CHECK Indicator Lamp Does Not Come On .	239	OVERHAUL	300
Engine Cannot Be Started In “P” or “N” Position .	240	Components	300
In “P” Position, Vehicle Moves When Pushed	241	Oil Channel	306
In “N” Position, Vehicle Moves	242	Locations of Adjusting Shims, Needle Bearings, Thrust Washers and Snap Rings	307
Large Shock (“N” to “D” Position)	243	DISASSEMBLY	308
Vehicle Does Not Creep Backward In “R” Position	246	Disassembly	308
Vehicle Does Not Creep Forward In “D” Position .	248	REPAIR FOR COMPONENT PARTS	322
Vehicle Cannot Be Started From D1	252	Oil Pump	322
A/T Does Not Shift: D1 → D2	254	Front Sun Gear, 3rd One-Way Clutch	324
A/T Does Not Shift: D2 → D3	256	Front Carrier, Input Clutch, Rear Internal Gear	327
A/T Does Not Shift: D3 → D4	259	Mid Sun Gear, Rear Sun Gear, High and Low Reverse Clutch Hub	332
A/T Does Not Shift: D4 → D5	261	High and Low Reverse Clutch	337
A/T Does Not Perform Lock-up	263	Direct Clutch	338
A/T Does Not Hold Lock-up Condition	266	ASSEMBLY	340
Lock-up Is Not Released	268	Assembly (1)	340
Engine Speed Does Not Return To Idle	269	Adjustment	350
Cannot Be Changed to Manual Mode	271	Assembly (2)	352
A/T Does Not Shift: 5th gear → 4th gear	272	SERVICE DATA AND SPECIFICATIONS (SDS) ...	358
A/T Does Not Shift: 4th gear → 3rd gear	274	General Specifications	358
A/T Does Not Shift: 3rd gear → 2nd gear	276	Vehicle Speed When Shifting Gears	358
A/T Does Not Shift: 2nd gear → 1st gear	278	Vehicle Speed When Performing and Releasing Complete Lock-up	358
Vehicle Does Not Decelerate By Engine Brake ...	280	Vehicle Speed When Performing and Releasing Slip Lock-up	358
SHIFT CONTROL SYSTEM	282	Stall Speed	358
Control Device Removal and Installation	282	Line Pressure	359
Adjustment of A/T Position	283	Solenoid Valves	359
Checking of A/T Position	283	A/T Fluid Temperature Sensor	359
A/T SHIFT LOCK SYSTEM	284	Turbine Revolution Sensor	359
Description	284	Revolution Sensor	359
Shift Lock System Electrical Parts Location	284	Reverse Brake	360
Wiring Diagram — AT — SHIFT	285	Total End Play	360
Shift Lock Control Unit Reference Values	287		
Component Inspection	287		
ON-VEHICLE SERVICE	290		
Control Valve Assembly	290		

INDEX FOR DTC

INDEX FOR DTC

PPF:00024

Alphabetical Index

ECS0082C

NOTE:

If DTC U1000 is displayed with other DTCs, first perform the trouble diagnosis for DTC U1000. Refer to [AT-100](#).

Items (CONSULT-II screen terms)	DTC		Reference page
	OBD-II	Except OBD-II	
	CONSULT-II GST*1	CONSULT-II only "A/T"	
A/T 1ST E/BRAKING	—	P1731	AT-167
ATF PRES SW 1/CIRC	—	P1841	AT-220
ATF PRES SW 3/CIRC	—	P1843	AT-224
ATF PRES SW 5/CIRC	—	P1845	AT-228
ATF PRES SW 6/CIRC	—	P1846	AT-232
A/T INTERLOCK	P1730	P1730	AT-160
A/T TCC S/V FNCTN	P0744	P0744	AT-123
ATF TEMP SEN/CIRC	P0710	P1710	AT-147
CAN COMM CIRCUIT	U1000	U1000	AT-100
D/C SOLENOID/CIRC	P1762	P1762	AT-189
D/C SOLENOID FNCTN	P1764	P1764	AT-194
ENGINE SPEED SIG	—	P0725	AT-116
FR/B SOLENOID/CIRC	P1757	P1757	AT-180
FR/B SOLENOID FNCT	P1759	P1759	AT-185
HLR/C SOL/CIRC	P1767	P1767	AT-198
HLR/C SOL FNCTN	P1769	P1769	AT-203
I/C SOLENOID/CIRC	P1752	P1752	AT-171
I/C SOLENOID FNCTN	P1754	P1754	AT-176
L/PRESS SOL/CIRC	P0745	P0745	AT-128
LC/B SOLENOID/CIRC	P1772	P1772	AT-207
LC/B SOLENOID FNCT	P1774	P1774	AT-212
MANU MODE SW/CIR	—	P1815	AT-216
PNP SW/CIRC	P0705	P0705	AT-106
STARTER RELAY/CIRC	—	P0615	AT-103
TCC SOLENOID/CIRC	P0740	P0740	AT-118
TCM-EEPROM	—	P1704	AT-143
TCM-POWER SUPPLY	—	P1701	AT-133
TCM-RAM	—	P1702	AT-139
TCM-ROM	—	P1703	AT-141
TP SEN/CIRC A/T	—	P1705	AT-145
TURBINE REV S/CIRC	P1716	P1716	AT-153
VEH SPD SE/CIR-MTR	—	P1721	AT-158
VEH SPD SEN/CIR AT	P0720	P0720	AT-111

*1: These numbers are prescribed by SAE J2012.

INDEX FOR DTC

DTC No. Index

EC50082D

NOTE:

If DTC U1000 is displayed with other DTCs, first perform the trouble diagnosis for DTC U1000. Refer to [AT-100](#).

DTC		Items (CONSULT-II screen terms)	Reference page
OBD-II	Except OBD-II		
CONSULT-II GST*1	CONSULT-II only "A/T"		
—	P0615	STARTER RELAY/CIRC	AT-103
P0705	P0705	PNP SW/CIRC	AT-106
P0710	P1710	ATF TEMP SEN/CIRC	AT-147
P0720	P0720	VEH SPD SEN/CIR AT	AT-111
—	P0725	ENGINE SPEED SIG	AT-116
P0740	P0740	TCC SOLENOID/CIRC	AT-118
P0744	P0744	A/T TCC S/V FNCTN	AT-123
P0745	P0745	L/PRESS SOL/CIRC	AT-128
—	P1701	TCM-POWER SUPPLY	AT-133
—	P1702	TCM-RAM	AT-139
—	P1703	TCM-ROM	AT-141
—	P1704	TCM-EEPROM	AT-143
—	P1705	TP SEN/CIRC A/T	AT-145
P1716	P1716	TURBINE REV S/CIRC	AT-153
—	P1721	VEH SPD SE/CIR-MTR	AT-158
P1730	P1730	A/T INTERLOCK	AT-160
—	P1731	A/T 1ST E/BRAKING	AT-167
P1752	P1752	I/C SOLENOID/CIRC	AT-171
P1754	P1754	I/C SOLENOID FNCTN	AT-176
P1757	P1757	FR/B SOLENOID/CIRC	AT-180
P1759	P1759	FR/B SOLENOID FNCT	AT-185
P1762	P1762	D/C SOLENOID/CIRC	AT-189
P1764	P1764	D/C SOLENOID FNCTN	AT-194
P1767	P1767	HLR/C SOL/CIRC	AT-198
P1769	P1769	HLR/C SOL FNCTN	AT-203
P1772	P1772	LC/B SOLENOID/CIRC	AT-207
P1774	P1774	LC/B SOLENOID FNCT	AT-212
—	P1815	MANU MODE SW/CIRC	AT-216
—	P1841	ATF PRES SW 1/CIRC	AT-220
—	P1843	ATF PRES SW 3/CIRC	AT-224
—	P1845	ATF PRES SW 5/CIRC	AT-228
—	P1846	ATF PRES SW 6/CIRC	AT-232
U1000	U1000	CAN COMM CIRCUIT	AT-100

*1: These numbers are prescribed by SAE J2012.

PRECAUTIONS

PRECAUTIONS

PPF:00001

Precautions for Supplemental Restraint System (SRS) “AIR BAG” and “SEAT BELT PRE-TENSIONER”

ECS008AD

The Supplemental Restraint System such as “AIR BAG” and “SEAT BELT PRE-TENSIONER”, used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. Information necessary to service the system safely is included in the SRS and SB section of this Service Manual.

WARNING:

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.
- Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the SRS section.
- Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.

Precautions for On Board Diagnostic (OBD) System of A/T and Engine

ECS0082F

The ECM has an on board diagnostic system. It will light up the malfunction indicator lamp (MIL) to warn the driver of a malfunction causing emission deterioration.

CAUTION:

- Be sure to turn the ignition switch “OFF” and disconnect the negative battery cable before any repair or inspection work. The open/short circuit of related switches, sensors, solenoid valves, etc. will cause the MIL to light up.
- Be sure to connect and lock the connectors securely after work. A loose (unlocked) connector will cause the MIL to light up due to an open circuit. (Be sure the connector is free from water, grease, dirt, bent terminals, etc.)
- Be sure to route and secure the harnesses properly after work. Interference of the harness with a bracket, etc. may cause the MIL to light up due to a short circuit.
- Be sure to connect rubber tubes properly after work. A misconnected or disconnected rubber tube may cause the MIL to light up due to a malfunction of the EGR system or fuel injection system, etc.
- Be sure to erase the unnecessary malfunction information (repairs completed) from the TCM and ECM before returning the vehicle to the customer.

PRECAUTIONS

Precautions for A/T Assembly Replacement

ECS0082G

CAUTION:

- Check data (Unit ID) in TCM with data monitor of CONSULT-II before replacing A/T assembly or control valve assembly.
- Check if new data (Unit ID) are entered correctly after replacing A/T assembly or control valve assembly and erasing data in TCM.
- When replacing A/T assembly, control valve assembly or TCM, refer to the pattern table below and erase the EEPROM in the TCM if necessary.

EEPROM ERASING PATTERNS

A/T assembly or control valve assembly	TCM	Erasing EEPROM in TCM	Remarks
Replaced	Replaced	Not required	Not required because the EEPROM in the TCM is in the default state.
Not replaced	Replaced	Not required	Not required because the EEPROM in the TCM is in the default state.
Replaced	Not replaced	Required	Required because data has been written in the EEPROM in the TCM and because the TCM cannot write data from the ROM assembly in the transmission.

METHOD FOR ERASING THE EEPROM IN THE TCM

1. Connect CONSULT-II to data link connector.
2. Turn ignition switch "ON" position. Confirm that CONSULT-II turn "ON".
3. Move selector lever in "R" position.
4. Touch "START" on CONSULT-II.
5. Select "SELF-DIAG RESULTS" mode for "A/T" with CONSULT-II.
6. Fully press the accelerator pedal (8/8 throttle), and hold it in the fully open position. (This will set the closed throttle position signal to "OFF".)
7. Touch "ERASE" on CONSULT-II, and then touch "YES".
8. Wait 3 seconds and then release the accelerator pedal.
9. Turn ignition switch "OFF" position.

METHOD FOR WRITING DATA FROM THE ROM ASSEMBLY IN THE TRANSMISSION

In the following procedure, the TCM reads data from the ROM assembly and writes it to the EEPROM in the TCM.

1. With the EEPROM in the TCM erased.
2. Move selector lever in "P" position.
3. Turn ignition switch "ON" position.

CHECK METHOD

- Normal: About 2 seconds after the ignition switch "ON" position, the A/T CHECK indicator lamp lights up for 2 seconds.
- Abnormal: Even after the ignition switch "ON" position, the A/T CHECK indicator lamp does not light up after 2 seconds or illuminates immediately.

Cope for abnormal

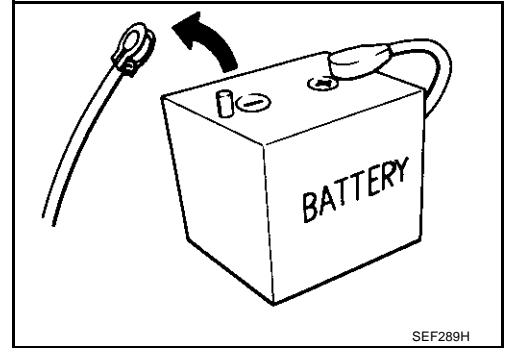
- Replace the control valve assembly.
- Replace the TCM.

PRECAUTIONS

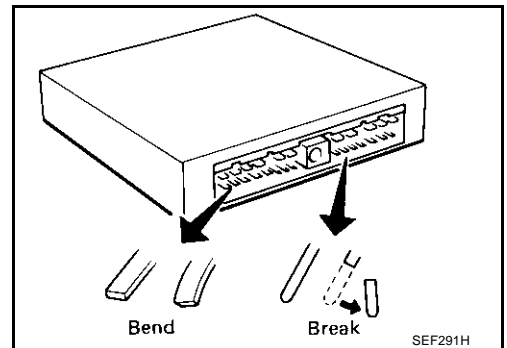
Precautions

ECS0082H

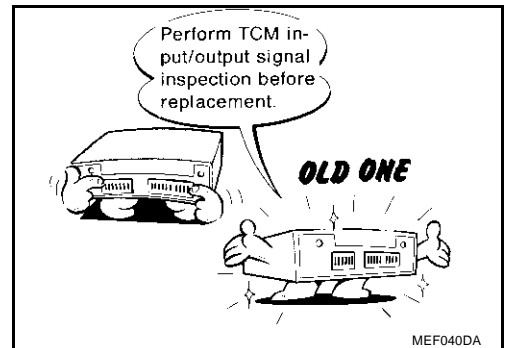
- Before connecting or disconnecting the TCM harness connector, turn ignition switch "OFF" and disconnect negative battery cable. Because battery voltage is applied to TCM even if ignition switch is turned "OFF".



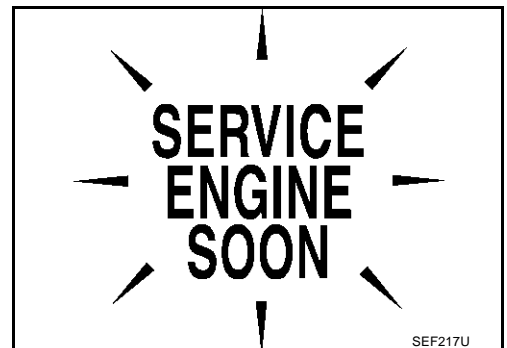
- When connecting or disconnecting pin connectors into or from TCM, take care not to damage pin terminals (bend or break). Make sure that there are not any bends or breaks on TCM pin terminal, when connecting pin connectors.



- Before replacing TCM, perform TCM input/output signal inspection and make sure whether TCM functions properly or not. [AT-84, "TCM INSPECTION TABLE"](#).



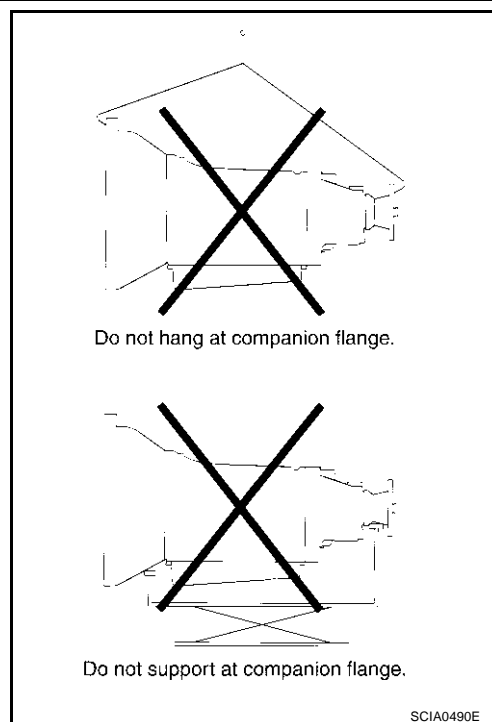
- After performing each TROUBLE DIAGNOSIS, perform "DTC (Diagnostic Trouble Code) CONFIRMATION PROCEDURE". If the repair is completed the DTC should not be displayed in the "DTC CONFIRMATION PROCEDURE".



A
B
AT
D
E
F
G
H
I
J
K
L
M

PRECAUTIONS

- When removing the RE5R05A model transmission from a vehicle, do not use the companion flange section at the rear end of the transmission as a support point.
 - Always use the specified brand of A/T fluid. Refer to [MA-11, "Fluids and Lubricants"](#).
 - Use paper rags not cloth rags during work.
 - After replacing the A/T fluid, dispose of the waste oil using the methods prescribed by law, ordinance, etc.
 - Before proceeding with disassembly, thoroughly clean the outside of the transaxle. It is important to prevent the internal parts from becoming contaminated by dirt or other foreign matter.
 - Disassembly should be done in a clean work area.
 - Use lint-free cloth or towels for wiping parts clean. Common shop rags can leave fibers that could interfere with the operation of the transaxle.
 - Place disassembled parts in order for easier and proper assembly.
 - All parts should be carefully cleaned with a general purpose, non-flammable solvent before inspection or reassembly.
 - Gaskets, seals and O-rings should be replaced any time the transaxle is disassembled.
 - It is very important to perform functional tests whenever they are indicated.
 - The valve body contains precision parts and requires extreme care when parts are removed and serviced. Place disassembled valve body parts in order for easier and proper assembly. Care will also prevent springs and small parts from becoming scattered or lost.
 - Properly installed valves, sleeves, plugs, etc. will slide along bores in valve body under their own weight.
 - Before assembly, apply a coat of recommended ATF to all parts. Apply petroleum jelly to protect O-rings and seals, or hold bearings and washers in place during assembly. Do not use grease.
 - Extreme care should be taken to avoid damage to O-rings, seals and gaskets when assembling.
 - After overhaul, refill the transaxle with new ATF.
 - When the A/T drain plug is removed, only some of the fluid is drained. Old A/T fluid will remain in torque converter and ATF cooling system.
- Always follow the procedures under "Changing A/T Fluid" in the AT section when changing A/T fluid. Refer to [AT-14, "Changing A/T Fluid"](#) and [AT-14, "Checking A/T Fluid"](#).



Service Notice or Precautions OBD-II SELF-DIAGNOSIS

ECS00821

- A/T self-diagnosis is performed by the TCM in combination with the ECM. The results can be read through the blinking pattern of the A/T CHECK indicator or the malfunction indicator lamp (MIL). Refer to the table on [AT-88, "Self-Diagnostic Result Test Mode"](#) for the indicator used to display each self-diagnostic result.
- The self-diagnostic results indicated by the MIL are automatically stored in both the ECM and TCM memories.

Always perform the procedure on [AT-39, "HOW TO ERASE DTC"](#) to complete the repair and avoid unnecessary blinking of the MIL.

For details of OBD-II, refer to [EC-51, "ON BOARD DIAGNOSTIC \(OBD\) SYSTEM"](#).

- **Certain systems and components, especially those related to OBD, may use the new style slide-locking type harness connector. For description and how to disconnect, refer to [PG-56, "HARNESS CONNECTOR"](#).**

PRECAUTIONS

Wiring Diagrams and Trouble Diagnosis

ECS0082J

When you read wiring diagrams, refer to the following:

- [GI-14, "How to Read Wiring Diagrams"](#).
- [PG-2, "POWER SUPPLY ROUTING"](#) for power distribution circuit.

When you perform trouble diagnosis, refer to the following:

- [GI-10, "How to Follow Trouble Diagnoses"](#).
- [GI-26, "How to Perform Efficient Diagnosis for an Electrical Incident"](#).

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PREPARATION

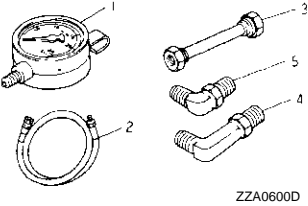
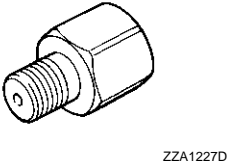
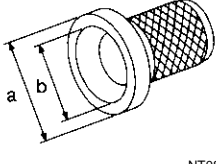
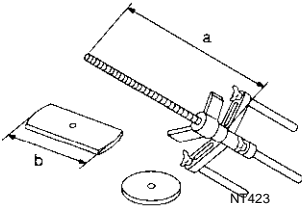
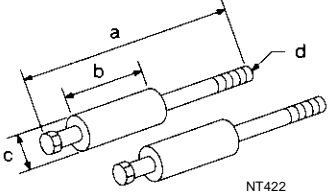
PREPARATION

PFP:00002

Special Service Tools

ECS0082K

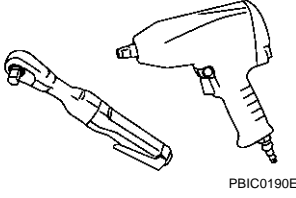
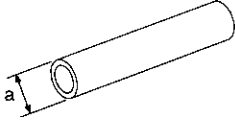
The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

Tool number (Kent-Moore No.) Tool name	Description
ST2505S001 (J34301-C) Oil pressure gauge set 1 ST25051001 (—) Oil pressure gauge 2 ST25052000 (—) Hose 3 ST25053000 (—) Joint pipe 4 ST25054000 (—) Adapter 5 ST25055000 (—) Adapter	Measuring line pressure 
KV31103600 (J45674) Joint pipe adapter (With ST25054000)	Measuring line pressure 
ST33400001 (J26082) Drift a: 60 mm (2.36 in) dia b: 47 mm (1.85 in) dia	Installing oil pump housing oil seal 
KV31102400 (J34285 and J34285-87) Clutch spring compressor a: 320 mm (12.60 in) b: 174 mm (6.85 in)	Installing reverse brake return spring retainer 
ST25850000 (J25721-A) Sliding hammer a: 179 mm (7.05 in) b: 70 mm (2.76 in) c: 40 mm (1.57 in) d: M12 x 1.75P	Remove oil pump assembly 

PREPARATION

Commercial Service Tools

ECS0082L

Tool name	Description
Power tool  <p style="text-align: right; margin-right: 50px;">PBIC0190E</p>	Loosening bolts and nuts
Drift a: 22 mm (0.87 in)  <p style="text-align: right; margin-right: 50px;">NT083</p>	Installing manual shaft oil seal.

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A/T FLUID

PFP:KLE40

Changing A/T Fluid

ECS0082M

1. Warm up A/T fluid.
2. Stop engine.
3. Remove the tightening bolt for A/T fluid level gauge.
4. Drain A/T fluid from drain plug and refill with new A/T fluid. Always refill same volume with drained fluid.
 - To replace the A/T fluid, pour in new fluid at the charging pipe with the engine idling and at the same time drain the old fluid from the radiator cooler hose return side.
 - When the color of the fluid coming out is about the same as the color of the new fluid, the replacement is complete. The amount of new transmission fluid to use should be 30 to 50% increase of the stipulated amount.

A/T fluid: Nissan Matic Fluid J

Fluid capacity: 10.3 ℓ (10-7/8 US qt, 9-1/8 Imp qt)

CAUTION:

- Use only Nissan Genuine ATF Matic Fluid J. Do not mix with other fluid.
- Using automatic transmission fluid other than Nissan Genuine ATF Matic Fluid J will cause deterioration in driveability and automatic transmission durability, and may damage the automatic transmission, which is not covered by the warranty.
- When filling A/T fluid, take care not to scatter heat generating parts such as exhaust.

Drain plug:

 : 29 - 39 N·m (3.0 - 4.0 kg·m, 22 - 29 ft·lb)

5. Run engine at idle speed for 5 minutes.
6. Check fluid level and condition. Refer to [AT-14, "Checking A/T Fluid"](#) . If fluid is still dirty, repeat step 2. through 5.
7. Install the removed A/T fluid level gauge in the fluid charging pipe.

Level gauge bolt:

 : 4.4 - 5.8 N·m (0.45 - 0.59 kg·m, 39 - 51 in·lb)

Checking A/T Fluid

ECS0082N

1. Warm up engine.
2. Check for fluid leakage.
3. Remove the tightening bolt for A/T fluid level gauge.
4. Before driving, fluid level can be checked at fluid temperatures of 30 to 50°C (86 to 122°F) using "COLD" range on A/T fluid level gauge as follows.
 - a. Park vehicle on level surface and set parking brake.
 - b. Start engine and move selector lever through each gear position. Leave selector lever in "P" position.
 - c. Check fluid level with engine idling.
 - d. Remove A/T fluid level gauge and wipe clean with lint-free paper.

CAUTION:

When wiping away the fluid level gauge, always use lint-free paper, not a cloth one.

- e. Re-insert A/T fluid level gauge into charging pipe as far as it will go.

CAUTION:

To check fluid level, insert the A/T fluid level gauge until the cap contacts the end of the charging pipe, with the gauge reversed from the normal attachment conditions.

- f. Remove A/T fluid level gauge and note reading. If reading is at low side of range, add fluid to the charging pipe.

CAUTION:

Do not overfill.

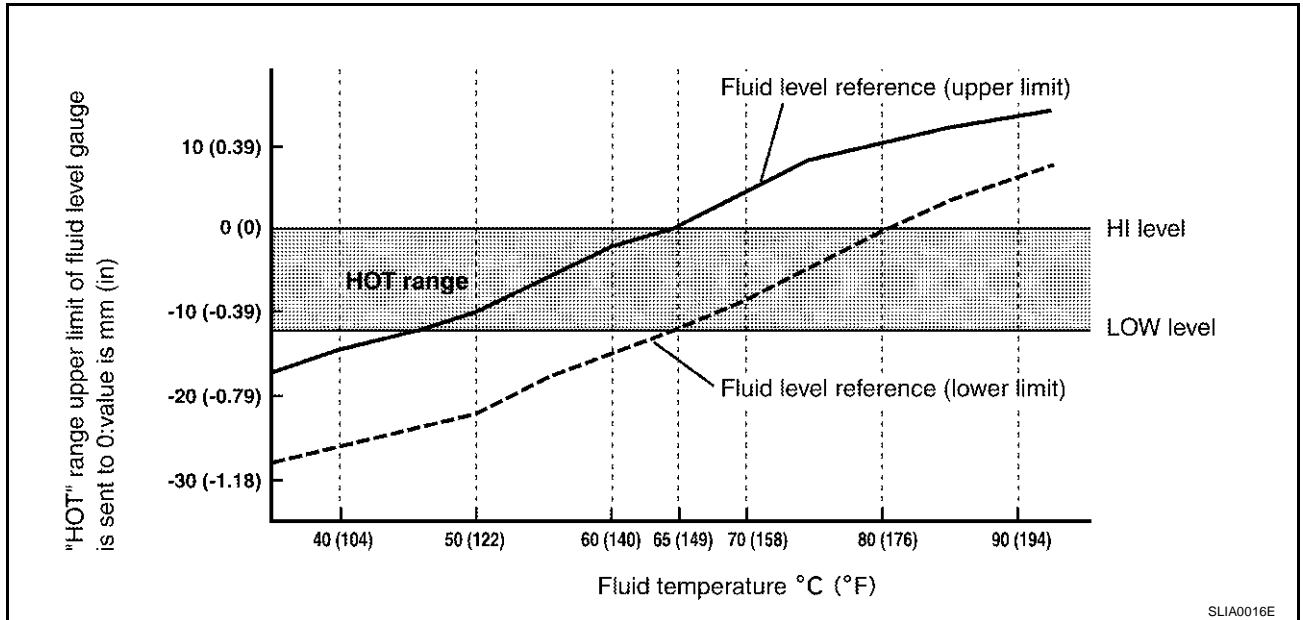
5. Drive vehicle for approximately 5 minutes in urban areas.

A/T FLUID

6. Make the fluid temperature approximately 65°C (149°F).

NOTE:

Fluid level will be greatly affected by temperature as shown in figure. Therefore, be certain to perform operation while checking data with CONSULT-II.

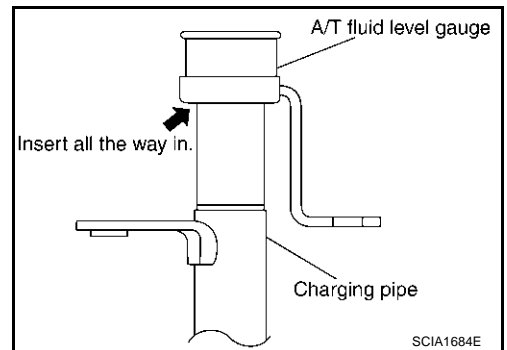


- Connect CONSULT-II to data link connector.
- Select "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
- Read out the value of "ATF TEMP 1".
- Re-check fluid level at fluid temperatures of approximately 65°C (149°F) using "HOT" range on A/T fluid level gauge.

CAUTION:

- When wiping away the fluid level gauge, always use lint-free paper, not a cloth one.
- To check fluid level, insert the A/T fluid level gauge until the cap contacts the end of the charging pipe, with the gauge reversed from the normal attachment conditions as shown.

- Check fluid condition.
 - If fluid is very dark or smells burned, refer to check operation of A/T. Flush cooling system after repair of A/T.
 - If A/T fluid contains frictional material (clutches, bands, etc.), replace radiator and flush cooler line using cleaning solvent and compressed air after repair of A/T. Refer to [CO-12, "RADIATOR"](#).



- Install the removed A/T fluid level gauge in the fluid charging pipe.

Level gauge bolt:

 : 4.4 - 5.8 N-m (0.45 - 0.59 kg-m, 39 - 51 in-lb)

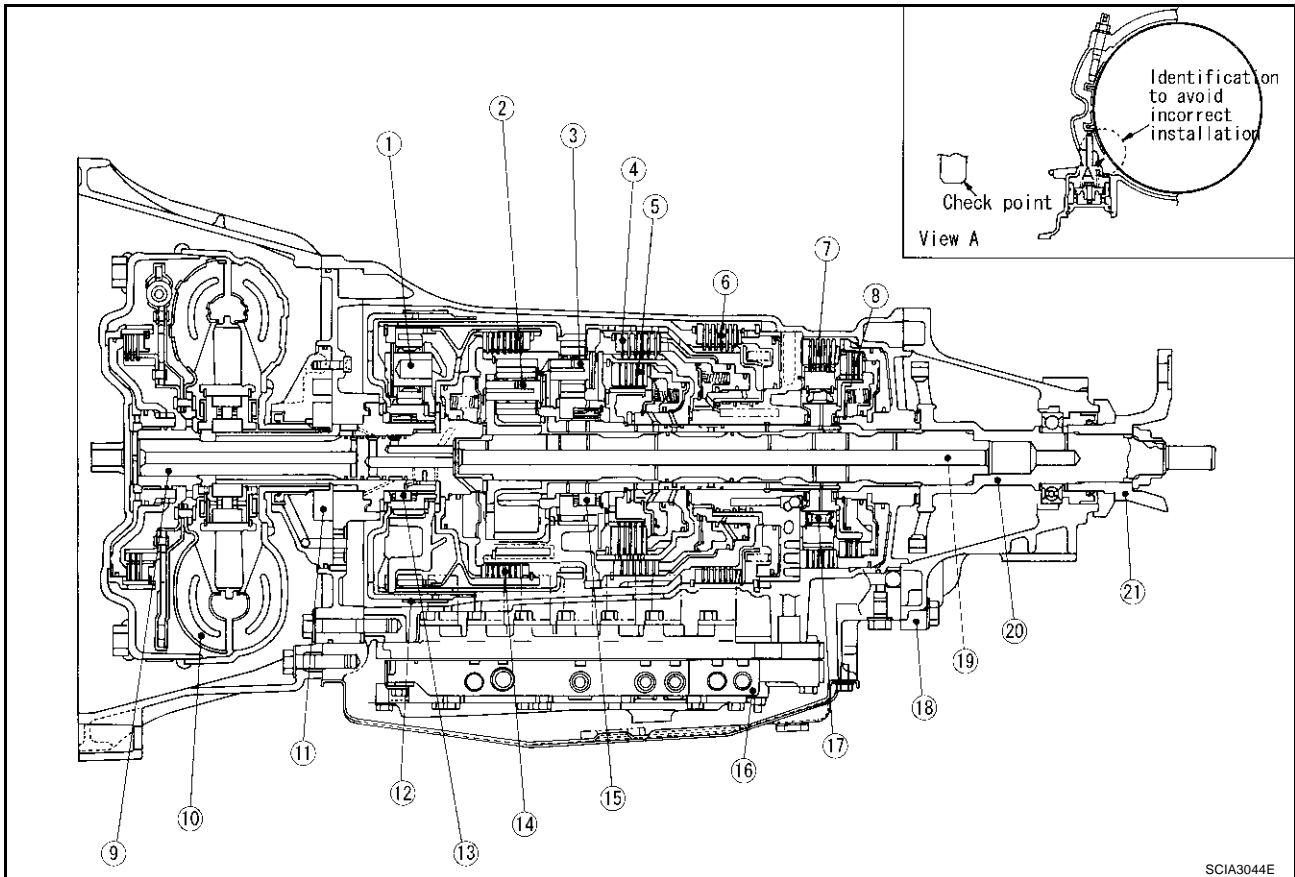
A/T CONTROL SYSTEM

A/T CONTROL SYSTEM

PFP:31036

Cross-Sectional View

ECS00820



SCIA3044E

- | | | |
|-------------------------|------------------------------|------------------------|
| 1. Front planetary gear | 2. Mid planetary gear | 3. Rear planetary gear |
| 4. Direct clutch | 5. High & low reverse clutch | 6. Reverse brake |
| 7. Forward brake | 8. Low coast brake | 9. Input shaft |
| 10. Torque converter | 11. Oil pump | 12. Front brake |
| 13. 3rd one-way clutch | 14. Input clutch | 15. 1st one-way clutch |
| 16. Control valve | 17. Forward one-way clutch | 18. Rear extension |
| 19. Intermediate shaft | 20. Output shaft | 21. Companion flange |

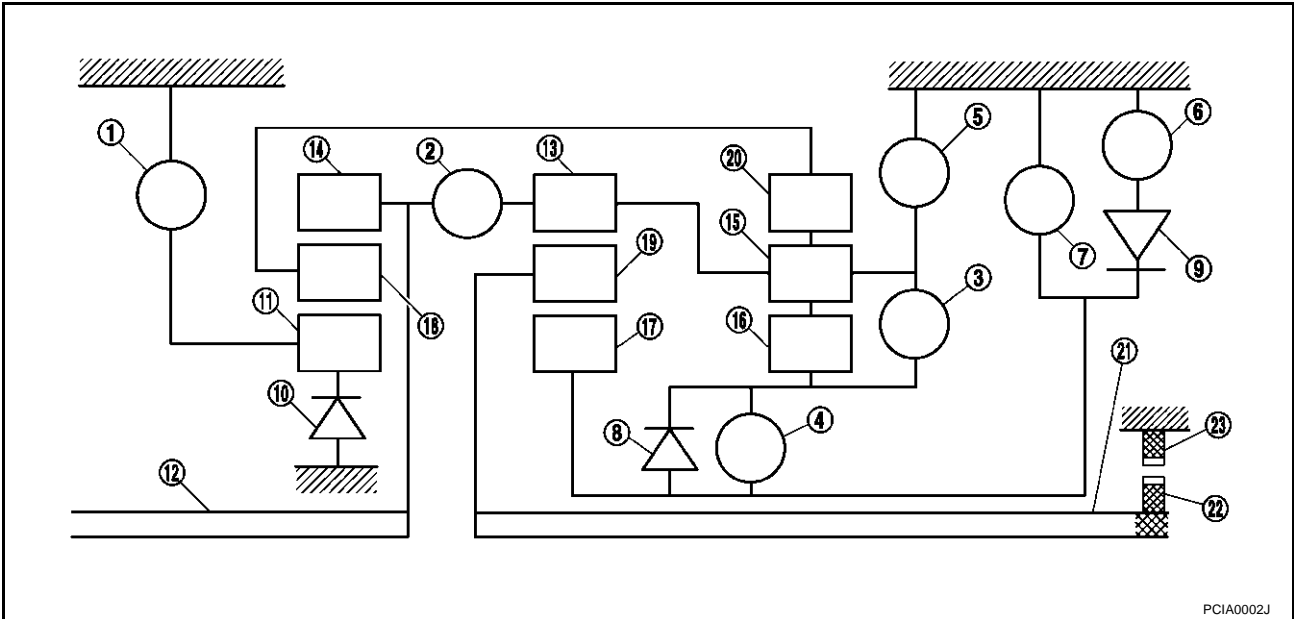
A/T CONTROL SYSTEM

ECS0082P

Shift Mechanism

The automatic transmission uses compact dual planetary gear systems to improve power-transmission efficiency, simplify construction and reduce weight. It also employs an optimum shift control and super wide gear ratios. They improve starting performance and acceleration during medium and high-speed operation.

CONSTRUCTION



- | | | |
|--------------------------------|-------------------------|---------------------------|
| 1. Front brake | 2. Input clutch | 3. Direct clutch |
| 4. High and low reverse clutch | 5. Reverse brake | 6. Forward brake |
| 7. Low coast brake | 8. 1st one-way clutch | 9. Forward one-way clutch |
| 10. 3rd one-way clutch | 11. Front sun gear | 12. Input shaft |
| 13. Mid internal gear | 14. Front internal gear | 15. Rear carrier |
| 16. Rear sun gear | 17. Mid sun gear | 18. Front carrier |
| 19. Mid carrier | 20. Rear internal gear | 21. Output shaft |
| 22. Parking gear | 23. Parking pawl | |

FUNCTION OF CLUTCH AND BRAKE

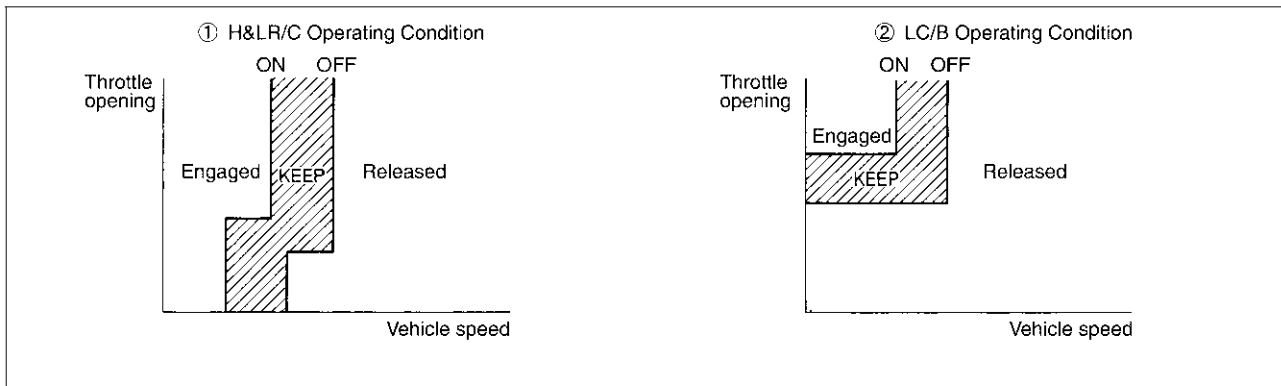
Name of the Part	Abbreviation	Function
Front brake (1)	Fr/B	Fastens the front sun gear (11).
Input clutch (2)	I/C	Connects the input shaft (12), the front internal gear (14) and the mid internal gear (13).
Direct clutch (3)	D/C	Connects the rear carrier (15) and the rear sun gear (16).
High and low reverse clutch (4)	H&LR/C	Connects the mid sun gear (17) and the rear sun gear (16).
Reverse brake (5)	R/B	Fastens the rear carrier (15).
Forward brake (6)	F/B	Fastens the mid sun gear (17).
Low coast brake (7)	LC/B	Fastens the mid sun gear (17).
1st one-way clutch (8)	1st/O.C	Allows the rear sun gear (16) to turn freely forward relative to the mid sun gear (17) but fastens it for reverse rotation.
Forward one-way clutch (9)	F/O.C	Allows the mid sun gear (17) to turn freely in the forward direction but fastens it for reverse rotation.
3rd one-way clutch (10)	3rd/O.C	Allows the front sun gear (11) to turn freely in the forward direction but fastens it for reverse rotation.

A/T CONTROL SYSTEM

CLUTCH AND BAND CHART

Shift position	I/C	H&LR/ C	D/C	R/B	Fr/B	LC/B	Fwd/B	1st OWC	Fwd OWC	3rd OWC	Remarks
P		△			△						PARK POSITION
R		○		○	○			◎		◎	REVERSE POSITION
N		△			△						NEUTRAL POSITION
D	1 st	△ *			△	△ **	○	◎	◎	◎	Automatic shift 1→2→3→4→5
	2 nd		○		△		○		◎	◎	
	3 rd		○	○		○	△	◇		◎	
	4 th	○	○	○			△	◇			
	5 th	○	○			○	△	◇		◇	
M5	1 st	△ *			△	△ **	○	◎	◎	◎	Automatic shift 1→2→3→4→5
	2 nd		○		△		○		◎	◎	
	3 rd		○	○		○	△	◇		◎	
	4 th	○	○	○			△	◇			
	5 th	○	○			○	△	◇		◇	
M4	1 st	△ *			△	△ **	○	◎	◎	◎	Automatic shift 1→2→3→4
	2 nd		○		△		○		◎	◎	
	3 rd		○	○		○	△	◇		◎	
	4 th	○	○	○			△	◇			
M3	1 st	△ *			△	△ **	○	◎	◎	◎	Automatic shift 1→2→3
	2 nd		○		△		○		◎	◎	
	3 rd		○	○		○	△	◇		◎	
M2	1 st	△ *			△	△ **	○	◎	◎	◎	Automatic shift 1→2
	2 nd		○		○	○	○		◎	◎	
M1	1 st	○			○	○	○	◎	◎	◎	Locks (held stationary) in 1st speed
	2 nd		○		○	○	○		◎	◎	

- — Operates
- ◎ — Operates during "progressive" acceleration.
- ◇ — Operates and affects power transmission while coasting.
- △ — Line pressure is applied but does not affect power transmission.
- △ * — Operates under conditions shown in illustration ①.
- △ ** — Operates under conditions shown in illustration ②. Delay control is applied during D (4,3,2,1) → N shift.



SCIA1524E

A/T CONTROL SYSTEM

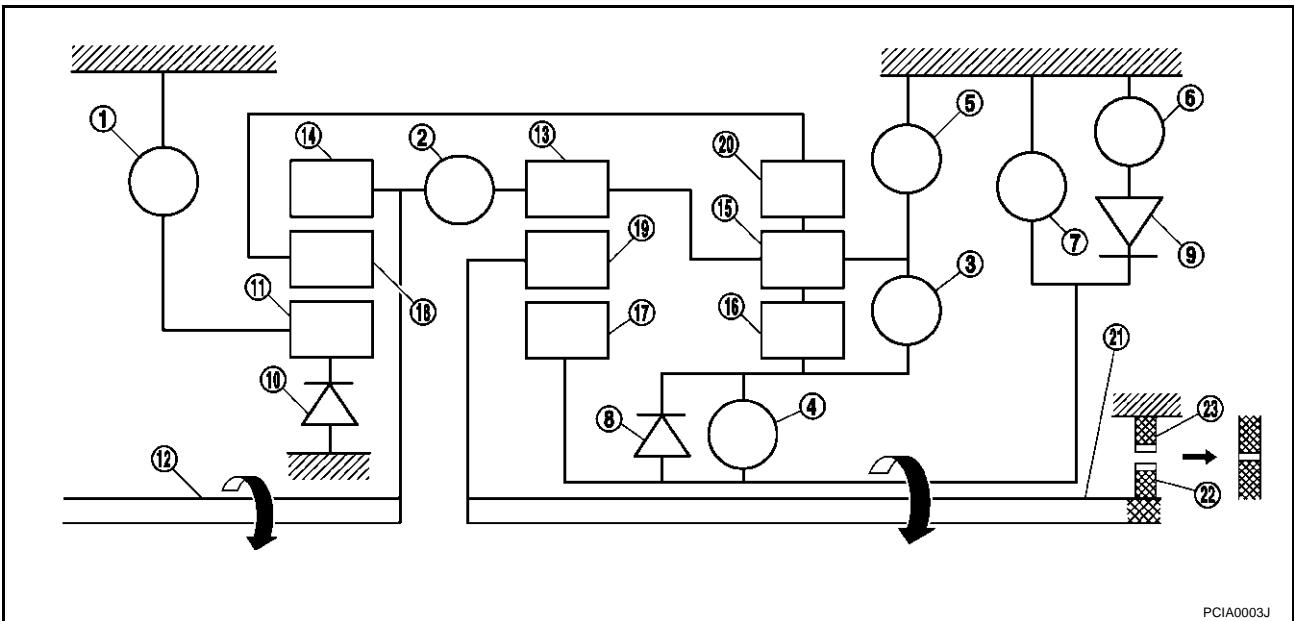
POWER TRANSMISSION

“N” Position

Since both the forward brake and the reverse brake are released, torque from the input shaft drive is not transmitted to the output shaft.

“P” Position

- The same as for the “N” position, both the forward brake and the reverse brake are released, so torque from the input shaft drive is not transmitted to the output shaft.
- The parking pawl linked with the select lever meshes with the parking gear and fastens the output shaft mechanically.

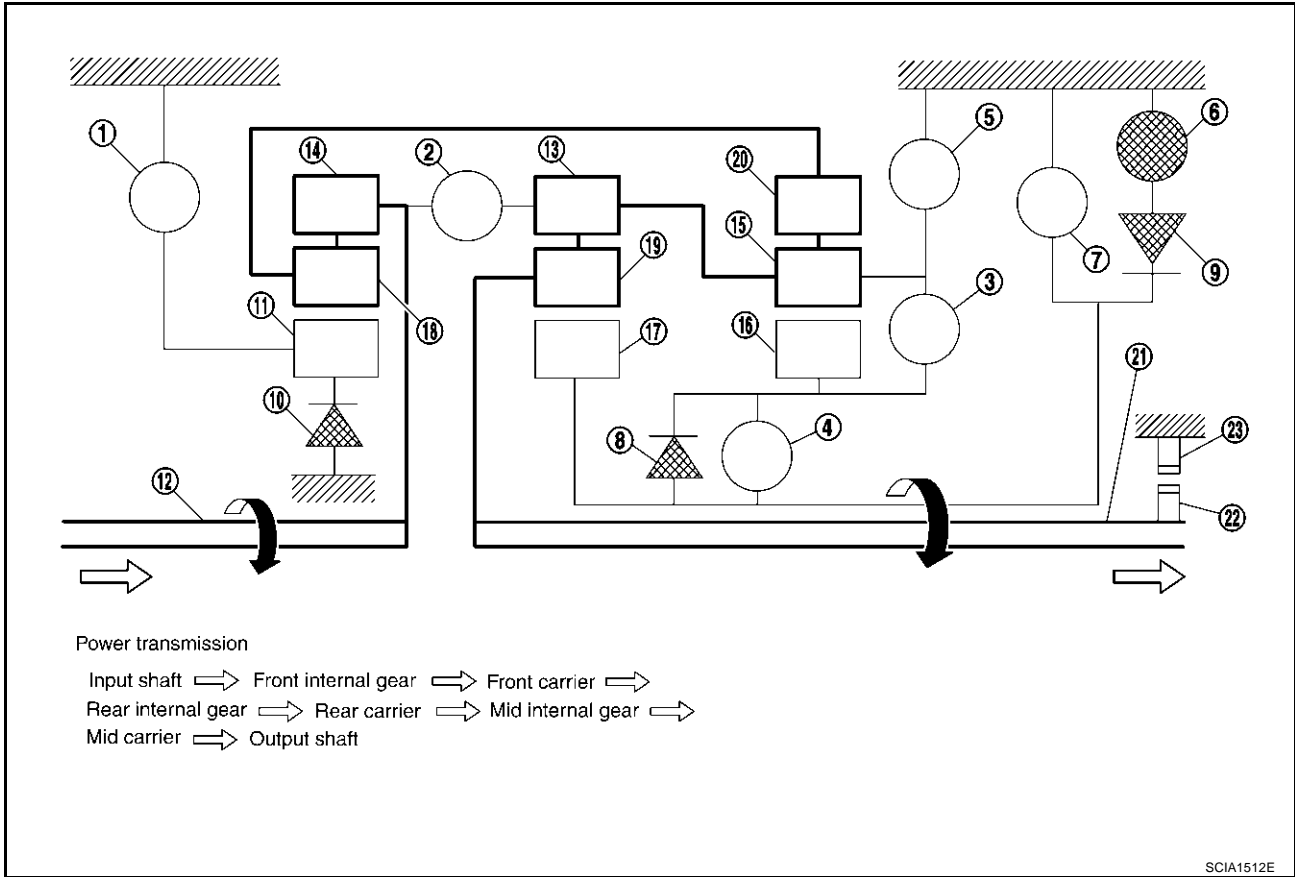


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|--------------------------------|-------------------------|---------------------------|
| 1. Front brake | 2. Input clutch | 3. Direct clutch |
| 4. High and low reverse clutch | 5. Reverse brake | 6. Forward brake |
| 7. Low coast brake | 8. 1st one-way clutch | 9. Forward one-way clutch |
| 10. 3rd one-way clutch | 11. Front sun gear | 12. Input shaft |
| 13. Mid internal gear | 14. Front internal gear | 15. Rear carrier |
| 16. Rear sun gear | 17. Mid sun gear | 18. Front carrier |
| 19. Mid carrier | 20. Rear internal gear | 21. Output shaft |
| 22. Parking gear | 23. Parking pawl | |

A/T CONTROL SYSTEM

“D”, “M2”, “M3”, “M4”, “M5” Positions 1st Gear

- The forward brake and the forward one-way clutch regulate reverse rotation of the mid sun gear.
- The first one-way clutch regulates reverse rotation of the rear sun gear.
- The third one-way clutch regulates reverse rotation of the front sun gear.
- During deceleration, the mid sun gear turns forward, so the forward one-way clutch idles and the engine brake is not activated.

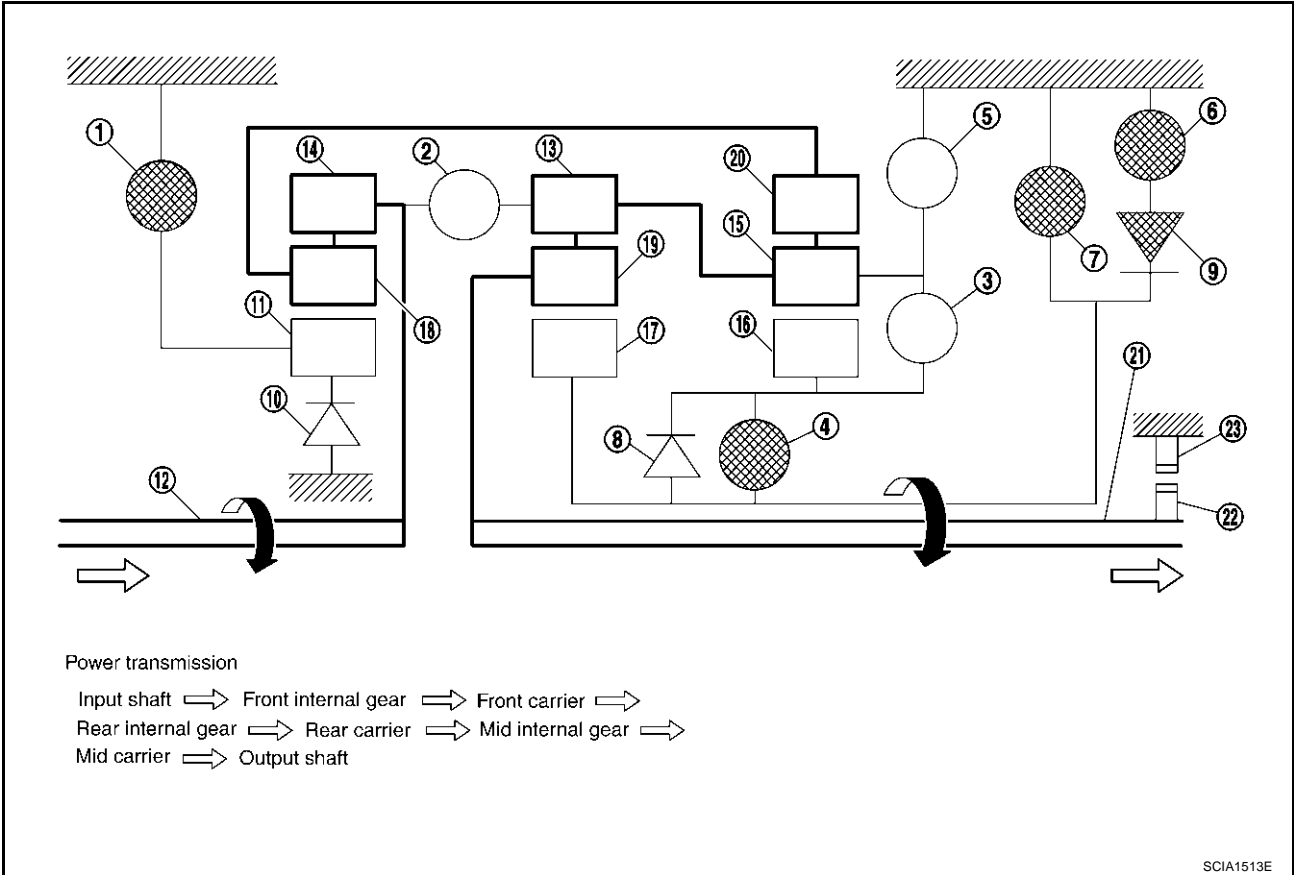


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|--------------------------------|-------------------------|---------------------------|
| 1. Front brake | 2. Input clutch | 3. Direct clutch |
| 4. High and low reverse clutch | 5. Reverse brake | 6. Forward brake |
| 7. Low coast brake | 8. 1st one-way clutch | 9. Forward one-way clutch |
| 10. 3rd one-way clutch | 11. Front sun gear | 12. Input shaft |
| 13. Mid internal gear | 14. Front internal gear | 15. Rear carrier |
| 16. Rear sun gear | 17. Mid sun gear | 18. Front carrier |
| 19. Mid carrier | 20. Rear internal gear | 21. Output shaft |
| 22. Parking gear | 23. Parking pawl | |

A/T CONTROL SYSTEM

“M1” Position 1st Gear

- The front brake fastens the front sun gear.
- The forward brake and the forward one-way clutch regulate reverse rotation of the mid sun gear.
- High and low reverse clutch connects the rear sun gear and the mid sun gear.
- The low coast brake fastens the mid sun gear.
- During deceleration, the low coast brake regulates forward rotation of the mid sun gear and the engine brake functions.



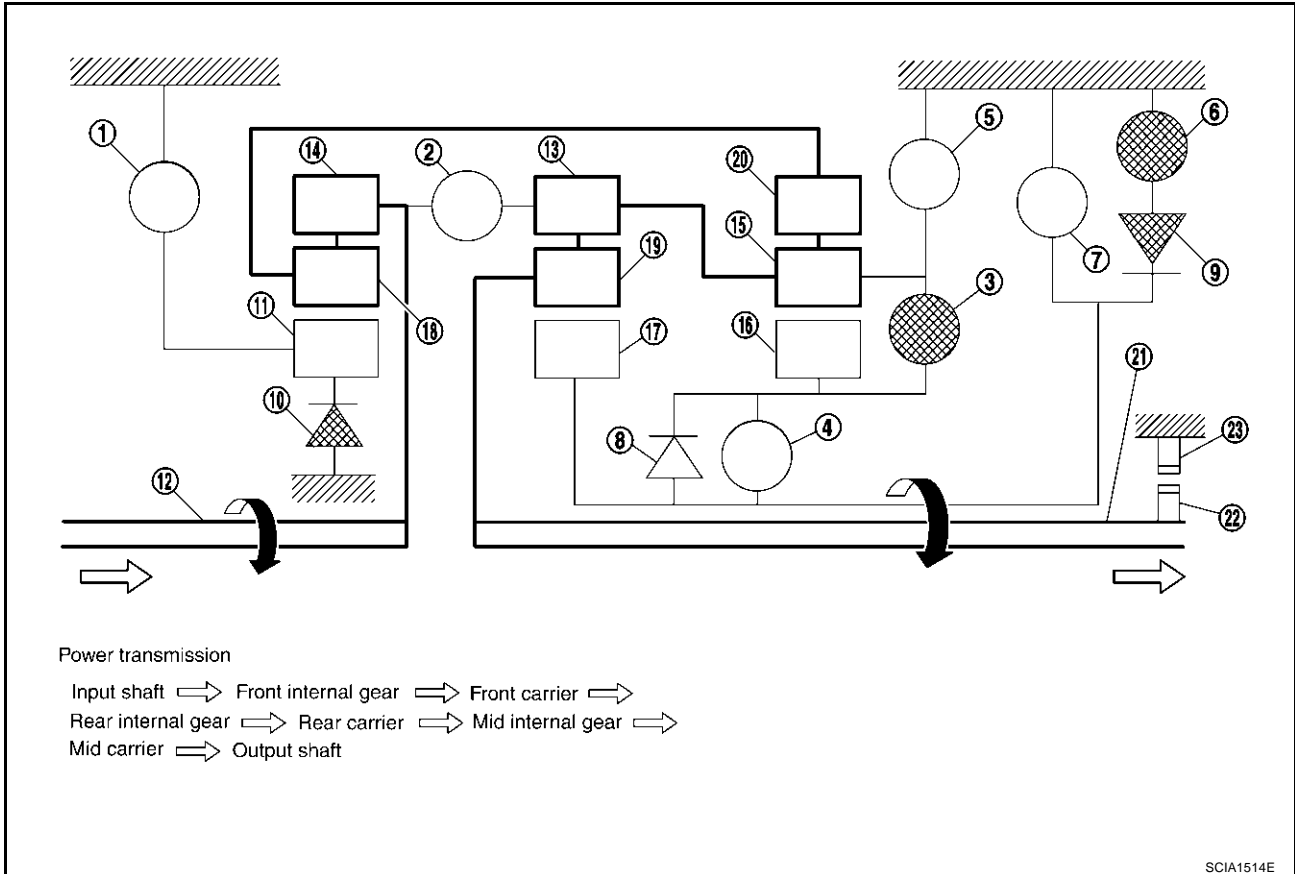
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|--------------------------------|-------------------------|---------------------------|
| 1. Front brake | 2. Input clutch | 3. Direct clutch |
| 4. High and low reverse clutch | 5. Reverse brake | 6. Forward brake |
| 7. Low coast brake | 8. 1st one-way clutch | 9. Forward one-way clutch |
| 10. 3rd one-way clutch | 11. Front sun gear | 12. Input shaft |
| 13. Mid internal gear | 14. Front internal gear | 15. Rear carrier |
| 16. Rear sun gear | 17. Mid sun gear | 18. Front carrier |
| 19. Mid carrier | 20. Rear internal gear | 21. Output shaft |
| 22. Parking gear | 23. Parking pawl | |

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A/T CONTROL SYSTEM

“D”, “M3”, “M4”, “M5” Positions 2nd Gear

- The forward brake and the forward one-way clutch regulate reverse rotation of the mid sun gear.
- The third one-way clutch regulates reverse rotation of the front sun gear.
- The direct clutch is coupled and the rear carrier and rear sun gear are connected.
- During deceleration, the mid sun gear turns forward, so the forward one-way clutch idles and engine brake is not activated.

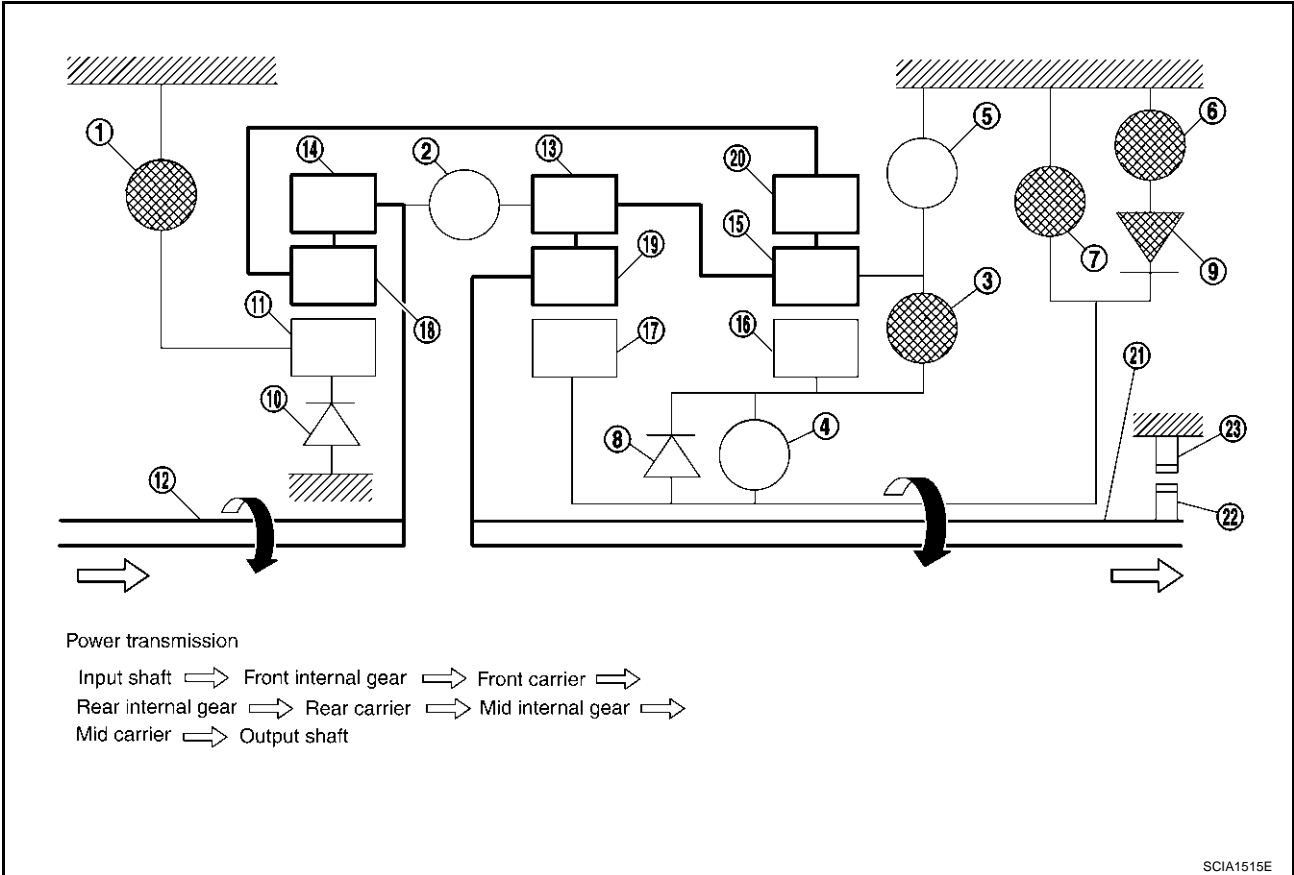


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|--------------------------------|-------------------------|---------------------------|
| 1. Front brake | 2. Input clutch | 3. Direct clutch |
| 4. High and low reverse clutch | 5. Reverse brake | 6. Forward brake |
| 7. Low coast brake | 8. 1st one-way clutch | 9. Forward one-way clutch |
| 10. 3rd one-way clutch | 11. Front sun gear | 12. Input shaft |
| 13. Mid internal gear | 14. Front internal gear | 15. Rear carrier |
| 16. Rear sun gear | 17. Mid sun gear | 18. Front carrier |
| 19. Mid carrier | 20. Rear internal gear | 21. Output shaft |
| 22. Parking gear | 23. Parking pawl | |

A/T CONTROL SYSTEM

“M1”, “M2” Position 2nd Gear

- The front brake fastens the front sun gear.
- The forward brake and the forward one-way clutch regulate reverse rotation of the mid sun gear.
- The direct clutch is coupled, and the rear carrier and rear sun gear are connected.
- The low coast brake fastens the mid sun gear.
- During deceleration, the low coast brake regulates forward rotation of the mid sun gear and the engine brake functions.



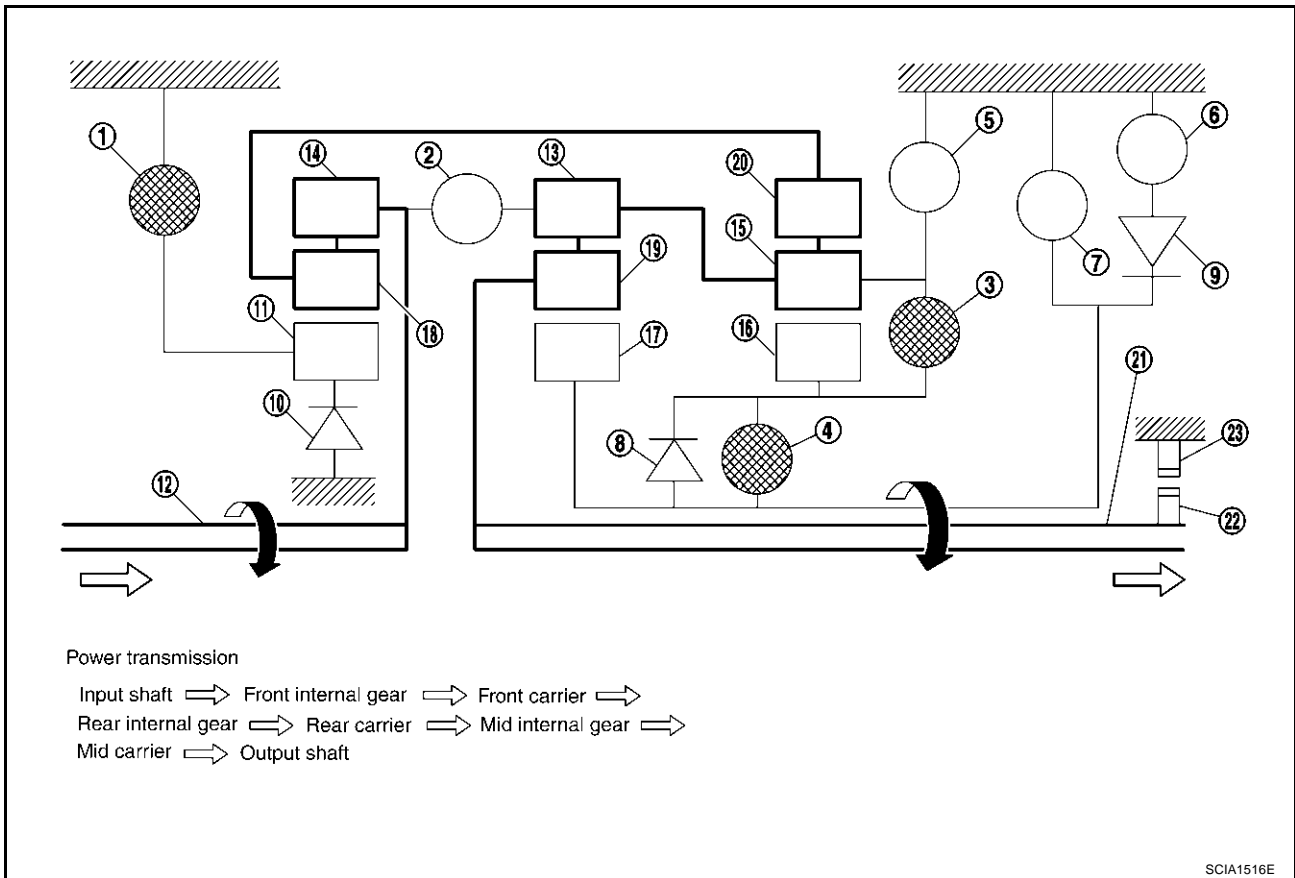
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|--------------------------------|-------------------------|---------------------------|
| 1. Front brake | 2. Input clutch | 3. Direct clutch |
| 4. High and low reverse clutch | 5. Reverse brake | 6. Forward brake |
| 7. Low coast brake | 8. 1st one-way clutch | 9. Forward one-way clutch |
| 10. 3rd one-way clutch | 11. Front sun gear | 12. Input shaft |
| 13. Mid internal gear | 14. Front internal gear | 15. Rear carrier |
| 16. Rear sun gear | 17. Mid sun gear | 18. Front carrier |
| 19. Mid carrier | 20. Rear internal gear | 21. Output shaft |
| 22. Parking gear | 23. Parking pawl | |

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A/T CONTROL SYSTEM

“D”, “M3”, “M4”, “M5” Positions 3rd Gear

- The front brake fastens the front sun gear.
- The direct clutch is coupled, and the rear carrier and rear sun gear are connected.
- The high and low reverse clutch is coupled and the mid sun gear and rear sun gear are connected.

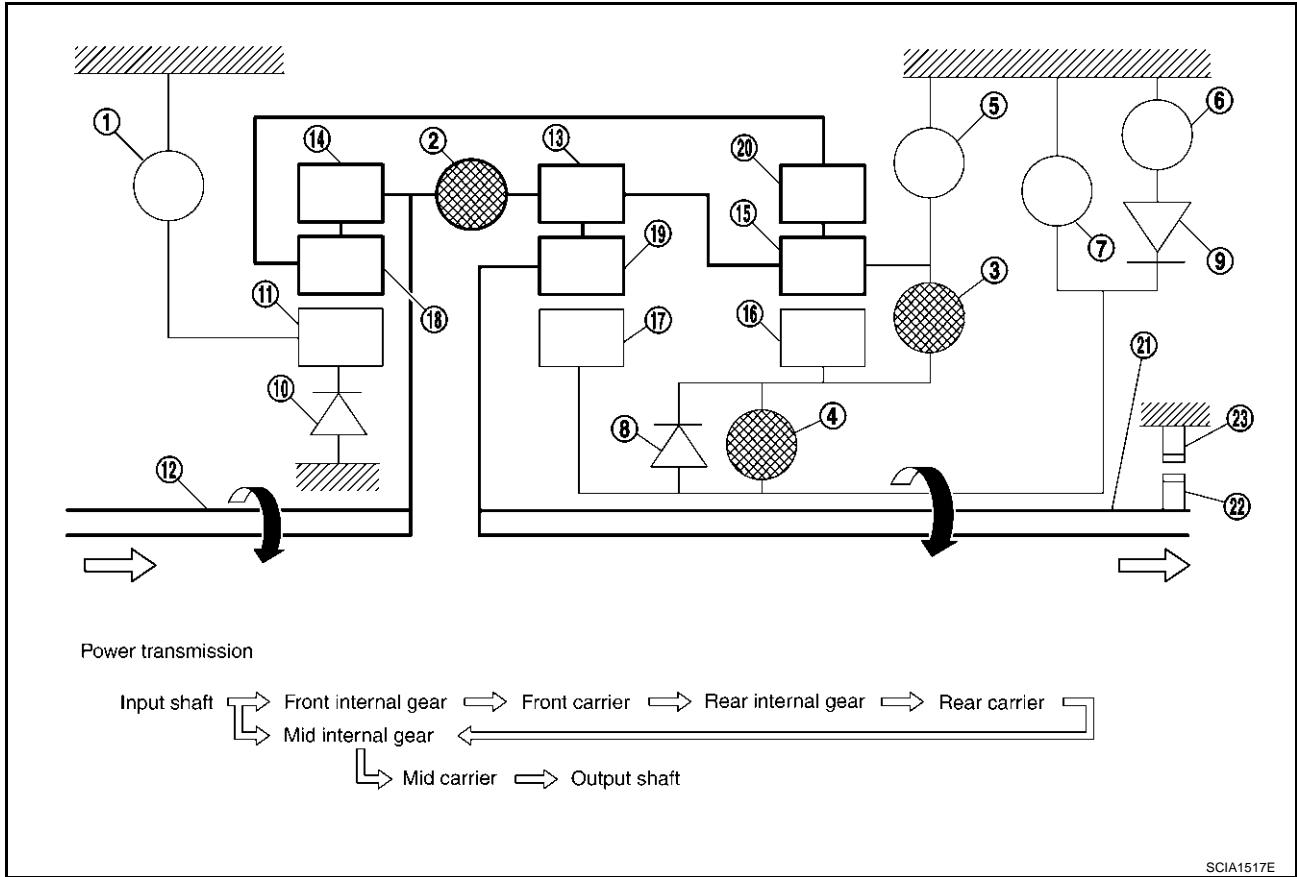


- | | | |
|--------------------------------|-------------------------|---------------------------|
| 1. Front brake | 2. Input clutch | 3. Direct clutch |
| 4. High and low reverse clutch | 5. Reverse brake | 6. Forward brake |
| 7. Low coast brake | 8. 1st one-way clutch | 9. Forward one-way clutch |
| 10. 3rd one-way clutch | 11. Front sun gear | 12. Input shaft |
| 13. Mid internal gear | 14. Front internal gear | 15. Rear carrier |
| 16. Rear sun gear | 17. Mid sun gear | 18. Front carrier |
| 19. Mid carrier | 20. Rear internal gear | 21. Output shaft |
| 22. Parking gear | 23. Parking pawl | |

A/T CONTROL SYSTEM

“D”, “M4”, “M5” Positions 4th Gear

- The direct clutch is coupled, and the rear carrier and rear sun gear are connected.
- The high and low reverse clutch is coupled and the mid sun gear and rear sun gear are connected.
- The input clutch is coupled and the front internal gear and mid internal gear are connected.
- The drive power is conveyed to the front internal gear, mid internal gear, and rear carrier and the three planetary gears rotate forward as one unit.



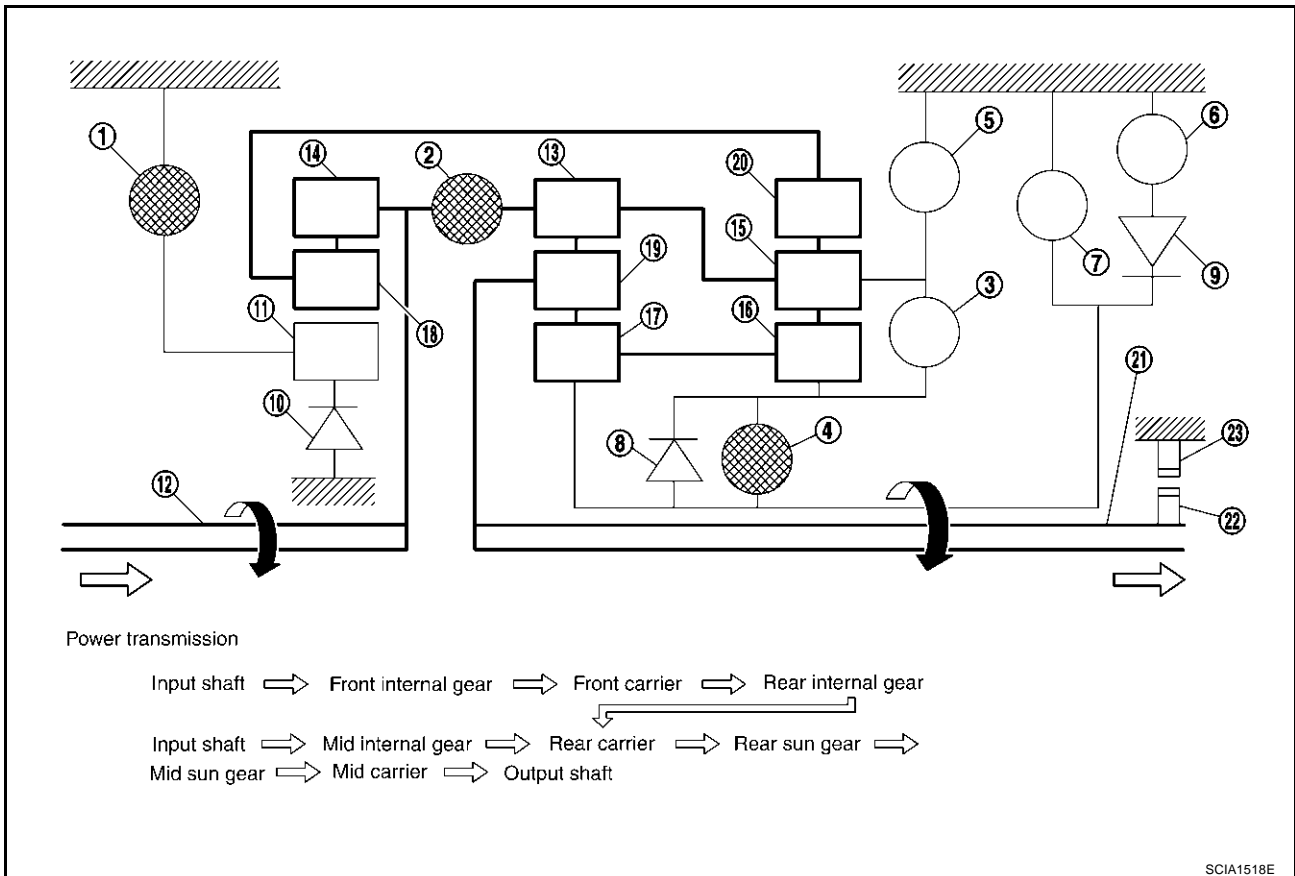
- | | | |
|--------------------------------|-------------------------|---------------------------|
| 1. Front brake | 2. Input clutch | 3. Direct clutch |
| 4. High and low reverse clutch | 5. Reverse brake | 6. Forward brake |
| 7. Low coast brake | 8. 1st one-way clutch | 9. Forward one-way clutch |
| 10. 3rd one-way clutch | 11. Front sun gear | 12. Input shaft |
| 13. Mid internal gear | 14. Front internal gear | 15. Rear carrier |
| 16. Rear sun gear | 17. Mid sun gear | 18. Front carrier |
| 19. Mid carrier | 20. Rear internal gear | 21. Output shaft |
| 22. Parking gear | 23. Parking pawl | |

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A/T CONTROL SYSTEM

“D”, “M5” Positions 5th Gear

- The front brake fastens the front sun gear.
- The input clutch is coupled and the front internal gear and mid internal gear are connected.
- The high and low reverse clutch is coupled and the mid sun gear and rear sun gear are connected.

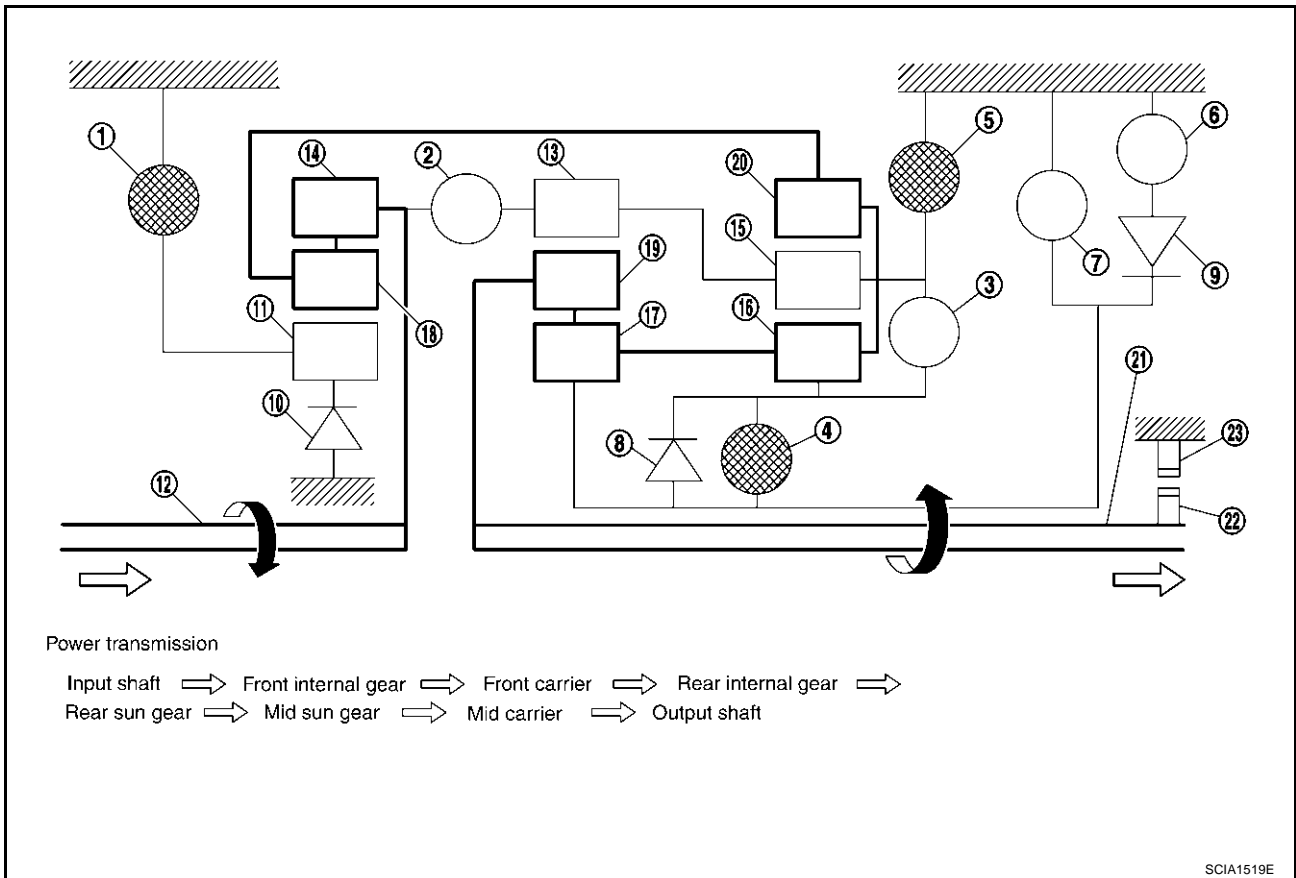


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|--------------------------------|-------------------------|---------------------------|
| 1. Front brake | 2. Input clutch | 3. Direct clutch |
| 4. High and low reverse clutch | 5. Reverse brake | 6. Forward brake |
| 7. Low coast brake | 8. 1st one-way clutch | 9. Forward one-way clutch |
| 10. 3rd one-way clutch | 11. Front sun gear | 12. Input shaft |
| 13. Mid internal gear | 14. Front internal gear | 15. Rear carrier |
| 16. Rear sun gear | 17. Mid sun gear | 18. Front carrier |
| 19. Mid carrier | 20. Rear internal gear | 21. Output shaft |
| 22. Parking gear | 23. Parking pawl | |

A/T CONTROL SYSTEM

“R” Position

- The front brake fastens the front sun gear.
- The high and low reverse clutch is coupled and the mid sun gear and rear sun gear are connected.
- The reverse brake fastens the rear carrier.



- | | | |
|--------------------------------|-------------------------|---------------------------|
| 1. Front brake | 2. Input clutch | 3. Direct clutch |
| 4. High and low reverse clutch | 5. Reverse brake | 6. Forward brake |
| 7. Low coast brake | 8. 1st one-way clutch | 9. Forward one-way clutch |
| 10. 3rd one-way clutch | 11. Front sun gear | 12. Input shaft |
| 13. Mid internal gear | 14. Front internal gear | 15. Rear carrier |
| 16. Rear sun gear | 17. Mid sun gear | 18. Front carrier |
| 19. Mid carrier | 20. Rear internal gear | 21. Output shaft |
| 22. Parking gear | 23. Parking pawl | |

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A/T CONTROL SYSTEM

ECS0082Q

TCM Function

The function of the TCM is to:

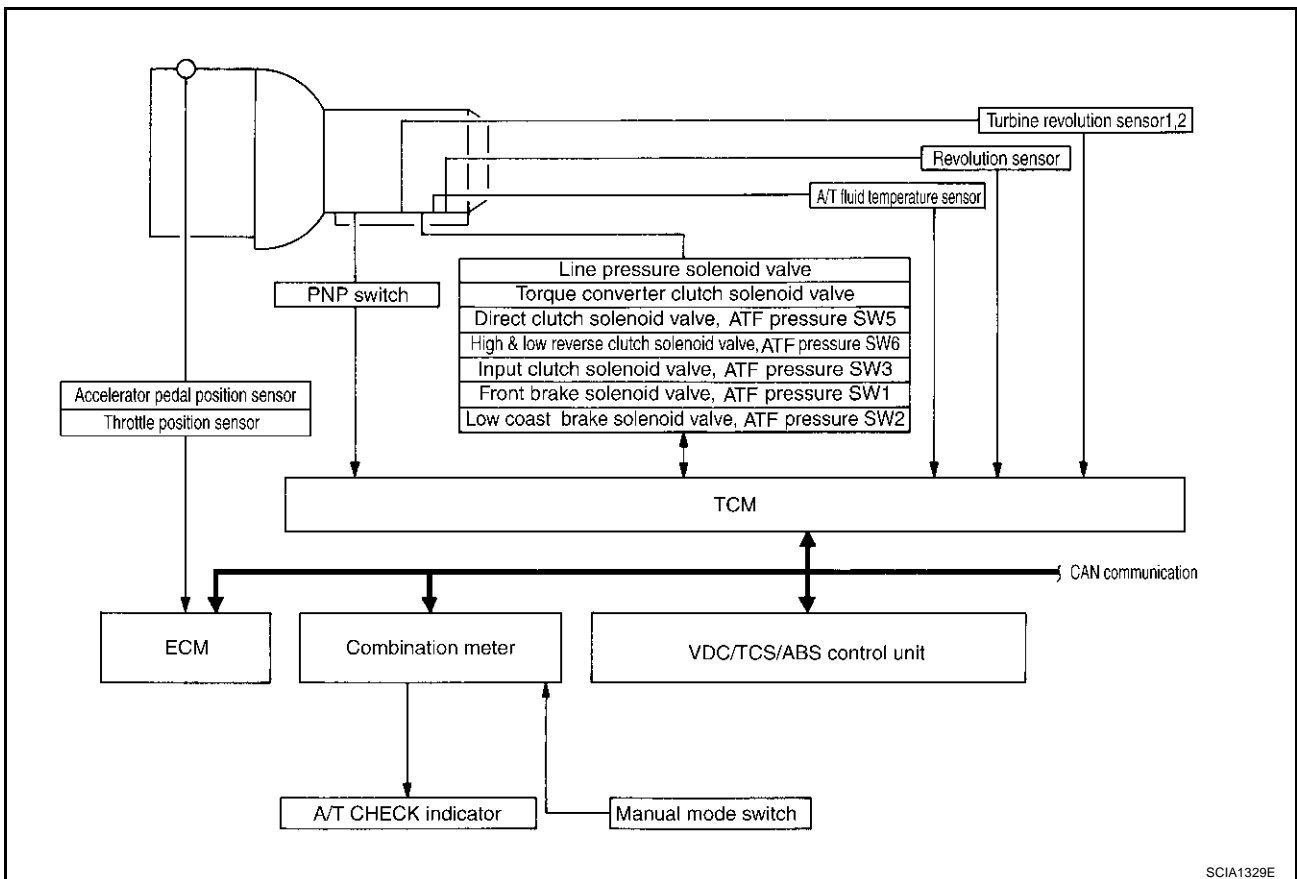
- Receive input signals sent from various switches and sensors.
- Determine required line pressure, shifting point, lock-up operation, and engine brake operation.
- Send required output signals to the respective solenoids.

CONTROL SYSTEM OUTLINE

The automatic transmission senses vehicle operating conditions through various sensors or signals. It always controls the optimum shift position and reduces shifting and lock-up shocks.

SENSORS (or SIGNAL)		TCM		ACTUATORS
PNP switch Throttle position sensor Accelerator pedal position sensor Closed throttle position signal Wide-open throttle position signal Engine speed signal A/T fluid temperature sensor Revolution sensor Vehicle speed sensor Manual mode switch signal Stop lamp switch signal Turbine revolution sensor	⇒	Shift control Line pressure control Lock-up control Engine brake control Timing control Fail-safe control Self-diagnosis CONSULT-II communication line Duet-EA control CAN system	⇒	Input clutch solenoid valve Direct clutch solenoid valve Front brake solenoid valve High & low reverse clutch solenoid valve Low coast brake solenoid valve Torque converter clutch solenoid valve Line pressure solenoid valve A/T CHECK indicator lamp

CONTROL SYSTEM DIAGRAM



SCIA1329E

A/T CONTROL SYSTEM

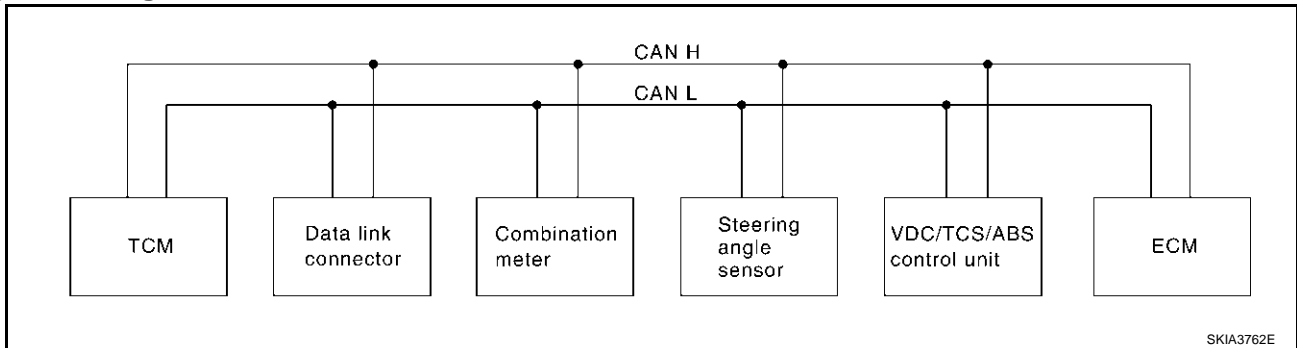
ECS0082R

CAN Communication SYSTEM DESCRIPTION

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN H line, CAN L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.

FOR VDC MODELS

System Diagram



Input/Output Signal Chart

T: Transmit R: Receive

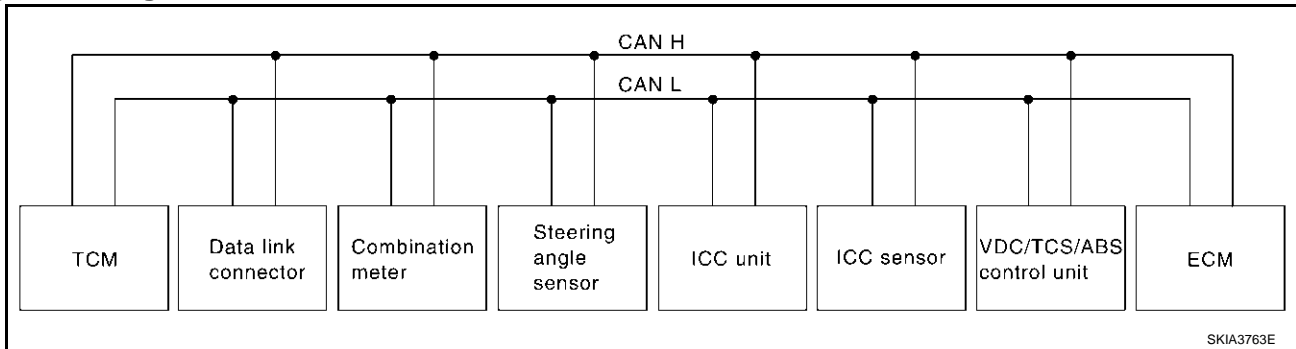
Signals	TCM	Combination meter	Steering angle sensor	VDC/TCS/ABS control unit	ECM
Engine speed signal	R	R		R	T
Engine coolant temperature signal	R	R			T
Accelerator pedal position signal	R			R	T
Engine torque signal	R			R	T
Battery voltage signal	R				T
Closed throttle position signal	R				T
Wide open throttle position signal	R				T
Lock-up prohibition signal	R				T
Torque-down permission signal	R				T
Fuel consumption monitor signal		R			T
Lock-up signal	T				R
Hard deceleration signal	T				R
Torque-down signal	T				R
Power mode indicator signal	T				R
A/T fluid temperature warning lamp signal	T	R			R
Current gear position signal	T	R		R	R
	R	T			
Next gear position signal	T			R	R
Shift change signal	T			R	R
Shift pattern signal	T				R
VDC system control signal				T	R
VDC operation signal				T	R
Stop lamp switch signal	R			T	
Steering wheel angle sensor signal	R		T	R	R
Air conditioner switch signal		T			R

A/T CONTROL SYSTEM

Signals	TCM	Combination meter	Steering angle sensor	VDC/TCS/ABS control unit	ECM
Headlamp switch signal		T			R
Rear window defogger switch signal		T			R
OD cancel switch signal	R	T		R	
Brake switch signal	R	T			
Power mode switch signal	R	T			
Vehicle speed signal	R	R		T	
	R	T			R
	T				R

FOR ICC MODELS

System Diagram



Input/Output Signal Chart

T: Transmit R: Receive

Signals	TCM	Combination meter	Steering angle sensor	ICC unit	ICC sensor	VDC/TCS/ABS control unit	ECM
ICC system display signal		R		T			
ICC sensor signal				R	T		
Engine speed signal	R	R		R		R	T
Engine coolant temperature signal	R	R					T
Accelerator pedal position signal	R					R	T
Engine torque signal	R					R	T
Battery voltage signal	R						T
Closed throttle position signal	R			R			T
Lock-up prohibition signal	R						T
Torque-down permission signal	R						T
Fuel consumption monitor signal		R					T
Lock-up signal	T						R
Hard deceleration signal	T						R
Torque-down signal	T						R
Power mode indicator signal	T						R
A/T fluid temperature warning lamp signal	T	R					R
Current gear position signal	T	R				R	R
	R	T					
Next gear position signal	T					R	R
Shift change signal	T					R	R

A/T CONTROL SYSTEM

Signals	TCM	Combina- tion meter	Steering angle sensor	ICC unit	ICC sen- sor	VDC/ TCS/ABS control unit	ECM
Shift pattern signal	T			R			R
VDC system control signal						T	R
VDC operation signal				R		T	R
Stop lamp switch signal	R					T	
Steering wheel angle sensor signal	R		T			R	R
Air conditioner switch signal		T					R
Headlamp switch signal		T					R
Rear window defogger switch signal		T					R
OD cancel switch signal	R	T				R	
Brake switch signal	R	T					
Power mode switch signal	R	T					
Vehicle speed signal	R	R		R		T	
	R	T					R
	T			R			R

Input/Output Signal of TCM

ECS0082S

Control item		Line pressure control	Vehicle speed control	Shift control	Lock-up control	Engine brake control	Fail-safe function (*3)	Self-diag- nostics function	
Input	Accelerator pedal position signal ^(*5)	X	X	X	X	X	X	X	
	Vehicle speed sensor A/T (revolution sensor)	X	X	X	X		X	X	
	Vehicle speed sensor MTR ^{(*1) (*5)}	X	X	X	X			X	
	Closed throttle position signal ^(*5)	(*2) X	(*2) X		X	(*2) X		(*4) X	
	Wide-open throttle position signal ^(*5)	(*2) X	(*2) X					(*4) X	
	Turbine revolution sensor 1	X	X				X	X	
	Turbine revolution sensor 2 (for 4th speed only)	X	X				X	X	
	Engine speed signals ^(*5)				X			X	
	PNP switch	X	X	X	X	X	X	(*4) X	
	Stop lamp switch signal ^(*5)		X			X		(*4) X	
	A/T fluid temperature sensors 1, 2	X	X		X	X	X	X	
	ASC/D or ICC	Operation signal ^(*5)		X	X	X	X		
		Overdrive cancel signal ^(*5)		X		X	X		
	TCM power supply voltage signal		X	X	X	X	X	X	X

A/T CONTROL SYSTEM

Control item		Line pressure control	Vehicle speed control	Shift control	Lock-up control	Engine brake control	Fail-safe function (*3)	Self-diagnos- tics function
Out- put	Direct clutch solenoid (ATF pressure switch 5)		X	X			X	X
	Input clutch solenoid (ATF pressure switch 3)		X	X			X	X
	High and low reverse clutch solenoid (ATF pressure switch 6)		X	X			X	X
	Front brake solenoid (ATF pressure switch 1)		X	X			X	X
	Low coast brake solenoid (ATF pressure switch 2)		X	X		X	X	X
	Line pressure solenoid	X	X	X	X	X	X	X
	TCC solenoid				X		X	X
	Self-diagnostics table(*6)							X

*1: Spare for vehicle speed sensor-A/T (revolution sensor)

*2: Spare for accelerator pedal position signal

*3: If these input and output signals are different, the TCM triggers the fail-safe function.

*4: Used as a condition for starting self-diagnostics; if self-diagnostics are not started, it is judged that there is some kind of error.

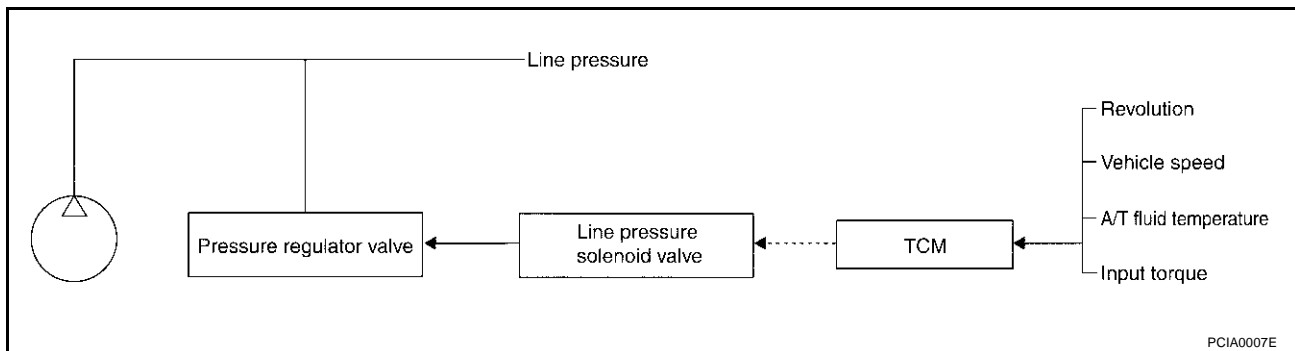
*5: Input by CAN communications.

*6: Output by CAN communications.

Line Pressure Control

ECS0082T

- When an input torque signal equivalent to the engine drive force is sent from the ECM to the TCM, the TCM controls the line pressure solenoid.
- This line pressure solenoid controls the pressure regulator valve as the signal pressure and adjusts the pressure of the operating oil discharged from the oil pump to the line pressure most appropriate to the driving state.



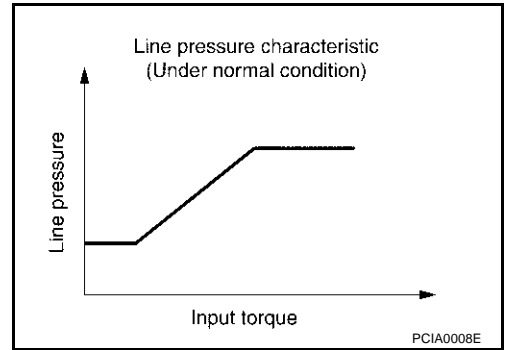
LINE PRESSURE CONTROL IS BASED ON THE TCM LINE PRESSURE CHARACTERISTIC PATTERN

- The TCM has stored in memory a number of patterns for the optimum line pressure characteristic for the driving state.
- In order to obtain the most appropriate line pressure characteristic to meet the current driving state, the TCM controls the line pressure solenoid current valve and thus controls the line pressure.

A/T CONTROL SYSTEM

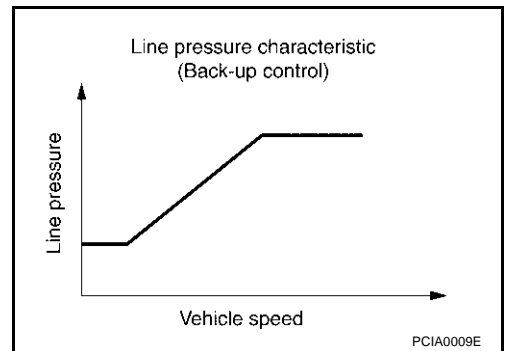
Normal Control

Each clutch is adjusted to the necessary pressure to match the engine drive force.



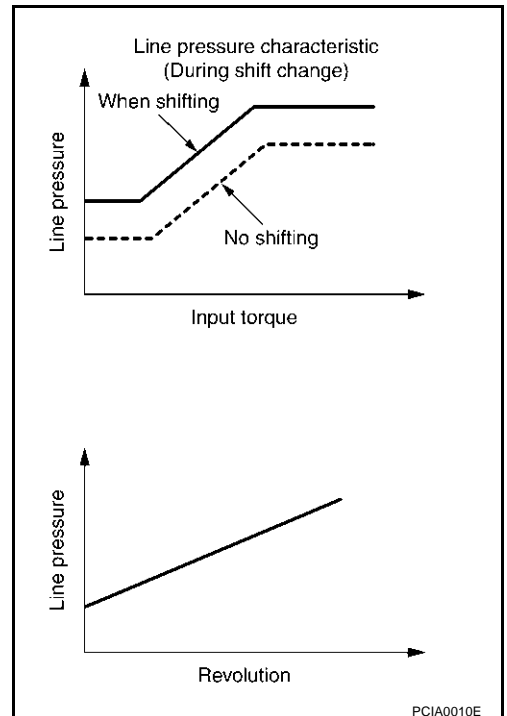
Back-Up Control (Engine Brake)

When the select operation is executed during driving and the transmission is shifted down, the line pressure is set according to the vehicle speed.



During Shift Change

The necessary and adequate line pressure for shift change is set. For this reason, line pressure pattern setting corresponds to input torque and gearshift selection. Also, line pressure characteristic is according to engine speed, during engine brake operation.

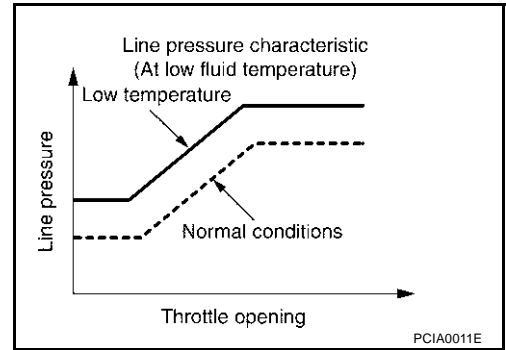


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A/T CONTROL SYSTEM

At Low Fluid Temperature

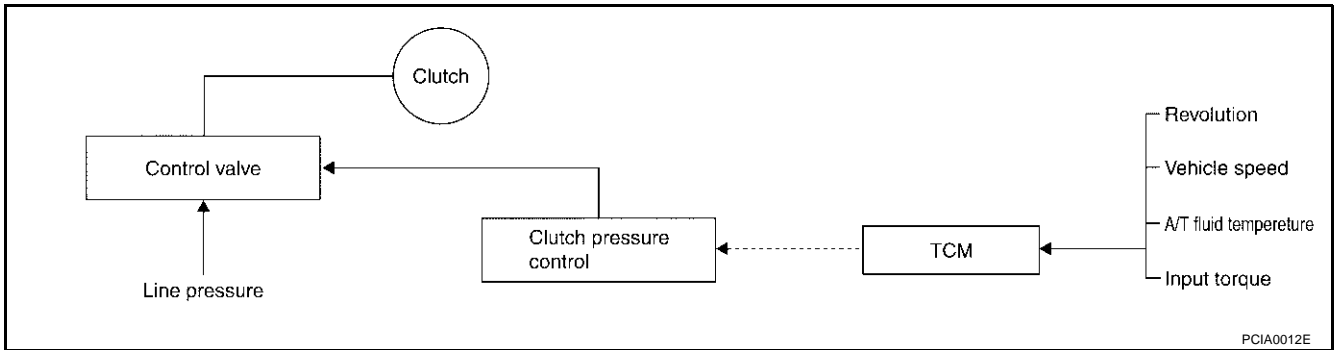
When the A/T fluid temperature drops below the prescribed temperature, in order to speed up the action of each friction element, the line pressure is set higher than the normal line pressure characteristic.



Shift Control

ECS0082U

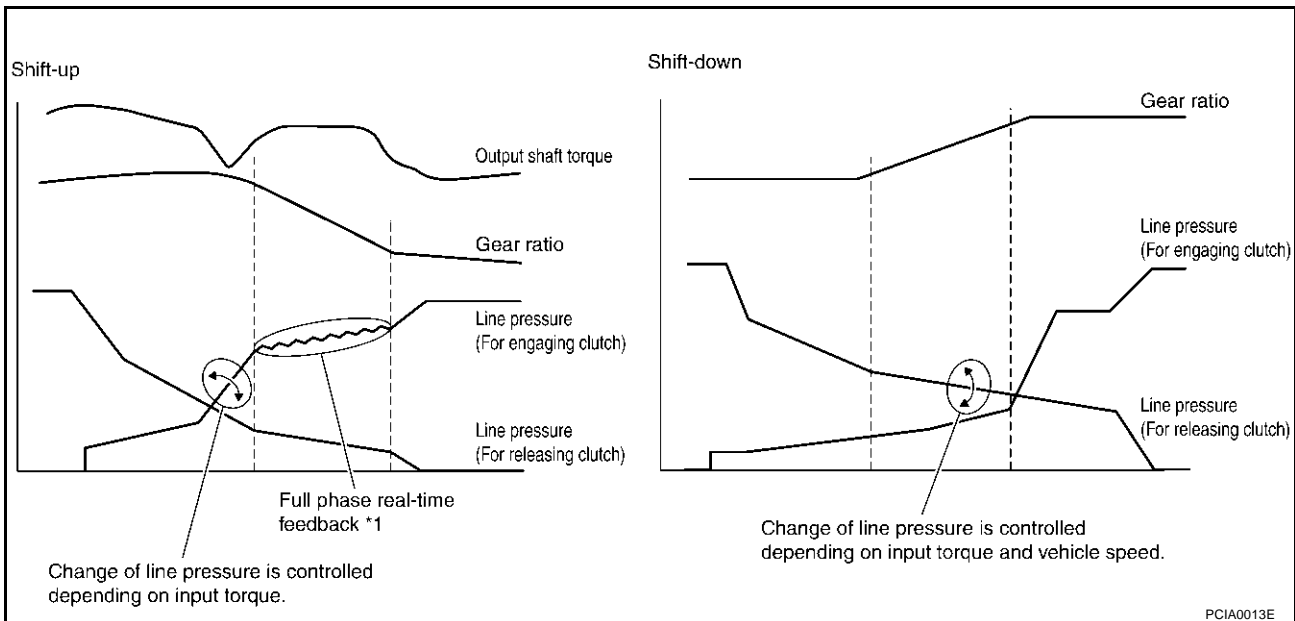
The clutch pressure control solenoid is controlled by the signals from the switches and sensors. Thus, the clutch pressure is adjusted to be appropriate to the engine load state and vehicle driving state. It becomes possible to finely control the clutch hydraulic pressure with high precision and a smoother shift change characteristic is attained.



SHIFT CHANGE

The clutch is controlled with the optimum timing and oil pressure by the engine speed, engine torque information, etc.

Shift Change System Diagram



*1: Full phase real-time feedback control monitors movement of gear ratio at gear change, and controls oil pressure at real-time to achieve the best gear ratio.

A/T CONTROL SYSTEM

Lock-Up Control

ECS0082V

The torque converter clutch piston in the torque converter is engaged to eliminate torque converter slip to increase power transmission efficiency.

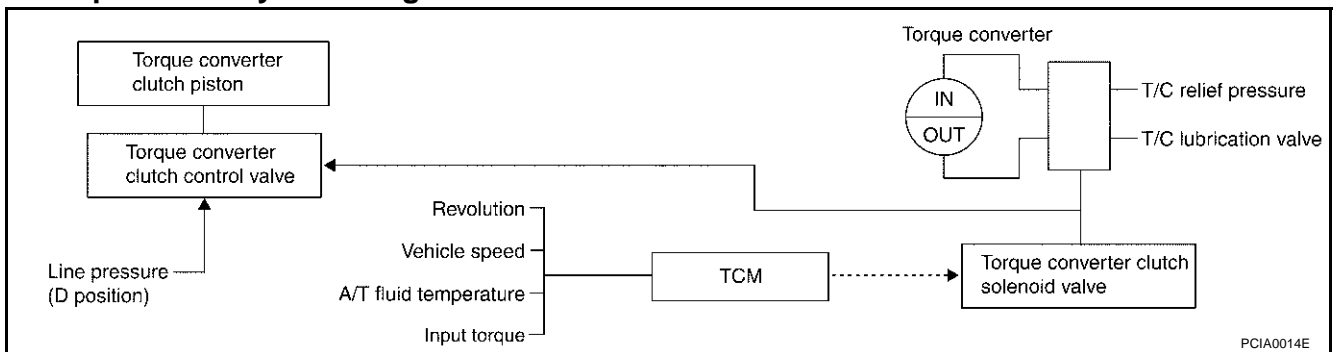
The torque converter clutch control valve operation is controlled by the torque converter clutch solenoid valve, which is controlled by a signal from TCM, and the torque converter clutch control valve engages or releases the torque converter clutch piston.

Lock-up Operation Condition Table

Select lever	D position, M5 position			M4 position
Gear position	5	4	3	4
Lock-up	×	–	–	×
Slip lock-up	×	×	×	–

TORQUE CONVERTER CLUTCH CONTROL VALVE CONTROL

Lock-up Control System Diagram



Lock-Up Released

- In the lock-up released state, the torque converter clutch control valve is set into the unlocked state by the torque converter clutch solenoid and the lock-up apply pressure is drained. In this way, the torque converter clutch piston is not coupled.

Lock-Up Applied

- In the lock-up applied state, the torque converter clutch control valve is set into the locked state by the torque converter clutch solenoid and lock-up apply pressure is generated. In this way, the torque converter clutch piston is pressed and coupled.

SMOOTH LOCK-UP CONTROL

When shifting from the lock-up released state to the lock-up applied state, the current output to the torque converter clutch solenoid is controlled with the TCM. In this way, when shifting to the lock-up applied state, the torque converter clutch is temporarily set to the half-clutched state to reduce the shock.

Half-Clutched State

- The current output from the TCM to the torque converter clutch solenoid is varied to steadily increase the torque converter clutch solenoid pressure. In this way, the lock-up apply pressure gradually rises and while the torque converter clutch piston is put into half-clutched status, the torque converter clutch piston operating pressure is increased and the coupling is completed smoothly.

Slip Lock-Up Control

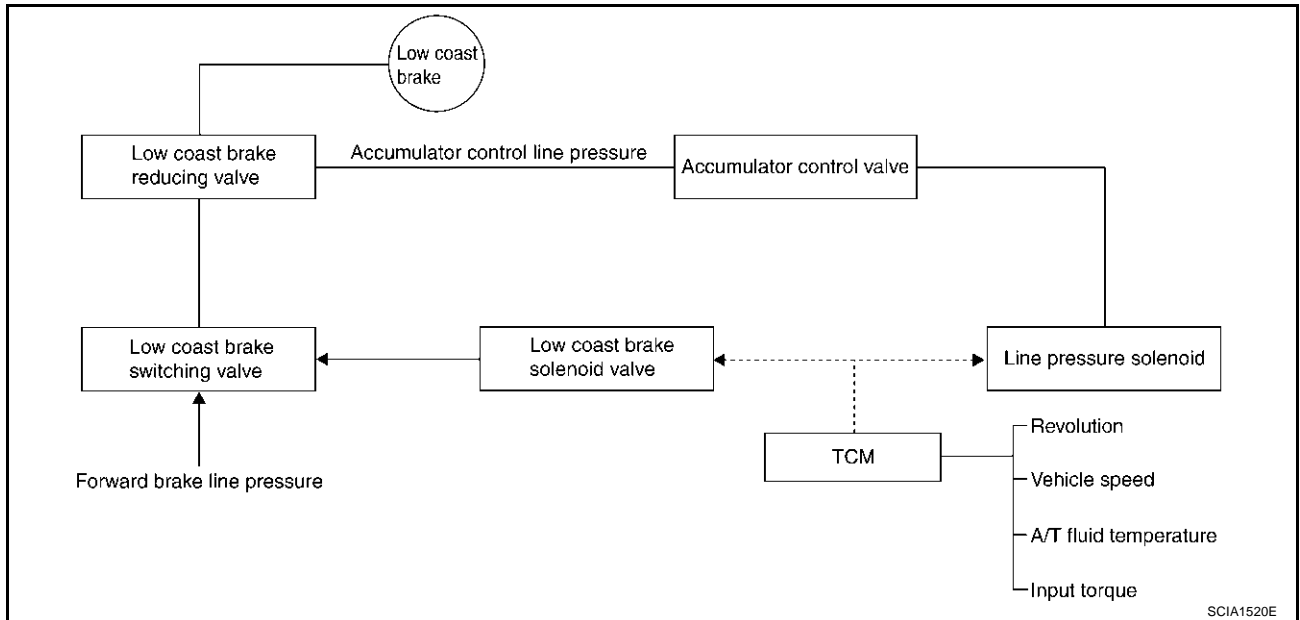
- In the slip region, the torque converter clutch solenoid current is controlled with the TCM to put it into the half-clutched state. This absorbs the engine torque fluctuation and lock-up operates from low speed. This raises the fuel efficiency for 3rd, 4th and 5th gears at both low speed and when the accelerator has a low degree of opening.

A/T CONTROL SYSTEM

Engine Brake Control

ECS0082W

- The forward one-way clutch transmits the drive force from the engine to the rear wheels. But the reverse drive from the rear wheels is not transmitted to the engine because the one-way clutch is idling. Therefore, the low coast brake solenoid is operated to prevent the forward one-way clutch from idling and the engine brake is operated in the same manner as conventionally.



- The operation of the low coast brake solenoid switches the low coast brake switching valve and controls the coupling and releasing of the low coast brake. The low coast brake reducing valve controls the low coast brake coupling force.

Control Valve

FUNCTION OF CONTROL VALVE

ECS0082X

Name	Function
Torque converter regulator valve	In order to prevent the pressure supplied to the torque converter from being excessive, the line pressure is adjusted to the optimum pressure (torque converter operating pressure).
Pressure regulator valve Pressure regulator plug Pressure regulator sleeve	Adjusts the oil discharged from the oil pump to the optimum pressure (line pressure) for the driving state.
Front brake control valve	When the front brake is coupled, adjusts the line pressure to the optimum pressure (front brake pressure) and supplies it to the front brake. (In 1st, 2nd, 3rd, and 5th gears, adjusts the clutch pressure.)
Accumulator control valve	Adjusts the pressure (accumulator control pressure) acting on the accumulator piston and low coast reducing valve to the pressure appropriate to the driving state.
Pilot valve A	Adjusts the line pressure and produces the constant pressure (pilot pressure) required for line pressure control, shift change control, and lock-up control.
Pilot valve B	Adjusts the line pressure and produces the constant pressure (pilot pressure) required for shift change control.
Low coast brake switching valve	During engine braking, supplies the line pressure to the low coast brake reducing valve.
Low coast brake reducing valve	When the low coast brake is coupled, adjusts the line pressure to the optimum pressure (low coast brake pressure) and supplies it to the low coast brake.
N-R accumulator	Produces the stabilizing pressure for when N-R is selected.
Direct clutch piston switching valve	Operates in 4th gear and switches the direct clutch coupling capacity.
High and low reverse clutch control valve	When the high and low reverse clutch is coupled, adjusts the line pressure to the optimum pressure (high and low reverse clutch pressure) and supplies it to the high and low reverse clutch. (In 1st, 3rd, 4th and 5th gears, adjusts the clutch pressure.)

A/T CONTROL SYSTEM

Name	Function
Input clutch control valve	When the input clutch is coupled, adjusts the line pressure to the optimum pressure (input clutch pressure) and supplies it to the input clutch. (In 4th and 5th gears, adjusts the clutch pressure.)
Direct clutch control valve	When the direct clutch is coupled, adjusts the line pressure to the optimum pressure (direct clutch pressure) and supplies it to the direct clutch. (In 2nd, 3rd, and 4th gears, adjusts the clutch pressure.)
TCC control valve TCC control plug TCC control sleeve	Switches the lock-up to operating or released. Also, by executing the lock-up operation transiently, lock-up smoothly.
Torque converter lubrication valve	Operates during lock-up to switch the torque converter, cooling, and lubrication system oil path.
Cool bypass valve	Allows excess oil to bypass cooler circuit without being fed into it.
Line pressure relief valve	Discharges excess oil from line pressure circuit.
N-D accumulator	Produces the stabilizing pressure for when N-D is selected.
Manual valve	Sends line pressure to each circuit according to the select position. The circuits to which the line pressure is not sent drain.

FUNCTION OF PRESSURE SWITCH

Name	Function
Pressure switch 1 (FR/B)	Detects any malfunction in the front brake hydraulic pressure. When it detects any malfunction, it puts the system into fail-safe mode.
Pressure switch 2 (LC/B)	Detects any malfunction in the low coast brake hydraulic pressure. When it detects any malfunction, it puts the system into fail-safe mode.
Pressure switch 3 (I/C)	Detects any malfunction in the input clutch hydraulic pressure. When it detects any malfunction, it puts the system into fail-safe mode.
Pressure switch 5 (D/C)	Detects any malfunction in the direct clutch hydraulic pressure. When it detects any malfunction, it puts the system into fail-safe mode.
Pressure switch 6 (H&LR/C)	Detects any malfunction in the high and low reverse clutch hydraulic pressure. When it detects any malfunction, it puts the system into fail-safe mode.

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ON BOARD DIAGNOSTIC (OBD) SYSTEM

PFP:00028

Introduction

ECS0082Y

The A/T system has two self-diagnostic systems.

The first is the emission-related on board diagnostic system (OBD-II) performed by the TCM in combination with the ECM. The malfunction is indicated by the MIL (malfunction indicator lamp) and is stored as a DTC in the ECM memory but not the TCM memory.

The second is the TCM original self-diagnosis indicated by the A/T CHECK indicator lamp. The malfunction is stored in the TCM memory. The detected items are overlapped with OBD-II self-diagnostic items. For detail, refer to [AT-88. "Self-Diagnostic Result Test Mode"](#) .

OBD-II Function for A/T System

ECS0082Z

The ECM provides emission-related on board diagnostic (OBD-II) functions for the A/T system. One function is to receive a signal from the TCM used with OBD-related parts of the A/T system. The signal is sent to the ECM when a malfunction occurs in the corresponding OBD-related part. The other function is to indicate a diagnostic result by means of the MIL (malfunction indicator lamp) on the instrument panel. Sensors, switches and solenoid valves are used as sensing elements.

The MIL automatically illuminates in One or Two Trip Detection Logic when a malfunction is sensed in relation to A/T system parts.

One or Two Trip Detection Logic of OBD-II ONE TRIP DETECTION LOGIC

ECS00830

If a malfunction is sensed during the first test drive, the MIL will illuminate and the malfunction will be stored in the ECM memory as a DTC. The TCM is not provided with such a memory function.

TWO TRIP DETECTION LOGIC

When a malfunction is sensed during the first test drive, it is stored in the ECM memory as a 1st trip DTC (diagnostic trouble code) or 1st trip freeze frame data. At this point, the MIL will not illuminate. — First Trip



If the same malfunction as that experienced during the first test drive is sensed during the second test drive, the MIL will illuminate. — Second Trip

The "trip" in the "One or Two Trip Detection Logic" means a driving mode in which self-diagnosis is performed during vehicle operation.

OBD-II Diagnostic Trouble Code (DTC) HOW TO READ DTC AND 1ST TRIP DTC

ECS00831

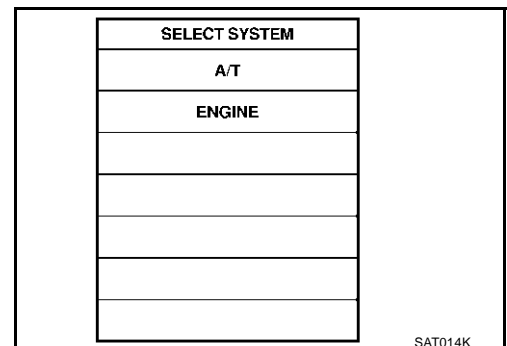
DTC and 1st trip DTC can be read by the following methods.

( with **CONSULT-II** or ( **GST**) CONSULT-II or GST (Generic Scan Tool) Examples: P0705, P0720 etc. These DTC are prescribed by SAE J2012.

(CONSULT-II also displays the malfunctioning component or system.)

- **1st trip DTC No. is the same as DTC No.**
- **Output of the diagnostic trouble code indicates that the indicated circuit has a malfunction. However, in case of the Mode II and GST, they do not indicate whether the malfunction is still occurring or occurred in the past and returned to normal. CONSULT-II can identify them as shown below, therefore, CONSULT-II (if available) is recommended.**

A sample of CONSULT-II display for DTC and 1st trip DTC is shown on the next page. DTC or 1st trip DTC of a malfunction is displayed in SELF-DIAGNOSTIC RESULTS mode for "ENGINE" with CONSULT-II. Time data indicates how many times the vehicle was driven after the last detection of a DTC.



ON BOARD DIAGNOSTIC (OBD) SYSTEM

If the DTC is being detected currently, the time data will be "0".

SELF-DIAG RESULTS	
DTC RESULTS	TIME
PNP SW/CIRC [P0705]	0

SAT015K

If a 1st trip DTC is stored in the ECM, the time data will be "1t".

SELF-DIAG RESULTS	
DTC RESULTS	TIME
PNP SW/CIRC [P0705]	1 t

SAT016K

Freeze Frame Data and 1st Trip Freeze Frame Data

The ECM has a memory function, which stores the driving condition such as fuel system status, calculated load value, engine coolant temperature, short term fuel trim, long term fuel trim, engine speed and vehicle speed at the moment the ECM detects a malfunction.

Data which are stored in the ECM memory, along with the 1st trip DTC, are called 1st trip freeze frame data, and the data, stored together with the DTC data, are called freeze frame data and displayed on CONSULT-II or GST. The 1st trip freeze frame data can only be displayed on the CONSULT-II screen, not on the GST. For detail, refer to [EC-108, "CONSULT-II Function"](#).

Only one set of freeze frame data (either 1st trip freeze frame data or freeze frame data) can be stored in the ECM. 1st trip freeze frame data is stored in the ECM memory along with the 1st trip DTC. There is no priority for 1st trip freeze frame data and it is updated each time a different 1st trip DTC is detected. However, once freeze frame data (2nd trip detection/MIL on) is stored in the ECM memory, 1st trip freeze frame data is no longer stored. Remember, only one set of freeze frame data can be stored in the ECM. The ECM has the following priorities to update the data.

Priority	Items
1	Freeze frame data Misfire — DTC: P0300 - P0306 Fuel Injection System Function — DTC: P0171, P0172, P0174, P0175
2	Except the above items (Includes A/T related items)
3	1st trip freeze frame data

Both 1st trip freeze frame data and freeze frame data (along with the DTC) are cleared when the ECM memory is erased.

HOW TO ERASE DTC

The diagnostic trouble code can be erased by CONSULT-II, GST or ECM DIAGNOSTIC TEST MODE as described following.

- If the battery cable is disconnected, the diagnostic trouble code will be lost within 24 hours.
- When you erase the DTC, using CONSULT-II or GST is easier and quicker than switching the mode selector on the ECM.

The following emission-related diagnostic information is cleared from the ECM memory when erasing DTC related to OBD-II. For details, refer to [EC-52, "Emission-related Diagnostic Information"](#).

- Diagnostic trouble codes (DTC)
- 1st trip diagnostic trouble codes (1st trip DTC)
- Freeze frame data

ON BOARD DIAGNOSTIC (OBD) SYSTEM

- 1st trip freeze frame data
- System readiness test (SRT) codes
- Test values

HOW TO ERASE DTC (WITH CONSULT-II)

- If a DTC is displayed for both ECM and TCM, it is necessary to be erased for both ECM and TCM.
1. If the ignition switch stays "ON" after repair work, be sure to turn ignition switch "OFF" once. Wait at least 10 seconds and then turn it "ON" (engine stopped) again.
 2. Turn CONSULT-II "ON" and touch "A/T".
 3. Touch "SELF-DIAG RESULTS".
 4. Touch "ERASE". (The DTC in the TCM will be erased.) Then touch "BACK" twice.
 5. Touch "ENGINE".
 6. Touch "SELF-DIAG RESULTS".
 7. Touch "ERASE". (The DTC in the ECM will be erased.)

How to erase DTC (With CONSULT-II)

1. If the ignition switch stays "ON" after repair work, be sure to turn ignition switch "OFF" once. Wait at least 10 seconds and then turn it "ON" (engine stopped) again.

SELECT SYSTEM
A/T
ENGINE

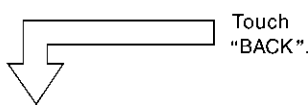
2. Turn CONSULT-II "ON", and touch "A/T".

SELECT DIAG MODE
SELF-DIAG RESULTS
DATA MONITOR
CAN DIAG SUPPORT MNTR
FUNCTION TEST
DTC WORK SUPPORT
ECU PART NUMBER

3. Touch "SELF-DIAG RESULTS".

SELF-DIAG RESULTS
DTC RESULTS
TCC SOLENOID/CIRC [P0740]

4. Touch "ERASE". (The DTC in the TCM will be erased.)



SELECT SYSTEM
A/T
ENGINE

5. Touch "ENGINE".

SELECT DIAG MODE
WORK SUPPORT
SELF-DIAG RESULTS
DATA MONITOR
DATA MONITOR(SPEC)
CAN DIAG SUPPORT MNTR
ACTIVE TEST

6. Touch "SELF-DIAG RESULTS".

SELF-DIAG RESULTS	
DTC RESULTS	TIME
TCC SOLENOID/CIRC [P0740]	0

7. Touch "ERASE". (The DTC in the TCM will be erased.)

SCIA5671E

HOW TO ERASE DTC (WITH GST)

1. If the ignition switch stays "ON" after repair work, be sure to turn ignition switch "OFF" once. Wait at least 10 seconds and then turn it "ON" (engine stopped) again.
2. Perform "TCM SELF-DIAGNOSTIC PROCEDURE (No Tools)". Refer to [AT-98, "TCM SELF-DIAGNOSTIC PROCEDURE \(NO TOOLS\)"](#). (The engine warm-up step can be skipped when performing the diagnosis only to erase the DTC.)
3. Select Mode 4 with Generic Scan Tool (GST). For details, refer to [EC-121, "Generic Scan Tool \(GST\) Function"](#).

ON BOARD DIAGNOSTIC (OBD) SYSTEM



HOW TO ERASE DTC (NO TOOLS)

The A/T CHECK indicator lamp is located on the instrument panel.

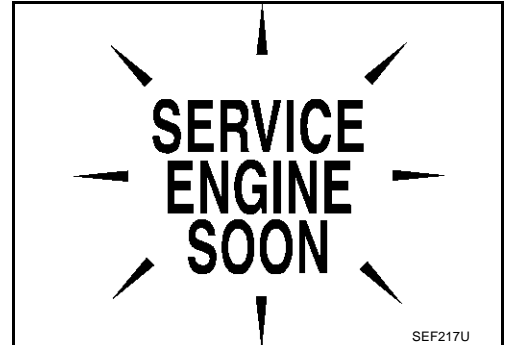
1. If the ignition switch stays "ON" after repair work, be sure to turn ignition switch "OFF" once. Wait at least 10 seconds and then turn it "ON" (engine stopped) again.
2. Perform "TCM SELF-DIAGNOSTIC PROCEDURE (No Tools)". Refer to [AT-98, "TCM SELF-DIAGNOSTIC PROCEDURE \(NO TOOLS\)"](#) . (The engine warm-up step can be skipped when performing the diagnosis only to erase the DTC.)
3. Perform "OBD-II SELF-DIAGNOSTIC PROCEDURE (No tools)". Refer to [EC-64, "No Tools"](#) .

Malfunction Indicator Lamp (MIL) DESCRIPTION

ECS00832

The MIL is located on the instrument panel.

1. The MIL will light up when the ignition switch is turned "ON" without the engine running. This is a bulb check.
 - If the MIL does not light up, refer to [DI-33, "WARNING LAMPS"](#) , or see [EC-410, "DTC P0650 MIL"](#) .
2. When the engine is started, the MIL should go off. If the MIL remains on, the on board diagnostic system has detected an engine system malfunction.



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TROUBLE DIAGNOSIS

TROUBLE DIAGNOSIS

PF0:00004

DTC Inspection Priority Chart

ECS00833

If some DTCs are displayed at the same time, perform inspections one by one based on the following priority chart.

NOTE:

If DTC U1000 is displayed with other DTCs, first perform the trouble diagnosis for DTC U1000. Refer to [AT-100](#).

Priority	Detected items (DTC)
1	U1000 CAN communication line
2	Except above

Fail-Safe

ECS00834

The TCM has an electrical fail-safe mode. This mode makes it possible to operate even if there is a malfunction in a main electronic control input/output signal circuit.

In fail-safe mode, even if the select lever is "D" or "M" mode, the transmission is fixed in 2nd or 4th (depending on the breakdown position), so the customer should feel "slipping" or "poor acceleration". When fail-safe mode is triggered, when the ignition switch is switched "ON", the A/T CHECK indicator lamp flashes for about 8 seconds. (Refer to [AT-98](#), "[TCM SELF-DIAGNOSTIC PROCEDURE \(NO TOOLS\)](#)").

Even when the electronic circuits are normal, under special conditions (for example, when slamming on the brake with the wheels spinning drastically and stopping the tire rotation), the transmission can go into fail-safe mode. If this happens, switch "OFF" the ignition switch for 10 seconds, then switch it "ON" again to return to the normal shift pattern. Also, the A/T CHECK indicator lamp flashes for about 8 seconds once, then is cleared. Therefore, the customer's vehicle has returned to normal, so handle according to the "diagnostics flow" (Refer to [AT-45](#)).

FAIL-SAFE FUNCTION

If any malfunction occurs in a sensor or solenoid, this function controls the A/T to make driving possible.

Vehicle Speed Sensor

- Signals are input from two systems - from vehicle speed sensor A/T (revolution sensor) installed on the transmission and from combination meter so normal driving is possible even if there is a malfunction in one of the systems. And if vehicle speed sensor A/T (revolution sensor) has unusual cases, 5th gear and manual mode are prohibited.

Accelerator Pedal Position Sensor

- If there is a malfunction in one of the systems, the accelerator opening angle is controlled by ECM according to a pre-determined accelerator angle to make driving possible. And if there are malfunctions in tow systems, the engine speed is fixed by ECM to a pre-determined engine speed to make driving possible.

Throttle Position Sensor

- If there is a malfunction in one of the systems, the accelerator opening angle is controlled by ECM according to a pre-determined accelerator angle to make driving possible. And if there are malfunctions in tow systems, the accelerator opening angle is controlled by the idle signal sent from the ECM which is based on input indicating either idle condition or off-idle condition (pre-determined accelerator opening) in order to make driving possible.

PNP Switch

- In the unlikely event that a malfunction signal enters the TCM, the position indicator is switched "OFF", the starter relay is switched "OFF" (starter starting is disabled), and the position is fixed to the "D" range to make driving possible.

PNP Relay

- The PNP relay is switched "OFF". (Starter starting is disabled.)

TROUBLE DIAGNOSIS

A/T Interlock

- If there is an A/T interlock judgment malfunction, the transmission is fixed in 2nd gear to make driving possible.

NOTE:

When the vehicle is driven fixed in 2nd gear, a turbine revolution sensor malfunction is displayed, but this is not a turbine revolution sensor malfunction.

- When the coupling pattern below is detected, the fail-safe action corresponding to the pattern is executed.

A/T INTERLOCK COUPLING PATTERN TABLE

●: NG X: OK

Gear position		ATF pressure switch output					Fail-safe function	Clutch pressure output pattern after fail-safe function					
		SW3 (I/C)	SW6 (H&LR /C)	SW5 (D/C)	SW1 (Fr/B)	SW2 (LC/B)		I/C	H&LR/C	D/C	Fr/B	LC/B	L/U
A/T interlock coupling pattern	3rd	–	X	X	–	●	Held in 2nd gear	OFF	OFF	ON	OFF	OFF	OFF
	4th	–	X	X	–	●	Held in 2nd gear	OFF	OFF	ON	OFF	OFF	OFF
	5th	X	X	–	X	●	Held in 2nd gear	OFF	OFF	ON	OFF	OFF	OFF

A/T 1st Engine Braking

- When there is an A/T first gear engine brake judgment malfunction, the low coast brake solenoid is switched “OFF” to avoid the engine brake operation.

Line Pressure Solenoid

- The solenoid is switched “OFF” and the line pressure is set to the maximum hydraulic pressure to make driving possible.

Torque Converter Clutch Solenoid

- The solenoid is switched “OFF” to release the lock-up.

Low Coast Brake Solenoid

- When a (electrical or functional) malfunction occurs, in order to make driving possible, if the solenoid is “ON”, the transmission is held in 2nd gear; if the solenoid is “OFF”, the transmission is held in 4th gear. (engine brake is not applied in 1st and 2nd gear.)

Input Clutch Solenoid

- If a (electrical or functional) malfunction occurs with the solenoid either “ON” or “OFF”, the transmission is held in 4th gear to make driving possible.

Direct Clutch Solenoid

- If a (electrical or functional) malfunction occurs with the solenoid either “ON” or “OFF”, the transmission is held in 4th gear to make driving possible.

Front Brake Clutch Solenoid

- If a (electrical or functional) malfunction occurs with the solenoid “ON”, in order to make driving possible, the A/T is held in 5th gear; if the solenoid is OFF, 4th gear.

High and Low Reverse Clutch Solenoid

- If a (electrical or functional) malfunction occurs with the solenoid either “ON” or “OFF”, the transmission is held in 4th gear to make driving possible.

Turbine Revolution Sensor 1 or 2

- The control is the same as if there were no turbine revolution sensors, 5th gear and manual mode are prohibited.

TROUBLE DIAGNOSIS

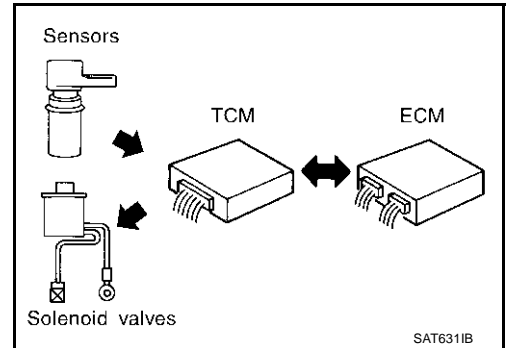
How To Perform Trouble Diagnosis For Quick and Accurate Repair INTRODUCTION

ECS00835

The TCM receives a signal from the vehicle speed sensor, accelerator pedal position sensor (throttle position sensor) or PNP switch and provides shift control or lock-up control via A/T solenoid valves.

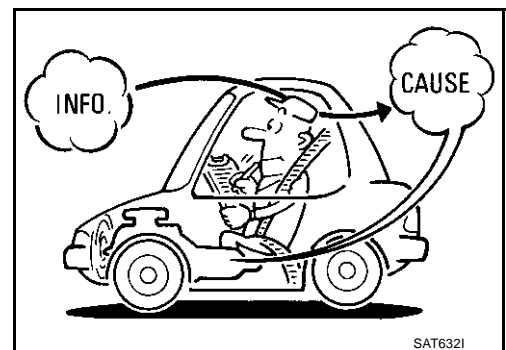
The TCM also communicates with the ECM by means of a signal sent from sensing elements used with the OBD-related parts of the A/T system for malfunction-diagnostic purposes. The TCM is capable of diagnosing malfunctioning parts while the ECM can store malfunctions in its memory.

Input and output signals must always be correct and stable in the operation of the A/T system. The A/T system must be in good operating condition and be free of valve seizure, solenoid valve malfunction, etc.



It is much more difficult to diagnose an error that occurs intermittently rather than continuously. Most intermittent errors are caused by poor electric connections or improper wiring. In this case, careful checking of suspected circuits may help prevent the replacement of good parts.

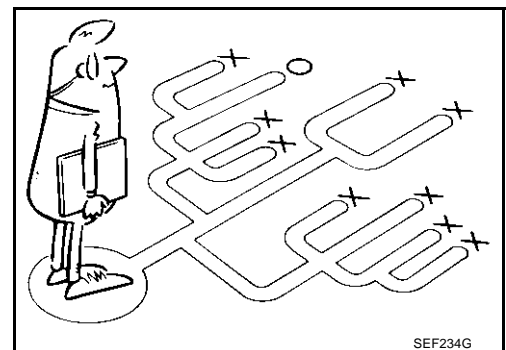
A visual check only may not find the cause of the errors. A road test with CONSULT-II (or GST) or a circuit tester connected should be performed. Follow the [AT-45, "WORK FLOW"](#) .



Before undertaking actual checks, take a few minutes to talk with a customer who approaches with a driveability complaint. The customer can supply good information about such errors, especially intermittent ones. Find out what symptoms are present and under what conditions they occur. A "Diagnostic Worksheet" as shown on the example (Refer to [AT-46](#)) should be used.

Start your diagnosis by looking for "conventional" errors first. This will help troubleshoot driveability errors on an electronically controlled engine vehicle.

Also check related Service bulletins.



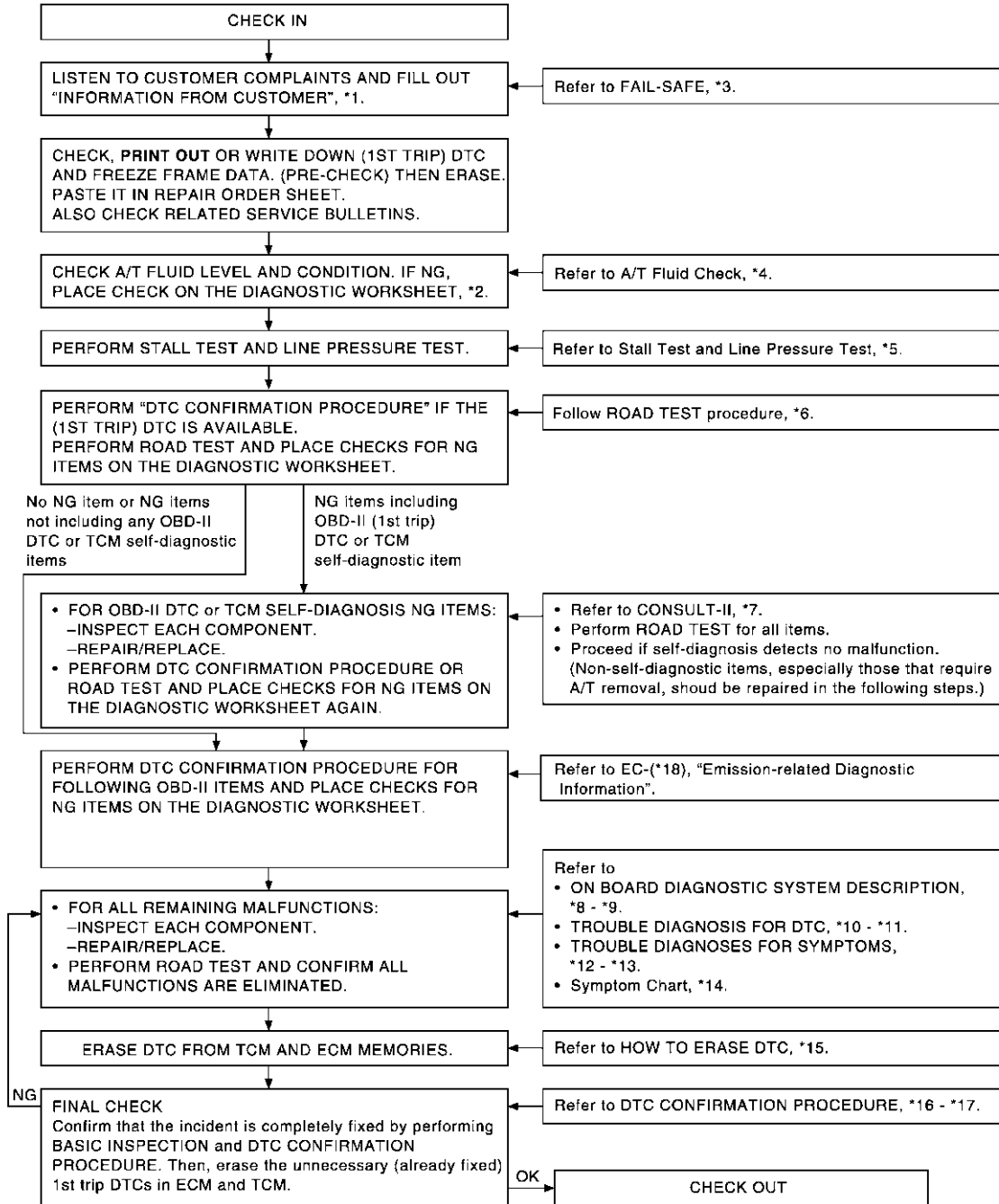
TROUBLE DIAGNOSIS

WORK FLOW

A good understanding of the malfunction conditions can make troubleshooting faster and more accurate. In general, each customer feels differently about a malfunction. It is important to fully understand the symptoms or conditions for a customer complaint.

Make good use of the two sheets provided, "Information From Customer" (Refer to [AT-46](#)) and "Diagnostic Worksheet" (Refer to [AT-46](#)), to perform the best troubleshooting possible.

Work Flow Chart



- *1. [AT-46](#)
- *4. [AT-51](#)
- *7. [AT-86](#)
- *10. [AT-100](#)
- *13. [AT-280](#)
- *16. [AT-100](#)

- *2. [AT-46](#)
- *5. [AT-51, AT-52](#)
- *8. [AT-38](#)
- *11. [AT-236](#)
- *14. [AT-60](#)
- *17. [AT-232](#)

- *3. [AT-42](#)
- *6. [AT-54](#)
- *9. [AT-98](#)
- *12. [AT-238](#)
- *15. [AT-39](#)
- *18. [EC-52](#)

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TROUBLE DIAGNOSIS

		<input type="checkbox"/> Execute all road tests and enter checks in required inspection items.	AT-54	A		
4	4-1.	Check before engine is started				
		<input type="checkbox"/> The A/T CHECK Indicator Lamp does come on. AT-239 . <input type="checkbox"/> Execute self-diagnostics Enter checks for detected items.			AT-55	B
		<input type="checkbox"/> Vehicle speed sensor-A/T. AT-111 . <input type="checkbox"/> Vehicle speed sensor-MTR. AT-158 . <input type="checkbox"/> Direct clutch solenoid valve. AT-189 . <input type="checkbox"/> TCC solenoid valve. AT-118 . <input type="checkbox"/> Line pressure solenoid valve. AT-128 . <input type="checkbox"/> Input clutch solenoid valve. AT-171 . <input type="checkbox"/> Front brake solenoid valve. AT-180 . <input type="checkbox"/> Low coast brake solenoid valve. AT-207 . <input type="checkbox"/> High and low reverse clutch solenoid valve. AT-198 . <input type="checkbox"/> PNP switch. AT-106 . <input type="checkbox"/> A/T fluid temperature sensors 1, 2. AT-147 . <input type="checkbox"/> Turbine revolution sensors 1, 2. AT-153 . <input type="checkbox"/> A/T interlock. AT-160 . <input type="checkbox"/> A/T 1st engine braking. AT-167 . <input type="checkbox"/> Start signal. AT-103 . <input type="checkbox"/> Accelerator pedal position signal. AT-145 . <input type="checkbox"/> Engine speed signal. AT-116 . <input type="checkbox"/> CAN communication. AT-100 . <input type="checkbox"/> TCM power supply. AT-133 . <input type="checkbox"/> Battery <input type="checkbox"/> Other			AT	D
Idle inspection	4-2.	<input type="checkbox"/> Engine Cannot Be Started in "P" and "N" Position. AT-240 . <input type="checkbox"/> In " P" Position, Vehicle Moves When Pushed. AT-241 . <input type="checkbox"/> In "N" Position Vehicle Moves. AT-242 . <input type="checkbox"/> Large Shock "N" to "D" Position. AT-243 . <input type="checkbox"/> Vehicle Does Not Creep Backward In "R" Position. AT-246 . <input type="checkbox"/> Vehicle does Not Creep Forward In "D" Position. AT-248 .	AT-55	E		
Driving tests		H	I			
4-3.	Part 1	<input type="checkbox"/> Vehicle Cannot Be Started From D1. AT-252 . <input type="checkbox"/> A/T Does Not Shift: D1 → D2. AT-254 . <input type="checkbox"/> A/T Does Not Shift: D2 → D3. AT-256 . <input type="checkbox"/> A/T Does Not Shift: D3 → D4. AT-259 . <input type="checkbox"/> A/T Does Not Shift: D4 → D5. AT-261 . <input type="checkbox"/> A/T Does Not Perform Lock-up. AT-263 . <input type="checkbox"/> A/T Does Not Hold Lock-up Condition. AT-266 . <input type="checkbox"/> Lock-up Is Not Released. AT-268 . <input type="checkbox"/> Engine Speed Does Not Return To Idle. AT-269 .	AT-56	J		
				K	L	
				M		

TROUBLE DIAGNOSIS

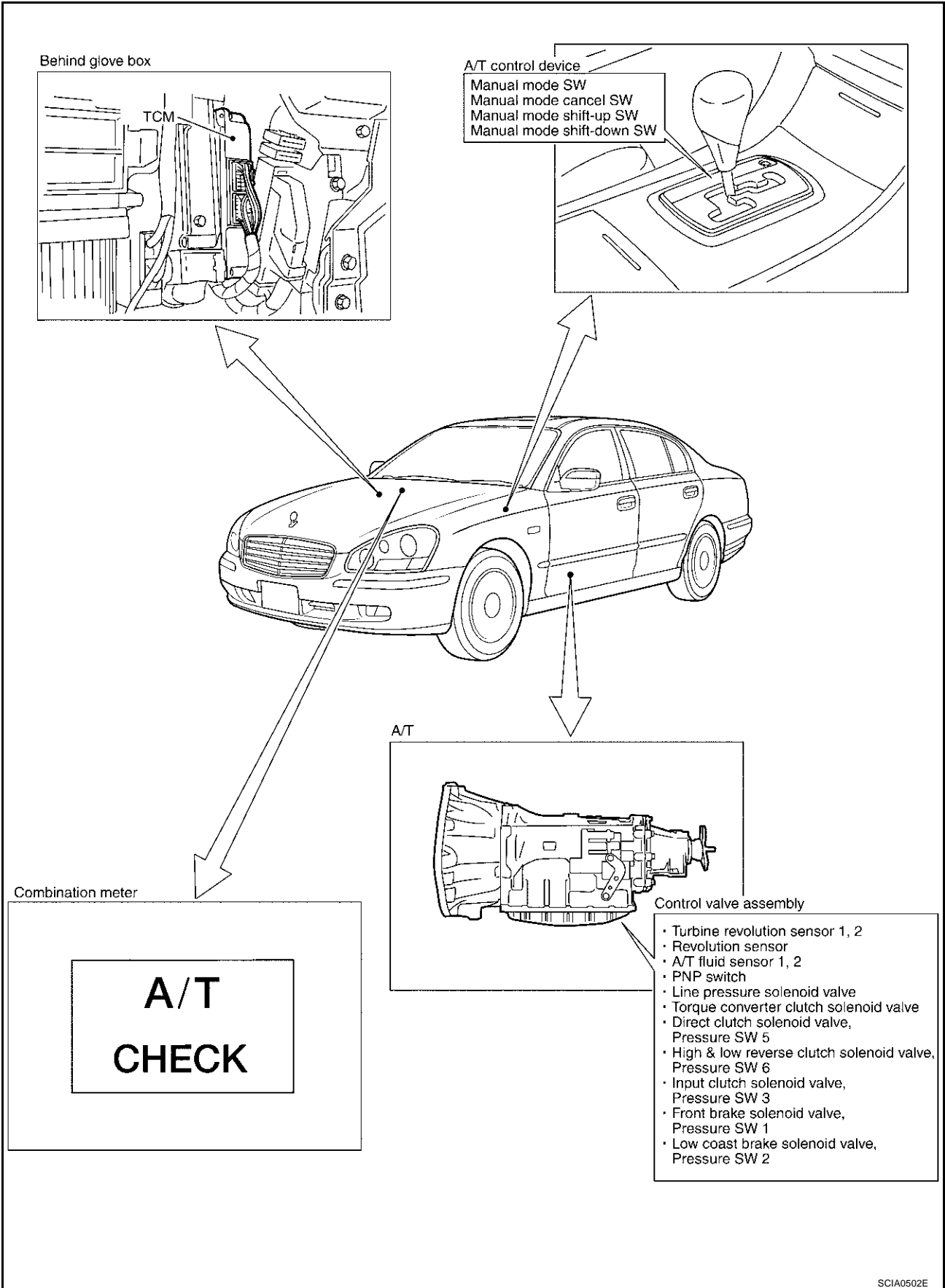
4	4-3	Part 2 <input type="checkbox"/> Vehicle Cannot Be Started From D1. AT-252 . <input type="checkbox"/> A/T Does Not Shift: D1 → D2. AT-254 . <input type="checkbox"/> A/T Does Not Shift: D2 → D3. AT-256 . <input type="checkbox"/> A/T Does Not Shift: D3 → D4. AT-259 .	AT-58
		Part 3 <input type="checkbox"/> Cannot Be Changed To Manual Mode. AT-271 . <input type="checkbox"/> A/T Does Not Shift: 5th gear → 4th gear. AT-272 . <input type="checkbox"/> A/T Does Not Shift: 4th gear → 3rd gear. AT-274 . <input type="checkbox"/> A/T Does Not Shift: 3rd gear → 2nd gear. AT-276 . <input type="checkbox"/> A/T Does Not Shift: 2nd gear → 1st gear. AT-278 . <input type="checkbox"/> Vehicle Does Not Decelerate By Engine Brake. AT-280 . <input type="checkbox"/> Execute self-diagnostics Enter checks for detected items.	AT-59
		<input type="checkbox"/> Vehicle speed sensor-A/T. AT-111 . <input type="checkbox"/> Vehicle speed sensor-MTR. AT-158 . <input type="checkbox"/> Direct clutch solenoid valve. AT-189 . <input type="checkbox"/> TCC solenoid valve. AT-118 . <input type="checkbox"/> Line pressure solenoid valve. AT-128 . <input type="checkbox"/> Input clutch solenoid valve. AT-171 . <input type="checkbox"/> Front brake solenoid valve. AT-180 . <input type="checkbox"/> Low coast brake solenoid valve. AT-207 . <input type="checkbox"/> High and low reverse clutch solenoid valve. AT-198 . <input type="checkbox"/> PNP switch. AT-106 . <input type="checkbox"/> A/T fluid temperature sensors 1, 2. AT-147 . <input type="checkbox"/> Turbine revolution sensors 1, 2. AT-153 . <input type="checkbox"/> A/T interlock. AT-160 . <input type="checkbox"/> A/T 1st engine braking. AT-167 . <input type="checkbox"/> Start signal. AT-103 . <input type="checkbox"/> Accelerator pedal position signal. AT-145 . <input type="checkbox"/> Engine speed signal. AT-116 . <input type="checkbox"/> CAN communication. AT-100 . <input type="checkbox"/> TCM power supply. AT-133 . <input type="checkbox"/> Battery <input type="checkbox"/> Other	
5		<input type="checkbox"/> Inspect each system for items found to be NG in the self-diagnostics and repair or replace the malfunction parts.	
6		<input type="checkbox"/> Execute all road tests and enter the checks again for the required items.	AT-54
7		<input type="checkbox"/> For any remaining NG items, execute the “diagnostics procedure” and repair or replace the malfunction parts. See the chart for diagnostics by symptoms. (This chart also contains other symptoms and inspection procedures.)	AT-60
8		<input type="checkbox"/> Erase the results of the self-diagnostics from the TCM.	AT-86 , AT-98

TROUBLE DIAGNOSIS

A/T Electrical Parts Location

ECS00836

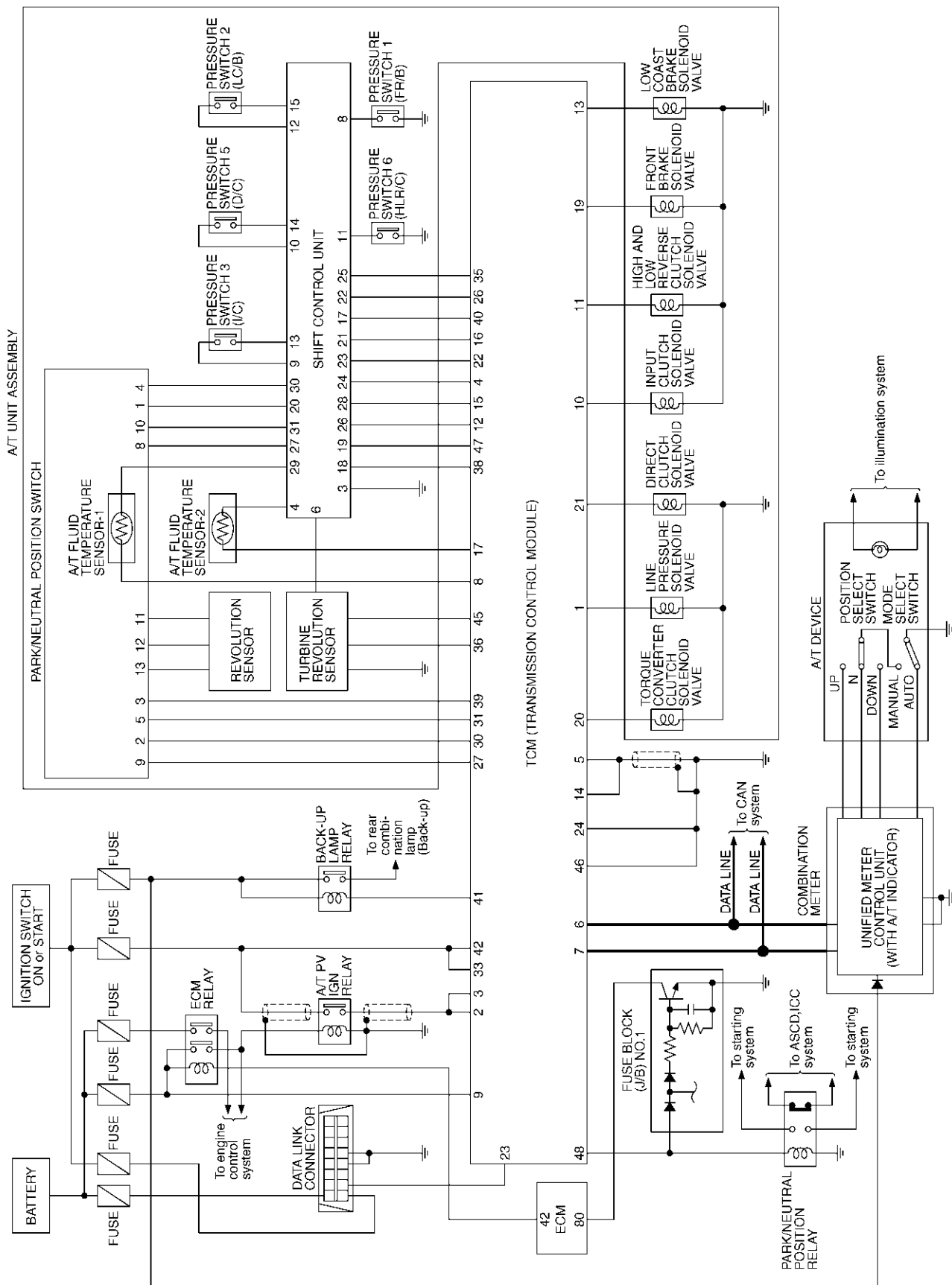
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TROUBLE DIAGNOSIS

Circuit Diagram

EC500837



TCWM0051E

TROUBLE DIAGNOSIS

ECS00838

Inspections Before Trouble Diagnosis

A/T FLUID CHECK

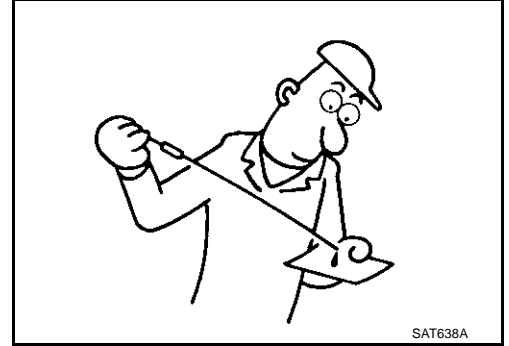
Fluid Leakage and Fluid Level Check

- Inspect for fluid leakage and check the fluid level. Refer to [AT-14, "Checking A/T Fluid"](#).

Fluid Condition Check

Inspect the fluid condition.

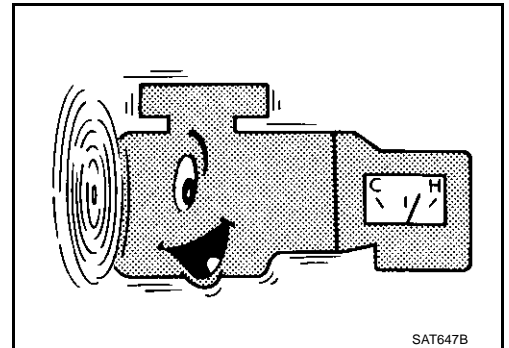
Fluid status	Conceivable Cause	Required Operation
Varnished (viscous varnish state)	Clutch, brake scorched	Replace the A/T fluid and check the A/T main unit and the vehicle for malfunctions (wire harnesses, cooler pipes, etc.)
Milky white or cloudy	Water in the fluid	Replace the A/T fluid and check for places where water is getting in.
Large amount of metal powder mixed in	Unusual wear of sliding parts within A/T	Replace the A/T fluid and check for improper operation of the A/T.



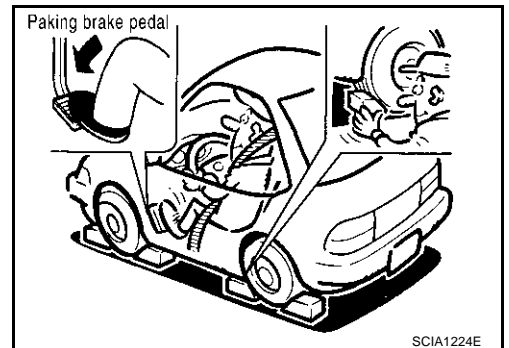
STALL TEST

Stall Test Procedure

- Inspect the amount of engine oil. Replenish the engine oil if necessary.
- Drive for about 10 minutes to warm up the vehicle so that the A/T fluid temperature is 50 to 80°C (122 to 176°F). Inspect the amount of A/T fluid. Replenish if necessary.



- Securely engage the parking brake so that the tires do not turn.

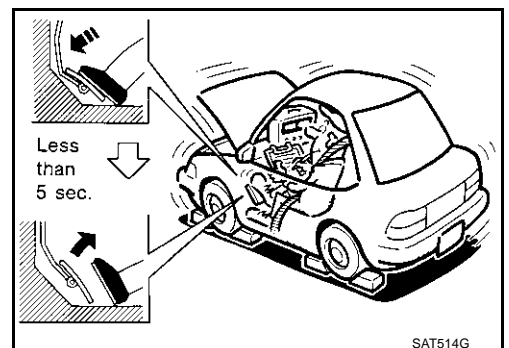


- Engine start, apply foot brake, and place selector lever in "D" position.
- While holding down the foot brake, gradually press down the accelerator pedal.
- Quickly read off the stall speed, then quickly remove your foot from the accelerator pedal.

CAUTION:

Do not hold down the accelerator pedal for more than 5 seconds during this test.

- Move the selector lever to the "N" position.
- Cool down the A/T fluid.



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TROUBLE DIAGNOSIS

CAUTION:

Run the engine at idle for at least one minute.

Stall speed: 2,300 - 2,600 rpm

Judgement Stall Test

	Selector lever position		Expected problem location
	D, M	R	
Stall rotation	H	O	<ul style="list-style-type: none"> ● Forward brake ● Forward one-way clutch ● 1st one-way clutch ● 3rd one-way clutch
	O	H	<ul style="list-style-type: none"> ● Reverse clutch
	L	L	<ul style="list-style-type: none"> ● Engine and torque converter one-way clutch
	H	H	<ul style="list-style-type: none"> ● Line pressure low
	O	O	<ul style="list-style-type: none"> ● One-way clutch in torque converter stuck or check with another item tests

O: Stall speed within standard value position

H: Stall speed higher than standard value

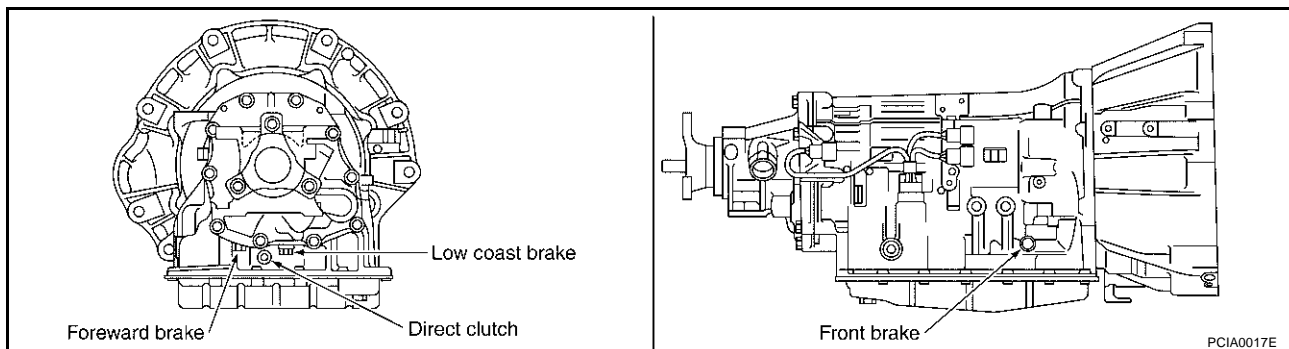
L: Stall speed lower than standard value

Stall test standard value position

Does not shift up D, M position 1 → 2	Slipping in 2nd, 3rd, 4th gears	Direct clutch slippage
Does not shift up D, M position 2 → 3	Slipping in 3rd, 4th, 5th gears	High and low reverse clutch slippage
Does not shift up D, M position 3 → 4	Slipping in 4th, 5th gears	Input clutch slippage
Does not shift up D, M position 4 → 5	Slipping in 5th gear	Front brake slippage

LINE PRESSURE TEST

Line Pressure Test Port



Line Pressure Test Procedure

1. Inspect the amount of engine oil and replenish if necessary.
2. Drive the car for about 10 minutes to warm it up so that the A/T fluid reaches in range of 50 to 80°C (122 to 176°F), then inspect the amount of A/T fluid and replenish if necessary.

NOTE:

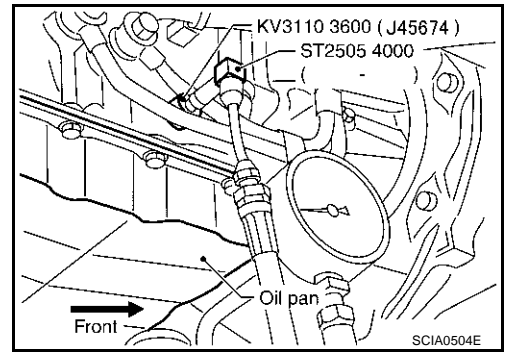
The automatic fluid temperature rises in range of 50 to 80°C (122 to 176°F) during 10 minutes of driving.

TROUBLE DIAGNOSIS

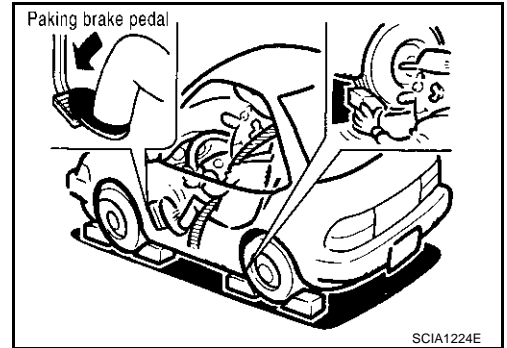
3. After warming up A/T, remove the oil pressure detection plug and install the oil pressure gauge.

CAUTION:

When using the oil pressure gauge, be sure to use the O-ring attached to the oil pressure detection plug.



4. Securely engage the parking brake so that the tires do not turn.




5. Start the engine, then measure the line pressure at both idle and the stall speed.

CAUTION:

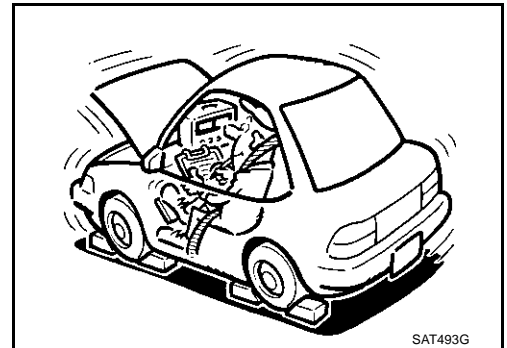
- Keep the brake pedal pressed all the way down during measurement.
- When measuring the line pressure at the stall speed, refer to [AT-51, "STALL TEST"](#).

6. After the measurements are complete, install the oil pressure detection plug and tighten to the regulation torque below.

 :4.8 - 9.8 N·m (0.45 - 0.99 kg·m, 39 - 86 in·lb)

CAUTION:

Do not reuse the O-ring.



Line Pressure

Engine speed	Line pressure kPa (kg/cm ² , psi)	
	R position	D, M positions
At idle speed	392 - 441 (4.0 - 4.5, 57 - 64)	373 - 422 (3.8 - 4.3, 54 - 61)
At stall speed	1,700 - 1,890 (17.3 - 19.3, 247 - 274)	1,310 - 1,500 (13.3 - 15.3, 190 - 218)

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TROUBLE DIAGNOSIS

Judgement of Line Pressure test

Judgement		Possible cause
Idle speed	Low for all positions (P, R, N, D, M)	<p>Possible causes include malfunctions in the pressure supply system and low oil pump output. For example</p> <ul style="list-style-type: none"> ● Oil pump wear ● Pressure regulator valve or plug sticking or spring fatigue ● Oil strainer ⇒ oil pump ⇒ pressure regulator valve passage oil leak ● Engine idle speed too low
	Only low for a specific position	<p>Possible causes include an oil pressure leak in a passage or device related to the position after the pressure is distributed by the manual valve.</p>
	High	<p>Possible causes include a sensor malfunction or malfunction in the line pressure adjustment function. For example</p> <ul style="list-style-type: none"> ● Accelerator pedal position signal malfunction ● ATF temperature sensor malfunction ● Line pressure solenoid malfunction (sticking in "OFF" state, filter clog, cut line) ● Pressure regulator valve or plug sticking
Stall speed	Oil pressure does not rise higher than the oil pressure for idle.	<p>Possible causes include a sensor malfunction or malfunction in the line pressure adjustment function. For example</p> <ul style="list-style-type: none"> ● Accelerator pedal position signal malfunction ● TCM breakdown ● Line pressure solenoid malfunction (shorting, sticking in "ON" state) ● Pressure regulator valve or plug sticking ● Pilot valve sticking or pilot filter clogged
	The pressure rises, but does not enter the standard position.	<p>Possible causes include malfunctions in the pressure supply system and malfunction in the line pressure adjustment function. For example</p> <ul style="list-style-type: none"> ● Accelerator pedal position signal malfunction ● Line pressure solenoid malfunction (sticking, filter clog) ● Pressure regulator valve or plug sticking ● Pilot valve sticking or pilot filter clogged
	Only low for a specific position	<p>Possible causes include an oil pressure leak in a passage or device related to the position after the pressure is distributed by the manual valve.</p>

ROAD TEST

Description

- The road test inspects overall performance of the A/T and analyzes possible malfunction causes.
- The road test is carried out in the following three stages.
 1. Check before engine is started. Refer to [AT-55](#) .
 2. Check at idle. Refer to [AT-55](#) .
 3. Cruise test
 - Inspect all the items from Part 1 to Part 3. Refer to [AT-56](#) , [AT-58](#) , [AT-59](#) .
- Before beginning the road test, check the test procedure and inspection items.
- Test all inspection items until the symptom is uncovered. Diagnose NG items when all road tests are complete.

TROUBLE DIAGNOSIS

Check Before Engine is Started

ECS00839

1. CHECK A/T CHECK INDICATOR LAMP

1. Park vehicle on level surface.
2. Move selector lever to "P" position.
3. Turn ignition switch to "OFF" position and wait at least 10 seconds.
4. Turn ignition switch to "ON" position. (Do not start engine.)

Does A/T CHECK indicator lamp light up for about 2 seconds?

Yes >> GO TO 2.

No >> Stop the road test and go to [AT-239, "A/T CHECK Indicator Lamp Does Not Come On"](#) .

2. CHECK A/T CHECK INDICATOR LAMP

Does A/T CHECK indicator lamp flash for about 8 seconds?

Yes >> For TCM fail-safe mode, carry out self-diagnostics and record all NG items on the diagnostics worksheet. Refer to [AT-87](#) , [AT-98](#) .

No >> 1. Turn ignition switch to "OFF" position.

2. Carry out the self-diagnostics and record all NG items on the diagnostics worksheet. Refer to [AT-87](#) , [AT-98](#) .

3. Go to [AT-55, "Check at Idle"](#) .

Check at Idle

ECS0083A

1. CHECK STARTING THE ENGINE

1. Park vehicle on level surface.
2. Move selector lever to "P" or "N" position.
3. Turn ignition switch to "OFF" position.
4. Turn ignition switch to "START" position.

Does the engine start?

Yes >> GO TO 2.

No >> Stop the road test and go to [AT-240, "Engine Cannot Be Started In "P" or "N" Position"](#) .

2. CHECK STARTING THE ENGINE

1. Turn ignition switch to "ON" position.
2. Move selector lever in "D" or "R" position.
3. Turn ignition switch to "START" position.

Does the engine start in either position?

Yes >> Stop the road test and go to [AT-240, "Engine Cannot Be Started In "P" or "N" Position"](#) .

No >> GO TO 3.

3. CHECK "P" POSITION FUNCTIONS

1. Move selector lever to "P" position.
2. Turn ignition switch to "OFF" position.
3. Disengage the parking brake.
4. Push the vehicle forward or backward.
5. Engage the parking brake.

When you push the vehicle with disengaging the parking brake, does it move?

Yes >> Enter a check mark at "Vehicle moves when pushed in "P" position" on the diagnostics worksheet, then continue the road test.

No >> GO TO 4.

TROUBLE DIAGNOSIS

4. CHECK "N" POSITION FUNCTIONS

1. Start the engine.
2. Move selector lever to "N" position.
3. Disengage the parking brake.

Does vehicle move forward or backward?

- Yes >> Enter a check mark at "Vehicle moves in "N" position" on the diagnostics worksheet, then continue the road test.
- No >> GO TO 5.

5. CHECK SHIFT SHOCK

1. Engage the brake.
2. Move selector lever to "D" position.

When the transmission is shifted from "N" to "D", is there an excessive shock?

- Yes >> Enter a check mark at "Large shock when shifted from N to D" on the diagnostics worksheet, then continue the road test.
- No >> GO TO 6.

6. CHECK "R" POSITION FUNCTIONS

1. Engage the brake.
2. Move selector lever to "R" position.
3. Disengage the brake for 4 to 5 seconds.

Does the vehicle creep backward?

- Yes >> GO TO 7.
- No >> Enter a check mark at "Vehicle does not creep backward in R position" on the diagnostics worksheet, then continue the road test.

7. CHECK "D" POSITION FUNCTIONS

Inspect whether the vehicle moves forward when the transmission is put into the "D" position.

Does the vehicle move forward in the "D" positions?

- Yes >> Go to [AT-56, "Cruise Test - Part 1"](#) , [AT-58, "Cruise Test - Part 2"](#) , and [AT-59, "Cruise Test - Part 3"](#) .
- No >> Enter a check mark at "Vehicle does not move forward in D positions" on the diagnostics worksheet, then continue the road test.

Cruise Test - Part 1

ECS0083B

Cruise test Part 1

1. CHECK STARTING OUT FROM D1

1. Drive the vehicle for about 10 minutes to warm up the engine oil and A/T fluid.
Appropriate temperature for the A/T fluid: 50 - 80°C (122 - 176°F)
2. Park the vehicle on a level surface.
3. Move selector lever to "P" position.
4. Start the engine.
5. Move selector lever to "D" position.
6. Press the accelerator pedal about half way down to accelerate the vehicle.

Ⓟ With CONSULT-II

Read off the gear positions.

Starts from D1?

- Yes >> GO TO 2.
- No >> Enter a check mark at "Vehicle cannot be started from D1" on the diagnostics worksheet, then continue the road test.

TROUBLE DIAGNOSIS

2. CHECK SHIFT UP D1 → D2

Press down the accelerator pedal about half way and inspect if the vehicle shifts up (D1 → D2) at the appropriate speed.

- Refer to [AT-60](#) .

With CONSULT-II

Read the gear position, throttle degree of opening, and vehicle speed.

Does the A/T shift up D1 → D2 at the correct speed?

Yes >> GO TO 3.

No >> Enter a check mark at "A/T does not shift D1 → D2" on the diagnostics worksheet, then continue the road test.

3. CHECK SHIFT UP D2 → D3

Press down the accelerator pedal about half way and inspect if the vehicle shifts up (D2 → D3) at the appropriate speed.

- Refer to [AT-60](#) .

With CONSULT-II

Read the gear position, throttle degree of opening, and vehicle speed.

Does the A/T shift up D2 → D3 at the correct speed?

Yes >> GO TO 4.

No >> Enter a check mark at "A/T does not shift D2 → D3" on the diagnostics worksheet, then continue the road test.

4. CHECK SHIFT UP D3 → D4

Press down the accelerator pedal about half way and inspect if the vehicle shifts up (D3 → D4) at the appropriate speed.

- Refer to [AT-60](#) .

With CONSULT-II

Read the gear position, throttle degree of opening, and vehicle speed.

Does the A/T shift up D3 → D4 at the correct speed?

Yes >> GO TO 5.

No >> Enter a check mark at "A/T does not shift D3 → D4" on the diagnostics worksheet, then continue the road test.

5. CHECK SHIFT UP D4 → D5

Press down the accelerator pedal about half way and inspect if the vehicle shifts up (D4 → D5) at the appropriate speed.

- Refer to [AT-60](#) .

With CONSULT-II

Read the gear position, throttle degree of opening, and vehicle speed.

Does the A/T shift up D4 → D5 at the correct speed?

Yes >> GO TO 6.

No >> Enter a check mark at "A/T does not shift D4 → D5" on the diagnostics worksheet, then continue the road test.

A
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TROUBLE DIAGNOSIS

6. CHECK LOCK-UP

When releasing accelerator pedal from D5, check lock-up from D5 to L/U.

- Refer to [AT-60](#) .

With CONSULT-II

Select "TCC SOLENOID 0.00A" with the "MAIN SIGNAL" mode for A/T. Refer to [AT-87, "CONSULT-II REFERENCE VALUE"](#) .

Does it lock-up?

Yes >> GO TO 7.

No >> Enter a check mark at "A/T does not perform lock-up" on the diagnostics worksheet, then continue the road test.

7. CHECK LOCK-UP HOLD

Does it maintain lock-up status?

Yes >> GO TO 8.

No >> Enter a check mark at "A/T hold does not lock-up condition" on the diagnostics worksheet, then continue the road test.

8. CHECK LOCK-UP RELEASE

Check lock-up cancellation by depressing brake pedal lightly to decelerate.

With CONSULT-II

Select "TCC SOLENOID 0.00A" with the "MAIN SIGNAL" mode for A/T. Refer to [AT-87, "CONSULT-II REFERENCE VALUE"](#) .

Does lock-up cancel?

Yes >> GO TO 9.

No >> Enter a check mark at "Lock-up is not released" on the diagnostics worksheet, then continue the road test.

9. CHECK SHIFT DOWN D5 → D4

Decelerate by pressing lightly on the brake pedal.

With CONSULT-II

Read the gear position and engine speed.

When the A/T shift down D5 → D4, does the engine speed drop smoothly back to idle?

Yes >> 1. Stop the vehicle.

2. Go to Cruise test - Part 2 (Refer to [AT-58](#)).

No >> Enter a check mark at "A/T does not shift down" on the diagnostics worksheet, then continue the road test. Go to Cruise test - Part 2 (Refer to [AT-58](#)).

Cruise Test - Part 2

ECS0083C

Cruise test Part 2

1. CHECK STARTING FROM D1

1. Move selector lever the "D" position.
2. Accelerate at half throttle.

With CONSULT-II

Read the gear position.

Does it start from D1?

Yes >> GO TO 2.

No >> Enter a check mark at "Vehicle cannot be started from D1" on the diagnostics worksheet, then continue the road test.

TROUBLE DIAGNOSIS

2. CHECK SHIFT UP D1 → D2

Press the accelerator pedal down all the way and inspect whether or not the transmission shifts up (D1 → D2) at the correct speed.

- Refer to [AT-60](#).

With CONSULT-II

Read the gear position, throttle position and vehicle speed.

Does the A/T shift up D1 → D2 at the correct speed?

Yes >> GO TO 3.

No >> Enter a check mark at “Vehicle does not shift D1 → D2” on the diagnostics worksheet, then continue the road test.

3. CHECK SHIFT UP D2 → D3

Press the accelerator pedal down all the way and inspect whether or not the transmission shifts up (D2 → D3) at the correct speed.

- Refer to [AT-60](#).

With CONSULT-II

Read the gear position, throttle position and vehicle speed.

Does the A/T shift up D2 → D3 at the correct speed?

Yes >> GO TO 4.

No >> Enter a check mark at “Vehicle does not shift D2 → D3” on the diagnostics worksheet, then continue the road test.

4. CHECK SHIFT UP D3 → D4 AND ENGINE BRAKE

When the transmission changes speed D3 → D4, return the accelerator pedal.

Does the A/T shift up D3 → D4 and apply the engine brake?

Yes >> 1. Stop the vehicle.

2. Go to Cruise test - Part 3 (Refer to [AT-59](#)).

No >> Enter a check mark at “Vehicle does not shift D3 → D4” on the diagnostics worksheet, then continue the road test.

Cruise Test - Part 3

ECS0083D

Cruise test Part 3

1. MANUAL MODE FUNCTION

Move to manual mode from D position.

Does it switch to manual mode?

Yes >> GO TO 2.

No >> Continue road test and add check mark to “Cannot be changed to manual mode” on diagnostics worksheet.

2. CHECK SHIFT DOWN

During manual mode driving, is downshift from 5^M → 4^M → 3^M → 2^M → 1^M performed?

With CONSULT-II

Read the gear position.

Is downshifting correctly performed?

Yes >> GO TO 3.

No >> Enter a check mark at “Vehicle does not shift” at the corresponding position (5^M → 4^M, 4^M → 3^M, 3^M → 2^M, 2^M → 1^M) on the diagnostics worksheet, then continue the road test.

TROUBLE DIAGNOSIS

3. CHECK ENGINE BRAKE

Does engine braking effectively reduce speed in M1 position?

Yes >> 1. Stop the vehicle.

2. Carry out the self-diagnostics. Refer to [AT-87, "SELF-DIAGNOSTIC PROCEDURE \(WITH CONSULT-II\)"](#) , [AT-98, "Diagnostic Procedure Without CONSULT-II"](#) .

No >> Enter a check mark at "Vehicle does not decelerate by engine brake" on the diagnostics work-sheet, then continue trouble diagnosis.

Vehicle Speed When Shifting Gears

ECS0083E

Throttle position	Vehicle speed km/h (MPH)							
	D1 →D2	D2 →D3	D3 →D4	D4 →D5	D5 →D4	D4 →D3	D3 →D2	D2 →D1
Full throttle	64 - 68 (40 - 42)	95 - 103 (59 - 64)	147 - 157 (91 - 98)	219 - 229 (136 - 142)	215 - 225 (134 - 140)	136 - 146 (85 - 91)	85 - 93 (53 - 58)	41 - 45 (25 - 28)
Half throttle	22 - 26 (14 - 16)	59 - 67 (37 - 42)	100 - 110 (62 - 68)	153 - 163 (95 - 101)	102 - 112 (63 - 70)	55 - 65 (34 - 40)	38 - 46 (24 - 29)	11 - 15 (7 - 9)

- At half throttle, the accelerator opening is 4/8 of the full opening.

Vehicle Speed When Performing and Releasing Complete Lock-up

ECS0083F

Throttle position	Vehicle speed km/h (MPH)	
	Lock-up "ON"	Lock-up "OFF"
Closed throttle	71 - 79 (44 - 49)	53 - 61 (33 - 38)
Half throttle	191 - 199 (119 - 124)	136 - 144 (85 - 89)

- At closed throttle, the accelerator opening is less than 1/8.
- At half throttle, the accelerator opening is 4/8 of the full opening.

Vehicle Speed When Performing and Releasing Slip Lock-up

ECS0083G

Throttle position	Gear position	Vehicle speed km/h (MPH)	
		Slip lock-up "ON"	Slip lock-up "OFF"
Closed throttle	3rd	27 - 35 (17 - 22)	24 - 32 (15 - 20)
	4th	39 - 47 (24 - 29)	36 - 44 (22 - 27)
	5th	48 - 56 (30 - 35)	45 - 53 (28 - 33)

- At closed throttle, the accelerator opening is less than 1/8.

Symptom Chart

ECS0083H

The diagnostics item numbers show the sequence for inspection. Inspect in order from Item 1.

Symptom	Condition	Diagnostic Item	Reference page
Shift point is high in D position.	ON vehicle	1. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-111 , AT-158
		2. Accelerator pedal position sensor	AT-145
		3. CAN communication line	AT-100
		4. ATF temperature sensor	AT-147
		5. Control valve assembly	AT-290
Shift point is low in D position.	ON vehicle	1. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-111 , AT-158
		2. Accelerator pedal position sensor	AT-145
		3. CAN communication line	AT-100
		4. Control valve assembly	AT-290

TROUBLE DIAGNOSIS

Symptom	Condition	Diagnostic Item	Reference page
Large shock. ("N" → "D" position) Refer to AT-243 . "Large Shock ("N" to "D" Position)" .	ON vehicle	1. Engine idle speed	EC-34
		2. Engine speed signal	AT-116
		3. Accelerator pedal position sensor	AT-145
		4. Control linkage adjustment	AT-283
		5. ATF temperature sensor	AT-147
		6. ATF pressure switch 1 and front brake solenoid valve	AT-220, AT-180
		7. CAN communication line	AT-100
		8. Fluid level and state	AT-51
		9. Line pressure test	AT-52
		10. Control valve assembly	AT-290
	OFF vehicle	11. Forward brake* (ATF condition "NG" only. Refer to AT-51 . "Fluid Condition Check" .)	AT-308
Shock is too large when changing D1 → D2 or M1 → M2 .	ON vehicle	1. Accelerator pedal position sensor	AT-145
		2. Control linkage adjustment	AT-283
		3. ATF pressure switch 5 and direct clutch solenoid valve	AT-228, AT-189
		4. CAN communication line	AT-100
		5. Engine speed signal	AT-116
		6. Turbine revolution sensor	AT-153
		7. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-111, AT-158
		8. Fluid level and state	AT-51
	9. Control valve assembly	AT-290	
OFF vehicle	10. Direct clutch (ATF condition "NG" only. Refer to AT-51 . "Fluid Condition Check" .)	AT-338	
Shock is too large when changing D2 → D3 or M2 → M3 .	ON vehicle	1. Accelerator pedal position sensor	AT-145
		2. Control linkage adjustment	AT-283
		3. ATF pressure switch 6 and high and low reverse clutch solenoid valve	AT-232, AT-198
		4. CAN communication line	AT-100
		5. Engine speed signal	AT-116
		6. Turbine revolution sensor	AT-153
		7. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-111, AT-158
		8. Fluid level and state	AT-51
	9. Control valve assembly	AT-290	
OFF vehicle	10. High and low reverse clutch (ATF condition "NG" only. Refer to AT-51 . "Fluid Condition Check" .)	AT-337	
Shock is too large when changing D3 → D4 or M3 → M4 .	ON vehicle	1. Accelerator pedal position sensor	AT-145
		2. Control linkage adjustment	AT-283
		3. ATF pressure switch 3 and input clutch solenoid valve	AT-224, AT-171
		4. CAN communication line	AT-100
		5. Engine speed signal	AT-116
		6. Turbine revolution sensor	AT-153
		7. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-111, AT-158
		8. Fluid level and state	AT-51
		9. Control valve assembly	AT-290
	OFF vehicle	10. Input clutch (ATF condition "NG" only. Refer to AT-51 . "Fluid Condition Check" .)	AT-327

TROUBLE DIAGNOSIS

Symptom	Condition	Diagnostic Item	Reference page
Shock is too large when changing D4 → D5 or M4 → M5 .	ON vehicle	1. Accelerator pedal position sensor	AT-145
		2. Control linkage adjustment	AT-283
		3. ATF pressure switch 1 and front brake solenoid valve	AT-220, AT-180
		4. CAN communication line	AT-100
		5. Engine speed signal	AT-116
		6. Turbine revolution sensor	AT-153
		7. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-111, AT-158
		8. Fluid level and state	AT-51
		9. Control valve assembly	AT-290
	OFF vehicle	10. Front brake [brake band (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)]	AT-300
		11. Input clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-327
Shock is too large for downshift when accelerator pedal is pressed.	ON vehicle	1. Accelerator pedal position sensor	AT-145
		2. Control linkage adjustment	AT-283
		3. CAN communication line	AT-100
		4. Engine speed signal	AT-116
		5. Turbine revolution sensor	AT-153
		6. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-111, AT-158
		7. Fluid level and state	AT-51
		8. Control valve assembly	AT-290
	OFF vehicle	9. Front brake [brake band (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)]	AT-300
		10. Input clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-327
		11. High and low reverse clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-337
12. Direct clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)		AT-338	
Shock is too large for upshift when accelerator pedal is released.	ON vehicle	1. Accelerator pedal position sensor	AT-145
		2. Control linkage adjustment	AT-283
		3. Engine speed signal	AT-116
		4. CAN communication line	AT-100
		5. Turbine revolution sensor	AT-153
		6. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-111, AT-158
		7. Fluid level and state	AT-51
		8. Control valve assembly	AT-290
	OFF vehicle	9. Front brake [brake band (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)]	AT-300
		10. Input clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-327
		11. High and low reverse clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-337
		12. Direct clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-338

TROUBLE DIAGNOSIS

Symptom	Condition	Diagnostic Item	Reference page
Shock is too large for lock-up.	ON vehicle	1. Accelerator pedal position sensor	AT-145
		2. Control linkage adjustment	AT-283
		3. Engine speed signal	AT-116
		4. CAN communication line	AT-100
		5. Turbine revolution sensor	AT-153
		6. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-111, AT-158
		7. Torque converter clutch solenoid valve	AT-118
		8. Fluid level and state	AT-51
		9. Control valve assembly	AT-290
	OFF vehicle	10. Torque converter (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308
Shock is too large during engine brake.	ON vehicle	1. Accelerator pedal position sensor	AT-145
		2. Control linkage adjustment	AT-283
		3. CAN communication line	AT-100
		4. Fluid level and state	AT-51
		5. Control valve assembly	AT-290
	OFF vehicle	6. Front brake [brake band (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)]	AT-300
		7. Input clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-327
		8. High and low reverse clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-337
		9. Direct clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-338
Judder occurs during lock-up.	ON vehicle	1. Fluid level and state	AT-51
		2. Engine speed signal	AT-116
		3. Turbine revolution sensor	AT-153
		4. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-111, AT-158
		5. Accelerator pedal position sensor	AT-145
		6. CAN communication line	AT-100
		7. Torque converter clutch solenoid valve	AT-118
		8. Control valve assembly	AT-290
	OFF vehicle	9. Torque converter (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308
Strange noise in "R" position.	ON vehicle	1. Fluid level and state	AT-51
		2. Engine speed signal	AT-116
		3. CAN communication line	AT-100
		4. Control valve assembly	AT-290
	OFF vehicle	5. Torque converter (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308
		6. Oil pump assembly (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-322
		7. Gear system (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-300
		8. High and low reverse clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-337
		9. Reverse brake (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308

TROUBLE DIAGNOSIS

Symptom	Condition	Diagnostic Item	Reference page
Strange noise in "N" position.	ON vehicle	1. Fluid level and state	AT-51
		2. Engine speed signal	AT-116
		3. CAN communication line	AT-100
		4. Control valve assembly	AT-290
	OFF vehicle	5. Torque converter (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308
		6. Oil pump assembly (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-322
		7. Gear system (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-300
Strange noise in "D" position.	ON vehicle	1. Fluid level and state	AT-51
		2. Engine speed signal	AT-116
		3. CAN communication line	AT-100
		4. Control valve assembly	AT-290
	OFF vehicle	5. Torque converter (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308
		6. Oil pump assembly (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-322
		7. Gear system (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-300
		8. Forward brake* (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308
When D or M position, remains in 1st gear.	ON vehicle	1. Fluid level and state	AT-51
		2. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-111, AT-158
		3. Direct clutch solenoid valve	AT-189
		4. Line pressure test	AT-52
		5. CAN communication line	AT-100
		6. Control valve assembly	AT-290
	OFF vehicle	7. 3rd one-way clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-324
		8. 1st one-way clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-332
		9. Gear system (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-300
		10. Reverse brake (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308
		11. Forward one-way clutch* (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308
		12. Forward brake* (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308

TROUBLE DIAGNOSIS

Symptom	Condition	Diagnostic Item	Reference page
When D or M position, remains in 2nd gear.	ON vehicle	1. Fluid level and state	AT-51
		2. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-111, AT-158
		3. Low coast brake solenoid valve	AT-207
		4. Line pressure test	AT-52
		5. CAN communication line	AT-100
		6. Control valve assembly	AT-290
	OFF vehicle	7. 3rd one-way clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-324
		8. Gear system (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-300
		9. Direct clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-338
		10. Forward brake* (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308
When D or M position, remains in 3rd gear.	ON vehicle	1. Fluid level and state	AT-51
		2. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-111, AT-158
		3. Line pressure test	AT-52
		4. CAN communication line	AT-100
		5. Control valve assembly	AT-290
	OFF vehicle	6. 3rd one-way clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-324
		7. Gear system (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-300
		8. High and low reverse clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-337
		9. Forward one-way clutch* (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308
		10. Forward brake* (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308
When D or M position, remains in 4th gear.	ON vehicle	1. Fluid level and state	AT-51
		2. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-111, AT-158
		3. ATF pressure switch 3 and input clutch solenoid valve	AT-224, AT-171
		4. ATF pressure switch 5 and direct clutch solenoid valve	AT-228, AT-189
		5. ATF pressure switch 6 and high and low reverse clutch solenoid valve	AT-232, AT-198
		6. Low coast brake solenoid valve	AT-207
		7. Front brake solenoid valve	AT-180
		8. Line pressure test	AT-52
		9. CAN communication line	AT-100
		10. Control valve assembly	AT-290
	OFF vehicle	11. Input clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-327
		12. Gear system (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-300
		13. High and low reverse clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-337
		14. Direct clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-338

TROUBLE DIAGNOSIS

Symptom	Condition	Diagnostic Item	Reference page
When D or M position, remains in 5th gear.	ON vehicle	1. Fluid level and state	AT-51
		2. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-111, AT-158
		3. ATF pressure switch 1 and front brake solenoid valve	AT-220, AT-180
		4. Line pressure test	AT-52
		5. CAN communication line	AT-100
		6. Control valve assembly	AT-290
	OFF vehicle	7. Front brake [brake band (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)]	AT-308
		8. Input clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-327
		9. Gear system (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-300
		10. High and low reverse clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-337
Vehicle cannot be started from D1 . Refer to AT-252, "Vehicle Cannot Be Started From D1" .	ON vehicle	1. Fluid level and state	AT-51
		2. Accelerator pedal position sensor	AT-145
		3. Line pressure test	AT-52
		4. CAN communication line	AT-100
		5. Control valve assembly	AT-290
	OFF vehicle	6. Torque converter (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308
		7. Oil pump assembly (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-322
		8. 3rd one-way clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-324
		9. 1st one-way clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-332
		10. Gear system (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-300
		11. Reverse brake (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308
		12. Forward one-way clutch* (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308
		13. Forward brake* (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308
Gear does not change from D1 → D2 or from M1 → M2 . Refer to AT-254, "A/T Does Not Shift: D1 → D2" .	ON vehicle	1. Fluid level and state	AT-51
		2. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-111, AT-158
		3. ATF pressure switch 5 and direct clutch solenoid valve	AT-228, AT-189
		4. Line pressure test	AT-52
		5. CAN communication line	AT-100
		6. Control valve assembly	AT-290
	OFF vehicle	7. Direct clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-338

TROUBLE DIAGNOSIS

Symptom	Condition	Diagnostic Item	Reference page
Gear does not change from D2 → D3 or from M2 → M3 . Refer to AT-256. "A/T Does Not Shift: D2 → D3" .	ON vehicle	1. Fluid level and state	AT-51
		2. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-111, AT-158
		3. ATF pressure switch 6 and high and low reverse clutch solenoid valve	AT-232, AT-198
		4. Line pressure test	AT-52
		5. CAN communication line	AT-100
		6. Control valve assembly	AT-290
	OFF vehicle	7. High and low reverse clutch (ATF condition "NG" only. Refer to AT-51. "Fluid Condition Check" .)	AT-337
Gear does not change from D3 → D4 or from M3 → M4 . Refer to AT-259. "A/T Does Not Shift: D3 → D4" .	ON vehicle	1. Fluid level and state	AT-51
		2. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-111, AT-158
		3. ATF pressure switch 3 and input clutch solenoid valve	AT-224, AT-171
		4. ATF pressure switch 1 and front brake solenoid valve	AT-220, AT-180
		5. Line pressure test	AT-52
		6. CAN communication line	AT-100
	7. Control valve assembly	AT-290	
OFF vehicle	8. Input clutch (ATF condition "NG" only. Refer to AT-51. "Fluid Condition Check" .)	AT-327	
Gear does not change from D4 → D5 or from M4 → M5 . Refer to AT-261. "A/T Does Not Shift: D4 → D5" .	ON vehicle	1. Fluid level and state	AT-51
		2. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-111, AT-158
		3. ATF pressure switch 1 and front brake solenoid valve	AT-220, AT-180
		4. ATF pressure switch 5 and direct clutch solenoid valve	AT-228, AT-189
		5. Turbine revolution sensor	AT-153
		6. Line pressure test	AT-52
		7. CAN communication line	AT-100
		8. Control valve assembly	AT-290
	OFF vehicle	9. Front brake [brake band (ATF condition "NG" only. Refer to AT-51. "Fluid Condition Check" .)]	AT-308
		10. Input clutch (ATF condition "NG" only. Refer to AT-51. "Fluid Condition Check" .)	AT-327
In D or M range, does not downshift to 4th gear. Refer to AT-272. "A/T Does Not Shift: 5th gear → 4th gear" .	ON vehicle	1. Fluid level and state	AT-51
		2. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-111, AT-158
		3. ATF pressure switch 1 and front brake solenoid valve	AT-220, AT-180
		4. ATF pressure switch 5 and direct clutch solenoid valve	AT-228, AT-189
		5. CAN communication line	AT-100
		6. Line pressure test	AT-52
		7. Control valve assembly	AT-290
	OFF vehicle	8. Front brake [brake band (ATF condition "NG" only. Refer to AT-51. "Fluid Condition Check" .)]	AT-308
		9. Input clutch (ATF condition "NG" only. Refer to AT-51. "Fluid Condition Check" .)	AT-327

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TROUBLE DIAGNOSIS

Symptom	Condition	Diagnostic Item	Reference page
In D or M range, does not downshift to 3rd gear. Refer to AT-274, "A/T Does Not Shift: 4th gear → 3rd gear" .	ON vehicle	1. Fluid level and state	AT-51
		2. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-111, AT-158
		3. ATF pressure switch 3 and input clutch solenoid valve	AT-224, AT-171
		4. ATF pressure switch 1 and front brake solenoid valve	AT-220, AT-180
		5. CAN communication line	AT-100
		6. Line pressure test	AT-52
	OFF vehicle	7. Control valve assembly	AT-290
In D or M range, does not downshift to 2nd gear. Refer to AT-276, "A/T Does Not Shift: 3rd gear → 2nd gear" .	ON vehicle	8. Input clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-327
		1. Fluid level and state	AT-51
		2. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-111, AT-158
		3. ATF pressure switch 6 and high and low reverse clutch solenoid valve	AT-232, AT-198
		4. CAN communication line	AT-100
		5. Line pressure test	AT-52
	OFF vehicle	6. Control valve assembly	AT-290
In D or M range, does not downshift to 1st gear. Refer to AT-278, "A/T Does Not Shift: 2nd gear → 1st gear" .	ON vehicle	7. High and low reverse clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-337
		1. Fluid level and state	AT-51
		2. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-111, AT-158
		3. ATF pressure switch 5 and direct clutch solenoid valve	AT-228, AT-189
		4. CAN communication line	AT-100
		5. Line pressure test	AT-52
	OFF vehicle	6. Control valve assembly	AT-290
Does not lock-up. Refer to AT-263, "A/T Does Not Perform Lock-up" .	ON vehicle	7. Direct clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-338
		1. Fluid level and state	AT-51
		2. Line pressure test	AT-52
		3. Engine speed signal	AT-116
		4. Turbine revolution sensor	AT-153
		5. Torque converter clutch solenoid valve	AT-118
	OFF vehicle	6. CAN communication line	AT-100
Does not hold lock-up condition. Refer to AT-266, "A/T Does Not Hold Lock-up Condition" .	ON vehicle	7. Control valve assembly	AT-290
		8. Torque converter (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308
		9. Oil pump assembly (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-322
		1. Fluid level and state	AT-51
		2. Line pressure test	AT-52
		3. Engine speed signal	AT-116
		4. Turbine revolution sensor	AT-153
	5. Torque converter clutch solenoid valve	AT-118	
	OFF vehicle	6. CAN communication line	AT-100
7. Control valve assembly		AT-290	
Does not hold lock-up condition. Refer to AT-266, "A/T Does Not Hold Lock-up Condition" .	ON vehicle	8. Torque converter (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308
		9. Oil pump assembly (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-322
		1. Fluid level and state	AT-51
		2. Line pressure test	AT-52
		3. Engine speed signal	AT-116
		4. Turbine revolution sensor	AT-153
		5. Torque converter clutch solenoid valve	AT-118
	OFF vehicle	6. CAN communication line	AT-100
		7. Control valve assembly	AT-290

TROUBLE DIAGNOSIS

Symptom	Condition	Diagnostic Item	Reference page	
Lock-up is not released. Refer to AT-268 , " Lock-up Is Not Released ".	ON vehicle	1. Fluid level and state	AT-51	
		2. Line pressure test	AT-52	
		3. Engine speed signal	AT-116	
		4. Turbine revolution sensor	AT-153	
		5. Torque converter clutch solenoid valve	AT-118	
		6. CAN communication line	AT-100	
		7. Control valve assembly	AT-290	
	OFF vehicle	8. Torque converter (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check ".)	AT-308	
		9. Oil pump assembly (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check ".)	AT-322	
Does not change M5 → M4.	ON vehicle	1. PNP switch	AT-106	
		2. Fluid level and state	AT-51	
		3. Control linkage adjustment	AT-283	
		4. Manual mode switch	AT-216	
		5. ATF pressure switch 1	AT-220	
		6. CAN communication line	AT-100	
		7. Control valve assembly	AT-290	
	OFF vehicle	8. Front brake [brake band (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check ".)]	AT-308	
	Does not change M4 → M3.	ON vehicle	1. PNP switch	AT-106
			2. Fluid level and state	AT-51
3. Control linkage adjustment			AT-283	
4. Manual mode switch			AT-216	
5. ATF pressure switch 1 and ATF pressure switch 3			AT-220 , AT-224	
6. CAN communication line			AT-100	
7. Control valve assembly			AT-290	
OFF vehicle		8. Front brake [brake band (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check ".)]	AT-308	
		9. Input clutch (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check ".)	AT-327	
		10. High and low reverse clutch (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check ".)	AT-337	
Does not change M3 → M2.	ON vehicle	1. PNP switch	AT-106	
		2. Fluid level and state	AT-51	
		3. Control linkage adjustment	AT-283	
		4. Manual mode switch	AT-216	
		5. ATF pressure switch 6	AT-232	
		6. CAN communication line	AT-100	
		7. Control valve assembly	AT-290	
	OFF vehicle	8. Front brake [brake band (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check ".)]	AT-308	
		9. Input clutch (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check ".)	AT-327	
		10. High and low reverse clutch (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check ".)	AT-337	

TROUBLE DIAGNOSIS

Symptom	Condition	Diagnostic Item	Reference page
Does not change M2 → M1.	ON vehicle	1. PNP switch	AT-106
		2. Fluid level and state	AT-51
		3. Control linkage adjustment	AT-283
		4. Manual mode switch	AT-216
		5. ATF pressure switch 5	AT-228
		6. CAN communication line	AT-100
		7. Control valve assembly	AT-290
	OFF vehicle	8. Input clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-327
		9. High and low reverse clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-337
		10. Direct clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-338
No shock at all or the clutch slips when vehicle changes speed D1 → D2 or M1 → M2 .	ON vehicle	1. Fluid level and state	AT-51
		2. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-111, AT-158
		3. ATF pressure switch 5 and direct clutch solenoid valve	AT-228, AT-189
		4. CAN communication line	AT-100
		5. Line pressure test	AT-52
		6. Control valve assembly	AT-290
	OFF vehicle	7. Torque converter (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308
		8. Oil pump assembly (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-322
		9. 3rd one-way clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-324
		10. Gear system (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-300
		11. Direct clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-338
		12. Forward brake* (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308

TROUBLE DIAGNOSIS

Symptom	Condition	Diagnostic Item	Reference page	
No shock at all or the clutch slips when vehicle changes speed D2 → D3 or M2 → M3 .	ON vehicle	1. Fluid level and state	AT-51	A
		2. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-111, AT-158	
		3. ATF pressure switch 6 and high and low reverse clutch solenoid valve	AT-232, AT-198	B
		4. CAN communication line	AT-100	
		5. Line pressure test	AT-52	
		6. Control valve assembly	AT-290	AT
	OFF vehicle	7. Torque converter (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308	D
		8. Oil pump assembly (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-322	
		9. 3rd one-way clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-324	E
		10. Gear system (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-300	
		11. High and low reverse clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-337	F
		12. Forward one-way clutch* (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308	G
		13. Forward brake* (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308	
No shock at all or the clutch slips when vehicle changes speed D3 → D4 or M3 → M4 .	ON vehicle	1. Fluid level and state	AT-51	H
		2. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-111, AT-158	
		3. ATF pressure switch 3 and input clutch solenoid valve	AT-224, AT-171	I
		4. ATF pressure switch 1 and front brake solenoid valve	AT-220, AT-180	
		5. CAN communication line	AT-100	
		6. Line pressure test	AT-52	J
		7. Control valve assembly	AT-290	
	OFF vehicle	8. Torque converter (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308	K
		9. Oil pump assembly (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-322	
		10. Input clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-327	L
		11. Gear system (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-300	
		12. High and low reverse clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-337	M
		13. Direct clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-338	

TROUBLE DIAGNOSIS

Symptom	Condition	Diagnostic Item	Reference page
No shock at all or the clutch slips when vehicle changes speed D4 → D5 or M4 → M5 .	ON vehicle	1. Fluid level and state	AT-51
		2. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-111, AT-158
		3. ATF pressure switch 1 and front brake solenoid valve	AT-220, AT-180
		4. ATF pressure switch 5 and direct clutch solenoid valve	AT-228, AT-189
		5. CAN communication line	AT-100
		6. Line pressure test	AT-52
		7. Control valve assembly	AT-290
	OFF vehicle	8. Torque converter (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308
		9. Oil pump assembly (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-322
		10. Front brake [brake band (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)]	AT-308
		11. Input clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-327
		12. Gear system (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-300
		13. High and low reverse clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-337
When you press the accelerator pedal and shift speed D5 → D4 or M5 → M4 the engine idles or the transmission slips.	ON vehicle	1. Fluid level and state	AT-51
		2. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-111, AT-158
		3. ATF pressure switch 1 and front brake solenoid valve	AT-220, AT-180
		4. ATF pressure switch 5 and direct clutch solenoid valve	AT-228, AT-189
		5. CAN communication line	AT-100
		6. Line pressure test	AT-52
		7. Control valve assembly	AT-290
	OFF vehicle	8. Torque converter (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308
		9. Oil pump assembly (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-322
		10. Input clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-327
		11. Gear system (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-300
		12. High and low reverse clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-337
		13. Direct clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-338

TROUBLE DIAGNOSIS

Symptom	Condition	Diagnostic Item	Reference page
When you press the accelerator pedal and shift speed D4 → D3 or M4 → M3 the engine idles or the transmission slips.	ON vehicle	1. Fluid level and state	AT-51
		2. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-111, AT-158
		3. ATF pressure switch 3 and input clutch solenoid valve	AT-224, AT-171
		4. ATF pressure switch 1 and front brake solenoid valve	AT-220, AT-180
		5. CAN communication line	AT-100
		6. Line pressure test	AT-52
		7. Control valve assembly	AT-290
	OFF vehicle	8. Torque converter (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308
		9. Oil pump assembly (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-322
		10. 3rd one-way clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-324
		11. Gear system (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-300
		12. High and low reverse clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-337
		13. Forward one-way clutch* (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308
		14. Forward brake* (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308
When you press the accelerator pedal and shift speed D3 → D2 or M3 → M2 the engine idles or the transmission slips.	ON vehicle	1. Fluid level and state	AT-51
		2. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-111, AT-158
		3. ATF pressure switch 6 and high and low reverse clutch solenoid valve	AT-232, AT-198
		4. ATF pressure switch 5 and direct clutch solenoid valve	AT-228, AT-189
		5. CAN communication line	AT-100
		6. Line pressure test	AT-52
		7. Control valve assembly	AT-290
	OFF vehicle	8. Torque converter (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308
		9. Oil pump assembly (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-322
		10. 3rd one-way clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-324
		11. Gear system (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-300
		12. Direct clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-338
		13. Forward brake* (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308

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TROUBLE DIAGNOSIS

Symptom	Condition	Diagnostic Item	Reference page
When you press the accelerator pedal and shift speed D2 → D1 or M2 → M1 the engine idles or the transmission slips.	ON vehicle	1. Fluid level and state	AT-51
		2. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-111 , AT-158
		3. ATF pressure switch 5 and direct clutch solenoid valve	AT-228 , AT-189
		4. CAN communication line	AT-100
		5. Line pressure test	AT-52
		6. Control valve assembly	AT-290
	OFF vehicle	7. Torque converter (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check " .)	AT-308
		8. Oil pump assembly (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check " .)	AT-322
		9. 3rd one-way clutch (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check " .)	AT-324
		10. 1st one-way clutch (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check " .)	AT-332
		11. Gear system (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check " .)	AT-300
		12. Reverse brake (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check " .)	AT-308
		13. Forward one-way clutch* (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check " .)	AT-308
		14. Forward brake* (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check " .)	AT-308
Vehicle dose not decelerate by engine brake. Refer to AT-280 , " Vehicle Does Not Decelerate By Engine Brake " .	ON vehicle	1. PNP switch	AT-106
		2. Fluid level and state	AT-51
		3. Control linkage adjustment	AT-283
		4. Manual mode switch	AT-216
		5. ATF pressure switch 5	AT-228
		6. CAN communication line	AT-100
		7. Control valve assembly	AT-290
	OFF vehicle	8. Input clutch (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check " .)	AT-327
		9. High and low reverse clutch (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check " .)	AT-337
		10. Direct clutch (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check " .)	AT-338
Engine brake does not work M5 → M4.	ON vehicle	1. PNP switch	AT-106
		2. Fluid level and state	AT-51
		3. Control linkage adjustment	AT-283
		4. Manual mode switch	AT-216
		5. ATF pressure switch 1	AT-220
		6. CAN communication line	AT-100
		7. Control valve assembly	AT-290
	OFF vehicle	8. Front brake [brake band (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check " .)]	AT-308

TROUBLE DIAGNOSIS

Symptom	Condition	Diagnostic Item	Reference page
Engine brake does not work M4 → M3.	ON vehicle	1. PNP switch	AT-106
		2. Fluid level and state	AT-51
		3. Control linkage adjustment	AT-283
		4. Manual mode switch	AT-216
		5. ATF pressure switch 1 and ATF pressure switch 3	AT-220, AT-224
		6. CAN communication line	AT-100
		7. Control valve assembly	AT-290
	OFF vehicle	8. Front brake [brake band (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check " .)]	AT-308
		9. Input clutch (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check " .)	AT-327
Engine brake does not work M3 → M2.	ON vehicle	1. PNP switch	AT-106
		2. Fluid level and state	AT-51
		3. Control linkage adjustment	AT-283
		4. Manual mode switch	AT-216
		5. ATF pressure switch 6	AT-232
		6. CAN communication line	AT-100
		7. Control valve assembly	AT-290
	OFF vehicle	8. Front brake [brake band (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check " .)]	AT-308
		9. Input clutch (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check " .)	AT-327
		10. High and low reverse clutch (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check " .)	AT-337
Engine brake does not work M2 → M1.	ON vehicle	1. PNP switch	AT-106
		2. Fluid level and state	AT-51
		3. Control linkage adjustment	AT-283
		4. Manual mode switch	AT-216
		5. ATF pressure switch 5	AT-228
		6. CAN communication line	AT-100
		7. Control valve assembly	AT-290
	OFF vehicle	8. Input clutch (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check " .)	AT-327
		9. High and low reverse clutch (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check " .)	AT-337
		10. Direct clutch (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check " .)	AT-338

A
B
AT
D
E
F
G
H
I
J
K
L
M

TROUBLE DIAGNOSIS

Symptom	Condition	Diagnostic Item	Reference page
With selector lever in D position, acceleration is extremely poor.	ON vehicle	1. Fluid level and state	AT-51
		2. Line pressure test	AT-52
		3. Accelerator pedal position sensor	AT-145
		4. CAN communication line	AT-100
		5. PNP switch	AT-106
		6. Control linkage adjustment	AT-283
		7. Control valve assembly	AT-290
	OFF vehicle	8. Torque converter (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308
		9. Oil pump assembly (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-322
		10. 1st one-way clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-332
		11. Gear system (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-300
		12. Reverse brake (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308
		13. Forward one-way clutch* (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308
		14. Forward brake* (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308
With selector lever in R position, acceleration is extremely poor.	ON vehicle	1. Fluid level and state	AT-51
		2. Line pressure test	AT-52
		3. Accelerator pedal position sensor	AT-145
		4. ATF pressure switch 6 and high and low reverse clutch solenoid valve	AT-232, AT-198
		5. CAN communication line	AT-100
		6. PNP switch	AT-106
		7. Control linkage adjustment	AT-283
		8. Control valve assembly	AT-290
	OFF vehicle	9. Gear system (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-300
		10. Output shaft (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308
		11. Reverse brake (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308

TROUBLE DIAGNOSIS

Symptom	Condition	Diagnostic Item	Reference page
While starting off by accelerating in 1st, engine races or slippage occurs.	ON vehicle	1. Fluid level and state	AT-51
		2. Line pressure test	AT-52
		3. Accelerator pedal position sensor	AT-145
		4. CAN communication line	AT-100
		5. Control valve assembly	AT-290
	OFF vehicle	6. Torque converter (ATF condition "NG" only. Refer to AT-51 , "Fluid Condition Check" .)	AT-308
		7. Oil pump assembly (ATF condition "NG" only. Refer to AT-51 , "Fluid Condition Check" .)	AT-322
		8. 3rd one-way clutch (ATF condition "NG" only. Refer to AT-51 , "Fluid Condition Check" .)	AT-324
		9. 1st one-way clutch (ATF condition "NG" only. Refer to AT-51 , "Fluid Condition Check" .)	AT-332
		10. Gear system (ATF condition "NG" only. Refer to AT-51 , "Fluid Condition Check" .)	AT-300
		11. Reverse brake (ATF condition "NG" only. Refer to AT-51 , "Fluid Condition Check" .)	AT-308
		12. Forward one-way clutch* (ATF condition "NG" only. Refer to AT-51 , "Fluid Condition Check" .)	AT-308
		13. Forward brake* (ATF condition "NG" only. Refer to AT-51 , "Fluid Condition Check" .)	AT-308
While accelerating in 2nd, engine races or slippage occurs.	ON vehicle	1. Fluid level and state	AT-51
		2. Line pressure test	AT-52
		3. Accelerator pedal position sensor	AT-145
		4. CAN communication line	AT-100
		5. ATF pressure switch 5 and direct clutch solenoid valve	AT-228 , AT-189
		6. Control valve assembly	AT-290
	OFF vehicle	7. Torque converter (ATF condition "NG" only. Refer to AT-51 , "Fluid Condition Check" .)	AT-308
		8. Oil pump assembly (ATF condition "NG" only. Refer to AT-51 , "Fluid Condition Check" .)	AT-322
		9. 3rd one-way clutch (ATF condition "NG" only. Refer to AT-51 , "Fluid Condition Check" .)	AT-324
		10. Gear system (ATF condition "NG" only. Refer to AT-51 , "Fluid Condition Check" .)	AT-300
		11. Direct clutch (ATF condition "NG" only. Refer to AT-51 , "Fluid Condition Check" .)	AT-338
		12. Forward brake* (ATF condition "NG" only. Refer to AT-51 , "Fluid Condition Check" .)	AT-308

A
B
AT
D
E
F
G
H
I
J
K
L
M

TROUBLE DIAGNOSIS

Symptom	Condition	Diagnostic Item	Reference page
While accelerating in 3rd, engine races or slippage occurs.	ON vehicle	1. Fluid level and state	AT-51
		2. Line pressure test	AT-52
		3. Accelerator pedal position sensor	AT-145
		4. CAN communication line	AT-100
		5. ATF pressure switch 6 and high and low reverse clutch solenoid valve	AT-232, AT-198
		6. Control valve assembly	AT-290
	OFF vehicle	7. Torque converter (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308
		8. Oil pump assembly (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-322
		9. 3rd one-way clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-324
		10. Gear system (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-300
		11. High and low reverse clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-337
		12. Forward one-way clutch* (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308
		13. Forward brake* (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308
While accelerating in 4th, engine races or slippage occurs.	ON vehicle	1. Fluid level and state	AT-51
		2. Line pressure test	AT-52
		3. Accelerator pedal position sensor	AT-145
		4. CAN communication line	AT-100
		5. ATF pressure switch 3 and input clutch solenoid valve	AT-224, AT-171
		6. Control valve assembly	AT-290
	OFF vehicle	7. Torque converter (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308
		8. Oil pump assembly (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-322
		9. Input clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-327
		10. Gear system (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-300
		11. High and low reverse clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-337
		12. Direct clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-338

TROUBLE DIAGNOSIS

Symptom	Condition	Diagnostic Item	Reference page	
While accelerating in 5th, engine races or slippage occurs.	ON vehicle	1. Fluid level and state	AT-51	A
		2. Line pressure test	AT-52	
		3. Accelerator pedal position sensor	AT-145	B
		4. CAN communication line	AT-100	
		5. ATF pressure switch 1 and front brake solenoid valve	AT-220, AT-180	AT
		6. Control valve assembly	AT-290	
	OFF vehicle	7. Torque converter (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308	D
		8. Oil pump assembly (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-322	
		9. Front brake [brake band (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)]	AT-308	E
		10. Input clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-327	
		11. Gear system (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-300	F
		12. High and low reverse clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-337	G
Slips at lock-up.	ON vehicle	1. Fluid level and state	AT-51	
		2. Line pressure test	AT-52	H
		3. Engine speed signal	AT-116	
		4. Turbine revolution sensor	AT-153	I
		5. Torque converter clutch solenoid valve	AT-118	
		6. CAN communication line	AT-100	J
		7. Control valve assembly	AT-290	
	OFF vehicle	8. Torque converter (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308	K
		9. Oil pump assembly (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-322	

TROUBLE DIAGNOSIS

Symptom	Condition	Diagnostic Item	Reference page
Maximum speed low.	ON vehicle	1. Fluid level and state	AT-51
		2. Line pressure test	AT-52
		3. Accelerator pedal position sensor	AT-145
		4. CAN communication line	AT-100
		5. Direct clutch solenoid valve	AT-189
		6. Control valve assembly	AT-290
	OFF vehicle	7. Torque converter (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check " .)	AT-308
		8. Oil pump assembly (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check " .)	AT-322
		9. Input clutch (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check " .)	AT-327
		10. Gear system (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check " .)	AT-300
		11. High and low reverse clutch (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check " .)	AT-337
		12. Direct clutch (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check " .)	AT-338
		13. Forward one-way clutch* (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check " .)	AT-308
		14. Forward brake* (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check " .)	AT-308
No creep at all. Refer to AT-246 , " Vehicle Does Not Creep Backward In "R" Position " , AT-248 , " Vehicle Does Not Creep Forward In "D" Position "	ON vehicle	1. Fluid level and state	AT-51
		2. Line pressure test	AT-52
		3. Accelerator pedal position sensor	AT-145
		4. ATF pressure switch 5 and direct clutch solenoid valve	AT-228 , AT-189
		5. PNP switch	AT-106
		6. CAN communication line	AT-100
		7. Control linkage adjustment	AT-283
		8. Control valve assembly	AT-290
	OFF vehicle	9. Torque converter (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check " .)	AT-308
		10. Oil pump assembly (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check " .)	AT-322
		11. 1st one-way clutch (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check " .)	AT-332
		12. Gear system (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check " .)	AT-300
		13. Reverse brake (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check " .)	AT-308
		14. Direct clutch (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check " .)	AT-338
		15. Forward one-way clutch* (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check " .)	AT-308
		16. Forward brake* (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check " .)	AT-308

TROUBLE DIAGNOSIS

Symptom	Condition	Diagnostic Item	Reference page
Extremely large creep.	ON vehicle	1. Engine idle speed	EC-34
		2. CAN communication line	AT-100
		3. ATF pressure switch 5	AT-228
	OFF vehicle	4. Torque converter (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308
With selector lever in P position, vehicle does not enter parking condition or, with selector lever in another position, parking condition is not cancelled. Refer to AT-241, "In "P" Position, Vehicle Moves When Pushed" .	ON vehicle	1. PNP switch	AT-106
		2. Control linkage adjustment	AT-283
	OFF vehicle	3. Parking pawl components (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-300
Vehicle runs with transmission in "P" position.	ON vehicle	1. PNP switch	AT-106
		2. Fluid level and state	AT-51
		3. Control linkage adjustment	AT-283
		4. Control valve assembly	AT-290
	OFF vehicle	5. Parking pawl components (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-300
		6. Gear system (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-300
Vehicle runs with transmission in "N" position. Refer to AT-242, "In "N" Position, Vehicle Moves" .	ON vehicle	1. PNP switch	AT-106
		2. Fluid level and state	AT-51
		3. Control linkage adjustment	AT-283
		4. Control valve assembly	AT-290
	OFF vehicle	5. Input clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-327
		6. Gear system (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-300
		7. Direct clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-338
		8. Reverse brake (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308
		9. Forward one-way clutch* (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308
		10. Low coast brake* (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308

A
B
AT
D
E
F
G
H
I
J
K
L
M

TROUBLE DIAGNOSIS

Symptom	Condition	Diagnostic Item	Reference page
Vehicle cannot run in all positions.	ON vehicle	1. Fluid level and state	AT-51
		2. Line pressure test	AT-52
		3. PNP switch	AT-106
		4. Control linkage adjustment	AT-283
		5. Control valve assembly	AT-290
	OFF vehicle	6. Oil pump assembly (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-322
		7. Gear system (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-300
		8. Output shaft (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308
With selector lever in D position, driving is not possible.	ON vehicle	1. Fluid level and state	AT-51
		2. Line pressure test	AT-52
		3. PNP switch	AT-106
		4. Control linkage adjustment	AT-283
		5. Control valve assembly	AT-290
	OFF vehicle	6. Torque converter (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308
		7. Oil pump assembly (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-322
		8. 1st one-way clutch (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-332
		9. Gear system (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-300
		10. Reverse brake (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308
		11. Forward one-way clutch* (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308
		12. Forward brake* (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308
With selector lever in R position, driving is not possible.	ON vehicle	1. Fluid level and state	AT-51
		2. Line pressure test	AT-52
		3. PNP switch	AT-106
		4. Control linkage adjustment	AT-283
		5. Control valve assembly	AT-290
	OFF vehicle	6. Gear system (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-300
		7. Output shaft (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308
		8. Reverse brake (ATF condition "NG" only. Refer to AT-51, "Fluid Condition Check" .)	AT-308
Can not be changed to manual mode. Refer to AT-271, "Cannot Be Changed to Manual Mode" .	ON vehicle	1. Manual mode switch	AT-216
		2. Turbine revolution sensor	AT-153
		3. CAN communication line	AT-100

TROUBLE DIAGNOSIS

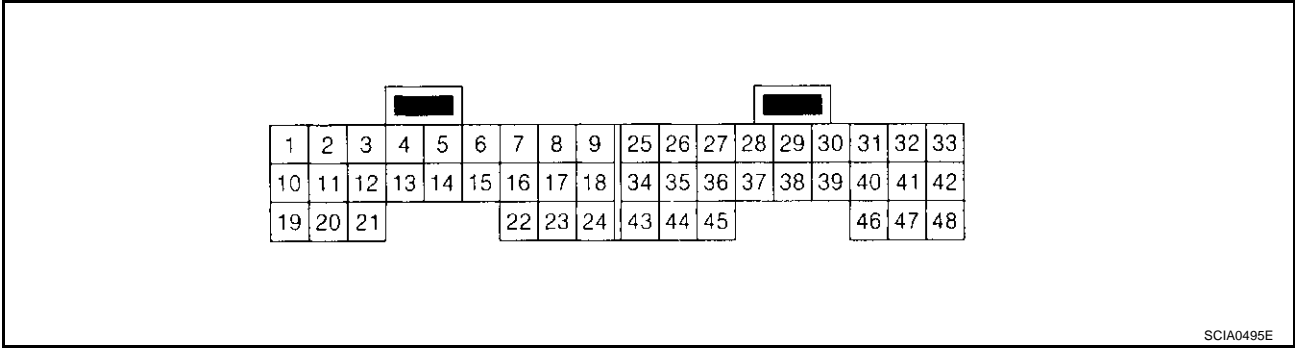
Symptom	Condition	Diagnostic Item	Reference page
Engine does not start in "N" or "P" position. Refer to AT-240 , " Engine Cannot Be Started In "P" or "N" Position ".	ON vehicle	1. Ignition switch and starter	PG-2, SC-22
		2. Control linkage adjustment	AT-283
		3. PNP switch	AT-106
Engine starts in positions other than "N" or "P".	ON vehicle	1. Ignition switch and starter	PG-2, SC-22
		2. Control linkage adjustment	AT-283
		3. PNP switch	AT-106
Engine stall.	ON vehicle	1. Fluid level and state	AT-51
		2. Engine speed signal	AT-116
		3. Turbine revolution sensor	AT-153
		4. Torque converter clutch solenoid valve	AT-118
		5. CAN communication line	AT-100
		6. Control valve assembly	AT-290
	OFF vehicle	7. Torque converter (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check ".)	AT-308
Engine stalls when select lever shifted "N" → "D", "R".	ON vehicle	1. Fluid level and state	AT-51
		2. Engine speed signal	AT-116
		3. Turbine revolution sensor	AT-153
		4. Torque converter clutch solenoid valve	AT-118
		5. CAN communication line	AT-100
		6. Control valve assembly	AT-290
	OFF vehicle	7. Torque converter (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check ".)	AT-308
Engine speed does not return to idle. Refer to AT-269 , " Engine Speed Does Not Return To Idle ".	ON vehicle	1. Fluid level and state	AT-51
		2. ATF pressure switch 5 and direct clutch solenoid valve	AT-228, AT-189
		3. ATF pressure switch 1 and front brake solenoid valve	AT-220, AT-180
		4. Accelerator pedal position sensor	AT-145
		5. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-111, AT-158
		6. CAN communication line	AT-100
		7. Control valve assembly	AT-290
	OFF vehicle	8. Front brake [brake band (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check ".)]	AT-308
		9. Direct clutch (ATF condition "NG" only. Refer to AT-51 , " Fluid Condition Check ".)	AT-338

*: Parts behind Drum Support is impossible to perform inspection by disassembly.

TROUBLE DIAGNOSIS








TCM Input/Output Signal Reference Values TCM TERMINAL CONNECTOR LAYOUT

ECS0083I










TCM INSPECTION TABLE






Data are reference value and are measured between each terminal and ground.

Terminal No.	Wire color	Item		Condition	Data (Approx.)
1	B/Y	Line pressure solenoid valve		After warming up the engine, release your foot from the accelerator pedal.	2V
				After warming up the engine, press the accelerator pedal all the way down.	0.7V
2	W	Power supply (A/T PV IGN relay)		-	Battery voltage
				 Measure 3 seconds after switching "OFF" the ignition switch.	0V
3	W	Power supply (A/T PV IGN relay)		-	Battery voltage
				 Measure 3 seconds after switching "OFF" the ignition switch.	0V
4	P/L	SEL3 (pressure switch 3)	-	-	-
5	B	Ground	-	-	-
6	LG/B	CAN H	-	-	-
7	P/B	CAN L	-	-	-
8	B/R	Fluid temperature sensor 1		When ATF temperature 0°C (32°F)	2.2V
				When ATF temperature 20°C (68°F)	1.8V
				When ATF temperature 80°C (176°F)	0.6V
9	W/B	Power supply (Memory back-up)		-	Battery voltage
10	R/W	Input clutch solenoid valve	When vehicle cruises	When the solenoid valve operating (in 1st gear, 2nd gear, or 3rd gear)	More than 2V
				When the solenoid valve is not operating (4th gear or 5th gear)	0V
11	R/L	High and low reverse clutch solenoid valve		When the solenoid valve operating [6 km/h (4 MPH) or faster in 1st gear or 2nd gear]	More than 2V
				When the solenoid valve is not operating [6 km/h (4 MPH) or slower in 1st gear or 3rd, 4th, or 5th gear]	0V

TROUBLE DIAGNOSIS

Terminal No.	Wire color	Item	Condition		Data (Approx.)
12	Y/R	Power supply (out)		-	Battery voltage
				-	0V
13	W/L	Low coast brake solenoid valve	When vehicle cruises	When the solenoid valve is operating (when running in M1-1 gear or M2-2 gear)	Battery voltage
				When the solenoid valve is not operating (when running in "D")	0V
14	B	Ground	-	-	-
15	B/W	SEL4	-	-	-
16	W/G	SEL1 (pressure switch 2)	-	-	-
17	Y/B	Fluid temperature sensor 2		When ATF temperature about 0°C (32°F)	2.2V
				When ATF temperature about 20°C (68°F)	1.7V
				When ATF temperature about 80°C (176°F)	0.45V
19	R	Front brake solenoid valve		When the solenoid valve is operating (other than 4th gear)	More than 2V
				When the solenoid valve is not operating (4th gear)	0V
20	Y	TCC solenoid valve	When vehicle cruises	When lock-up	More than 2V
				When not lock-up	0V
21	G	Direct clutch solenoid valve		When the solenoid valve is operating (1st gear or 5th gear)	More than 2V
				When the solenoid valve is not operating (2nd gear, 3rd gear, or 4th gear)	0V
22	P/B	SEL2 (pressure switch 5)	-	-	-
23	PU/W	K-line (CONSULT-II signal)	The terminal is connected to the data link connector for CONSULT-II.		
24	B	Ground	-	-	-
26	G/Y	PSC2 (pressure switch 6)		When high and low reverse clutch solenoid valve "ON".	0V
				When high and low reverse clutch solenoid valve "OFF".	Battery voltage
27	Y/B	Vehicle speed sensor A/T (revolution sensor)	When vehicle cruises	When moving at 20 km/h (12 MPH), use the CONSULT-II pulse frequency measuring function. CAUTION: Connect the data link connector to the vehicle-side diagnosis connector.	185 (Hz)
30	R/W	PNP switch 1		Selector lever in "P" position.	Battery voltage
				Selector lever in "N" position.	Less than 2.5V
31	OR	PNP switch 2		Selector lever in "P" position.	Battery voltage
				Selector lever in "D" position.	Less than 2.5V
33	G/R	Power supply		-	Battery voltage
				-	0V

TROUBLE DIAGNOSIS

Terminal No.	Wire color	Item	Condition		Data (Approx.)
35	B/Y	PSB2 (pressure switch 1)		When front brake solenoid valve "OFF".	Battery voltage
				When front brake solenoid valve "ON".	0V
36	L/Y	Turbine revolution sensor 1	When vehicle cruises	When running at 50 km/h (31 MPH) in 4th gear with the closed throttle position signal "OFF", use the CONSULT-II pulse frequency measuring function. CAUTION: Connect the data link connector to the vehicle-side diagnosis connector.	1.3 (kHz)
38	SB	PNP switch 3		Selector lever in "D" position.	Battery voltage
				Selector lever in "R" position.	Less than 2.5V
39	BR	PNP switch 4		Selector lever in "D" position.	Less than 2.5V
				Selector lever in "P" position.	Battery voltage
40	Y/G	DATA BIT1	-	-	-
41	R	Back-up lamp relay		Selector lever in "R" position.	0V
				Selector lever in other positions.	Battery voltage
42	G/R	Power supply	 	-	Battery voltage
				-	0V
45	PU	Turbine revolution sensor 2	When vehicle cruises	When moving at 20 km/h (12 MPH) in 1st gear with the closed throttle position signal "OFF", use the CONSULT-II pulse frequency measuring function. CAUTION: Connect the data link connector to the vehicle-side diagnosis connector.	1.3 (kHz)
46	B	Ground	-	-	-
47	G/W	PNP switch 3 (monitor)		Selector lever in "D" position.	Battery voltage
				Selector lever in "R" position.	Less than 2.5V
48	B/W	PNP relay (Starter relay)		Selector lever in "N", "P" position.	Battery voltage
				Selector lever in other positions.	0V

CONSULT-II

ECS0083J

After performing "SELF-DIAGNOSTIC PROCEDURE (WITH CONSULT-II)" (Refer to [AT-87](#)), place check marks for results on the [AT-46, "DIAGNOSTIC WORKSHEET"](#) . Reference pages are provided following the items.

NOTICE:

- The CONSULT-II electrically displays shift timing and lock-up timing (that is, operation timing of each solenoid).
Check for time difference between actual shift timing and the CONSULT-II display. If the difference is noticeable, mechanical parts (except solenoids, sensors, etc.) may be malfunctioning. Check mechanical parts using applicable diagnostic procedures.
- Shift schedule (which implies gear position) displayed on CONSULT-II and that indicated in Service Manual may differ slightly. This occurs because of the following reasons:
 - Actual shift schedule has more or less tolerance or allowance,
 - Shift schedule indicated in Service Manual refers to the point where shifts start, and
 - Gear position displayed on CONSULT-II indicates the point where shifts are completed.
- Display of solenoid valves on CONSULT-II changes at the start of shifting, while gear position is displayed upon completion of shifting (which is computed by TCM).

TROUBLE DIAGNOSIS

4. Additional CONSULT-II information can be found in the Operation Manual supplied with the CONSULT-II unit.

FUNCTION

Diagnostic test mode	Function	Reference page
Self-diagnostic results	Self-diagnostic results can be read and erased quickly.	AT-88
Data monitor	Input/Output data in the ECU can be read.	AT-91
CAN diagnostic support monitor	The results of transmit/receive diagnosis of CAN communication can be read.	—
Function test	Conducted by CONSULT-II instead of a technician to determine whether each system is "OK" or "NG".	—
DTC work support	Select the operating condition to confirm Diagnosis Trouble Codes.	AT-95
ECU part number	ECU part number can be read.	—

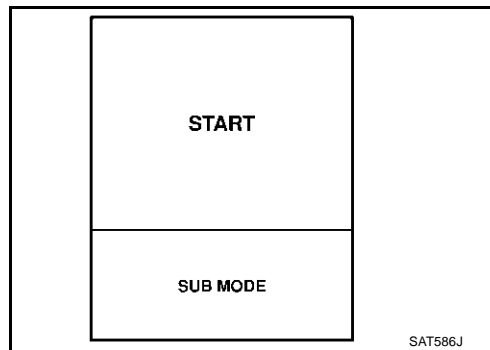
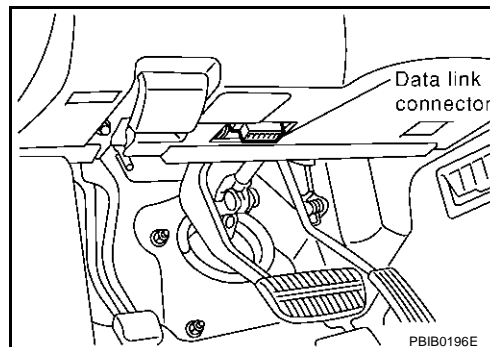
CONSULT-II REFERENCE VALUE

Item name	Condition	Display value (Approx.)
ATF TEMP SE 1	0°C (32° F) - 20°C (68°F) - 80°C (176°F)	2.2 - 1.8 - 0.6 V
ATF TEMP SE 2		2.2 - 1.7 - 0.45 V
TCC SOLENOID	When perform slip lock-up	0.2 - 0.4 A
	When perform lock-up	0.4 - 0.6 A

Ⓢ SELF-DIAGNOSTIC PROCEDURE (WITH CONSULT-II)

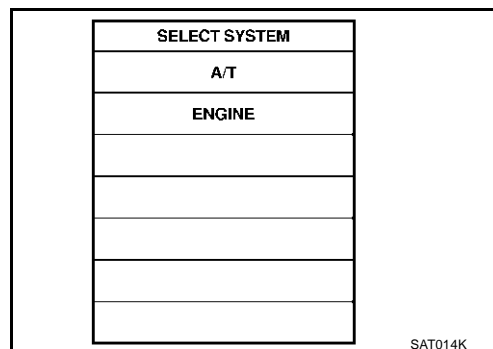
CONSULT-II Setting Procedure

- For details, refer to the separate "CONSULT-II Operations Manual".
1. Turn ignition switch "OFF" position.
 2. Connect CONSULT-II and CONSULT-II CONVERTER to data link connector, which is located in instrument lower panel on driver side.
 3. Turn ignition switch "ON" position.
 4. Touch "START".

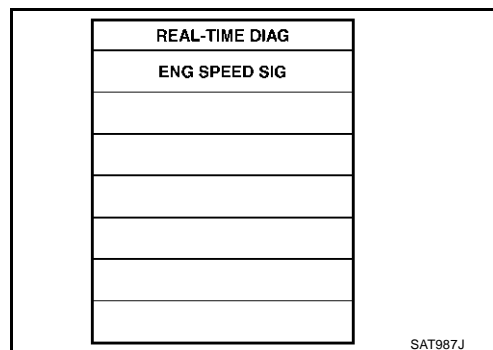


TROUBLE DIAGNOSIS

5. Touch "ENGINE" for OBD-II detected items or touch "A/T" for TCM self-diagnosis.
 If "A/T" or "ENGINE" is not indicated, go to [GI-38, "CONSULT-II Data Link Connector \(DLC\) Circuit"](#) .



6. Touch "SELF-DIAG RESULTS".
 Display shows malfunction experienced since the last erasing operation.
 CONSULT-II performs REAL-TIME SELF-DIAGNOSIS.
 Also, any malfunction detected while in this mode will be displayed at real time.



Self-Diagnostic Result Test Mode

X: Applicable —: Not applicable

Items (CONSULT-II screen terms)	Malfunction is detected when...	TCM self-diagnosis		OBD-II (DTC)
		A/T CHECK indicator lamp	"A/T" with CONSULT-II	MIL indicator lamp*1, "ENGINE" with CONSULT-II or GST
CAN COMM CIRCUIT	<ul style="list-style-type: none"> When a malfunction is detected in CAN communications 	X	U1000	U1000
STARTER RELAY/CIRC	<ul style="list-style-type: none"> If this signal is ON other than in P or N position, this is judged to be a malfunction. (And if it is OFF in P or N position, this too is judged to be a malfunction.) 	X	P0615	—
PNP SW/CIRC	<ul style="list-style-type: none"> PNP switch 1-4 signals input with impossible pattern PNP switch 3 monitor terminal cut line P position is detected from N position without any other position being detected in between. 	X	P0705	P0705
VEH SPD SEN/CIR AT (Revolution sensor)	<ul style="list-style-type: none"> Signal from vehicle speed sensor A/T (Revolution sensor) not input due to cut line or the like Unexpected signal input during running After ignition switch is turned ON, unexpected signal input from vehicle speed sensor MTR before the vehicle starts moving 	X	P0720	P0720
ENGINE SPEED SIG	<ul style="list-style-type: none"> TCM does not receive the CAN communication signal from the ECM. 	X	P0725	—
TCC SOLENOID/CIRC	<ul style="list-style-type: none"> Normal voltage not applied to solenoid due to cut line, short, or the like 	X	P0740	P0740
A/T TCC S/V FNCTN	<ul style="list-style-type: none"> A/T cannot perform lock-up even if electrical circuit is good. TCM detects as irregular by comparing difference value with slip rotation. 	X	P0744	P0744*2

TROUBLE DIAGNOSIS

Items (CONSULT-II screen terms)	Malfunction is detected when...	TCM self-diagnosis		OBD-II (DTC)
		A/T CHECK indicator lamp	"A/T" with CONSULT-II	MIL indicator lamp*1, "ENGINE" with CONSULT-II or GST
L/PRESS SOL/CIRC	<ul style="list-style-type: none"> Normal voltage not applied to solenoid due to cut line, short, or the like TCM detects as irregular by comparing target value with monitor value. 	X	P0745	P0745
TCM-POWER SUPPLY	<ul style="list-style-type: none"> When the power supply to the TCM is cut "OFF", for example because the battery is removed, and the self-diagnostics memory function stops This is not a malfunction message (Whenever shutting "OFF" a power supply to the TCM, this message appears on the screen.) 	—	P1701	—
TCM-RAM	<ul style="list-style-type: none"> TCM memory (RAM) is malfunctioning. 	—	P1702	—
TCM-ROM	<ul style="list-style-type: none"> TCM memory (ROM) is malfunctioning. 	—	P1703	—
TCM-EEPROM	<ul style="list-style-type: none"> TCM memory (EEP ROM) is malfunctioning. 	—	P1704	—
TP SEN/CIRC A/T	<ul style="list-style-type: none"> TCM does not receive the proper accelerator pedal position signals (input by CAN communication) from ECM. 	X	P1705	—
ATF TEMP SEN/CIRC	<ul style="list-style-type: none"> During running, the ATF temperature sensor signal voltage is excessively high or low 	X	P1710	P0710
TURBINE REV S/CIRC	<ul style="list-style-type: none"> TCM does not receive the proper voltage signal from the sensor. TCM detects an irregularity only at position of 4th gear for turbine revolution sensor 2. 	X	P1716	P1716
VEH SPD SE/CIR-MTR	<ul style="list-style-type: none"> Signal (CAN communication) from vehicle speed sensor MTR not input due to cut line or the like Unexpected signal input during running 	—	P1721	—
A/T INTERLOCK	<ul style="list-style-type: none"> Except during shift change, the gear position and ATF pressure switch states are monitored and comparative judgment made. 	X	P1730	P1730
A/T 1ST E/BRAKING	<ul style="list-style-type: none"> Each ATF pressure switch and solenoid current is monitored and if a pattern is detected having engine braking 1st gear other than in the M1 position, a malfunction is detected. 	X	P1731	—
I/C SOLENOID/CIRC	<ul style="list-style-type: none"> Normal voltage not applied to solenoid due to functional malfunction, cut line, short, or the like TCM detects as irregular by comparing target value with monitor value. 	X	P1752	P1752
I/C SOLENOID FNCTN	<ul style="list-style-type: none"> TCM detects that actual gear ratio is irregular, and relation between gear position and condition of ATF pressure switch 3 is irregular during depressing accelerator pedal. (Other than during shift change) TCM detects that relation between gear position and condition of ATF pressure switch 3 is irregular during releasing accelerator pedal. (Other than during shift change) 	X	P1754	P1754*2
FR/B SOLENOID/CIRC	<ul style="list-style-type: none"> Normal voltage not applied to solenoid due to functional malfunction, cut line, short, or the like TCM detects as irregular by comparing target value with monitor value. 	X	P1757	P1757

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TROUBLE DIAGNOSIS

Items (CONSULT-II screen terms)	Malfunction is detected when...	TCM self-diagnosis		OBD-II (DTC)
		A/T CHECK indicator lamp	"A/T" with CONSULT-II	MIL indicator lamp*1, "ENGINE" with CONSULT-II or GST
FR/B SOLENOID FNCT	<ul style="list-style-type: none"> ● TCM detects that actual gear ratio is irregular, and relation between gear position and condition of ATF pressure switch 1 is irregular during depressing accelerator pedal. (Other than during shift change) ● TCM detects that relation between gear position and condition of ATF pressure switch 1 is irregular during releasing accelerator pedal. (Other than during shift change) 	X	P1759	P1759*2
D/C SOLENOID/ CIRC	<ul style="list-style-type: none"> ● Normal voltage not applied to solenoid due to cut line, short, or the like ● TCM detects as irregular by comparing target value with monitor value. 	X	P1762	P1762
D/C SOLENOID FNCTN	<ul style="list-style-type: none"> ● TCM detects that actual gear ratio is irregular, and relation between gear position and condition of ATF pressure switch 5 is irregular during depressing accelerator pedal. (Other than during shift change) ● TCM detects that relation between gear position and condition of ATF pressure switch 5 is irregular during releasing accelerator pedal. (Other than during shift change) 	X	P1764	P1764*2
HLR/C SOL/CIRC	<ul style="list-style-type: none"> ● Normal voltage not applied to solenoid due to functional malfunction, cut line, short, or the like ● TCM detects as irregular by comparing target value with monitor value. 	X	P1767	P1767
HLR/C SOL FNCTN	<ul style="list-style-type: none"> ● TCM detects that actual gear ratio is irregular, and relation between gear position and condition of ATF pressure switch 6 is irregular during depressing accelerator pedal. (Other than during shift change) ● TCM detects that relation between gear position and condition of ATF pressure switch 6 is irregular during releasing accelerator pedal. (Other than during shift change) 	X	P1769	P1769*2
LC/B SOLENOID/ CIRC	<ul style="list-style-type: none"> ● Normal voltage not applied to solenoid due to functional malfunction, cut line, short, or the like 	X	P1772	P1772
LC/B SOLENOID FNCT	<ul style="list-style-type: none"> ● TCM detects an improper voltage drop when it tries to operate the solenoid valve. ● Condition of ATF pressure switch 2 is different from monitor value, and relation between gear position and actual gear ratio is irregular. 	X	P1774	P1774*2
MANU MODE SW/ CIRC	<ul style="list-style-type: none"> ● When an impossible pattern of switch signals is detected, a malfunction is detected. 	—	P1815	—
ATF PRES SW 1/ CIRC	<ul style="list-style-type: none"> ● TCM detects that actual gear ratio is normal, and relation between gear position and condition of ATF pressure switch 1 is irregular during depressing accelerator pedal. (Other than during shift change) 	—	P1841	—
ATF PRES SW 3/ CIRC	<ul style="list-style-type: none"> ● TCM detects that actual gear ratio is normal, and relation between gear position and condition of ATF pressure switch 3 is irregular during depressing accelerator pedal. (Other than during shift change) 	—	P1843	—
ATF PRES SW 5/ CIRC	<ul style="list-style-type: none"> ● TCM detects that actual gear ratio is normal, and relation between gear position and condition of ATF pressure switch 5 is irregular during depressing accelerator pedal. (Other than during shift change) 	—	P1845	—

TROUBLE DIAGNOSIS

Items (CONSULT-II screen terms)	Malfunction is detected when...	TCM self-diagnosis		OBD-II (DTC)
		A/T CHECK indicator lamp	"A/T" with CONSULT-II	MIL indicator lamp*1, "ENGINE" with CONSULT-II or GST
ATF PRES SW 6/ CIRC	<ul style="list-style-type: none"> TCM detects that actual gear ratio is normal, and relation between gear position and condition of ATF pressure switch 6 is irregular during depressing accelerator pedal. (Other than during shift change) 	—	P1846	—
NO DTC IS DETECTED FURTHER TESTING MAY BE REQUIRED	<ul style="list-style-type: none"> No NG item has been detected. 	—	X	X

*1: Refer to [AT-41, "Malfunction Indicator Lamp \(MIL\)"](#) .

*2: These malfunctions cannot be displayed MIL if another malfunction is assigned to MIL.

Data Monitor Mode (A/T)

X: Standard —: Not applicable

Monitored item (Unit)	Monitor Item Selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
VHCL/S SE-A/T (km/h)	X	X	X	Revolution sensor
VHCL/S SE-MTR (km/h)	X	—	X	
ACCELE POSI (0.0/8)	X	—	X	Accelerator pedal position signal
THROTTLE POSI (0.0/8)	X	X	X	Degree of opening for accelerator recognized by the TCM For fail-safe operation, the specific value used for control is displayed.
CLSO THL POS (ON-OFF display)	X	—	X	Signal input with CAN communications
W/O THL POS (ON-OFF display)	X	—	X	Signal input with CAN communications
BRAKE SW (ON-OFF display)	X	—	X	Stop lamp switch
GEAR	—	X	X	Gear position recognized by the TCM updated after gear-shifting
ENGINE SPEED (rpm)	X	X	X	
TURBINE REV (rpm)	X	X	X	
OUTPUT REV (rpm)	X	X	X	
GEAR RATIO	—	X	X	
TC SLIP SPEED (rpm)	—	X	X	Difference between engine speed and torque converter input shaft speed
F SUN GR REV (rpm)	—	—	X	
F CARR GR REV (rpm)	—	—	X	
ATF TEMP SE 1 (V)	X	—	X	
ATF TEMP SE 2 (V)	X	—	X	
ATF TEMP 1 (°C)	—	X	X	
ATF TEMP 2 (°C)	—	X	X	
BATTERY VOLT (V)	X	—	X	
ATF PRES SW 1 (ON-OFF display)	X	X	X	(for FR/B solenoid)
ATF PRES SW 2 (ON-OFF display)	X	X	X	(for LC/B solenoid)
ATF PRES SW 3 (ON-OFF display)	X	X	X	(for I/C solenoid)

TROUBLE DIAGNOSIS

Monitored item (Unit)	Monitor Item Selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
ATF PRES SW 5 (ON-OFF display)	X	X	X	(for D/C solenoid)
ATF PRES SW 6 (ON-OFF display)	X	X	X	(for HLR/C solenoid)
PNP SW 1 (ON-OFF display)	X	—	X	
PNP SW 2 (ON-OFF display)	X	—	X	
PNP SW 3 (ON-OFF display)	X	—	X	
PNP SW 4 (ON-OFF display)	X	—	X	
1 POSITION SW (ON-OFF display)	X	—	X	
SLCT LVR POSI	—	X	X	Selector lever position is recognized by the TCM. For fail safe operation, the specific value used for control is displayed.
OD CONT SW (ON-OFF display)	X	—	X	Not mounted but displayed.
POWERSHIFT SW (ON-OFF display)	X	—	X	Not mounted but displayed.
HOLD SW (ON-OFF display)	X	—	X	
MANU MODE SW (ON-OFF display)	X	—	X	
NON M-MODE SW (ON-OFF display)	X	—	X	
UP SW LEVER (ON-OFF display)	X	—	X	
DOWN SW LEVER (ON-OFF display)	X	—	X	
SFT UP ST SW (ON-OFF display)	—	—	X	Not mounted but displayed.
SFT DWN ST SW (ON-OFF display)	—	—	X	
ASCD-CRUISE (ON-OFF display)	—	—	X	
ASCD-OD CUT (ON-OFF display)	—	—	X	
ABS SIGNAL (ON-OFF display)	—	—	X	
ACC OD CUT (ON-OFF display)	—	—	X	
ACC SIGNAL (ON-OFF display)	—	—	X	
TCS SIGNAL 2 (ON-OFF display)	—	—	X	
TCS GR/P KEEP (ON-OFF display)	—	—	X	
TCS SIGNAL 1 (ON-OFF display)	—	—	X	
TCC SOLENOID (A)	—	X	X	
LINE PRES SOL (A)	—	X	X	
I/C SOLENOID (A)	—	X	X	
FR/B SOLENOID (A)	—	X	X	
D/C SOLENOID (A)	—	X	X	
HLR/C SOL (A)	—	X	X	
ON OFF SOL (ON-OFF display)	—	—	X	LC/B solenoid
TCC SOL MON (A)	—	—	X	
L/P SOL MON (A)	—	—	X	
I/C SL MON (A)	—	—	X	
FR/B SOL MON (A)	—	—	X	
D/C SOL MON (A)	—	—	X	
HLR/C SOL MON (A)	—	—	X	
ONOFF SOL MON (ON-OFF display)	—	—	X	LC/B solenoid
P POSI IND (ON-OFF display)	—	—	X	

TROUBLE DIAGNOSIS

Monitored item (Unit)	Monitor Item Selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
R POSI IND (ON-OFF display)	—	—	X	
N POSI IND (ON-OFF display)	—	—	X	
D POSI IND (ON-OFF display)	—	—	X	
4TH POSI IND (ON-OFF display)	—	—	X	
3RD POSI IND (ON-OFF display)	—	—	X	
2ND POSI IND (ON-OFF display)	—	—	X	
1ST POSI IND (ON-OFF display)	—	—	X	
MANU MODE IND (ON-OFF display)	—	—	X	
POWER M LAMP (ON-OFF display)	—	—	X	
F-SAFE IND/L (ON-OFF display)	—	—	X	
ATF WARN LAMP (ON-OFF display)	—	—	X	
BACK-UP LAMP (ON-OFF display)	—	—	X	
STARTER RELAY (ON-OFF display)	—	—	X	PNP relay
PNP SW3 MON (ON-OFF display)	—	—	X	
C/V CLB ID1	—	—	X	
C/V CLB ID2	—	—	X	
C/V CLB ID3	—	—	X	
UNIT CLB ID1	—	—	X	
UNIT CLB ID2	—	—	X	
UNIT CLB ID3	—	—	X	
TRGT GR RATIO	—	—	X	
ENGINE TORQUE (Nm)	—	—	X	
ENG TORQUE D (Nm)	—	—	X	
INPUT TRQ S (Nm)	—	—	X	
INPUT TRQ L/P (Nm)	—	—	X	
TRGT PRES TCC (kPa)	—	—	X	
TRGT PRES L/P (kPa)	—	—	X	
TRGT PRE FR/B (kPa)	—	—	X	
TRGT PRES I/C (kPa)	—	—	X	
TRGT PRES D/C (kPa)	—	—	X	
TRG PRE HLR/C (kPa)	—	—	X	
SHIFT PATTERN	—	—	X	
DRV CST JUDGE	—	—	X	
START RLY MON (ON-OFF display)	—	—	X	PNP relay
NEXT GR POSI	—	—	X	
SHIFT MODE	—	—	X	
MANU GR POSI	—	—	X	
VEHICLE SPEED (km/h)	—	X	X	Vehicle speed recognized by the TCM.
Voltage (V)	—	—	X	Displays the value measured by the voltage probe.

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TROUBLE DIAGNOSIS

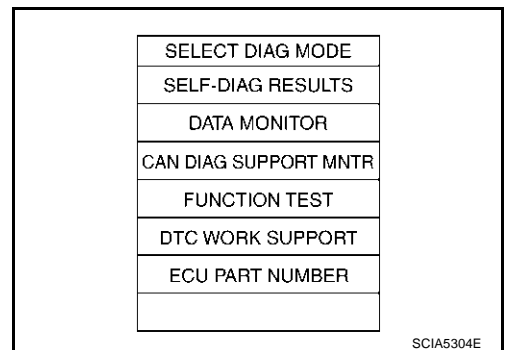
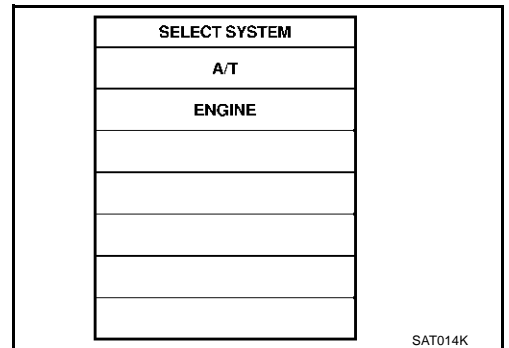
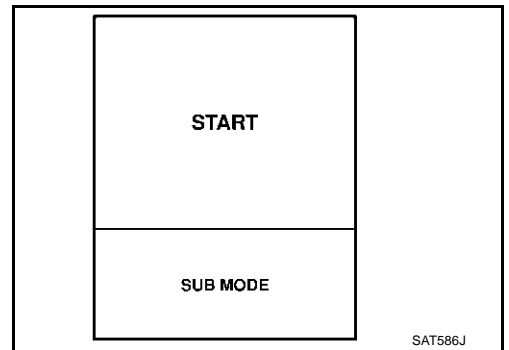
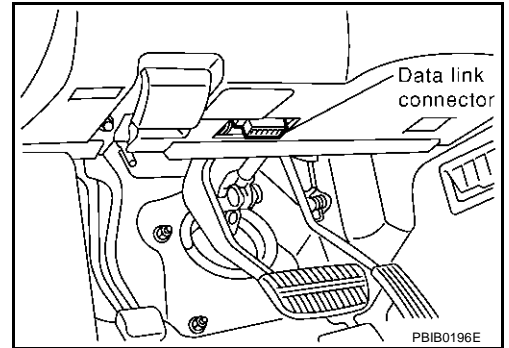
Monitored item (Unit)	Monitor Item Selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
Frequency (Hz)	—	—	X	The value measured by the pulse probe is displayed.
DUTY-HI (high) (%)	—	—	X	
DUTY-LOW (low) (%)	—	—	X	
PLS WIDTH-HI (ms)	—	—	X	
PLS WIDTH-LOW (ms)	—	—	X	

TROUBLE DIAGNOSIS

DTC WORK SUPPORT MODE WITH CONSULT-II

CONSULT-II Setting Procedure

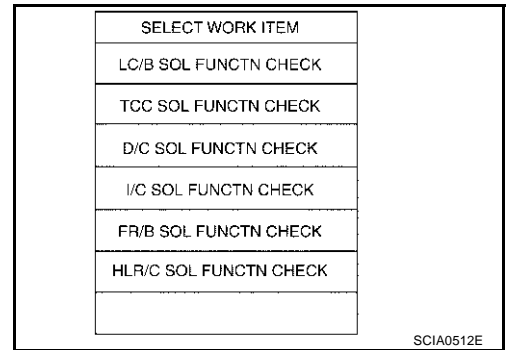
- For details, refer to the separate "CONSULT-II Operation Manual".
1. Turn ignition switch "OFF".
 2. Connect CONSULT-II and CONSULT-II CONVERTER to data link connector, which is located in instrument lower panel on driver side.
 3. Turn ignition switch "ON".
 4. Touch "START".
 5. Touch "A/T".
If "A/T" is not indicated, go to [GI-38. "CONSULT-II Data Link Connector \(DLC\) Circuit"](#).
 6. Touch "DTC WORK SUPPORT".



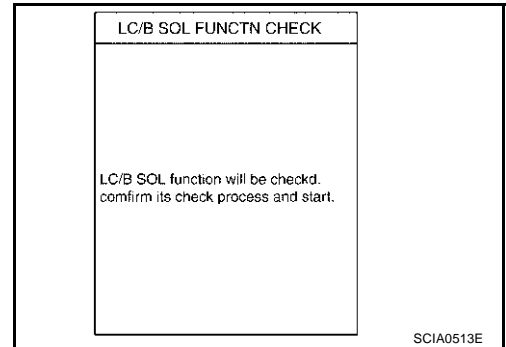
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TROUBLE DIAGNOSIS

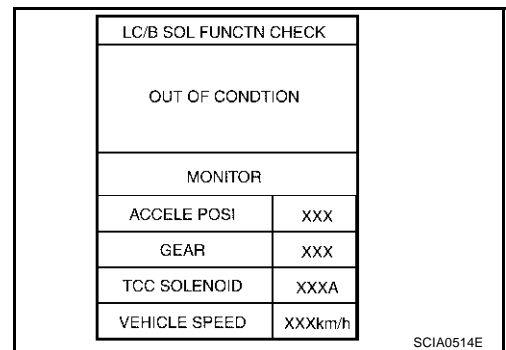
7. Touch select item menu.



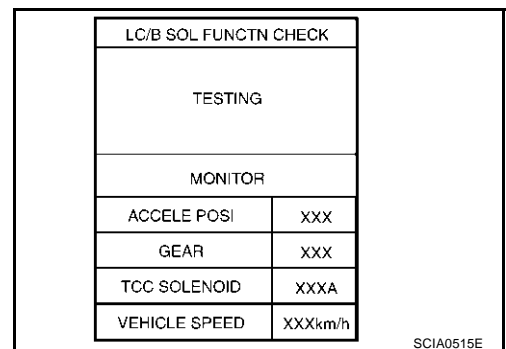
8. Touch "START".



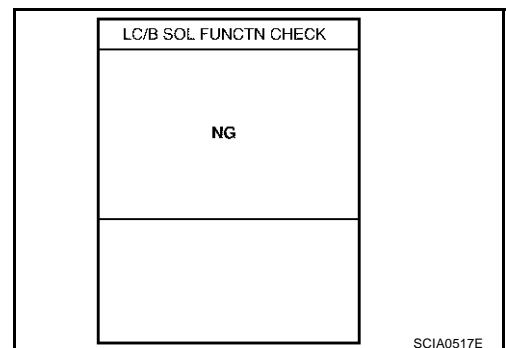
9. Perform driving test according to "DTC CONFIRMATION PROCEDURE" in "TROUBLE DIAGNOSIS FOR DTC".



- When testing conditions are satisfied, CONSULT-II screen changes from "OUT OF CONDITION" to "TESTING".

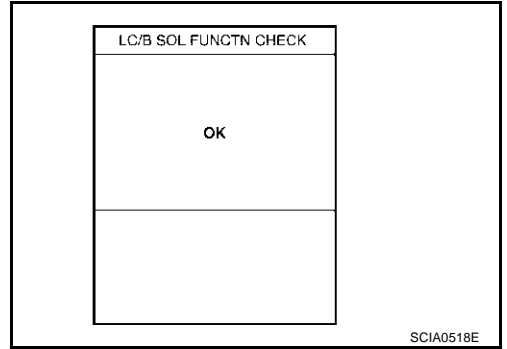


10. Stop vehicle. If "NG" appears on the screen, malfunction may exist. Go to "DIAGNOSTIC PROCEDURE".
11. Perform test drive to check gear shift feeling in accordance with instructions displayed.
12. Touch "YES" or "NO".
13. CONSULT-II procedure is ended.



TROUBLE DIAGNOSIS

If "NG" appears on the screen, a malfunction may exist. Go to "DIAGNOSTIC PROCEDURE".

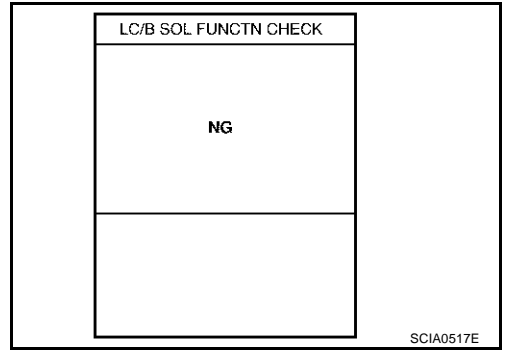


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TROUBLE DIAGNOSIS

DTC WORK SUPPORT MODE

DTC work support item	Description	Check item
I/C SOL FUNCTN CHECK*	—	—
FR/B SOL FUNCTN CHECK*	—	—
D/C SOL FUNCTN CHECK*	—	—
HLR/C SOL FUNCTN CHECK*	—	—
LC/B SOL FUNCTN CHECK*	—	—
TCC SOL FUNCTN CHECK	Following items for "TCC solenoid function (lock-up) " can be confirmed. ● Self-diagnosis status (whether the diagnosis is being conducted or not) ● Self-diagnosis result (OK or NG)	● TCC solenoid valve ● Hydraulic control circuit

*: Do not use, but displayed.

Diagnostic Procedure Without CONSULT-II OBD-II SELF-DIAGNOSTIC PROCEDURE (WITH GST)

EC50083K



Refer to [EC-121, "Generic Scan Tool \(GST\) Function"](#) .

OBD-II SELF-DIAGNOSTIC PROCEDURE (NO TOOLS)



Refer to [EC-65, "Malfunction Indicator Lamp \(MIL\)"](#) .

TCM SELF-DIAGNOSTIC PROCEDURE (NO TOOLS)



Description

In the unlikely event of a malfunction in the electrical system, when the ignition switch is switched "ON", the A/T CHECK indicator lamp lights up for 2 seconds, then flashes for 8 seconds. If there is no malfunction, when the ignition switch is turned "ON", the indicator lamp lights up for 2 seconds. As a method for locating the suspect circuit, when the self-diagnostics start signal is input, the memory for the malfunction location is output and the A/T CHECK indicator lamp flashes to display the corresponding DTC.

Diagnostic Procedure

1. CHECK A/T CHECK INDICATOR LAMP

1. Start the engine with selector lever in "P" position. Warm engine to normal operating temperature.
2. Turn ignition switch "ON" and "OFF" at least twice, then leave it in the "OFF" position.
3. Wait 10 seconds.
4. Turn ignition switch to "ON" position.
(Do not start engine.)
5. Does A/T CHECK indicator lamp come on for about 2 seconds?

Yes or No

Yes >> GO TO 2.

No >> GO TO [AT-239, "A/T CHECK Indicator Lamp Does Not Come On"](#) .

TROUBLE DIAGNOSIS

2. JUDGEMENT PROCEDURE STEP 1

1. Turn ignition switch "OFF".
2. Push shift lock release button.
3. Move selector lever from "P" to "D" position.
4. Release accelerator pedal. (Set the closed throttle position signal "ON".)
5. Depress brake pedal. (Brake switch signal "ON".)
6. Turn ignition switch "ON".
7. Wait 3 seconds.
8. Move the selector lever to the Manual shift gate side. (Manual mode switch "ON".)
9. Release brake pedal. (Brake switch signal "OFF".)
10. Move the selector lever to "D" position. (Manual mode switch "OFF".)
11. Depress brake pedal. (Brake switch signal "ON".)
12. Release brake pedal. (Brake switch signal "OFF".)
13. Depress accelerator pedal fully and release it.

>> GO TO 3.

3. CHECK SELF-DIAGNOSIS CODE

Check A/T CHECK indicator lamp.

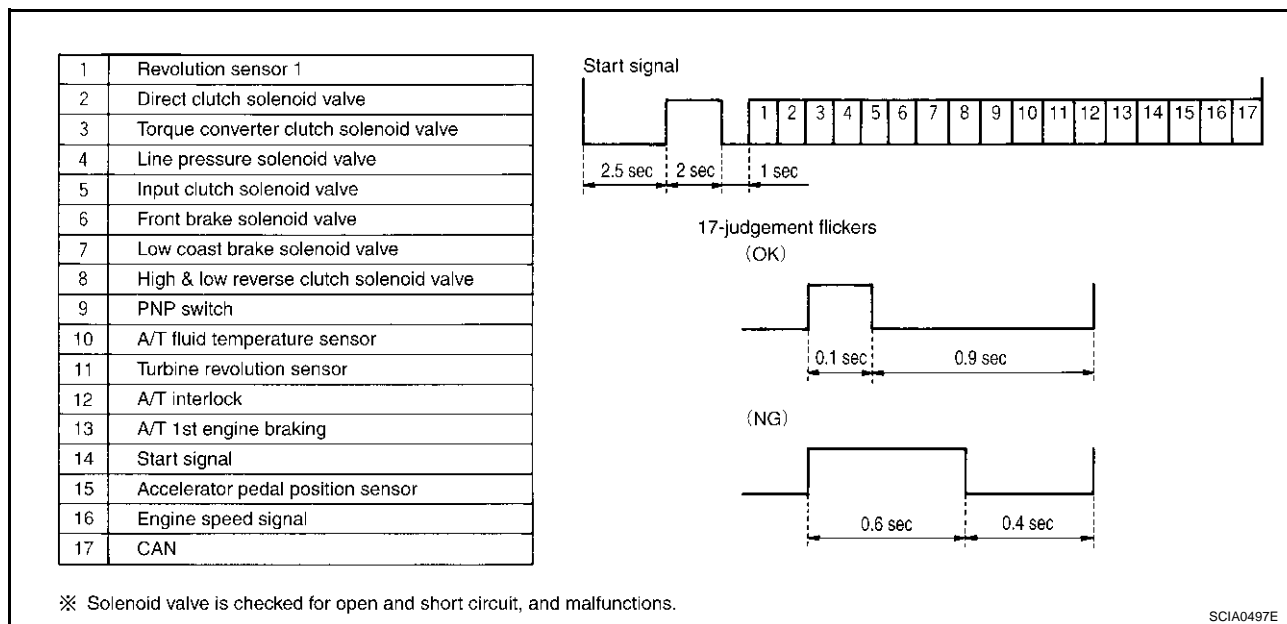
Refer to [AT-99, "Judgement Self-Diagnosis Code"](#) .

If the system does not go into self-diagnostics. Refer to [AT-236, "PARK/NEUTRAL POSITION, MANUAL MODE, BRAKE AND THROTTLE POSITION SWITCH CIRCUIT"](#) .

>> DIAGNOSIS END

Judgement Self-Diagnosis Code

If there is a malfunction, the lamp lights up for the time corresponding to the suspect circuit.



Erase Self-Diagnosis

- In order to make it easier to find the cause of hard-to-duplicate malfunctions, malfunction information is stored into the control unit as necessary during use by the user. This memory is not erased no matter how many times the ignition switch is turned ON and OFF.
- However, this information is erased by turning ignition switch "OFF" after executing self-diagnostics or by erasing the memory using the CONSULT-II.

DTC U1000 CAN COMMUNICATION LINE

DTC U1000 CAN COMMUNICATION LINE

PFP:23710

Description

ECS0083L

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent malfunction detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN H line, CAN L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.

On Board Diagnosis Logic

ECS0083M

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "CAN COMM CIRCUIT" with CONSULT-II or U1000 without CONSULT-II is detected when TCM cannot communicate to other control units.

Possible Cause

ECS0083N

Harness or connectors
(CAN communication line is open or shorted.)

DTC Confirmation Procedure

ECS0083O

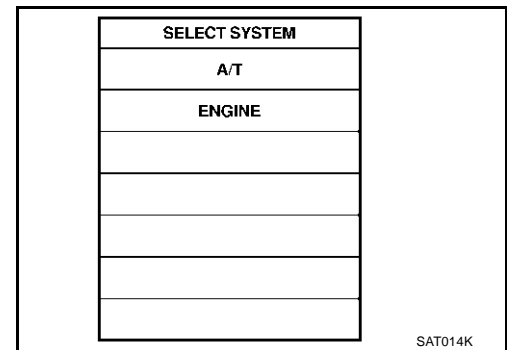
NOTE:

If "DTC Confirmation Procedure" has been previously conducted, always turn ignition switch "OFF" and wait at least 10 seconds before conducting the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

④ WITH CONSULT-II

1. Turn ignition switch to "ON" position. (Do not start engine.)
2. Select "DATA MONITOR" mode for "ENGINE" with CONSULT-II.
3. Start engine and wait for at least 6 seconds.
4. If DTC is detected, go to [AT-102, "Diagnostic Procedure"](#).



④ WITH GST




Follow the procedure "WITH CONSULT-II".

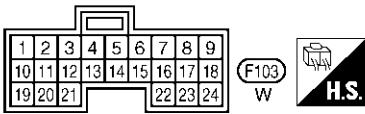
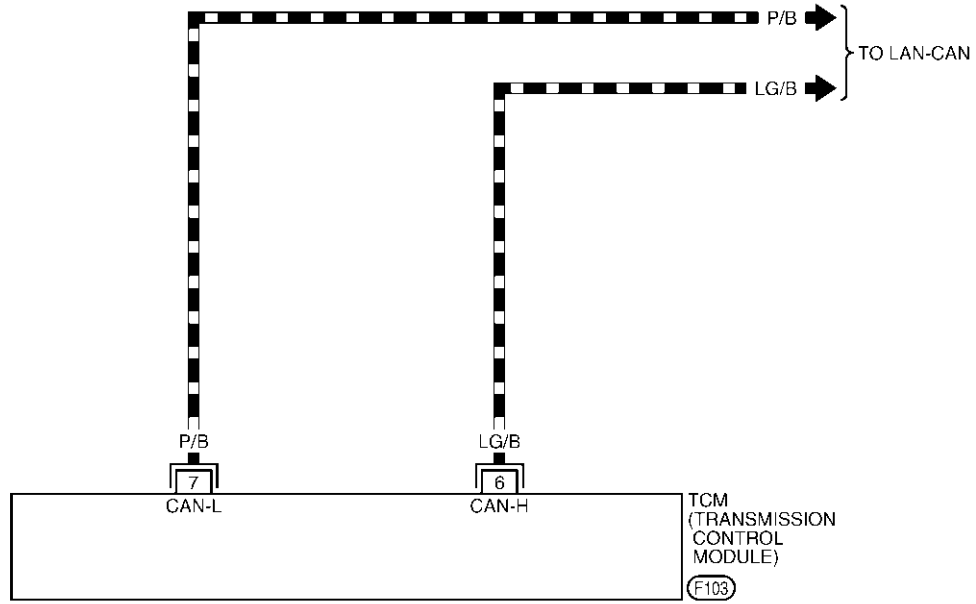
DTC U1000 CAN COMMUNICATION LINE

Wiring Diagram — AT — CAN

ECS0083P

AT-CAN-01

 : DETECTABLE LINE FOR DTC
 : NON-DETECTABLE LINE FOR DTC
 : DATA LINE



TCM terminals and data are reference value.

TCWM0032E

Terminal No.	Wire color	Item	Condition	Data (Approx.)
6	LG/B	CAN H	—	—
7	P/B	CAN L	—	—

DTC U1000 CAN COMMUNICATION LINE

Diagnostic Procedure

ECS0083Q

1. CHECK CAN COMMUNICATION CIRCUIT

Ⓟ With CONSULT-II

1. Turn ignition switch to "ON" position and start engine.
2. Select "DATA MONITOR" mode for "A/T" with CONSULT-II.

Is any malfunction of the "CAN COMM CIRCUIT" indicated?

- Yes >> Print out CONSULT-II screen, GO TO LAN section.
Refer to [LAN-24, "CAN SYSTEM \(FOR VDC MODELS\)"](#)
, [LAN-42, "CAN SYSTEM \(FOR ICC MODELS\)"](#) .
- No >> **INSPECTION END**

SELF-DIAG RESULTS			
DTC RESULTS			
CAN COMM CIRCUIT [U1000]			
ERASE		PRINT	
MODE	BACK	LIGHT	COPY

PCIA0061E

DTC P0615 START SIGNAL CIRCUIT

DTC P0615 START SIGNAL CIRCUIT

PFP:25230

Description

ECS0083R

Prohibits cranking other at "P" or "N" position.

On Board Diagnosis Logic

ECS0083S

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code "STARTER RELAY/CIRC" with CONSULT-II or 14th judgement flicker without CONSULT-II is detected when detects as irregular when switched "ON" other than at "P" or "N" position. (Or when switched "OFF" at "P" or "N" position).

Possible Cause

ECS0083T

- Harness or connectors
[The park/neutral position (PNP) relay and TCM circuit is open or shorted.]
- Park/neutral position (PNP) relay

DTC Confirmation Procedure

ECS0083U

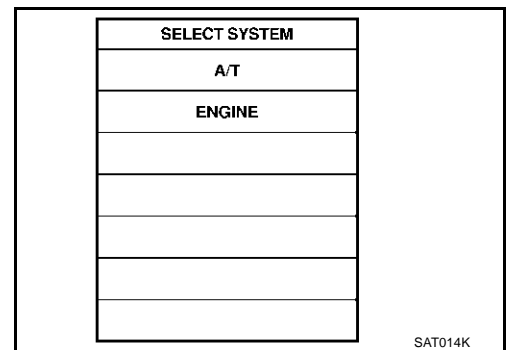
NOTE:

If "DTC Confirmation Procedure" has been previously conducted, always turn ignition switch "OFF" and wait at least 10 seconds before conducting the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

Ⓟ WITH CONSULT-II

1. Turn ignition switch to "ON" position. (Do not start engine.)
2. Select "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Start engine.
4. Vehicle start for at least 2 consecutive seconds.
5. If DTC is detected, go to [AT-105. "Diagnostic Procedure"](#).



DTC P0615 START SIGNAL CIRCUIT

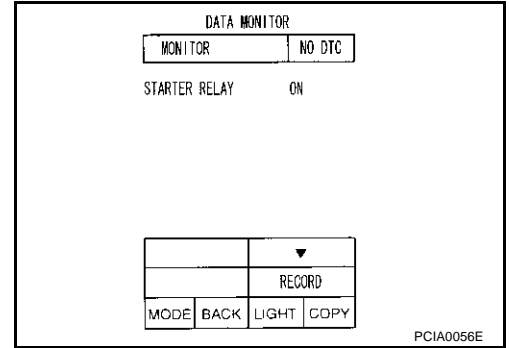
ECS0083W

Diagnostic Procedure

1. CHECK PNP RELAY (WITH CONSULT-II)

With CONSULT-II

- Turn ignition switch to "ON" position. (Do not start engine.)
- Select "SELECTION FROM MENU" in "DATA MONITOR" mode for "A/T" with CONSULT-II and check monitor "STARTER RELAY" (PNP relay) ON/OFF.



OK or NG

- OK >> GO TO 4.
NG >> GO TO 3.

2. CHECK PNP RELAY (WITHOUT CONSULT-II)

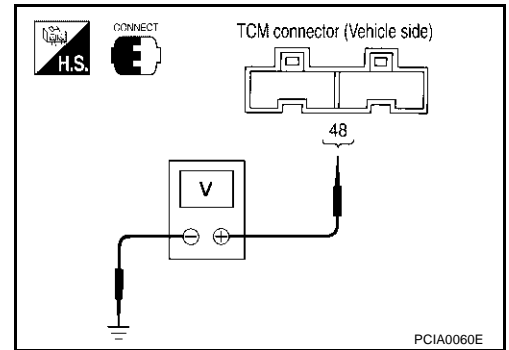
Without CONSULT-II

- Turn ignition switch to "ON" position. (Do not start engine.)
- Check the voltage between the TCM connector and ground.

Item	Connector No.	Terminal No. (Wire color)		Shift position	Voltage (Approx.)
PNP relay (Starter relay)	F104	48 (B/W)	Ground	N and P	Battery voltage
				R and D	0V

OK or NG

- OK >> GO TO 4.
NG >> GO TO 3.



3. DETECT MALFUNCTIONING ITEM

Check the following items:

- PNP relay. Refer to [PG-64, "STANDARDIZED RELAY"](#).
- Disconnections or short-circuits in the harness between TCM and the PNP relay
- Ground circuit for the PNP relay

OK or NG

- OK >> GO TO 4.
NG >> Repair or replace damaged parts.

4. CHECK DTC

Perform "DTC Confirmation Procedure". Refer to [AT-103, "DTC Confirmation Procedure"](#).

OK or NG

- OK >> **INSPECTION END**
NG >> GO TO 5.

5. PERFORM TCM INSPECTION

- Perform TCM input/output signal inspection.
- If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

- OK >> **INSPECTION END**
NG >> Repair or replace damaged parts.

DTC P0705 PARK/NEUTRAL POSITION SWITCH

DTC P0705 PARK/NEUTRAL POSITION SWITCH

PDF:32006

Description

ECS0083X

- The park/neutral position (PNP) switch includes a transmission position switch.
- The transmission range switch detects the selector lever position and sends a signal to the TCM.

On Board Diagnosis Logic

ECS0083Y

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "PNP SW/CIRC" with CONSULT-II or P0705 without CONSULT-II is detected under the following conditions.
 - When TCM does not receive the correct voltage signal from the PNP switch 1, 2, 3, 4 based on the gear position.
 - When monitor terminal of PNP switch 3 is disconnected.
 - When no other position but "P" position is detected from "N" positions.

Possible Cause

ECS0083Z

- Harness or connectors
[The park/neutral position (PNP) switch 1, 2, 3, 4 and TCM circuit is open or shorted.]
- Park/neutral position (PNP) switch 1, 2, 3, 4
- Park/neutral position (PNP) switch 3 monitor terminal disconnected

DTC Confirmation Procedure

ECS00840

CAUTION:

Always drive vehicle at a safe speed.

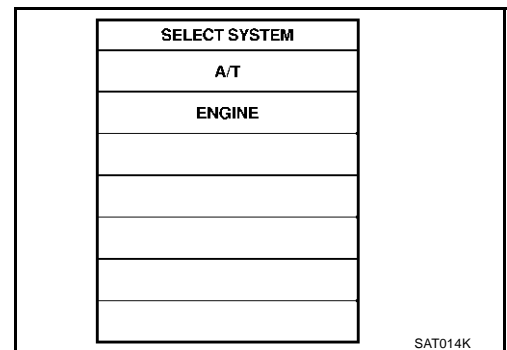
NOTE:

If "DTC Confirmation Procedure" has been previously conducted, always turn ignition switch "OFF" and wait at least 10 seconds before conducting the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

④ WITH CONSULT-II

1. Turn ignition switch to "ON" position. (Do not start engine.)
2. Select "DATA MONITOR" mode for "ENGINE" with CONSULT-II.
3. Start engine.
4. Maintain the following conditions for at least 2 consecutive seconds.
THRTL POS SEN: More than 1.2V
5. If DTC is detected, go to [AT-108, "Diagnostic Procedure"](#).



④ WITH GST

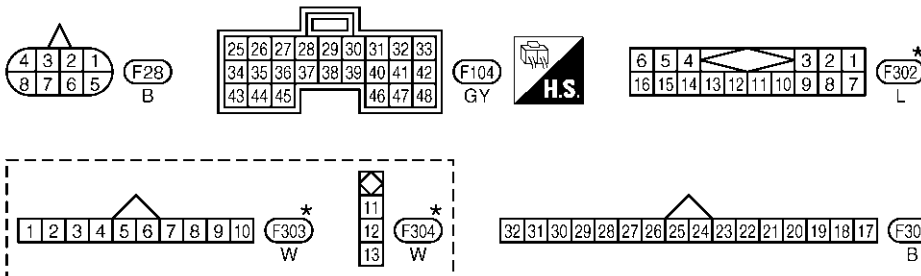
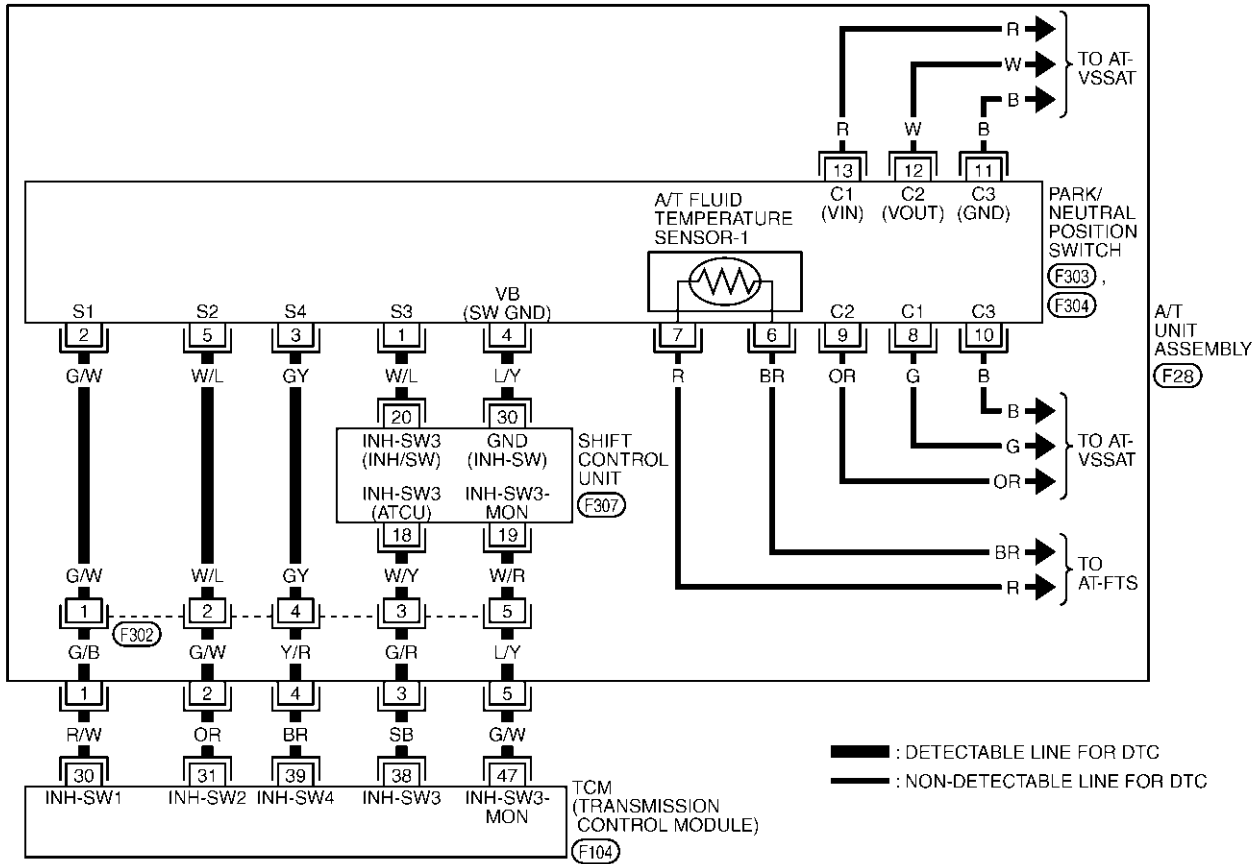
Follow the procedure "With CONSULT-II".

DTC P0705 PARK/NEUTRAL POSITION SWITCH

Wiring Diagram — AT — PNP/SW

ECS00841

AT-PNP/SW-01



*: THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT", PG SECTION.

TCWM0003E

DTC P0705 PARK/NEUTRAL POSITION SWITCH

TCM terminals and data are reference value. Measured between each terminal and ground.

Terminal No.	Wire color	Item	Condition	Data (Approx.)
30	R/W	PNP switch 1	Selector lever in "P" position.	Battery voltage
			Selector lever in "N" position.	Less than 2.5V
31	OR	PNP switch 2	Selector lever in "P" position.	Battery voltage
			Selector lever in "D" position.	Less than 2.5V
38	SB	PNP switch 3	Selector lever in "D" position.	Battery voltage
			Selector lever in "R" position.	Less than 2.5V
39	BR	PNP switch 4	Selector lever in "D" position.	Less than 2.5V
			Selector lever in "P" position.	Battery voltage
47	G/W	PNP switch 3 (monitor)	Selector lever in "D" position.	Battery voltage
			Selector lever in "R" position.	Less than 2.5V

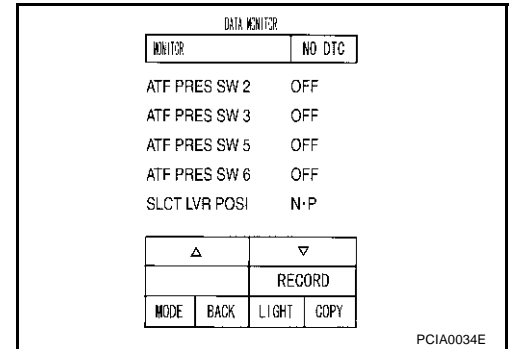
Diagnostic Procedure

ECS00842

1. CHECK PNP SWITCH CIRCUIT (WITH CONSULT-II)

With CONSULT-II

- Turn ignition switch to "ON" position. (Do not start engine.)
- Select "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
- Read out "N·P", "R" and "D" position switches moving selector lever to each position.



OK or NG

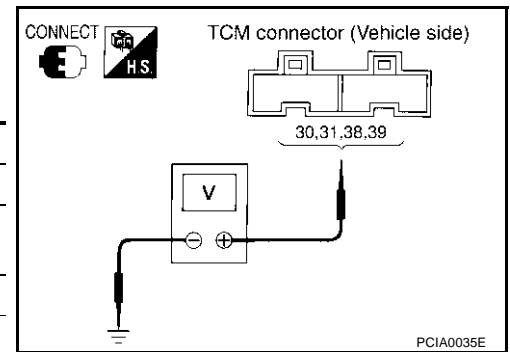
- OK >> GO TO 5.
 NG >> GO TO 3.

2. CHECK PNP SWITCH CIRCUIT (WITHOUT CONSULT-II)

Without CONSULT-II

- Turn ignition switch to "ON" position. (Do not start engine.)
- Selector lever to "P", "R", "N", or "D" position to check the voltage between the TCM connector terminals and ground.

Shift position	Connector No.		F104	
	Terminal No. (Wire color)			
	30 (R/W) - Ground	31 (OR) - Ground	38 (SB) - Ground	39 (BR) - Ground
P	Battery voltage	Battery voltage	-	Battery voltage
R	-	-	Less than 2.5V	-
N	Less than 2.5V	-	-	-
D	-	Less than 2.5V	Battery voltage	Less than 2.5V



OK or NG

- OK >> GO TO 5.
 NG >> GO TO 3.

DTC P0705 PARK/NEUTRAL POSITION SWITCH

3. DETECT MALFUNCTIONING ITEM

Check the following items.

- Disconnection or short-circuit in the harness between TCM and A/T unit harness connector.
- PNP switch. Refer to [AT-110, "Component Inspection"](#) .

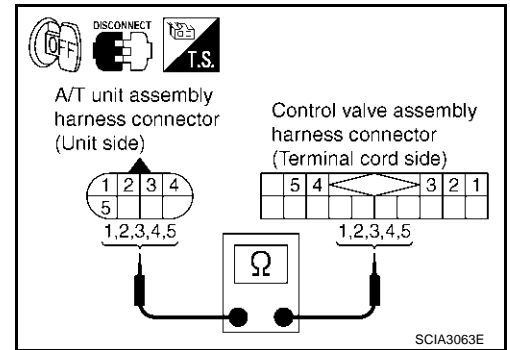
OK or NG

- OK >> GO TO 4.
 NG >> Repair or replace damaged parts.

4. CHECK TERMINAL CORD ASSEMBLY

1. Remove oil pan. Refer to [AT-290, "Control Valve Assembly"](#) .
2. Disconnect A/T unit assembly harness connector and control valve assembly harness connector.
3. Check continuity between A/T unit assembly harness connector and control valve assembly harness connector.

Item	Connector No.	Terminal No. (Wire color)	Continuity
A/T unit assembly harness connector	F28	1 (G/B)	Yes
Control valve assembly harness connector	F302		
A/T unit assembly harness connector	F28	2 (G/W)	Yes
Control valve assembly harness connector	F302		
A/T unit assembly harness connector	F28	3 (G/R)	Yes
Control valve assembly harness connector	F302		
A/T unit assembly harness connector	F28	4 (Y/R)	Yes
Control valve assembly harness connector	F302		
A/T unit assembly harness connector	F28	5 (L/Y)	Yes
Control valve assembly harness connector	F302		



4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

OK or NG

- OK >> Replace control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#) .
 NG >> Repair open circuit or short to ground or short to power in harness or connectors.

5. CHECK DTC

Perform "DTC Confirmation Procedure". Refer to [AT-106, "DTC Confirmation Procedure"](#) .

OK or NG

- OK >> **INSPECTION END**
 NG >> GO TO 6.

DTC P0705 PARK/NEUTRAL POSITION SWITCH

6. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> **INSPECTION END**

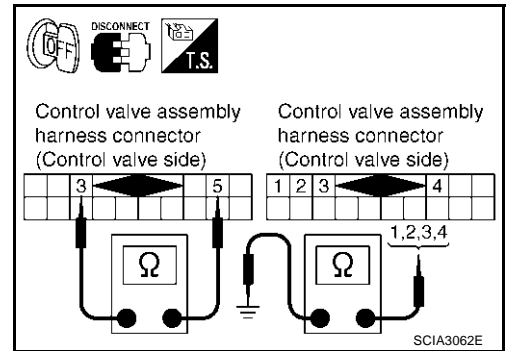
NG >> Repair or replace damaged parts.

Component Inspection PNP SWITCH

ECS00843

1. Selector lever to various positions to check the continuity between terminals on the PNP switch and ground.

PNP SW	Shift position	Connector No.	Terminal No. (Wire color)	Continuity
SW 1	P	F302	1 (G/W) - Ground	No
SW 2			2 (W/L) - Ground	
SW 3	3 (W/Y) - Ground			
SW 4	D		4 (GY) - Ground	Yes
SW 3 Monitor	P, R, N, D		3 (W/Y) - 5 (W/R)	



2. If NG, check the continuity with the control linkage disconnected. (Refer to Step 1 above.)
3. If OK with the control linkage disconnected, adjust the control linkage. Refer to [AT-283, "Adjustment of A/T Position"](#).
4. If NG even when the control linkage is disconnected, replace the control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#).

DTC P0720 VEHICLE SPEED SENSOR A/T (REVOLUTION SENSOR)

DTC P0720 VEHICLE SPEED SENSOR A/T (REVOLUTION SENSOR)

PF3:32702

Description

ECS00844

The revolution sensor detects the revolution of the idler gear parking pawl lock gear and emits a pulse signal. The pulse signal is sent to the TCM which converts it into vehicle speed.

On Board Diagnosis Logic

ECS00845

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "VEH SPD SEN/CIR AT" with CONSULT-II or P0720 without CONSULT-II is detected under the following conditions.
 - When TCM does not receive the proper voltage signal from the sensor.
 - After ignition switch is turned "ON", irregular signal input from vehicle speed sensor MTR before the vehicle starts moving.

Possible Cause

ECS00846

- Harness or connectors
(The sensor circuit is open or shorted.)
- Revolution sensor
- Vehicle speed sensor MTR

DTC Confirmation Procedure

ECS00847

CAUTION:

- Always drive vehicle at a safe speed.
- Be careful not to rev engine into the red zone on the tachometer.

NOTE:

If "DTC Confirmation Procedure" has been previously conducted, always turn ignition switch "OFF" and wait at least 10 seconds before conducting the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

WITH CONSULT-II

1. Turn ignition switch to "ON" position. (Do not start engine.)
2. Select "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Check for an increase of "VHCL/S SE-A/T" value in response to "VHCL/S SE-MTR" value.
If the check result is NG, go to [AT-113, "Diagnostic Procedure"](#) .
If the check result is OK, go to following step.
4. Select "DATA MONITOR" mode for "ENGINE" with CONSULT-II.
5. Start engine and maintain the following conditions for at least 5 consecutive seconds.

VHCL SPEED SE: 30 km/h (19 MPH) or more

THRTL POS SEN: More than 1.0/8

Selector lever: "D" position

If the check result is NG, go to [AT-113, "Diagnostic Procedure"](#) .

If the check result is OK, go to following step.

6. Maintain the following conditions for at least 5 consecutive seconds.

ENGINE SPEED: 3,500 rpm or more

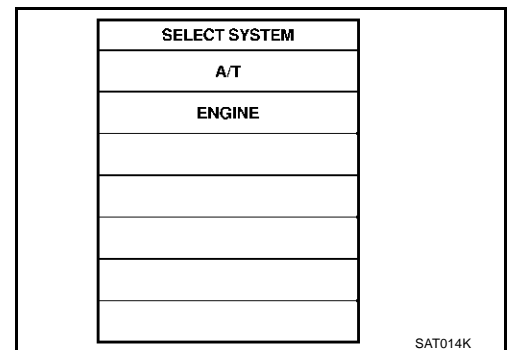
THRTL POS SEN: More than 1.0/8

Selector lever: "D" position

If the check result is NG, go to [AT-113, "Diagnostic Procedure"](#) .

WITH GST

Follow the procedure "With CONSULT-II".

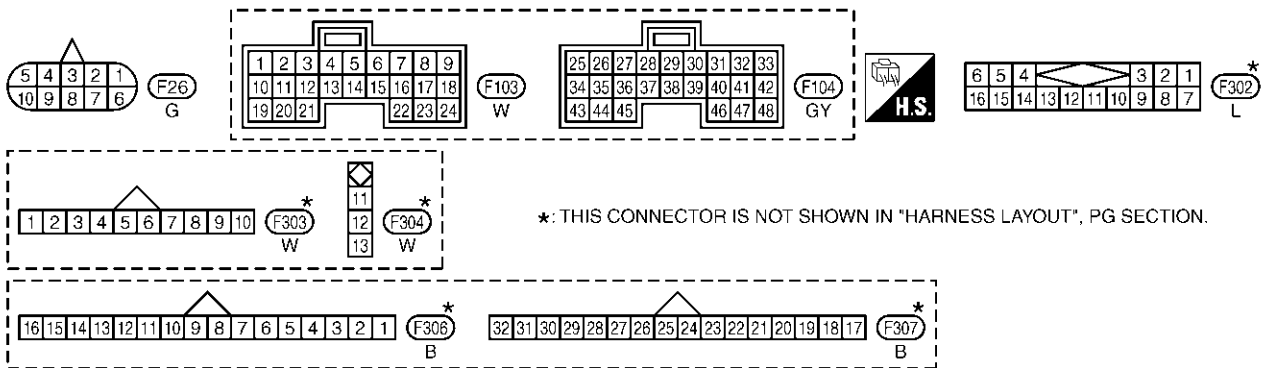
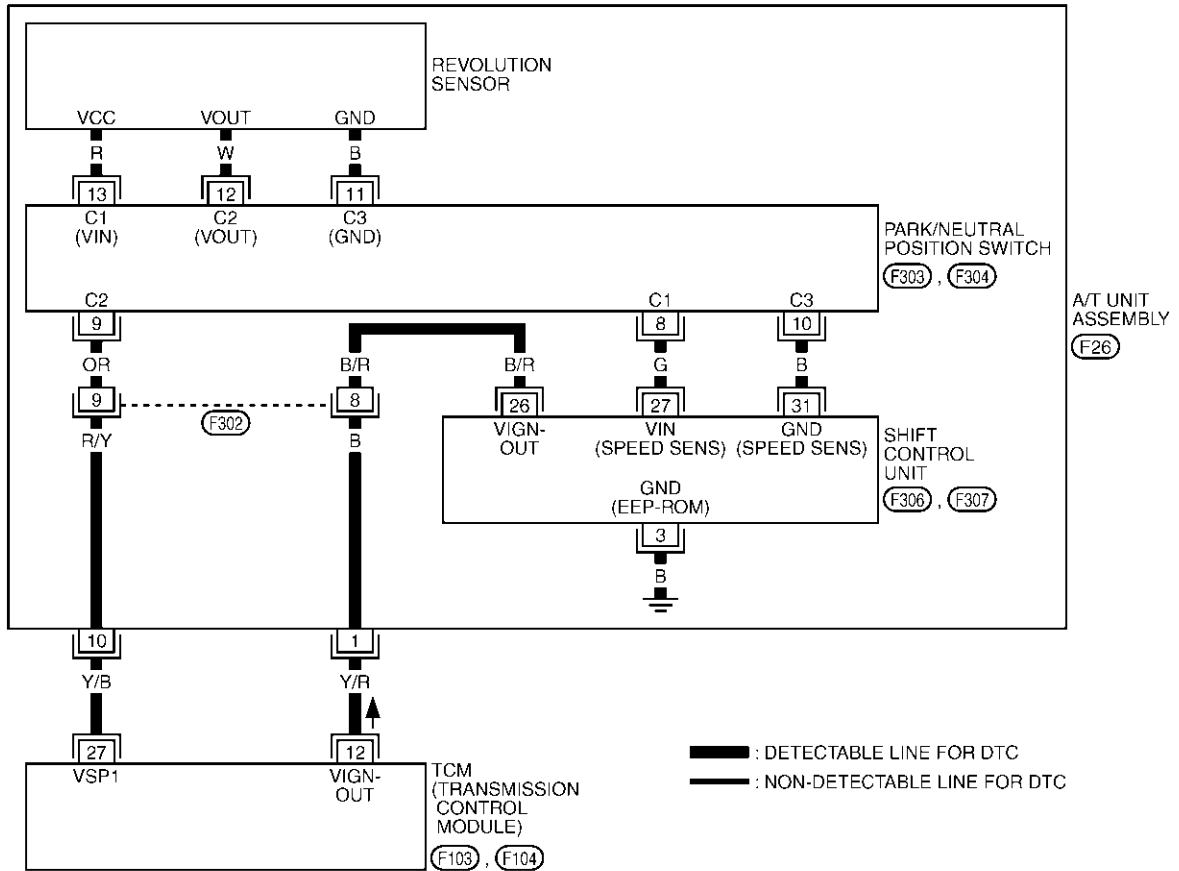


DTC P0720 VEHICLE SPEED SENSOR A/T (REVOLUTION SENSOR)

Wiring Diagram — AT — VSSA/T

ECS00848

AT-VSSAT-01



TCM terminals and data are reference value. Measured between each terminal and ground.

TCWM0004E

Terminal No.	Wire color	Item	Condition	Data (Approx.)
12	Y/R	Power supply (out)	IGN ON	—
			IGN OFF	—
27	Y/B	Vehicle speed sensor A/T (revolution sensor)	When vehicle cruises	When moving at 20 km/h (12MPH), use the CONSULT-II pulse frequency measuring function. CAUTION: Connect the data link connector to the vehicle-side diagnosis connector.

DTC P0720 VEHICLE SPEED SENSOR A/T (REVOLUTION SENSOR)

ECS00849

Diagnostic Procedure

1. CHECK INPUT SIGNALS

With CONSULT-II

1. Turn ignition switch to "ON" position. (Do not start engine.)
2. Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Start the engine.
4. Read out the value of "VHCL/S SE·A/T" while driving. Check the value changes according to driving speed.

DATA MONITOR		NO DTC
VHCL/S SE·A/T	0km/h	
VHCL/S SE·MTR	0km/h	
ACCELE POSI	0.0/8	
THROTTLE POS	0.0/8	
CLSD THL POS	ON	
W/O THL POS	OFF	
		▽
		RECORD
MODE	BACK	LIGHT COPY

PCIA0033E

With GST

Follow the procedure "With CONSULT-II".

OK or NG

- OK >> GO TO 6.
 NG >> GO TO 3.

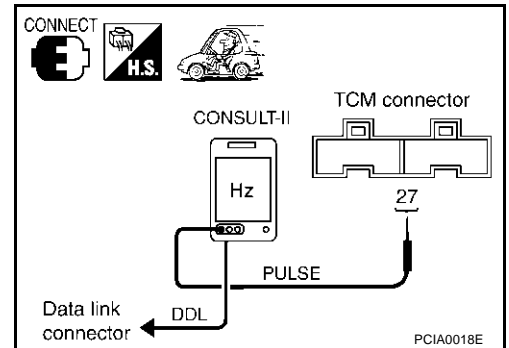
2. CHECK REVOLUTION SENSOR (WITH CONSULT-II)

With CONSULT-II

1. Start the engine.
2. Check the pulse when vehicle cruises.

Condition	Connector No.	Terminal No. (Wire color)	Data (Approx.)
When moving at 20 km/h (12 MPH), use the CONSULT-II pulse frequency measuring function.	F104	27 (Y/B)	185 (Hz)

CAUTION:
 Connect the data link connector to the vehicle-side diagnosis connector.



OK or NG

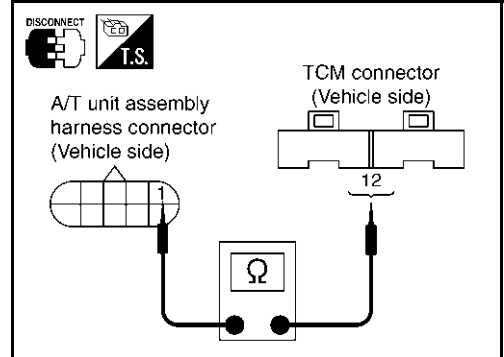
- OK >> GO TO 6.
 NG >> GO TO 3.

DTC P0720 VEHICLE SPEED SENSOR A/T (REVOLUTION SENSOR)

3. CHECK HARNESS BETWEEN TCM AND A/T UNIT ASSEMBLY HARNESS CONNECTOR

1. Turn ignition switch to "OFF" position.
2. Disconnect TCM connector.
3. Check continuity between A/T unit assembly harness connector and TCM connector.

Item	Connector No.	Terminal No. (Wire color)	Continuity
TCM	F103	12 (Y/R)	Yes
A/T unit assembly harness connector	F26	1 (Y/R)	
TCM	F104	27 (Y/B)	Yes
A/T unit assembly harness connector	F26	10 (Y/B)	

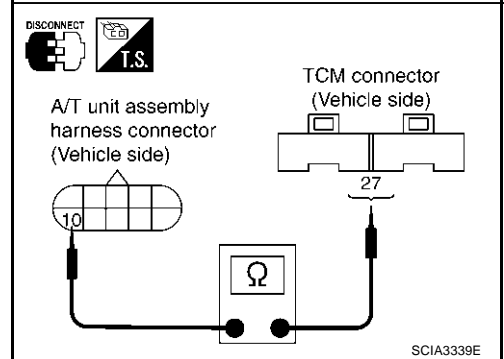


4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

OK or NG

OK >> GO TO 4.

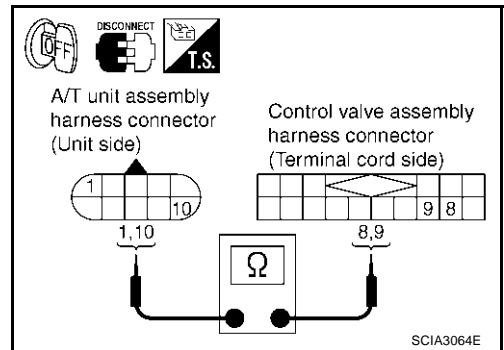
NG >> Repair open circuit or short to ground or short to power in harness or connectors.



4. CHECK TERMINAL CORD ASSEMBLY

1. Remove oil pan. Refer to [AT-290, "Control Valve Assembly"](#).
2. Disconnect A/T unit assembly harness connector and control valve assembly harness connector.
3. Check continuity between A/T unit assembly harness connector and control valve assembly harness connector.

Item	Connector No.	Terminal No. (Wire color)	Continuity
A/T unit assembly harness connector	F26	1 (B)	Yes
Control valve assembly harness connector	F302	8 (B)	
A/T unit assembly harness connector	F26	10 (R/Y)	Yes
Control valve assembly harness connector	F302	9 (R/Y)	



4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

OK or NG

OK >> GO TO 5.

NG >> Repair open circuit or short to ground or short to power in harness or connectors.

DTC P0720 VEHICLE SPEED SENSOR A/T (REVOLUTION SENSOR)

5. DETECT MALFUNCTION ITEMS

1. Check control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#) .
2. Disassemble A/T. Refer to [AT-308, "DISASSEMBLY"](#) .
3. Check revolution sensor. Refer to [AT-308, "DISASSEMBLY"](#) .

OK or NG

- OK >> GO TO 6.
- NG >> Repair or replace damaged parts.

6. CHECK DTC

Perform "DTC Confirmation Procedure". Refer to [AT-111, "DTC Confirmation Procedure"](#) .

OK or NG

- OK >> **INSPECTION END**
- NG >> GO TO 7.

7. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

- OK >> **INSPECTION END**
- NG >> Repair or replace damaged parts.

A
B
AT
D
E
F
G
H
I
J
K
L
M

DTC P0725 ENGINE SPEED SIGNAL

DTC P0725 ENGINE SPEED SIGNAL

PFP:24825

Description

ECS0084A

The engine speed signal is sent from the ECM to the TCM.

On Board Diagnosis Logic

ECS0084B

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code "ENGINE SPEED SIG" with CONSULT-II or 16th judgement flicker without CONSULT-II is detected when TCM does not receive the ignition signal from ECM during engine cranking or running.

Possible Cause

ECS0084C

Harness or connectors
(The ECM to the TCM circuit is open or shorted.)

DTC Confirmation Procedure

ECS0084D

CAUTION:

Always drive vehicle at a safe speed.

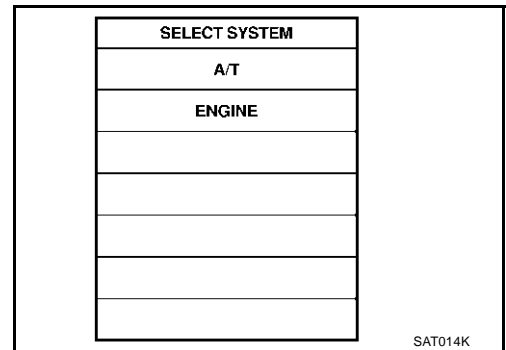
NOTE:

If "DTC Confirmation Procedure" has been previously conducted, always turn ignition switch "OFF" and wait at least 10 seconds before conducting the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

Ⓟ WITH CONSULT-II

1. Turn ignition switch to "ON" position and select "DATA MONITOR" mode for "A/T" with CONSULT-II.
2. Start engine and maintain the following conditions for at least 10 consecutive seconds.
VHCL SPEED SE: 10 km/h (6 MPH) or more
ACCELE POSI: More than 1/8
Selector lever: "D" position
3. If DTC is detected, go to [AT-116, "Diagnostic Procedure"](#).



Diagnostic Procedure

ECS0084E

1. CHECK DTC WITH ECM

Ⓟ With CONSULT-II

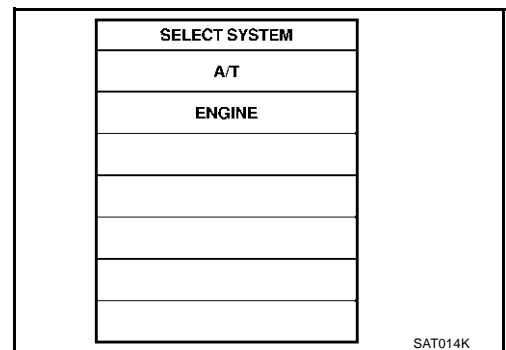
1. Turn ignition switch to "ON" position. (Do not start engine.)
2. Select "SELF-DIAG RESULTS" mode for "ENGINE" with CONSULT-II. Refer to [EC-108, "CONSULT-II Function"](#).

OK or NG

OK >> GO TO 2.

NG >> Check the DTC detected item, go to [EC-108, "CONSULT-II Function"](#).

- If CAN communication line is detected, go to [AT-100, "DTC U1000 CAN COMMUNICATION LINE"](#).



DTC P0725 ENGINE SPEED SIGNAL

2. CHECK DTC WITH TCM

With CONSULT-II

1. Start engine.
2. Select "MAIN SIGNALS" in "DATA MONITOR" mode for "AT" with CONSULT-II.
3. While monitoring engine speed, check for engine speed change corresponding to wide-open throttle position signal.

OK or NG

- OK >> GO TO 3.
NG >> Check the ignition signal circuit.
- Refer to [EC-641, "IGNITION SIGNAL"](#).

DATA MONITOR			
MONITOR	NO. DTC		
W/O THL POS	OFF		
BRAKE SW	OFF		
ENGINE SPEED	0 rpm		
TURBINE REV	0 rpm		
OUTPUT REV	0 rpm		
▼			
RECORD			
MODE	BACK	LIGHT	COPY

PCIA0041E

3. CHECK DTC

Perform "DTC Confirmation Procedure". Refer to [AT-116, "DTC Confirmation Procedure"](#).

OK or NG

- OK >> **INSPECTION END**
NG >> GO TO 4.

4. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

- OK >> **INSPECTION END**
NG >> Repair or replace damaged parts.

DTC P0740 TORQUE CONVERTER CLUTCH SOLENOID VALVE

DTC P0740 TORQUE CONVERTER CLUTCH SOLENOID VALVE

PFP:31940

Description

ECS0084F

- The torque converter clutch solenoid valve is activated, with the gear in D4 , D5 by the TCM in response to signals sent from the vehicle speed sensor and accelerator pedal position sensor (throttle position sensor). Torque converter clutch piston operation will then be controlled.
- Lock-up operation, however, is prohibited when A/T fluid temperature is too low.
- When the accelerator pedal is depressed (less than 1/8) in lock-up condition, the engine speed should not change abruptly. If there is a big jump in engine speed, there is no lock-up.

CONSULT-II Reference Value

ECS0084G

Item name	Condition	Display value (Approx.) (A)
TCC SOLENOID	When perform slip lock-up	0.2 - 0.4
	When perform lock-up	0.4 - 0.6

On Board Diagnosis Logic

ECS0084H

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "TCC SOLENOID/CIRC" with CONSULT-II or P0740 without CONSULT-II is detected under the following conditions.
 - When TCM detects an improper voltage drop when it tries to operate the solenoid valve.
 - When TCM detects as irregular by comparing target value with monitor value.

Possible Cause

ECS0084I

- Torque converter clutch solenoid valve
- Harness or connectors
(The solenoid circuit is open or shorted.)

DTC Confirmation Procedure

ECS0084J

CAUTION:

Always drive vehicle at a safe speed.

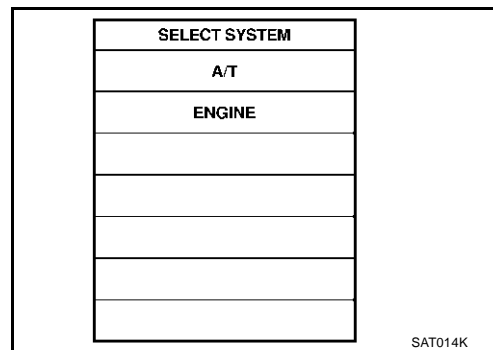
NOTE:

If "DTC Confirmation Procedure" has been previously conducted, always turn ignition switch "OFF" and wait at least 10 seconds before conducting the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

④ WITH CONSULT-II

1. Turn ignition switch to "ON" position. (Do not start engine.)
2. Select "DATA MONITOR" mode for "ENGINE" with CONSULT-II.
3. Start engine and maintain the following conditions for at least 5 consecutive seconds.
VHCL SPEED SE: 80 km/h (50 MPH) or more
ACCELE POS: 0.5/8 - 1.0/8
SELECTOR LEVER: "D" position
4. If DTC is detected go to [AT-120, "Diagnostic Procedure"](#) .



④ WITH GST

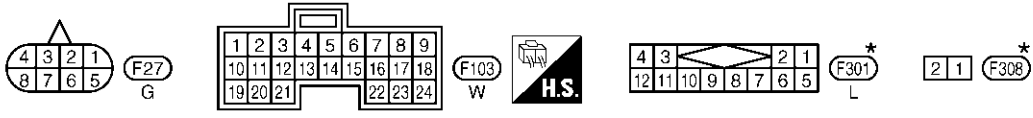
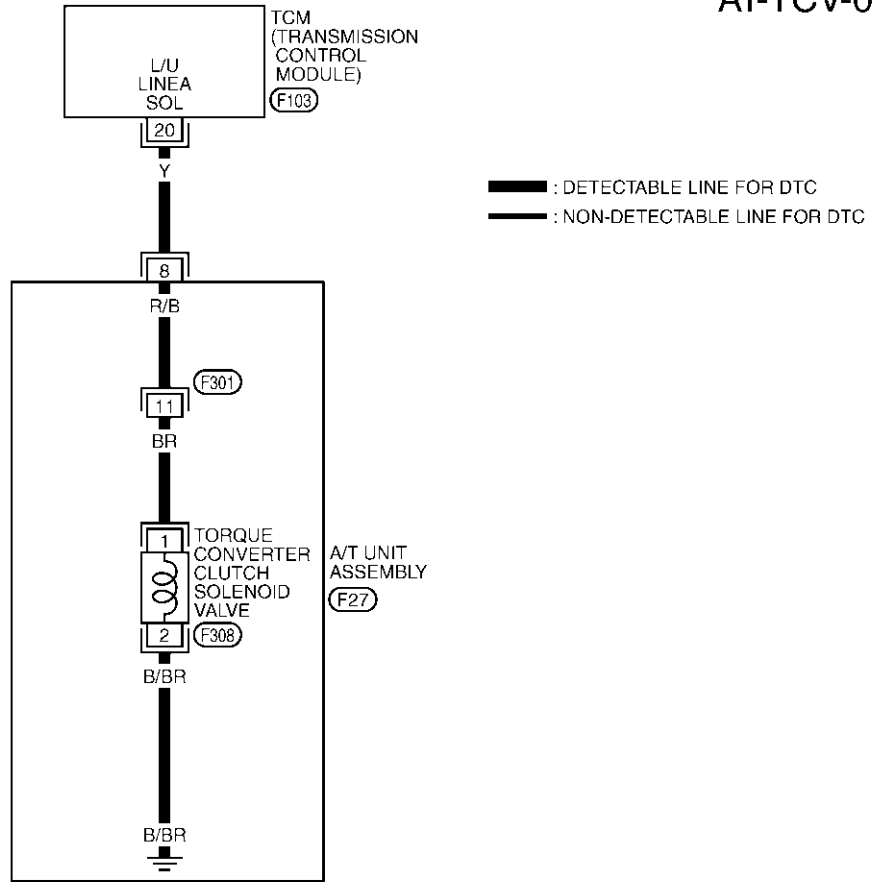
Follow the procedure "With CONSULT-II".

DTC P0740 TORQUE CONVERTER CLUTCH SOLENOID VALVE

Wiring Diagram — AT — TCV

ECS0084K

AT-TCV-01



*: THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT", PG SECTION.

TCWM0005E

TCM terminal and data are reference value. Measured between each terminal and ground.

Terminal No.	Wire color	Item	Condition		Data (Approx.)
			When vehicle cruises		
20	Y	TCC solenoid valve	When lock-up		More than 2V
			When not lock-up		0V

DTC P0740 TORQUE CONVERTER CLUTCH SOLENOID VALVE

ECS0084L

Diagnostic Procedure

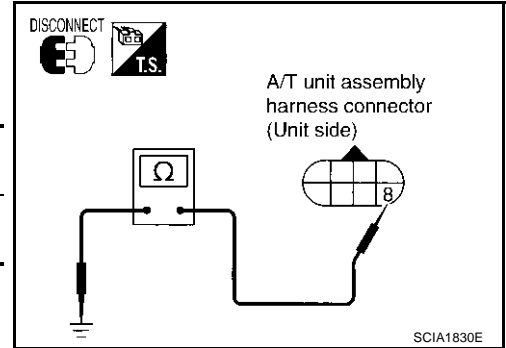
1. CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE CIRCUIT

1. Turn ignition switch to "OFF" position.
2. Disconnect A/T unit assembly harness connector at the transmission right side.
3. Check the resistance between terminal and ground.

Solenoid valve	Connector No.	Terminal No. (Wire color)	Resistance (Approx.)
Torque converter clutch solenoid valve	F27	8 (Y) - Ground	3 - 9 Ω

OK or NG

- OK >> GO TO 4.
 NG >> GO TO 2.



2. CHECK TERMINAL CORD ASSEMBLY

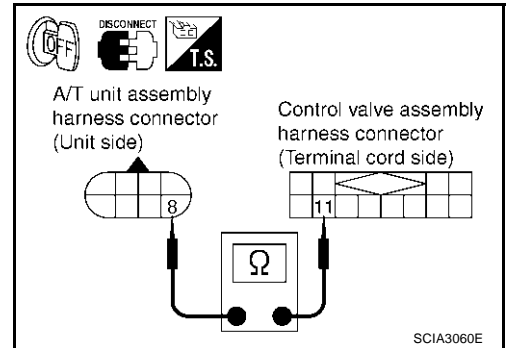
1. Remove oil pan. Refer to [AT-290, "Control Valve Assembly"](#).
2. Disconnect A/T unit assembly harness connector and control valve assembly harness connector.
3. Check continuity between A/T unit assembly harness connector and control valve assembly harness connector.

Item	Connector No.	Terminal No. (Wire color)	Continuity
A/T unit assembly harness connector	F27	8 (R/B)	Yes
Control valve assembly harness connector	F301	11 (R/B)	

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

OK or NG

- OK >> GO TO 3.
 NG >> Repair open circuit or short to ground or short to power in harness or connectors.



3. CHECK VALVE RESISTANCE

Check valve resistance

- Refer to [AT-121, "Component Inspection"](#).

OK or NG

- OK >> GO TO 4.
 NG >> Replace the control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#).

DTC P0740 TORQUE CONVERTER CLUTCH SOLENOID VALVE

4. CHECK POWER SOURCE CIRCUIT

1. Turn ignition switch to "OFF" position.
2. Disconnect TCM connector.
3. Check continuity between A/T unit assembly harness connector and TCM connector.

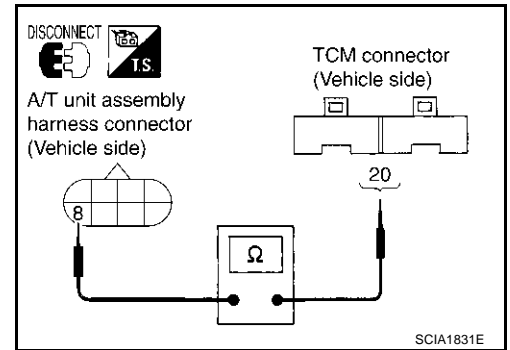
Item	Connector No.	Terminal No. (Wire color)	Continuity
TCM	F103	20 (Y)	Yes
A/T unit assembly harness connector	F27	8 (Y)	

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

OK or NG

OK >> GO TO 5.

NG >> Repair open circuit or short to ground or short to power in harness or connectors.



5. CHECK DTC

Perform "DTC Confirmation Procedure". Refer to [AT-118, "DTC Confirmation Procedure"](#).

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 6.

6. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> **INSPECTION END**

NG >> Repair or replace damaged parts.

Component Inspection TORQUE CONVERTER CLUTCH SOLENOID VALVE

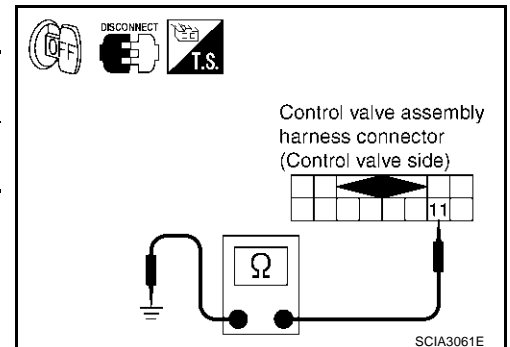
ECS00A11

Resistance check

1. Turn ignition switch "OFF".
2. Remove oil pan. Refer to [AT-290, "Control Valve Assembly"](#).
3. Disconnect control valve assembly harness connector.
4. Check resistance between terminal and ground.

Solenoid Valve	Connector No.	Terminal No. (Wire color)	Resistance (Ω) (Approx.)
Torque converter clutch solenoid valve	F301	11 (BR) - Ground	3 - 9 Ω

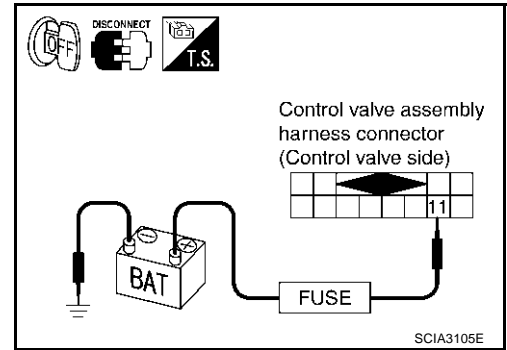
5. If NG, replace control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#).



DTC P0740 TORQUE CONVERTER CLUTCH SOLENOID VALVE

Operation check

- Check solenoid valve by listening for its operating sound while applying battery voltage to the terminal 11 and ground.



DTC P0744 A/T TCC S/V FUNCTION (LOCK-UP)

DTC P0744 A/T TCC S/V FUNCTION (LOCK-UP)

PPF:31940

Description

ECS0084M

This malfunction is detected when the A/T does not shift into 5th gear position or the torque converter clutch does not lock-up as instructed by the TCM. This is not only caused by electrical malfunction (circuits open or shorted) but also by mechanical malfunction such as control valve sticking, improper solenoid valve operation, etc.

On Board Diagnosis Logic

ECS0084N

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "A/T TCC S/V FNCTN" with CONSULT-II or P0744 without CONSULT-II is detected under the following conditions.
 - When A/T cannot perform lock-up even if electrical circuit is good.
 - When TCM detects as irregular by comparing difference value with slip rotation.

Possible Cause

ECS0084O

- Harness or connectors
(The solenoid circuit is open or shorted.)
- Torque converter clutch solenoid valve
- Hydraulic control circuit

DTC Confirmation Procedure

ECS0084P

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If "DTC Confirmation Procedure" has been previously conducted, always turn ignition switch "OFF" and wait at least 10 seconds before conducting the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

WITH CONSULT-II

1. Start engine and select "TCC S/V FNCTN CHECK" of "DTC WORK SUPPORT" mode for "A/T" with CONSULT-II and touch "START".
2. Accelerate vehicle to more than 80 km/h (50 MPH) and maintain the following condition continuously until "TESTING" has turned to "COMPLETE". (It will take approximately 30 seconds after "TESTING" shows.)

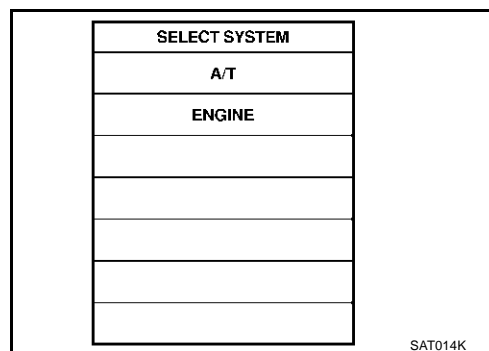
ACCELE POSI: More than 1.0/8 (at all times during step 4)

TCC SOLENOID: 0.4 - 0.6 A

Selector lever: "D" position

[Reference speed: Constant speed of more than 80 km/h (50 MPH)]

- Check that "GEAR" shows "5".
 - For shift schedule, refer to [AT-358, "Vehicle Speed When Performing and Releasing Complete Lock-up"](#).
 - If "TESTING" does not appear on CONSULT-II for a long time, select "SELF-DIAG RESULTS". In case a 1st trip DTC other than P0744 is shown, refer to applicable "TROUBLE DIAGNOSIS FOR DTC".
3. Make sure that "OK" is displayed. (If "NG" is displayed, refer to "DIAGNOSTIC PROCEDURE".)
Refer to [AT-125, "Diagnostic Procedure"](#).
Refer to shift schedule, [AT-358, "Vehicle Speed When Performing and Releasing Complete Lock-up"](#).



WITH GST

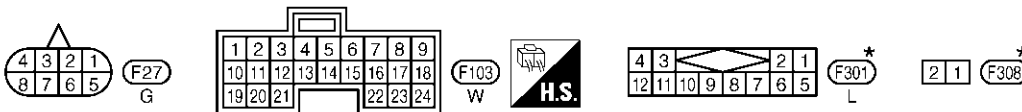
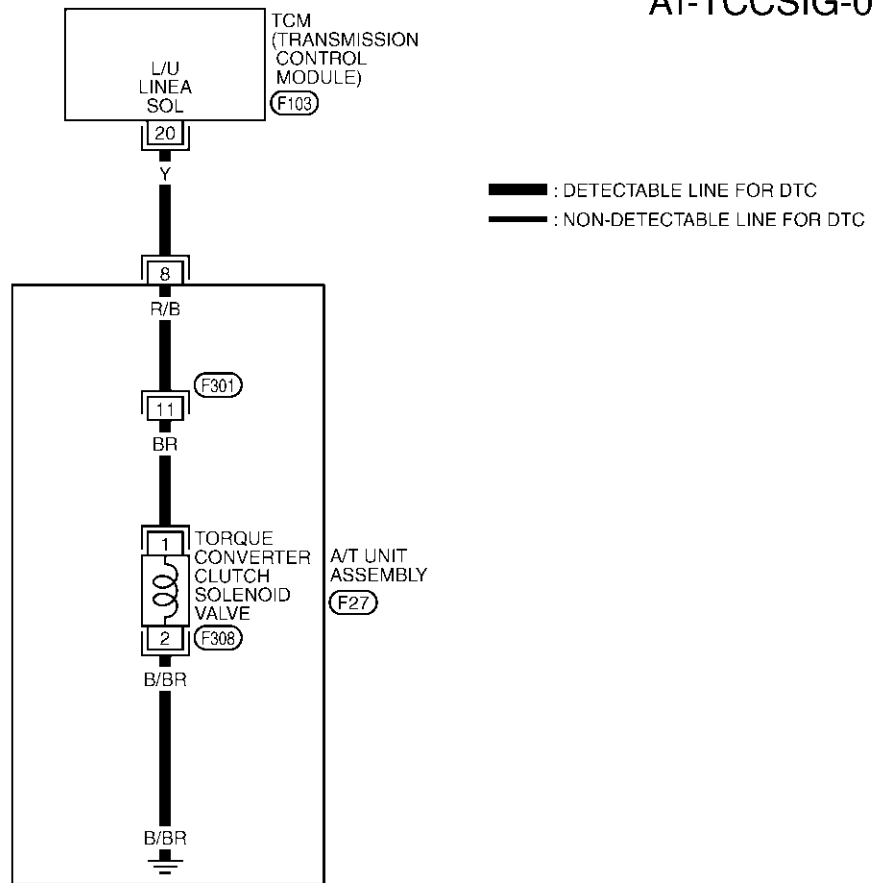
Follow the procedure "With CONSULT-II".

DTC P0744 A/T TCC S/V FUNCTION (LOCK-UP)

Wiring Diagram — AT — TCCSIG

ECS0084Q

AT-TCCSIG-01



*: THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT", PG SECTION.

TCM terminal and data are reference value. Measured between each terminal and ground.

TCWM0006E

Terminal No.	Wire color	Item	Condition		Data (Approx.)
20	Y	TCC solenoid valve	When vehicle cruises	When lock-up	More than 2V
				When not lock-up	0V

DTC P0744 A/T TCC S/V FUNCTION (LOCK-UP)

ECS00A1J

Diagnostic Procedure

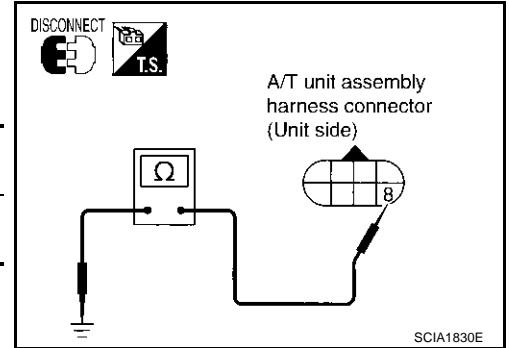
1. CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE CIRCUIT

1. Turn ignition switch to "OFF" position.
2. Disconnect A/T unit assembly harness connector at the transmission right side.
3. Check the resistance between terminal and ground.

Solenoid valve	Connector No.	Terminal No. (Wire color)	Resistance (Approx.)
Torque converter clutch solenoid valve	F27	8 (Y) - Ground	3 - 9 Ω

OK or NG

- OK >> GO TO 4.
 NG >> GO TO 2.



2. CHECK TERMINAL CORD ASSEMBLY

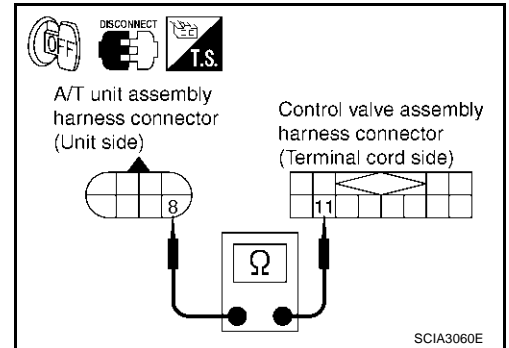
1. Remove oil pan. Refer to [AT-290, "Control Valve Assembly"](#).
2. Disconnect A/T unit assembly harness connector and control valve assembly harness connector.
3. Check continuity between A/T unit assembly harness connector and control valve assembly harness connector.

Item	Connector No.	Terminal No. (Wire color)	Continuity
A/T unit assembly harness connector	F27	8 (R/B)	Yes
Control valve assembly harness connector	F301	11 (R/B)	

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

OK or NG

- OK >> GO TO 3.
 NG >> Repair open circuit or short to ground or short to power in harness or connectors.



3. CHECK VALVE RESISTANCE

Check valve resistance

- Refer to [AT-126, "Component Inspection"](#).

OK or NG

- OK >> GO TO 5.
 NG >> Replace the control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#).

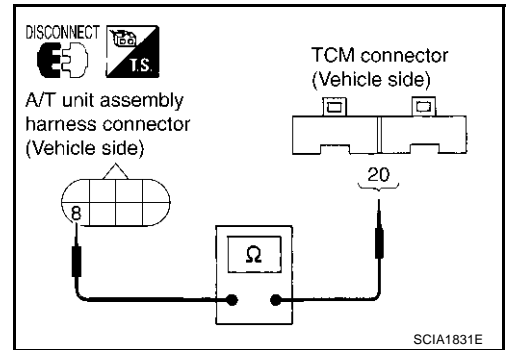
DTC P0744 A/T TCC S/V FUNCTION (LOCK-UP)

4. CHECK POWER SOURCE CIRCUIT

1. Turn ignition switch to "OFF" position.
2. Disconnect TCM connector.
3. Check continuity between A/T unit assembly harness connector and TCM connector.

Item	Connector No.	Terminal No. (Wire color)	Continuity
TCM	F103	20 (Y)	Yes
A/T unit assembly harness connector	F27	8 (Y)	

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.



OK or NG

OK >> GO TO 5.

NG >> Repair open circuit or short to ground or short to power in harness or connectors.

5. CHECK DTC

Perform "DTC Confirmation Procedure". Refer to [AT-118, "DTC Confirmation Procedure"](#).

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 6.

6. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> **INSPECTION END**

NG >> Repair or replace damaged parts.

Component Inspection TORQUE CONVERTER CLUTCH SOLENOID VALVE

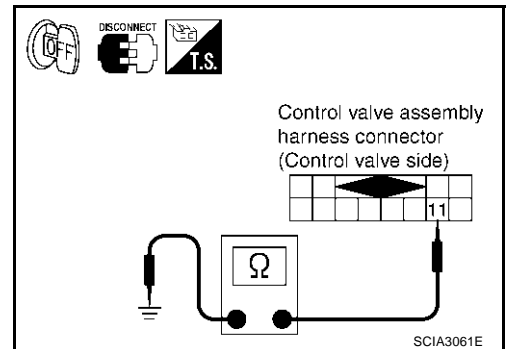
ECS00A1L

Resistance check

1. Turn ignition switch "OFF".
2. Remove oil pan. Refer to [AT-290, "Control Valve Assembly"](#).
3. Disconnect control valve assembly harness connector.
4. Check resistance between terminal and ground.

Solenoid Valve	Connector No.	Terminal No. (Wire color)	Resistance (Ω) (Approx.)
Torque converter clutch solenoid valve	F301	11 (BR) - Ground	3 - 9 Ω

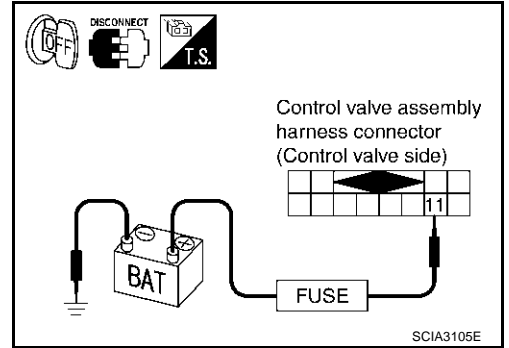
5. If NG, replace control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#).



DTC P0744 A/T TCC S/V FUNCTION (LOCK-UP)

Operation check

- Check solenoid valve by listening for its operating sound while applying battery voltage to the terminal 11 and ground.



A
B
AT
D
E
F
G
H
I
J
K
L
M

DTC P0745 LINE PRESSURE SOLENOID VALVE

DTC P0745 LINE PRESSURE SOLENOID VALVE

PFP:31940

Description

ECS0084S

The line pressure solenoid valve regulates the oil pump discharge pressure to suit the driving condition in response to a signal sent from the TCM.

The line pressure duty cycle value is not consistent when the closed throttle position signal is “ON”. To confirm the line pressure duty cycle at low pressure, the accelerator (throttle) should be open until the closed throttle position signal is “OFF”.

On Board Diagnosis Logic

ECS0084T

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “L/PRESS SOL/CIRC” with CONSULT-II or P0745 without CONSULT-II is detected under the following conditions.
 - When TCM detects an improper voltage drop when it tries to operate the solenoid valve.
 - When TCM detects as irregular by comparing target value with monitor value.

Possible Cause

ECS0084U

- Harness or connectors
(The solenoid circuit is open or shorted.)
- Line pressure solenoid valve

DTC Confirmation Procedure

ECS0084V

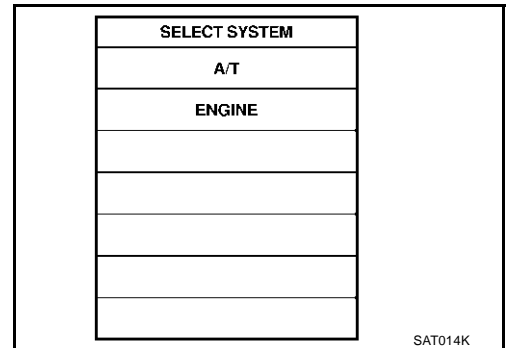
NOTE:

If “DTC Confirmation Procedure” has been previously conducted, always turn ignition switch “OFF” and wait at least 10 seconds before conducting the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

④ WITH CONSULT-II

1. Turn ignition switch to “ON” position and select “DATA MONITOR” mode for “ENGINE” with CONSULT-II.
2. Engine start and wait at least 5 second.
3. If DTC is detected, go to [“AT-130, “Diagnostic Procedure”](#) .



④ WITH GST

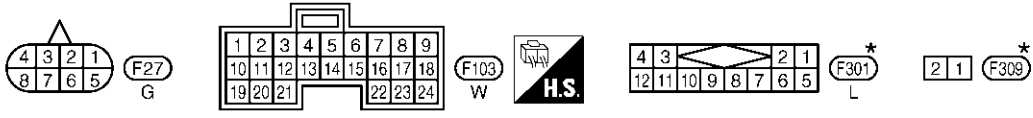
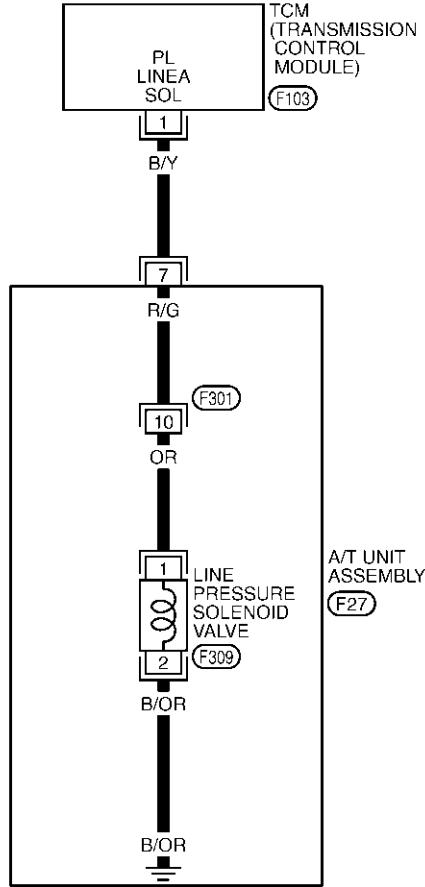
Follow the procedure “With CONSULT-II”.

DTC P0745 LINE PRESSURE SOLENOID VALVE

Wiring Diagram — AT — LPSV

ECS0084W

AT-LPSV-01



*: THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT", PG SECTION.

TCWM0007E

TCM terminal and data are reference value. Measured between each terminal and ground.

Terminal No.	Wire color	Item	Condition		Data (Approx.)
1	B/Y	Line pressure solenoid valve	IGN ON	After warming up the engine, release your foot from the accelerator pedal.	2V
				After warming up the engine, press the accelerator pedal all the way down.	0.7V

DTC P0745 LINE PRESSURE SOLENOID VALVE

ECS0084X

Diagnostic Procedure

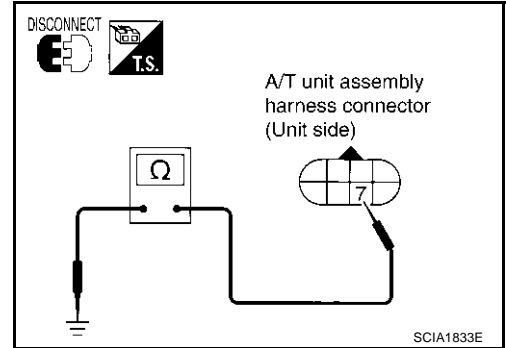
1. CHECK LINE PRESSURE SOLENOID VALVE CIRCUIT

1. Turn ignition switch to "OFF" position.
2. Disconnect A/T unit assembly harness connector at the transmission right side.
3. Check the resistance between terminal and ground.

Solenoid valve	Connector No.	Terminal No. (Wire color)	Resistance (Approx.)
Line pressure solenoid valve	F27	7 (B/Y) - Ground	3 - 9 Ω

OK or NG

- OK >> GO TO 4.
 NG >> GO TO 2.



2. CHECK TERMINAL CORD ASSEMBLY

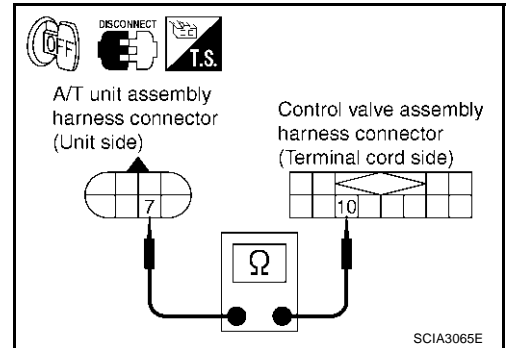
1. Remove oil pan. Refer to [AT-290, "Control Valve Assembly"](#).
2. Disconnect A/T unit assembly harness connector and control valve assembly harness connector.
3. Check continuity between A/T unit assembly harness connector and control valve assembly harness connector.

Item	Connector No.	Terminal No. (Wire color)	Continuity
A/T unit assembly harness connector	F27	7 (R/G)	Yes
Control valve assembly harness connector	F301	10 (R/G)	

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

OK or NG

- OK >> GO TO 3.
 NG >> Repair open circuit or short to ground or short to power in harness or connectors.



3. CHECK VALVE RESISTANCE

Check valve resistance

- Refer to [AT-131, "Component Inspection"](#).

OK or NG

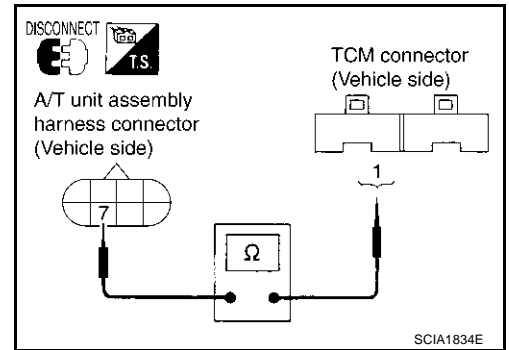
- OK >> GO TO 5.
 NG >> Replace the control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#).

DTC P0745 LINE PRESSURE SOLENOID VALVE

4. CHECK POWER SOURCE CIRCUIT

1. Turn ignition switch to "OFF" position.
2. Disconnect TCM connector.
3. Check continuity between A/T unit assembly harness connector and TCM connector.

Item	Connector No.	Terminal No. (Wire color)	Continuity
TCM	F103	1 (B/Y)	Yes
A/T unit assembly harness connector	F27	7 (B/Y)	



4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

OK or NG

- OK >> GO TO 5.
- NG >> Repair open circuit or short to ground or short to power in harness or connectors.

5. CHECK DTC

Perform "DTC Confirmation Procedure". Refer to [AT-128, "DTC Confirmation Procedure"](#).

OK or NG

- OK >> **INSPECTION END**
- NG >> GO TO 6.

6. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

- OK >> **INSPECTION END**
- NG >> Repair or replace damaged parts.

Component Inspection LINE PRESSURE SOLENOID VALVE

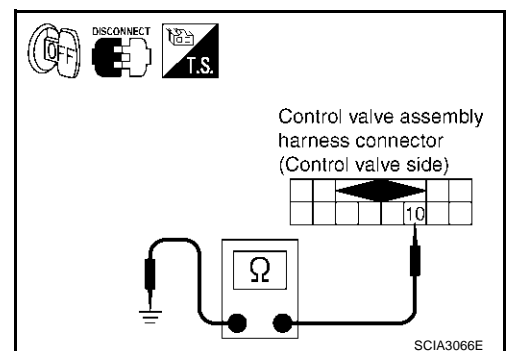
ECS00A1M

Resistance check

1. Turn ignition switch "OFF".
2. Remove oil pan. Refer to [AT-290, "Control Valve Assembly"](#).
3. Disconnect control valve assembly harness connector.
4. Check resistance between terminal and ground.

Solenoid Valve	Connector No.	Terminal No. (Wire color)	Resistance (Ω) (Approx.)
Line pressure solenoid valve	F301	10 (OR) - Ground	3 - 9 Ω

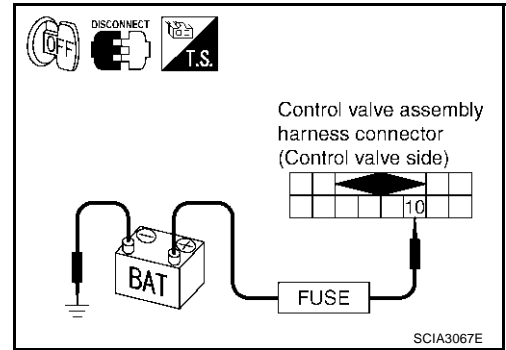
5. If NG, replace control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#).



DTC P0745 LINE PRESSURE SOLENOID VALVE

Operation check

- Check solenoid valve by listening for its operating sound while applying battery voltage to the terminal 10 and ground.



DTC P1701 TRANSMISSION CONTROL MODULE (POWER SUPPLY)

DTC P1701 TRANSMISSION CONTROL MODULE (POWER SUPPLY)

PPF:31036

Description

ECS0084Y

When the power supply to the TCM is cut "OFF", for example because the battery is removed, and the self-diagnostics memory function stops, malfunction is detected.

On Board Diagnosis Logic

ECS0084Z

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code "TCM-POWER SUPPLY" with CONSULT-II is detected when TCM does not receive the voltage signal from the battery power supply.
- This is not a malfunction message. (Whenever shutting "OFF" a power supply to the TCM, this message appears on the screen.)

Possible Cause

ECS00850

Harness or connectors
(Battery or ignition switch and TCM circuit is open or shorted.)

DTC Confirmation Procedure

ECS00851

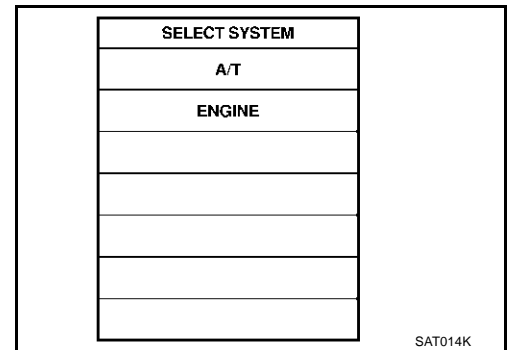
NOTE:

If "DTC Confirmation Procedure" has been previously conducted, always turn ignition switch "OFF" and wait at least 10 seconds before conducting the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

Ⓟ WITH CONSULT-II

1. Turn ignition switch to "ON" position. (Do not start engine.)
2. Select "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Wait for at least 2 consecutive seconds.
4. If DTC is detected, go to [AT-137, "Diagnostic Procedure"](#).



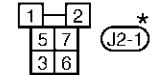
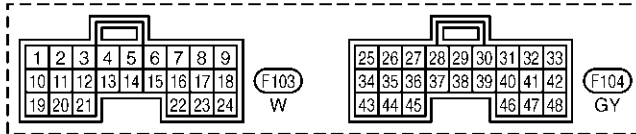
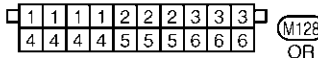
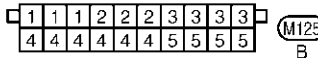
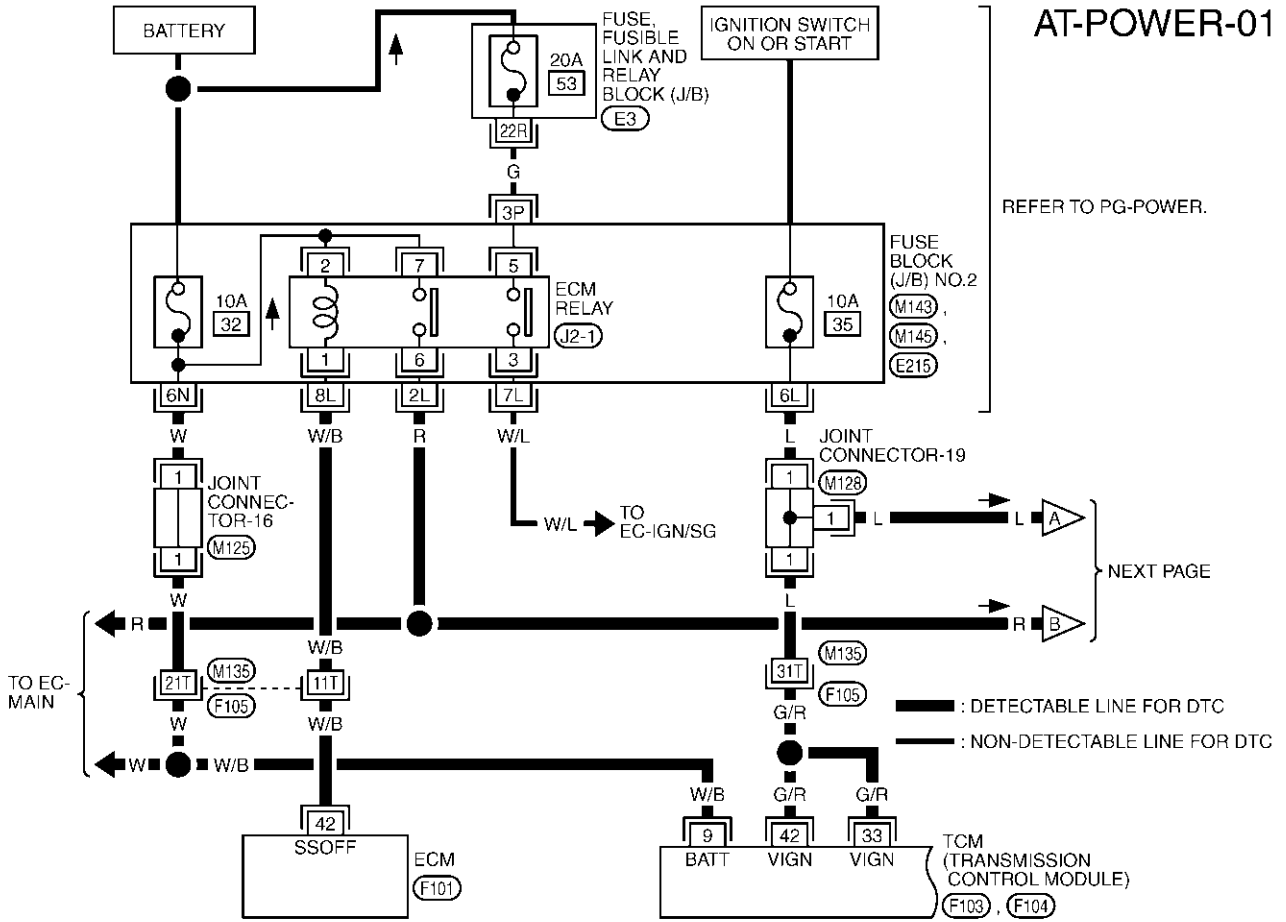
DTC P1701 TRANSMISSION CONTROL MODULE (POWER SUPPLY)

ECS00852

Wiring Diagram — AT — POWER

AT-POWER-01

REFER TO PG-POWER.



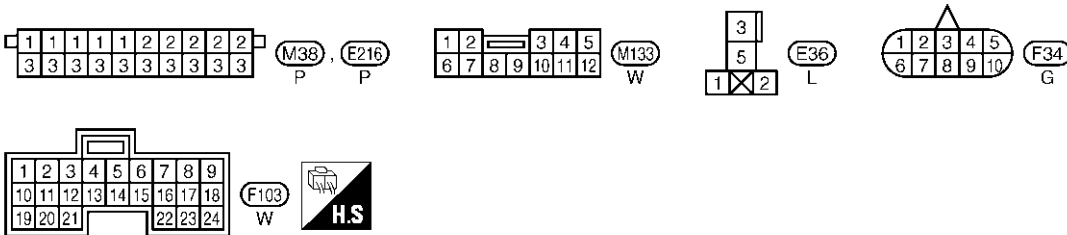
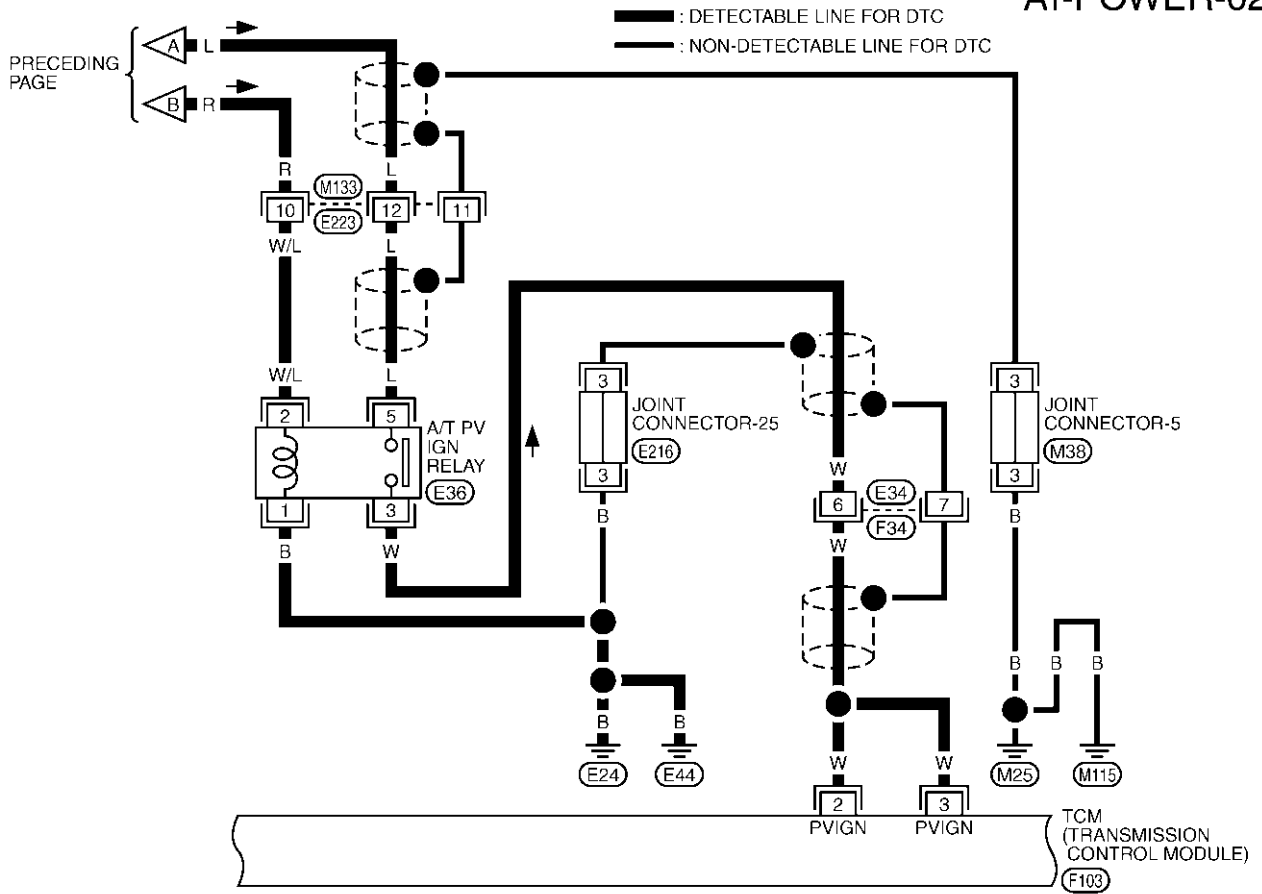
- REFER TO THE FOLLOWING.
- (F105) -SUPER MULTIPLE JUNCTION (SMJ)
 - (M143), (M145), (E215) -FUSE BLOCK-JUNCTION BOX (J/B) NO.2
 - (E3) -FUSE,FUSIBLE LINK AND RELAY BLOCK (J/B)
 - (F101) -ELECTICAL UNITS

*: THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT", PG SECTION.

TCWM0099E

DTC P1701 TRANSMISSION CONTROL MODULE (POWER SUPPLY)

AT-POWER-02

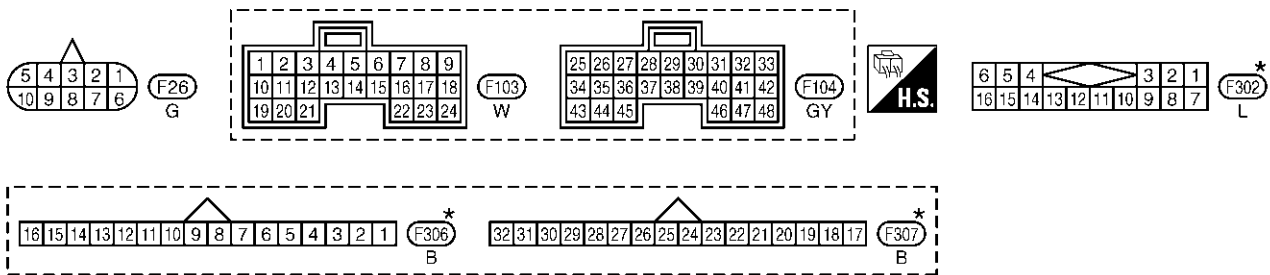
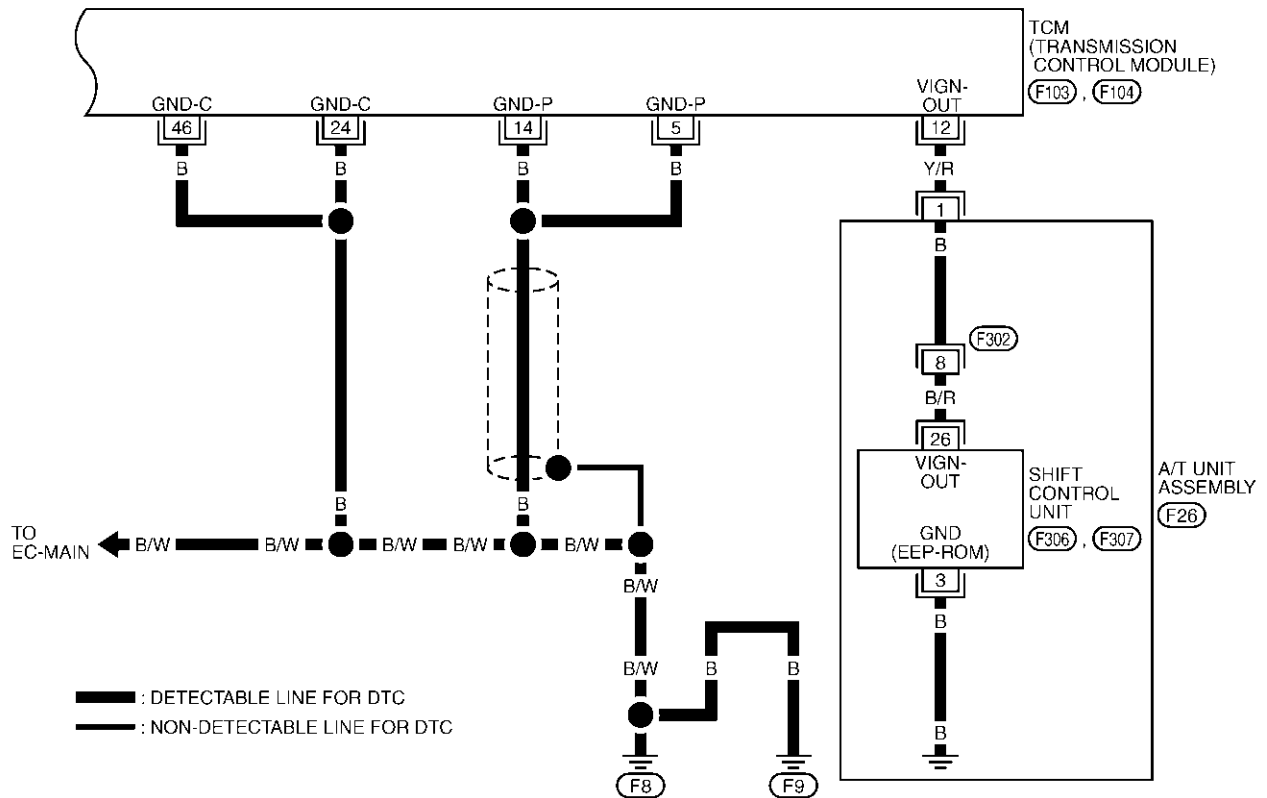


A
B
AT
D
E
F
G
H
I
J
K
L
M

TCWM0100E

DTC P1701 TRANSMISSION CONTROL MODULE (POWER SUPPLY)

AT-POWER-03



*: THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT", PG SECTION.

TCWM0101E

TCM terminals and data are reference value. Measured between each terminal and ground.

Terminal No.	Wire color	Item	Condition		Data (Approx.)
2	W	Power supply (A/T PV IGN relay)	IGN ON	—	Battery voltage
			IGN OFF	Measure 3 seconds after switching "OFF" the ignition switch.	0V
3	W	Power supply (A/T PV IGN relay)	IGN ON	—	Battery voltage
			IGN OFF	Measure 3 seconds after switching "OFF" the ignition switch.	0V
5	B	Ground	—	—	—
9	W/B	Power supply (Memory back-up)	IGN ON or OFF	—	Battery voltage

DTC P1701 TRANSMISSION CONTROL MODULE (POWER SUPPLY)

Terminal No.	Wire color	Item	Condition		Data (Approx.)
12	Y/R	Power supply (out)	IGN ON	–	Battery voltage
			IGN OFF	–	0V
14	B	Ground	–	–	–
24	B	Ground	–	–	–
33	G/R	Power supply	IGN ON	–	Battery voltage
			IGN OFF	–	0V
42	G/R	Power supply	IGN ON	–	Battery voltage
			IGN OFF	–	0V
46	B	Ground	–	–	–

Diagnostic Procedure

ECS00853

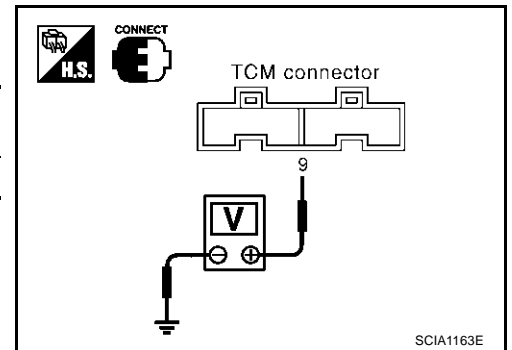
1. CHECK TCM POWER SOURCE, STEP 1

- Turn ignition switch to “OFF” position.
- Check voltage between TCM terminal and ground.

Item	Connector No.	Terminal No. (Wire color)	Voltage
TCM	F103	9 (W/B) - Ground	Battery voltage

OK or NG

- OK >> GO TO 2.
 NG >> GO TO 3.



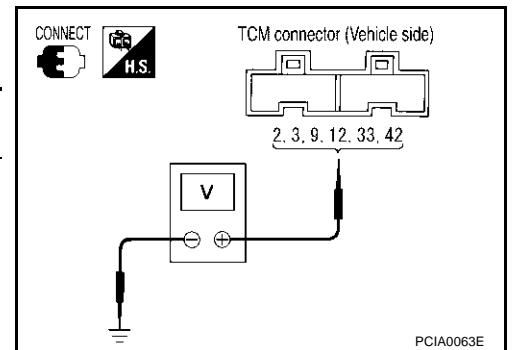
2. CHECK TCM POWER SOURCE, STEP 2

- Turn ignition switch to “ON” position.
- Check voltage between TCM terminal and ground.

Item	Connector No.	Terminal No. (Wire color)	Voltage
TCM	F103	2 (W) - Ground	Battery voltage
		3 (W) - Ground	
		9 (W/B) - Ground	
		12 (Y/R) - Ground	
	F104	33 (G/R) - Ground	
		42 (G/R) - Ground	

OK or NG

- OK >> GO TO 4.
 NG >> GO TO 3.



DTC P1701 TRANSMISSION CONTROL MODULE (POWER SUPPLY)

3. DETECT MALFUNCTIONING ITEM

Check the following items:

- Harness for short or open between battery and TCM terminal 9
- Harness for short or open between ignition switch and TCM terminals 2, 3, 33 and 42
- 10A fuse [No. 32 or 35, located in the fuse block (J/B)]
- Ignition switch. Refer to [PG-2, "POWER SUPPLY ROUTING"](#) .
- A/T PV IGN relay. Refer to [AT-138, "Component Inspection"](#) .
- ECM relay. Refer to [EC-133, "POWER SUPPLY CIRCUIT FOR ECM"](#) .

OK or NG

- OK >> GO TO 4.
NG >> Repair or replace damaged parts.

4. CHECK TCM GROUND CIRCUIT

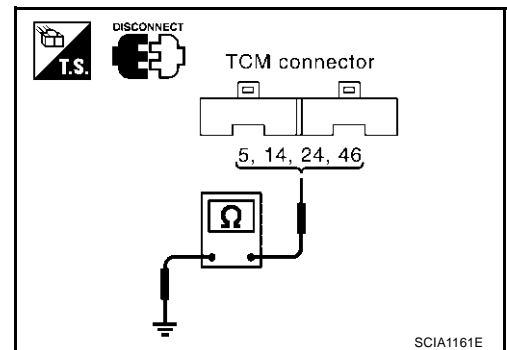
1. Turn ignition switch to "OFF" position.
2. Disconnect TCM harness connector.
3. Check continuity between TCM terminals 5 (B), 14 (B), 24 (B), 46 (B) and ground.

Continuity should exist.

If OK, check harness for short to ground and short to power.

OK or NG

- OK >> GO TO 5.
NG >> Repair open circuit or short to ground or short to power in harness or connectors.



5. CHECK DTC

Check again. Refer to [AT-133, "DTC Confirmation Procedure"](#) .

OK or NG

- OK >> **INSPECTION END**
NG >> GO TO 6.

6. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

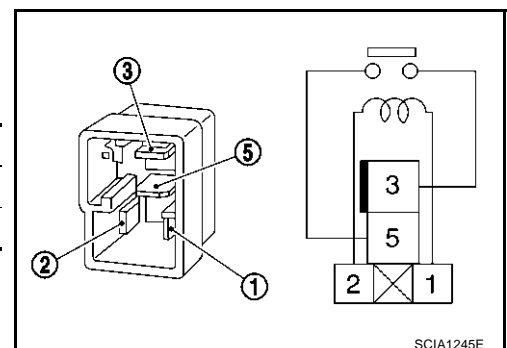
- OK >> **INSPECTION END**
NG >> Repair or replace damaged parts.

Component Inspection A/T PV IGN RELAY

1. Apply 12V direct current between A/T PV IGN relay terminals 1 and 2.
2. Check continuity between relay terminals 3 and 5.

Condition	Continuity
12V direct current supply between terminals 1 and 2	Yes
OFF	No

3. If NG, replace A/T PV IGN relay.



DTC P1702 TRANSMISSION CONTROL MODULE (RAM)

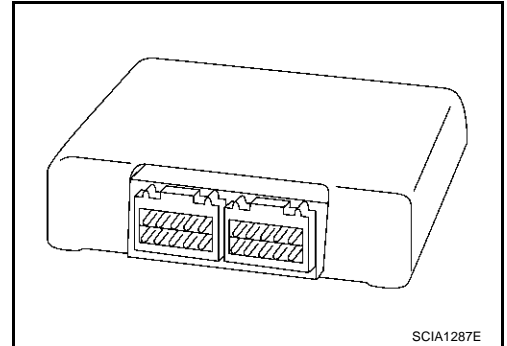
DTC P1702 TRANSMISSION CONTROL MODULE (RAM)

PFP:31036

Description

ECS00855

The TCM consists of a microcomputer and connectors for signal input and output and for power supply. The TCM controls the A/T.



SCIA1287E

ECS00856

On Board Diagnosis Logic

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code "TCM-RAM" with CONSULT-II is detected when TCM memory RAM is malfunctioning.

Possible Cause

ECS00857

TCM

DTC Confirmation Procedure

ECS00858

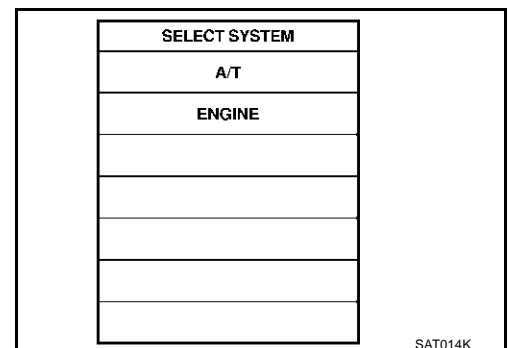
NOTE:

If "DTC Confirmation Procedure" has been previously conducted, always turn ignition switch "OFF" and wait at least 10 seconds before conducting the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

WITH CONSULT-II

1. Turn ignition switch to "ON" position. (Do not start engine.)
2. Select "DATA MONITOR" mode for A/T with CONSULT-II.
3. Start engine.
4. Run engine for at least 2 consecutive seconds at idle speed.
5. If DTC is detected, go to [AT-140, "Diagnostic Procedure"](#).



SAT014K

DTC P1702 TRANSMISSION CONTROL MODULE (RAM)

Diagnostic Procedure

ECS00859

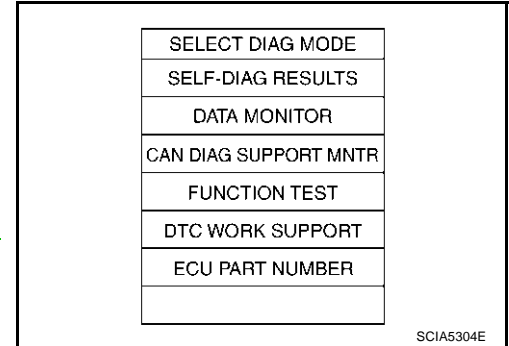
1. CHECK DTC

Ⓜ With CONSULT-II

1. Turn ignition switch to "ON" position. (Do not start engine.)
2. Select "SELF DIAG RESULTS" mode for "A/T" with CONSULT-II.
3. Touch "ERASE".
4. Turn ignition switch to "OFF" position and wait at least 10 seconds.
5. Perform DTC confirmation procedure, [AT-139, "DTC Confirmation Procedure"](#).

Is the "TCM·RAM" displayed again?

- Yes >> Replace TCM.
No >> **INSPECTION END**



DTC P1703 TRANSMISSION CONTROL MODULE (ROM)

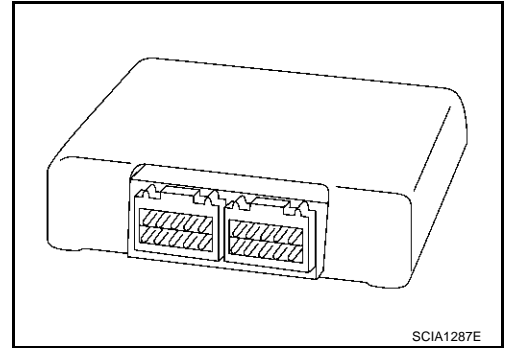
DTC P1703 TRANSMISSION CONTROL MODULE (ROM)

PF3:31036

Description

ECS0085A

The TCM consists of a microcomputer and connectors for signal input and output and for power supply. The TCM controls the A/T.



SCIA1287E

ECS0085B

On Board Diagnosis Logic

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code "TCM-ROM" with CONSULT-II is detected when TCM memory ROM is malfunctioning.

Possible Cause

ECS0085C

TCM

DTC Confirmation Procedure

ECS0085D

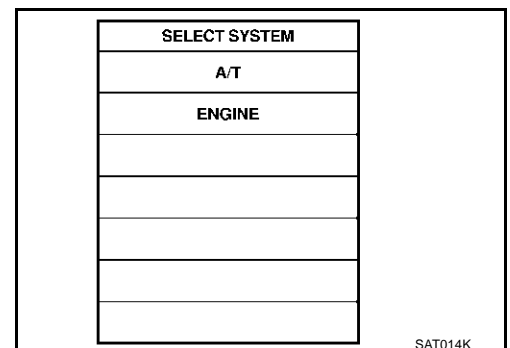
NOTE:

If "DTC Confirmation Procedure" has been previously conducted, always turn ignition switch "OFF" and wait at least 10 seconds before conducting the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

WITH CONSULT-II

1. Turn ignition switch to "ON" position. (Do not start engine.)
2. Select "DATA MONITOR" mode for A/T with CONSULT-II.
3. Start engine.
4. Run engine for at least 2 consecutive seconds at idle speed.
5. If DTC is detected, go to [AT-142, "Diagnostic Procedure"](#).



SAT014K

DTC P1703 TRANSMISSION CONTROL MODULE (ROM)

Diagnostic Procedure

ECS0085E

1. CHECK DTC

Ⓜ With CONSULT-II

1. Turn ignition switch to "ON" position. (Do not start engine.)
2. Select "SELF DIAG RESULTS" mode for "A/T" with CONSULT-II.
3. Touch "ERASE".
4. Turn ignition switch to "OFF" position and wait at least 10 seconds.
5. Perform DTC confirmation procedure, [AT-141, "DTC Confirmation Procedure"](#).

Is the "TCM-ROM" displayed again?

- Yes >> Replace TCM.
No >> **INSPECTION END**

SELECT DIAG MODE
SELF-DIAG RESULTS
DATA MONITOR
CAN DIAG SUPPORT MNTR
FUNCTION TEST
DTC WORK SUPPORT
ECU PART NUMBER

SCIA5304E

DTC P1704 TRANSMISSION CONTROL MODULE (EEPROM)

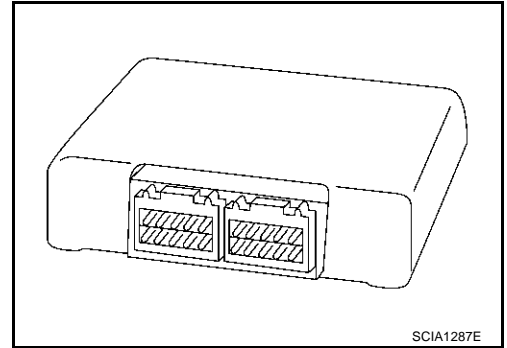
DTC P1704 TRANSMISSION CONTROL MODULE (EEPROM)

PFP:31036

Description

ECS0085F

The TCM consists of a microcomputer and connectors for signal input and output and for power supply. The TCM controls the A/T.



ECS0085G

On Board Diagnosis Logic

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code "TCM-EEPROM" with CONSULT-II is detected when TCM memory EEPROM is malfunctioning.

Possible Cause

ECS0085H

TCM

DTC Confirmation Procedure

ECS0085I

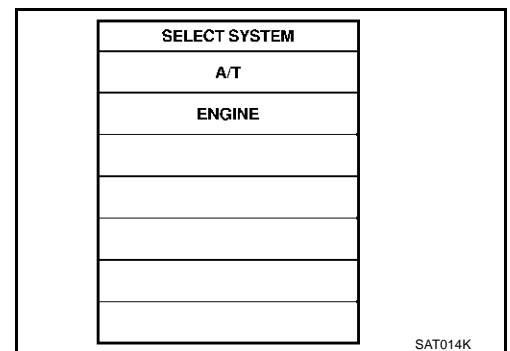
NOTE:

If "DTC Confirmation Procedure" has been previously conducted, always turn ignition switch "OFF" and wait at least 10 seconds before conducting the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

WITH CONSULT-II

1. Turn ignition switch to "ON" position. (Do not start engine.)
2. Select "DATA MONITOR" mode for A/T with CONSULT-II.
3. Start engine.
4. Run engine for at least 2 consecutive seconds at idle speed.
5. If DTC is detected, go to [AT-144, "Diagnostic Procedure"](#).



DTC P1704 TRANSMISSION CONTROL MODULE (EEPROM)

Diagnostic Procedure

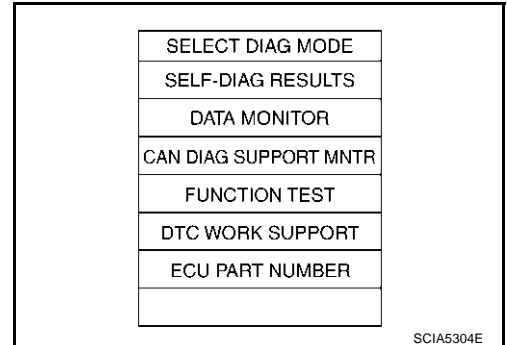
ECS0085J

1. CHECK DTC

With CONSULT-II



1. Turn ignition switch to "ON" position and select "SELF DIAGNOSIS" mode for "A/T" with CONSULT-II.
2. Move selector lever to "R" position.
3. Depress accelerator pedal (Full throttle position).
4. Touch "ERASE".
5. Turn ignition switch to "OFF" position and wait at least 10 seconds.
6. Perform "DTC Confirmation Procedure". Refer to [AT-143, "DTC Confirmation Procedure"](#).



Is the "TCM-EEPROM" displayed again?

- Yes >> Replace TCM.
No >> **INSPECTION END**

DTC P1705 THROTTLE POSITION SENSOR

DTC P1705 THROTTLE POSITION SENSOR

PFP:22620

Description

ECS0085K

Electric throttle control actuator consists of throttle control motor, accelerator pedal position sensor, throttle position sensor, etc. The actuator sends a signal to the ECM, and ECM sends signals to TCM with CAN communication.

On Board Diagnosis Logic

ECS0085L

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code "TP SEN/CIRC A/T" with CONSULT-II or 15th judgement flicker without CONSULT-II is detected when TCM does not receive the proper accelerator pedal position signals (input by CAN communication) from ECM.

Possible Cause

ECS0085M

Harness or connectors
(The sensor circuit is open or shorted.)

DTC Confirmation Procedure

ECS0085N

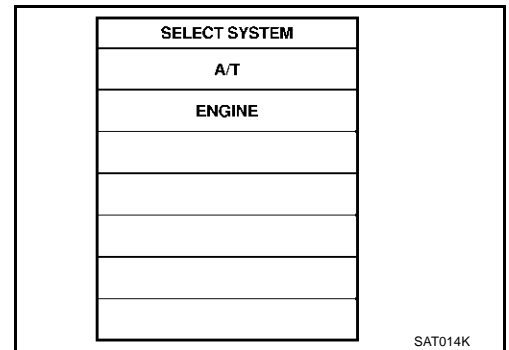
NOTE:

If "DTC Confirmation Procedure" has been previously conducted, always turn ignition switch "OFF" and wait at least 10 seconds before conducting the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

WITH CONSULT-II

1. Turn ignition switch to "ON" position. (Do not start engine.)
2. Select "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Start engine and let it idle for 1 second.
4. If DTC is detected, go to ["AT-145, "Diagnostic Procedure"](#) .



Diagnostic Procedure

1. CHECK DTC WITH ECM

ECS0085O

With CONSULT-II

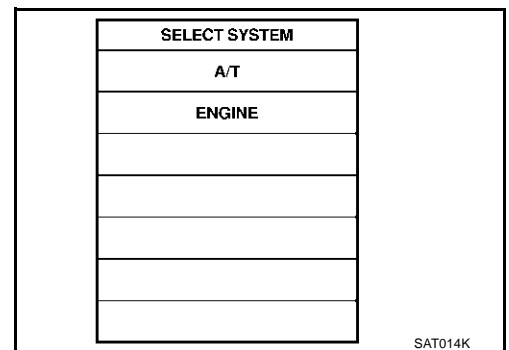
1. Turn ignition switch to "ON" position. (Do not start engine.)
2. Select "SELF-DIAG RESULTS" mode for "ENGINE" with CONSULT-II. Refer to ["EC-108, "CONSULT-II Function"](#) .

OK or NG

OK >> GO TO 2.

NG >> Check the DTC detected item. Go to ["EC-108, "CONSULT-II Function"](#) .

- If CAN communication line is detected, go to ["AT-100, "DTC U1000 CAN COMMUNICATION LINE"](#) .



DTC P1705 THROTTLE POSITION SENSOR

2. CHECK DTC WITH TCM

With CONSULT-II

1. Turn ignition switch to "ON" position. (Do not start engine.)
2. Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Depress accelerator pedal and read out the value of "ACCLE POS" and "THROTTLE POSI".
Check engine speed changes according to throttle position.
4. Select "SELF-DIAG RESULTS" mode for "ENGINE" with CONSULT-II. Refer to [EC-113, "SELF-DIAG RESULTS MODE"](#).

DATA MONITOR	
MONITOR	NO. DTC
ACCELE POSI	0.0/8
THROTTLE POSI	0.0/8
CLSD THL POS	ON
W/OTHL POS	OFF
BRAKE SW	OFF

		▼	
		RECORD	
MODE	BACK	LIGHT	COPY

PCIA0070E

OK or NG

- OK >> GO TO 3.
NG >> Repair or replace damaged parts.

3. CHECK DTC

Perform "DTC Confirmation Procedure". Refer to [AT-145, "DTC Confirmation Procedure"](#).

OK or NG

- OK >> **INSPECTION END**
NG >> GO TO 4.

4. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

- OK >> **INSPECTION END**
NG >> Repair or replace damaged parts.

DTC P1710 A/T FLUID TEMPERATURE SENSOR CIRCUIT

DTC P1710 A/T FLUID TEMPERATURE SENSOR CIRCUIT

PFP:31940

Description

ECS0085P

The A/T fluid temperature sensor detects the A/T fluid temperature and sends a signal to the TCM.

CONSULT-II Reference Value

ECS0085Q

Item name	Condition	Display value (Approx.) (V)
Fluid temperature sensor 1	0°C (32°F) - 20°C (68°F) - 80°C (176°F)	2.2 - 1.8 - 0.6
Fluid temperature sensor 2		2.2 - 1.7 - 0.45

On Board Diagnosis Logic

ECS0085R

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "ATF TEMP SEN/CIRC" with CONSULT-II or P1710 (A/T), P0710 (ENGINE) without CONSULT-II is detected when TCM receives an excessively low or high voltage from the sensor.

Possible Cause

ECS0085S

- Harness or connectors
(The sensor circuit is open or shorted.)
- A/T fluid temperature sensors 1, 2

DTC Confirmation Procedure

ECS0085T

CAUTION:

Always drive vehicle at a safe speed.

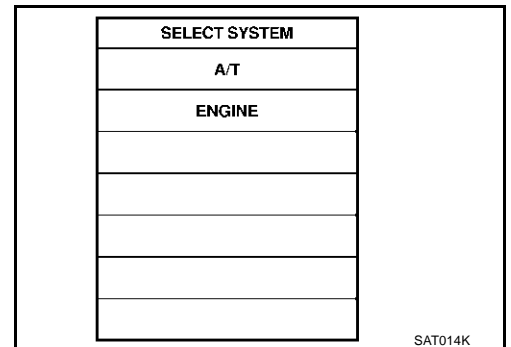
NOTE:

If "DTC Confirmation Procedure" has been previously conducted, always turn ignition switch "OFF" and wait at least 10 seconds before conducting the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

WITH CONSULT-II

1. Turn ignition switch to "ON" position. (Do not start engine.)
2. Select "DATA MONITOR" mode for "ENGINE" with CONSULT-II.
3. Start engine and maintain the following conditions for at least 10 minutes (Total). (It is not necessary to maintain continuously.)
VHCL SPEED SE: 10 km/h (6 MPH) or more
THRTL POS SEN: More than 1.0/8
Selector lever: "D" position
4. If DTC is detected, go to [AT-149, "Diagnostic Procedure"](#).



WITH GST

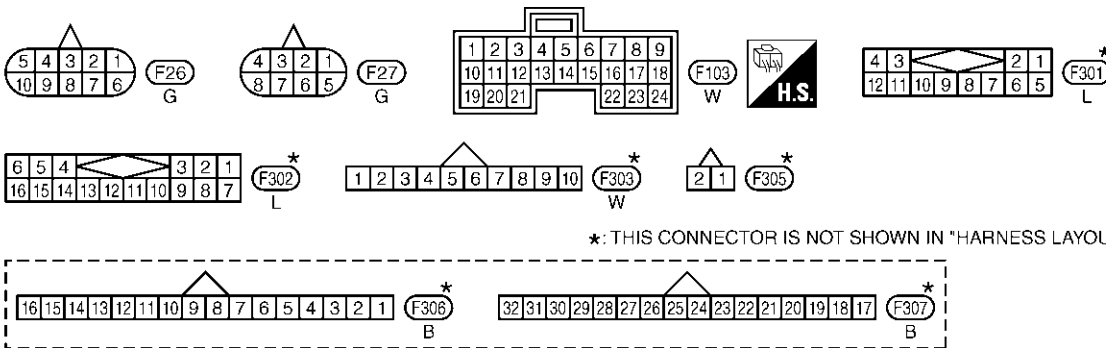
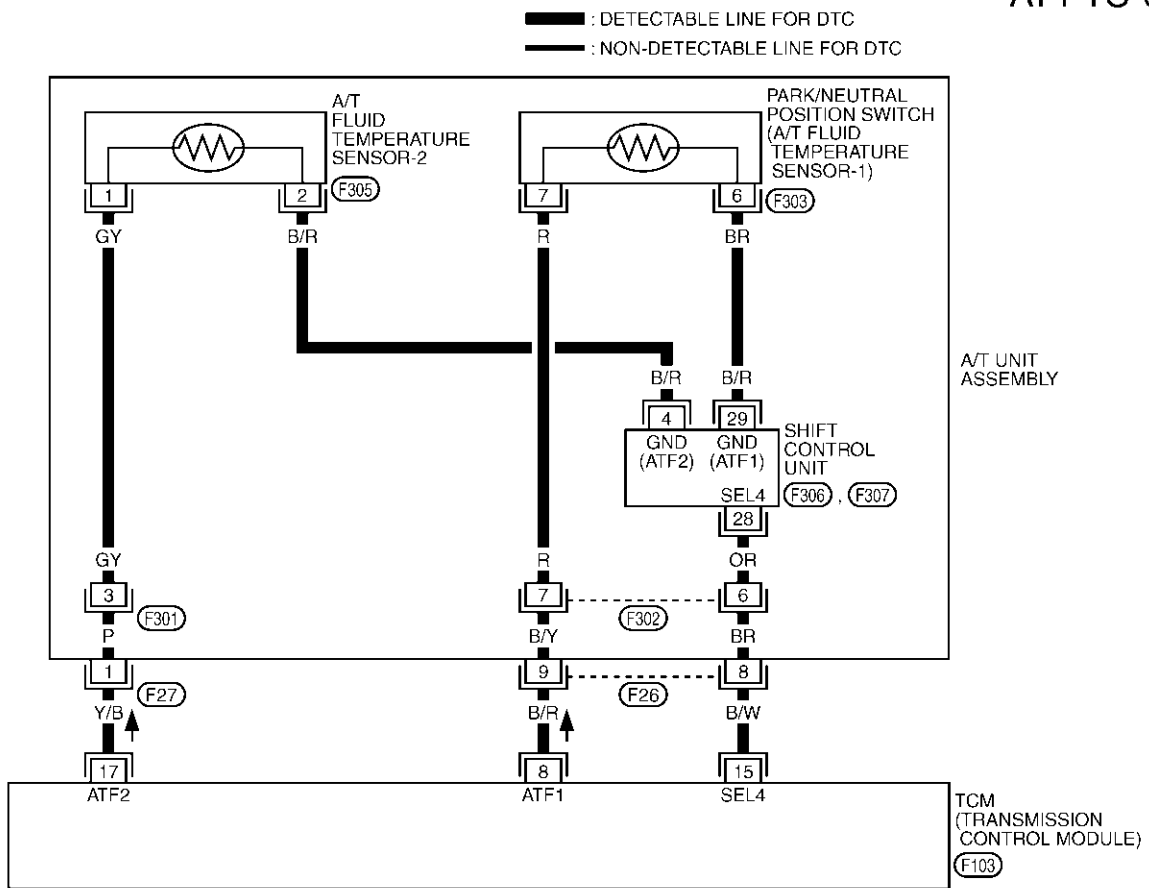
Follow the procedure "With CONSULT-II".

DTC P1710 A/T FLUID TEMPERATURE SENSOR CIRCUIT

Wiring Diagram — AT — FTS

ECS0085U

AT-FTS-01



TCM terminals and data are reference value. Measured between each terminal and ground.

TCWM0011E

Terminal No.	Wire color	Item	Condition	Data (Approx.)	
8	B/R	Fluid temperature sensor 1	IGN ON	When ATF temperature 0°C (32°F)	2.2V
				When ATF temperature 20°C (68°F)	1.8V
				When ATF temperature 80°C (176°F)	0.6V
15	B/W	SEL4	—	—	
17	Y/B	Fluid temperature sensor 2	IGN ON	When ATF temperature about 0°C (32°F)	2.2V
				When ATF temperature about 20°C (68°F)	1.7V
				When ATF temperature about 80°C (176°F)	0.45V

DTC P1710 A/T FLUID TEMPERATURE SENSOR CIRCUIT

ECS0085V

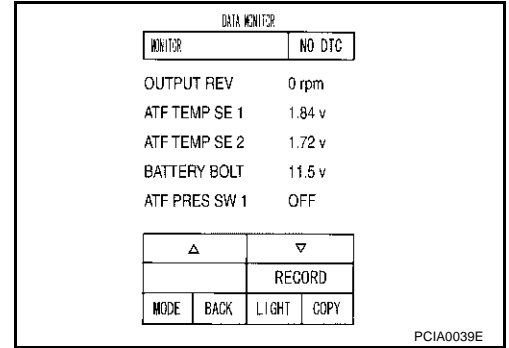
Diagnostic Procedure

1. CHECK INPUT SIGNALS (WITH CONSULT-II)

With CONSULT-II

1. Start engine.
2. Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Read out the value of "ATF TEMP SE 1" or "ATF TEMP SE 2".

Item name	Condition °C (°F)	Display value (Approx.) V
Fluid temperature sensor 1	0 (32) - 20 (68) - 80 (176)	2.2 - 1.8 - 0.6
Fluid temperature sensor 2		2.2 - 1.7 - 0.45



OK or NG

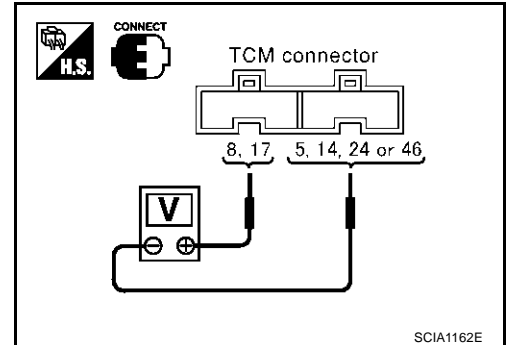
- OK >> GO TO 7.
 NG >> GO TO 3.

2. CHECK INPUT SIGNALS (WITHOUT CONSULT-II)

Without CONSULT-II

1. Start engine.
2. Check voltage between TCM connector and ground while warming up A/T. Refer to [AT-148, "Wiring Diagram — AT — FTS"](#).

Name	Connector No.	Terminal No.	Temperature °C (°F)	Voltage (V) (Approx.)
Fluid temperature sensor 1	F103	8 (B/R) - 5 (B), 14 (B), 24 (B) or 46 (B) (ground)	0 (32)	2.2
			20 (68)	1.8
			80 (176)	0.6
Fluid temperature sensor 2		17 (Y/B) - 5 (B), 14 (B), 24 (B) or 46 (B) (ground)	0 (32)	2.2
			20 (68)	1.7
			80 (176)	0.45



3. Turn ignition switch to "OFF" position.
4. Disconnect the TCM connector.
5. Check if there is continuity between the connector terminal and ground.

OK or NG

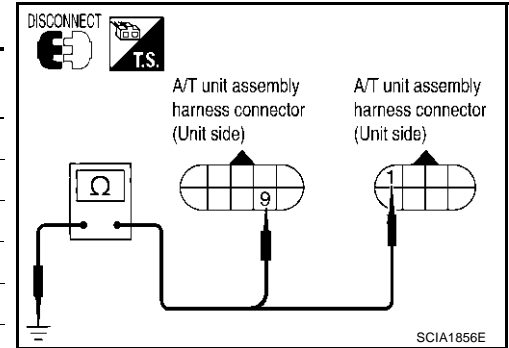
- OK >> GO TO 7.
 NG >> GO TO 3.

DTC P1710 A/T FLUID TEMPERATURE SENSOR CIRCUIT

3. CHECK FLUID TEMPERATURE SENSOR CIRCUIT

1. Turn ignition switch to "OFF" position.
2. Disconnect A/T unit assembly harness connector at the transmission right side.
3. Check the resistance between terminal and ground.

Name	Connector No.	Terminal No. (Wire color)	Temperature °C (°F)	Resistance (KΩ) (Approx.)
Fluid temperature sensor 1	F26	9 (B/R) - Ground	0 (32)	15
			20 (68)	6.5
			80 (176)	0.9
Fluid temperature sensor 2	F27	1 (Y/B) - Ground	0 (32)	10
			20 (68)	4
			80 (176)	0.5



4. Reinstall any part removed.

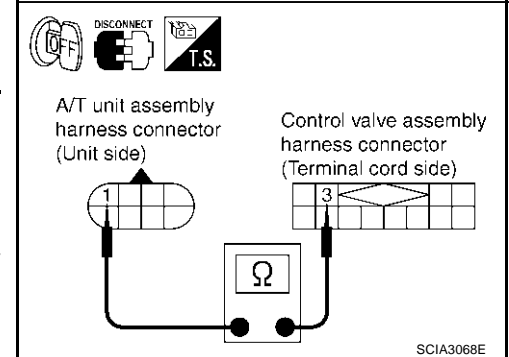
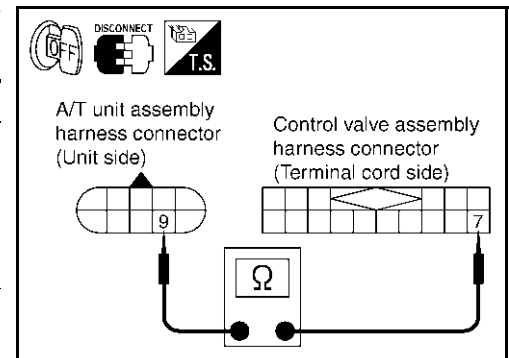
OK or NG

- OK >> GO TO 7.
 NG >> GO TO 4.

4. CHECK TERMINAL CORD ASSEMBLY

1. Remove oil pan. Refer to [AT-290, "Control Valve Assembly"](#).
2. Disconnect A/T unit assembly harness connector and control valve assembly harness connector.
3. Check continuity between A/T unit assembly harness connector and control valve assembly harness connector.

Item	Connector No.	Terminal No. (Wire color)	Continuity
A/T unit assembly harness connector	F26	9 (B/Y)	Yes
Control valve assembly harness connector	F302	7 (B/Y)	
A/T unit assembly harness connector	F27	1 (P)	Yes
Control valve assembly harness connector	F301	3 (P)	



4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

OK or NG

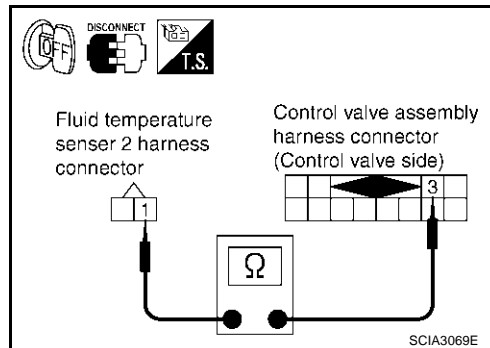
- OK >> GO TO 5.
 NG >> Repair open circuit or short to ground or short to power in harness or connectors.

DTC P1710 A/T FLUID TEMPERATURE SENSOR CIRCUIT

5. CHECK HARNESS BETWEEN FLUID TEMPERATURE SENSOR 2 AND CONTROL VALVE ASSEMBLY

1. Disconnect fluid temperature sensor 2 harness connector and control valve assembly harness connector.
2. Check continuity between fluid temperature sensor 2 harness connector and control valve assembly harness connector.

Item	Connector No.	Terminal No. (Wire color)	Continuity
Fluid temperature sensor 2 harness connector	F305	1 (GY)	Yes
Control valve assembly harness connector	F301	3 (GY)	



OK or NG

OK >> GO TO 6.

NG >> Repair open circuit or short to ground or short to power in harness or connectors.

6. CHECK FLUID TEMPERATURE SENSOR 2

Check fluid temperature sensor 2.

- Refer to [AT-152, "Component Inspection"](#).

OK or NG

OK >> GO TO 7.

NG >> Repair or replace damaged parts.

7. DETECT MALFUNCTIONING ITEM

Check the following items:

- Harness for short to ground or short to power or open between TCM and A/T unit assembly harness connector.

OK or NG

OK >> GO TO 8.

NG >> Repair or replace damaged parts.

8. CHECK DTC

Perform "DTC Confirmation Procedure". Refer to [AT-147, "DTC Confirmation Procedure"](#).

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 9.

9. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> **INSPECTION END**

NG >> Repair or replace damaged parts.

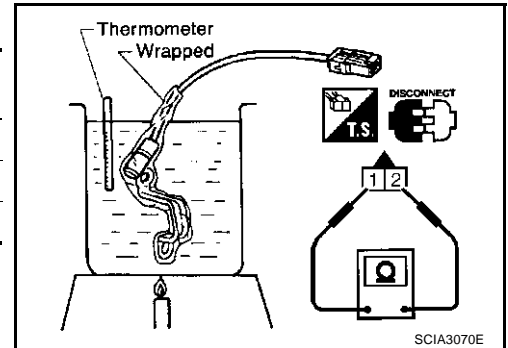
DTC P1710 A/T FLUID TEMPERATURE SENSOR CIRCUIT

ECS00A1N

Component Inspection FLUID TEMPERATURE SENSOR 2

1. Remove fluid temperature sensor 2. Refer to [AT-290, "Control Valve Assembly"](#).
2. Check resistance between terminal 1 and 2.

Name	Connector No.	Terminal No. (Wire color)	Temperature °C (°F)	Resistance (KΩ) (Approx.)
Fluid temperature sensor 2	F305	1 (GY) - 2 (B/R)	0 (32)	10
			20 (68)	4
			80 (176)	0.5



DTC P1716 TURBINE REVOLUTION SENSOR

DTC P1716 TURBINE REVOLUTION SENSOR

PPF:31935

Description

ECS0085W

The turbine revolution sensor detects input shaft rpm (revolutions per minute). It is located on the input side of the automatic transmission. Monitors revolution of sensor 1 and sensor 2 for non-standard conditions.

On Board Diagnosis Logic

ECS0085X

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "TURBINE REV S/CIRC" with CONSULT-II or P1716 without CONSULT-II is detected under the following conditions.
 - When TCM does not receive the proper voltage signal from the sensor.
 - When TCM detects an irregularity only at position of 4th gear for turbine revolution sensor 2.

Possible Cause

ECS0085Y

- Harness or connectors
(The sensor circuit is open or shorted.)
- Turbine revolution sensor 1, 2

DTC Confirmation Procedure

ECS0085Z

CAUTION:

Always drive vehicle at a safe speed.

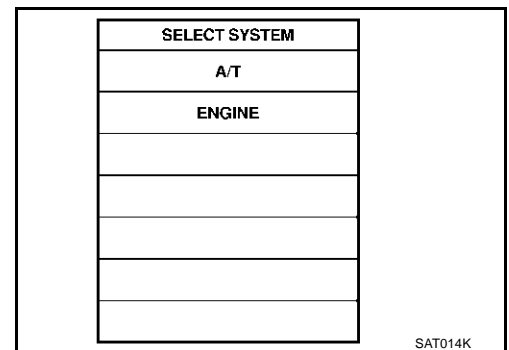
NOTE:

If "DTC Confirmation Procedure" has been previously conducted, always turn ignition switch "OFF" and wait at least 10 seconds before conducting the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

Ⓟ WITH CONSULT-II

1. Turn ignition switch to "ON" position. (Do not start engine.)
2. Select "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Start engine and maintain the following conditions for at least 5 consecutive seconds.
 - VHCL SPEED SE: 40 km/h (25 MPH) or more**
 - ENGINE SPEED: 1,500 rpm or more**
 - ACCELE POS: 0.5/8 or more**
 - Selector lever: "D" position**
 - Gear position (Turbine revolution sensor 1): 4th or 5th position**
 - Gear position (Turbine revolution sensor 2): All position**
4. If DTC is detected, go to [AT-155. "Diagnostic Procedure"](#).



Ⓢ WITH GST

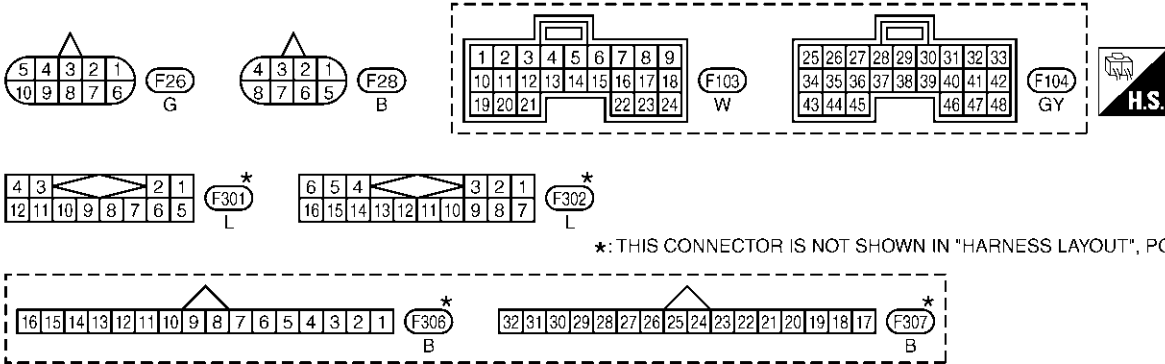
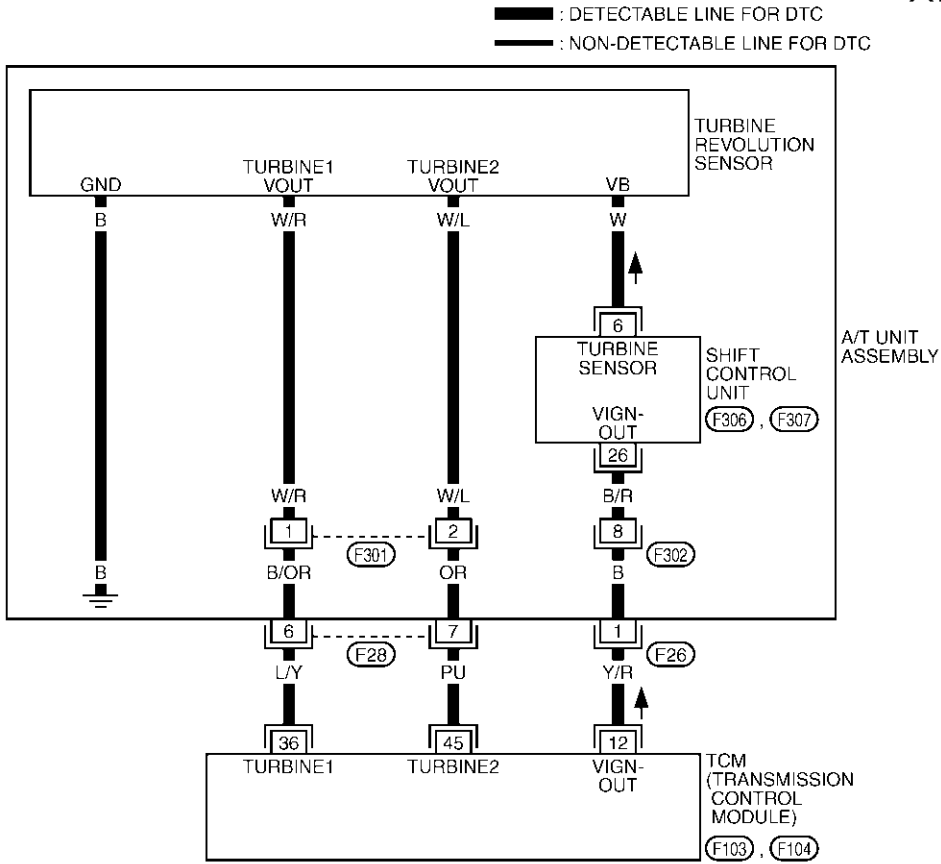
Follow the procedure "With CONSULT-II".

DTC P1716 TURBINE REVOLUTION SENSOR

Wiring Diagram — AT — TRSA/T

ECS00860

AT-TRSA/T-01



TCM terminals and data are reference value. Measured between each terminal and ground.

TCWM0012E

Terminal No.	Wire color	Item	Condition		Data (Approx.)
12	Y/R	Power supply (out)	IGN ON	—	Battery voltage
			IGN OFF	—	0V

DTC P1716 TURBINE REVOLUTION SENSOR

Terminal No.	Wire color	Item	Condition	Data (Approx.)
36	L/Y	Turbine revolution sensor 1	When vehicle cruises	1.3 (kHz)
45	PU	Turbine revolution sensor 2		

When running at 50 km/h (31 MPH) in 4th gear with the closed throttle position signal "OFF", use the CONSULT-II pulse frequency measuring function.
CAUTION:
Connect the data link connector to the vehicle-side diagnosis connector.

When moving at 20 km/h (12 MPH) in 1st gear with the closed throttle position signal "OFF", use the CONSULT-II pulse frequency measuring function.
CAUTION:
Connect the data link connector to the vehicle-side diagnosis connector.

Diagnostic Procedure

ECS00861

1. CHECK INPUT SIGNALS

With CONSULT-II

- Start engine.
- Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
- Vehicle start and read out the value of "TURBINE REV".

With GST

Follow the procedure "With CONSULT-II".

OK or NG

- OK >> GO TO 5.
 NG >> GO TO 2.

DATA MONITOR	
MONITOR	NO. DTC
W/O THL. POS	OFF
BRAKE SW	OFF
ENGINE SPEED	0 rpm
TURBINE REV	0 rpm
OUTPUT REV	0 rpm

		▼	
RECORD			
MODE	BACK	LIGHT	COPY

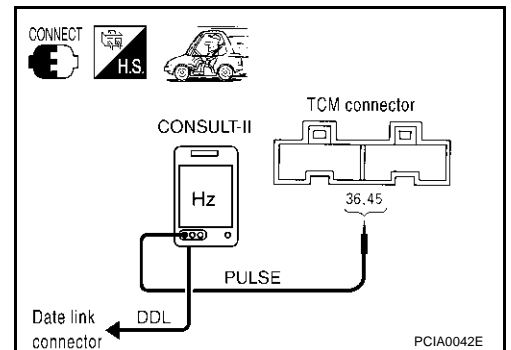
PCIA0041E

2. CHECK TURBINE REVOLUTION SENSOR

With CONSULT-II

- Start engine.
- Check the pulse when vehicle cruises.

Name	Condition
Turbine revolution sensor 1	When running at 50 km/h (31 MPH) in 4th gear with the closed throttle position signal "OFF", use the CONSULT-II pulse frequency measuring function. CAUTION: Connect the data link connector to the vehicle-side diagnosis connector.
Turbine revolution sensor 2	When moving at 20 km/h (12 MPH) in 1st gear with the closed throttle position signal "OFF", use the CONSULT-II pulse frequency measuring function. CAUTION: Connect the data link connector to the vehicle-side diagnosis connector.



Item	Connector No.	Terminal No. (Wire color)	Name	Data (Approx.)
TCM	F104	36 (L/Y)	Turbine revolution sensor 1	1.3 (kHz)
		45 (PU)	Turbine revolution sensor 2	

OK or NG

- OK >> GO TO 5.
 NG >> GO TO 3.

DTC P1716 TURBINE REVOLUTION SENSOR

3. CHECK HARNESS BETWEEN TCM AND A/T UNIT ASSEMBLY HARNESS CONNECTOR

1. Turn ignition switch to "OFF" position.
2. Disconnect TCM connector.
3. Check continuity between A/T unit assembly harness connector and TCM connector.

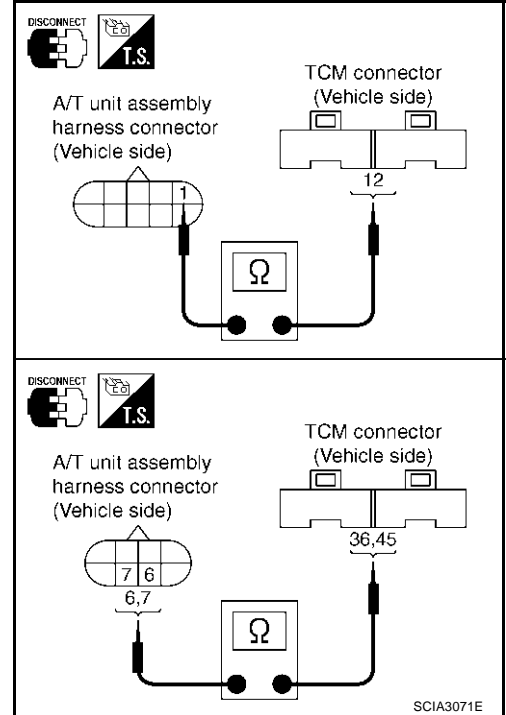
Item	Connector No.	Terminal No. (Wire color)	Continuity
TCM	F103	12 (Y/R)	Yes
A/T unit assembly harness connector	F26	1 (Y/R)	
TCM	F104	36 (L/Y)	Yes
A/T unit assembly harness connector	F28	6 (L/Y)	
TCM	F104	45 (PU)	Yes
A/T unit assembly harness connector	F28	7 (PU)	

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

OK or NG

OK >> GO TO 4.

NG >> Repair open circuit or short to ground or short to power in harness or connectors.



4. CHECK TERMINAL CORD ASSEMBLY

1. Remove oil pan. Refer to [AT-290, "Control Valve Assembly"](#).
2. Disconnect A/T unit assembly harness connector and control valve assembly harness connector.
3. Check continuity between A/T unit assembly harness connector and control valve assembly harness connector.

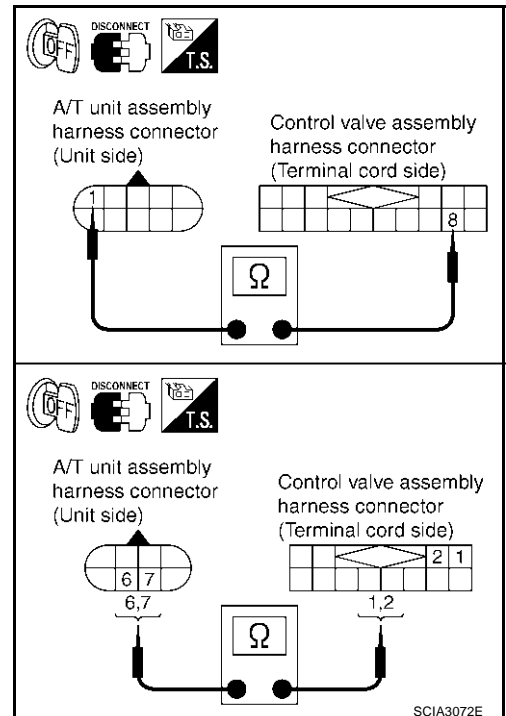
Item	Connector No.	Terminal No. (Wire color)	Continuity
A/T unit assembly harness connector	F26	1 (B)	Yes
Control valve assembly harness connector	F302	8 (B)	
A/T unit assembly harness connector	F28	6 (B/OR)	Yes
Control valve assembly harness connector	F301	1 (B/OR)	
A/T unit assembly harness connector	F28	7 (OR)	Yes
Control valve assembly harness connector	F301	2 (OR)	

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

OK or NG

OK >> Replace the control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#).

NG >> Repair or replace damaged parts.



DTC P1716 TURBINE REVOLUTION SENSOR

5. CHECK DTC

Perform "DTC Confirmation Procedure". Refer to [AT-118, "DTC Confirmation Procedure"](#) .

OK or NG

OK >> **INSPECTION END**
NG >> GO TO 6.

6. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> **INSPECTION END**
NG >> Repair or replace damaged parts.

A
B
AT
D
E
F
G
H
I
J
K
L
M

DTC P1721 VEHICLE SPEED SENSOR MTR

DTC P1721 VEHICLE SPEED SENSOR MTR

PFP:24814

Description

ECS00862

The vehicle speed sensor-MTR signal is transmitted from combination meter to TCM by CAN communication line. The signal functions as an auxiliary device to the revolution sensor when it is malfunctioning. The TCM will then use the vehicle speed sensor-MTR signal.

On Board Diagnosis Logic

ECS00863

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code "VHE SPD SE-MTR" with CONSULT-II is detected when TCM does not receive the proper vehicle speed sensor MTR signal (input by CAN communication) from combination meter.

Possible Cause

ECS00864

Harness or connectors
(The sensor circuit is open or shorted.)

DTC Confirmation Procedure

ECS00865

CAUTION:

Always drive vehicle at a safe speed.

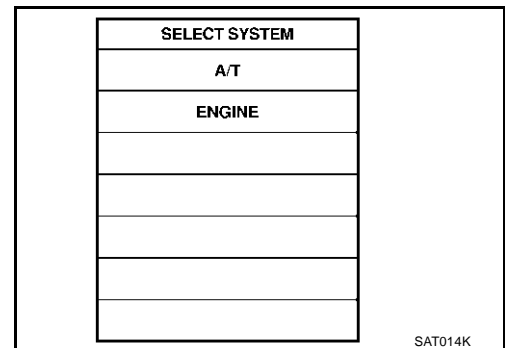
NOTE:

If "DTC Confirmation Procedure" has been previously conducted, always turn ignition switch "OFF" and wait at least 10 seconds before conducting the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

④ WITH CONSULT-II

1. Turn ignition switch to "ON" position. (Do not start engine.)
2. Select "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Start engine and maintain the following conditions for at least 5 consecutive seconds.
ACCELE POS: 1/8 or less
VHCL SPEED SE: 30 km/h (17 MPH) or more
4. If DTC is detected, go to [AT-158, "Diagnostic Procedure"](#).



Diagnostic Procedure

ECS00866

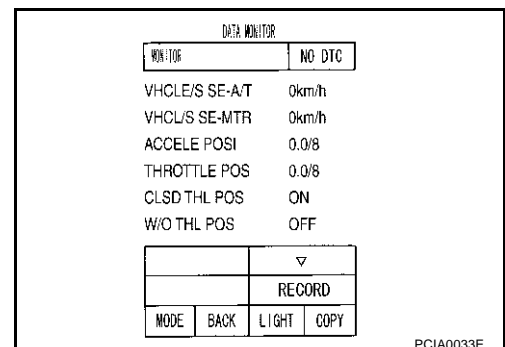
1. CHECK INPUT SIGNALS

④ With CONSULT-II

1. Start engine.
2. Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Vehicle start and read out the value of "VHCL/S SE-MTR".

OK or NG

- OK >> GO TO 3.
NG >> GO TO 2.



DTC P1721 VEHICLE SPEED SENSOR MTR

2. CHECK DTC, STEP 1

Check following items.

1. Refer to [AT-100, "DTC U1000 CAN COMMUNICATION LINE"](#) .
2. Refer to [BRC-26, "CONSULT-II Functions"](#) .
3. Refer to [DI-7, "COMBINATION METERS"](#) .

OK or NG

OK >> **INSPECTION END**

NG >> If NG, recheck pin terminals for damage or loose connection with harness connector.

3. CHECK DTC, STEP 2

Perform DTC confirmation procedure. [AT-158, "DTC Confirmation Procedure"](#) .

OK or NG

OK >> **INSPECTION END**

NG >> If the system returns a malfunction, recheck pin terminals for damage or loose connection with harness connector.

A

B

AT

D

E

F

G

H

I

J

K

L

M

DTC P1730 A/T INTERLOCK

DTC P1730 A/T INTERLOCK

PFP:00000

Description

ECS00867

- Fail-safe function to detect interlock conditions.
- Fail-safe function to the transmission range switch detects the selector position and sends a signal to the TCM.

On Board Diagnosis Logic

ECS00868

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "A/T INTERLOCK" with CONSULT-II or P1730 without CONSULT-II is detected when TCM does not receive the proper voltage signal from the sensor and switch.
- TCM monitors and compares gear position and conditions of each pressure switch when gear is steady.

Possible Cause

ECS00869

- Harness or connectors
(The solenoid and switch circuit is open or shorted.)
- Low coast brake solenoid valve
- Pressure switch 2

DTC Confirmation Procedure

ECS0086A

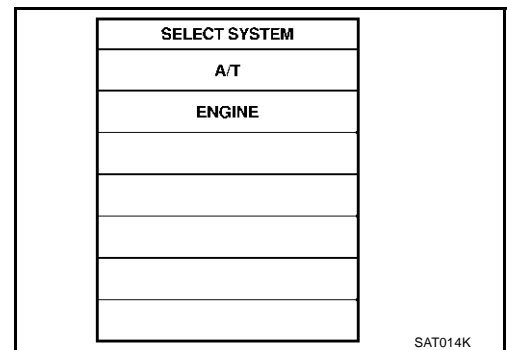
NOTE:

If "DTC Confirmation Procedure" has been previously conducted, always turn ignition switch "OFF" and wait at least 10 seconds before conducting the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

Ⓟ WITH CONSULT-II

1. Turn ignition switch to "ON" position. (Do not start engine.)
2. Select "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Start engine.
4. Drive vehicle and maintain the following conditions for at least 2 consecutive seconds.
Selector lever: "D" position
5. If DTC is detected, go to [AT-165, "Diagnostic Procedure"](#).



Ⓢ WITH GST

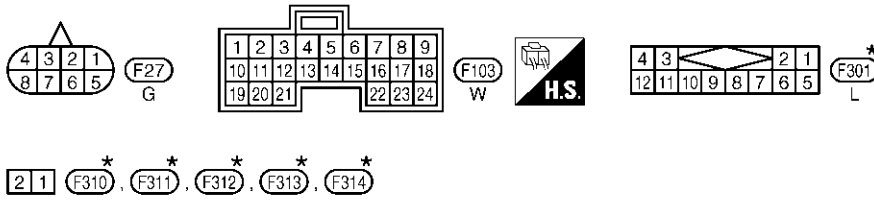
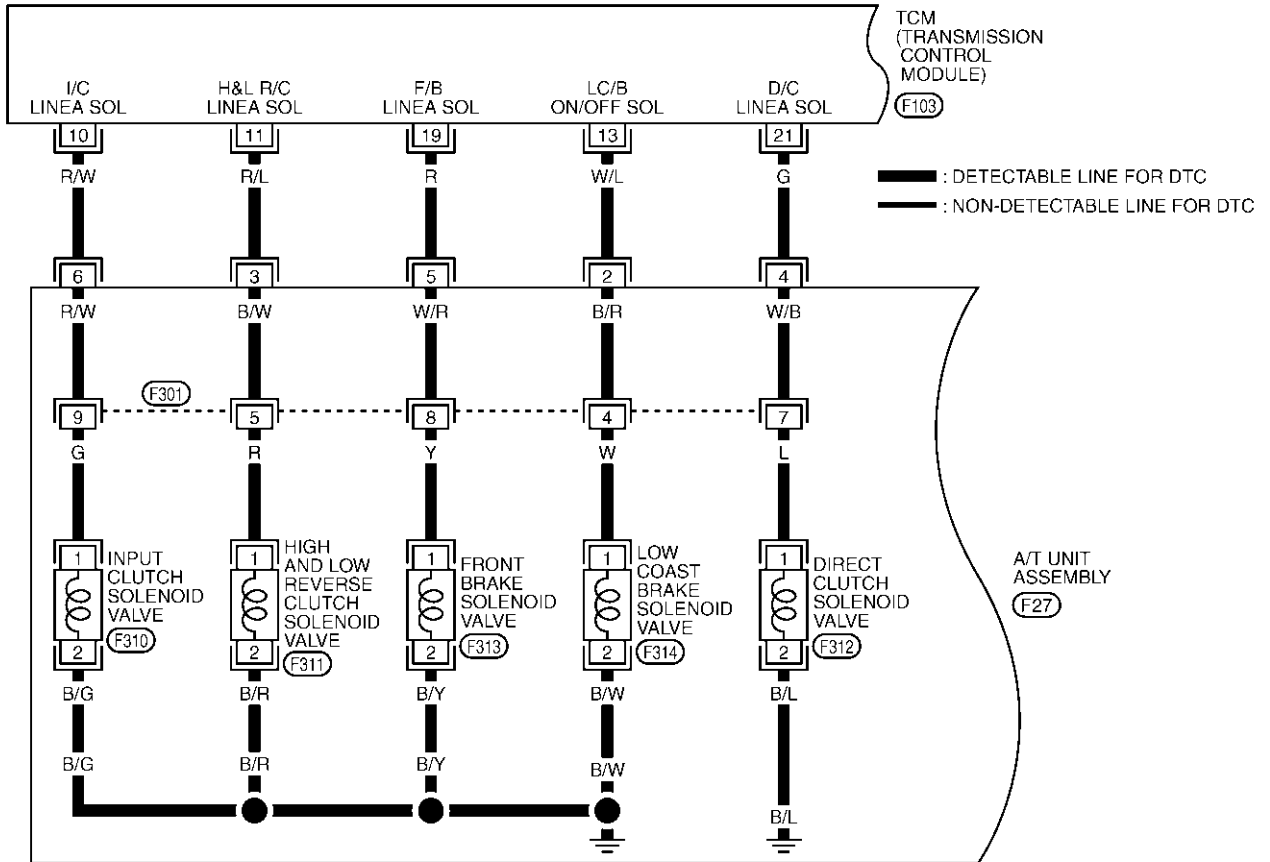
Follow the procedure "With CONSULT-II".

DTC P1730 A/T INTERLOCK

Wiring Diagram — AT — I/LOCK

ECS0086B

AT-I/LOCK-01



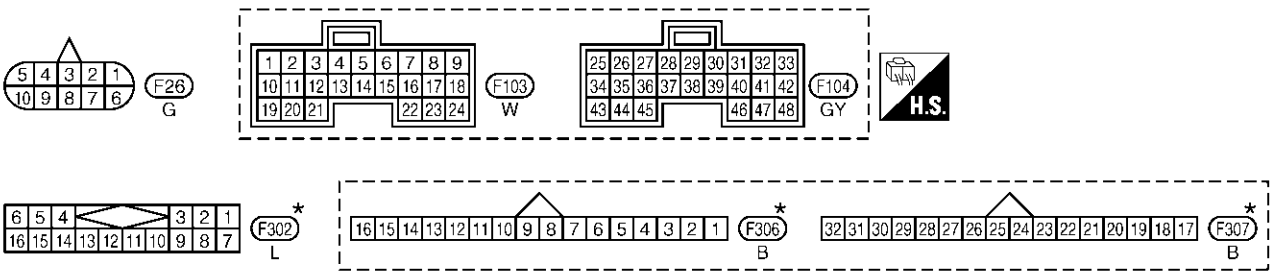
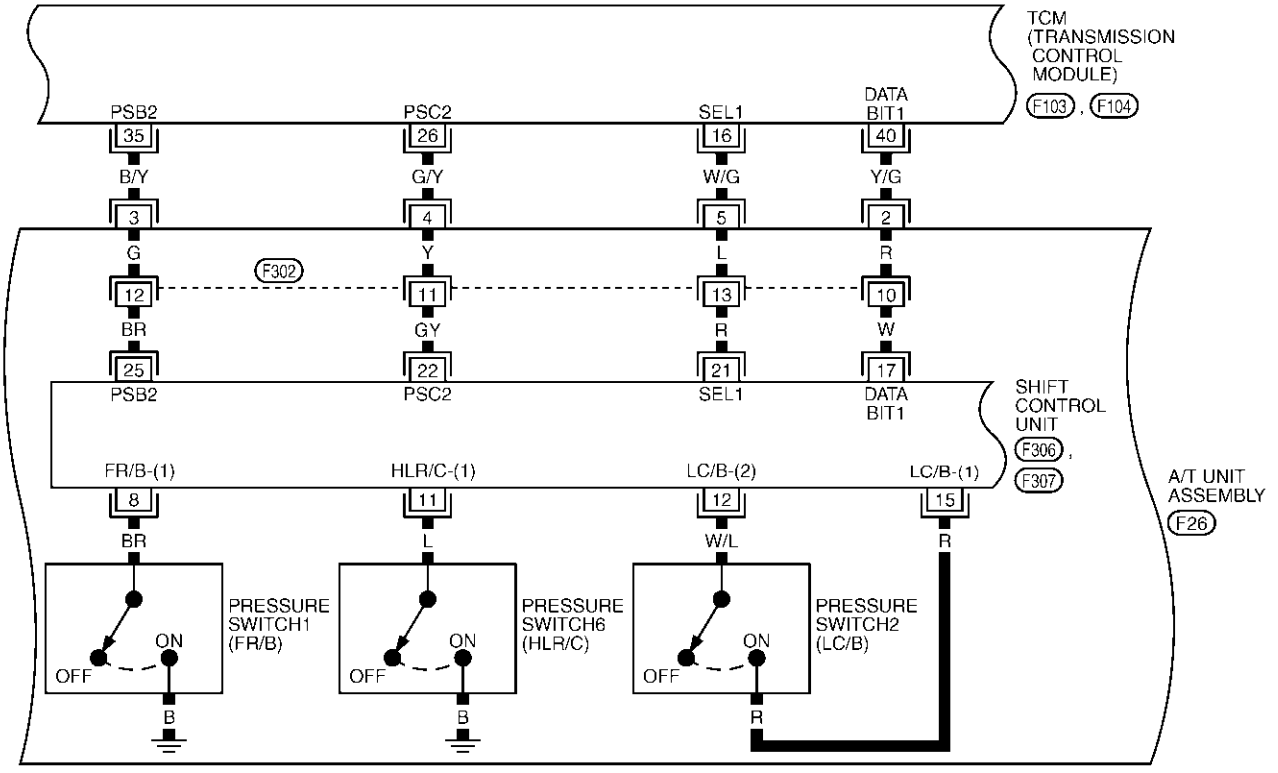
*: THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT", PG SECTION.

TCWM0013E

DTC P1730 A/T INTERLOCK

AT-I/LOCK-02

: DETECTABLE LINE FOR DTC
 : NON-DETECTABLE LINE FOR DTC



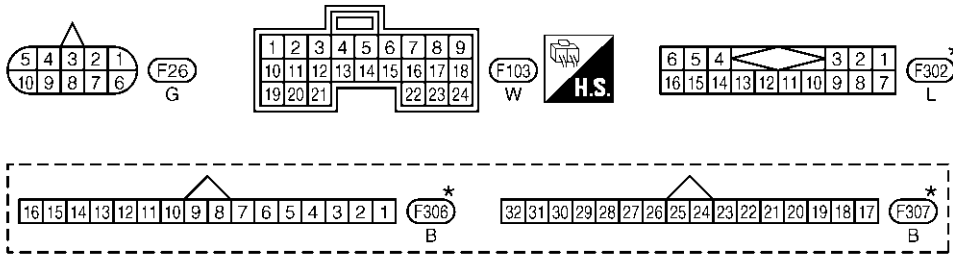
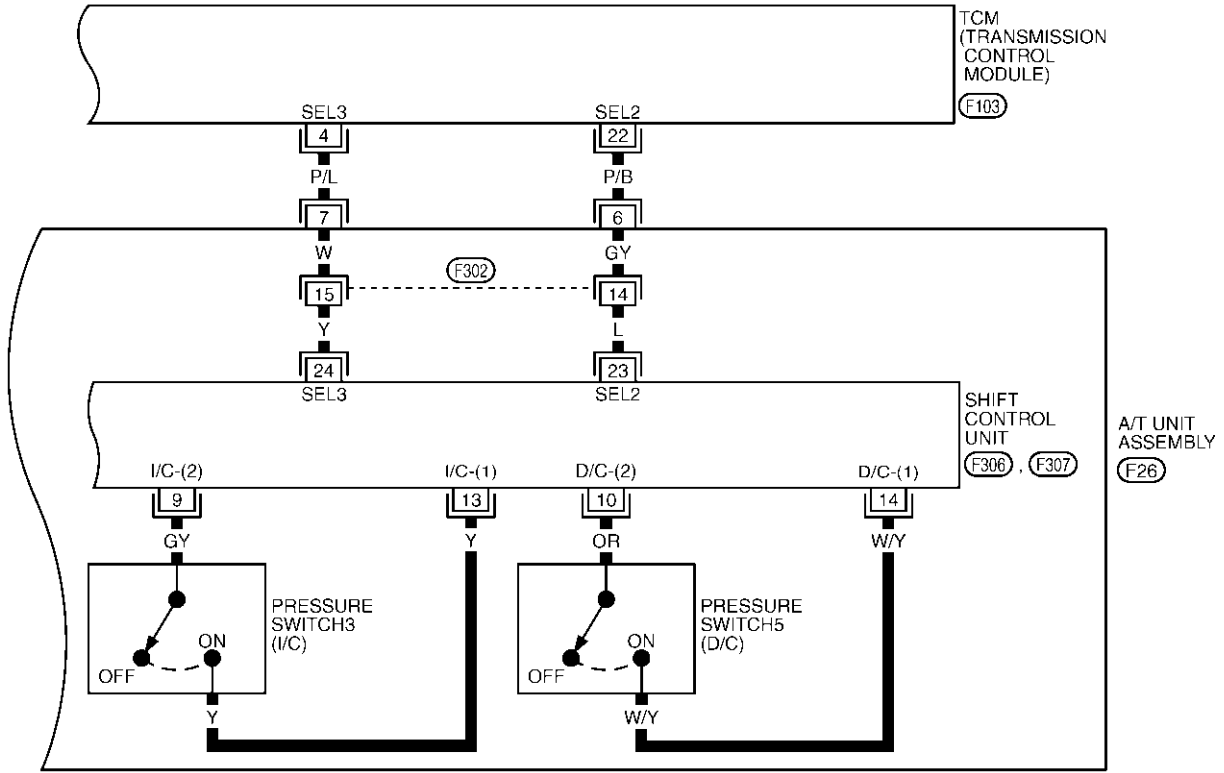
*: THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT", PG SECTION.

TCWM0014E

DTC P1730 A/T INTERLOCK

AT-I/LOCK-03

: DETECTABLE LINE FOR DTC
 : NON-DETECTABLE LINE FOR DTC



*: THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT", PG SECTION.

TCM terminals and data are reference value. Measured between each terminal and ground.

TCWM0015E

Terminal No.	Wire color	Item	Condition	Data (Approx.)
4	P/L	SEL3 (pressure switch 3)	-	-

DTC P1730 A/T INTERLOCK

Terminal No.	Wire color	Item	Condition		Data (Approx.)
10	R/W	Input clutch solenoid valve	When vehicle cruises	When the solenoid valve operating (in 1st gear, 2nd gear, or 3rd gear)	More than 2V
				When the solenoid valve is not operating (4th gear or 5th gear)	0V
11	R/L	High & low reverse clutch solenoid valve		When the solenoid valve operating [6 km/h (4MPH) or faster in 1st gear or 2nd gear]	More than 2V
				When the solenoid valve is not operating [6 km/h (4MPH) or slower in 1st gear or 3rd, 4th, or 5th gear]	0V
13	W/L	Low coast brake solenoid valve		When the solenoid valve is operating (when running in M1-1 gear or M2-2 gear)	Battery voltage
				When the solenoid valve is not operating (when running in "D")	0V
16	W/G	SEL1 (pressure switch 2)	-	-	-
19	R	Front brake solenoid valve	When the solenoid valve is operating (other than 4th gear)	More than 2V	
			When the solenoid valve is not operating (4th gear)	0V	
21	G	Direct clutch solenoid valve	When the solenoid valve is operating (1st gear or 5th gear)	More than 2V	
			When the solenoid valve is not operating (2nd gear, 3rd gear, or 4th gear)	0V	
22	P/B	SEL2 (pressure switch 5)	-	-	-
26	G/Y	PSC2 (pressure switch 6)	When high & low reverse clutch solenoid valve "ON".	0V	
			When high & low reverse clutch solenoid valve "OFF".	Battery voltage	
35	B/Y	PSB2 (pressure switch 1)	When front brake solenoid valve "OFF".	Battery voltage	
			When front brake solenoid valve "ON".	0V	
40	Y/G	DATA BIT1	-	-	-

DTC P1730 A/T INTERLOCK

ECS0086C

Judgement of A/T Interlock

When A/T Interlock is judged to be malfunctioning, the vehicle should be fixed in 2nd gear, and should be set in a condition in which it can travel.

When one of the following fastening patterns is detected, the fail-safe function in correspondence with the individual pattern should be executed.

A/T INTERLOCK COUPLING PATTERN TABLE

●: NG, X: OK

Gear position		ATF pressure switch output					Fail-safe function	Clutch pressure output pattern after fail-safe function					
		SW3 (I/C)	SW6 (H&LR /C)	SW5 (D/C)	SW1 (Fr/B)	SW2 (LC/B)		I/C	H&LR/C	D/C	Fr/B	LC/B	L/U
A/T interlock coupling pattern	3rd	-	X	X	-	●	Held in 2nd gear	OFF	OFF	ON	OFF	OFF	OFF
	4th	-	X	X	-	●	Held in 2nd gear	OFF	OFF	ON	OFF	OFF	OFF
	5th	X	X	-	X	●	Held in 2nd gear	OFF	OFF	ON	OFF	OFF	OFF

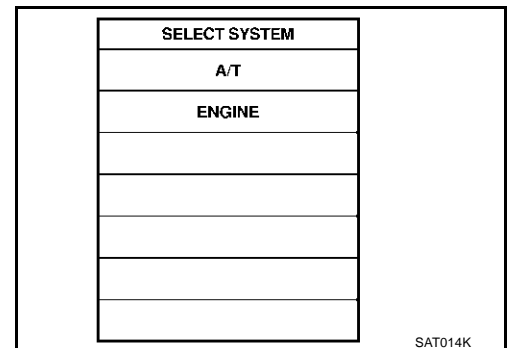
Diagnostic Procedure

ECS0086D

1. SELF-DIAGNOSIS

④ With CONSULT-II

1. Start engine.
2. Select "SELF-DIAG RESULTS" mode for "A/T" with CONSULT-II.
3. Drive vehicle.



⊗ Without CONSULT-II

1. Drive vehicle.
2. Stop vehicle and turn ignition switch OFF.
3. Turn ignition switch "ON". (Do not start engine.)
4. Perform self-diagnosis. Refer to [AT-98, "TCM SELF-DIAGNOSTIC PROCEDURE \(NO TOOLS\)"](#).

OK or NG

OK >> GO TO 2.

NG >> ● Check each solenoid valves. Refer to [AT-207, "DTC P1772 LOW COAST BRAKE SOLENOID VALVE"](#), [AT-212, "DTC P1774 LOW COAST BRAKE SOLENOID VALVE FUNCTION"](#).

2. CHECK DTC

Perform "DTC Confirmation Procedure". Refer to [AT-160, "DTC Confirmation Procedure"](#).

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 3.

DTC P1730 A/T INTERLOCK

3. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

- OK >> **INSPECTION END**
NG >> Repair or replace damaged parts.

DTC P1731 A/T 1ST ENGINE BRAKING

DTC P1731 A/T 1ST ENGINE BRAKING

PF0:00000

Description

ECS0086E

Fail-safe function to prevent sudden decrease in speed by engine brake other than at M1 position.

On Board Diagnosis Logic

ECS0086F

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code "A/T 1ST E/BRAKING" with CONSULT-II or 13th judgement flicker without CONSULT-II is detected under the following condition.
 - When TCM does not receive the proper voltage signal from the sensor.
 - When TCM monitors each pressure switch and solenoid monitor value, and detects as irregular when engine brake of 1st gear acts other than at M1 position.

Possible Cause

ECS0086G

- Harness or connectors
(The sensor circuit is open or shorted.)
- Low coast brake solenoid valve
- ATF pressure switch 2

DTC Confirmation Procedure

ECS0086H

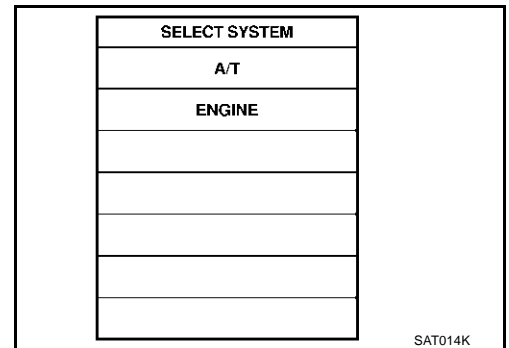
NOTE:

If "DTC Confirmation Procedure" has been previously conducted, always turn ignition switch "OFF" and wait at least 10 seconds before conducting the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

Ⓟ WITH CONSULT-II

1. Turn ignition switch to "ON" position. (Do not start engine.)
2. Select "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Start engine.
4. Maintain the following conditions for at least 2 consecutive seconds.
ENGINE SPEED: 1,200 rpm
Selector lever: "D" position
Gear position: 1st gear
5. If DTC is detected, go to [AT-169, "Diagnostic Procedure"](#).



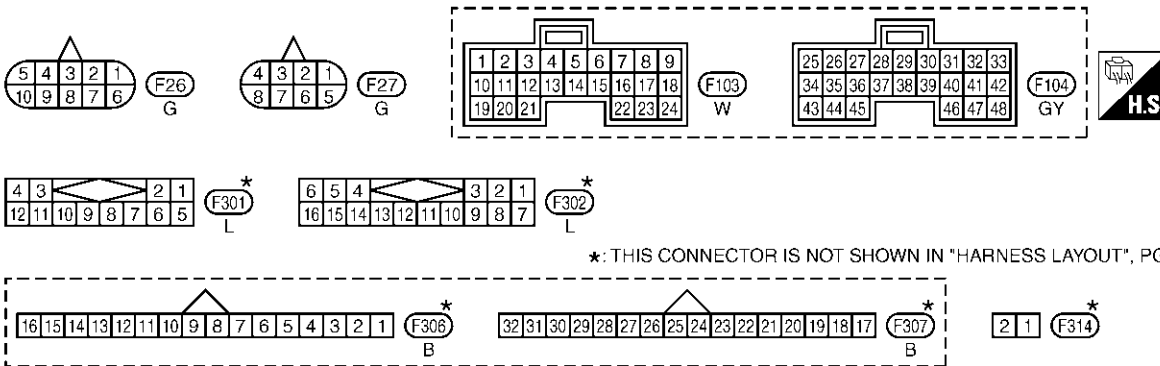
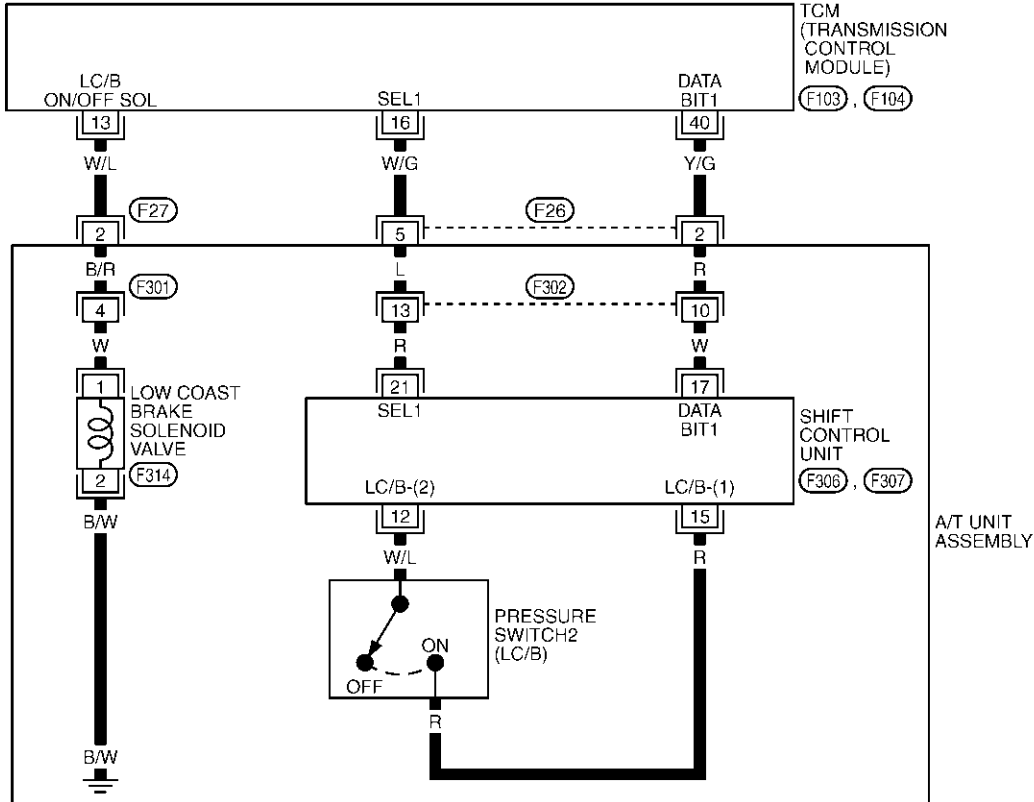
DTC P1731 A/T 1ST ENGINE BRAKING

Wiring Diagram — AT — E/BRE

ECS00861

AT-E/BRE-01

— : DETECTABLE LINE FOR DTC
 - - - : NON-DETECTABLE LINE FOR DTC



TCM terminals and data are reference value. Measured between each terminal and ground.

TCWM0016E

Terminal No.	Wire color	Item	Condition		Data (Approx.)
13	W/L	Low coast brake solenoid valve	When vehicle cruises	When the solenoid valve is operating (when running in M1-1 gear or M2-2 gear)	Battery voltage
				When the solenoid valve is not operating (when running in "D")	0V
16	W/G	SEL1 (pressure switch 2)	-	-	-
40	Y/G	DATA BIT1	-	-	-

DTC P1731 A/T 1ST ENGINE BRAKING

ECS0086J

Diagnostic Procedure

1. CHECK INPUT SIGNALS

With CONSULT-II

1. Start engine.
2. Select "ECU INPUT SIGNALS" or "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Accelerate vehicle in the "D" position (1st gear), and confirm the ON/OFF actuation of the "ATF PRES SW 2".

OK or NG

- OK >> GO TO 4.
 NG >> GO TO 2.

DATA MONITOR	
MONITOR	NO DTC
ATF PRES SW 1	OFF
ATF PRES SW 2	OFF
ATF PRES SW 3	OFF
ATF PRES SW 5	OFF
ATF PRES SW 6	OFF

△		▽	
RECORD			
MODE	BACK	LIGHT	COPY

PCIA0067E

2. CHECK HARNESS BETWEEN TCM AND A/T UNIT ASSEMBLY HARNESS CONNECTOR

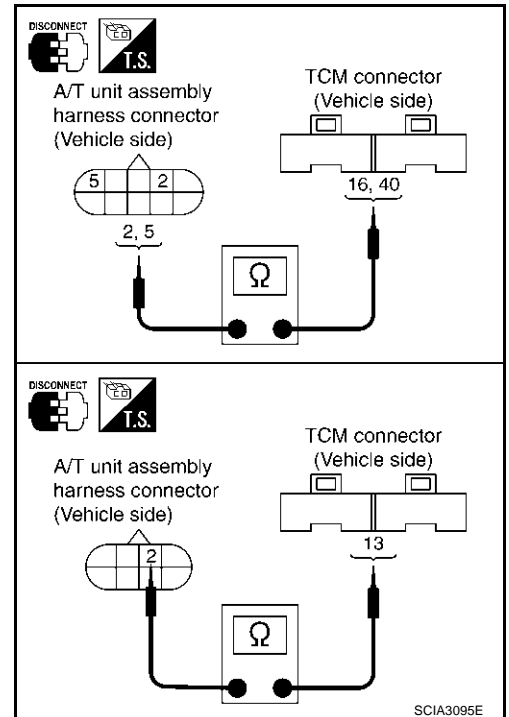
1. Turn ignition switch to "OFF" position.
2. Disconnect TCM connector.
3. Check continuity between A/T unit assembly harness connector and TCM connector.

Item	Connector No.	Terminal No. (Wire color)	Continuity
TCM	F103	13 (W/L)	Yes
A/T unit assembly harness connector	F27	2 (W/L)	
TCM	F103	16 (W/G)	Yes
A/T unit assembly harness connector	F26	5 (W/G)	
TCM	F104	40 (Y/G)	Yes
A/T unit assembly harness connector	F26	2 (Y/G)	

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

OK or NG

- OK >> GO TO 3.
 NG >> Repair open circuit or short to ground or short to power in harness or connectors.

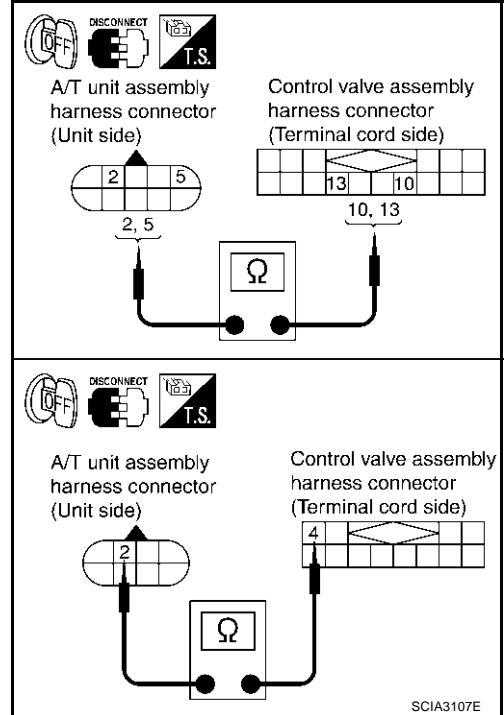


DTC P1731 A/T 1ST ENGINE BRAKING

3. CHECK TERMINAL CORD ASSEMBLY

1. Remove oil pan. Refer to [AT-290, "Control Valve Assembly"](#) .
2. Disconnect A/T unit assembly harness connector and control valve assembly harness connector.
3. Check continuity between A/T unit assembly harness connector and control valve assembly harness connector.

Item	Connector No.	Terminal No. (Wire color)	Continuity
A/T unit assembly harness connector	F26	2 (R)	Yes
Control valve assembly harness connector	F302	10 (R)	
A/T unit assembly harness connector	F26	5 (L)	Yes
Control valve assembly harness connector	F302	13 (L)	
A/T unit assembly harness connector	F27	2 (B/R)	Yes
Control valve assembly harness connector	F301	4 (B/R)	



4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

OK or NG

- OK >> Replace the control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#) .
 NG >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK DTC

Perform "DTC Confirmation Procedure". Refer to [AT-167, "DTC Confirmation Procedure"](#) .

OK or NG

- OK >> **INSPECTION END**
 NG >> GO TO 5.

5. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

- OK >> **INSPECTION END**
 NG >> Repair or replace damaged parts.

DTC P1752 INPUT CLUTCH SOLENOID VALVE

DTC P1752 INPUT CLUTCH SOLENOID VALVE

PFP:31940

Description

ECS0086K

Input clutch solenoid valve is controlled by the TCM in response to signals sent from the PNP switch, vehicle speed sensor and accelerator pedal position sensor (throttle position sensor). Gears will then be shifted to the optimum position.

On Board Diagnosis Logic

ECS0086L

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "I/C SOLENOID/CIRC" with CONSULT-II or P1752 without CONSULT-II is detected under the following conditions.
 - When TCM detects an improper voltage drop when it tries to operate the solenoid valve.
 - When TCM detects as irregular by comparing target value with monitor value.

Possible Cause

ECS0086M

- Harness or connectors
(The solenoid circuit is open or shorted.)
- Input clutch solenoid valve

DTC Confirmation Procedure

ECS0086N

CAUTION:

Always drive vehicle at a safe speed.

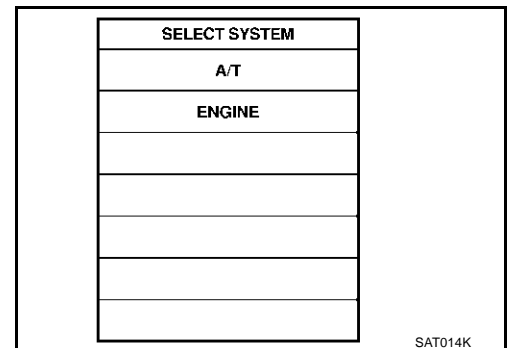
NOTE:

If "DTC Confirmation Procedure" has been previously conducted, always turn ignition switch "OFF" and wait at least 10 seconds before conducting the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

Ⓟ WITH CONSULT-II

1. Turn ignition switch to "ON" position. (Do not start engine.)
2. Select "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Start engine.
4. Maintain the following conditions for at least 5 consecutive seconds.
ACCELE POS: 1.5/8 - 2.0/8
Selector lever: "D" position
Gear position: 3rd ⇒ 4th Gear (I/C ON/OFF)
5. If DTC is detected go to "[AT-173, "Diagnostic Procedure"](#)".



Ⓢ WITH GST

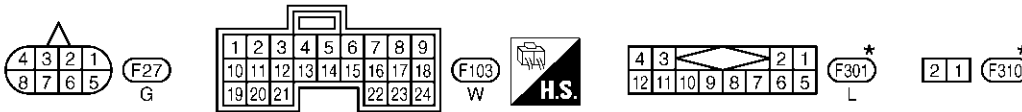
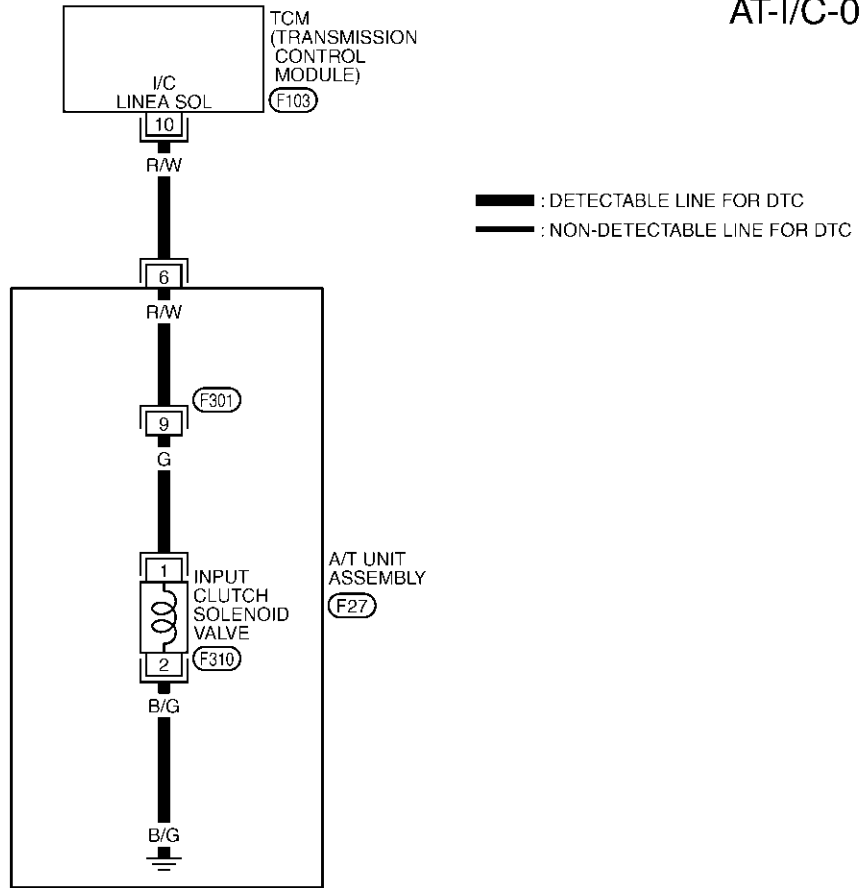
Follow the procedure "With CONSULT-II".

DTC P1752 INPUT CLUTCH SOLENOID VALVE

Wiring Diagram — AT — I/C

ECS00860

AT-I/C-01



*: THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT", PG SECTION.

TCM terminal and data are reference value. Measured between each terminal and ground.

TCWM0017E

Terminal No.	Wire color	Item	Condition		Data (Approx.)
10	R/W	Input clutch solenoid valve	When vehicle cruises	When the solenoid valve operating (in 1st gear, 2nd gear, or 3rd gear)	More than 2V
				When the solenoid valve is not operating (4th gear or 5th gear)	0V

DTC P1752 INPUT CLUTCH SOLENOID VALVE

ECS0086P

Diagnostic Procedure

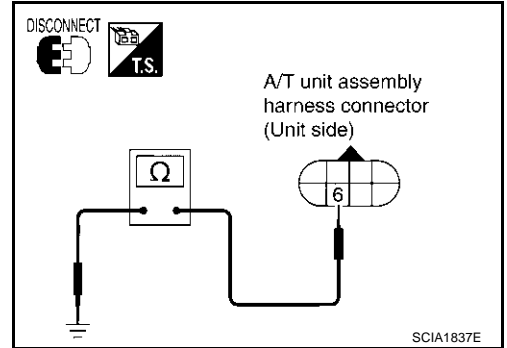
1. CHECK INPUT CLUTCH SOLENOID VALVE CIRCUIT

1. Turn ignition switch to "OFF" position.
2. Disconnect A/T unit assembly harness connector at the transmission right side.
3. Check the resistance between terminal and ground.

Solenoid valve	Connector No.	Terminal No. (Wire color)	Resistance (Approx.)
Input clutch solenoid valve	F27	6 (R/W) - Ground	3 - 9 Ω

OK or NG

- OK >> GO TO 4.
 NG >> GO TO 2.



2. CHECK TERMINAL CORD ASSEMBLY

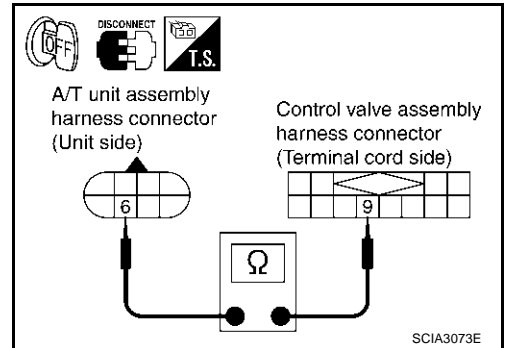
1. Remove oil pan. Refer to [AT-290, "Control Valve Assembly"](#).
2. Disconnect A/T unit assembly harness connector and control valve assembly harness connector.
3. Check continuity between A/T unit assembly harness connector and control valve assembly harness connector.

Item	Connector No.	Terminal No. (Wire color)	Continuity
A/T unit assembly harness connector	F27	6 (R/W)	Yes
Control valve assembly harness connector	F301	9 (R/W)	

4. If OK, check harness for short to ground and short to power.

OK or NG

- OK >> GO TO 3.
 NG >> Repair open circuit or short to ground or short to power in harness or connectors.



3. CHECK VALVE RESISTANCE

Check valve resistance

- Refer to [AT-175, "Component Inspection"](#).

OK or NG

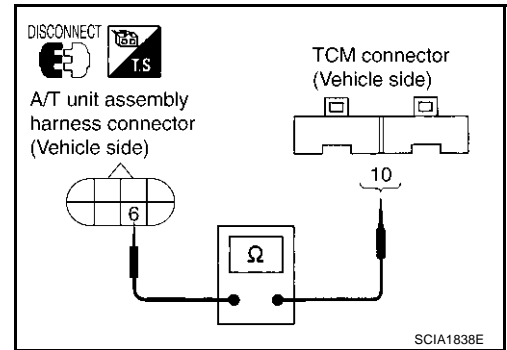
- OK >> GO TO 4.
 NG >> Replace the control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#).

DTC P1752 INPUT CLUTCH SOLENOID VALVE

4. CHECK POWER SOURCE CIRCUIT

1. Turn ignition switch to "OFF" position.
2. Disconnect TCM connector.
3. Check continuity between A/T unit assembly harness connector and TCM connector.

Item	Connector No.	Terminal No. (Wire color)	Continuity
TCM	F103	10 (R/W)	Yes
A/T unit assembly harness connector	F27	6 (R/W)	



4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

OK or NG

OK >> GO TO 5.

NG >> Repair open circuit or short to ground or short to power in harness or connectors.

5. CHECK DTC

Perform "DTC Confirmation Procedure". Refer to [AT-171, "DTC Confirmation Procedure"](#).

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 6.

6. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 6.

DTC P1752 INPUT CLUTCH SOLENOID VALVE

ECS00A31

Component Inspection INPUT CLUTCH SOLENOID VALVE

Resistance check

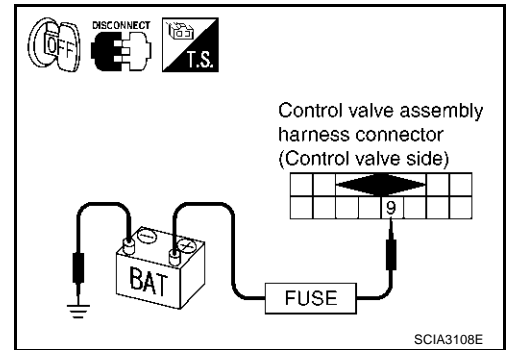
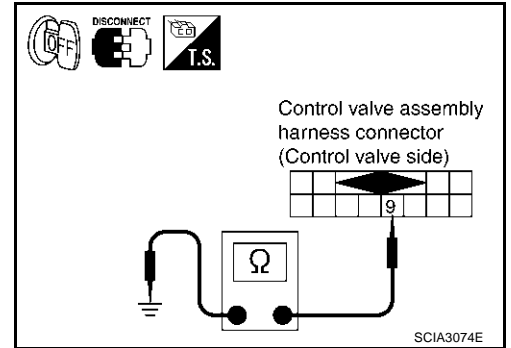
1. Turn ignition switch "OFF".
2. Remove oil pan. Refer to [AT-290, "Control Valve Assembly"](#) .
3. Disconnect control valve assembly harness connector.
4. Check resistance between terminal and ground.

Solenoid Valve	Connector No.	Terminal No. (Wire color)	Resistance (Ω) (Approx.)
Input clutch solenoid valve	F301	9 (G) - Ground	3 - 9 Ω

5. If NG, replace control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#) .

Operation check

- Check solenoid valve by listening for its operating sound while applying battery voltage to the terminal 9 and ground.



A
B
AT
D
E
F
G
H
I
J
K
L
M

DTC P1754 INPUT CLUTCH SOLENOID VALVE FUNCTION

DTC P1754 INPUT CLUTCH SOLENOID VALVE FUNCTION

PFP:31940

Description

ECS0086Q

- Input clutch solenoid valve is controlled by the TCM in response to signals sent from the PNP switch, vehicle speed sensor and accelerator pedal position sensor (throttle position sensor). Gears will then be shifted to the optimum position.
- This is not only caused by electrical malfunction (circuits open or shorted) but also by mechanical malfunction such as control valve sticking, improper solenoid valve operation.

On Board Diagnosis Logic

ECS0086R

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "I/C SOLENOID FNCTN" with CONSULT-II or P1754 without CONSULT-II is detected under the following conditions.
 - When TCM detects that actual gear ratio is irregular, and relation between gear position and condition of ATF pressure switch 3 is irregular during depressing accelerator pedal. (Other than during shift change)
 - When TCM detects that relation between gear position and condition of ATF pressure switch 3 is irregular during releasing accelerator pedal. (Other than during shift change)

Possible Cause

ECS0086S

- Harness or connectors
(The solenoid and switch circuits are open or shorted.)
- Input clutch solenoid valve
- ATF pressure switch 3

DTC Confirmation Procedure

ECS0086T

CAUTION:

Always drive vehicle at a safe speed.

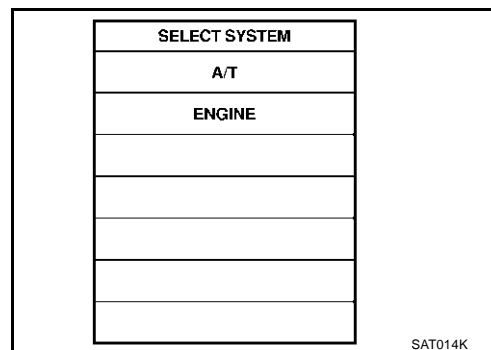
NOTE:

If "DTC Confirmation Procedure" has been previously conducted, always turn ignition switch "OFF" and wait at least 10 seconds before conducting the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

Ⓜ WITH CONSULT-II

1. Start engine.
2. Accelerate vehicle to maintain the following condition.
ACCELE POSI: 1.5/8 - 2.0/8
Selector lever: "D" position
Gear position: 3rd ⇒ 4th Gear (I/C ON/OFF)
3. Perform step "2" again.
4. Turn ignition switch to "OFF" position, then perform step "1" to "3" again.
5. Check "SELF-DIAG RESULTS" mode for "A/T" with CONSULT-II. If DTC (P1754) is detected, refer to [AT-178, "Diagnostic Procedure"](#).
If DTC (P1752) is detected, go to [AT-173, "Diagnostic Procedure"](#).
If DTC (P1843) is detected, go to [AT-226, "Diagnostic Procedure"](#).



Ⓜ WITH GST

Follow the procedure "With CONSULT-II".

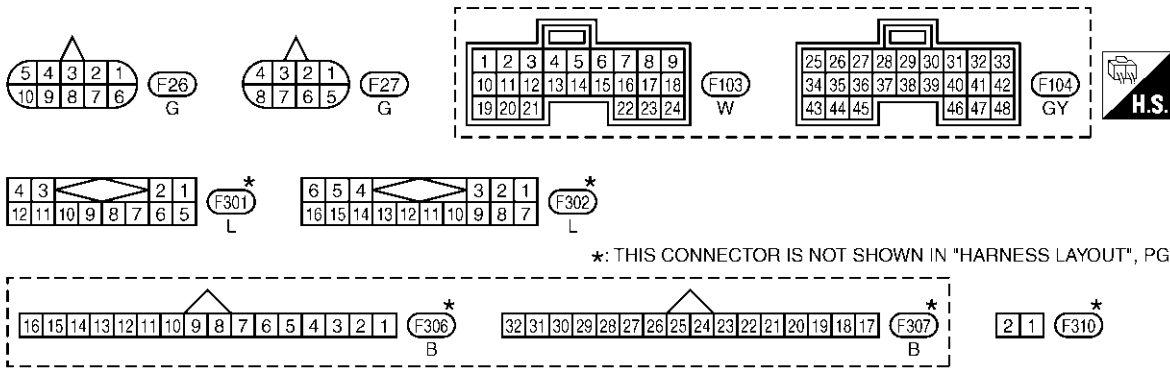
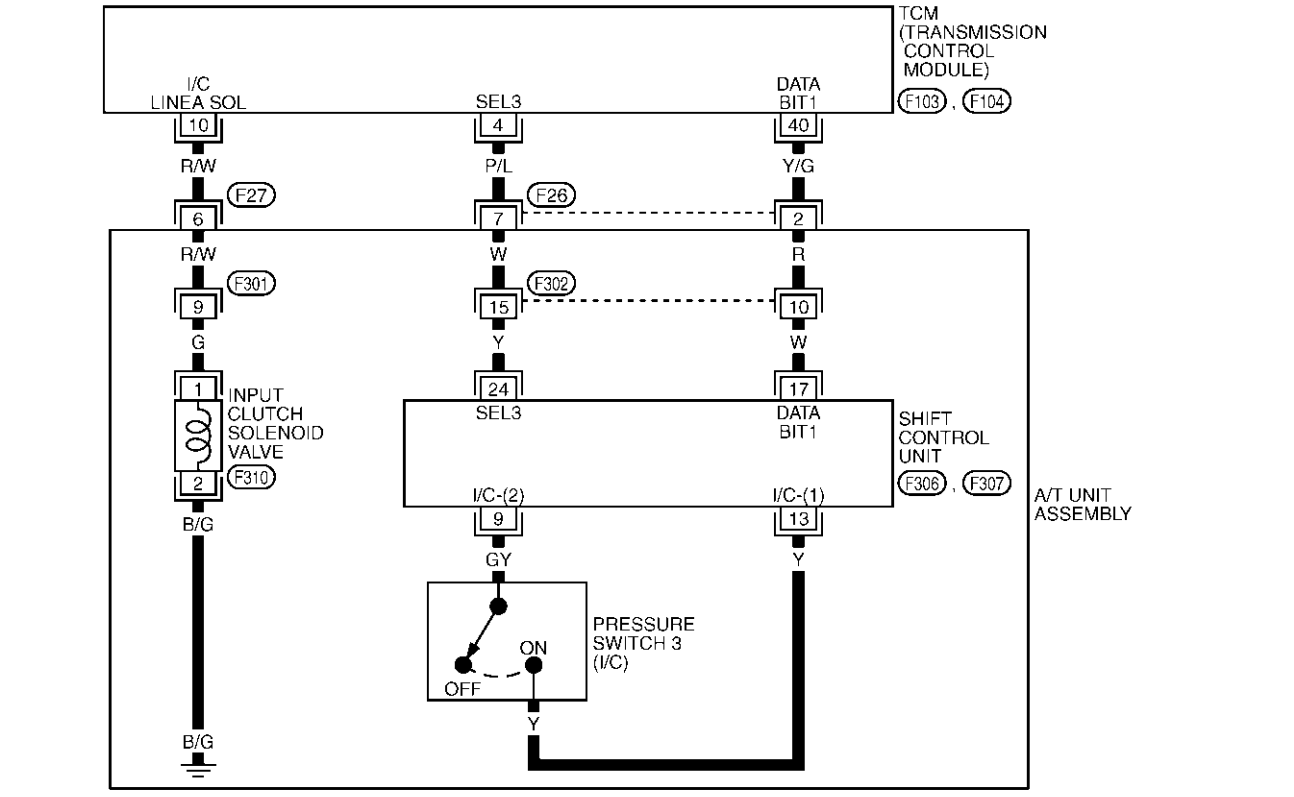
DTC P1754 INPUT CLUTCH SOLENOID VALVE FUNCTION

Wiring Diagram — AT — I/CF

ECS0086U

AT-I/CF-01

: DETECTABLE LINE FOR DTC
 : NON-DETECTABLE LINE FOR DTC



*: THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT", PG SECTION.

TCM terminal and data are reference value. Measured between each terminal and ground.

TCWM0093E

Terminal No.	Wire color	Item	Condition	Data (Approx.)
4	P/L	SEL3 (pressure switch 3)	-	-
10	R/W	Input clutch solenoid valve	When the solenoid valve operating (in 1st gear, 2nd gear or 3rd gear)	More than 2V
			When the solenoid valve is not operating (4th gear or 5th gear)	0V
40	Y/G	DATA BIT1	-	-

DTC P1754 INPUT CLUTCH SOLENOID VALVE FUNCTION

ECS00A32

Diagnostic Procedure

1. CHECK INPUT SIGNALS

With CONSULT-II

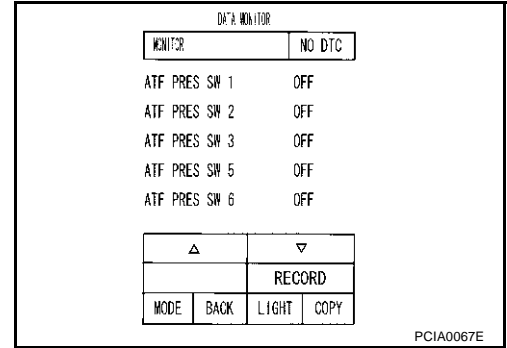
1. Start engine.
2. Select "ECU INPUT SIGNALS" or "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Accelerate vehicle in the "D" position (3rd ⇒ 4th gear), and confirm the ON/OFF actuation of the "ATF PRES SW 3".

With GST

Follow the procedure "With CONSULT-II".

OK or NG

- OK >> GO TO 4.
 NG >> GO TO 2.



2. CHECK HARNESS BETWEEN TCM AND A/T UNIT ASSEMBLY HARNESS CONNECTOR

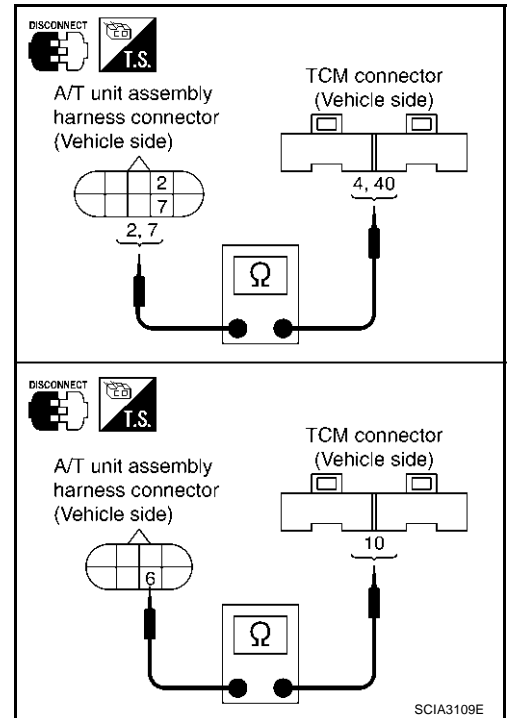
1. Turn ignition switch to "OFF" position.
2. Disconnect TCM connector.
3. Check continuity between A/T unit assembly harness connector and TCM connector.

Item	Connector No.	Terminal No. (Wire color)	Continuity
TCM	F103	4 (P/L)	Yes
A/T unit assembly harness connector	F26	7 (P/L)	
TCM	F103	10 (R/W)	Yes
A/T unit assembly harness connector	F27	6 (R/W)	
TCM	F104	40 (Y/G)	Yes
A/T unit assembly harness connector	F26	2 (Y/G)	

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

OK or NG

- OK >> GO TO 3.
 NG >> Repair open circuit or short to ground or short to power in harness or connectors.

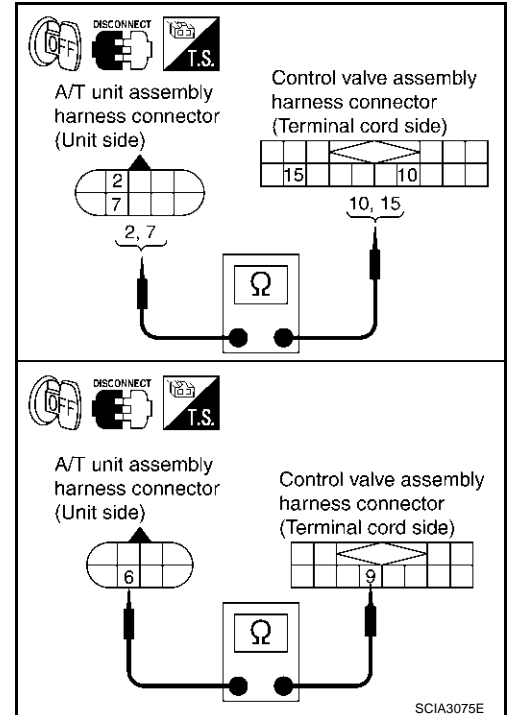


DTC P1754 INPUT CLUTCH SOLENOID VALVE FUNCTION

3. CHECK TERMINAL CORD ASSEMBLY

1. Remove oil pan. Refer to [AT-290, "Control Valve Assembly"](#) .
2. Disconnect A/T unit assembly harness connector and control valve assembly harness connector.
3. Check continuity between A/T unit assembly harness connector and control valve assembly harness connector.

Item	Connector No.	Terminal No. (Wire color)	Continuity
A/T unit assembly harness connector	F26	2 (R)	Yes
Control valve assembly harness connector	F302	10 (R)	
A/T unit assembly harness connector	F26	7 (W)	Yes
Control valve assembly harness connector	F302	15 (W)	
A/T unit assembly harness connector	F27	6 (R/W)	Yes
Control valve assembly harness connector	F301	9 (R/W)	



4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

OK or NG

- OK >> Replace the control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#) .
- NG >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK DTC

Perform "DTC Confirmation Procedure". Refer to [AT-167, "DTC Confirmation Procedure"](#) .

OK or NG

- OK >> **INSPECTION END**
- NG >> GO TO 5.

5. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

- OK >> **INSPECTION END**
- NG >> Repair or replace damaged parts.

DTC P1757 FRONT BRAKE SOLENOID VALVE

DTC P1757 FRONT BRAKE SOLENOID VALVE

PFP:31940

Description

ECS0086W

Front brake solenoid valve is controlled by the TCM in response to signals sent from the PNP switch, vehicle speed sensor and accelerator pedal position sensor (throttle position sensor). Gears will then be shifted to the optimum position.

On Board Diagnosis Logic

ECS0086X

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "FR/B SOLENOID/CIRC" with CONSULT-II or P1757 without CONSULT-II is detected under the following conditions.
 - When TCM detects an improper voltage drop when it tries to operate the solenoid valve.
 - When TCM detects as irregular by comparing target value with monitor value.

Possible Cause

ECS0086Y

- Harness or connectors
(The solenoid circuit is open or shorted.)
- Front brake solenoid valve

DTC Confirmation Procedure

ECS0086Z

CAUTION:

Always drive vehicle at a safe speed.

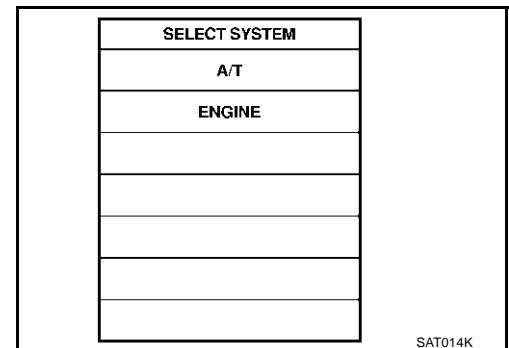
NOTE:

If "DTC Confirmation Procedure" has been previously conducted, always turn ignition switch "OFF" and wait at least 10 seconds before conducting the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

Ⓟ WITH CONSULT-II

1. Turn ignition switch to "ON" position. (Do not start engine.)
2. Select "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Start engine.
4. Maintain the following conditions for at least 5 consecutive seconds.
ACCELE POS: 1.5/8 - 2.0/8
Selector lever: "D" position
Gear position: 3rd ⇒ 4th Gear (FR/B ON/OFF)
5. If DTC is detected go to [AT-182, "Diagnostic Procedure"](#).



Ⓢ WITH GST

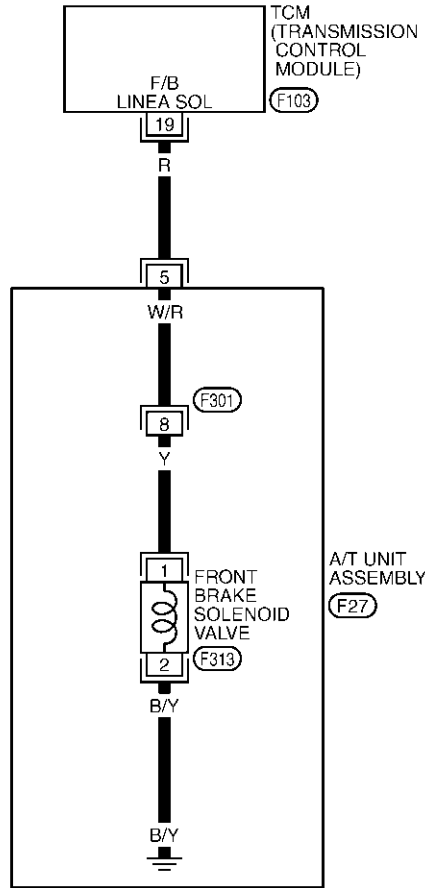
Follow the procedure "With CONSULT-II".

DTC P1757 FRONT BRAKE SOLENOID VALVE

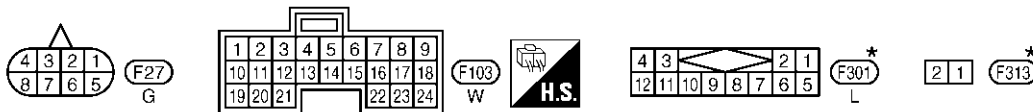
Wiring Diagram — AT — FR/B

ECS00870

AT-FR/B-01



: DETECTABLE LINE FOR DTC
 : NON-DETECTABLE LINE FOR DTC



*: THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT", PG SECTION.

TCM terminal and data are reference value. Measured between each terminal and ground.

TCWM0019E

Terminal No.	Wire color	Item	Condition		Data (Approx.)
19	R	Front brake solenoid valve	When vehicle starts	When the solenoid valve is operating (other than 4th gear)	More than 2V
				When the solenoid valve is not operating (4th gear)	0V

DTC P1757 FRONT BRAKE SOLENOID VALVE

ECS00871

Diagnostic Procedure

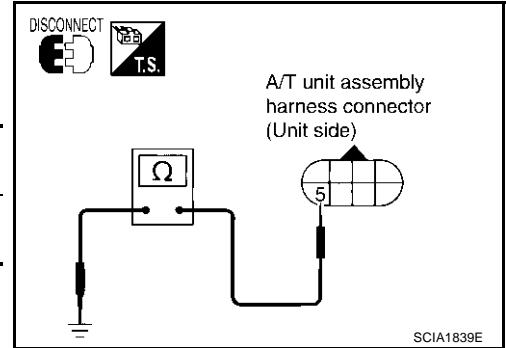
1. CHECK FRONT BRAKE SOLENOID VALVE CIRCUIT

1. Turn ignition switch to "OFF" position.
2. Disconnect A/T unit assembly harness connector at the transmission right side.
3. Check the resistance between terminal and ground.

Solenoid valve	Connector No.	Terminal No. (Wire color)	Resistance (Approx.)
Front brake solenoid valve	F27	5 (R) - Ground	3 - 9 Ω

OK or NG

- OK >> GO TO 4.
 NG >> GO TO 2.



2. CHECK TERMINAL CORD ASSEMBLY

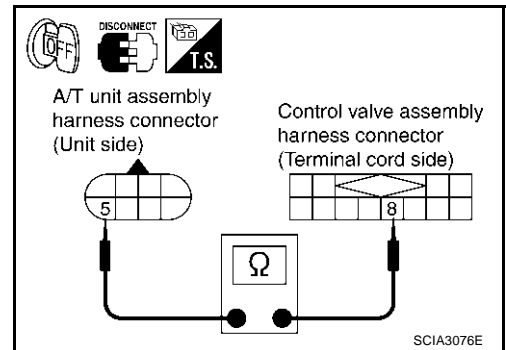
1. Remove oil pan. Refer to [AT-290, "Control Valve Assembly"](#).
2. Disconnect A/T unit assembly harness connector and control valve assembly harness connector.
3. Check continuity between A/T unit assembly harness connector and control valve assembly harness connector.

Item	Connector No.	Terminal No. (Wire color)	Continuity
A/T unit assembly harness connector	F27	5 (W/R)	Yes
Control valve assembly harness connector	F301	8 (W/R)	

4. If OK, check harness for short to ground and short to power.

OK or NG

- OK >> GO TO 3.
 NG >> Repair open circuit or short to ground or short to power in harness or connectors.



3. CHECK VALVE RESISTANCE

Check valve resistance

- Refer to [AT-184, "Component Inspection"](#).

OK or NG

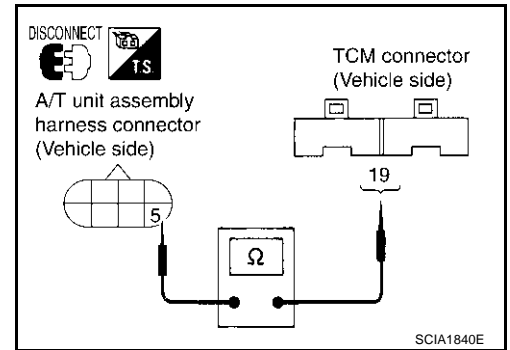
- OK >> GO TO 4.
 NG >> Replace the control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#).

DTC P1757 FRONT BRAKE SOLENOID VALVE

4. CHECK POWER SOURCE CIRCUIT

1. Turn ignition switch to "OFF" position.
2. Disconnect TCM connector.
3. Check continuity between A/T unit assembly harness connector and TCM connector.

Item	Connector No.	Terminal No. (Wire color)	Continuity
TCM	F103	19 (R)	Yes
A/T unit assembly harness connector	F27	5 (R)	



4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

OK or NG

OK >> GO TO 5.

NG >> Repair open circuit or short to ground or short to power in harness or connectors.

5. CHECK DTC

Perform "DTC Confirmation Procedure". Refer to [AT-180, "DTC Confirmation Procedure"](#) .

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 6.

6. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> **INSPECTION END**

NG >> Repair or replace damaged parts.

DTC P1757 FRONT BRAKE SOLENOID VALVE

ECS00A33

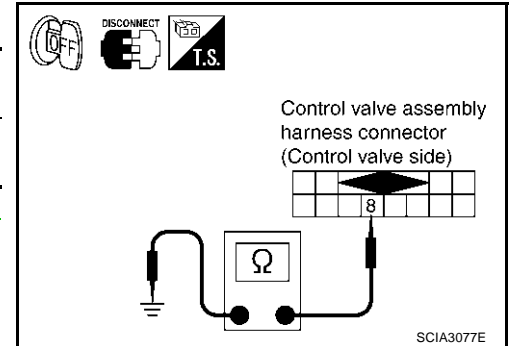
Component Inspection FRONT BRAKE SOLENOID VALVE

Resistance check

1. Turn ignition switch "OFF".
2. Remove oil pan. Refer to [AT-290, "Control Valve Assembly"](#) .
3. Disconnect control valve assembly harness connector.
4. Check resistance between terminal and ground.

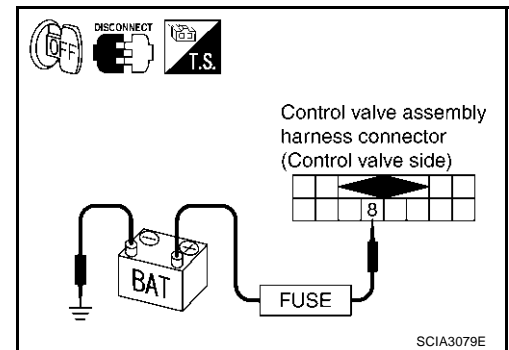
Solenoid Valve	Connector No.	Terminal No. (Wire color)	Resistance (Ω) (Approx.)
Front brake solenoid valve	F301	8 (Y) - Ground	3 - 9 Ω

5. If NG, replace control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#) .



Operation check

- Check solenoid valve by listening for its operating sound while applying battery voltage to the terminal 8 and ground.



DTC P1759 FRONT BRAKE SOLENOID VALVE FUNCTION

DTC P1759 FRONT BRAKE SOLENOID VALVE FUNCTION

PDF:31940

Description

ECS00872

- Front brake solenoid valve is controlled by the TCM in response to signals sent from the PNP switch, vehicle speed sensor and accelerator pedal position sensor (throttle position sensor). Gears will then be shifted to the optimum position.
- This is not only caused by electrical malfunction (circuits open or shorted) but also by mechanical malfunction such as control valve sticking, improper solenoid valve operation.

On Board Diagnosis Logic

ECS00873

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "FR/B SOLENOID FNCT" with CONSULT-II or P1759 without CONSULT-II is detected under the following conditions.
 - When TCM detects that actual gear ratio is irregular, and relation between gear position and condition of ATF pressure switch 1 is irregular during depressing accelerator pedal. (Other than during shift change)
 - When TCM detects that relation between gear position and condition of ATF pressure switch 1 is irregular during releasing accelerator pedal. (Other than during shift change)

Possible Cause

ECS00874

- Harness or connectors
(The solenoid and switch circuits are open or shorted.)
- Front brake solenoid valve
- ATF pressure switch 1

DTC Confirmation Procedure

ECS00875

CAUTION:

Always drive vehicle at a safe speed.

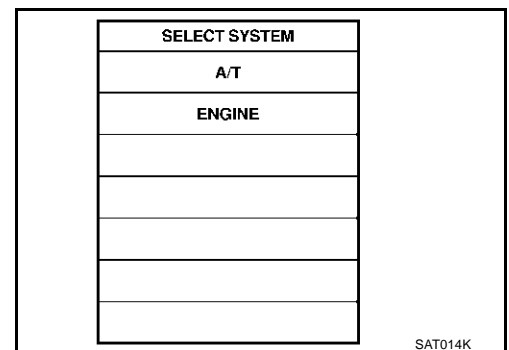
NOTE:

If "DTC Confirmation Procedure" has been previously conducted, always turn ignition switch "OFF" and wait at least 10 seconds before conducting the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

Ⓜ WITH CONSULT-II

1. Start engine.
2. Accelerate vehicle to maintain the following condition.
ACCELE POS: 1.5/8 - 2.0/8
Selector lever: "D" position
Gear position: 3rd ⇒ 4th Gear (FR/B ON/OFF)
3. Perform step "2" again.
4. Turn ignition switch to "OFF" position, then perform step "1" to "3" again.
5. Check "SELF-DIAG RESULTS" mode for "A/T" with CONSULT-II. If DTC (P1759) is detected, refer to [AT-187, "Diagnostic Procedure"](#).
If DTC (P1757) is detected, go to [AT-182, "Diagnostic Procedure"](#).
If DTC (P1841) is detected, go to [AT-222, "Diagnostic Procedure"](#).



Ⓜ WITH GST

Follow the procedure "With CONSULT-II".

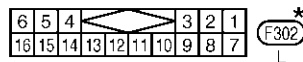
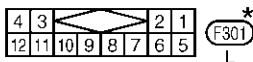
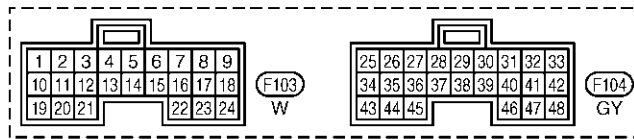
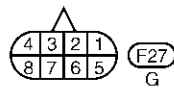
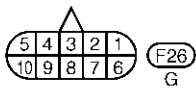
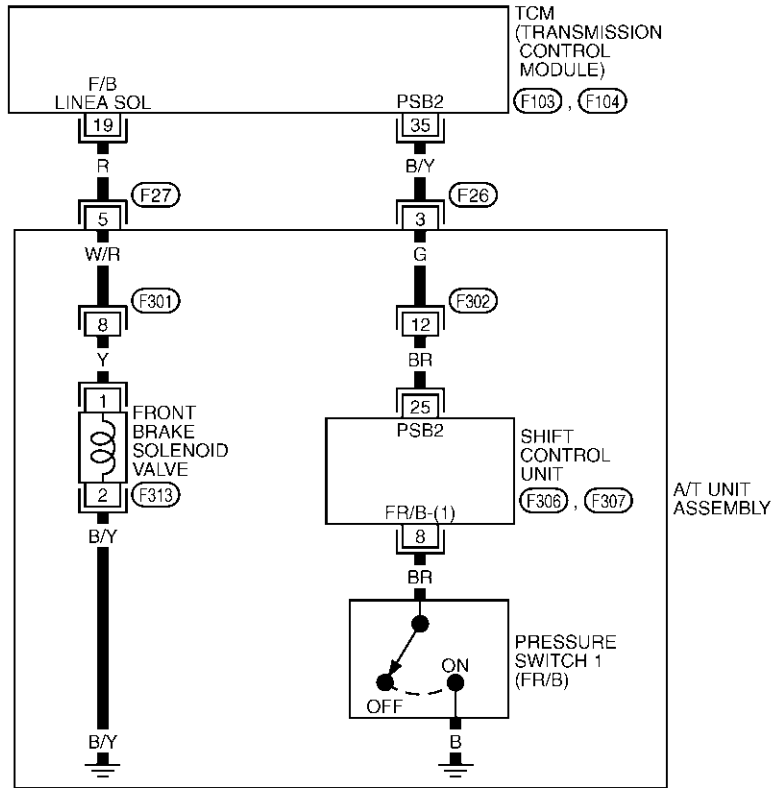
DTC P1759 FRONT BRAKE SOLENOID VALVE FUNCTION

Wiring Diagram — AT — FR/BF

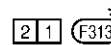
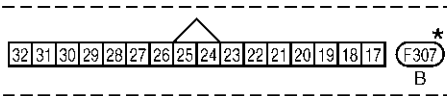
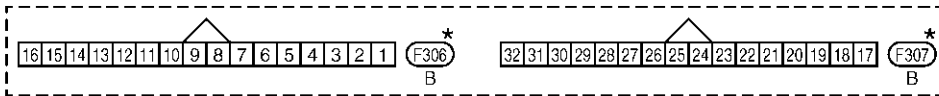
ECS00876

AT-FR/BF-01

: DETECTABLE LINE FOR DTC
 : NON-DETECTABLE LINE FOR DTC



*: THIS CONNECTOR IS NOT SHOWN IN "HARNES LAYOUT", PG SECTION.



TCM terminal and data are reference value. Measured between each terminal and ground.

TCWM0094E

Terminal No.	Wire color	Item	Condition	Data (Approx.)
19	R	Front brake solenoid valve	When the solenoid valve is operating (other than 4th gear)	More than 2V
			When the solenoid valve is not operating (4th gear)	0V
35	B/Y	PSB2 (pressure switch 1)	When front brake solenoid valve "OFF".	Battery voltage
			When front brake solenoid valve "ON".	0V

DTC P1759 FRONT BRAKE SOLENOID VALVE FUNCTION

ECS00877

Diagnostic Procedure

1. INPUT SIGNALS (WITH CONSULT-II)

With CONSULT-II

1. Start engine.
2. Select "ECU INPUT SIGNALS" or "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Accelerate vehicle in the "D" position (3rd ⇒ 4th gear), and confirm the ON/OFF actuation of the "ATF PRES SW 1".

OK or NG

- OK >> GO TO 5.
 NG >> GO TO 3.

DATA MONITOR	
MONITOR	NO DTC
ATF PRES SW 1	OFF
ATF PRES SW 2	OFF
ATF PRES SW 3	OFF
ATF PRES SW 5	OFF
ATF PRES SW 6	OFF

△		▽	
RECORD			
MODE	BACK	LIGHT	COPY

PCIA0067E

2. INPUT SIGNALS (WITHOUT CONSULT-II)

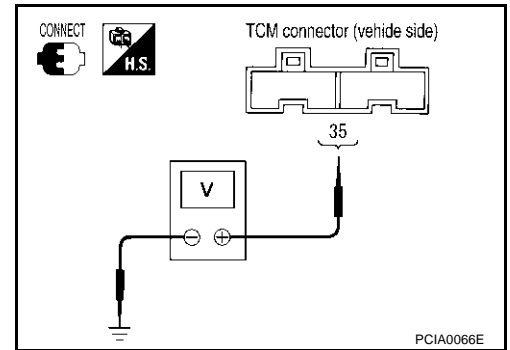
Without CONSULT-II

1. Start engine.
2. Accelerate vehicle in the "D" position (3rd ⇒ 4th gear).

Solenoid valve		Connector No.	Terminal No. (Wire color)	Voltage
Front brake solenoid valve	OFF	F104	35 (B/Y) - Ground	Battery voltage
	ON			Approx. 0 V

OK or NG

- OK >> GO TO 5.
 NG >> GO TO 3.



3. CHECK HARNESS BETWEEN TCM AND A/T UNIT ASSEMBLY HARNESS CONNECTOR

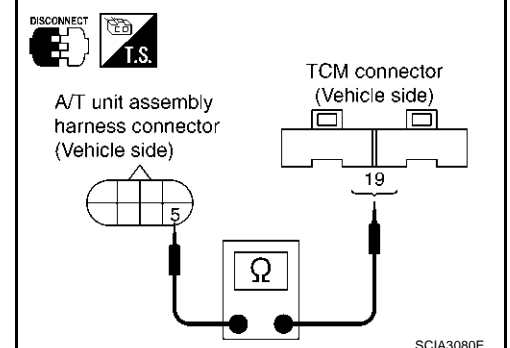
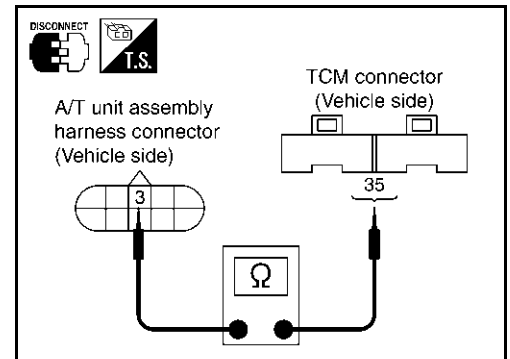
1. Turn ignition switch to "OFF" position.
2. Disconnect TCM connector.
3. Check continuity between A/T unit assembly harness connector and TCM connector.

Item	Connector No.	Terminal No. (Wire color)	Continuity
TCM	F103	19 (R)	Yes
A/T unit assembly harness connector	F27	5 (R)	
TCM	F104	35 (B/Y)	Yes
A/T unit assembly harness connector	F26	3 (B/Y)	

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

OK or NG

- OK >> GO TO 4.
 NG >> Repair open circuit or short to ground or short to power in harness or connectors.



DTC P1759 FRONT BRAKE SOLENOID VALVE FUNCTION

4. CHECK TERMINAL CORD ASSEMBLY

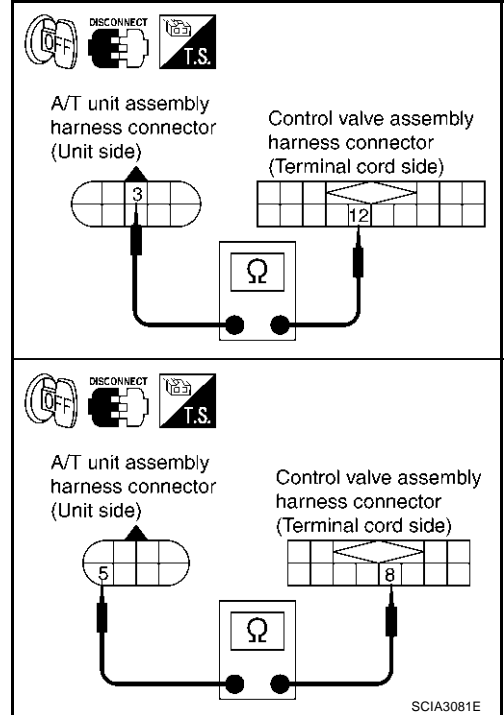
1. Remove oil pan. Refer to [AT-290, "Control Valve Assembly"](#) .
2. Disconnect A/T unit assembly harness connector and control valve assembly harness connector.
3. Check continuity between A/T unit assembly harness connector and control valve assembly harness connector.

Item	Connector No.	Terminal No. (Wire color)	Continuity
A/T unit assembly harness connector	F26	3 (G)	Yes
Control valve assembly harness connector	F302	12 (G)	
A/T unit assembly harness connector	F27	5 (W/R)	Yes
Control valve assembly harness connector	F301	8 (W/R)	

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

OK or NG

- OK >> Replace the control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#) .
- NG >> Repair open circuit or short to ground or short to power in harness or connectors.



5. CHECK DTC

Perform "DTC Confirmation Procedure". Refer to [AT-185, "DTC Confirmation Procedure"](#) .

OK or NG

- OK >> **INSPECTION END**
- NG >> GO TO 6.

6. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

- OK >> **INSPECTION END**
- NG >> Repair or replace damaged parts.

DTC P1762 DIRECT CLUTCH SOLENOID VALVE

DTC P1762 DIRECT CLUTCH SOLENOID VALVE

PFP:31940

Description

ECS00878

Direct clutch solenoid valve is controlled by the TCM in response to signals sent from the PNP switch, vehicle speed sensor and accelerator pedal position sensor (throttle position sensor). Gears will then be shifted to the optimum position.

On Board Diagnosis Logic

ECS00879

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "D/C SOLENOID/CIRC" with CONSULT-II or P1762 without CONSULT-II is detected under the following conditions.
 - When TCM detects an improper voltage drop when it tries to operate the solenoid valve.
 - When TCM detects as irregular by comparing target value with monitor value.

Possible Cause

ECS0087A

- Harness or connectors
(The solenoid circuit is open or shorted.)
- Direct clutch solenoid valve

DTC Confirmation Procedure

ECS0087B

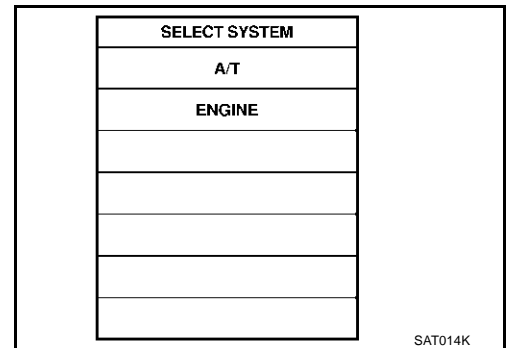
NOTE:

If "DTC Confirmation Procedure" has been previously conducted, always turn ignition switch "OFF" and wait at least 10 seconds before conducting the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

WITH CONSULT-II

1. Turn ignition switch to "ON" position. (Do not start engine.)
2. Select "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Start engine.
4. Maintain the following conditions for at least 5 consecutive seconds.
ACCELE POS: 1.5/8 - 2.0/8
Selector lever: "D" position
Gear position: 1st ⇒ 2nd Gear (D/C ON/OFF)
5. If DTC is detected, go to [AT-191, "Diagnostic Procedure"](#).



WITH GST

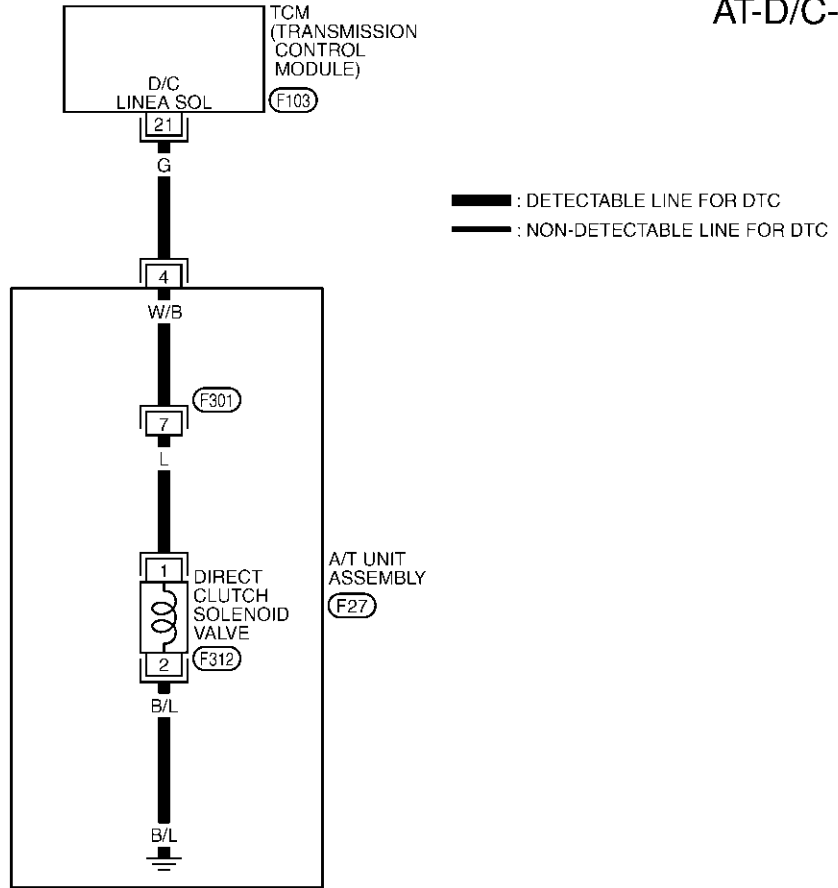
Follow the procedure "With CONSULT-II".

DTC P1762 DIRECT CLUTCH SOLENOID VALVE

Wiring Diagram — AT — D/C

ECS0087C

AT-D/C-01



*: THIS CONNECTOR IS NOT SHOWN IN "HARNES LAYOUT", PG SECTION.

TCM terminal and data are reference value. Measured between each terminal and ground.

TCWM0021E

Terminal No.	Wire color	Item	Condition		Data (Approx.)
21	G	Direct clutch solenoid valve	When vehicle cruises	When the solenoid valve is operating (1st gear or 5th gear)	More than 2V
				When the solenoid valve is not operating (2nd gear, 3rd gear or 4th gear)	0V

DTC P1762 DIRECT CLUTCH SOLENOID VALVE

ECS0087D

Diagnostic Procedure

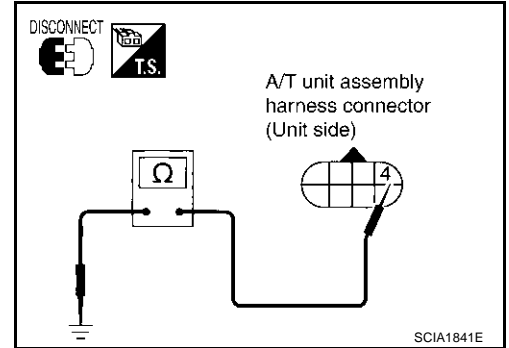
1. CHECK DIRECT CLUTCH SOLENOID VALVE CIRCUIT

1. Turn ignition switch to "OFF" position.
2. Disconnect A/T unit assembly harness connector at the transmission right side.
3. Check the resistance between terminal and ground.

Solenoid valve	Connector No.	Terminal No. (Wire color)	Resistance (Approx.)
Direct clutch solenoid valve	F27	4 (G) - Ground	3 - 9 Ω

OK or NG

- OK >> GO TO 4.
 NG >> GO TO 2.



2. CHECK TERMINAL CORD ASSEMBLY

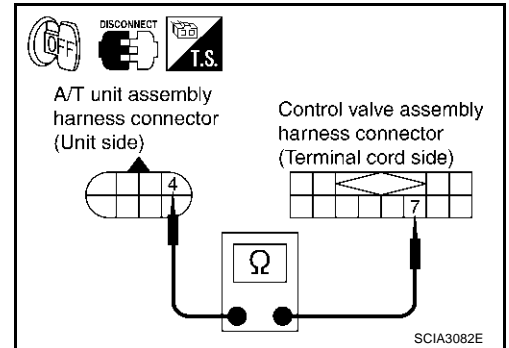
1. Remove oil pan. Refer to [AT-290, "Control Valve Assembly"](#).
2. Disconnect A/T unit assembly harness connector and control valve assembly harness connector.
3. Check continuity between A/T unit assembly harness connector and control valve assembly harness connector.

Item	Connector No.	Terminal No. (Wire color)	Continuity
A/T unit assembly harness connector	F27	4 (W/B)	Yes
Control valve assembly harness connector	F301	7 (W/B)	

4. If OK, check harness for short to ground and short to power.

OK or NG

- OK >> GO TO 3.
 NG >> Repair open circuit or short to ground or short to power in harness or connectors.



3. CHECK VALVE RESISTANCE

Check valve resistance

- Refer to [AT-193, "Component Inspection"](#).

OK or NG

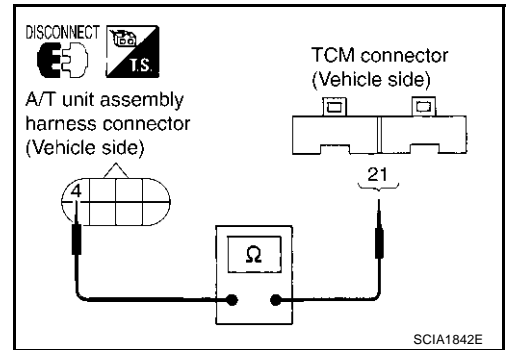
- OK >> GO TO 4.
 NG >> Replace the control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#).

DTC P1762 DIRECT CLUTCH SOLENOID VALVE

4. CHECK POWER SOURCE CIRCUIT

1. Turn ignition switch to "OFF" position.
2. Disconnect TCM connector.
3. Check continuity between A/T unit assembly harness connector and TCM connector.

Item	Connector No.	Terminal No. (Wire color)	Continuity
TCM	F103	21 (G)	Yes
A/T unit assembly harness connector	F27	4 (G)	



4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

OK or NG

OK >> GO TO 5.

NG >> Repair open circuit or short to ground or short to power in harness or connectors.

5. CHECK DTC

Perform "DTC Confirmation Procedure". Refer to [AT-189, "DTC Confirmation Procedure"](#).

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 6.

6. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> **INSPECTION END**

NG >> Repair or replace damaged parts.

DTC P1762 DIRECT CLUTCH SOLENOID VALVE

ECS00A34

Component Inspection DIRECT CLUTCH SOLENOID VALVE

Resistance check

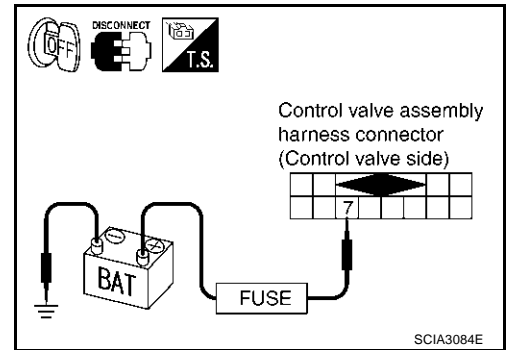
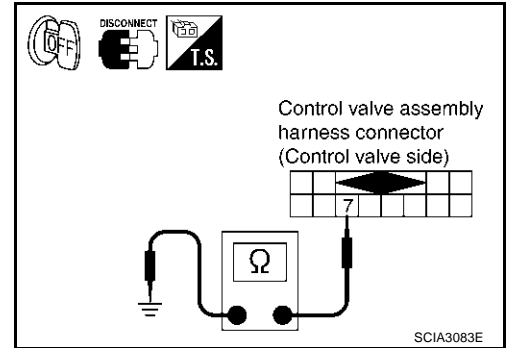
1. Turn ignition switch "OFF".
2. Remove oil pan. Refer to [AT-290, "Control Valve Assembly"](#) .
3. Disconnect control valve assembly harness connector.
4. Check resistance between terminal and ground.

Solenoid Valve	Connector No.	Terminal No. (Wire color)	Resistance (Ω) (Approx.)
Direct clutch solenoid valve	F301	7 (L) - Ground	3 - 9 Ω

5. If NG, replace control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#) .

Operation check

- Check solenoid valve by listening for its operating sound while applying battery voltage to the terminal 7 and ground.



A
B
AT
D
E
F
G
H
I
J
K
L
M

DTC P1764 DIRECT CLUTCH SOLENOID VALVE FUNCTION

DTC P1764 DIRECT CLUTCH SOLENOID VALVE FUNCTION

PFP:31940

Description

ECS0087E

- Direct clutch solenoid valve is controlled by the TCM in response to signals sent from the PNP switch, vehicle speed sensor and accelerator pedal position sensor (throttle position sensor). Gears will then be shifted to the optimum position.
- This is not only caused by electrical malfunction (circuits open or shorted) but also by mechanical malfunction such as control valve sticking, improper solenoid valve operation.

On Board Diagnosis Logic

ECS0087F

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "D/C SOLENOID FNCTN" with CONSULT-II or P1764 without CONSULT-II is detected under the following conditions.
 - When TCM detects that actual gear ratio is irregular, and relation between gear position and condition of ATF pressure switch 5 is irregular during depressing accelerator pedal. (Other than during shift change)
 - When TCM detects that relation between gear position and condition of ATF pressure switch 5 is irregular during releasing accelerator pedal. (Other than during shift change)

Possible Cause

ECS0087G

- Harness or connectors
(The solenoid and switch circuits are open or shorted.)
- Direct clutch solenoid valve
- ATF pressure switch 5

DTC Confirmation Procedure

ECS0087H

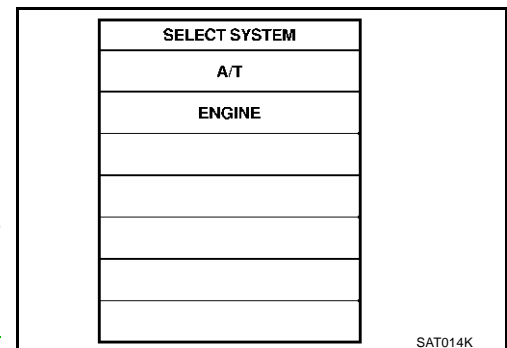
NOTE:

If "DTC Confirmation Procedure" has been previously conducted, always turn ignition switch "OFF" and wait at least 10 seconds before conducting the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

WITH CONSULT-II

1. Start engine.
2. Accelerate vehicle to maintain the following condition.
ACCELE POS: 1.5/8 - 2.0/8
Selector lever: "D" position
Gear position: 1st ⇒ 2nd Gear (D/C ON/OFF)
3. Perform step "2" again.
4. Turn ignition switch to "OFF" position, then perform step "1" to "3" again.
5. Check "SELF-DIAG RESULTS" mode for "A/T" with CONSULT-II. If DTC (P1764) is detected, refer to [AT-196, "Diagnostic Procedure"](#).
If DTC (P1762) is detected, go to [AT-191, "Diagnostic Procedure"](#).
If DTC (P1845) is detected, go to [AT-230, "Diagnostic Procedure"](#).



WITH GST

Follow the procedure "With CONSULT-II".

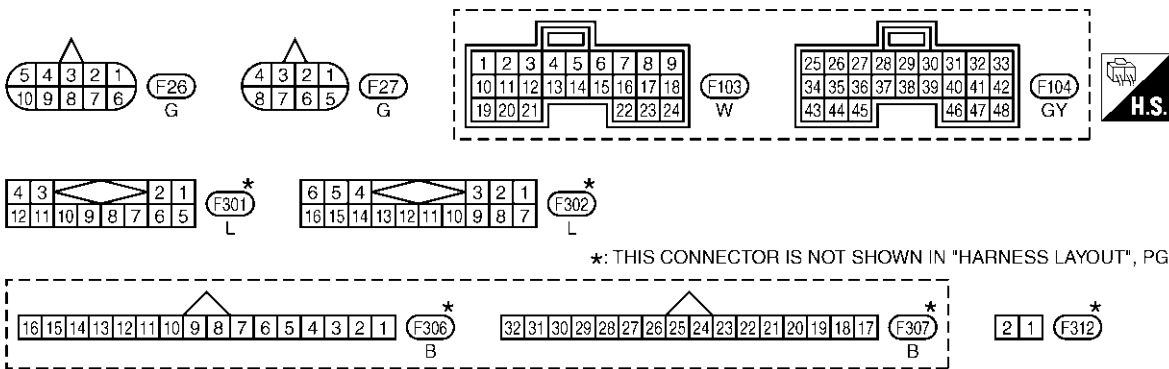
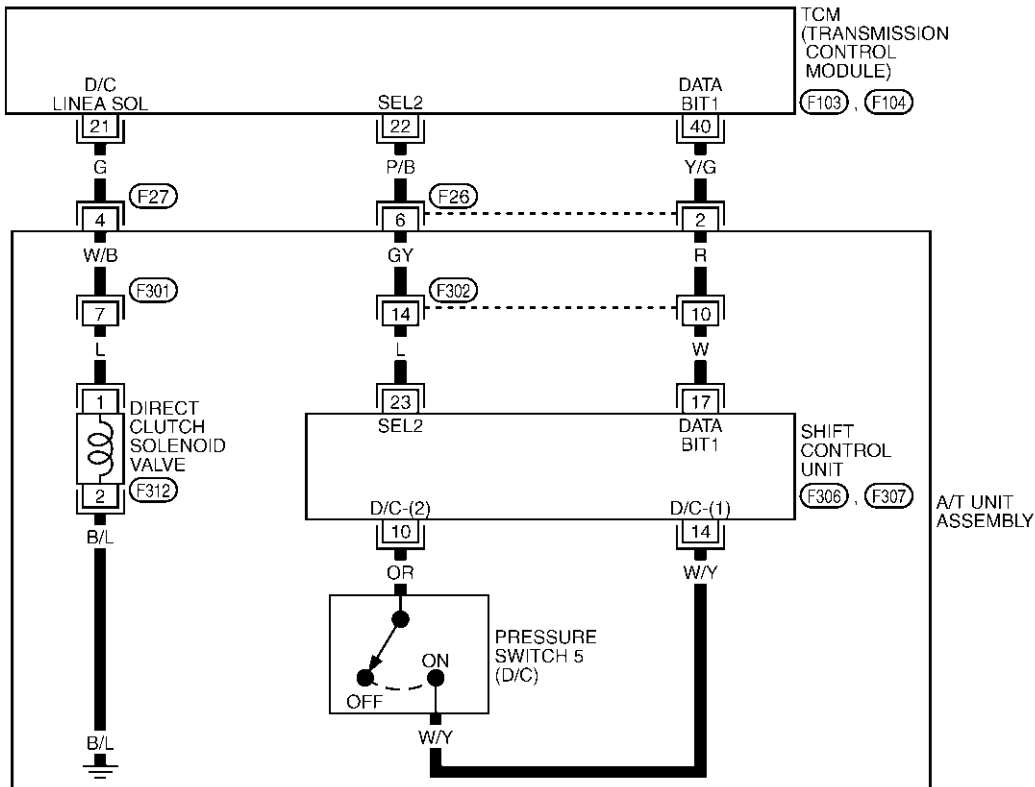
DTC P1764 DIRECT CLUTCH SOLENOID VALVE FUNCTION

Wiring Diagram — AT — D/CF

ECS00871

AT-D/CF-01

— : DETECTABLE LINE FOR DTC
 — : NON-DETECTABLE LINE FOR DTC



TCM terminal and data are reference value. Measured between each terminal and ground.

TCWM0095E

Terminal No.	Wire color	Item	Condition	Data (Approx.)	
21	G	Direct clutch solenoid valve	When vehicle cruises	When the solenoid valve is operating (1st gear or 5th gear)	More than 2V
				When the solenoid valve is not operating (2nd gear, 3rd gear or 4th gear)	0V
22	P/B	SEL2 (pressure switch 5)	-	-	
40	Y/G	DATA BIT1	-	-	

DTC P1764 DIRECT CLUTCH SOLENOID VALVE FUNCTION

ECS0087J

Diagnostic Procedure

1. CHECK INPUT SIGNALS

With CONSULT-II

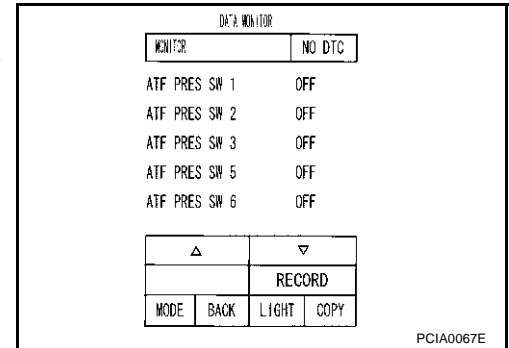
1. Start engine.
2. Select "ECU INPUT SIGNALS" or "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Accelerate vehicle in the "D" position (1st ⇒ 2nd gear), and confirm the ON/OFF actuation of the "ATF PRES SW 5".

With GST

Follow the procedure "With CONSULT-II".

OK or NG

- OK >> GO TO 4.
 NG >> GO TO 2.



2. CHECK HARNESS BETWEEN TCM AND A/T UNIT ASSEMBLY HARNESS CONNECTOR

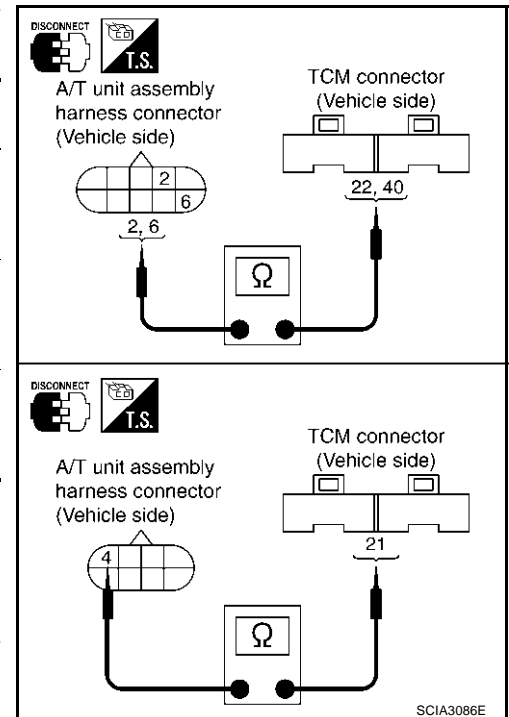
1. Turn ignition switch to "OFF" position.
2. Disconnect TCM connector.
3. Check continuity between A/T unit assembly harness connector and TCM connector.

Item	Connector No.	Terminal No. (Wire color)	Continuity
TCM	F103	21 (G)	Yes
A/T unit assembly harness connector	F27	4 (G)	
TCM	F103	22 (P/B)	Yes
A/T unit assembly harness connector	F26	6 (P/B)	
TCM	F104	40 (Y/G)	Yes
A/T unit assembly harness connector	F26	2 (Y/G)	

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

OK or NG

- OK >> GO TO 3.
 NG >> Repair open circuit or short to ground or short to power in harness or connectors.

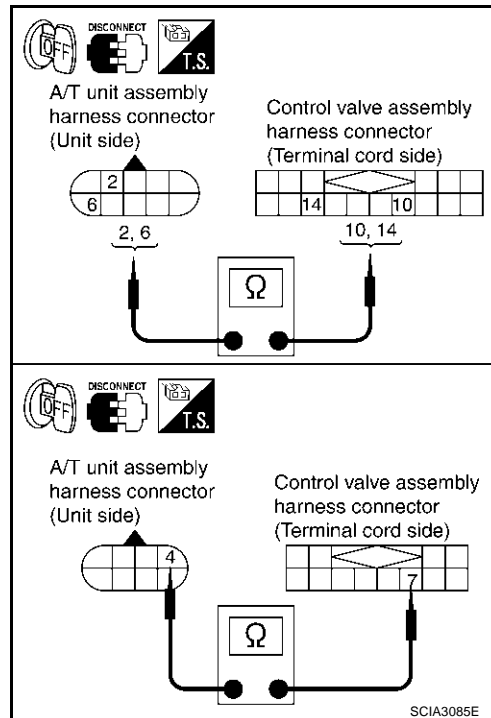


DTC P1764 DIRECT CLUTCH SOLENOID VALVE FUNCTION

3. CHECK TERMINAL CORD ASSEMBLY

1. Remove oil pan. Refer to [AT-290, "Control Valve Assembly"](#) .
2. Disconnect A/T unit assembly harness connector and control valve assembly harness connector.
3. Check continuity between A/T unit assembly harness connector and control valve assembly harness connector.

Item	Connector No.	Terminal No. (Wire color)	Continuity
A/T unit assembly harness connector	F26	2 (R)	Yes
Control valve assembly harness connector	F302	10 (R)	
A/T unit assembly harness connector	F26	6 (GY)	Yes
Control valve assembly harness connector	F302	14 (GY)	
A/T unit assembly harness connector	F27	4 (W/B)	Yes
Control valve assembly harness connector	F301	7 (W/B)	



4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

OK or NG

- OK >> Replace the control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#) .
 NG >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK DTC

Perform "DTC Confirmation Procedure". Refer to [AT-194, "DTC Confirmation Procedure"](#) .

OK or NG

- OK >> **INSPECTION END**
 NG >> GO TO 5.

5. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

- OK >> **INSPECTION END**
 NG >> Repair or replace damaged parts.

DTC P1767 HIGH AND LOW REVERSE CLUTCH SOLENOID VALVE

DTC P1767 HIGH AND LOW REVERSE CLUTCH SOLENOID VALVE

PFP:31940

Description

ECS0087K

High & low reverse clutch solenoid valve is controlled by the TCM in response to signals sent from the PNP switch, vehicle speed sensor and accelerator pedal position sensor (throttle position sensor). Gears will then be shifted to the optimum position.

On Board Diagnosis Logic

ECS0087L

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "HLR/C SOL/CIRC" with CONSULT-II or P1767 without CONSULT-II is detected under the following conditions.
 - When TCM detects an improper voltage drop when it tries to operate the solenoid valve.
 - When TCM detects as irregular by comparing target value with monitor value.

Possible Cause

ECS0087M

- Harness or connectors
(The solenoid circuit is open or shorted.)
- High & low reverse clutch solenoid valve

DTC Confirmation Procedure

ECS0087N

CAUTION:

Always drive vehicle at a safe speed.

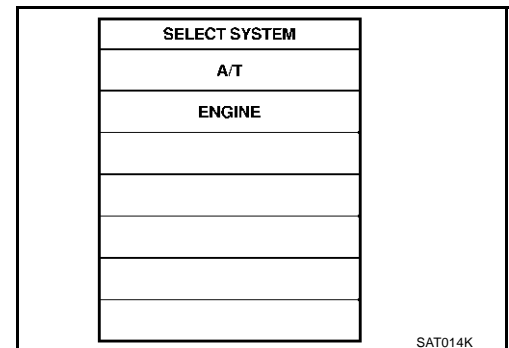
NOTE:

If "DTC Confirmation Procedure" has been previously conducted, always turn ignition switch "OFF" and wait at least 10 seconds before conducting the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

Ⓟ WITH CONSULT-II

1. Turn ignition switch to "ON" position. (Do not start engine.)
2. Select "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Start engine.
4. Maintain the following conditions for at least 5 consecutive seconds.
ACCELE POS: 1.5/8 - 2.0/8
Selector lever: "D" position
Gear position: 2nd ⇒ 3rd Gear (HLR/C ON/OFF)
5. If DTC is detected, go to [AT-200, "Diagnostic Procedure"](#).



Ⓢ WITH GST

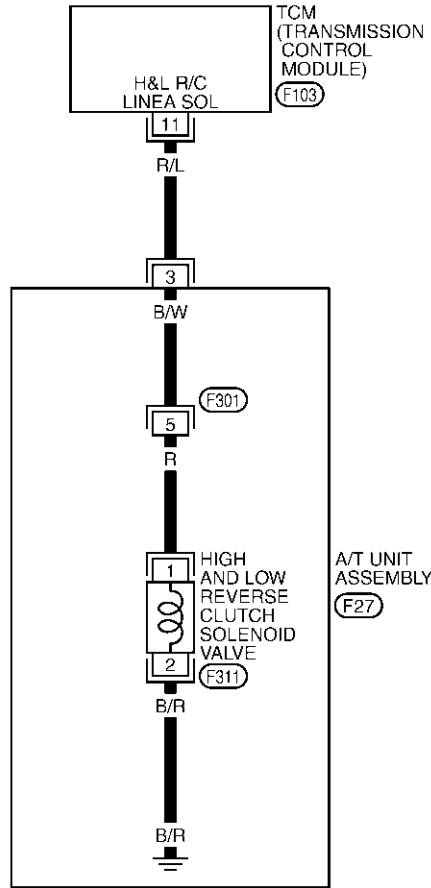
Follow the procedure "With CONSULT-II".

DTC P1767 HIGH AND LOW REVERSE CLUTCH SOLENOID VALVE

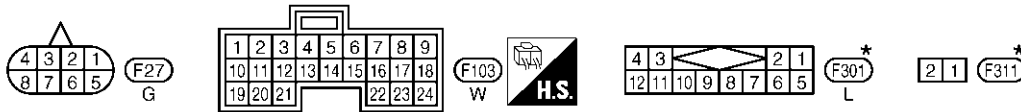
Wiring Diagram — AT — HLR/C

ECS00870

AT-HLR/C-01



: DETECTABLE LINE FOR DTC
 : NON-DETECTABLE LINE FOR DTC



*: THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT", PG SECTION.

TCM terminal and data are reference value. Measured between each terminal and ground.

TCWM0023E

Terminal No.	Wire color	Item	Condition		Data (Approx.)
11	R/L	High & low reverse clutch solenoid valve	When vehicle cruises	When the solenoid valve operating [6 km/h (4 MPH) or faster in 1st gear or 2nd gear]	More than 2V
				When the solenoid valve is not operating [6 km/h (4 MPH) or slower in 1st gear or 3rd, 4th, or 5th gear]	0V

DTC P1767 HIGH AND LOW REVERSE CLUTCH SOLENOID VALVE

ECS0087P

Diagnostic Procedure

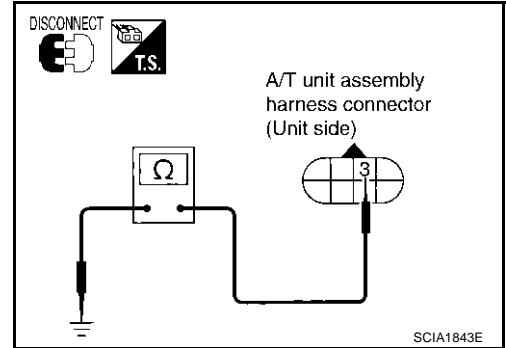
1. CHECK HIGH AND LOW REVERSE CLUTCH SOLENOID VALVE CIRCUIT

1. Turn ignition switch to "OFF" position.
2. Disconnect A/T unit assembly harness connector at the transmission right side.
3. Check the resistance between terminal and ground.

Solenoid valve	Connector No.	Terminal No. (Wire color)	Resistance (Approx.)
High and low reverse clutch solenoid valve	F27	3 (R/L) - Ground	3 - 9 Ω

OK or NG

- OK >> GO TO 4.
 NG >> GO TO 2.



2. CHECK TERMINAL CORD ASSEMBLY

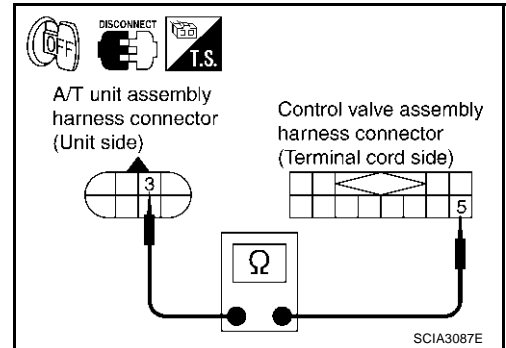
1. Remove oil pan. Refer to [AT-290, "Control Valve Assembly"](#).
2. Disconnect A/T unit assembly harness connector and control valve assembly harness connector.
3. Check continuity between A/T unit assembly harness connector and control valve assembly harness connector.

Item	Connector No.	Terminal No. (Wire color)	Continuity
A/T unit assembly harness connector	F27	3 (B/W)	Yes
Control valve assembly harness connector	F301	5 (B/W)	

4. If OK, check harness for short to ground and short to power.

OK or NG

- OK >> GO TO 3.
 NG >> Repair open circuit or short to ground or short to power in harness or connectors.



3. CHECK VALVE RESISTANCE

Check valve resistance

- Refer to [AT-202, "Component Inspection"](#).

OK or NG

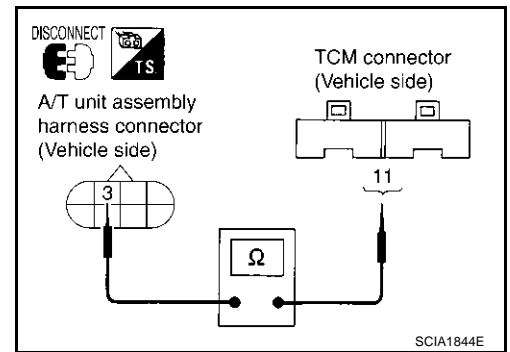
- OK >> GO TO 4.
 NG >> Replace the control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#).

DTC P1767 HIGH AND LOW REVERSE CLUTCH SOLENOID VALVE

4. CHECK POWER SOURCE CIRCUIT

1. Turn ignition switch to "OFF" position.
2. Disconnect TCM connector.
3. Check continuity between A/T unit assembly harness connector and TCM connector.

Item	Connector No.	Terminal No. (Wire color)	Continuity
TCM	F103	11 (R/L)	Yes
A/T unit assembly harness connector	F27	3 (R/L)	



4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

OK or NG

OK >> GO TO 5.

NG >> Repair open circuit or short to ground or short to power in harness or connectors.

5. CHECK DTC

Perform "DTC Confirmation Procedure". Refer to [AT-198, "DTC Confirmation Procedure"](#).

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 6.

6. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> **INSPECTION END**

NG >> Repair or replace damaged parts.

DTC P1767 HIGH AND LOW REVERSE CLUTCH SOLENOID VALVE

ECS00A35

Component Inspection

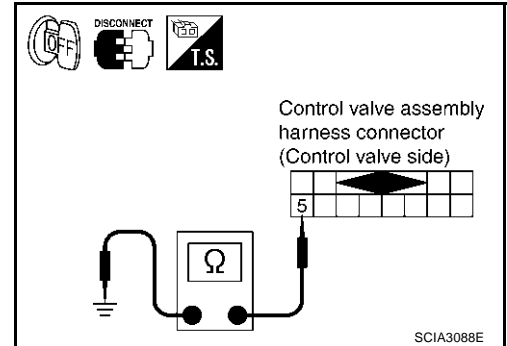
HIGH AND LOW REVERSE CLUTCH SOLENOID VALVE

Resistance check

1. Turn ignition switch "OFF".
2. Remove oil pan. Refer to [AT-290, "Control Valve Assembly"](#).
3. Disconnect control valve assembly harness connector.
4. Check resistance between terminal and ground.

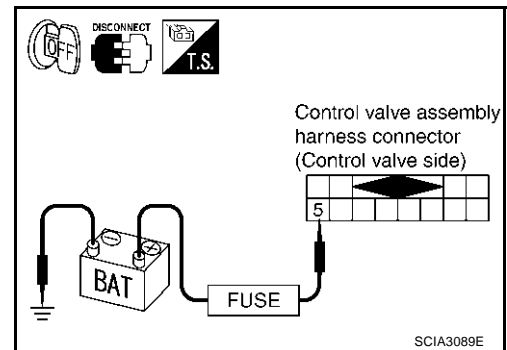
Solenoid Valve	Connector No.	Terminal No. (Wire color)	Resistance (Ω) (Approx.)
High and low reverse clutch solenoid valve	F301	5 (R) - Ground	3 - 9 Ω

5. If NG, replace control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#).



Operation check

- Check solenoid valve by listening for its operating sound while applying battery voltage to the terminal 5 and ground.



DTC P1769 HIGH AND LOW REVERSE CLUTCH SOLENOID VALVE FUNCTION

DTC P1769 HIGH AND LOW REVERSE CLUTCH SOLENOID VALVE FUNCTION

PFPP:31940

Description

ECS0087Q

- High & low reverse clutch solenoid valve is controlled by the TCM in response to signals sent from the PNP switch, vehicle speed sensor and accelerator pedal position sensor (throttle position sensor). Gears will then be shifted to the optimum position.
- This is not only caused by electrical malfunction (circuits open or shorted) but also by mechanical malfunction such as control valve sticking, improper solenoid valve operation.

On Board Diagnosis Logic

ECS0087R

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "HLR/C SOL FNCTN" with CONSULT-II or P1769 without CONSULT-II is detected under the following conditions.
 - When TCM detects that actual gear ratio is irregular, and relation between gear position and condition of ATF pressure switch 6 is irregular during depressing accelerator pedal. (Other than during shift change)
 - When TCM detects that relation between gear position and condition of ATF pressure switch 6 is irregular during releasing accelerator pedal. (Other than during shift change)

Possible Cause

ECS0087S

- Harness or connectors
(The solenoid and switch circuits are open or shorted.)
- High & low reverse clutch solenoid valve
- ATF pressure switch 6

DTC Confirmation Procedure

ECS0087T

CAUTION:

Always drive vehicle at a safe speed.

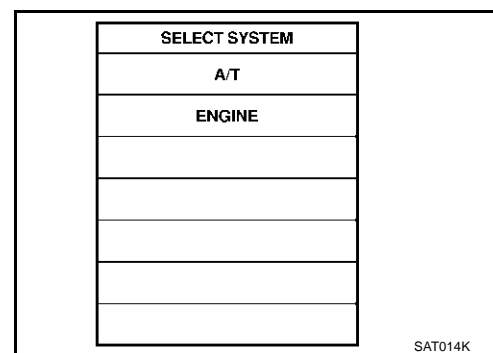
NOTE:

If "DTC Confirmation Procedure" has been previously conducted, always turn ignition switch "OFF" and wait at least 10 seconds before conducting the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

Ⓟ WITH CONSULT-II

1. Start engine.
2. Accelerate vehicle to maintain the following condition.
ACCELE POS: 1.5/8 - 2.0/8
Selector lever: "D" position
Gear position: 2nd ⇒ 3rd Gear (HLR/C ON/OFF)
3. Perform step "2" again.
4. Turn ignition switch to "OFF" position, then perform step "1" to "3" again.
5. Check "SELF-DIAG RESULTS" mode for "A/T" with CONSULT-II. If DTC (P1769) is detected, refer to [AT-205, "Diagnostic Procedure"](#).



- If DTC (P1767) is detected, go to [AT-200, "Diagnostic Procedure"](#).
- If DTC (P1846) is detected, go to [AT-234, "Diagnostic Procedure"](#).

Ⓢ WITH GST

Follow the procedure "With CONSULT-II".

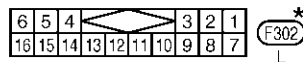
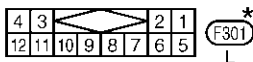
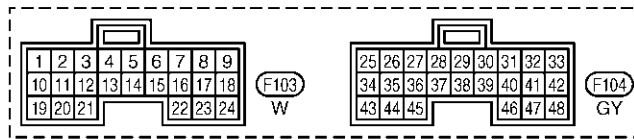
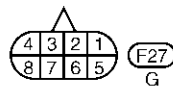
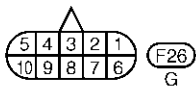
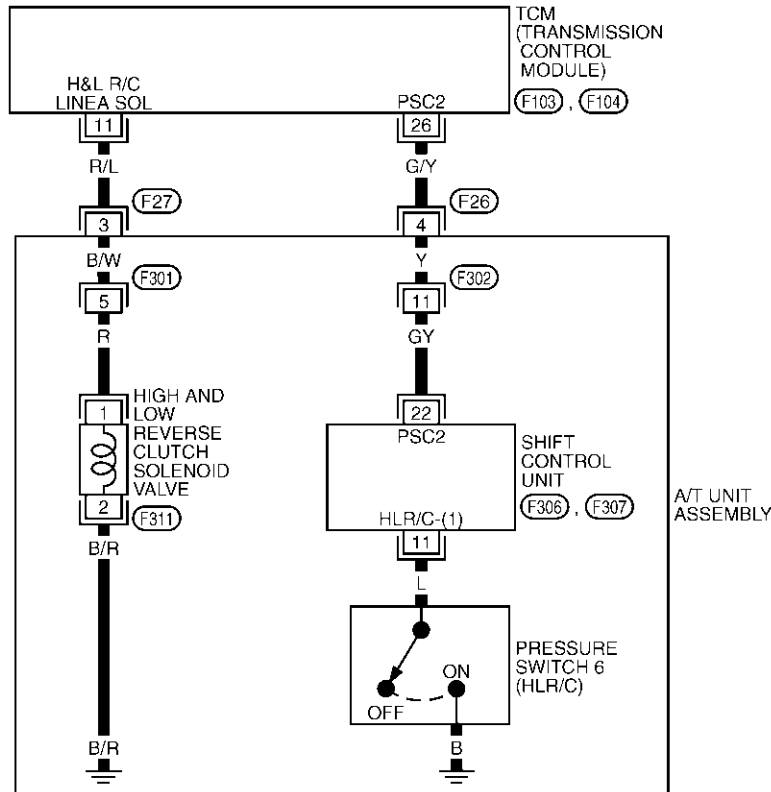
DTC P1769 HIGH AND LOW REVERSE CLUTCH SOLENOID VALVE FUNCTION

Wiring Diagram — AT — HLR/CF

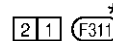
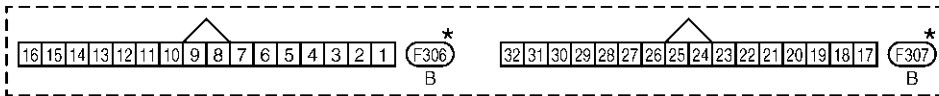
ECS0087U

AT-HLR/CF-01

: DETECTABLE LINE FOR DTC
 : NON-DETECTABLE LINE FOR DTC



*: THIS CONNECTOR IS NOT SHOWN IN "HARNES LAYOUT", PG SECTION.



TCM terminal and data are reference value. Measured between each terminal and ground.

TCWM0096E

Terminal No.	Wire color	Item	Condition	Data (Approx.)
11	R/L	High & low reverse clutch solenoid valve	When the solenoid valve operating [6 km/h (4 MPH) or faster in 1st gear or 2nd gear]	More than 2V
			When the solenoid valve is not operating [6 km/h (4 MPH) or slower in 1st gear or 3rd, 4th, or 5th gear]	0V
26	G/Y	PSC2 (pressure switch 6)	When high & low reverse clutch solenoid valve "ON".	0V
			When high & low reverse clutch solenoid valve "OFF".	Battery voltage

DTC P1769 HIGH AND LOW REVERSE CLUTCH SOLENOID VALVE FUNCTION

ECS0087V

Diagnostic Procedure

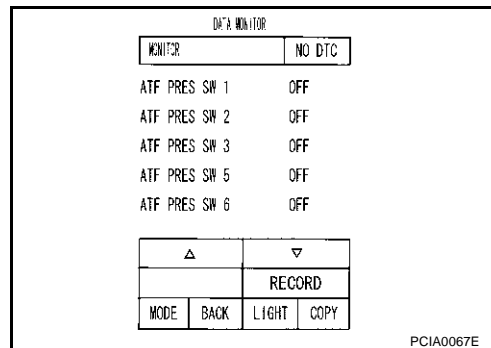
1. CHECK INPUT SIGNALS (WITH CONSULT-II)

With CONSULT-II

1. Start engine.
2. Select "ECU INPUT SIGNALS" or "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Accelerate vehicle in the "D" position (2nd ⇒ 3rd gear), and confirm the ON/OFF actuation of the "ATF PRES SW 6".

OK or NG

- OK >> GO TO 5.
 NG >> GO TO 3.



2. CHECK INPUT SIGNALS (WITHOUT CONSULT-II)

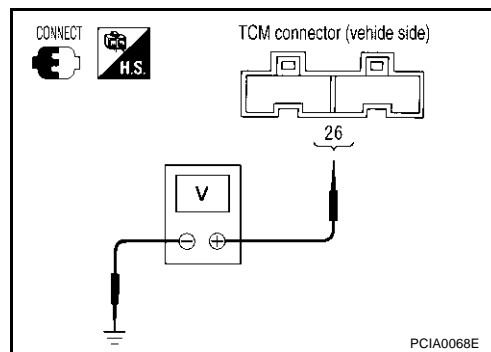
Without CONSULT-II

1. Start engine.
2. Accelerate vehicle in the "D" position (2nd ⇒ 3rd gear).

Solenoid valve		Connector No.	Terminal No. (Wire color)	Voltage
High and low reverse clutch solenoid valve	OFF	F104	26 (G/Y) - Ground	Battery voltage
	ON			Approx. 0 V

OK or NG

- OK >> GO TO 5.
 NG >> GO TO 3.



3. CHECK HARNESS BETWEEN TCM AND A/T UNIT ASSEMBLY HARNESS CONNECTOR

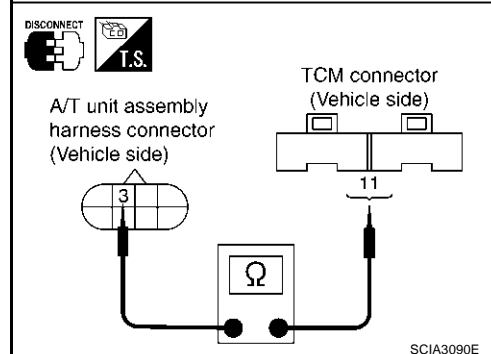
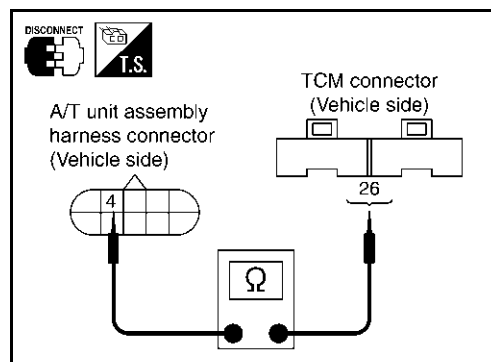
1. Turn ignition switch to "OFF" position.
2. Disconnect TCM connector.
3. Check continuity between A/T unit assembly harness connector and TCM connector.

Item	Connector No.	Terminal No. (Wire color)	Continuity
TCM	F103	11 (R/L)	Yes
A/T unit assembly harness connector	F27	3 (R/L)	
TCM	F104	26 (G/Y)	Yes
A/T unit assembly harness connector	F26	4 (G/Y)	

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

OK or NG

- OK >> GO TO 4.
 NG >> Repair open circuit or short to ground or short to power in harness or connectors.



DTC P1769 HIGH AND LOW REVERSE CLUTCH SOLENOID VALVE FUNCTION

4. CHECK TERMINAL CORD ASSEMBLY

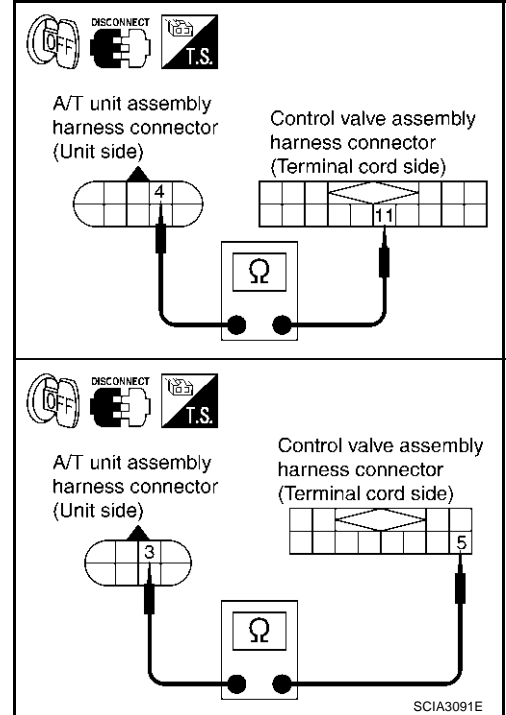
1. Remove oil pan. Refer to [AT-290, "Control Valve Assembly"](#) .
2. Disconnect A/T unit assembly harness connector and control valve assembly harness connector.
3. Check continuity between A/T unit assembly harness connector and control valve assembly harness connector.

Item	Connector No.	Terminal No. (Wire color)	Continuity
A/T unit assembly harness connector	F26	4 (Y)	Yes
Control valve assembly harness connector	F302	11 (Y)	
A/T unit assembly harness connector	F27	3 (B/W)	Yes
Control valve assembly harness connector	F301	5 (B/W)	

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

OK or NG

- OK >> Replace the control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#) .
- NG >> Repair open circuit or short to ground or short to power in harness or connectors.



5. CHECK DTC

Perform "DTC Confirmation Procedure". Refer to [AT-203, "DTC Confirmation Procedure"](#) .

OK or NG

- OK >> **INSPECTION END**
- NG >> GO TO 6.

6. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

- OK >> **INSPECTION END**
- NG >> Repair or replace damaged parts.

DTC P1772 LOW COAST BRAKE SOLENOID VALVE

DTC P1772 LOW COAST BRAKE SOLENOID VALVE

PFP:31940

Description

ECS0087W

Low coast brake solenoid valve is turned "ON" or "OFF" by the TCM in response to signals sent from the PNP switch, vehicle speed sensor and accelerator pedal position sensor (throttle position sensor). Gears will then be shifted to the optimum position.

On Board Diagnosis Logic

ECS0087X

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "LC/B SOLENOID/CIRC" with CONSULT-II or P1772 without CONSULT-II is detected when TCM detects an improper voltage drop when it tries to operate the solenoid valve.

Possible Cause

ECS0087Y

- Harness or connectors
(The solenoid circuit is open or shorted.)
- Low coast brake solenoid valve

DTC Confirmation Procedure

ECS0087Z

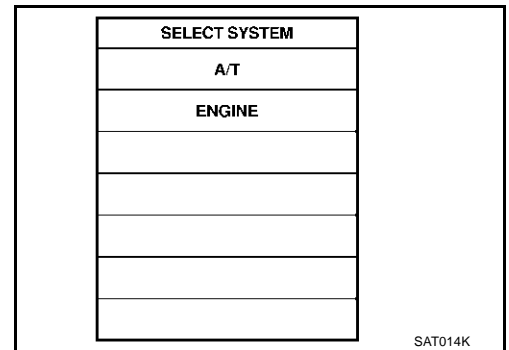
NOTE:

If "DTC Confirmation Procedure" has been previously conducted, always turn ignition switch "OFF" and wait at least 10 seconds before conducting the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

Ⓟ WITH CONSULT-II

1. Turn ignition switch to "ON" position. (Do not start engine.)
2. Select "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Start engine.
4. Maintain the following conditions for at least 5 consecutive seconds.
Selector lever: "M" position
Gear position: "M1-1st" or "M2-2nd" gear (LC/B ON/OFF)
5. If DTC is detected, go to [AT-209, "Diagnostic Procedure"](#).



Ⓟ WITH GST

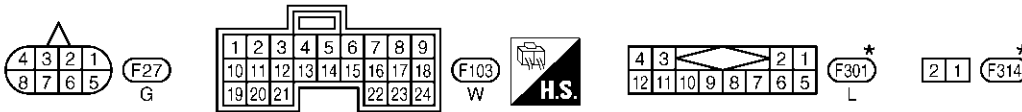
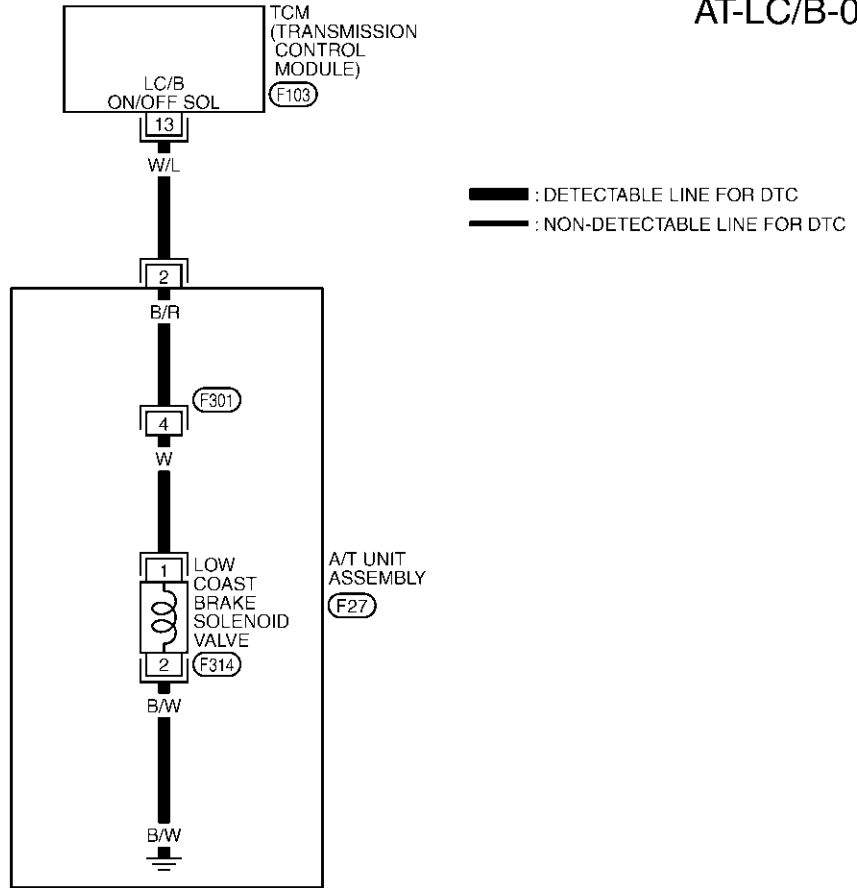
Follow the procedure "With CONSULT-II".

DTC P1772 LOW COAST BRAKE SOLENOID VALVE

Wiring Diagram — AT — LC/B

ECS00880

AT-LC/B-01



*: THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT", PG SECTION.

TCM terminal and data are reference value. Measured between each terminal and ground.

TCWM0025E

Terminal No.	Wire color	Item	Condition		Data (Approx.)
13	W/L	Low coast brake solenoid valve	When vehicle cruises	When the solenoid valve is operating (when running in M1-1 gear or M2-2 gear)	Battery voltage
				When the solenoid valve is not operating (when running in "D")	0V

DTC P1772 LOW COAST BRAKE SOLENOID VALVE

ECS00881

Diagnostic Procedure

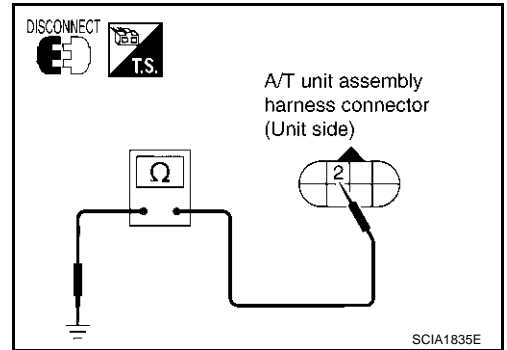
1. CHECK LOW COAST BRAKE SOLENOID VALVE CIRCUIT

1. Turn ignition switch to "OFF" position.
2. Disconnect A/T unit assembly harness connector at the transmission right side.
3. Check the resistance between terminal and ground.

Solenoid valve	Connector No.	Terminal No. (Wire color)	Resistance (Approx.)
Low coast brake solenoid valve	F27	2 (W/L) - Ground	20 - 40 Ω

OK or NG

- OK >> GO TO 4.
 NG >> GO TO 2.



2. CHECK TERMINAL CORD ASSEMBLY

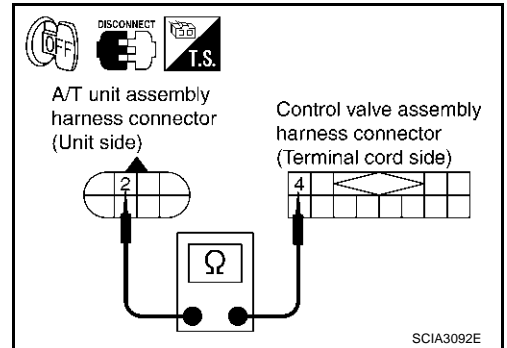
1. Remove oil pan. Refer to [AT-290, "Control Valve Assembly"](#).
2. Disconnect A/T unit assembly harness connector and control valve assembly harness connector.
3. Check continuity between A/T unit assembly harness connector and control valve assembly harness connector.

Item	Connector No.	Terminal No. (Wire color)	Continuity
A/T unit assembly harness connector	F27	2 (B/R)	Yes
Control valve assembly harness connector	F301	4 (B/R)	

4. If OK, check harness for short to ground and short to power.

OK or NG

- OK >> GO TO 3.
 NG >> Repair open circuit or short to ground or short to power in harness or connectors.



3. CHECK VALVE RESISTANCE

Check valve resistance

- Refer to [AT-211, "Component Inspection"](#).

OK or NG

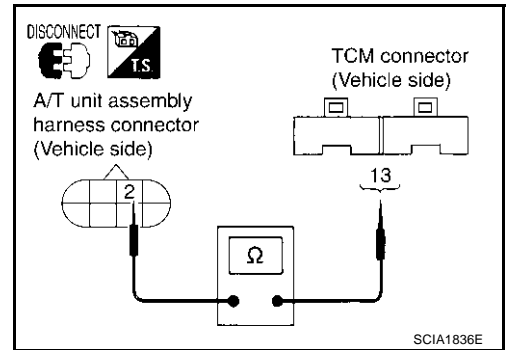
- OK >> GO TO 4.
 NG >> Replace the control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#).

DTC P1772 LOW COAST BRAKE SOLENOID VALVE

4. CHECK POWER SOURCE CIRCUIT

1. Turn ignition switch to "OFF" position.
2. Disconnect TCM connector.
3. Check continuity between A/T unit assembly harness connector and TCM connector.

Item	Connector No.	Terminal No. (Wire color)	Continuity
TCM	F103	13 (W/L)	Yes
A/T unit assembly harness connector	F27	2 (W/L)	



4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

OK or NG

OK >> GO TO 5.

NG >> Repair open circuit or short to ground or short to power in harness or connectors.

5. CHECK DTC

Perform "DTC Confirmation Procedure". Refer to [AT-207, "DTC Confirmation Procedure"](#).

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 6.

6. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> **INSPECTION END**

NG >> Repair or replace damaged parts.

DTC P1772 LOW COAST BRAKE SOLENOID VALVE

ECS00A36

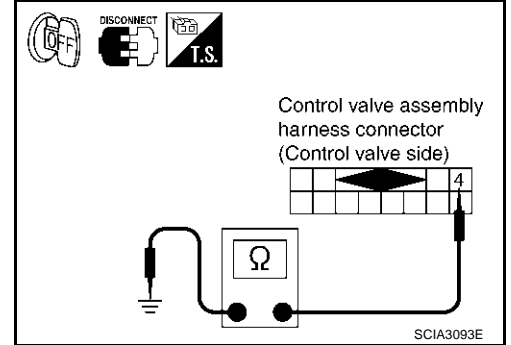
Component Inspection LOW COAST BRAKE SOLENOID VALVE

Resistance check

1. Turn ignition switch "OFF".
2. Remove oil pan. Refer to [AT-290, "Control Valve Assembly"](#) .
3. Disconnect control valve assembly harness connector.
4. Check resistance between terminal and ground.

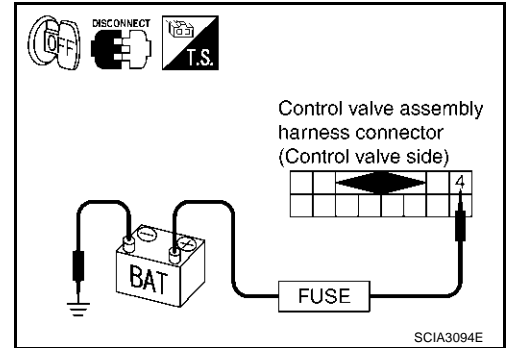
Solenoid Valve	Connector No.	Terminal No. (Wire color)	Resistance (Ω) (Approx.)
Low coast brake solenoid valve	F301	4 (W) - Ground	20 - 40 Ω

5. If NG, replace control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#) .



Operation check

- Check solenoid valve by listening for its operating sound while applying battery voltage to the terminal 4 and ground.



A
B
AT
D
E
F
G
H
I
J
K
L
M

DTC P1774 LOW COAST BRAKE SOLENOID VALVE FUNCTION

DTC P1774 LOW COAST BRAKE SOLENOID VALVE FUNCTION

PFP:31940

Description

ECS00882

- Low coast brake solenoid valve is turned “ON” or “OFF” by the TCM in response to signals sent from the PNP switch, vehicle speed sensor and accelerator pedal position sensor (throttle position sensor). Gears will then be shifted to the optimum position.
- This is not only caused by electrical malfunction (circuits open or shorted) but also by mechanical malfunction such as control valve sticking, improper solenoid valve operation.

On Board Diagnosis Logic

ECS00883

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “LC/B SOLENOID FNCT” with CONSULT-II or P1774 without CONSULT-II is detected under the following conditions.
 - When TCM detects that actual gear ratio is irregular, and relation between gear position and condition of ATF pressure switch 2 is irregular during depressing accelerator pedal. (Other than during shift change)
 - When TCM detects that relation between gear position and condition of ATF pressure switch 2 is irregular during releasing accelerator pedal. (Other than during shift change)

Possible Cause

ECS00884

- Harness or connectors
(The solenoid and switch circuits are open or shorted.)
- Low coast brake solenoid valve
- ATF pressure switch 2

DTC Confirmation Procedure

ECS00885

CAUTION:

Always drive vehicle at a safe speed.

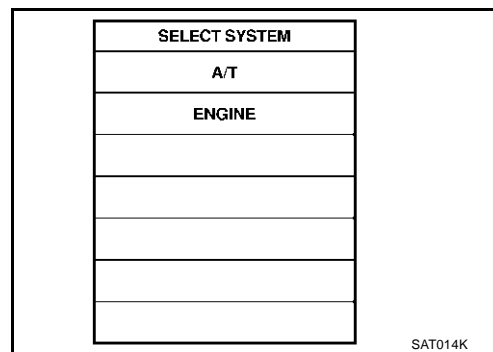
NOTE:

If “DTC Confirmation Procedure” has been previously conducted, always turn ignition switch “OFF” and wait at least 10 seconds before conducting the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

WITH CONSULT-II

1. Start engine.
2. Accelerate vehicle to maintain the following condition.
Selector lever: “M” position
Gear position: “M1-1st” or “M2-2nd” gear (LC/B ON/OFF)
3. Perform step “2” again.
4. Turn ignition switch to “OFF” position, then perform step “1” to “3” again.
5. Check “SELF-DIAG RESULTS” mode for “A/T” with CONSULT-II. If DTC (P1774) is detected, refer to [AT-214, "Diagnostic Procedure"](#).
If DTC (P1772) is detected, go to [AT-209, "Diagnostic Procedure"](#).



WITH GST

Follow the procedure “With CONSULT-II”.

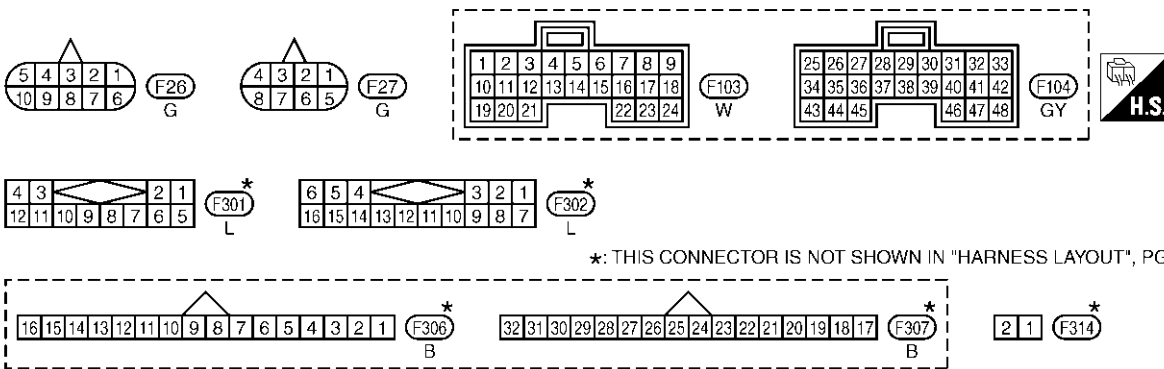
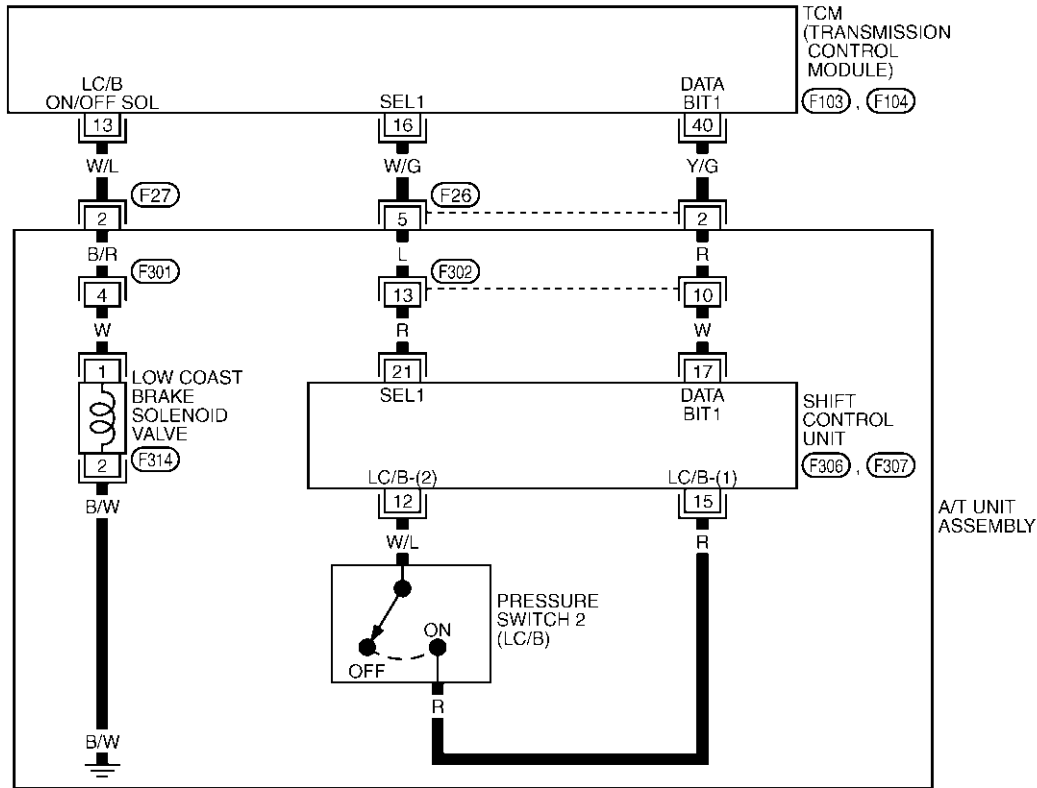
DTC P1774 LOW COAST BRAKE SOLENOID VALVE FUNCTION

Wiring Diagram — AT — LC/BF

ECS00886

AT-LC/BF-01

— : DETECTABLE LINE FOR DTC
 — : NON-DETECTABLE LINE FOR DTC



TCM terminals and data are reference value. Measured between each terminal and ground.

TCWM0097E

Terminal No.	Wire color	Item	Condition	Data (Approx.)
13	W/L	Low coast brake solenoid valve	When vehicle cruises	Battery voltage
			When the solenoid valve is not operating (when running in "D")	0V
16	W/G	SEL1 (pressure switch 2)	-	-
40	Y/G	DATA BIT1	-	-

DTC P1774 LOW COAST BRAKE SOLENOID VALVE FUNCTION

ECS00887

Diagnostic Procedure

1. CHECK INPUT SIGNALS

With CONSULT-II

1. Start engine.
2. Select "ECU INPUT SIGNALS" or "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Accelerate vehicle in the manual mode ("M1-1st" or "M2-2nd" gear), and confirm the ON/OFF actuation of the "ATF PRES SW 2".

With GST

Follow the procedure "With CONSULT-II".

OK or NG

- OK >> GO TO 4.
NG >> GO TO 2.

DATA MONITOR	
MONITOR	NO. DTC
ATF PRES SW 1	OFF
ATF PRES SW 2	OFF
ATF PRES SW 3	OFF
ATF PRES SW 5	OFF
ATF PRES SW 6	OFF

Δ	▽
RECORD	
MODE	BACK
LIGHT	COPY

PCIA0067E

2. CHECK HARNESS BETWEEN TCM AND A/T UNIT ASSEMBLY HARNESS CONNECTOR

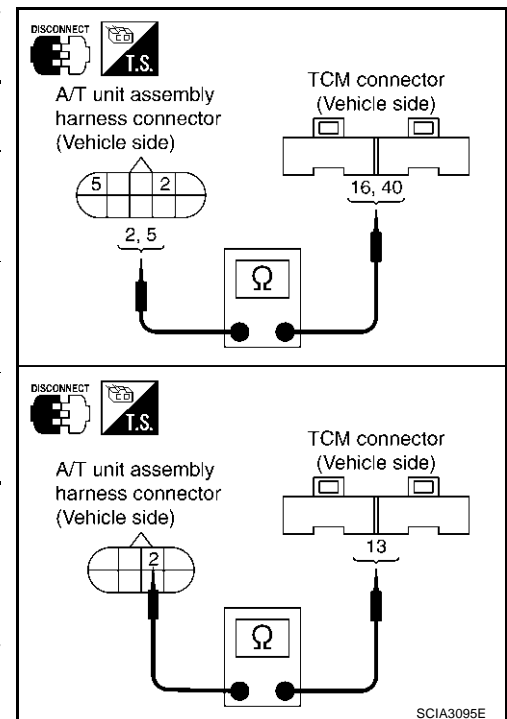
1. Turn ignition switch to "OFF" position.
2. Disconnect TCM connector.
3. Check continuity between A/T unit assembly harness connector and TCM connector.

Item	Connector No.	Terminal No. (Wire color)	Continuity
TCM	F103	13 (W/L)	Yes
A/T unit assembly harness connector	F27	2 (W/L)	
TCM	F103	16 (W/G)	Yes
A/T unit assembly harness connector	F26	5 (W/G)	
TCM	F104	40 (Y/G)	Yes
A/T unit assembly harness connector	F26	2 (Y/G)	

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

OK or NG

- OK >> GO TO 3.
NG >> Repair open circuit or short to ground or short to power in harness or connectors.

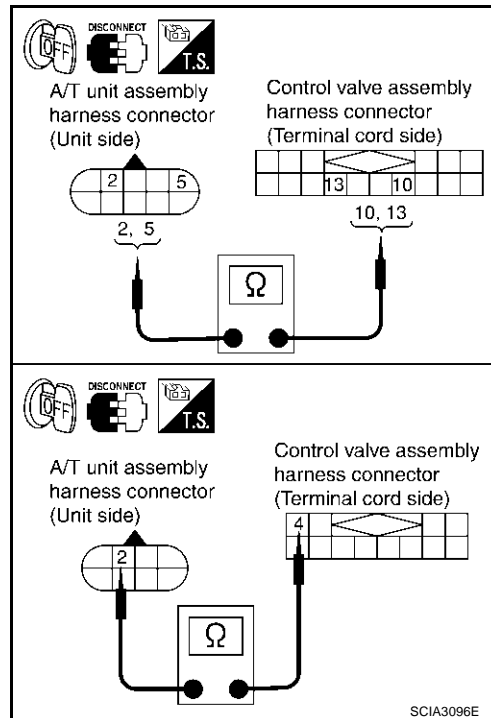


DTC P1774 LOW COAST BRAKE SOLENOID VALVE FUNCTION

3. CHECK TERMINAL CORD ASSEMBLY

1. Remove oil pan. Refer to [AT-290, "Control Valve Assembly"](#) .
2. Disconnect A/T unit assembly harness connector and control valve assembly harness connector.
3. Check continuity between A/T unit assembly harness connector and control valve assembly harness connector.

Item	Connector No.	Terminal No. (Wire color)	Continuity
A/T unit assembly harness connector	F26	2 (R)	Yes
Control valve assembly harness connector	F302	10 (R)	
A/T unit assembly harness connector	F26	5 (L)	Yes
Control valve assembly harness connector	F302	13 (L)	
A/T unit assembly harness connector	F27	2 (B/R)	Yes
Control valve assembly harness connector	F301	4 (B/R)	



4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

OK or NG

- OK >> Replace the control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#) .
 NG >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK DTC

Perform "DTC Confirmation Procedure". Refer to [AT-212, "DTC Confirmation Procedure"](#) .

OK or NG

- OK >> **INSPECTION END**
 NG >> GO TO 5.

5. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

- OK >> **INSPECTION END**
 NG >> Repair or replace damaged parts.

DTC P1815 MANUAL MODE SWITCH

DTC P1815 MANUAL MODE SWITCH

PFP:34901

Description

ECS00888

When an impossible pattern of switch signals is detected, this is judged to be an irregularity.

CONSULT-II Reference Value in Data Monitor Mode

ECS00889

Monitor Item	Condition	Reference Value
MANU MODE SW [ON - OFF]	Manual shift gate position (neutral)	ON
	Other than the above	OFF
NON M-MODE SW [ON - OFF]	Manual shift gate position	OFF
	Other than the above	ON
UP SW LEVER [ON - OFF]	Select lever: + side	ON
	Other than the above	OFF
DOWN SW LEVER [ON - OFF]	Select lever: - side	ON
	Other than the above	OFF

On Board Diagnosis Logic

ECS0088A

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code "MANU MODE SW/CIR" with CONSULT-II is detected when TCM monitors Manual mode, Non manual mode, Up or Down switch signal, and detects as irregular when impossible input pattern occurs 1 second or more.

Possible Cause

ECS0088B

- Harness or connectors (These switches circuit is open or shorted.)
- Mode select switch (Into control device)
- Position select switch (Into control device)

DTC Confirmation Procedure

ECS0088C

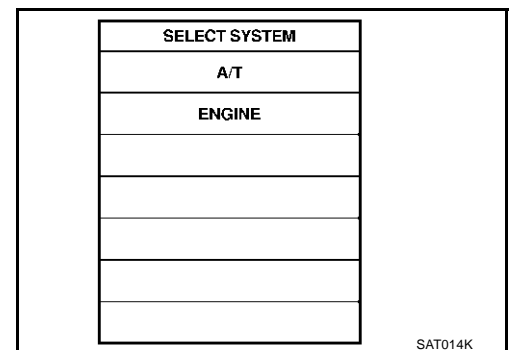
NOTE:

If "DTC Confirmation Procedure" has been previously conducted, always turn ignition switch "OFF" and wait at least 10 seconds before conducting the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

WITH CONSULT-II

1. Turn ignition switch to "ON" position. (Do not start engine.)
2. Select "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Start engine.
4. Move selector lever to "M" position for at least 2 consecutive seconds.
5. If DTC is detected, go to [AT-218, "Diagnostic Procedure"](#).

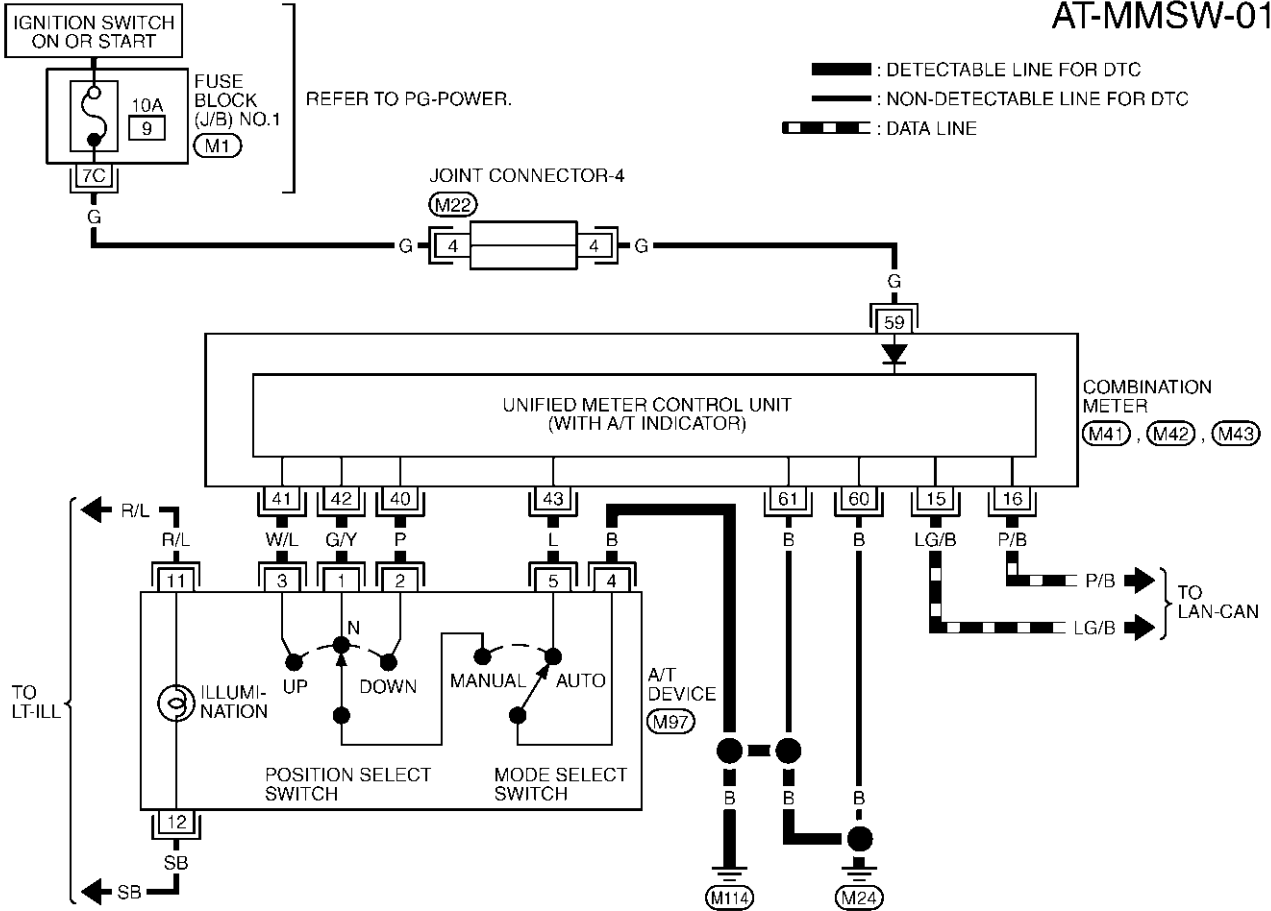


DTC P1815 MANUAL MODE SWITCH

Wiring Diagram — AT — MMSW

ECS0088D

AT-MMSW-01



REFER TO THE FOLLOWING.
 (M1) -FUSE BLOCK-JUNCTION BOX (J/B) NO.1

A
B
AT
D
E
F
G
H
I
J
K
L
M

DTC P1815 MANUAL MODE SWITCH

EC50088E

Diagnostic Procedure

1. CHECK MANUAL MODE SWITCH CIRCUIT (WITH CONSULT-II)

Ⓐ With CONSULT-II

1. Turn ignition switch to "ON" position. (Do not start engine.)
2. Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Read out ON/OFF switching action of the "MANU MODE SW", "NON M-MODE SW", "UP SW LEVER", "DOWN SW LEVER".

DATA MONITOR	
MONITOR	NO. DTC
MANU MODE SW	OFF
NON M-MODE SW	ON
UP SW LEVER	OFF
DOWN SW LEVER	OFF

△			
RECORD			
MODE	BACK	LIGHT	COPY

PCIA0064E

OK or NG

- OK >> GO TO 4.
NG >> GO TO 3.

2. CHECK MANUAL MODE SWITCH CIRCUIT (WITHOUT CONSULT-II)

Ⓑ Without CONSULT-II

Drive vehicle in the manual mode, and confirm that the actual gear position and the meter's indication of the position mutually coincide when the selector lever is shifted to the "+ (up)" or "- (down)" side (1st ⇔ 5th gear).

OK or NG

- OK >> GO TO 4.
NG >> GO TO 3.

3. DETECT MALFUNCTIONING ITEM

Check the following items.

- Power supply. Refer to [DI-7, "COMBINATION METERS"](#) .
- Manual mode switch. Refer to [AT-219, "Component Inspection"](#) .
- Pin terminals for damage or loose connection with harness connector.
- Open circuit or short to ground or short to power in harness or connector for A/T device (manual mode switch).

OK or NG

- OK >> GO TO 4
NG >> Repair or replace damaged parts.

4. CHECK DTC

Perform DTC confirmation procedure. Refer to [AT-216, "DTC Confirmation Procedure"](#) .

OK or NG

- OK >> **INSPECTION END**
NG >> Replace the control device assembly.

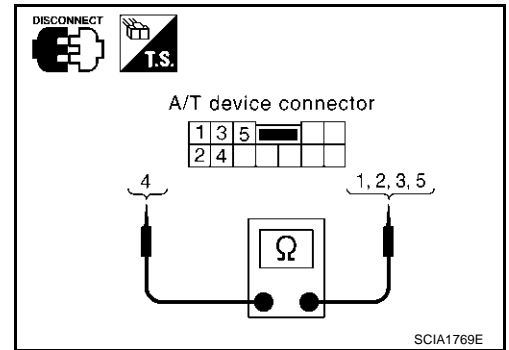
DTC P1815 MANUAL MODE SWITCH

ECS0088F

Component Inspection MANUAL MODE SWITCH

Check continuity between terminals.

Item	Position	Connector No.	Terminal No. (Unit side)	Continuity
Manual mode (select) switch	Auto	M97	4 - 5	Yes
	Manual		1 - 4	
UP switch	Up		3 - 4	
DOWN switch	Down		2 - 4	



Position Indicator Lamp DIAGNOSTIC PROCEDURE

ECS0088G

1. CHECK INPUT SIGNALS (WITH CONSULT-II)

With CONSULT-II

- Start engine.
- Select "MAIN SIGNALS" in "DATA MONITOR" mode for A/T with CONSULT-II and read out the value of "GEAR".
- Drive vehicle in the manual mode, and confirm that the actual gear position and the meter's indication of the position mutually coincide when the select lever is shifted to the "+ (up)" or "- (down)" side (1st ⇔ 5th gear).

OK or NG

- OK >> **INSPECTION END**
 NG >> Check the following items.

Position Indicator Lamp Symptom Chart

Items	Presumed location of trouble
The actual gear position does not change, or shifting into the manual mode is not possible (no gear shifting in the manual mode possible). The position indicator lamp is not indicated.	Manual mode switch Refer to AT-216, "DTC P1815 MANUAL MODE SWITCH" . A/T main system (Fail-safe function actuated) ● Refer to AT-87, "SELF-DIAGNOSTIC PROCEDURE (WITH CONSULT-II)" .
The actual gear position changes, but the position indicator lamp is not indicated.	Execute the self-diagnosis function. ● Refer to AT-87, "SELF-DIAGNOSTIC PROCEDURE (WITH CONSULT-II)" .
The actual gear position and the indication on the position indicator lamp do not coincide.	Execute the self-diagnosis function. ● Refer to AT-87, "SELF-DIAGNOSTIC PROCEDURE (WITH CONSULT-II)" .
Only a specific position or positions is/are not indicated on the position indicator lamp.	Check the combination meter. Refer to DI-7, "COMBINATION METERS" .

DTC P1841 ATF PRESSURE SWITCH 1

DTC P1841 ATF PRESSURE SWITCH 1

PFP:25240

Description

ECS0088H

Fail-safe function to detect front brake clutch solenoid valve condition.

On Board Diagnosis Logic

ECS0088I

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code “ATF PRES SW 1/CIRC” with CONSULT-II is detected, when TCM detects that actual gear ratio is normal, and relation between gear position and condition of ATF pressure switch 1 is irregular during depressing accelerator pedal. (Other than during shift change)

Possible Cause

ECS0088J

- ATF pressure switch 1
- Harness or connectors
(The switch circuit is open or shorted.)

DTC Confirmation Procedure

ECS0088K

CAUTION:

Always drive vehicle at a safe speed.

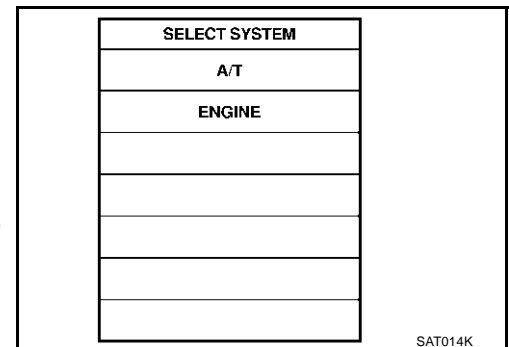
NOTE:

If “DTC Confirmation Procedure” has been previously conducted, always turn ignition switch “OFF” and wait at least 10 seconds before conducting the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

④ WITH CONSULT-II

1. Start engine.
2. Accelerate vehicle to maintain the following condition.
ACCELE POS: 1.5/8 - 2.0/8
Selector lever: “D” position
Gear position: 3rd ⇒ 4th Gear (FR/B ON/OFF)
3. Perform step “2” again.
4. Turn ignition switch to “OFF” position, then perform step “1” to “3” again.
5. Check “SELF-DIAG RESULTS” mode for “A/T” with CONSULT-II.
If DTC (P1841) is detected, go to [AT-222, "Diagnostic Procedure"](#) .
If DTC (P1757) is detected, go to [AT-182, "Diagnostic Procedure"](#) .

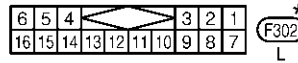
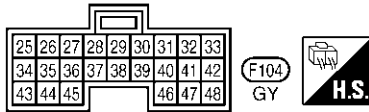
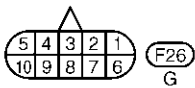
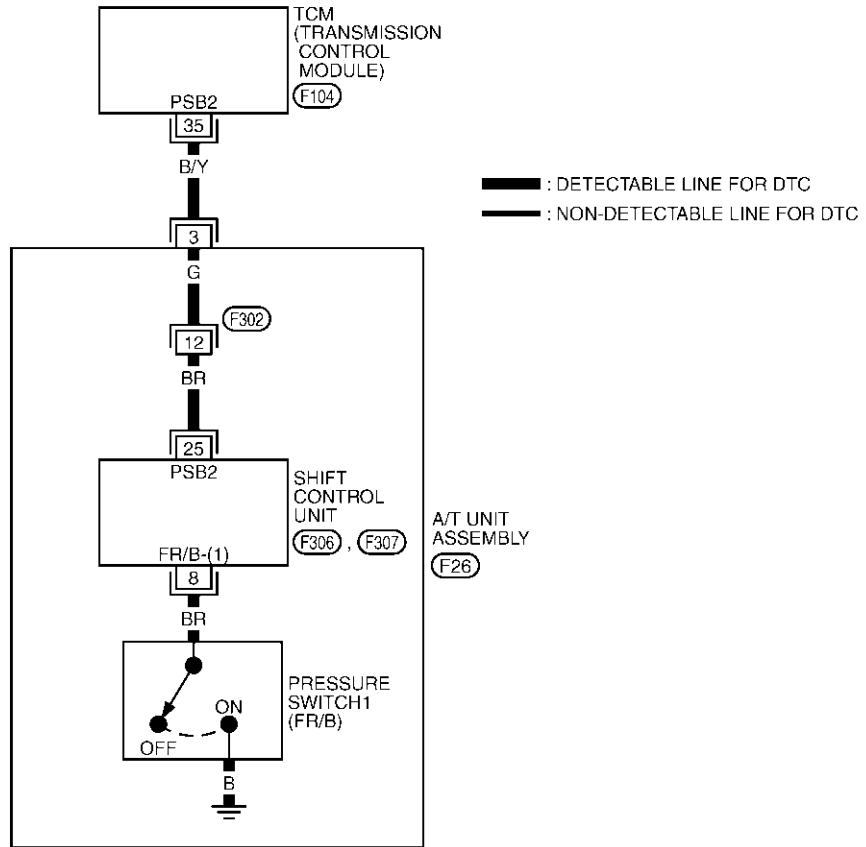


DTC P1841 ATF PRESSURE SWITCH 1

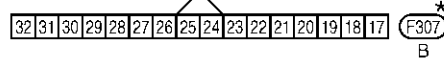
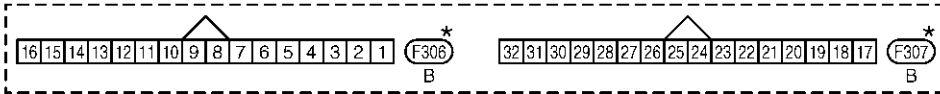
Wiring Diagram — AT — FPSW1

ECS0088L

AT-FPSW1-01



*: THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT", PG SECTION.



TCM terminal and data are reference value. Measured between each terminal and ground.

TCWM0028E

Terminal No.	Wire color	Item	Condition		Data (Approx.)
35	B/Y	PSB2 (pressure switch 1)	When vehicle starts	When front brake solenoid valve "OFF".	Battery voltage
				When front brake solenoid valve "ON".	0V

DTC P1841 ATF PRESSURE SWITCH 1

ECS0088M

Diagnostic Procedure

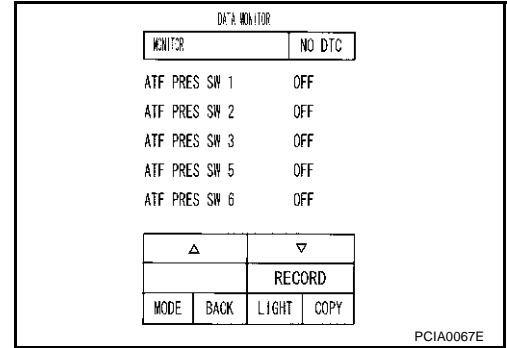
1. CHECK INPUT SIGNALS (WITH CONSULT-II)

With CONSULT-II

1. Start engine.
2. Select "ECU INPUT SIGNALS" or "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Accelerate vehicle in the "D" position (3rd ⇒ 4th gear), and confirm the ON/OFF actuation of the "ATF PRES SW 1".

OK or NG

- OK >> GO TO 5.
NG >> GO TO 3.



2. CHECK INPUT SIGNALS (WITHOUT CONSULT-II)

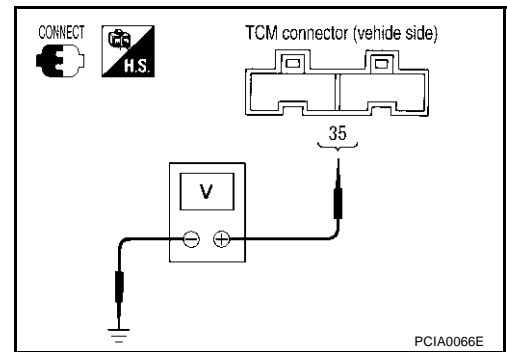
Without CONSULT-II

1. Start engine.
2. Accelerate vehicle in the "D" position (3rd ⇒ 4th gear).

Solenoid valve		Connector No.	Terminal No. (Wire color)	Voltage
Front brake solenoid valve	OFF	F104	35 (B/Y) - Ground	Battery voltage
	ON			Approx. 0 V

OK or NG

- OK >> GO TO 5.
NG >> GO TO 3.



3. CHECK POWER SOURCE CIRCUIT

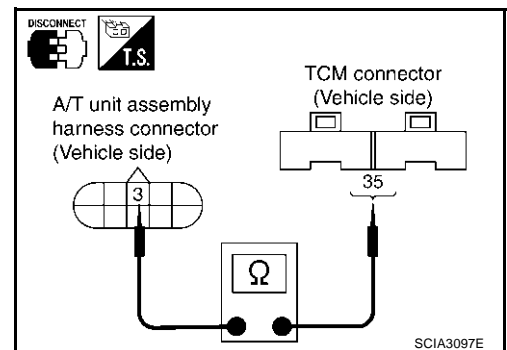
1. Turn ignition switch to "OFF" position.
2. Disconnect TCM connector.
3. Check continuity between A/T unit assembly harness connector and TCM connector.

Item	Connector No.	Terminal No. (Wire color)	Continuity
TCM	F104	35 (B/Y)	Yes
A/T unit assembly harness connector	F26	3 (B/Y)	

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

OK or NG

- OK >> GO TO 4.
NG >> Repair open circuit or short to ground or short to power in harness or connectors.

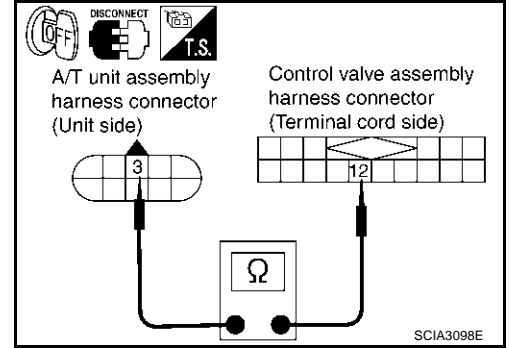


DTC P1841 ATF PRESSURE SWITCH 1

4. CHECK TERMINAL CORD ASSEMBLY

1. Remove oil pan. Refer to [AT-290, "Control Valve Assembly"](#) .
2. Disconnect A/T unit assembly harness connector and control valve assembly harness connector.
3. Check continuity between A/T unit assembly harness connector and control valve assembly harness connector.

Item	Connector No.	Terminal No. (Wire color)	Continuity
A/T unit assembly harness connector	F26	3 (G)	Yes
Control valve assembly harness connector	F302	12 (G)	



4. If OK, check harness for short to ground and short to power.

OK or NG

- OK >> Replace control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#) .
- NG >> Repair open circuit or short to ground or short to power in harness or connectors.

5. CHECK DTC

Perform DTC confirmation procedure. Refer to [AT-180, "DTC Confirmation Procedure"](#) .

OK or NG

- OK >> **INSPECTION END**
- NG >> GO TO 6.

6. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

- OK >> Replace control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#) .
- NG >> Repair or replace damaged parts.

DTC P1843 ATF PRESSURE SWITCH 3

DTC P1843 ATF PRESSURE SWITCH 3

PFP:25240

Description

ECS0088N

Fail-safe function to detect input clutch solenoid valve condition.

On Board Diagnosis Logic

ECS0088O

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code “ATF PRES SW 3/CIRC” with CONSULT-II is detected, when TCM detects that actual gear ratio is normal, and relation between gear position and condition of ATF pressure switch 3 is irregular during depressing accelerator pedal. (Other than during shift change)

Possible Cause

ECS0088P

- ATF pressure switch 3
- Harness or connectors
(The switch circuit is open or shorted.)

DTC Confirmation Procedure

ECS0088Q

CAUTION:

Always drive vehicle at a safe speed.

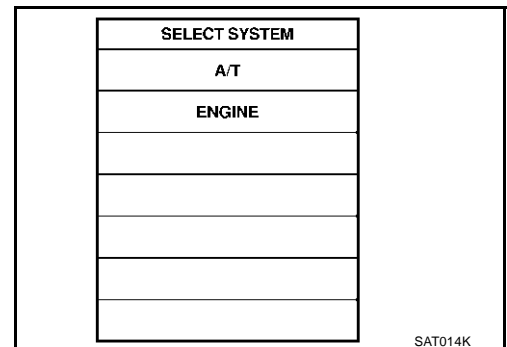
NOTE:

If “DTC Confirmation Procedure” has been previously conducted, always turn ignition switch “OFF” and wait at least 10 seconds before conducting the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

WITH CONSULT-II

1. Start engine.
2. Accelerate vehicle to maintain the following condition.
ACCELE POS: 1.5/8 - 2.0/8
Selector lever: “D” position
Gear position: 3rd ⇒ 4th Gear (I/C ON/OFF)
3. Perform step “2” again.
4. Turn ignition switch to “OFF” position, then perform step “1” to “3” again.
5. Check “SELF-DIAG RESULTS” mode for “A/T” with CONSULT-II.
If DTC (P1843) is detected, go to [AT-226, "Diagnostic Procedure"](#).
If DTC (P1752) is detected, go to [AT-173, "Diagnostic Procedure"](#).

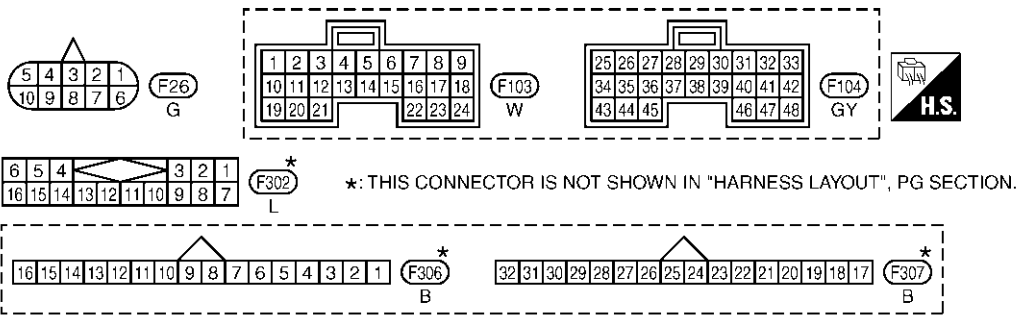
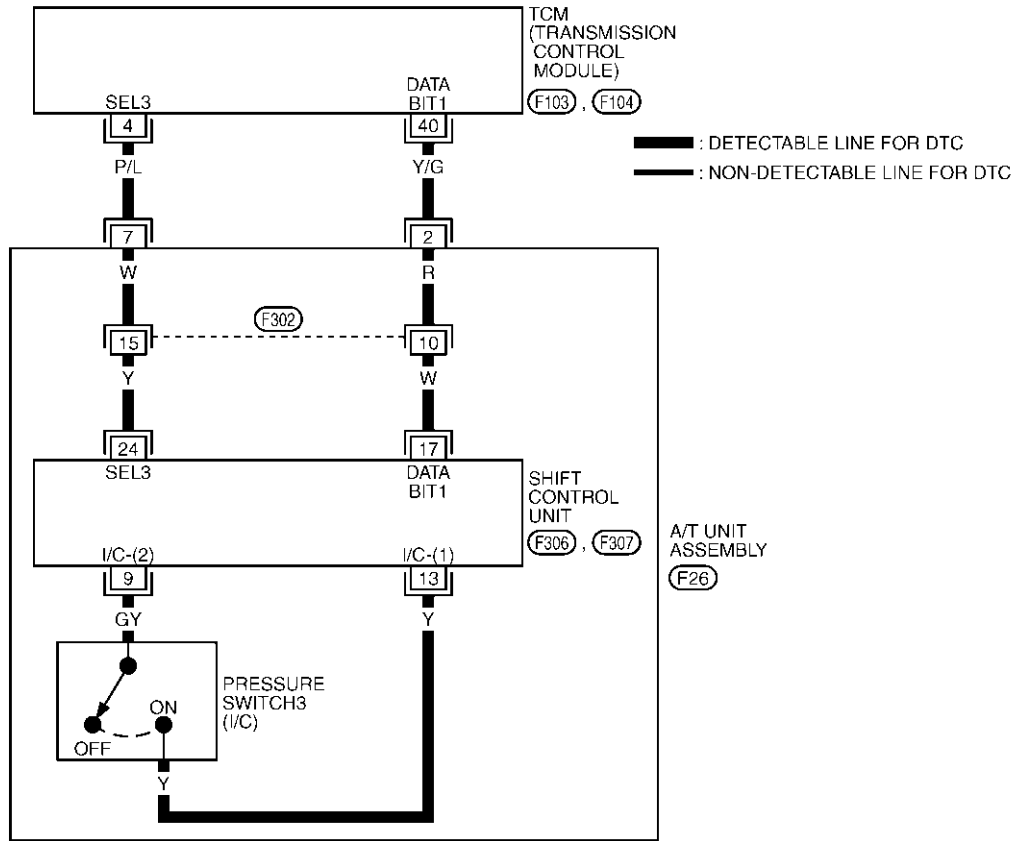


DTC P1843 ATF PRESSURE SWITCH 3

Wiring Diagram — AT — FPSW3

ECS008BR

AT-FPSW3-01



TCM terminals and data are reference value.

TCWM0029E

Terminal No.	Wire color	Item	Condition	Data (Approx.)
4	P/L	SEL3 (pressure switch 3)	—	—
40	Y/G	DATA BIT1	—	—

DTC P1843 ATF PRESSURE SWITCH 3

EC50088S

Diagnostic Procedure

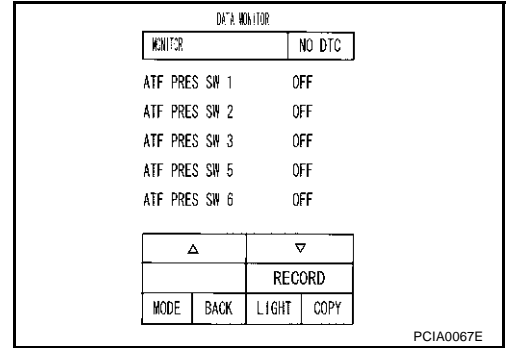
1. CHECK INPUT SIGNALS

Ⓜ With CONSULT-II

1. Start engine.
2. Select "ECU INPUT SIGNALS" or "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Accelerate vehicle in the "D" position (3rd ⇒ 4th gear), and confirm the ON/OFF actuation of the "ATF PRES SW 3".

OK or NG

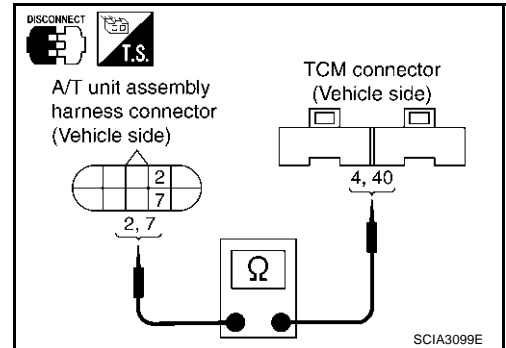
- OK >> GO TO 4.
 NG >> GO TO 2.



2. CHECK HARNESS BETWEEN TCM AND A/T UNIT ASSEMBLY HARNESS CONNECTOR

1. Turn ignition switch to "OFF" position.
2. Disconnect TCM connector.
3. Check continuity between A/T unit assembly harness connector and TCM connector.

Item	Connector No.	Terminal No. (Wire color)	Continuity
TCM	F103	4 (P/L)	Yes
A/T unit assembly harness connector	F26	7 (P/L)	
TCM	F104	40 (Y/G)	Yes
A/T unit assembly harness connector	F26	2 (Y/G)	



4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

OK or NG

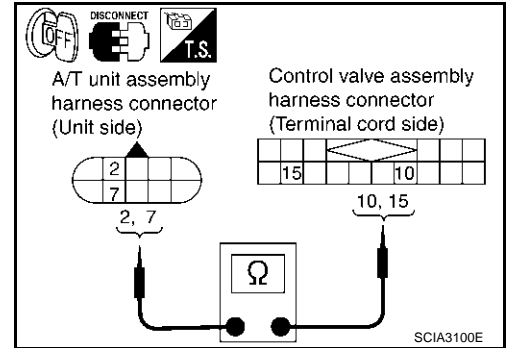
- OK >> GO TO 3.
 NG >> Repair open circuit or short to ground or short to power in harness or connectors.

DTC P1843 ATF PRESSURE SWITCH 3

3. CHECK TERMINAL CORD ASSEMBLY

1. Remove oil pan. Refer to [AT-290, "Control Valve Assembly"](#) .
2. Disconnect A/T unit assembly harness connector and control valve assembly harness connector.
3. Check continuity between A/T unit assembly harness connector and control valve assembly harness connector.

Item	Connector No.	Terminal No. (Wire color)	Continuity
A/T unit assembly harness connector	F26	2 (R)	Yes
Control valve assembly harness connector	F302	10 (R)	
A/T unit assembly harness connector	F26	7 (W)	Yes
Control valve assembly harness connector	F302	15 (W)	



4. If OK, check harness for short to ground and short to power.

OK or NG

- OK >> Replace the control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#) .
- NG >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK DTC

Perform DTC confirmation procedure. Refer to [AT-224, "DTC Confirmation Procedure"](#) .

OK or NG

- OK >> **INSPECTION END**
- NG >> GO TO 5.

5. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

- OK >> Replace the control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#) .
- NG >> Repair or replace damaged parts.

DTC P1845 ATF PRESSURE SWITCH 5

DTC P1845 ATF PRESSURE SWITCH 5

PFP:25240

Description

ECS0088T

Fail-safe function to detect direct clutch solenoid valve condition.

On Board Diagnosis Logic

ECS0088U

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code “ATF PRES SW 5/CIRC” with CONSULT-II is detected, when TCM detects that actual gear ratio is normal, and relation between gear position and condition of ATF pressure switch 5 is irregular during depressing accelerator pedal. (Other than during shift change)

Possible Cause

ECS0088V

- ATF pressure switch 5
- Harness or connectors
(The switch circuit is open or shorted.)

DTC Confirmation Procedure

ECS0088W

CAUTION:

Always drive vehicle at a safe speed.

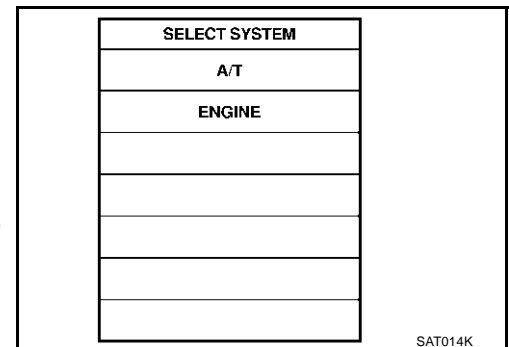
NOTE:

If “DTC Confirmation Procedure” has been previously conducted, always turn ignition switch “OFF” and wait at least 10 seconds before conducting the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

④ WITH CONSULT-II

1. Start engine.
2. Accelerate vehicle to maintain the following condition.
ACCELE POS: 1.5/8 - 2.0/8
Selector lever: “D” position
Gear position: 1st ⇒ 2nd Gear (D/C ON/OFF)
3. Perform step “2” again.
4. Turn ignition switch to “OFF” position, then perform step “1” to “3” again.
5. Check “SELF-DIAG RESULTS” mode for “A/T” with CONSULT-II.
If DTC (P1845) is detected, go to [AT-230, "Diagnostic Procedure"](#) .
If DTC (P1762) is detected, go to [AT-191, "Diagnostic Procedure"](#) .

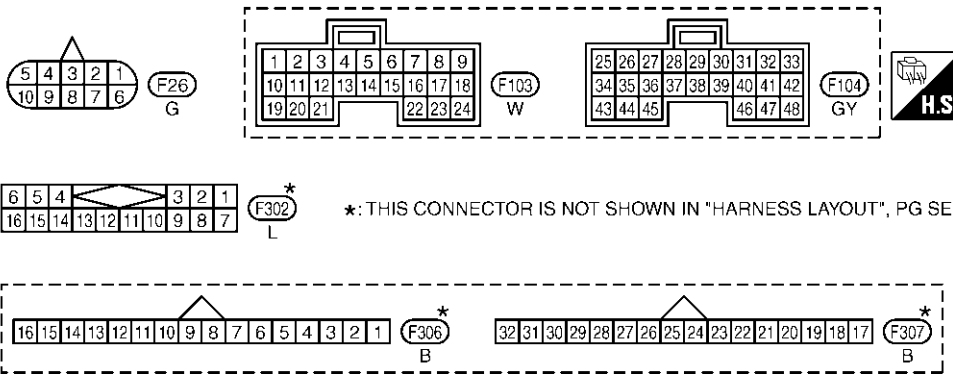
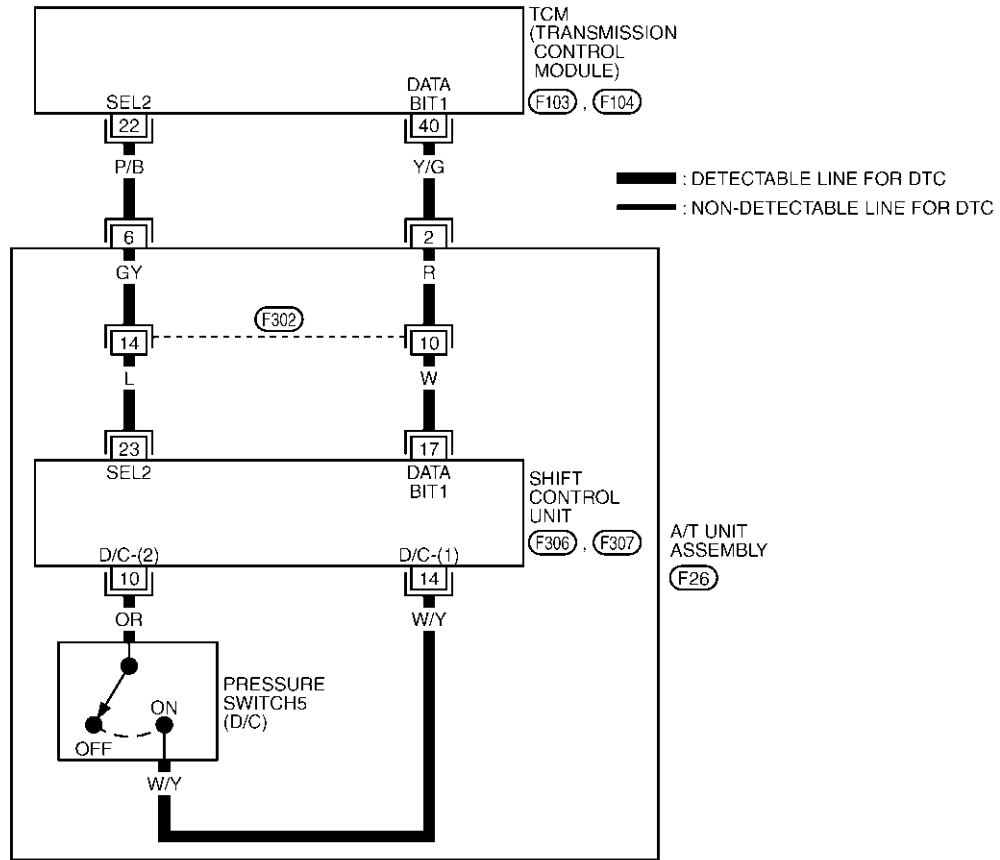


DTC P1845 ATF PRESSURE SWITCH 5

Wiring Diagram — AT — FPSW5

ECS0088X

AT-FPSW5-01



TCM terminals and data are reference value.

TCWM0030E

Terminal No.	Wire color	Item	Condition	Data (Approx.)
22	P/B	SEL2 (pressure switch 5)	—	—
40	Y/G	DATA BIT1	—	—

DTC P1845 ATF PRESSURE SWITCH 5

ECS008BY

Diagnostic Procedure

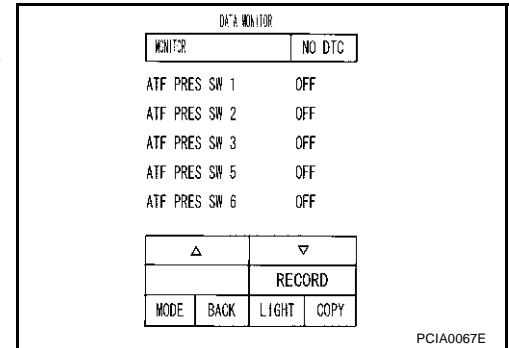
1. INPUT SIGNALS

Ⓜ With CONSULT-II

1. Start engine.
2. Select "ECU INPUT SIGNALS" or "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Accelerate vehicle in the "D" position (1st ⇒ 2nd gear), and confirm the ON/OFF actuation of the "ATF PRES SW 5".

OK or NG

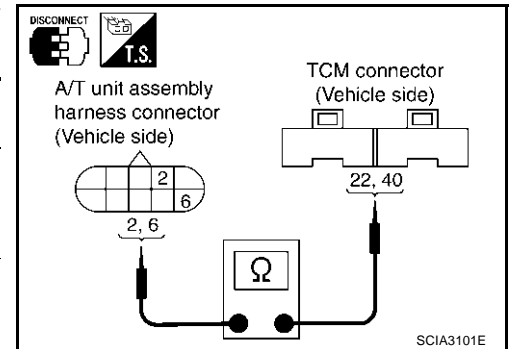
- OK >> GO TO 4.
 NG >> GO TO 2.



2. CHECK HARNESS BETWEEN TCM AND A/T UNIT ASSEMBLY HARNESS CONNECTOR

1. Turn ignition switch to "OFF" position.
2. Disconnect TCM connector.
3. Check continuity between A/T unit assembly harness connector and TCM connector.

Item	Connector No.	Terminal No. (Wire color)	Continuity
TCM	F103	22 (P/B)	Yes
A/T unit assembly harness connector	F26	6 (P/B)	
TCM	F104	40 (Y/G)	Yes
A/T unit assembly harness connector	F26	2 (Y/G)	



4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

OK or NG

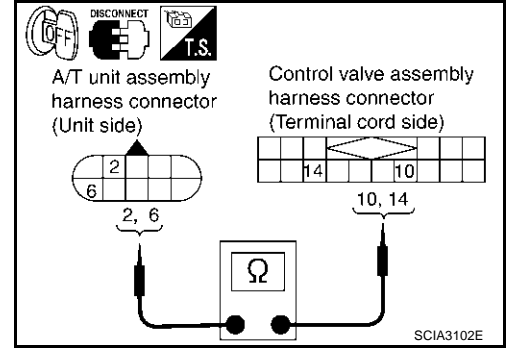
- OK >> GO TO 3.
 NG >> Repair open circuit or short to ground or short to power in harness or connectors.

DTC P1845 ATF PRESSURE SWITCH 5

3. CHECK TERMINAL CORD ASSEMBLY

1. Remove oil pan. Refer to [AT-290, "Control Valve Assembly"](#) .
2. Disconnect A/T unit assembly harness connector and control valve assembly harness connector.
3. Check continuity between A/T unit assembly harness connector and control valve assembly harness connector.

Item	Connector No.	Terminal No. (Wire color)	Continuity
A/T unit assembly harness connector	F26	2 (R)	Yes
Control valve assembly harness connector	F302	10 (R)	
A/T unit assembly harness connector	F26	6 (GY)	Yes
Control valve assembly harness connector	F302	14 (GY)	



4. If OK, check harness for short to ground and short to power.

OK or NG

- OK >> Replace the control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#) .
- NG >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK DTC

Perform DTC confirmation procedure. Refer to [AT-228, "DTC Confirmation Procedure"](#) .

OK or NG

- OK >> **INSPECTION END**
- NG >> GO TO 5.

5. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

- OK >> Replace the control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#) .
- NG >> Repair or replace damaged parts.

DTC P1846 ATF PRESSURE SWITCH 6

DTC P1846 ATF PRESSURE SWITCH 6

PFP:25240

Description

ECS0088Z

Fail-safe function to detect high & low reverse clutch solenoid valve condition.

On Board Diagnosis Logic

ECS00890

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code "ATF PRES SW 6/CIRC" with CONSULT-II is detected, when TCM detects that actual gear ratio is normal, and relation between gear position and condition of ATF pressure switch 6 is irregular during depressing accelerator pedal. (Other than during shift change)

Possible Cause

ECS00891

- ATF pressure switch 6
- Harness or connectors
(The switch circuit is open or shorted.)

DTC Confirmation Procedure

ECS00892

CAUTION:

Always drive vehicle at a safe speed.

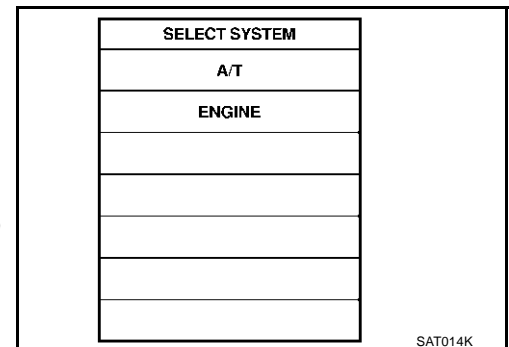
NOTE:

If "DTC Confirmation Procedure" has been previously conducted, always turn ignition switch "OFF" and wait at least 10 seconds before conducting the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

WITH CONSULT-II

1. Start engine.
2. Accelerate vehicle to maintain the following condition.
ACCELE POS: 1.5/8 - 2.0/8
Selector lever: "D" position
Gear position: 2nd ⇒ 3rd Gear (HLR/C ON/OFF)
3. Perform step "2" again.
4. Turn ignition switch to "OFF" position, then perform step "1" to "3" again.
5. Check "SELF-DIAG RESULTS" mode for "A/T" with CONSULT-II.
If DTC (P1846) is detected, go to [AT-234, "Diagnostic Procedure"](#).
If DTC (P1767) is detected, go to [AT-200, "Diagnostic Procedure"](#).

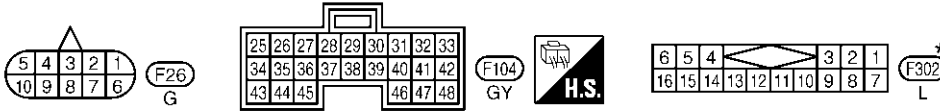
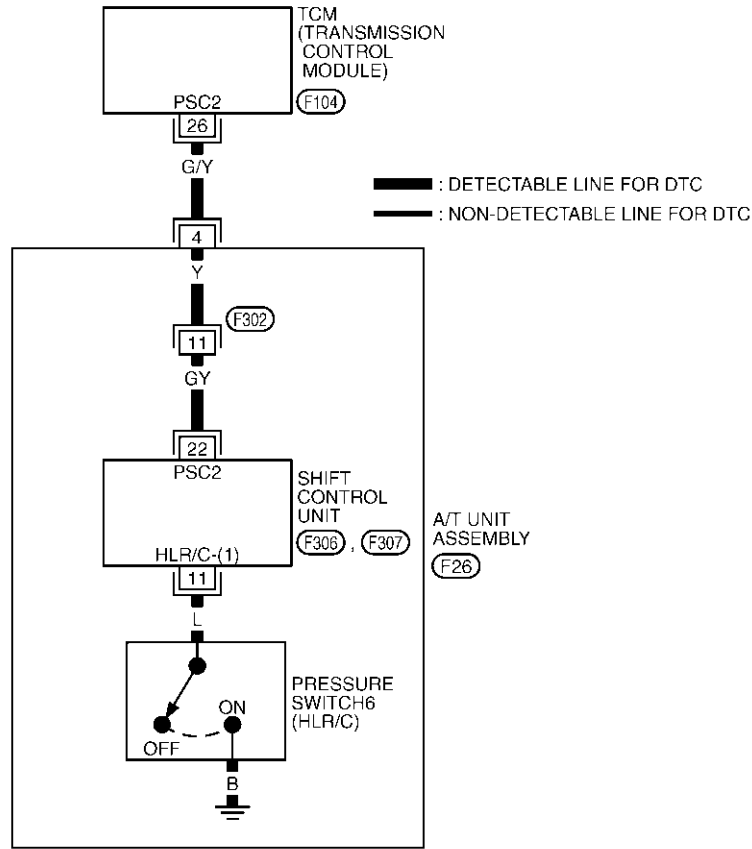


DTC P1846 ATF PRESSURE SWITCH 6

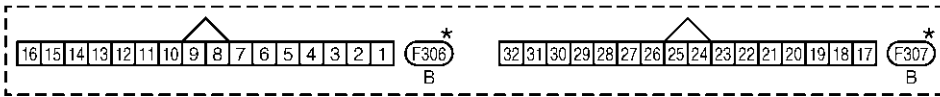
Wiring Diagram — AT — FPSW6

ECS00893

AT-FPSW6-01



*: THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT", PG SECTION.



TCM terminal and data are reference value. Measured between each terminal and ground.

TCWM0031E

Terminal No.	Wire color	Item	Condition		Data (Approx.)
26	G/Y	PSC2 (pressure switch 6)	When vehicle cruises	When high & low reverse clutch solenoid valve "ON".	0V
				When high & low reverse clutch solenoid valve "OFF".	Battery voltage

DTC P1846 ATF PRESSURE SWITCH 6

ECS00894

Diagnostic Procedure

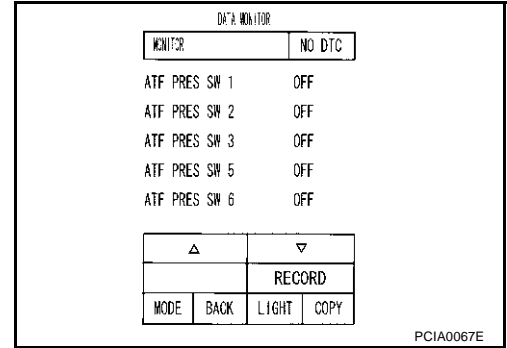
1. CHECK INPUT SIGNALS (WITH CONSULT-II)

With CONSULT-II

1. Start engine.
2. Select "ECU INPUT SIGNALS" or "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Accelerate vehicle in the "D" position (2nd ⇒ 3rd gear), and confirm the ON/OFF actuation of the "ATF PRES SW 6".

OK or NG

- OK >> GO TO 5.
 NG >> GO TO 3.



2. CHECK INPUT SIGNALS (WITHOUT CONSULT-II)

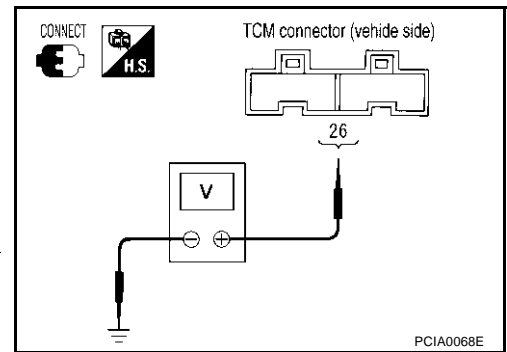
Without CONSULT-II

1. Start engine.
2. Accelerate vehicle in the "D" position (2nd ⇒ 3rd gear).

Solenoid valve		Connector No.	Terminal No. (Wire color)	Voltage
High & low reverse clutch solenoid valve	OFF	F104	26 (G/Y) - Ground	Battery voltage
	ON			Approx. 0 V

OK or NG

- OK >> GO TO 5.
 NG >> GO TO 3.



3. CHECK POWER SOURCE CIRCUIT

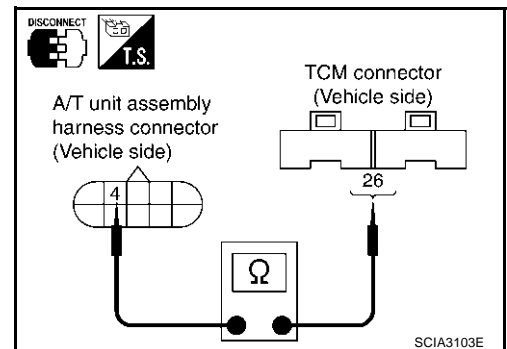
1. Turn ignition switch to "OFF" position.
2. Disconnect TCM connector.
3. Check continuity between A/T unit assembly harness connector and TCM connector.

Item	Connector No.	Terminal No. (Wire color)	Continuity
TCM	F104	26 (G/Y)	Yes
A/T unit assembly harness connector	F26	4 (G/Y)	

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

OK or NG

- OK >> GO TO 4.
 NG >> Repair open circuit or short to ground or short to power in harness or connectors.

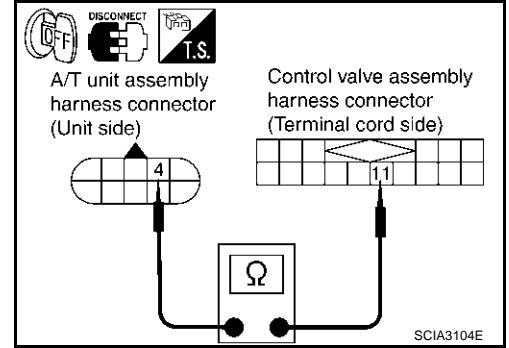


DTC P1846 ATF PRESSURE SWITCH 6

4. CHECK TERMINAL CORD ASSEMBLY

1. Remove oil pan. Refer to [AT-290, "Control Valve Assembly"](#) .
2. Disconnect A/T unit assembly harness connector and control valve assembly harness connector.
3. Check continuity between A/T unit assembly harness connector and control valve assembly harness connector.

Item	Connector No.	Terminal No. (Wire color)	Continuity
A/T unit assembly harness connector	F26	4 (Y)	Yes
Control valve assembly harness connector	F302	11 (Y)	



4. If OK, check harness for short to ground and short to power.

OK or NG

- OK >> Replace the control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#) .
- NG >> Repair open circuit or short to ground or short to power in harness or connectors.

5. CHECK DTC

Perform DTC confirmation procedure. Refer to [AT-232, "DTC Confirmation Procedure"](#) .

OK or NG

- OK >> **INSPECTION END**
- NG >> GO TO 6.

6. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

- OK >> Replace the control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#) .
- NG >> Repair or replace damaged parts.

PARK/NEUTRAL POSITION, MANUAL MODE, BRAKE AND THROTTLE POSITION SWITCH CIRCUIT

PARK/NEUTRAL POSITION, MANUAL MODE, BRAKE AND THROTTLE POSITION SWITCH CIRCUIT

PFP:31918

Diagnostic Procedure

ECS00895

1. CHECK PNP SWITCH CIRCUIT

Ⓜ With CONSULT-II

1. Turn ignition switch to "ON" position. (Do not start engine.)
2. Select "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Read out "N·P", "R" and "D" position switches moving selector lever to each position.

OK or NG

- OK >> GO TO 3.
NG >> GO TO 2.

DATA MONITOR	
MONITOR	NO. DTC
ATF PRES SW 2	OFF
ATF PRES SW 3	OFF
ATF PRES SW 5	OFF
ATF PRES SW 6	OFF
SLCT LVR POSI	N·P

△	▽		
RECORD			
MODE	BACK	LIGHT	COPY

PCIA0034E

2. DETECT MALFUNCTIONING ITEM

Check the following items.

- Disconnection or short-circuit in the harness between TCM and PNP switch 1, 2, 3, 4.
- Disconnection or short-circuit in the harness between the PNP switch 3 monitor and TCM.
- PNP switch. Refer to [AT-106, "DTC P0705 PARK/NEUTRAL POSITION SWITCH"](#) .

OK or NG

- OK >> GO TO 3.
NG >> Repair or replace damaged parts.

3. CHECK MANUAL MODE SWITCH CIRCUIT

Ⓜ With CONSULT-II

1. Turn ignition switch to "ON" position. (Do not start engine.)
2. Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Read out ON/OFF switching action of the "MANU MODE SW", "NON M-MODE SW", "UP SW LEVER", "DOWN SW LEVER".

OK or NG

- OK >> GO TO 5.
NG >> GO TO 4.

DATA MONITOR	
MONITOR	NO. DTC
MANU MODE SW	OFF
NON M-MODE SW	ON
UP SW LEVER	OFF
DOWN SW LEVER	OFF

△	▽		
RECORD			
MODE	BACK	LIGHT	COPY

PCIA0064E

4. DETECT MALFUNCTIONING ITEM

Check the following items.

- Manual mode switch. Refer to [AT-216, "DTC P1815 MANUAL MODE SWITCH"](#) .
- Check the connector housing for missing, loosening, bending or falling down of any terminal.

OK or NG

- OK >> GO TO 5.
NG >> Repair or replace damaged parts.

PARK/NEUTRAL POSITION, MANUAL MODE, BRAKE AND THROTTLE POSITION SWITCH CIRCUIT

5. CHECK BRAKE SWITCH CIRCUIT

With CONSULT-II

1. Turn ignition switch to "ON" position. (Do not start engine.)
2. Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Read out ON/OFF switching action of the "BRAKE SW".

OK or NG

OK >> GO TO 6.

NG >> Check the following items.

- Stop lamp switch. Refer to [BR-6, "BRAKE PEDAL"](#).
- Combination meter. Refer to [DI-7, "COMBINATION METERS"](#).

DATA MONITOR			
MONITOR		NO DTC	
ACCELE POSI	0.0/8		
THROTTLE POSI	0.0/8		
CLSD THL POS	ON		
W/O THL POS	OFF		
BRAKE SW	OFF		
		▼	
RECORD			
MODE	BACK	LIGHT	COPY

PCIA0070E

6. CHECK THROTTLE POSITION SIGNAL CIRCUIT

With CONSULT-II

1. Turn ignition switch to "ON" position. (Do not start engine.)
2. Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Depress accelerator pedal and read out the value of "CLSD THL POS" and "W/O THL POS".

Accelerator pedal operation	Monitor item	
	CLSD THL POS	W/O THL POS
Released	ON	OFF
Fully depressed	OFF	ON

DATA MONITOR			
MONITOR		NO DTC	
ACCELE POSI	0.0/8		
THROTTLE POSI	0.0/8		
CLSD THL POS	ON		
W/O THL POS	OFF		
BRAKE SW	OFF		
		▼	
RECORD			
MODE	BACK	LIGHT	COPY

PCIA0070E

4. Perform the self-diagnosis for "ENGINE" with CONSULT-II.

OK or NG

OK >> GO TO 7.

NG >> Repair or replace damaged parts.

7. CHECK DTC

Perform SELF-DIAGNOSTIC PROCEDURE.

- Refer to [AT-86, "CONSULT-II"](#).
- CAN Communication Line. Refer to [AT-100](#).

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 8.

8. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> **INSPECTION END**

NG >> Repair or replace damaged parts.

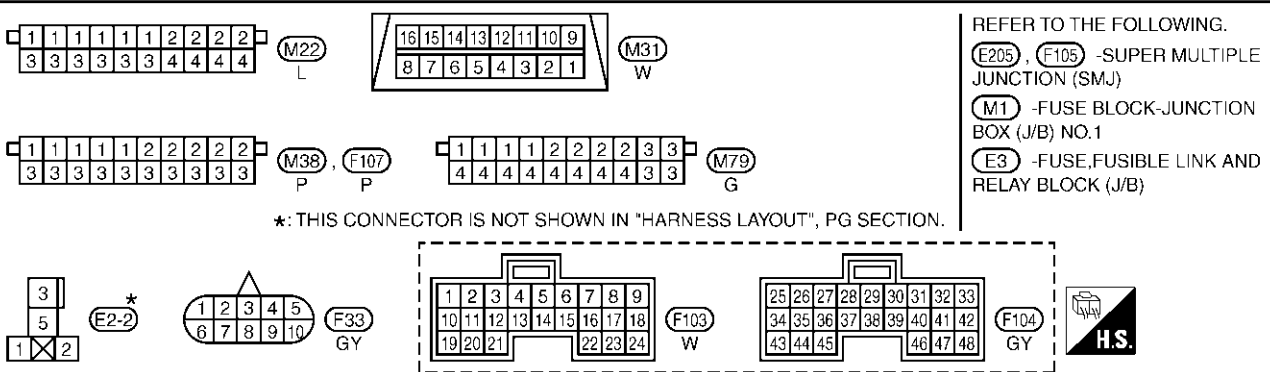
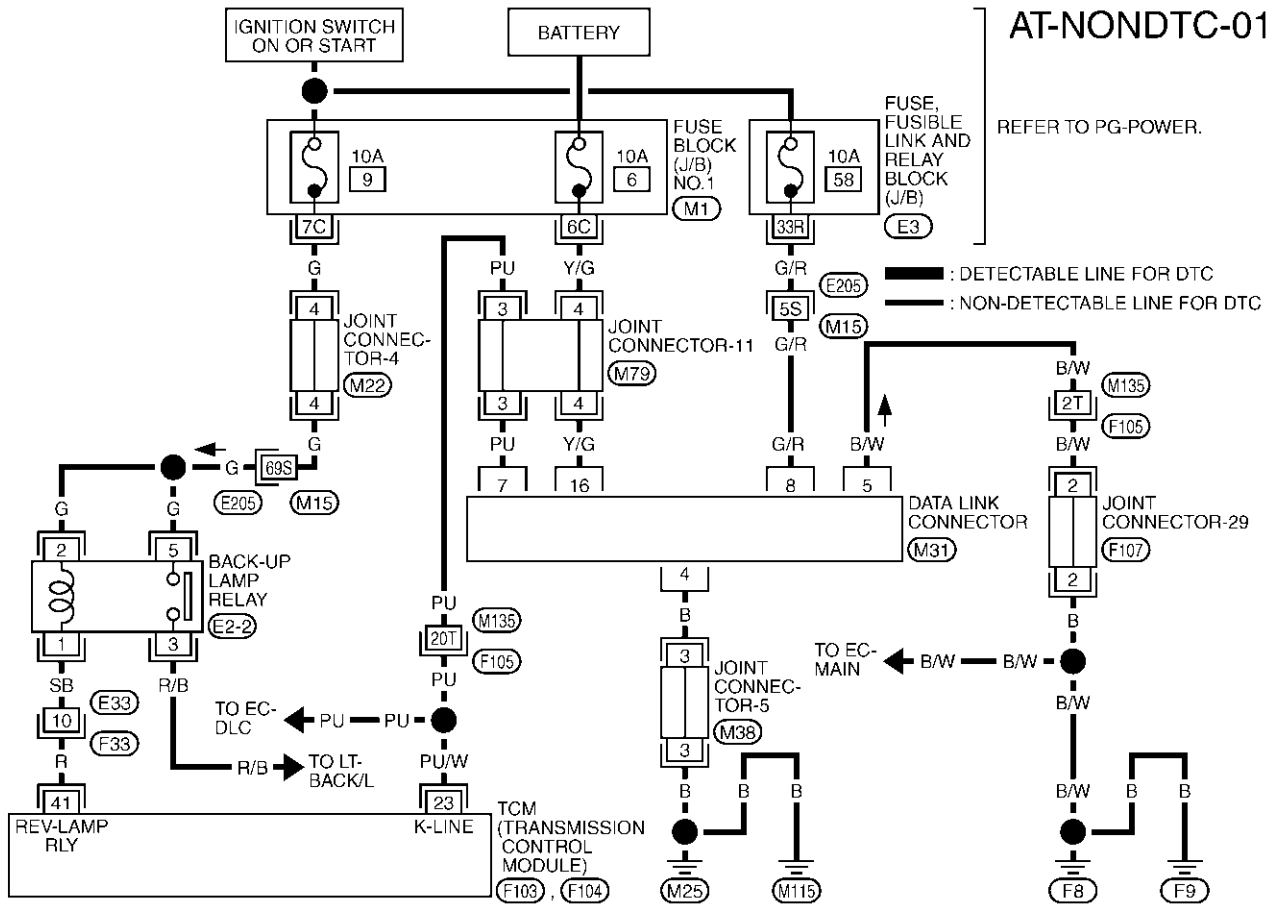
TROUBLE DIAGNOSIS FOR SYMPTOMS

TROUBLE DIAGNOSIS FOR SYMPTOMS

PFP:00007

Wiring Diagram — AT — NONDTC

ECS00896



TCM terminals and data are reference value. Measured between each terminal and ground.

TCWM0103E

Terminal No.	Wire color	Item	Condition	Data (Approx.)
23	PU/W	K-line (CONSULT-II signal)	The terminal is connected to the Data link connector for CONSULT-II.	
41	R	BACK-UP LAMP relay	IGN ON	Selector lever in "R" position. Battery voltage
				Selector lever in other position. 0V

TROUBLE DIAGNOSIS FOR SYMPTOMS

ECS00897

A/T CHECK Indicator Lamp Does Not Come On

SYMPTOM:

A/T CHECK indicator lamp does not come on for about 2 seconds when turning ignition switch to "ON".

DIAGNOSTIC PROCEDURE

1. CHECK CAN COMMUNICATION LINE

Execute the self-diagnosis. Is a malfunction in the CAN communication indicated in the results?

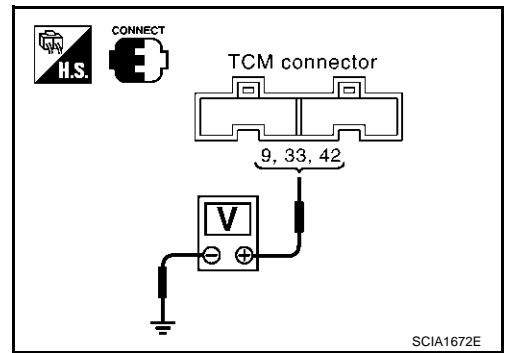
Yes or No

- Yes >> Check the CAN communication line. Refer to [AT-100, "DTC U1000 CAN COMMUNICATION LINE"](#).
 No >> GO TO 2.

2. CHECK TCM POWER SOURCE

- Turn ignition switch "ON". (Do not start engine.)
- Check voltage between TCM connector terminals and ground. Refer to [AT-134, "Wiring Diagram — AT — POWER"](#).

Item	Connector No.	Terminal No. (Wire color)	Voltage
TCM	F103	9 (W/B) - Ground	Battery voltage
	F104	33 (G/R) - Ground	
		42 (G/R) - Ground	



- Turn ignition switch "OFF".
- Check voltage between TCM connector terminals and ground. Refer to [AT-134, "Wiring Diagram — AT — POWER"](#).

Item	Connector No.	Terminal No. (Wire color)	Voltage
TCM	F103	9 (W/B) - Ground	Battery voltage
	F104	33 (G/R) - Ground	0V
		42 (G/R) - Ground	

OK or NG

- OK >> GO TO 4.
 NG >> GO TO 3.

3. DETECT MALFUNCTIONING ITEM

Check the following items:

- Harness for short or open between battery and TCM connector terminal 9
- Harness for short or open between ignition switch and TCM connector terminals 33 and 42
- 10A fuse [No. 32 or 35, located in the fuse block (J/B)]
- Ignition switch, Refer to [PG-2, "POWER SUPPLY ROUTING"](#).

OK or NG

- OK >> GO TO 4.
 NG >> Repair or replace damaged parts.

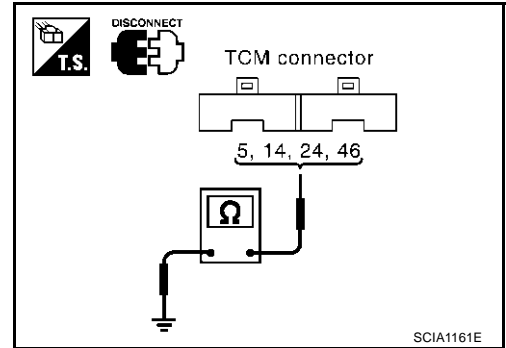
TROUBLE DIAGNOSIS FOR SYMPTOMS

4. CHECK TCM GROUND CIRCUIT

1. Turn ignition switch to "OFF".
2. Disconnect the TCM connector.
3. Check continuity between terminals 5 (B), 14 (B), 24 (B), 46 (B) and ground. Refer to [AT-134, "Wiring Diagram — AT — POWER"](#).
4. If OK, check the harness for short-circuit to ground or the power source.

OK or NG

- OK >> GO TO 5.
NG >> Repair the short-circuit(s) in the harness or connector to ground or the power source.



5. CHECK A/T CHECK INDICATOR LAMP CIRCUIT

1. Turn ignition switch to "OFF".
2. Check the combination meter. Refer to [DI-7, "COMBINATION METERS"](#).

OK or NG

- OK >> GO TO 6.
NG >> Replace the combination meter. Refer to [DI-27, "Removal and Installation for Combination Meter"](#)

6. CHECK SYMPTOM

Check again.

OK or NG

- OK >> **INSPECTION END**
NG >> GO TO 7.

7. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

- OK >> **INSPECTION END**
NG >> Repair or replace damaged parts.

Engine Cannot Be Started In "P" or "N" Position SYMPTOM:

ECS00898

- Engine cannot be started with selector lever in "P" or "N" position.
- Engine can be started with selector lever in "D" or "R" position.

DIAGNOSTIC PROCEDURE

1. CHECK PNP SWITCH CIRCUIT

Execute self-diagnosis.

Do the self-diagnostic results indicate PNP switch?

- Yes >> Check the malfunctioning system. Refer to [AT-106, "DTC P0705 PARK/NEUTRAL POSITION SWITCH"](#).
No >> GO TO 2.

TROUBLE DIAGNOSIS FOR SYMPTOMS

2. CHECK CONTROL LINKAGE

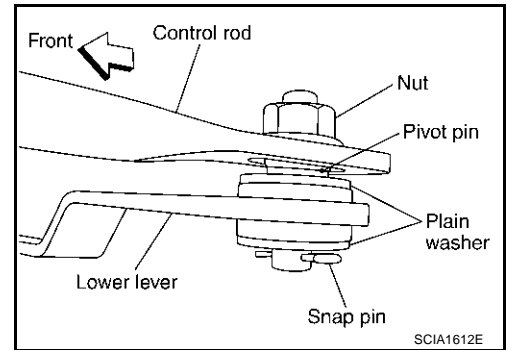
Check the control linkage.

- Refer to [AT-283, "Checking of A/T Position"](#).

OK or NG

OK >> GO TO 3.

NG >> Adjust control linkage. Refer to [AT-283, "Adjustment of A/T Position"](#).



3. CHECK STARTING SYSTEM

Check starting system. Refer to [SC-22, "STARTING SYSTEM"](#).

OK or NG

OK >> **INSPECTION END**

NG >> Repair or replace damaged parts.

In "P" Position, Vehicle Moves When Pushed SYMPTOM:

ECS00899

Even though the selector lever is set in the "P" position, the parking mechanism is not actuated, allowing the vehicle to be moved when it is pushed.

DIAGNOSTIC PROCEDURE

1. CHECK PNP SWITCH CIRCUIT

Execute self-diagnosis.

Do the self-diagnostic results indicate PNP switch?

Yes >> Check the malfunctioning system. Refer to [AT-106, "DTC P0705 PARK/NEUTRAL POSITION SWITCH"](#).

No >> GO TO 2.

2. CHECK CONTROL LINKAGE

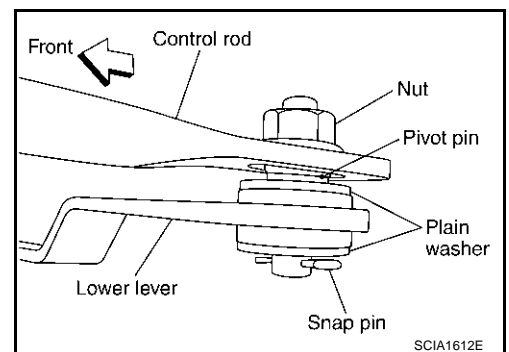
Check the control linkage.

- Refer to [AT-283, "Checking of A/T Position"](#).

OK or NG

OK >> GO TO 3.

NG >> Adjust control linkage. Refer to [AT-283, "Adjustment of A/T Position"](#).



3. CHECK PARKING COMPONENTS

Check parking components. Refer to [AT-300, "Components"](#).

OK or NG

OK >> **INSPECTION END**

NG >> Repair or replace damaged parts.

TROUBLE DIAGNOSIS FOR SYMPTOMS

EC50089A

In "N" Position, Vehicle Moves

SYMPTOM:

Vehicle moves forward or backward when selecting "N" position.

DIAGNOSTIC PROCEDURE

1. CHECK PNP SWITCH CIRCUIT

Execute self-diagnosis.

Do the self-diagnostic results indicate PNP switch?

Yes >> Check the malfunctioning system. Refer to [AT-106, "DTC P0705 PARK/NEUTRAL POSITION SWITCH"](#).

No >> GO TO 2.

2. CHECK CONTROL LINKAGE

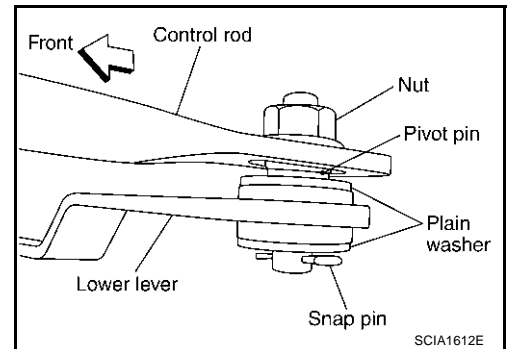
Check the control linkage.

- Refer to [AT-283, "Checking of A/T Position"](#).

OK or NG

OK >> GO TO 3.

NG >> Adjust control linkage. Refer to [AT-283, "Adjustment of A/T Position"](#).



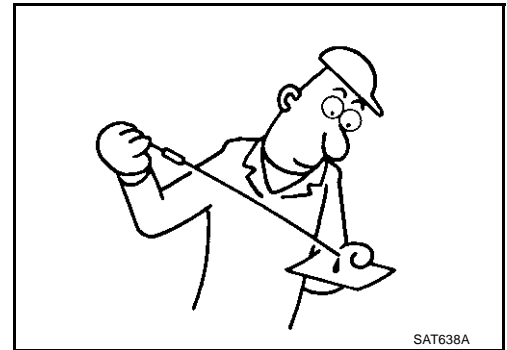
3. CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to [AT-14, "Checking A/T Fluid"](#).

OK or NG

OK >> GO TO 4.

NG >> Refill ATF.



4. CHECK A/T FLUID CONDITION

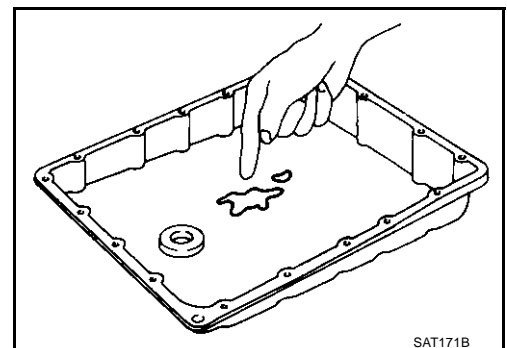
1. Remove oil pan. Refer to [AT-290, "Control Valve Assembly"](#).

2. Check A/T fluid condition.

OK or NG

OK >> GO TO 5.

NG >> Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-60, "Symptom Chart"](#).



TROUBLE DIAGNOSIS FOR SYMPTOMS

5. CHECK SYMPTOM

Check again.

OK or NG

- OK >> **INSPECTION END**
- NG >> GO TO 6.

6. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

- OK >> **INSPECTION END**
- NG >> Repair or replace damaged parts.

Large Shock (“N” to “D” Position) SYMPTOM:

ECS0089B

A noticeable shock occurs when the selector lever is shifted from the “N” to “D” position.

DIAGNOSTIC PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

Execute self-diagnosis.

Do the self-diagnostic results indicate A/T fluid temperature sensor, engine speed signal, accelerator pedal position sensor, ATF pressure switch 1, front brake solenoid valve, CAN communication line?

- Yes >> Check the malfunctioning system. Refer to [AT-147, "DTC P1710 A/T FLUID TEMPERATURE SENSOR CIRCUIT"](#) , [AT-116, "DTC P0725 ENGINE SPEED SIGNAL"](#) , [AT-145, "DTC P1705 THROTTLE POSITION SENSOR"](#) , [AT-220, "DTC P1841 ATF PRESSURE SWITCH 1"](#) , [AT-180, "DTC P1757 FRONT BRAKE SOLENOID VALVE"](#) [AT-180, "DTC P1757 FRONT BRAKE SOLENOID VALVE"](#) , [AT-100, "DTC U1000 CAN COMMUNICATION LINE"](#) .
- No >> GO TO 2.

2. ENGINE IDLE SPEED

Check the engine idle speed. Refer to [EC-34, "Idle Speed and Ignition Timing Check"](#) .

OK or NG

- OK >> GO TO 3.
- NG >> Repair.

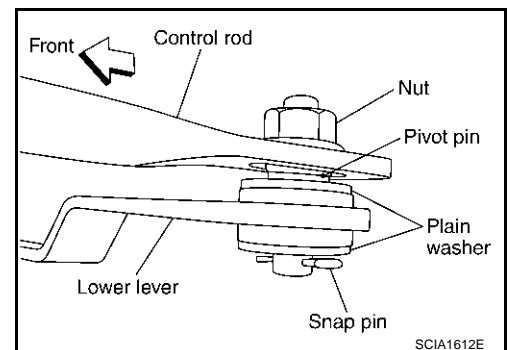
3. CHECK CONTROL LINKAGE

Check the control linkage.

- Refer to [AT-283, "Checking of A/T Position"](#) .

OK or NG

- OK >> GO TO 4.
- NG >> Adjust control linkage. Refer to [AT-283, "Adjustment of A/T Position"](#) .



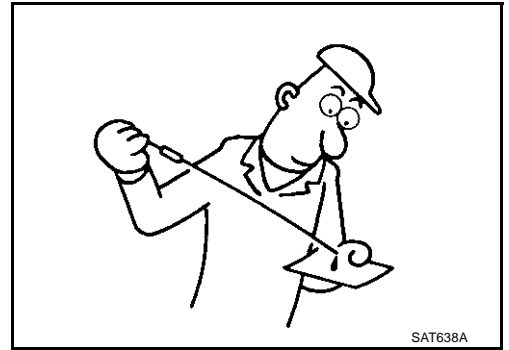
TROUBLE DIAGNOSIS FOR SYMPTOMS

4. CHECK A/T FLUID LEVEL

Check the A/T fluid level again. Refer to [AT-14, "Checking A/T Fluid"](#)

OK or NG

- OK >> GO TO 5.
- NG >> Refill ATF.

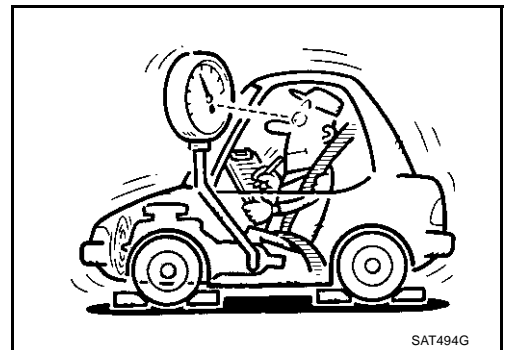


5. CHECK LINE PRESSURE

Check line pressure at idle with selector lever in "D" position. Refer to [AT-52, "LINE PRESSURE TEST"](#).

OK or NG

- OK >> GO TO 8.
- NG - 1 >> Line pressure high: GO TO 6.
- NG - 2 >> Line pressure low: GO TO 7.



6. DETECT MALFUNCTIONING ITEM

1. Control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#).
2. Disassemble A/T. Refer to [AT-308, "DISASSEMBLY"](#).
3. Check the following items:
 - Oil pump assembly. Refer to [AT-322, "Oil Pump"](#).

OK or NG

- OK >> GO TO 8.
- NG >> Repair or replace damaged parts.

7. DETECT MALFUNCTIONING ITEM

1. Control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#).
2. Disassemble A/T. Refer to [AT-308, "DISASSEMBLY"](#).
3. Check the following items:
 - Oil pump assembly. Refer to [AT-322, "Oil Pump"](#).
 - Power train system. Refer to [AT-308, "DISASSEMBLY"](#).
 - Transmission case. Refer to [AT-308, "DISASSEMBLY"](#).

OK or NG

- OK >> GO TO 8.
- NG >> Repair or replace damaged parts.

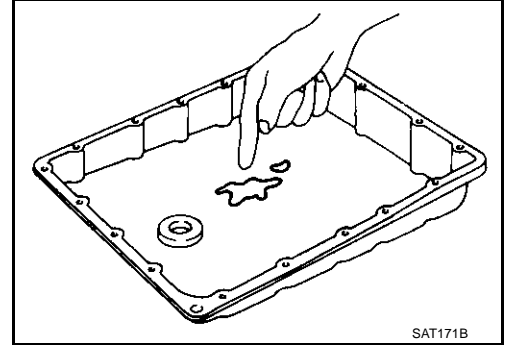
TROUBLE DIAGNOSIS FOR SYMPTOMS

8. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-290, "Control Valve Assembly"](#) .
2. Check A/T fluid condition.

OK or NG

- OK >> GO TO 9.
NG >> GO TO 12.



9. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-60, "Symptom Chart"](#) .

OK or NG

- OK >> GO TO 10.
NG >> Repair or replace damaged parts.

10. CHECK SYMPTOM

Check again.

OK or NG

- OK >> **INSPECTION END**
NG >> GO TO 11.

11. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

- OK >> **INSPECTION END**
NG >> Repair or replace damaged parts.

12. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-60, "Symptom Chart"](#) .

OK or NG

- OK >> GO TO 10.
NG >> Repair or replace damaged parts.

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TROUBLE DIAGNOSIS FOR SYMPTOMS

EC50089C

Vehicle Does Not Creep Backward In "R" Position

SYMPTOM:

The vehicle does not creep in the "R" position. Or an extreme lack of acceleration is observed.

DIAGNOSTIC PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

Execute self-diagnosis.

Do the self-diagnostic results indicate accelerator pedal position sensor, ATF pressure switch 6, high and low reverse clutch solenoid valve, CAN communication line, PNP switch?

Yes >> Check the malfunctioning system. Refer to [AT-145, "DTC P1705 THROTTLE POSITION SENSOR"](#), [AT-232, "DTC P1846 ATF PRESSURE SWITCH 6"](#), [AT-198, "DTC P1767 HIGH AND LOW REVERSE CLUTCH SOLENOID VALVE"](#), [AT-100, "DTC U1000 CAN COMMUNICATION LINE"](#), [AT-106, "DTC P0705 PARK/NEUTRAL POSITION SWITCH"](#).

No >> GO TO 2.

2. CHECK CONTROL LINKAGE

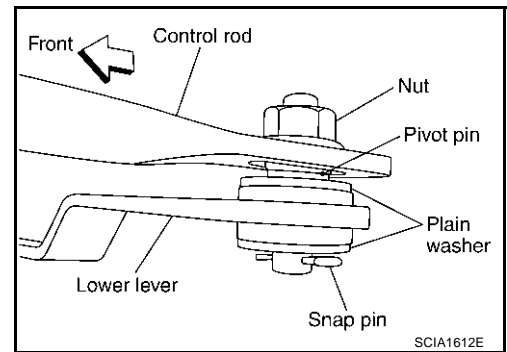
Check the control linkage.

● Refer to [AT-283, "Checking of A/T Position"](#).

OK or NG

OK >> GO TO 3.

NG >> Adjust control linkage. Refer to [AT-283, "Adjustment of A/T Position"](#).



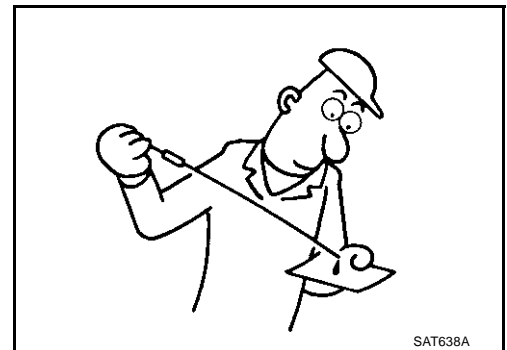
3. CHECK A/T FLUID LEVEL

Check A/T fluid level again. Refer to [AT-14, "Checking A/T Fluid"](#).

OK or NG

OK >> GO TO 4.

NG >> Refill ATF.



4. CHECK STALL TEST

Check stall revolution with selector lever in "1" and "R" positions.

Refer to [AT-51, "STALL TEST"](#).

OK or NG

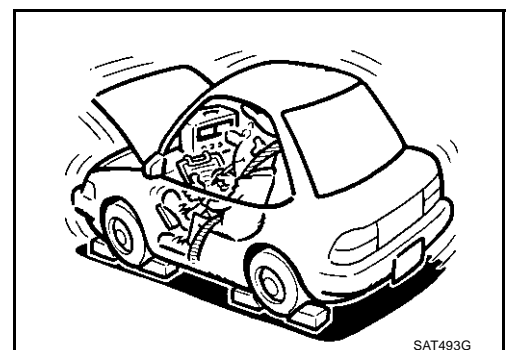
OK >> GO TO 5.

OK in "1" position, NG in "R" position >> 1. Disassemble A/T. Refer to [AT-308, "DISASSEMBLY"](#).

2. Check the following items. If any items are damaged, repair or replace damaged parts.

- Reverse brake

NG in both "1" and "R" positions >> GO TO 7.



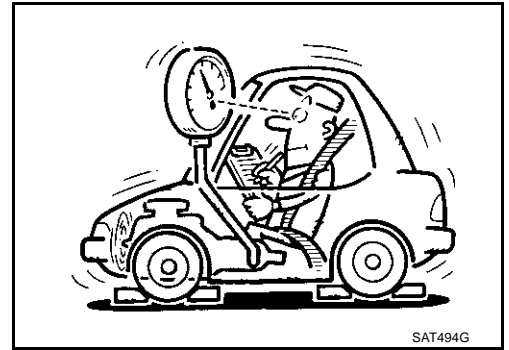
TROUBLE DIAGNOSIS FOR SYMPTOMS

5. CHECK LINE PRESSURE

Check the line pressure with the engine idling. Refer to [AT-52, "LINE PRESSURE TEST"](#) .

OK or NG

- OK >> GO TO 8.
- NG - 1 >> Line pressure high. GO TO 6.
- NG - 2 >> Line pressure low. GO TO 7.



6. DETECT MALFUNCTIONING ITEM

1. Control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#) .
2. Disassemble A/T. Refer to [AT-308, "DISASSEMBLY"](#) .
3. Check the following items:
 - Oil pump assembly. Refer to [AT-322, "Oil Pump"](#) .

OK or NG

- OK >> GO TO 8.
- NG >> Repair or replace damaged parts.

7. DETECT MALFUNCTIONING ITEM

1. Control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#) .
2. Disassemble A/T. Refer to [AT-308, "DISASSEMBLY"](#) .
3. Check the following items:
 - Oil pump assembly. Refer to [AT-322, "Oil Pump"](#) .
 - Power train system. Refer to [AT-308, "DISASSEMBLY"](#) .
 - Transmission case. Refer to [AT-308, "DISASSEMBLY"](#) .

OK or NG

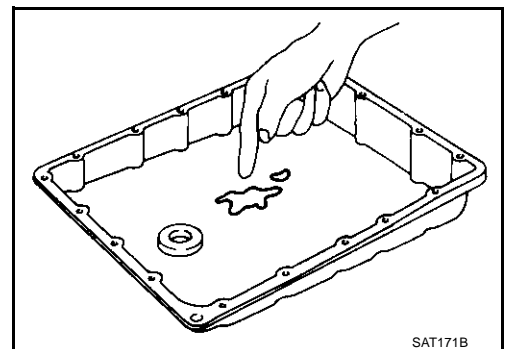
- OK >> GO TO 8.
- NG >> Repair or replace damaged parts.

8. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-290, "Control Valve Assembly"](#) .
2. Check A/T fluid condition.

OK or NG

- OK >> GO TO 9.
- NG >> GO TO 12.



TROUBLE DIAGNOSIS FOR SYMPTOMS

9. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-60, "Symptom Chart"](#) .

OK or NG

- OK >> GO TO 10.
NG >> Repair or replace damaged parts.

10. CHECK SYMPTOM

Check again.

OK or NG

- OK >> **INSPECTION END**
NG >> GO TO 11.

11. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

- OK >> **INSPECTION END**
NG >> Repair or replace damaged parts.

12. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-60, "Symptom Chart"](#) .

OK or NG

- OK >> GO TO 10.
NG >> Repair or replace damaged parts.

Vehicle Does Not Creep Forward In "D" Position SYMPTOM:

ECS0089D

Vehicle does not creep forward when selecting "D" position.

DIAGNOSTIC PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

Execute self-diagnosis.

Do the self-diagnostic results indicate accelerator pedal position sensor, CAN communication line, PNP switch?

- Yes >> Check the malfunctioning system. Refer to [AT-145, "DTC P1705 THROTTLE POSITION SENSOR"](#) , [AT-100, "DTC U1000 CAN COMMUNICATION LINE"](#) , [AT-106, "DTC P0705 PARK/NEUTRAL POSITION SWITCH"](#) .
- No >> GO TO 2.

TROUBLE DIAGNOSIS FOR SYMPTOMS

2. CHECK CONTROL LINKAGE

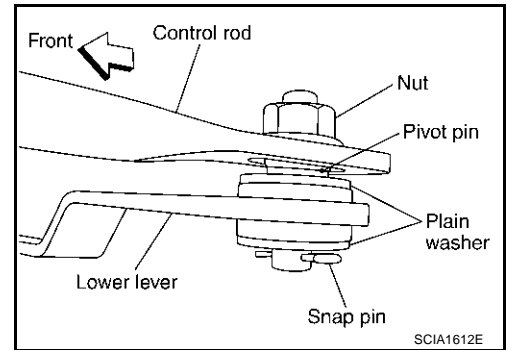
Check the control linkage.

- Refer to [AT-283, "Checking of A/T Position"](#).

OK or NG

OK >> GO TO 3.

NG >> Adjust control linkage. Refer to [AT-283, "Adjustment of A/T Position"](#).



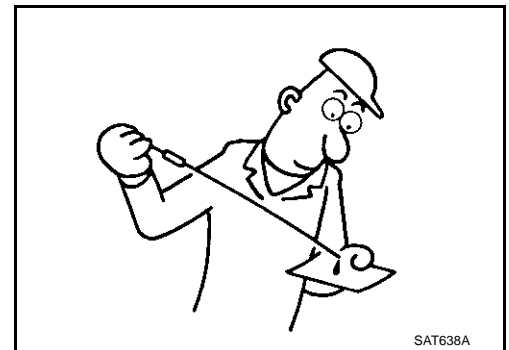
3. CHECK A/T FLUID LEVEL

Check A/T fluid level again. Refer to [AT-14, "Checking A/T Fluid"](#).

OK or NG

OK >> GO TO 4.

NG >> Refill ATF.



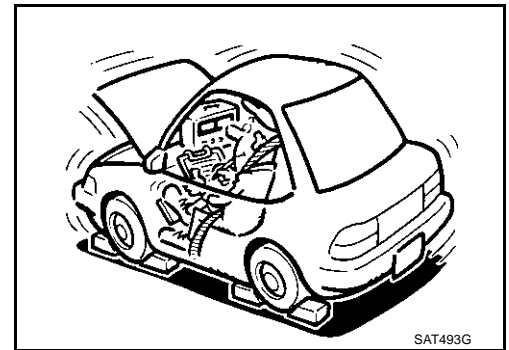
4. CHECK STALL TEST

Check stall revolution with selector lever in "D" position. Refer to [AT-51, "STALL TEST"](#).

OK or NG

OK >> GO TO 5.

NG >> GO TO 7.



5. CHECK LINE PRESSURE

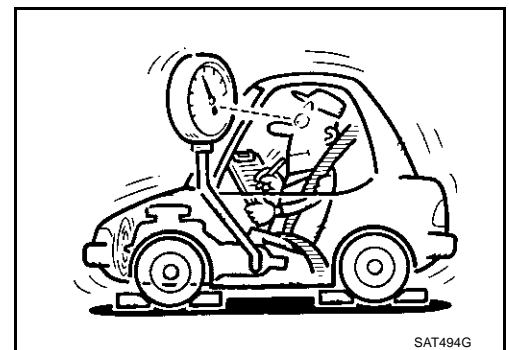
Check line pressure at idle with selector lever in "D" position. Refer to [AT-52, "LINE PRESSURE TEST"](#).

OK or NG

OK >> GO TO 8.

NG - 1 >> Line pressure high. GO TO 6.

NG - 2 >> Line pressure low. GO TO 7.



TROUBLE DIAGNOSIS FOR SYMPTOMS

6. DETECT MALFUNCTIONING ITEM

1. Control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#) .
2. Disassemble A/T. Refer to [AT-308, "DISASSEMBLY"](#) .
3. Check the following items:
 - Oil pump assembly. Refer to [AT-322, "Oil Pump"](#) .

OK or NG

- OK >> GO TO 8.
- NG >> Repair or replace damaged parts.

7. DETECT MALFUNCTIONING ITEM

1. Control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#) .
2. Disassemble A/T. Refer to [AT-308, "DISASSEMBLY"](#) .
3. Check the following items:
 - Oil pump assembly. Refer to [AT-322, "Oil Pump"](#) .
 - Power train system. Refer to [AT-308, "DISASSEMBLY"](#) .
 - Transmission case. Refer to [AT-308, "DISASSEMBLY"](#) .

OK or NG

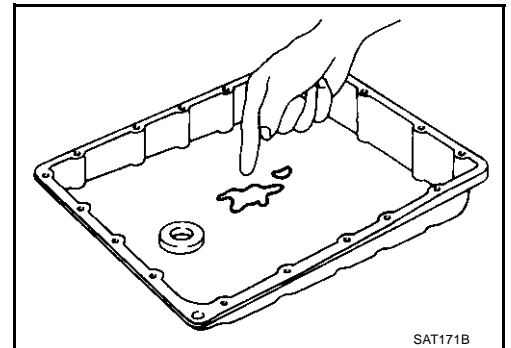
- OK >> GO TO 8.
- NG >> Repair or replace damaged parts.

8. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-290, "Control Valve Assembly"](#) .
2. Check A/T fluid condition.

OK or NG

- OK >> GO TO 9.
- NG >> GO TO 12.



9. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-60, "Symptom Chart"](#) .

OK or NG

- OK >> GO TO 10.
- NG >> Repair or replace damaged parts.

10. CHECK SYMPTOM

Check again.

OK or NG

- OK >> **INSPECTION END**
- NG >> GO TO 11.

TROUBLE DIAGNOSIS FOR SYMPTOMS

11. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> **INSPECTION END**

NG >> Repair or replace damaged parts.

12. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-60](#), "[Symptom Chart](#)".

OK or NG

OK >> GO TO 10.

NG >> Repair or replace damaged parts.

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L

M

TROUBLE DIAGNOSIS FOR SYMPTOMS

ECS0089E

Vehicle Cannot Be Started From D1

SYMPTOM:

Vehicle cannot be started from D1 on cruise test - Part 1.

DIAGNOSTIC PROCEDURE

1. CONFIRM THE SYMPTOM

Check if vehicle creeps in "R" position.

OK or NG

OK >> GO TO 2.

NG >> Refer to [AT-246, "Vehicle Does Not Creep Backward In "R" Position"](#).

2. CHECK SELF-DIAGNOSTIC RESULTS

Execute self-diagnosis.

Is any malfunction detected by self-diagnostic results?

YES >> Check the malfunctioning system.

NO >> GO TO 3.

3. CHECK ACCELERATOR POSITION (APP) SENSOR

Check accelerator pedal position (APP) sensor. Refer to [AT-145, "DTC P1705 THROTTLE POSITION SENSOR"](#)

OK or NG

OK >> GO TO 4.

NG >> Repair or replace accelerator pedal position (APP) sensor.

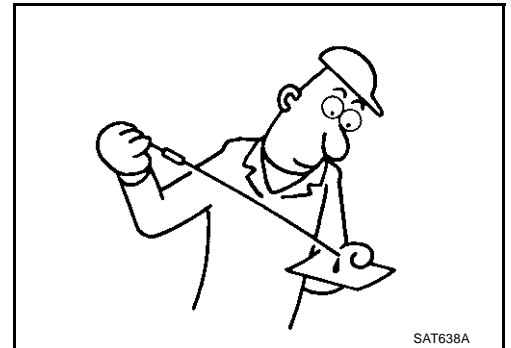
4. CHECK A/T FLUID LEVEL

Check A/T fluid level again. Refer to [AT-14, "Checking A/T Fluid"](#).

OK or NG

OK >> GO TO 5.

NG >> Refill ATF.



5. CHECK LINE PRESSURE

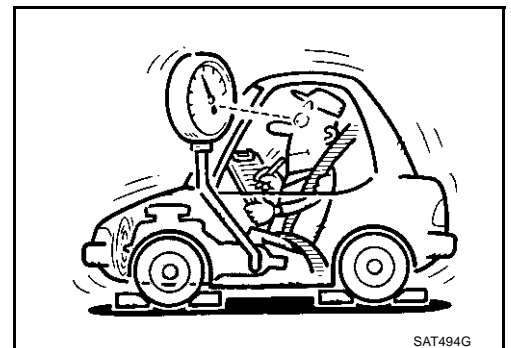
Check line pressure at the engine stall point. Refer to [AT-52, "LINE PRESSURE TEST"](#).

OK or NG

OK >> GO TO 8.

NG - 1 >> Line pressure high. GO TO 6.

NG - 2 >> Line pressure low. GO TO 7.



TROUBLE DIAGNOSIS FOR SYMPTOMS

6. DETECT MALFUNCTIONING ITEM

1. Control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#) .
2. Disassemble A/T. Refer to [AT-308, "DISASSEMBLY"](#) .
3. Check the following items:
 - Oil pump assembly. Refer to [AT-322, "Oil Pump"](#) .

OK or NG

- OK >> GO TO 8.
- NG >> Repair or replace damaged parts.

7. DETECT MALFUNCTIONING ITEM

1. Control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#) .
2. Disassemble A/T. Refer to [AT-308, "DISASSEMBLY"](#) .
3. Check the following items:
 - Oil pump assembly. Refer to [AT-322, "Oil Pump"](#) .
 - Power train system. Refer to [AT-308, "DISASSEMBLY"](#) .
 - Transmission case. Refer to [AT-308, "DISASSEMBLY"](#) .

OK or NG

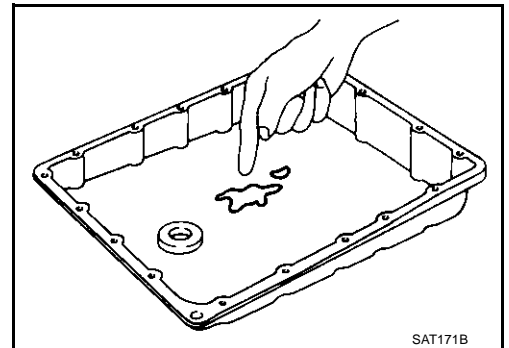
- OK >> GO TO 8.
- NG >> Repair or replace damaged parts.

8. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-290, "Control Valve Assembly"](#) .
2. Check A/T fluid condition.

OK or NG

- OK >> GO TO 9.
- NG >> GO TO 12.



9. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-60, "Symptom Chart"](#) .

OK or NG

- OK >> GO TO 10.
- NG >> Repair or replace damaged parts.

10. CHECK SYMPTOM

Check again.

OK or NG

- OK >> **INSPECTION END**
- NG >> GO TO 11.

TROUBLE DIAGNOSIS FOR SYMPTOMS

11. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

- OK >> **INSPECTION END**
NG >> Repair or replace damaged parts.

12. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-60, "Symptom Chart"](#).

OK or NG

- OK >> GO TO 10.
NG >> Repair or replace damaged parts.

A/T Does Not Shift: D1 → D2

EC50089F

SYMPTOM:

The vehicle does not shift-up from the D1 to D2 gear at the specified speed.

DIAGNOSTIC PROCEDURE

1. CONFIRM THE SYMPTOM

Check if vehicle creeps forward in "D" position and vehicle can be started from D1.

OK or NG

- OK >> GO TO 2.
NG >> Refer to [AT-248, "Vehicle Does Not Creep Forward In "D" Position"](#), [AT-252, "Vehicle Cannot Be Started From D1"](#).

2. CHECK SELF-DIAGNOSTIC RESULTS

Execute self-diagnosis.

Do the self-diagnostic results indicate ATF pressure switch 5, direct clutch solenoid valve, accelerator pedal position sensor, vehicle speed sensor A/T (revolution sensor) and vehicle speed sensor MTR?

- YES >> Check the malfunctioning system. Refer to [AT-228, "DTC P1845 ATF PRESSURE SWITCH 5"](#), [AT-189, "DTC P1762 DIRECT CLUTCH SOLENOID VALVE"](#), [AT-145, "DTC P1705 THROTTLE POSITION SENSOR"](#), [AT-111, "DTC P0720 VEHICLE SPEED SENSOR A/T \(REVOLUTION SENSOR\)"](#), [AT-158, "DTC P1721 VEHICLE SPEED SENSOR MTR"](#).

- NO >> GO TO 3.

3. CHECK A/T FLUID LEVEL

Check A/T fluid level again. Refer to [AT-14, "Checking A/T Fluid"](#).

OK or NG

- OK >> GO TO 4.
NG >> Refill ATF.



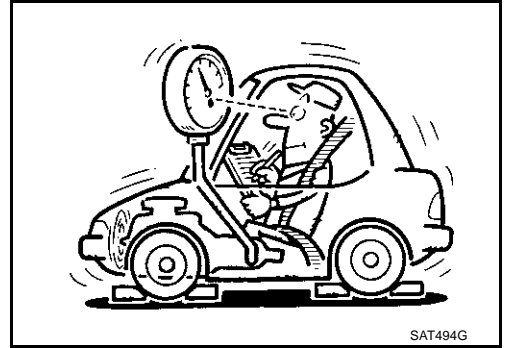
TROUBLE DIAGNOSIS FOR SYMPTOMS

4. CHECK LINE PRESSURE

Check line pressure at the engine stall point. Refer to [AT-52, "LINE PRESSURE TEST"](#) .

OK or NG

- OK >> GO TO 7.
- NG - 1 >> Line pressure high. GO TO 5.
- NG - 2 >> Line pressure low. GO TO 6.



5. DETECT MALFUNCTIONING ITEM

1. Control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#) .
2. Disassemble A/T. Refer to [AT-308, "DISASSEMBLY"](#) .
3. Check the following items:
 - Oil pump assembly. Refer to [AT-322, "Oil Pump"](#) .

OK or NG

- OK >> GO TO 7.
- NG >> Repair or replace damaged parts.

6. DETECT MALFUNCTIONING ITEM

1. Control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#) .
2. Disassemble A/T. Refer to [AT-308, "DISASSEMBLY"](#) .
3. Check the following items:
 - Oil pump assembly. Refer to [AT-322, "Oil Pump"](#) .
 - Power train system. Refer to [AT-308, "DISASSEMBLY"](#) .
 - Transmission case. Refer to [AT-308, "DISASSEMBLY"](#) .

OK or NG

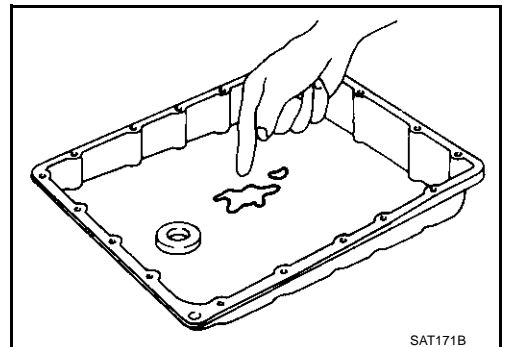
- OK >> GO TO 7.
- NG >> Repair or replace damaged parts.

7. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-290, "Control Valve Assembly"](#) .
2. Check A/T fluid condition.

OK or NG

- OK >> GO TO 8.
- NG >> GO TO 11.



TROUBLE DIAGNOSIS FOR SYMPTOMS

8. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-60, "Symptom Chart"](#) .

OK or NG

- OK >> GO TO 9.
NG >> Repair or replace damaged parts.

9. CHECK SYMPTOM

Check again.

OK or NG

- OK >> **INSPECTION END**
NG >> GO TO 10.

10. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

- OK >> **INSPECTION END**
NG >> Repair or replace damaged parts.

11. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-60, "Symptom Chart"](#) .

OK or NG

- OK >> GO TO 9.
NG >> Repair or replace damaged parts.

A/T Does Not Shift: D2 → D3 **SYMPTOM:**

ECS0089G

The vehicle does not shift-up from D2 to D3 gear at the specified speed.

DIAGNOSTIC PROCEDURE

1. CONFIRM THE SYMPTOM

Check if vehicle creeps forward in "D" position" and vehicle can be started from D1.

OK or NG

- OK >> GO TO 2.
NG >> Refer to [AT-248, "Vehicle Does Not Creep Forward In "D" Position"](#) , [AT-252, "Vehicle Cannot Be Started From D1"](#) .

2. CHECK SELF-DIAGNOSTIC RESULTS

Execute self-diagnosis.

Do the self-diagnostic results indicate ATF pressure switch 6, high and low reverse clutch solenoid valve, accelerator pedal position sensor, vehicle speed sensor A/T (revolution sensor) and vehicle speed sensor MTR?

- YES >> Check the malfunctioning system. Refer to [AT-232, "DTC P1846 ATF PRESSURE SWITCH 6"](#) , [AT-198, "DTC P1767 HIGH AND LOW REVERSE CLUTCH SOLENOID VALVE"](#) , [AT-145, "DTC P1705 THROTTLE POSITION SENSOR"](#) , [AT-111, "DTC P0720 VEHICLE SPEED SENSOR A/T \(REVOLUTION SENSOR\)"](#) , [AT-158, "DTC P1721 VEHICLE SPEED SENSOR MTR"](#) .
- NO >> GO TO 3.

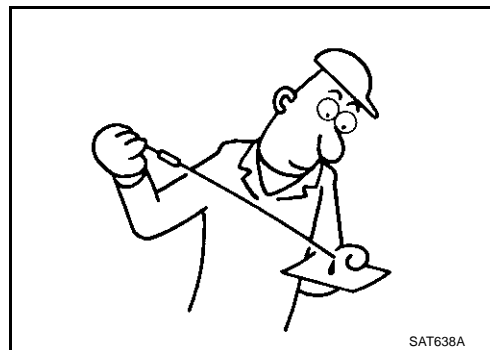
TROUBLE DIAGNOSIS FOR SYMPTOMS

3. CHECK A/T FLUID LEVEL

Check A/T fluid level again. Refer to [AT-14, "Checking A/T Fluid"](#) .

OK or NG

- OK >> GO TO 4.
- NG >> Refill ATF.

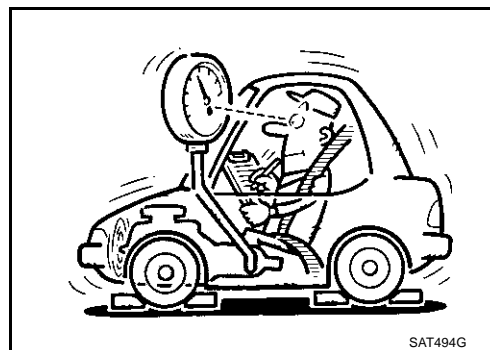


4. CHECK LINE PRESSURE

Check line pressure at the engine stall point. Refer to [AT-52, "LINE PRESSURE TEST"](#) .

OK or NG

- OK >> GO TO 7.
- NG - 1 >> Line pressure high. GO TO 5.
- NG - 2 >> Line pressure low. GO TO 6.



5. DETECT MALFUNCTIONING ITEM

1. Control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#) .
2. Disassemble A/T. Refer to [AT-308, "DISASSEMBLY"](#) .
3. Check the following items:
 - Oil pump assembly. Refer to [AT-322, "Oil Pump"](#) .

OK or NG

- OK >> GO TO 7.
- NG >> Repair or replace damaged parts.

6. DETECT MALFUNCTIONING ITEM

1. Control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#) .
2. Disassemble A/T. Refer to [AT-308, "DISASSEMBLY"](#) .
3. Check the following items:
 - Oil pump assembly. Refer to [AT-322, "Oil Pump"](#) .
 - Power train system. Refer to [AT-308, "DISASSEMBLY"](#) .
 - Transmission case. Refer to [AT-308, "DISASSEMBLY"](#) .

OK or NG

- OK >> GO TO 7.
- NG >> Repair or replace damaged parts.

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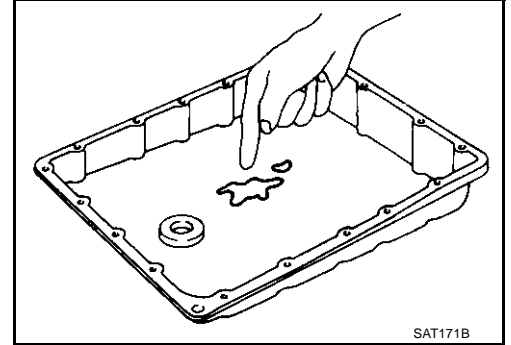
TROUBLE DIAGNOSIS FOR SYMPTOMS

7. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-290, "Control Valve Assembly"](#) .
2. Check A/T fluid condition.

OK or NG

- OK >> GO TO 8.
NG >> GO TO 11.



8. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-60, "Symptom Chart"](#) .

OK or NG

- OK >> GO TO 9.
NG >> Repair or replace damaged parts.

9. CHECK SYMPTOM

Check again.

OK or NG

- OK >> **INSPECTION END**
NG >> GO TO 10.

10. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

- OK >> **INSPECTION END**
NG >> Repair or replace damaged parts.

11. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-60, "Symptom Chart"](#) .

OK or NG

- OK >> GO TO 9.
NG >> Repair or replace damaged parts.

TROUBLE DIAGNOSIS FOR SYMPTOMS

ECS0089H

A/T Does Not Shift: D3 → D4

SYMPTOM:

- The vehicle does not shift-up from the D3 to D4 gear at the specified speed.
- The vehicle does not shift-up from the D3 to D4 gear unless A/T is warmed up.

DIAGNOSTIC PROCEDURE

1. CONFIRM THE SYMPTOM

Check if vehicle creeps forward in "D" position and vehicle can be started from D1.

OK or NG

OK >> GO TO 2.

NG >> Refer to [AT-248, "Vehicle Does Not Creep Forward In "D" Position"](#) , [AT-252, "Vehicle Cannot Be Started From D1"](#) .

2. CHECK SELF-DIAGNOSTIC RESULTS

Execute self-diagnosis.

Do the self-diagnostic results indicate ATF pressure switch 1, ATF pressure switch 3, front brake solenoid valve, input clutch solenoid valve, accelerator pedal position sensor, vehicle speed sensor A/T (revolution sensor) and vehicle speed sensor MTR?

YES >> Check the malfunctioning system. Refer to [AT-220, "DTC P1841 ATF PRESSURE SWITCH 1"](#) , [AT-224, "DTC P1843 ATF PRESSURE SWITCH 3"](#) , [AT-171, "DTC P1752 INPUT CLUTCH SOLENOID VALVE"](#) , [AT-180, "DTC P1757 FRONT BRAKE SOLENOID VALVE"](#) , [AT-145, "DTC P1705 THROTTLE POSITION SENSOR"](#) , [AT-111, "DTC P0720 VEHICLE SPEED SENSOR A/T \(REVOLUTION SENSOR\)"](#) , [AT-158, "DTC P1721 VEHICLE SPEED SENSOR MTR"](#) .

NO >> GO TO 3.

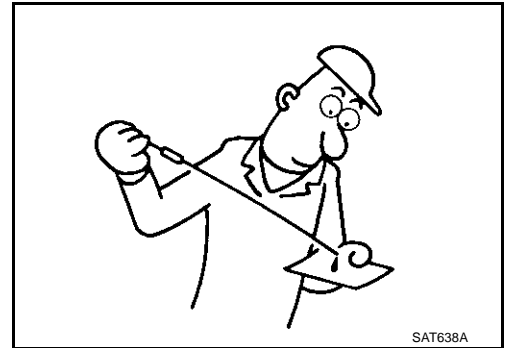
3. CHECK A/T FLUID LEVEL

Check A/T fluid level again. Refer to [AT-14, "Checking A/T Fluid"](#) .

OK or NG

OK >> GO TO 4.

NG >> Refill ATF.



SAT638A

4. CHECK LINE PRESSURE

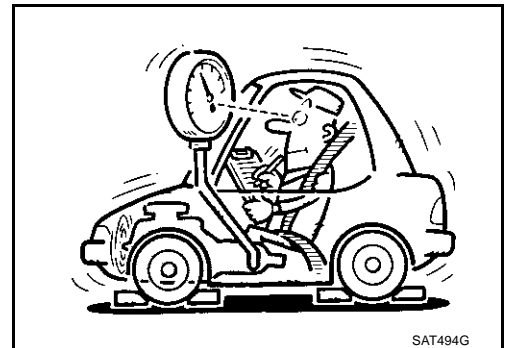
Check line pressure at the engine stall point. Refer to [AT-52, "LINE PRESSURE TEST"](#) .

OK or NG

OK >> GO TO 7.

NG - 1 >> Line pressure high. GO TO 5.

NG - 2 >> Line pressure low. GO TO 6.



SAT494G

TROUBLE DIAGNOSIS FOR SYMPTOMS

5. DETECT MALFUNCTIONING ITEM

1. Control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#) .
2. Disassemble A/T. Refer to [AT-308, "DISASSEMBLY"](#) .
3. Check the following items:
 - Oil pump assembly. Refer to [AT-322, "Oil Pump"](#) .

OK or NG

- OK >> GO TO 7.
NG >> Repair or replace damaged parts.

6. DETECT MALFUNCTIONING ITEM

1. Control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#) .
2. Disassemble A/T. Refer to [AT-308, "DISASSEMBLY"](#) .
3. Check the following items:
 - Oil pump assembly. Refer to [AT-322, "Oil Pump"](#) .
 - Power train system. Refer to [AT-308, "DISASSEMBLY"](#) .
 - Transmission case. Refer to [AT-308, "DISASSEMBLY"](#) .

OK or NG

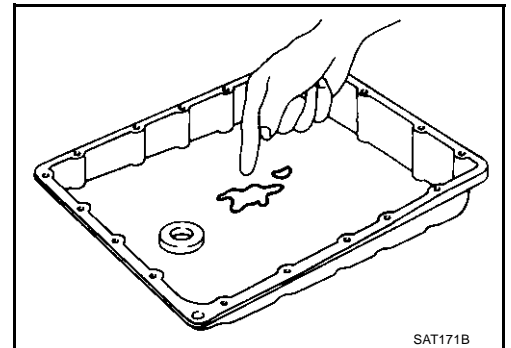
- OK >> GO TO 7.
NG >> Repair or replace damaged parts.

7. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-290, "Control Valve Assembly"](#) .
2. Check A/T fluid condition.

OK or NG

- OK >> GO TO 8.
NG >> GO TO 11.



8. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-60, "Symptom Chart"](#) .

OK or NG

- OK >> GO TO 9.
NG >> Repair or replace damaged parts.

9. CHECK SYMPTOM

Check again.

OK or NG

- OK >> **INSPECTION END**
NG >> GO TO 10.

TROUBLE DIAGNOSIS FOR SYMPTOMS

10. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

- OK >> **INSPECTION END**
NG >> Repair or replace damaged parts.

11. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-60, "Symptom Chart"](#).

OK or NG

- OK >> GO TO 9.
NG >> Repair or replace damaged parts.

A/T Does Not Shift: D4 → D5

ECS0089I

SYMPTOM:

- The vehicle does not shift-up from the D4 to D5 gear at the specified speed.
- The vehicle does not shift-up from the D4 to D5 gear unless A/T is warmed up.

DIAGNOSTIC PROCEDURE

1. CONFIRM THE SYMPTOM

Check if vehicle creeps forward in "D" position" and vehicle can be started from D1.

OK or NG

- OK >> GO TO 2.
NG >> Refer to [AT-248, "Vehicle Does Not Creep Forward In "D" Position"](#) ,[AT-252, "Vehicle Cannot Be Started From D1"](#) .

2. CHECK SELF-DIAGNOSTIC RESULTS

Execute self-diagnosis.

Do the self-diagnostic results indicate ATF pressure switch 1, ATF pressure switch 5, front brake solenoid valve, direct clutch solenoid valve, accelerator pedal position sensor, turbine revolution sensor, vehicle speed sensor A/T (revolution sensor) and vehicle speed sensor MTR?

- YES >> Check the malfunctioning system. Refer to [AT-220, "DTC P1841 ATF PRESSURE SWITCH 1"](#) ,
[AT-228, "DTC P1845 ATF PRESSURE SWITCH 5"](#) , [AT-180, "DTC P1757 FRONT BRAKE SOLENOID VALVE"](#) ,
[AT-189, "DTC P1762 DIRECT CLUTCH SOLENOID VALVE"](#) , [AT-145, "DTC P1705 THROTTLE POSITION SENSOR"](#) ,
[AT-153, "DTC P1716 TURBINE REVOLUTION SENSOR"](#) , [AT-111, "DTC P0720 VEHICLE SPEED SENSOR A/T \(REVOLUTION SENSOR\)"](#) ,
[AT-158, "DTC P1721 VEHICLE SPEED SENSOR MTR"](#) .

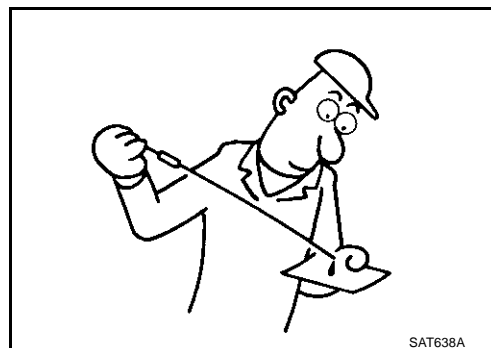
- NO >> GO TO 3.

3. CHECK A/T FLUID LEVEL

Check A/T fluid level again. Refer to [AT-14, "Checking A/T Fluid"](#) .

OK or NG

- OK >> GO TO 4.
NG >> Refill ATF.



TROUBLE DIAGNOSIS FOR SYMPTOMS

4. CHECK LINE PRESSURE

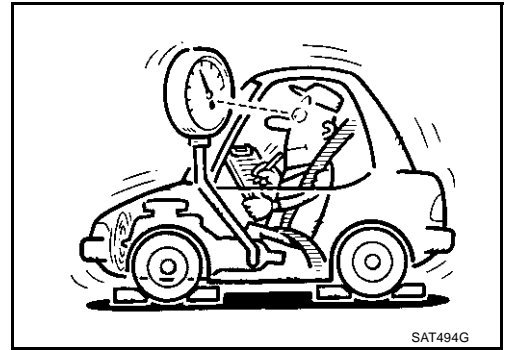
Check line pressure at the engine stall point. Refer to [AT-52, "LINE PRESSURE TEST"](#) .

OK or NG

OK >> GO TO 7.

NG - 1 >> Line pressure high. GO TO 5.

NG - 2 >> Line pressure low. GO TO 6.



5. DETECT MALFUNCTIONING ITEM

1. Control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#) .

2. Disassemble A/T. Refer to [AT-308, "DISASSEMBLY"](#) .

3. Check the following items:

- Oil pump assembly. Refer to [AT-322, "Oil Pump"](#) .

OK or NG

OK >> GO TO 7.

NG >> Repair or replace damaged parts.

6. DETECT MALFUNCTIONING ITEM

1. Control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#) .

2. Disassemble A/T. Refer to [AT-308, "DISASSEMBLY"](#) .

3. Check the following items:

- Oil pump assembly. Refer to [AT-322, "Oil Pump"](#) .

- Power train system. Refer to [AT-308, "DISASSEMBLY"](#) .

- Transmission case. Refer to [AT-308, "DISASSEMBLY"](#) .

OK or NG

OK >> GO TO 7.

NG >> Repair or replace damaged parts.

7. CHECK A/T FLUID CONDITION

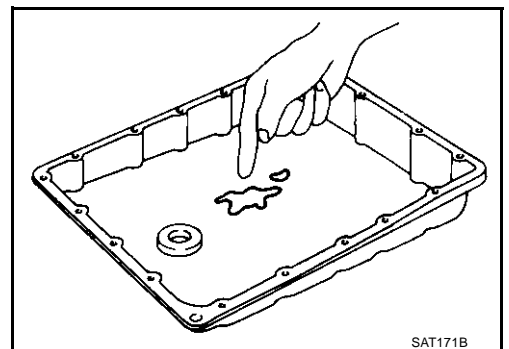
1. Remove oil pan. Refer to [AT-290, "Control Valve Assembly"](#) .

2. Check A/T fluid condition.

OK or NG

OK >> GO TO 8.

NG >> GO TO 11.



TROUBLE DIAGNOSIS FOR SYMPTOMS

8. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-60](#), "[Symptom Chart](#)".

OK or NG

- OK >> GO TO 9.
NG >> Repair or replace damaged parts.

9. CHECK SYMPTOM

Check again.

OK or NG

- OK >> **INSPECTION END**
NG >> GO TO 10.

10. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

- OK >> **INSPECTION END**
NG >> Repair or replace damaged parts.

11. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-60](#), "[Symptom Chart](#)".

OK or NG

- OK >> GO TO 9.
NG >> Repair or replace damaged parts.

A/T Does Not Perform Lock-up **SYMPTOM:**

ECS0089J

A/T does not perform lock-up at the specified speed.

DIAGNOSTIC PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

Execute self-diagnosis.

Do the self-diagnostic results indicate torque converter clutch solenoid valve, engine speed signal, turbine revolution sensor, accelerator pedal position sensor, CAN communication?

- YES >> Check the malfunctioning system. Refer to [AT-118](#), "[DTC P0740 TORQUE CONVERTER CLUTCH SOLENOID VALVE](#)", [AT-116](#), "[DTC P0725 ENGINE SPEED SIGNAL](#)", [AT-153](#), "[DTC P1716 TURBINE REVOLUTION SENSOR](#)", [AT-145](#), "[DTC P1705 THROTTLE POSITION SENSOR](#)", [AT-100](#), "[DTC U1000 CAN COMMUNICATION LINE](#)".
- NO >> GO TO 2.

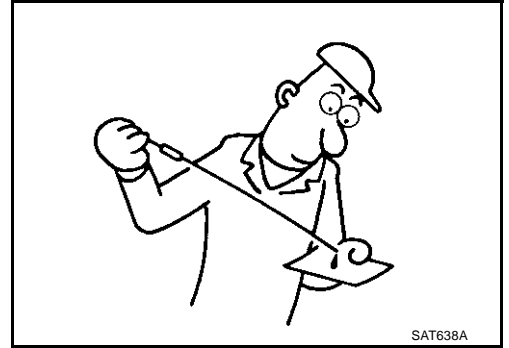
TROUBLE DIAGNOSIS FOR SYMPTOMS

2. CHECK A/T FLUID LEVEL

Check A/T fluid level again. Refer to [AT-14, "Checking A/T Fluid"](#) .

OK or NG

- OK >> GO TO 3.
- NG >> Refill ATF.

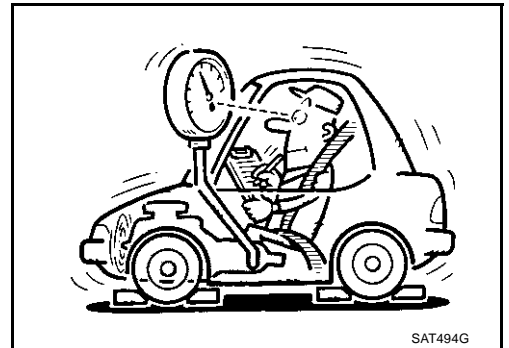


3. CHECK LINE PRESSURE

Check line pressure at the engine stall point. Refer to [AT-52, "LINE PRESSURE TEST"](#) .

OK or NG

- OK >> GO TO 6.
- NG - 1 >> Line pressure high. GO TO 4.
- NG - 2 >> Line pressure low. GO TO 5.



4. DETECT MALFUNCTIONING ITEM

1. Control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#) .
2. Disassemble A/T. Refer to [AT-308, "DISASSEMBLY"](#) .
3. Check the following items:
 - Oil pump assembly. Refer to [AT-322, "Oil Pump"](#) .

OK or NG

- OK >> GO TO 6.
- NG >> Repair or replace damaged parts.

5. DETECT MALFUNCTIONING ITEM

1. Control valve assembly. Refer to [AT-290, "Control Valve Assembly"](#) .
2. Disassemble A/T. Refer to [AT-308, "DISASSEMBLY"](#) .
3. Check the following items:
 - Oil pump assembly. Refer to [AT-322, "Oil Pump"](#) .
 - Power train system. Refer to [AT-308, "DISASSEMBLY"](#) .
 - Transmission case. Refer to [AT-308, "DISASSEMBLY"](#) .

OK or NG

- OK >> GO TO 6.
- NG >> Repair or replace damaged parts.

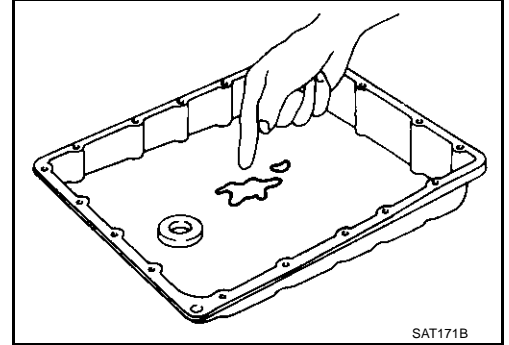
TROUBLE DIAGNOSIS FOR SYMPTOMS

6. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-290, "Control Valve Assembly"](#) .
2. Check A/T fluid condition.

OK or NG

- OK >> GO TO 7.
NG >> GO TO 10.



7. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-60, "Symptom Chart"](#) .

OK or NG

- OK >> GO TO 8.
NG >> Repair or replace damaged parts.

8. CHECK SYMPTOM

Check again.

OK or NG

- OK >> **INSPECTION END**
NG >> GO TO 9.

9. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

- OK >> **INSPECTION END**
NG >> Repair or replace damaged parts.

10. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-60, "Symptom Chart"](#) .

OK or NG

- OK >> GO TO 8.
NG >> Repair or replace damaged parts.

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TROUBLE DIAGNOSIS FOR SYMPTOMS

EC50089K

A/T Does Not Hold Lock-up Condition

SYMPTOM:

The lock-up condition cannot be maintained for more than 30 seconds.

DIAGNOSTIC PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

Execute self-diagnosis.

Do the self-diagnostic results indicate torque converter clutch solenoid valve, engine speed signal, turbine revolution sensor, CAN communication?

YES >> Check the malfunctioning system. Refer to [AT-118, "DTC P0740 TORQUE CONVERTER CLUTCH SOLENOID VALVE"](#), [AT-116, "DTC P0725 ENGINE SPEED SIGNAL"](#), [AT-153, "DTC P1716 TURBINE REVOLUTION SENSOR"](#), [AT-100, "DTC U1000 CAN COMMUNICATION LINE"](#).

NO >> GO TO 2.

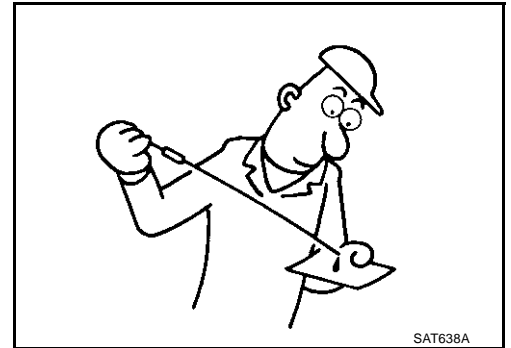
2. CHECK A/T FLUID LEVEL

Check A/T fluid level again. Refer to [AT-14, "Checking A/T Fluid"](#).

OK or NG

OK >> GO TO 3.

NG >> Refill ATF.



3. CHECK A/T FLUID CONDITION

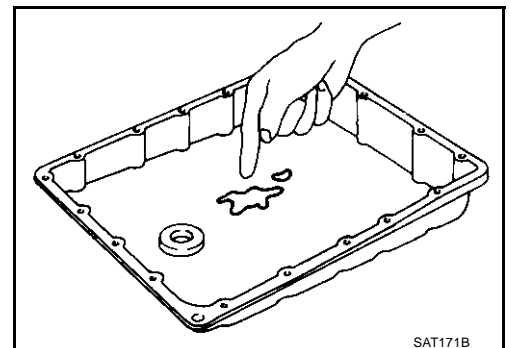
1. Remove oil pan. Refer to [AT-290, "Control Valve Assembly"](#).

2. Check A/T fluid condition.

OK or NG

OK >> GO TO 4.

NG >> GO TO 7.



4. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-60, "Symptom Chart"](#).

OK or NG

OK >> GO TO 5.

NG >> Repair or replace damaged parts.

5. CHECK SYMPTOM

Check again.

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 6.

TROUBLE DIAGNOSIS FOR SYMPTOMS

6. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> **INSPECTION END**

NG >> Repair or replace damaged parts.

7. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-60](#), "[Symptom Chart](#)".

OK or NG

OK >> GO TO 5.

NG >> Repair or replace damaged parts.

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TROUBLE DIAGNOSIS FOR SYMPTOMS

ECS0089L

Lock-up Is Not Released

SYMPTOM:

The lock-up condition cannot be cancelled even after releasing the accelerator pedal.

DIAGNOSTIC PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

Execute self-diagnosis.

Do the self-diagnostic results indicate torque converter clutch solenoid valve, engine speed signal, turbine revolution sensor, CAN communication?

YES >> Check the malfunctioning system. Refer to [AT-118, "DTC P0740 TORQUE CONVERTER CLUTCH SOLENOID VALVE"](#) , [AT-116, "DTC P0725 ENGINE SPEED SIGNAL"](#) , [AT-153, "DTC P1716 TURBINE REVOLUTION SENSOR"](#) , [AT-100, "DTC U1000 CAN COMMUNICATION LINE"](#) .

NO >> GO TO 2.

2. CHECK SYMPTOM

Check again.

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 3.

3. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> **INSPECTION END**

NG >> Repair or replace damaged parts.

TROUBLE DIAGNOSIS FOR SYMPTOMS

ECS0089M

Engine Speed Does Not Return To Idle

SYMPTOM:

When a shift-down is performed, the engine speed does not smoothly return to the idling speed.

DIAGNOSTIC PROCEDURE

1. CHECK A/T FLUID LEVEL

Check A/T fluid level again. Refer to [AT-14, "Checking A/T Fluid"](#) .

OK or NG

- OK >> GO TO 2.
- NG >> Refill ATF.

2. CHECK SELF-DIAGNOSTIC RESULTS

Execute self-diagnosis.

Do the self-diagnostic results indicate front brake solenoid valve, direct clutch solenoid valve, ATF pressure switch 1, ATF pressure switch 5, accelerator pedal position sensor, vehicle speed sensor A/T (revolution sensor) and vehicle speed sensor MTR?

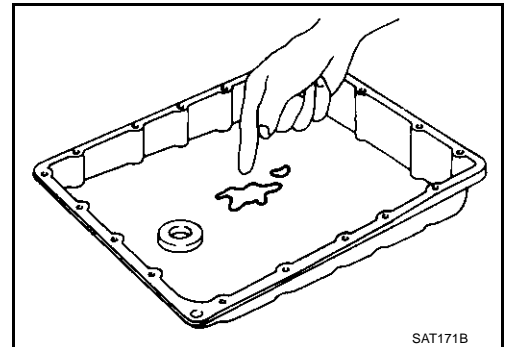
- YES >> Check the malfunctioning system. Refer to [AT-180, "DTC P1757 FRONT BRAKE SOLENOID VALVE"](#) , [AT-189, "DTC P1762 DIRECT CLUTCH SOLENOID VALVE"](#) , [AT-220, "DTC P1841 ATF PRESSURE SWITCH 1"](#) , [AT-228, "DTC P1845 ATF PRESSURE SWITCH 5"](#) , [AT-145, "DTC P1705 THROTTLE POSITION SENSOR"](#) , [AT-111, "DTC P0720 VEHICLE SPEED SENSOR A/T \(REVOLUTION SENSOR\)"](#) , [AT-158, "DTC P1721 VEHICLE SPEED SENSOR MTR"](#) .
- NO >> GO TO 3.

3. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-290, "Control Valve Assembly"](#) .
2. Check A/T fluid condition.

OK or NG

- OK >> GO TO 4.
- NG >> GO TO 7.



4. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-60, "Symptom Chart"](#) .

OK or NG

- OK >> GO TO 5.
- NG >> Repair or replace damaged parts.

5. CHECK SYMPTOM

Check again.

OK or NG

- OK >> **INSPECTION END**
- NG >> GO TO 6.

TROUBLE DIAGNOSIS FOR SYMPTOMS

6. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

- OK >> **INSPECTION END**
NG >> Repair or replace damaged parts.

7. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-60](#), "[Symptom Chart](#)".

OK or NG

- OK >> GO TO 5.
NG >> Repair or replace damaged parts.

TROUBLE DIAGNOSIS FOR SYMPTOMS

Cannot Be Changed to Manual Mode

ECS0089N

SYMPTOM:

Does not change to manual mode when manual shift gate is used.

DIAGNOSTIC PROCEDURE

1. MANUAL MODE SWITCH

Check the manual mode switch. Refer to [AT-216, "DTC P1815 MANUAL MODE SWITCH"](#) .

OK or NG

OK >> GO TO 2.

NG >> Repair or replace damaged parts.

2. CHECK SELF-DIAGNOSTIC RESULTS

Execute self-diagnosis.

Do the self-diagnostic results indicate turbine revolution sensor?

YES >> Check the malfunctioning system. Refer to [AT-153, "DTC P1716 TURBINE REVOLUTION SENSOR"](#) .

NO >> **INSPECTION END**

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TROUBLE DIAGNOSIS FOR SYMPTOMS

ECS00890

A/T Does Not Shift: 5th gear → 4th gear

SYMPTOM:

When shifted from 5M to 4M position in manual mode, does not downshift from 5th to 4th gear.

DIAGNOSTIC PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

Execute self-diagnosis.

Do the self-diagnostic results indicate PNP switch, ATF pressure switch 1?

YES >> Check the malfunctioning system. Refer to [AT-106, "DTC P0705 PARK/NEUTRAL POSITION SWITCH"](#) , [AT-220, "DTC P1841 ATF PRESSURE SWITCH 1"](#) .

NO >> GO TO 2.

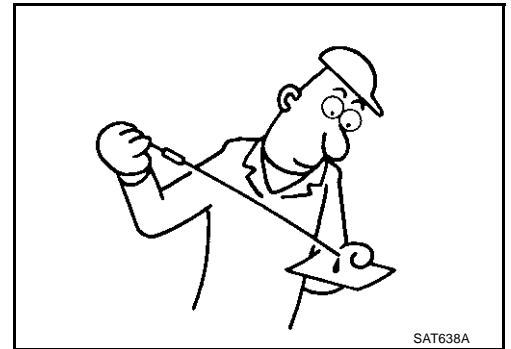
2. CHECK A/T FLUID LEVEL

Check A/T fluid level again. Refer to [AT-14, "Checking A/T Fluid"](#) .

OK or NG

OK >> GO TO 3.

NG >> Refill ATF.



3. CHECK CONTROL LINKAGE

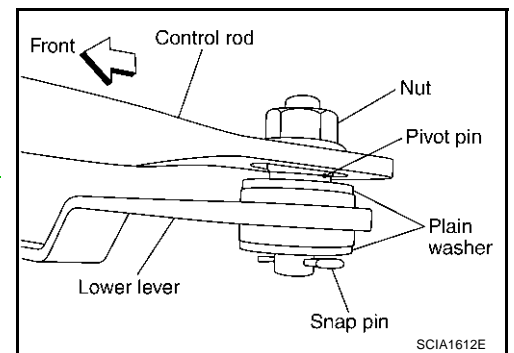
Check the control linkage.

● Refer to [AT-283, "Checking of A/T Position"](#) .

OK or NG

OK >> GO TO 4.

NG >> Adjust control linkage. Refer to [AT-283, "Adjustment of A/T Position"](#) .



4. MANUAL MODE SWITCH

Check the manual mode switch. Refer to [AT-216, "DTC P1815 MANUAL MODE SWITCH"](#) .

OK or NG

OK >> GO TO 5.

NG >> Repair or replace damaged parts.

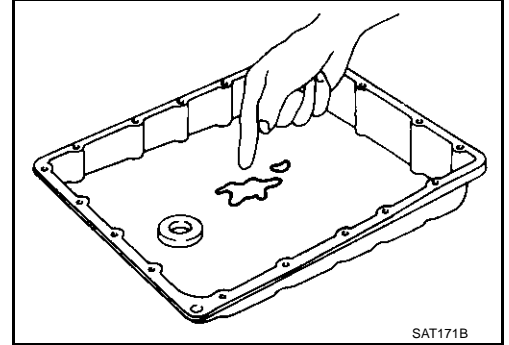
TROUBLE DIAGNOSIS FOR SYMPTOMS

5. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-290, "Control Valve Assembly"](#) .
2. Check A/T fluid condition.

OK or NG

- OK >> GO TO 6.
NG >> GO TO 9.



6. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-60, "Symptom Chart"](#) .

OK or NG

- OK >> GO TO 7.
NG >> Repair or replace damaged parts.

7. CHECK SYMPTOM

Check again.

OK or NG

- OK >> **INSPECTION END**
NG >> GO TO 8.

8. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

- OK >> **INSPECTION END**
NG >> Repair or replace damaged parts.

9. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-60, "Symptom Chart"](#) .

OK or NG

- OK >> GO TO 7.
NG >> Repair or replace damaged parts.

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TROUBLE DIAGNOSIS FOR SYMPTOMS

EC50089P

A/T Does Not Shift: 4th gear → 3rd gear

SYMPTOM:

When shifted from 4M to 3M position in manual mode, does not downshift from 4th to 3rd gear.

DIAGNOSTIC PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

Execute self-diagnosis.

Do the self-diagnostic results indicate PNP switch, ATF pressure switch 1, ATF pressure switch 3?

YES >> Check the malfunctioning system. Refer to [AT-106, "DTC P0705 PARK/NEUTRAL POSITION SWITCH"](#), [AT-220, "DTC P1841 ATF PRESSURE SWITCH 1"](#), [AT-224, "DTC P1843 ATF PRESSURE SWITCH 3"](#).

NO >> GO TO 2.

2. CHECK A/T FLUID LEVEL

Check A/T fluid level again. Refer to [AT-14, "Checking A/T Fluid"](#).

OK or NG

OK >> GO TO 3.

NG >> Refill ATF.



3. CHECK CONTROL LINKAGE

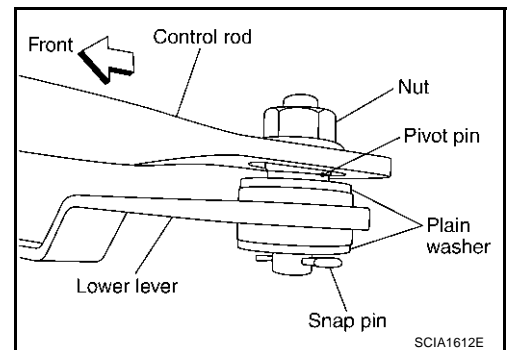
Check the control linkage.

- Refer to [AT-283, "Checking of A/T Position"](#).

OK or NG

OK >> GO TO 4.

NG >> Adjust control linkage. Refer to [AT-283, "Adjustment of A/T Position"](#).



4. MANUAL MODE SWITCH

Check the manual mode switch. Refer to [AT-216, "DTC P1815 MANUAL MODE SWITCH"](#).

OK or NG

OK >> GO TO 5.

NG >> Repair or replace damaged parts.

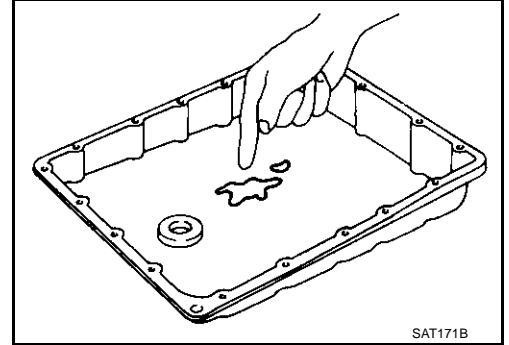
TROUBLE DIAGNOSIS FOR SYMPTOMS

5. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-290, "Control Valve Assembly"](#) .
2. Check A/T fluid condition.

OK or NG

- OK >> GO TO 6.
NG >> GO TO 9.



6. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-60, "Symptom Chart"](#) .

OK or NG

- OK >> GO TO 7.
NG >> Repair or replace damaged parts.

7. CHECK SYMPTOM

Check again.

OK or NG

- OK >> **INSPECTION END**
NG >> GO TO 8.

8. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

- OK >> **INSPECTION END**
NG >> Repair or replace damaged parts.

9. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-60, "Symptom Chart"](#) .

OK or NG

- OK >> GO TO 7.
NG >> Repair or replace damaged parts.

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TROUBLE DIAGNOSIS FOR SYMPTOMS

ECS0089Q

A/T Does Not Shift: 3rd gear → 2nd gear

SYMPTOM:

When shifted from 3M to 2M position in manual mode, does not downshift from 3rd to 2nd gear.

DIAGNOSTIC PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

Execute self-diagnosis.

Do the self-diagnostic results indicate PNP switch, ATF pressure switch 6?

YES >> Check the malfunctioning system. Refer to [AT-106, "DTC P0705 PARK/NEUTRAL POSITION SWITCH"](#) , [AT-232, "DTC P1846 ATF PRESSURE SWITCH 6"](#) .

NO >> GO TO 2.

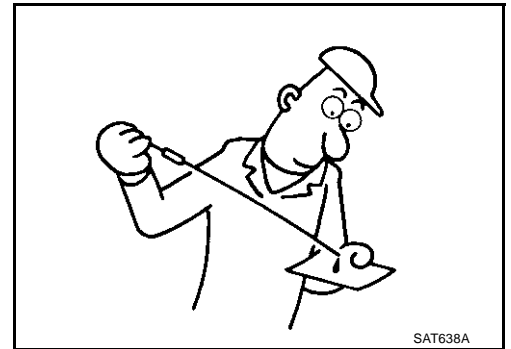
2. CHECK A/T FLUID LEVEL

Check A/T fluid level again. Refer to [AT-14, "Checking A/T Fluid"](#) .

OK or NG

OK >> GO TO 3.

NG >> Refill ATF.



3. CHECK CONTROL LINKAGE

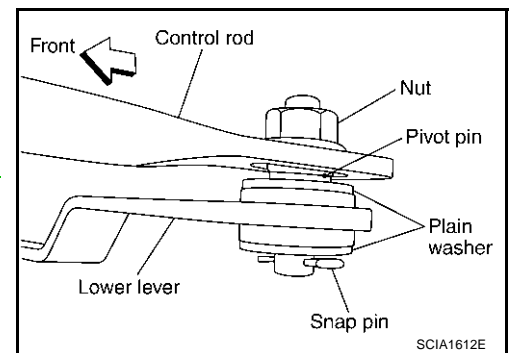
Check the control linkage.

- Refer to [AT-283, "Checking of A/T Position"](#) .

OK or NG

OK >> GO TO 4.

NG >> Adjust control linkage. Refer to [AT-283, "Adjustment of A/T Position"](#) .



4. MANUAL MODE SWITCH

Check the manual mode switch. Refer to [AT-216, "DTC P1815 MANUAL MODE SWITCH"](#) .

OK or NG

OK >> GO TO 5.

NG >> Repair or replace damaged parts.

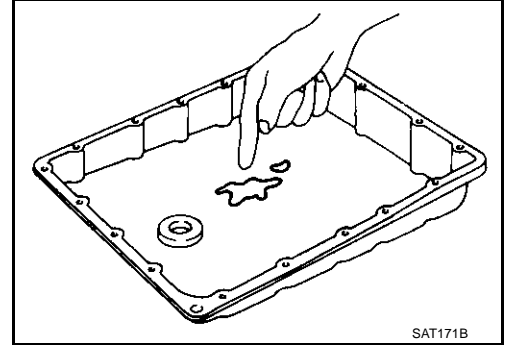
TROUBLE DIAGNOSIS FOR SYMPTOMS

5. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-290, "Control Valve Assembly"](#) .
2. Check A/T fluid condition.

OK or NG

- OK >> GO TO 6.
NG >> GO TO 9.



6. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-60, "Symptom Chart"](#) .

OK or NG

- OK >> GO TO 7.
NG >> Repair or replace damaged parts.

7. CHECK SYMPTOM

Check again.

OK or NG

- OK >> **INSPECTION END**
NG >> GO TO 8.

8. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

- OK >> **INSPECTION END**
NG >> Repair or replace damaged parts.

9. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-60, "Symptom Chart"](#) .

OK or NG

- OK >> GO TO 7.
NG >> Repair or replace damaged parts.

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TROUBLE DIAGNOSIS FOR SYMPTOMS

EC50089R

A/T Does Not Shift: 2nd gear → 1st gear

SYMPTOM:

When shifted from 2M to 1M position in manual mode, does not downshift from 2nd to 1st gear.

DIAGNOSTIC PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

Execute self-diagnosis.

Do the self-diagnostic results indicate PNP switch, ATF pressure switch 5?

YES >> Check the malfunctioning system. Refer to [AT-106, "DTC P0705 PARK/NEUTRAL POSITION SWITCH"](#) , [AT-228, "DTC P1845 ATF PRESSURE SWITCH 5"](#) .

NO >> GO TO 2.

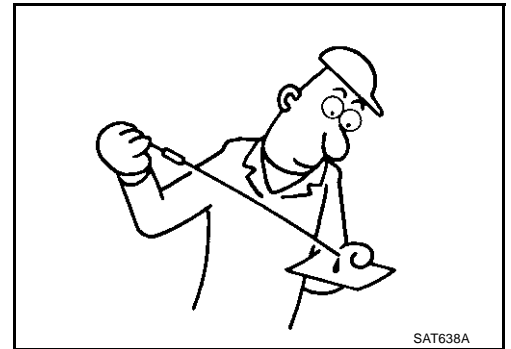
2. CHECK A/T FLUID LEVEL

Check A/T fluid level again. Refer to [AT-14, "Checking A/T Fluid"](#) .

OK or NG

OK >> GO TO 3.

NG >> Refill ATF.



3. CHECK CONTROL LINKAGE

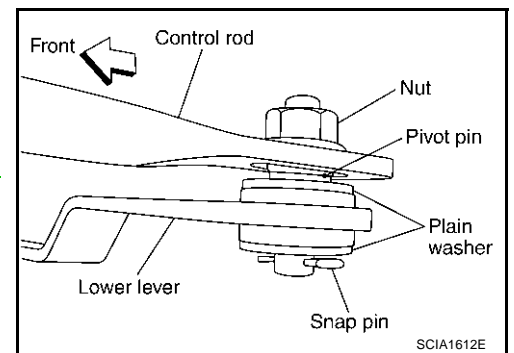
Check the control linkage.

- Refer to [AT-283, "Checking of A/T Position"](#) .

OK or NG

OK >> GO TO 4.

NG >> Adjust control linkage. Refer to [AT-283, "Adjustment of A/T Position"](#) .



4. MANUAL MODE SWITCH

Check the manual mode switch. Refer to [AT-216, "DTC P1815 MANUAL MODE SWITCH"](#) .

OK or NG

OK >> GO TO 5.

NG >> Repair or replace damaged parts.

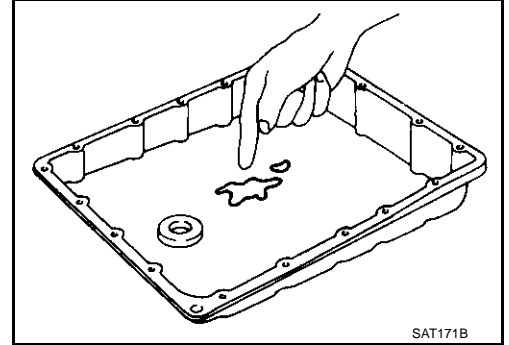
TROUBLE DIAGNOSIS FOR SYMPTOMS

5. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-290, "Control Valve Assembly"](#) .
2. Check A/T fluid condition.

OK or NG

- OK >> GO TO 6.
NG >> GO TO 9.



6. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-60, "Symptom Chart"](#) .

OK or NG

- OK >> GO TO 7.
NG >> Repair or replace damaged parts.

7. CHECK SYMPTOM

Check again.

OK or NG

- OK >> **INSPECTION END**
NG >> GO TO 8.

8. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

- OK >> **INSPECTION END**
NG >> Repair or replace damaged parts.

9. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-60, "Symptom Chart"](#) .

OK or NG

- OK >> GO TO 7.
NG >> Repair or replace damaged parts.

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TROUBLE DIAGNOSIS FOR SYMPTOMS

ECS0089S

Vehicle Does Not Decelerate By Engine Brake

SYMPTOM:

No engine brake is applied when the gear is shifted from the 2nd to 1st gear.

DIAGNOSTIC PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

Execute self-diagnosis.

Do the self-diagnostic results indicate PNP switch, ATF pressure switch 5?

YES >> Check the malfunctioning system. Refer to [AT-106, "DTC P0705 PARK/NEUTRAL POSITION SWITCH"](#) , [AT-228, "DTC P1845 ATF PRESSURE SWITCH 5"](#) .

NO >> GO TO 2.

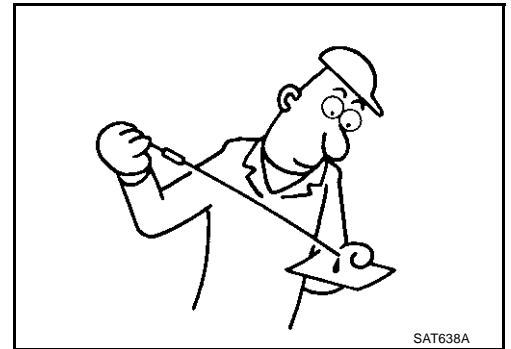
2. CHECK A/T FLUID LEVEL

Check A/T fluid level again. Refer to [AT-14, "Checking A/T Fluid"](#) .

OK or NG

OK >> GO TO 3.

NG >> Refill ATF.



3. CHECK CONTROL LINKAGE

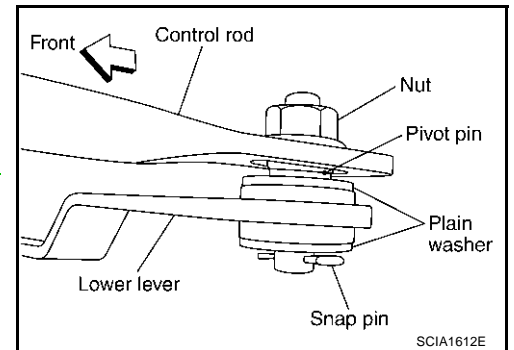
Check the control linkage.

● Refer to [AT-283, "Checking of A/T Position"](#) .

OK or NG

OK >> GO TO 4.

NG >> Adjust control linkage. Refer to [AT-283, "Adjustment of A/T Position"](#) .



4. MANUAL MODE SWITCH

Check the manual mode switch. Refer to [AT-216, "DTC P1815 MANUAL MODE SWITCH"](#) .

OK or NG

OK >> GO TO 5.

NG >> Repair or replace damaged parts.

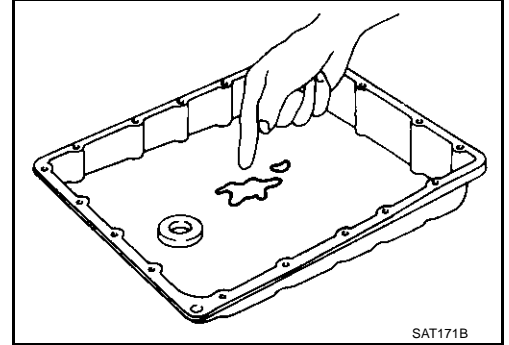
TROUBLE DIAGNOSIS FOR SYMPTOMS

5. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-290, "Control Valve Assembly"](#) .
2. Check A/T fluid condition.

OK or NG

- OK >> GO TO 6.
NG >> GO TO 9.



6. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-60, "Symptom Chart"](#) .

OK or NG

- OK >> GO TO 7.
NG >> Repair or replace damaged parts.

7. CHECK SYMPTOM

Check again.

OK or NG

- OK >> **INSPECTION END**
NG >> GO TO 8.

8. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

- OK >> **INSPECTION END**
NG >> Repair or replace damaged parts.

9. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-60, "Symptom Chart"](#) .

OK or NG

- OK >> GO TO 7.
NG >> Repair or replace damaged parts.

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SHIFT CONTROL SYSTEM

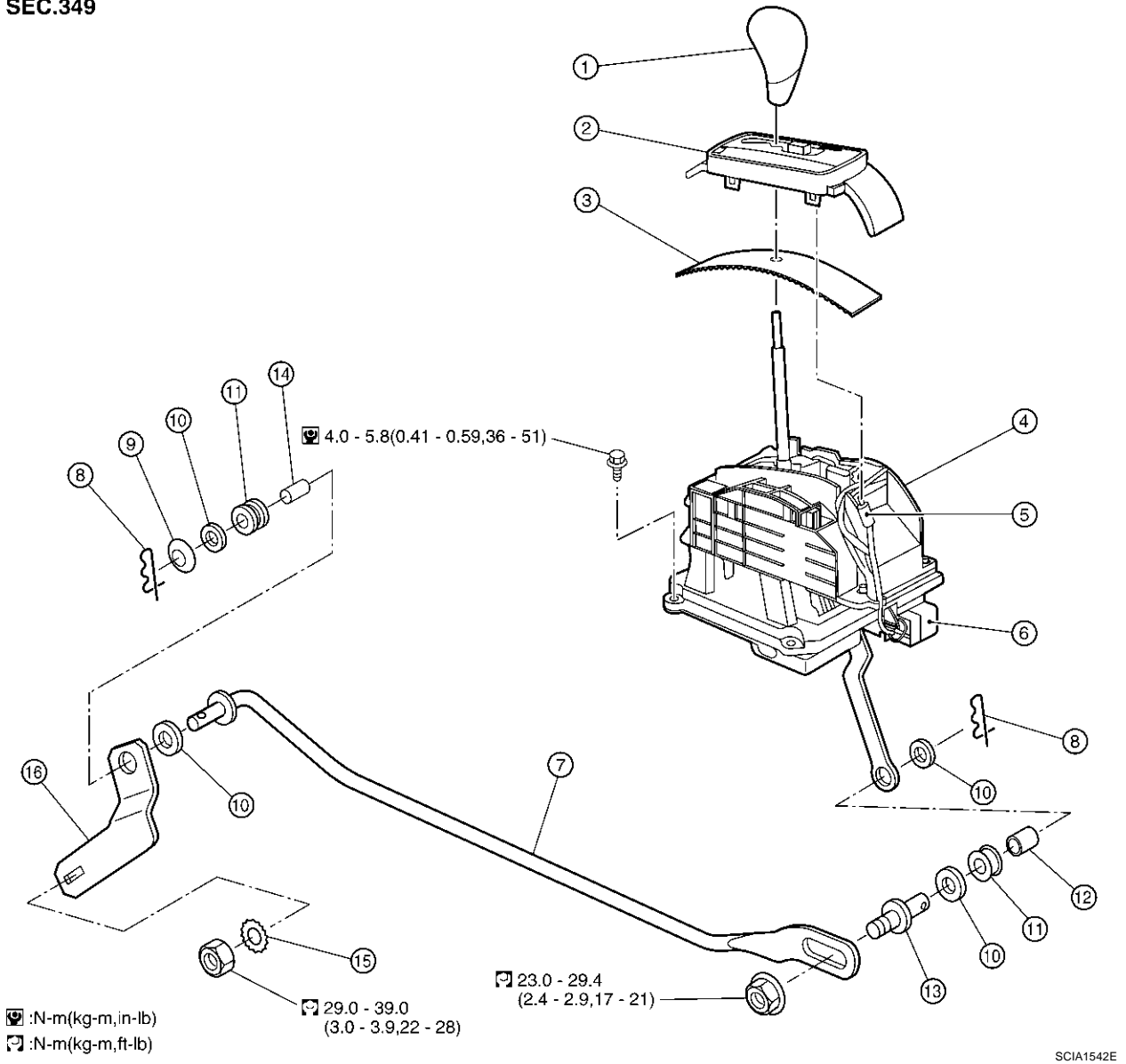
SHIFT CONTROL SYSTEM

PFP:34901

Control Device Removal and Installation

ECS0089T

SEC.349



SCIA1542E

- | | | |
|----------------------------|-----------------------------|---------------------------------|
| 1. Select lever knob | 2. Position indicator plate | 3. Slide plate |
| 4. Control device assembly | 5. Position lamp | 6. A/T device harness connector |
| 7. Control rod | 8. Snap pin | 9. Conical washer |
| 10. Plain washer | 11. Rod insulator | 12. Cross tube |
| 13. Pivot pin | 14. Collar | 15. Lock washer |
| 16. Manual lever | | |

SHIFT CONTROL SYSTEM

REMOVAL

1. Disconnect lower lever of control device and control rod.
2. Remove console finisher.
 - Refer to [IP-10, "INSTRUMENT PANEL ASSEMBLY"](#) .
3. Remove console box assembly.
 - Refer to [IP-10, "INSTRUMENT PANEL ASSEMBLY"](#) .
4. Remove rear ventilator duct.
 - Refer to [ATC-139, "Rear Ventilator Ducts"](#) .
5. Disconnect control device harness connector.
6. Remove control device assembly.


INSTALLATION

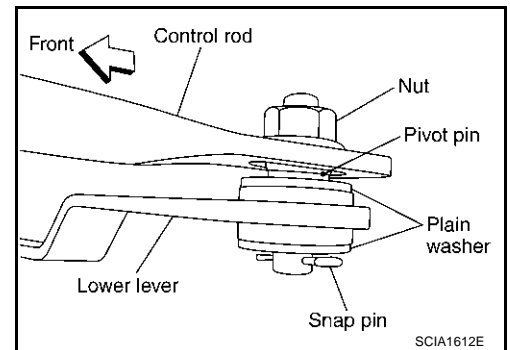
Install in reverse order of removal. Be careful of the following:

- After installation is completed, adjust and check A/T position.

Adjustment of A/T Position

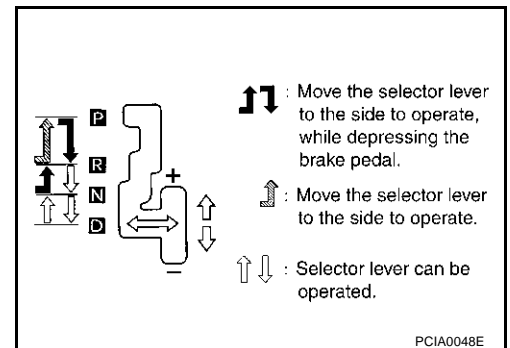
1. Loosen nut of pivot pin.
2. Place PNP switch and selector lever in "P" position.
3. While pressing lower lever toward rear of vehicle (in P-position direction), tighten nut to specified torque.

 **23.0 - 29.4 N·m (2.4 - 2.9 kg·m, 17 - 21 ft·lb)**



Checking of A/T Position

1. Place selector lever in "P" position, and turn ignition switch ON (engine stop).
2. Check that selector lever can be shifted to other than "P" position when brake pedal is depressed. Also check that selector lever can be shifted from "P" position only when brake pedal is depressed.
3. Move the selector lever and check for excessive effort, sticking, noise or rattle.
4. Confirm the selector lever stops at each position with the feel of engagement when it is moved through all the positions. Check whether or not the actual position the selector lever is in matches the position shown by the shift position indicator and the transmission body.
5. The method of operating the lever to individual positions correctly should be as shown in the figure.
6. Confirm the back-up lamps illuminate only when lever is placed in the "R" position. Confirm the back-up lamps does not illuminate when selector lever is in the "P" or "N" position with the lever pushed against the "R" position.
7. Confirm the engine can only be started with the selector lever in the "P" and "N" positions.
8. Check that transmission is locked completely in "P" position.
9. When selector lever is set to manual shift gate, check that manual mode is displayed on combination meter. Shift selector lever to "+" and "-" sides, and check that set shift position changes.



A/T SHIFT LOCK SYSTEM

A/T SHIFT LOCK SYSTEM

PFP:34950

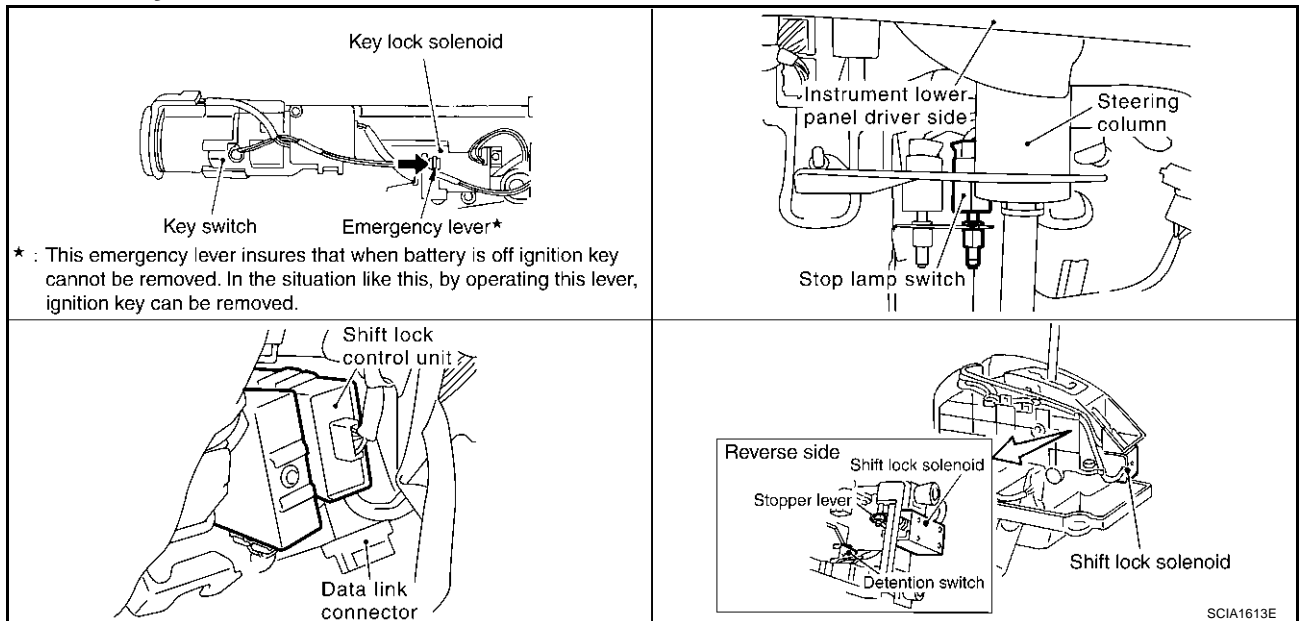
Description

ECS0089W

- The electrical key interlock mechanism also operates as a shift lock:
With the ignition switch turned to ON, the selector lever cannot be shifted from "P" (parking) to any other position unless the brake pedal is depressed.
With the key removed, the selector lever cannot be shifted from "P" to any other position.
The key cannot be removed unless the selector lever is placed in "P".
- The shift lock and key interlock mechanisms are controlled by the ON-OFF operation of the shift lock solenoid and by the operation of the rotator and slider located inside the key cylinder, respectively.

Shift Lock System Electrical Parts Location

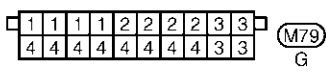
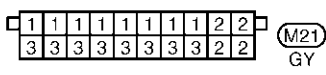
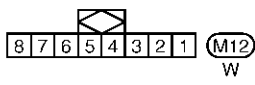
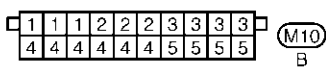
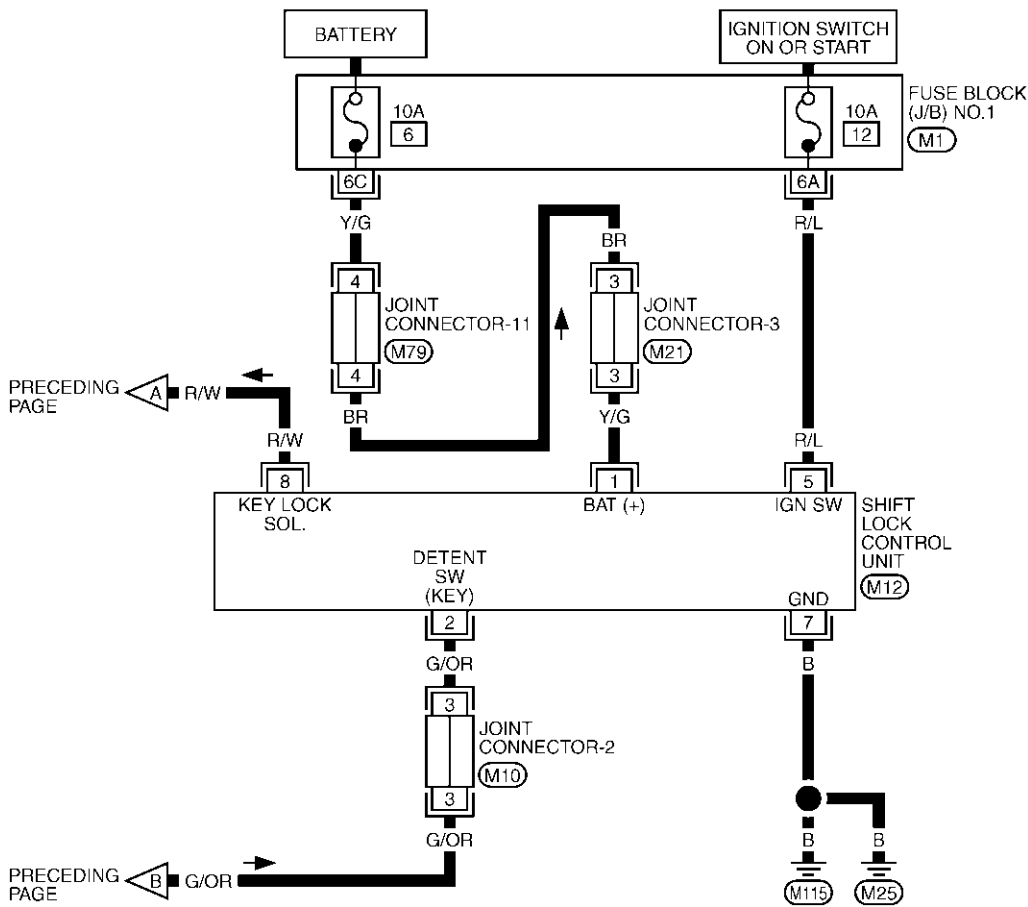
ECS0089X



A/T SHIFT LOCK SYSTEM

AT-SHIFT-02

REFER TO PG-POWER.



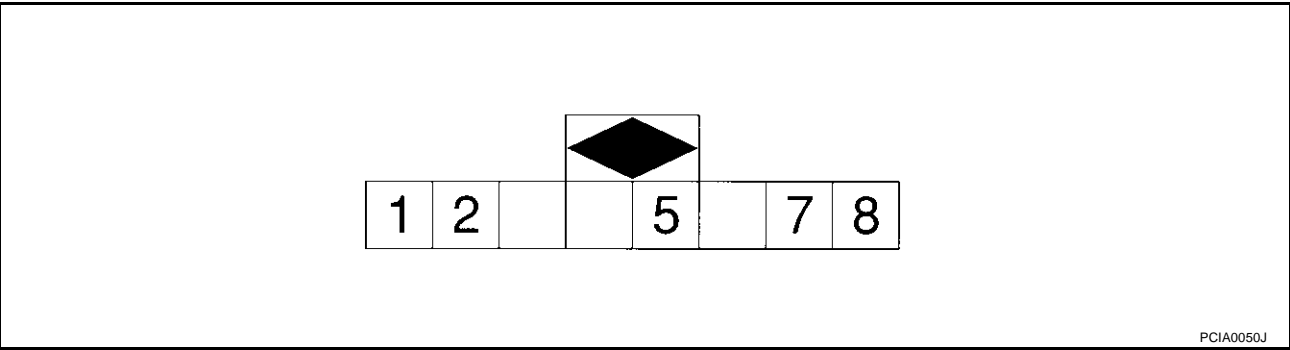
REFER TO THE FOLLOWING.
 (M1) -FUSE BLOCK-JUNCTION BOX (J/B) NO.1

TCWM0092E

A/T SHIFT LOCK SYSTEM

Shift Lock Control Unit Reference Values SHIFT LOCK HARNESS CONNECTOR TERMINALS LAYOUT

ECS0089Z



SHIFT LOCK CONTROL UNIT INSPECTION TABLE

Data are reference values.

Terminal No. (Wire color)		Item	Condition	Judgement standard
(+)	(-)			
1 (Y/G)	7 (B)	Power source	Ignition switch: "ON"	Battery voltage
			Ignition switch: "OFF"	
2 (G/OR)	7 (B)	Detention switch (for key)	The position when the key is inserted and the selector lever is set to a position other than the "P" position, or when it is shifted from the "R" to the "P" position	Battery voltage
			Except the above	
5 (R/L)	7 (B)	Ignition signal	Ignition switch: "ON"	Battery voltage
			Ignition switch: "OFF"	Approx. 0V
7 (B)	—	Ground	Ignition switch: "ON"	Approx. 0V
7 (B)	8 (R/W)	Key lock solenoid	When the selector lever is set to a position other than the "P" position, and the key switch is turned from "ON" to "OFF"	Battery voltage for approx. 1 sec. (Note)
			Except the above	Approx. 0V
8 (R/W)	7 (B)	Key unlock solenoid	When the selector lever is set to the "P" position (without the selector lever being depressed)	Battery voltage for approx. 1 sec. (Note)
			Except the above	Approx. 0V

NOTE:

Confirm that the pointer swings only momentarily because the output time is so short. If the inspection is done with an oscilloscope, it should be observed that the power source voltage lasts for 3.5 to 10 ms.

Component Inspection SHIFT LOCK SOLENOID

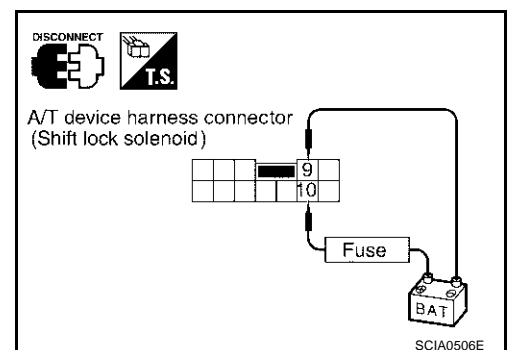
ECS008A0

- Check operation by applying battery voltage to the A/T device harness connector.

CAUTION:

Be sure to apply the voltage of the correct polarity to the respective terminals. Otherwise, the part may be damaged.

Connector No.	Terminal No. (Wire color)
M97	10(R/W) (Battery voltage) - 9 (L/W) (Ground)



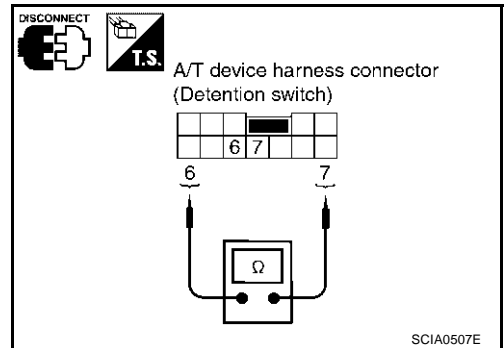
A/T SHIFT LOCK SYSTEM

DETENTION SWITCH

For Key:

- Check continuity between terminals of the A/T device harness connector.

Condition	Connector No.	Terminal No. (Wire color)	Continuity
When selector lever is locked at the "P" position.	M97	6 (PU/W) - 7 (G/OR)	No
When selector lever is not locked at the "P" position.			Yes



KEY LOCK SOLENOID

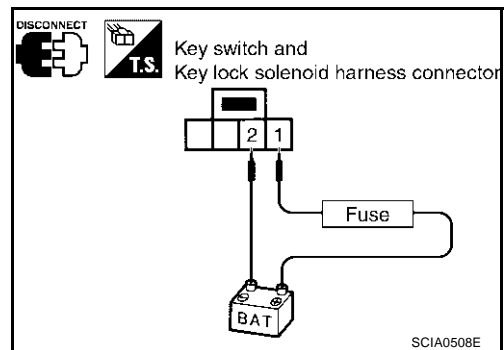
Key Lock

- Check operation by applying battery voltage to key switch and key lock solenoid harness connector.

CAUTION:

Be careful not to cause burnout of the harness.

Connector No.	Terminal No. (Wire color)
M64	1 (B) (Battery voltage) - 2 (R/W) (Ground)



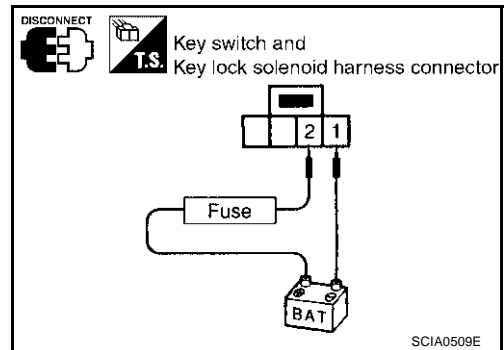
Key Unlock

- Check operation by applying battery voltage to key switch and key lock solenoid harness connector.

CAUTION:

Be careful not to cause burnout of the harness.

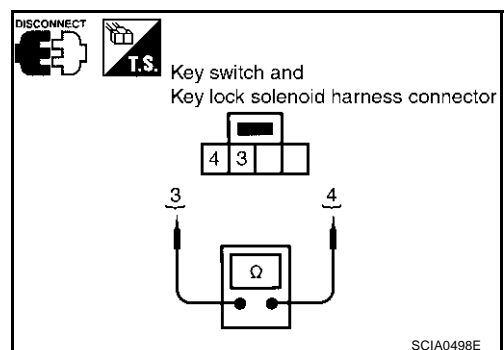
Connector No.	Terminal No. (Wire color)
M64	2 (R/W) (Battery voltage) - 1 (B) (Ground)



KEY SWITCH

- Check continuity between terminals of the key switch and key lock solenoid harness connector.

Condition	Connector No.	Terminal No. (Wire color)	Continuity
Key inserted	M64	3 (LG) - 4 (PU/W)	Yes
Key withdrawn			No



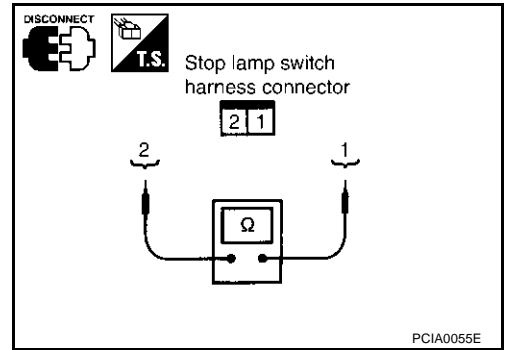
A/T SHIFT LOCK SYSTEM

STOP LAMP SWITCH

- Check continuity between terminals of the stop lamp switch harness connector.

Condition	Connector No.	Terminal No. (Wire color)	Continuity
When brake pedal is depressed	M402	1 (R/Y) - 2 (R/W)	Yes
When brake pedal is released			No

Check stop lamp switch after adjusting brake pedal. Refer to [BR-6](#), "[BRAKE PEDAL](#)".



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ON-VEHICLE SERVICE

PFP:00000

Control Valve Assembly

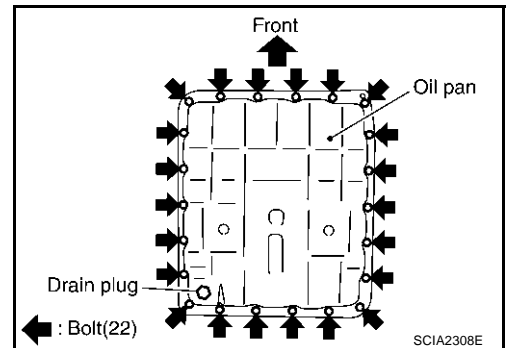
ECS00BFP

CAUTION:

When replacing the control valve assembly, erase EEP ROM in TCM. Refer to [AT-8, "Precautions for A/T Assembly Replacement"](#) .

REMOVAL

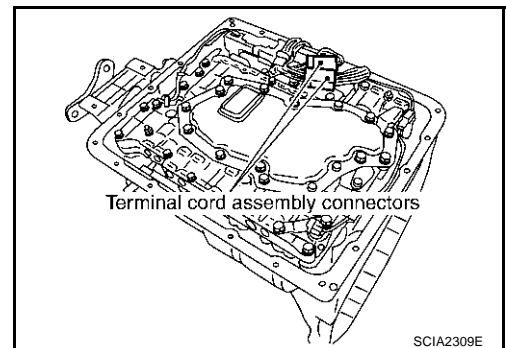
1. Disconnect the negative battery terminal
2. Disconnect heated oxygen sensor 2 harness connector.
3. Drain ATF through drain plug.
4. Remove oil pan and oil pan gasket.



5. Disconnect terminal cord assembly connectors.

CAUTION:

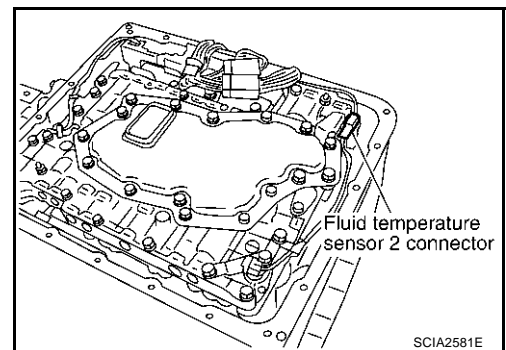
Be careful not to damage connector.



6. Disconnect fluid temperature sensor 2 connector.

CAUTION:

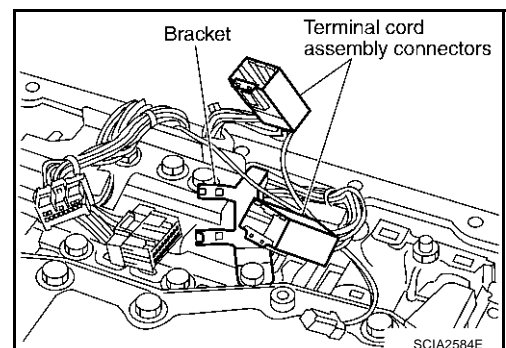
Be careful not to damage connector.



7. Remove terminal cord assembly connectors from bracket.

CAUTION:

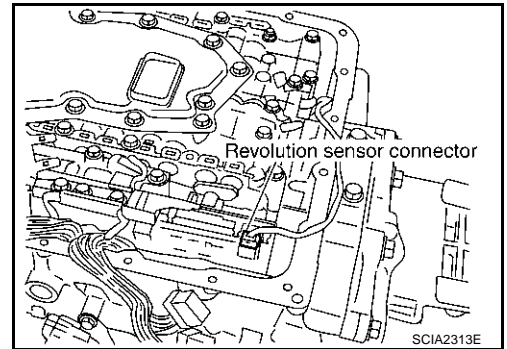
Be careful not to damage connector.



ON-VEHICLE SERVICE

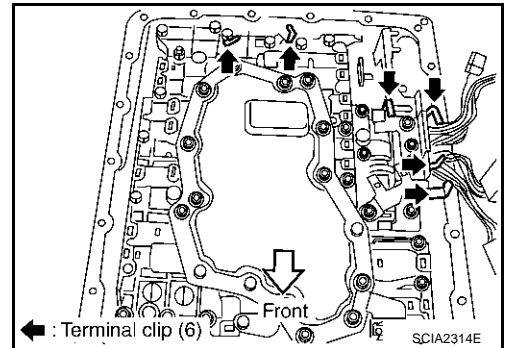
8. Disconnect revolution sensor connector.

CAUTION:
Be careful not to damage connector.



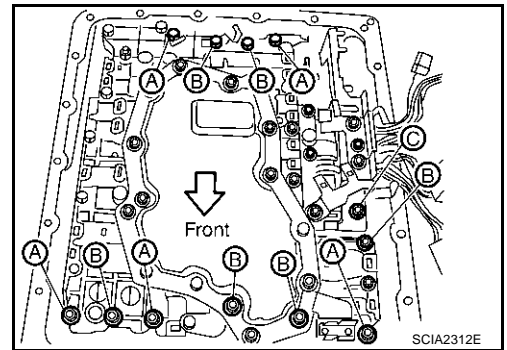
9. Straighten terminal clips to free terminal cord assembly and revolution sensor harness then remove terminal clips.

CAUTION:
Hang down terminal cord assembly and revolution sensor harness toward outside so as not to disturb removal of control valve assembly.



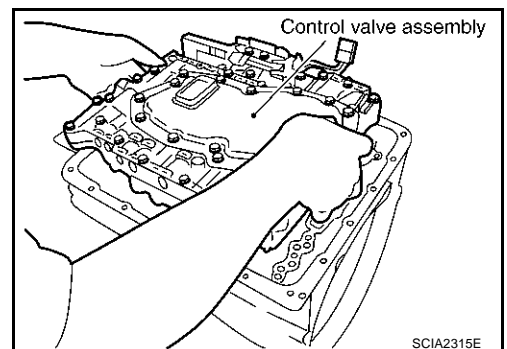
10. Remove bolts A, B and C from control valve assembly.

Bolt symbol	Length mm (in)	Number of bolts
A	42 (1.65)	5
B	55 (2.17)	6
C	40 (1.57)	1

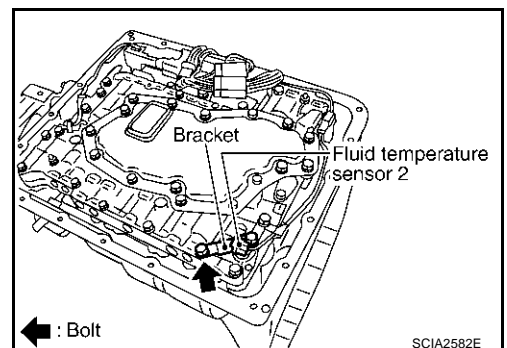


11. Remove control valve assembly from transmission case.

CAUTION:
When removing, be careful with the manual valve notch and manual plate height. Remove it vertically.



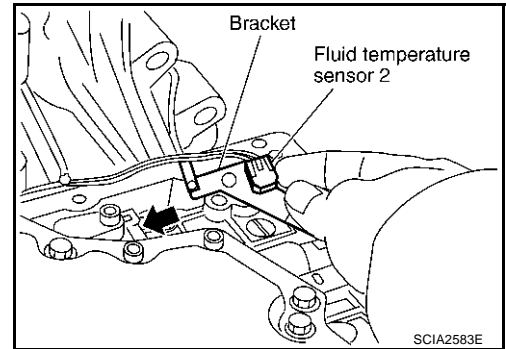
12. Remove fluid temperature sensor 2 with bracket from control valve assembly.



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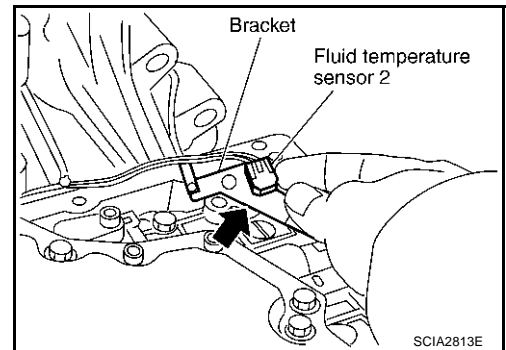
ON-VEHICLE SERVICE

13. Remove bracket from fluid temperature sensor 2.




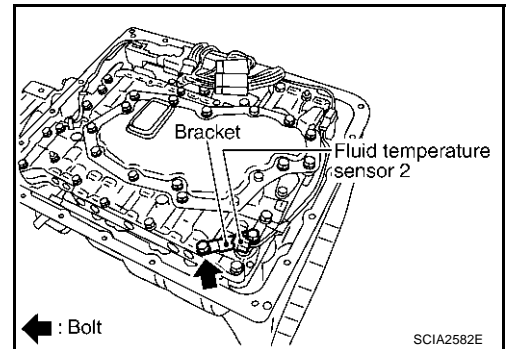
INSTALLATION

1. Install fluid temperature sensor 2 in bracket.

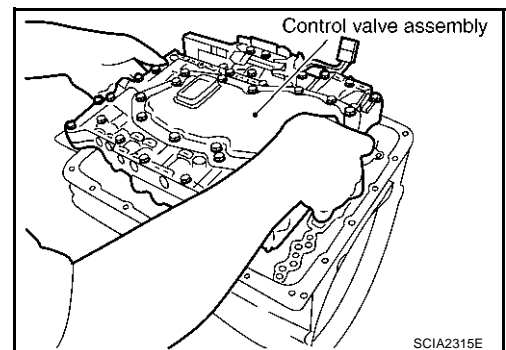


2. Install fluid temperature sensor 2 in control valve assembly.
(With bracket.)

 : 6.9 - 8.8 N·m (0.71 - 0.89 kg·m, 61 - 77 in·lb)



3. Install control valve assembly.
 - a. Install control valve assembly in transmission case.

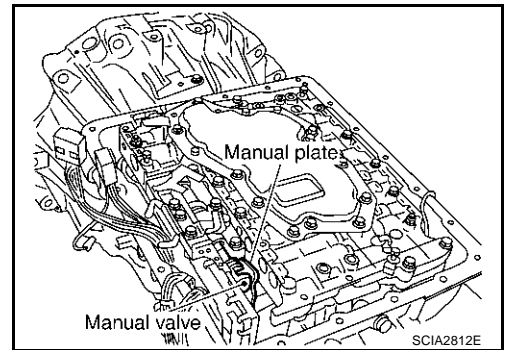


CAUTION:

- Hang down terminal cord assembly and revolution sensor harness toward outside so as not to disturb installation of control valve assembly.
- Make sure that turbine sensor securely installs turbine sensor hole.

ON-VEHICLE SERVICE

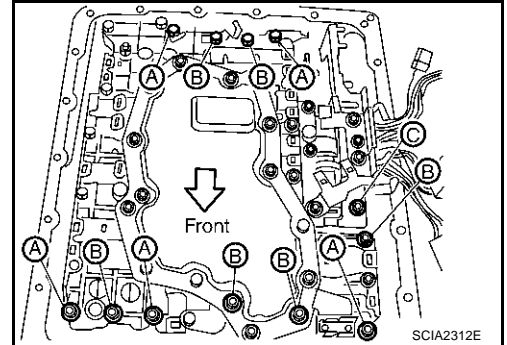
- Assemble it so that manual valve cutout is engaged with manual plate projection.



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- b. Install bolts A, B and C in control valve assembly.

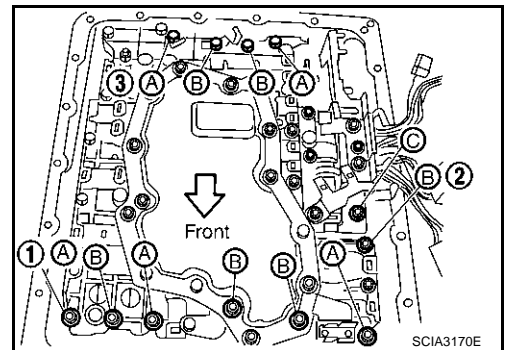
Bolt symbol	Length mm (in)	Number of bolts
A	42 (1.65)	5
B	55 (2.17)	6
C	40 (1.57)	1



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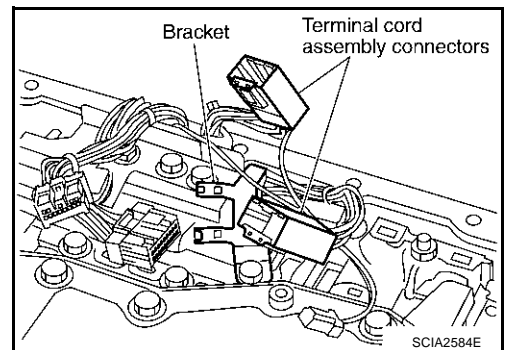
- c. Tighten bolt 1, 2 and 3 temporarily to prevent dislocation. After that tighten them in order (1 → 2 → 3), and then tighten other bolts.

 : 6.9 - 8.8 N-m (0.71 - 0.89 kg-m, 61 - 77 in-lb)



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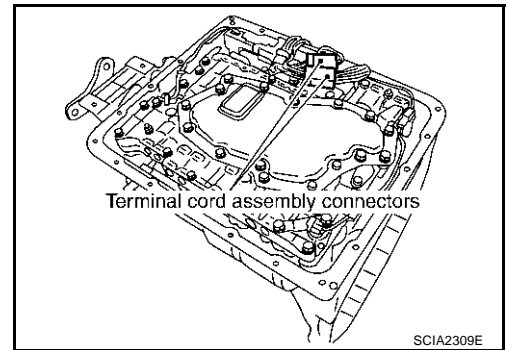
4. Install terminal cord assembly connectors in bracket.



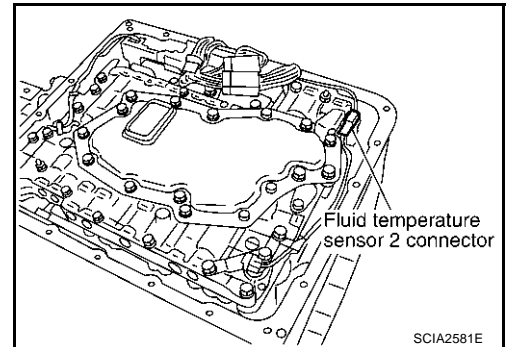
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ON-VEHICLE SERVICE

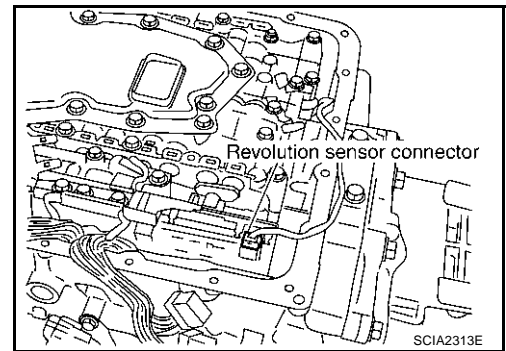
5. Connect terminal cord assembly connectors.



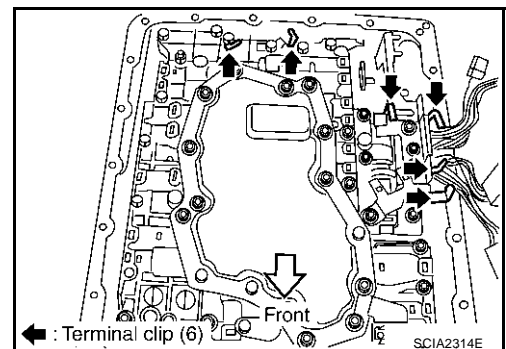
6. Connect fluid temperature sensor 2 connector.



7. Connect revolution sensor connector.



8. Securely fasten terminal harness with clip.



9. Install oil pan in transmission case.
 - a. Install oil pan gasket in transmission case.

CAUTION:

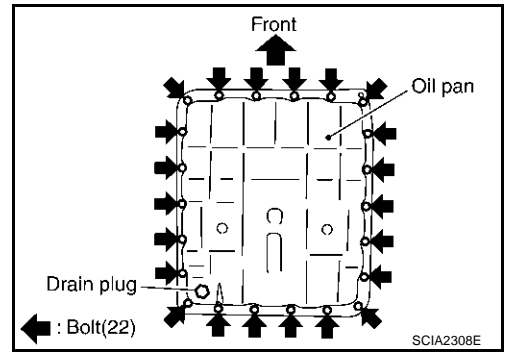
 - Do not reuse oil pan gasket.
 - Install it in the direction to align hole positions.

ON-VEHICLE SERVICE

b. Install oil pan in transmission case.

CAUTION:

- Install it so that drain plug comes to the position as shown in the figure.
- Be careful not to pinch harnesses.



c. Tighten oil pan mounting bolts to the specified torque in numerical order shown in the figure after temporarily tightening them.

CAUTION:

Do not reuse oil pan mounting bolts.



: 6.9 - 8.8 N·m (0.71 - 0.89 kg-m, 61 - 77 in-lb)

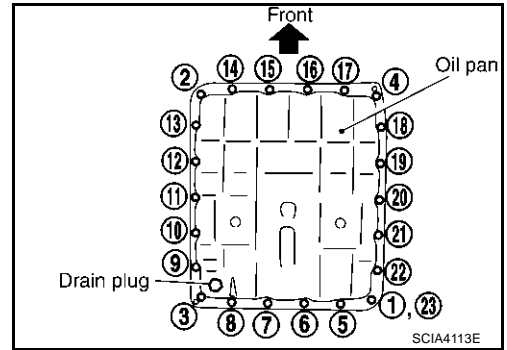
10. Install drain plug in oil pan.

CAUTION:

Do not reuse drain plug gasket.



: 29 - 39 N·m (3.0 - 4.0 kg-m, 22 - 29 ft-lb)



11. Pour ATF into transmission assembly.

12. Connect heated oxygen sensor 2 harness connector.

13. Connect the negative battery terminal

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AIR BREATHER HOSE

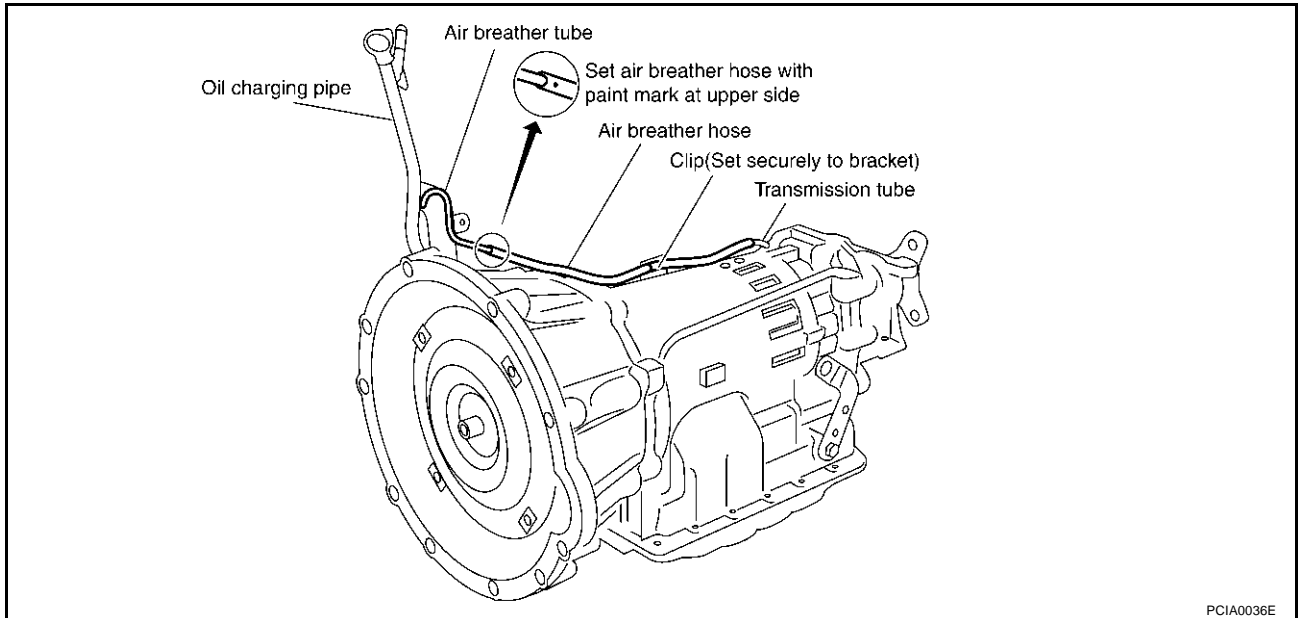
AIR BREATHER HOSE

PFP:31098

Removal and Installation

ECS008A1

Refer to the figure below for air breather hose removal and installation procedure.



CAUTION:

- When installing an air breather hose, be careful not to be crushed or blocked by folding or bending the hose.
- When inserting a hose to the transmission tube, be sure to insert it fully until its end reaches the tube bend R portion.
- When inserting a hose to the air breather tube, be sure to insert it fully until its end reaches the tube spool portion.

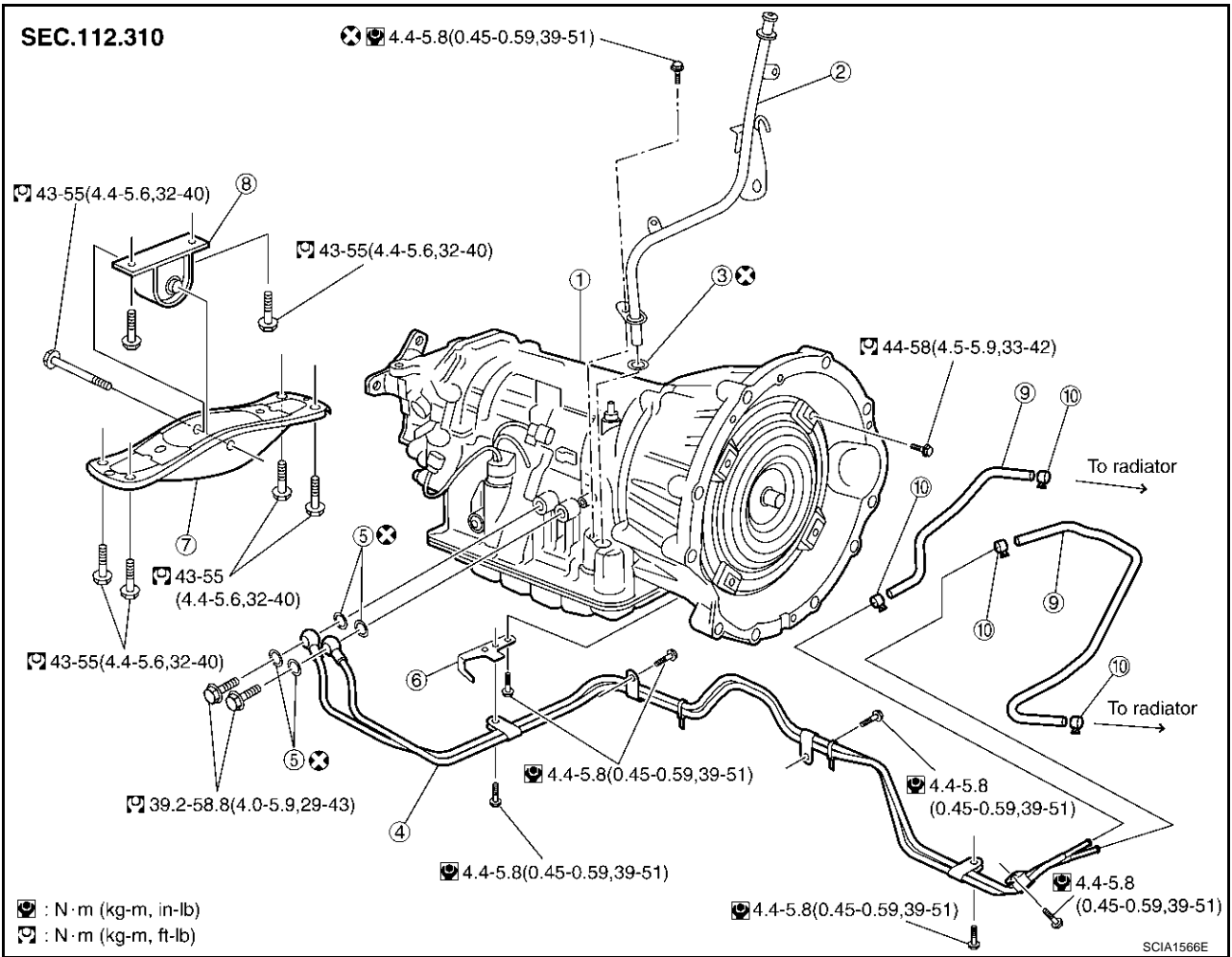
TRANSMISSION ASSEMBLY

TRANSMISSION ASSEMBLY

PF31020

Removal and Installation

ECS008A2



- | | | |
|--------------------------|----------------------------|----------------------|
| 1. Transmission assembly | 2. A/T fluid charging pipe | 3. O-ring |
| 4. Fluid cooler tube | 5. Copper washer | 6. Bracket |
| 7. Engine rear member | 8. Insulator | 9. Fluid cooler hose |
| 10. Hose band | | |

REMOVAL

CAUTION:

When removing the A/T assembly from engine, first remove the crankshaft position sensor (POS) from the A/T assembly.

Be careful not to damage sensor edge.

1. Disconnect the negative battery terminal.
2. Remove engine under cover with power tool.
3. Remove exhaust tube with power tool. Refer to [EX-3, "Removal and Installation"](#).
4. Remove propeller shaft. Refer to [PR-3, "Removal and Installation"](#).
5. Remove A/T control rod. Refer to [AT-283, "Adjustment of A/T Position"](#).
6. Disconnect A/T solenoid valve harness connectors.
7. Remove crankshaft position sensor (POS) from A/T assembly.
8. Remove fluid cooler tube and A/T fluid charging pipe.
9. Plug up openings such as the fluid charging pipe hole, etc.
10. Remove air breather hose. Refer to [AT-296, "Removal and Installation"](#).
11. Remove starter motor. Refer to [SC-28, "Removal and Installation"](#).

TRANSMISSION ASSEMBLY

12. Remove dust cover from converter housing part.
13. Turn crankshaft, and remove the four tightening bolts for drive plate and torque converter.

CAUTION:

When turning crankshaft, turn it clockwise as viewed from the front of the engine.

14. Support A/T assembly with a jack.

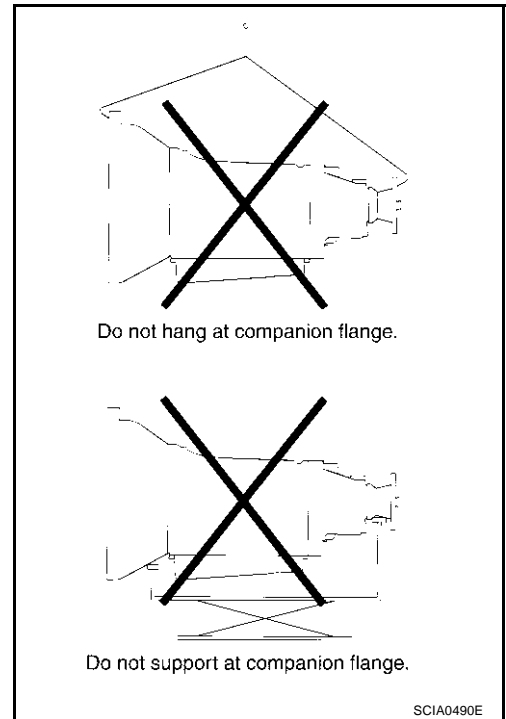
CAUTION:

When setting the transmission jack, be careful not to allow it to collide against the drain plug.

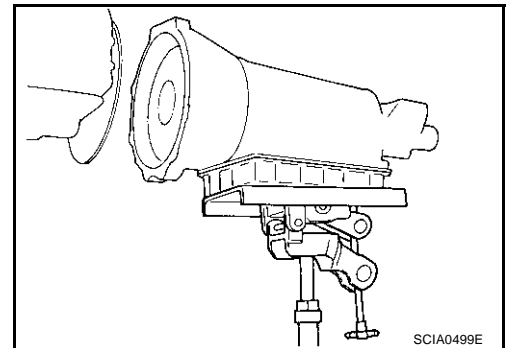
15. Remove engine rear member with power tool.
16. Remove bolts fixing A/T assembly to engine with power tool.

CAUTION:

Do not perform any work that uses the companion flange section located at the rear part of the transmission as a point of support.



17. Remove A/T assembly from vehicle with a jack.
 - **Secure torque converter to prevent it from dropping.**
 - **Secure A/T assembly to a jack.**



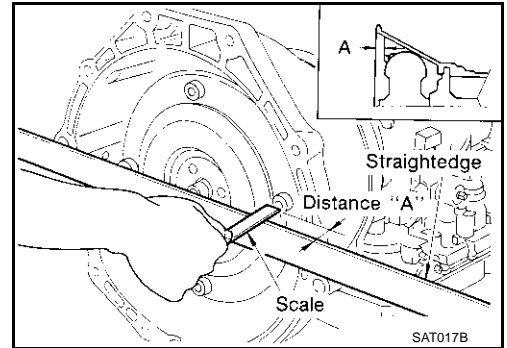
TRANSMISSION ASSEMBLY

INSPECTION

Installation and Inspection of Torque Converter

- After inserting a torque converter to a transmission, be sure to check dimension A to ensure it is within the reference value limit.

Dimension A : 22.0 mm (0.87 in) or more



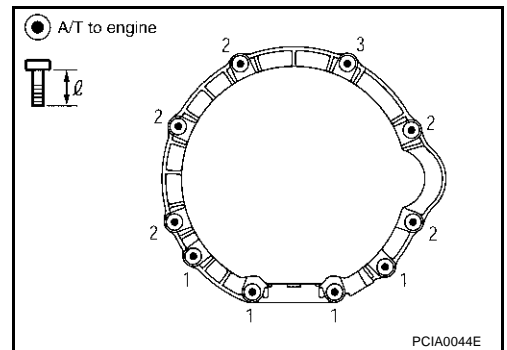
INSTALLATION

Install the removed parts in the reverse order of the removal, while paying attention to the following work.

- When installing transmission to the engine, attach the fixing bolts in accordance with the following standard.

Bolt No.	1	2	3*
Number of bolts	4	5	1
Bolt length "ℓ"mm (in)	65 (2.56)	70 (2.76)	70 (2.76)
Tightening torque N-m (kg-m, ft-lb)	69 - 79 (7.1 - 8.0, 51 - 58)	110 - 118 (11.3 - 12.0, 82 - 87)	

*: Tightening the bolt With A/T fluid charging pipe.

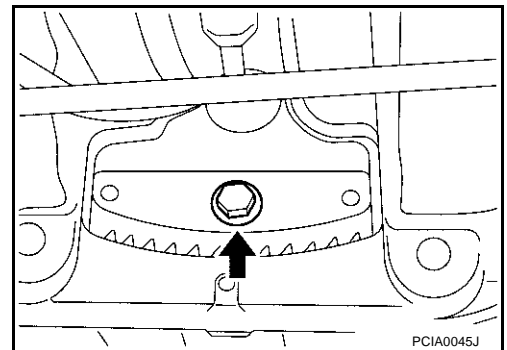


- Align the positions of tightening bolts for drive plate with those of the torque converter, and temporarily tighten the bolts. Then, tighten the bolts with the specified torque.

⚙️ : 44 - 58 N-m (4.5 - 5.9 kg-m, 33 - 42 ft-lb)

CAUTION:

- When turning crankshaft, turn it clockwise as viewed from the front of the engine.
- When tightening the tightening bolts for the torque converter after fixing the crankshaft pulley bolts, be sure to confirm the tightening torque of the crankshaft pulley mounting bolts.
- After converter is installed to drive plate, rotate crankshaft several turns and check to be sure that transmission rotates freely without binding.
- Install crankshaft position sensor (POS). Refer to [EM-25, "Removal and Installation"](#).
- After completing installation, check fluid leakage, fluid level, and the positions of A/T. Refer to [AT-14, "Checking A/T Fluid"](#), [AT-283, "Adjustment of A/T Position"](#), [AT-283, "Checking of A/T Position"](#).
- When replacing the A/T assembly, erase EEP ROM in TCM. Refer to [AT-8, "Precautions for A/T Assembly Replacement"](#).

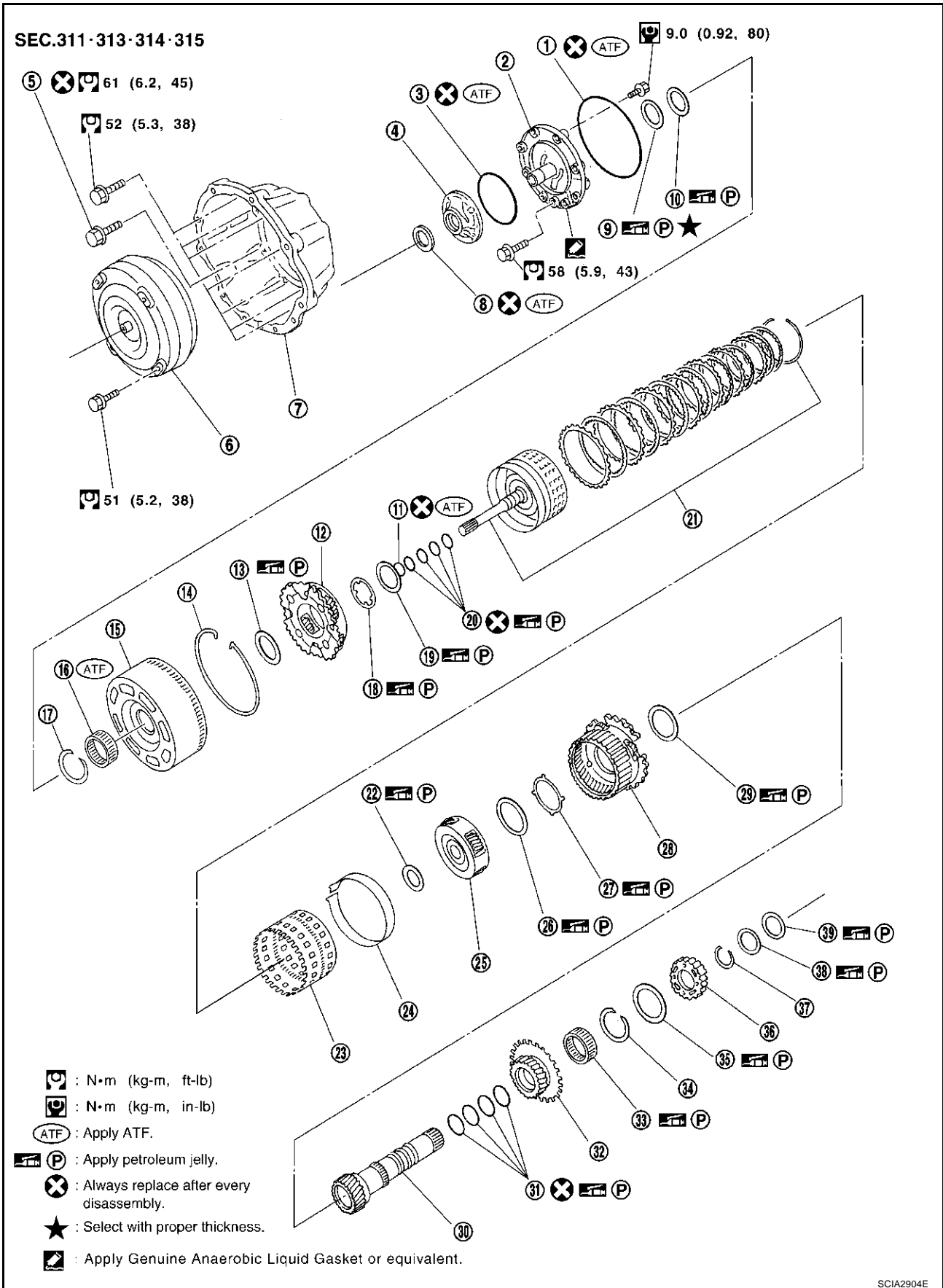


OVERHAUL

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OVERHAUL Components



SCIA2904E

OVERHAUL

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|---------------------------|------------------------------|-------------------------------------|
| 1. O-ring | 2. Oil pump cover | 3. O-ring |
| 4. Oil pump housing | 5. Self-sealing bolt | 6. Torque converter |
| 7. Converter housing | 8. Oil pump housing oil seal | 9. Bearing race |
| 10. Needle bearing | 11. O-ring | 12. Front carrier assembly |
| 13. Needle bearing | 14. Snap ring | 15. Front sun gear |
| 16. 3rd one-way clutch | 17. Snap ring | 18. Bearing race |
| 19. Needle bearing | 20. Seal ring | 21. Input clutch assembly |
| 22. Needle bearing | 23. Rear internal gear | 24. Brake band |
| 25. Mid carrier assembly | 26. Needle bearing | 27. Bearing race |
| 28. Rear carrier assembly | 29. Needle bearing | 30. Mid sun gear |
| 31. Seal ring | 32. Rear sun gear | 33. 1st one-way clutch |
| 34. Snap ring | 35. Needle bearing | 36. High and low reverse clutch hub |
| 37. Snap ring | 38. Bearing race | 39. Needle bearing |

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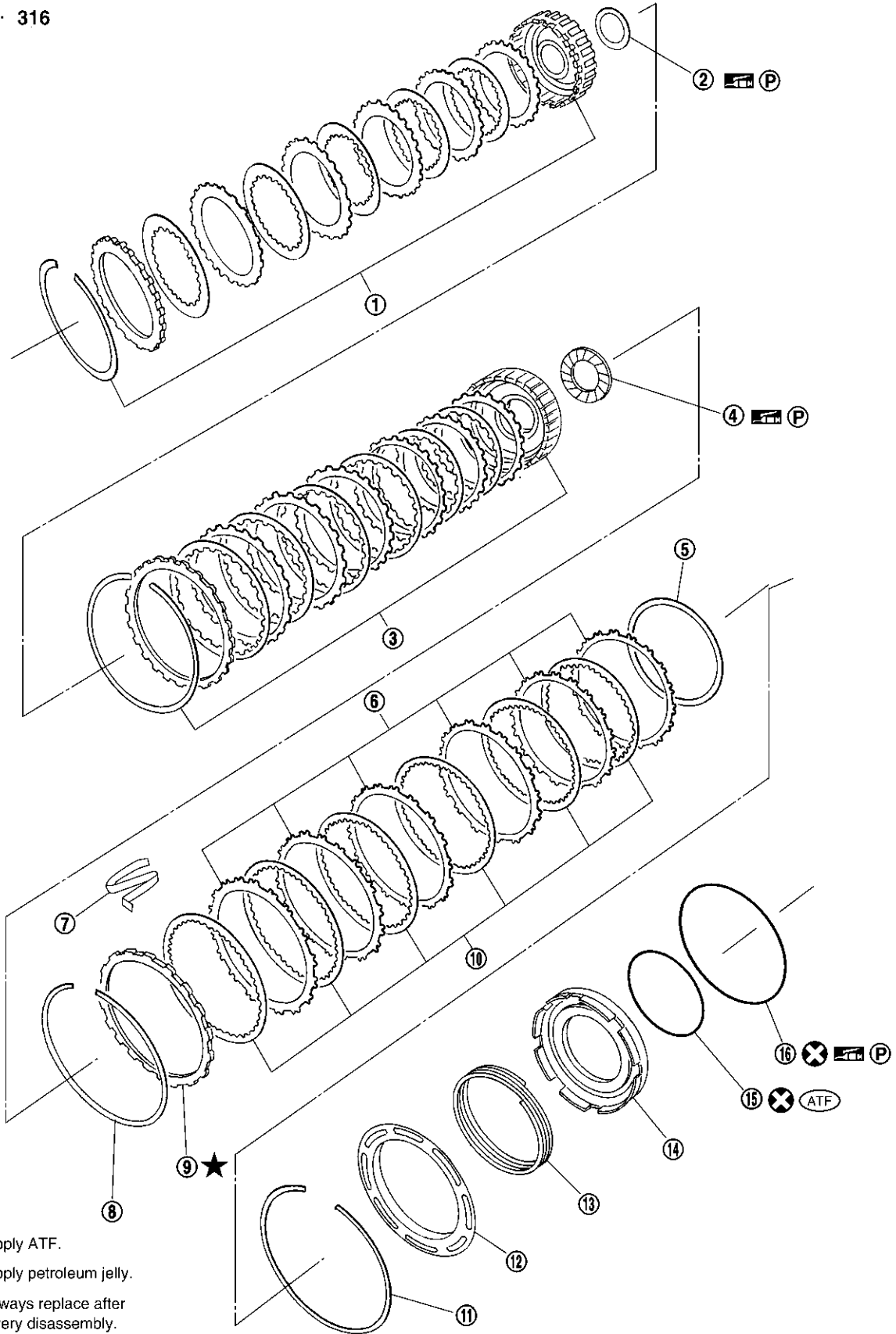
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OVERHAUL

SEC.315· 316



SCIA3413E

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|---|-----------------------------|-------------------------------|
| 1. High and low reverse clutch assembly | 2. Needle bearing | 3. Direct clutch assembly |
| 4. Needle bearing | 5. Reverse brake dish plate | 6. Reverse brake driven plate |

OVERHAUL

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|-------------------------------|--------------------------|----------------------------------|
| 7. N-sprig | 8. Snap ring | 9. Reverse brake retaining plate |
| 10. Reverse brake drive plate | 11. Snap ring | 12. Spring retainer |
| 13. Return spring | 14. Reverse brake piston | 15. D-ring |
| 16. Lip seal | | |

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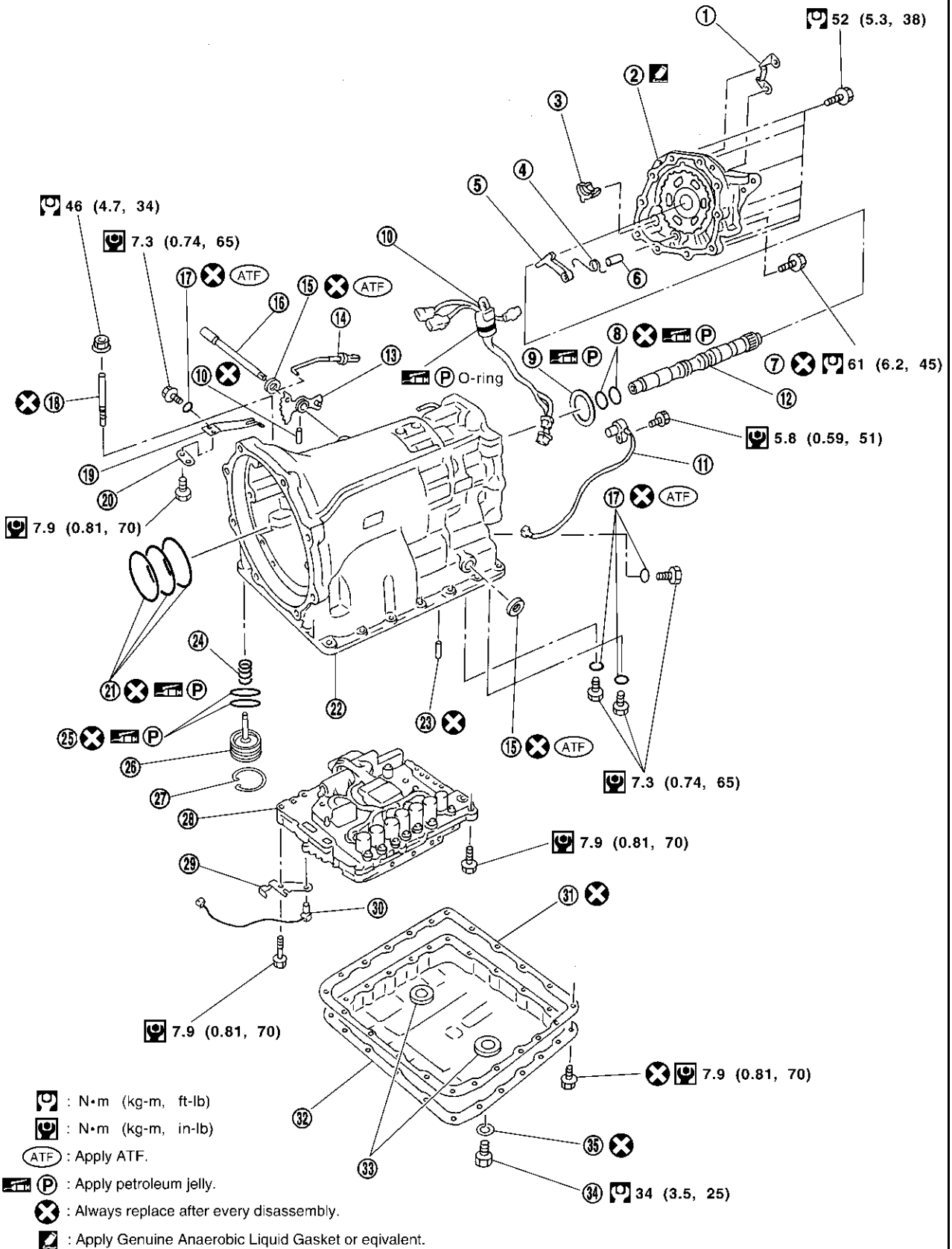
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OVERHAUL

SEC.313·314·315·316·317·319



SCIA2906E

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| 1. Terminal bracket | 2. Output shaft & companion flange | 3. Parking actuator support complement |
| 4. Return spring | 5. Parking pawl | 6. Pawl shaft |

OVERHAUL

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|----------------------------|-----------------------|--------------------------------|
| 7. Self sealing bolt | 8. Seal ring | 9. Needle bearing |
| 10. Terminal cord assembly | 11. Revolution sensor | 12. Intermediate shaft |
| 13. Manual plate | 14. Parking rod | 15. Manual shaft oil seal |
| 16. Manual shaft | 17. O-ring | 18. Band servo anchor end pin |
| 19. Detent spring | 20. Spacer | 21. Seal ring |
| 22. Transmission case | 23. Retaining pin | 24. Return spring |
| 25. O-ring | 26. Servo assembly | 27. Snap ring |
| 28. Control valve assembly | 29. Bracket | 30. Fluid temperature sensor 2 |
| 31. Oil pan gasket | 32. Oil pan | 33. Magnet |
| 34. Drain plug | 35. Drain plug gasket | |

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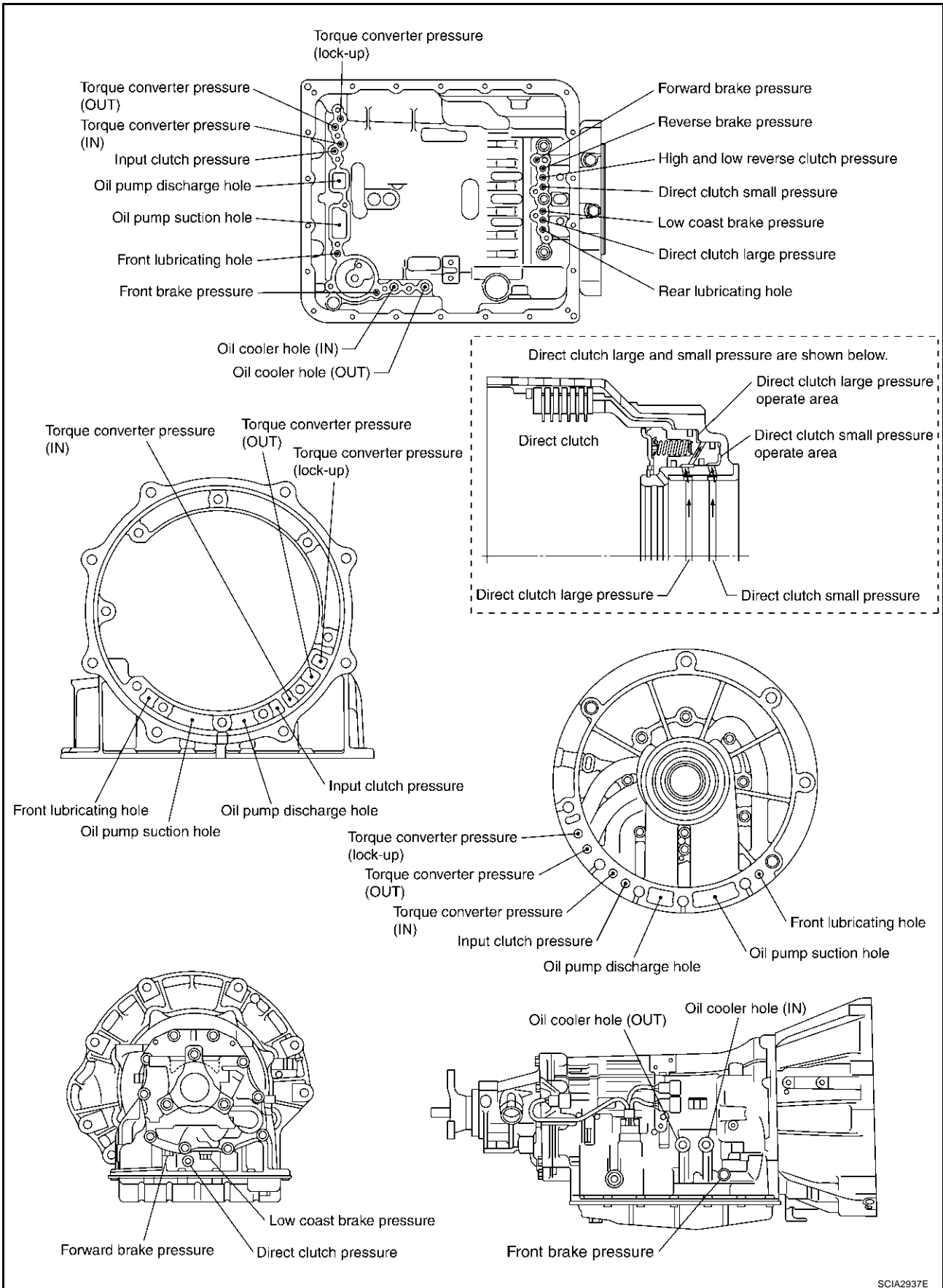
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OVERHAUL

Oil Channel

ECS00A07

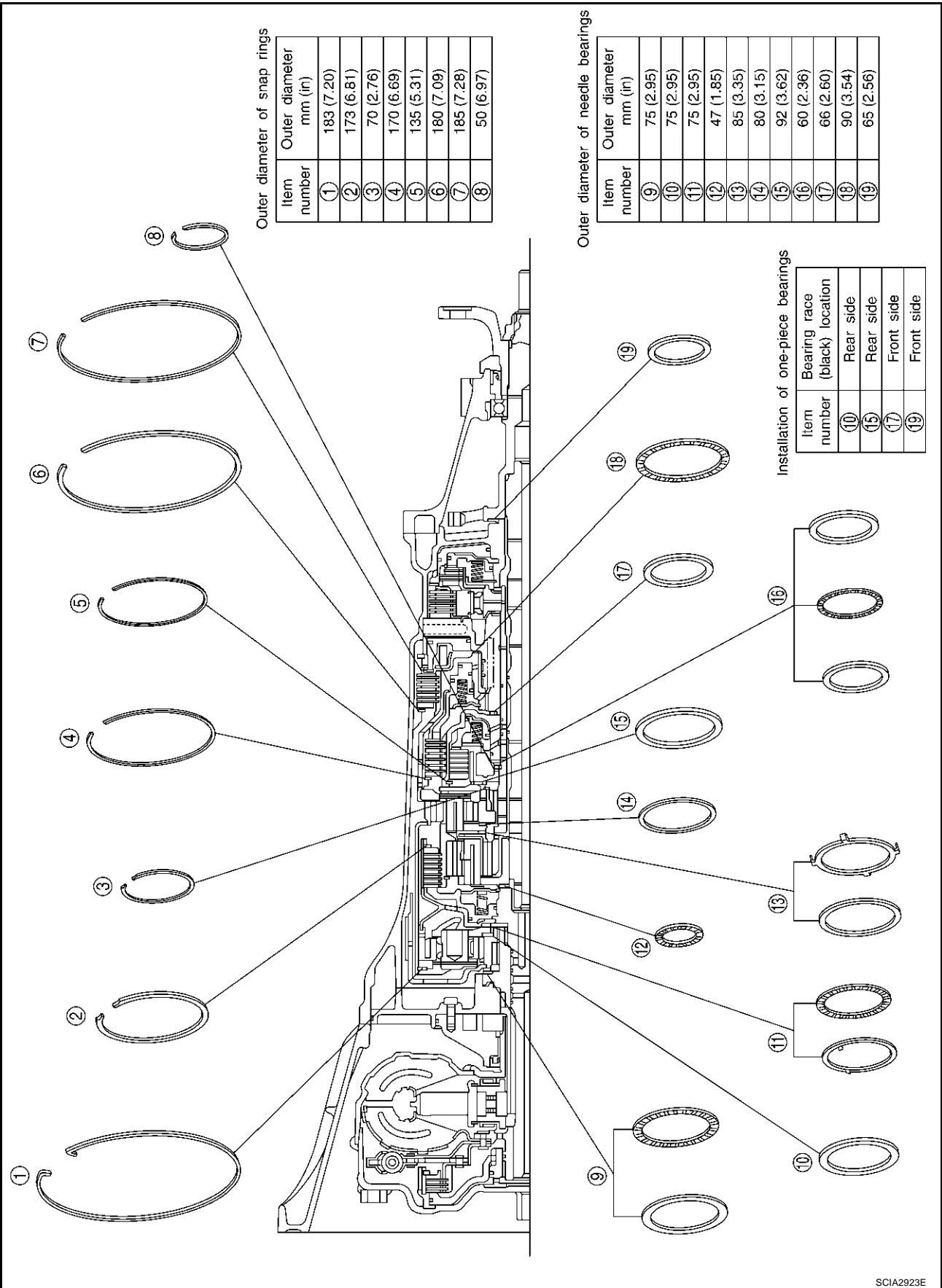


SCIA2937E

OVERHAUL

Locations of Adjusting Shims, Needle Bearings, Thrust Washers and Snap Rings

ECS00A08



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DISASSEMBLY

PFP:31020

DISASSEMBLY

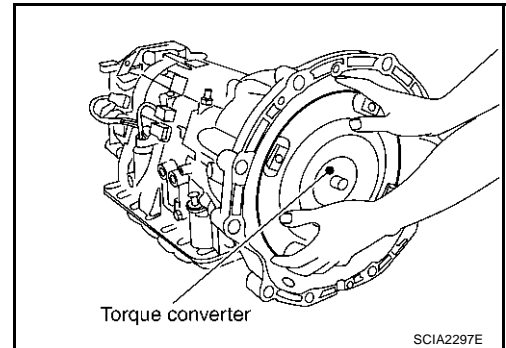
Disassembly

ECS00A09

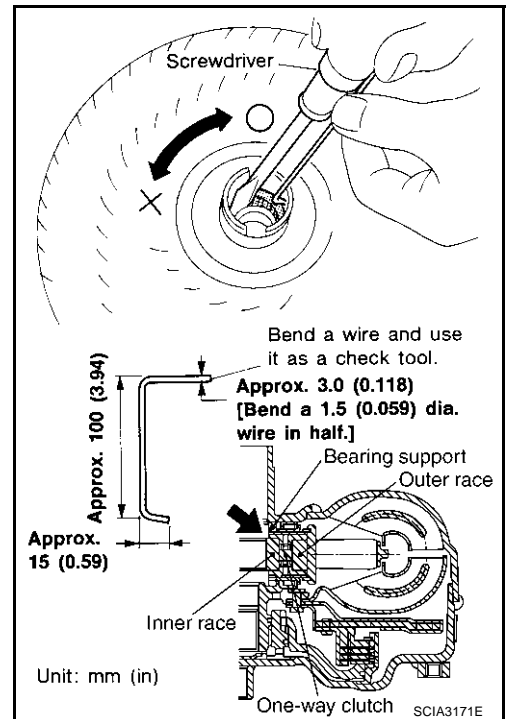
CAUTION:

- Do not disassemble parts behind Drum Support.
- When replacing the control valve assembly, erase EEP ROM in TCM. Refer to [AT-8. "Precautions for A/T Assembly Replacement"](#) .

1. Drain ATF through drain plug.
2. Remove torque converter by holding it firmly and turning while pulling straight out.



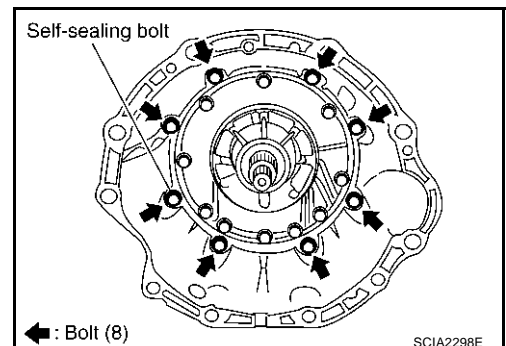
3. Check torque converter one-way clutch using check tool as shown at figure.
 - a. Insert check tool into the groove of bearing support built into one-way clutch outer race.
 - b. When fixing bearing support with check tool, rotate one-way clutch spline using screwdriver.
 - c. Check that inner race rotates clockwise only. If not, replace torque converter assembly.



4. Remove converter housing from transmission case.

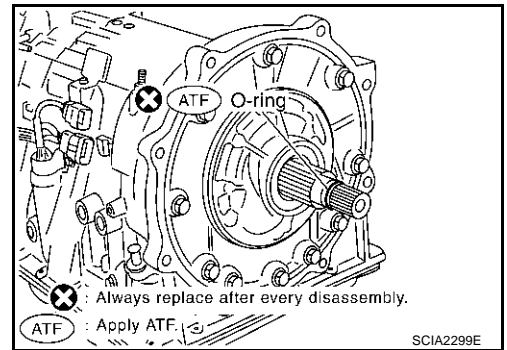
CAUTION:

Be careful not to scratch converter housing.

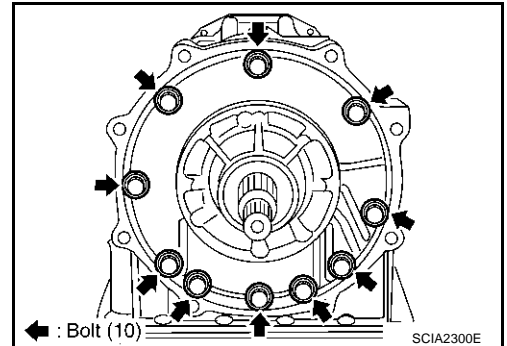


DISASSEMBLY

5. Remove O-ring from input clutch assembly.



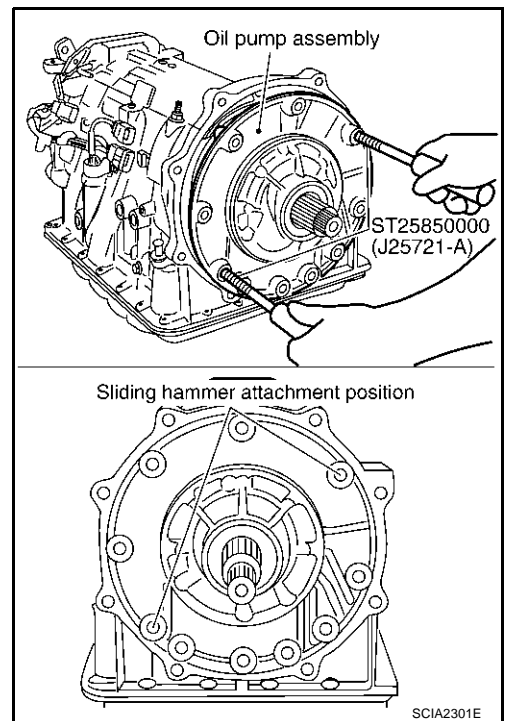
6. Remove tightening bolts for oil pump assembly and transmission case.



7. Attach sliding hammer to oil pump assembly and extract it evenly from transmission case.

CAUTION:

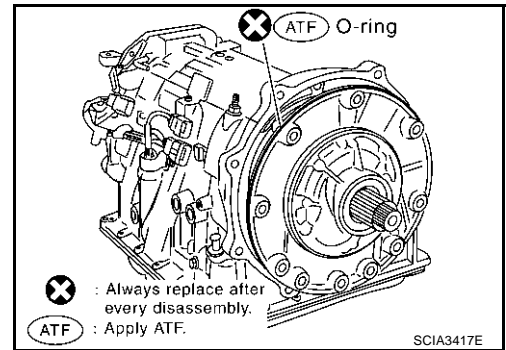
- Fully tighten sliding hammer screw.
- Make sure that bearing race is installed to the oil pump assembly edge surface.



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DISASSEMBLY

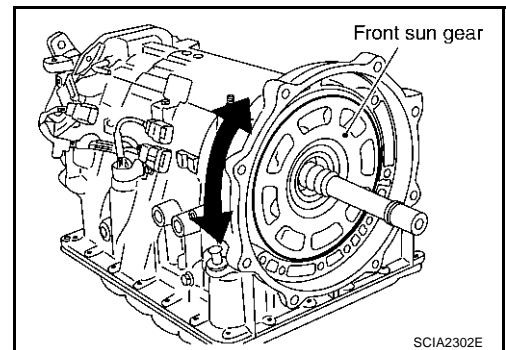
8. Remove O-ring from oil pump assembly.



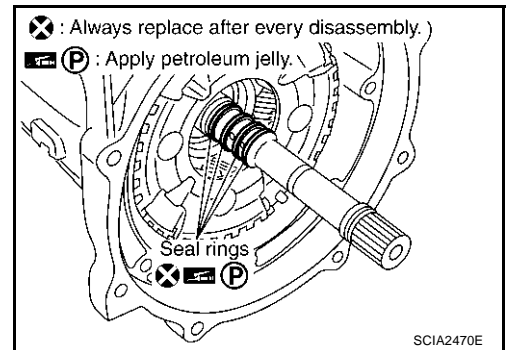
9. Remove bearing race, needle bearing and front sun gear from transmission case.

NOTE:

Remove front sun gear by rotating left/right.



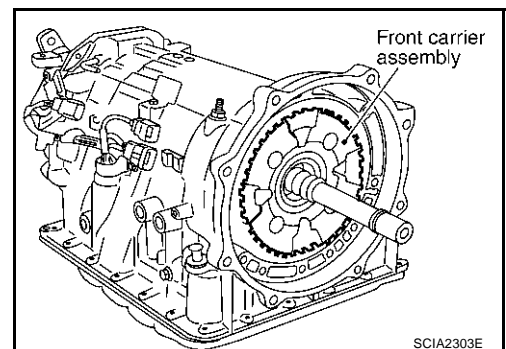
10. Remove seal rings from input clutch assembly.



11. Remove front carrier assembly from transmission case. (With input clutch assembly and rear internal gear.)

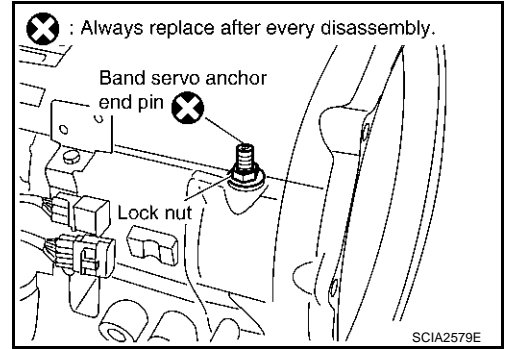
CAUTION:

Be careful to remove it with needle bearing.

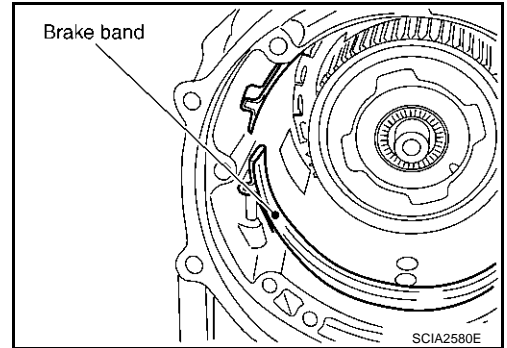


DISASSEMBLY

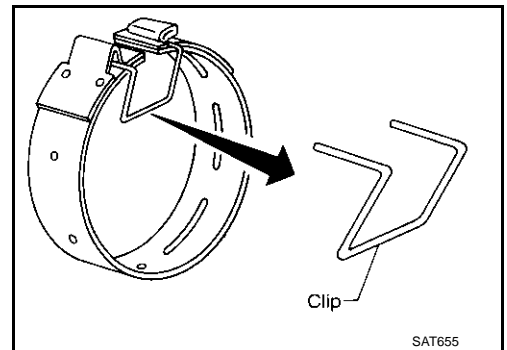
12. Loosen lock nut and remove band servo anchor end pin from transmission case.



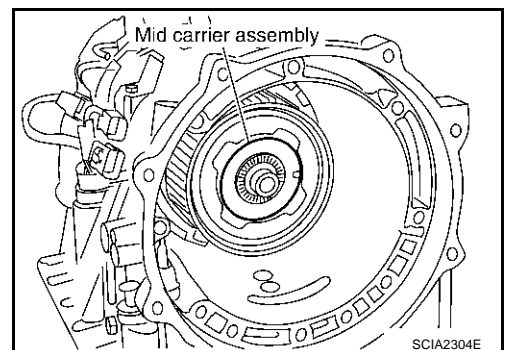
13. Remove brake band from transmission case.



- To prevent brake linings from cracking or peeling, do not stretch the flexible band unnecessarily. When removing the brake band, always secure it with a clip as shown in the figure at left. Leave the clip in position after removing the brake band.
- Check brake band facing for damage, cracks, wear or burns.



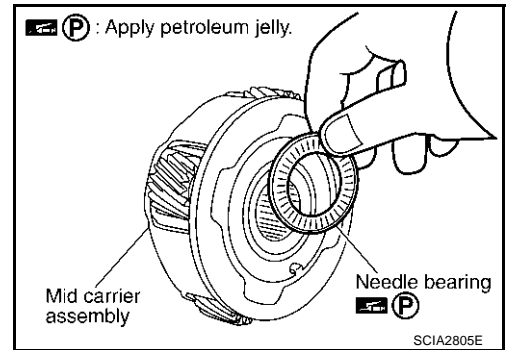
14. Remove mid carrier assembly and rear carrier assembly as a unit.
15. Remove mid carrier assembly from rear carrier assembly.



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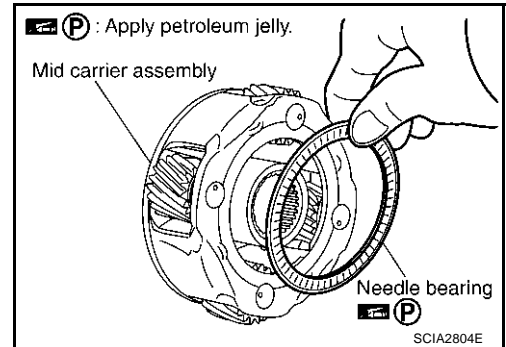
DISASSEMBLY

16. Remove needle bearing (front side) from mid carrier assembly.

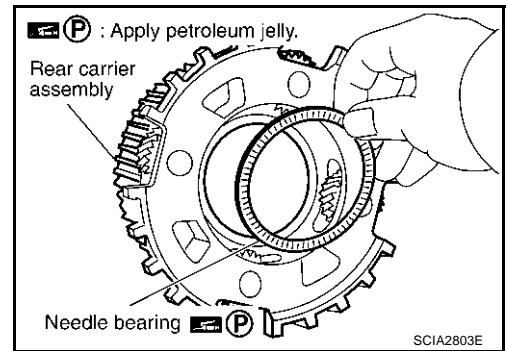


17. Remove needle bearing (rear side) from mid carrier assembly.

18. Remove bearing race from rear carrier assembly.



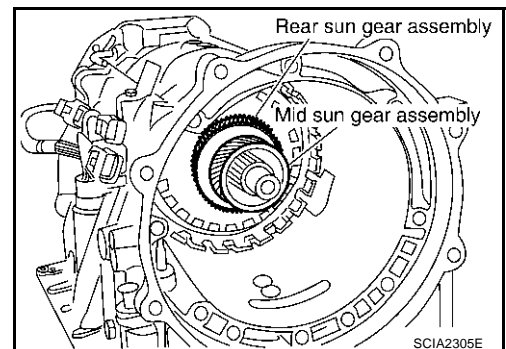
19. Remove needle bearing from rear carrier assembly.



20. Remove mid sun gear assembly, rear sun gear assembly and high and low reverse clutch hub as a unit.

CAUTION:

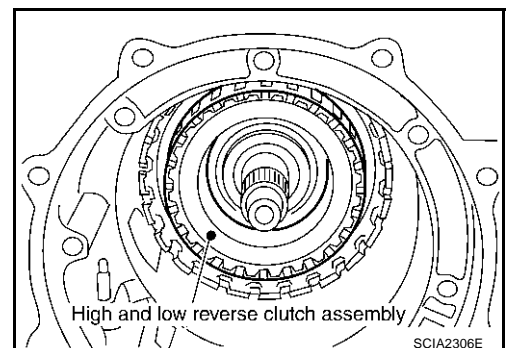
Be careful to remove them with bearing race and needle bearing.



21. Remove high and low reverse clutch assembly from transmission case.

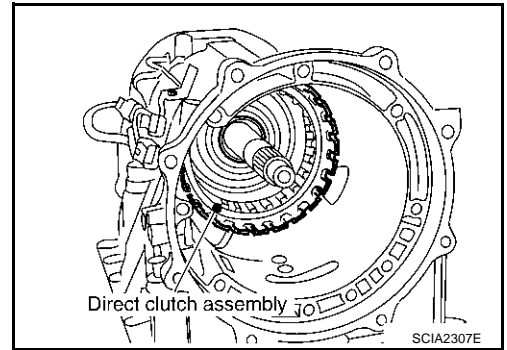
CAUTION:

Make sure that needle bearing is installed to the high and low reverse clutch assembly edge surface.

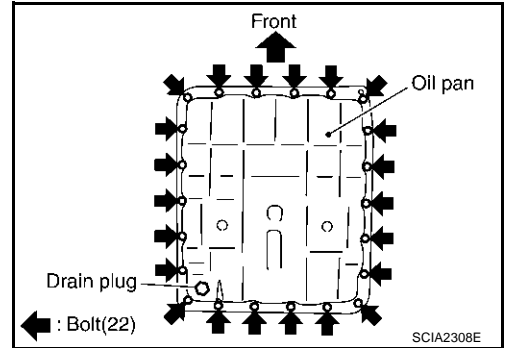


DISASSEMBLY

22. Remove direct clutch assembly from transmission case.
23. Remove needle bearing from drum support edge surface.

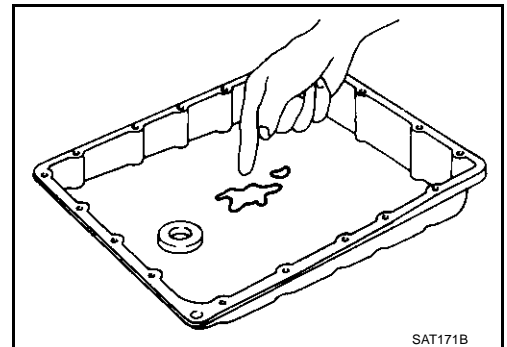


24. Remove oil pan and oil pan gasket.



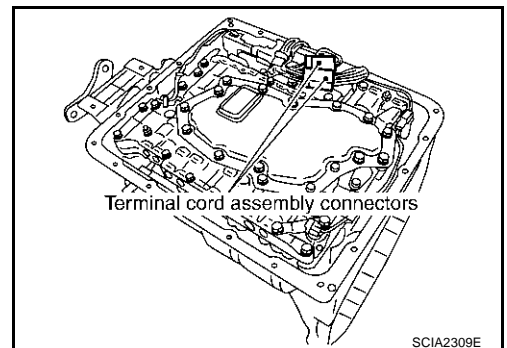
25. Check foreign materials in oil pan to help determine causes of malfunction. If the fluid is very dark, smells burned, or contains foreign particles, the frictional material (clutches, band) may need replacement. A tacky film that will not wipe clean indicates varnish build up. Varnish can cause valves, servo, and clutches to stick and can inhibit pump pressure.

- If frictional material is detected, replace radiator after repair of A/T. Refer to [CO-12, "RADIATOR"](#) , [CO-14, "RADIATOR \(ALUMINUM TYPE\)"](#) .



26. Disconnect terminal cord assembly connectors.

CAUTION:
Be careful not to damage connector.

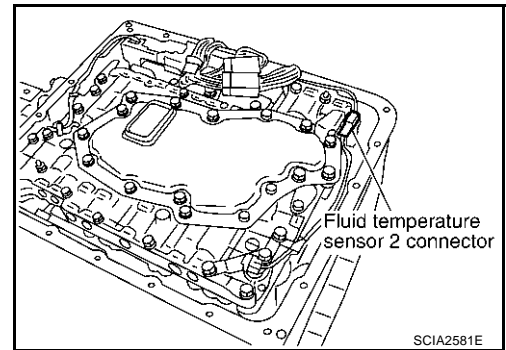


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DISASSEMBLY

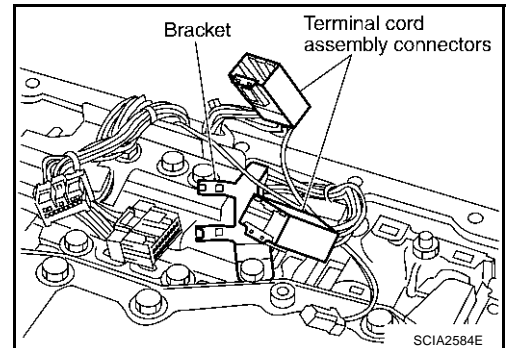
27. Disconnect fluid temperature sensor 2 connector.

CAUTION:
Be careful not to damage connector.



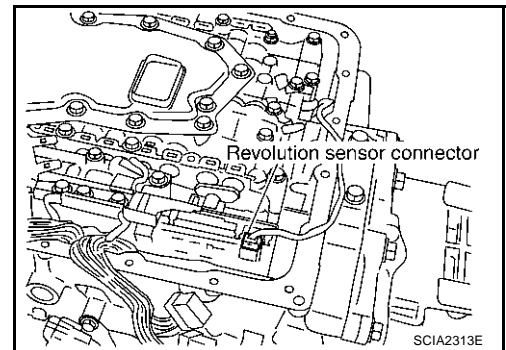
28. Remove terminal cord assembly connectors from bracket.

CAUTION:
Be careful not to damage connector.



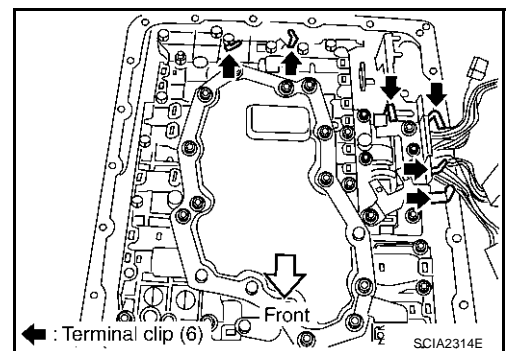
29. Disconnect revolution sensor connector.

CAUTION:
Be careful not to damage connector.



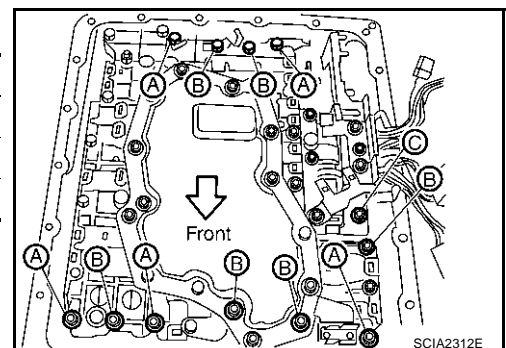
30. Straighten terminal clips to free terminal cord assembly and revolution sensor harness then remove terminal clips.

CAUTION:
Hang down terminal cord assembly and revolution sensor harness toward outside so as not to disturb removal of control valve assembly.



31. Remove bolts A, B and C from control valve assembly.

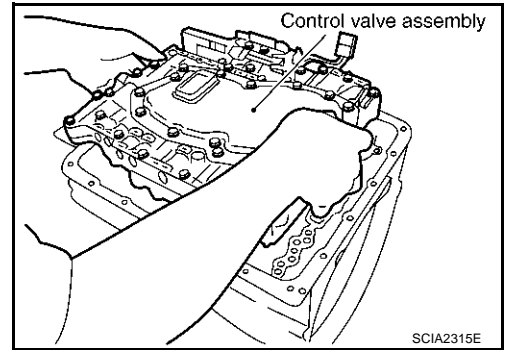
Bolt symbol	Length mm (in)	Number of bolts
A	42 (1.65)	5
B	55 (2.17)	6
C	40 (1.57)	1



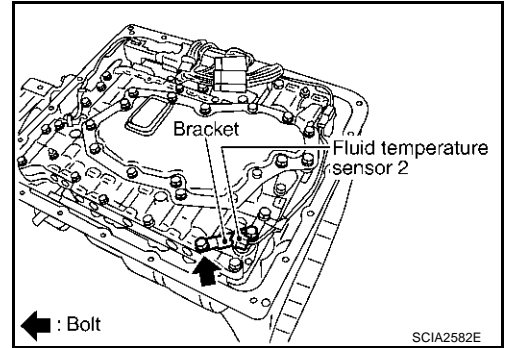
DISASSEMBLY

32. Remove control valve assembly from transmission case.

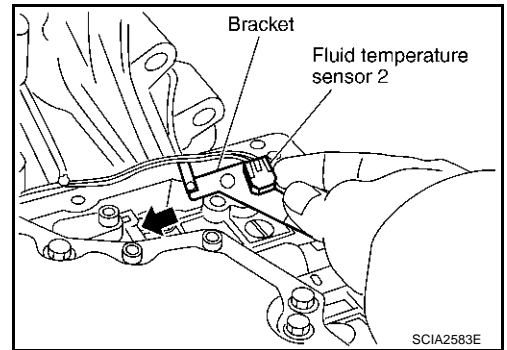
CAUTION:
When removing, be careful with the manual valve notch and manual plate height. Remove it vertically.



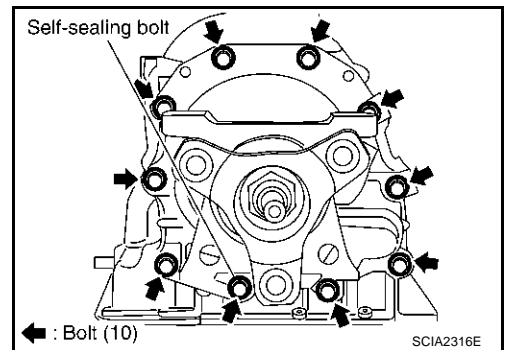
33. Remove fluid temperature sensor 2 with bracket from control valve assembly.



34. Remove bracket from fluid temperature sensor 2.



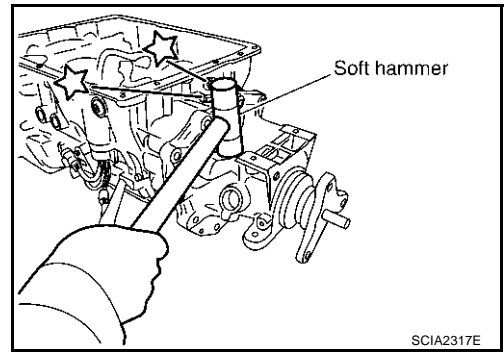
35. Remove tightening bolts for output shaft & companion flange complement and transmission case.



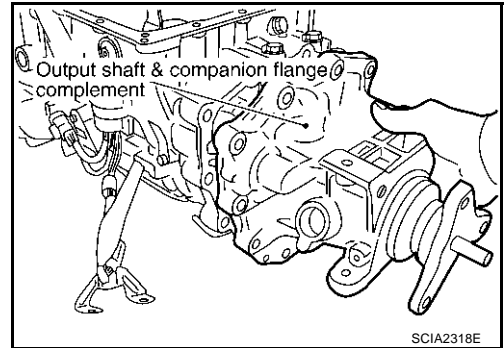
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DISASSEMBLY

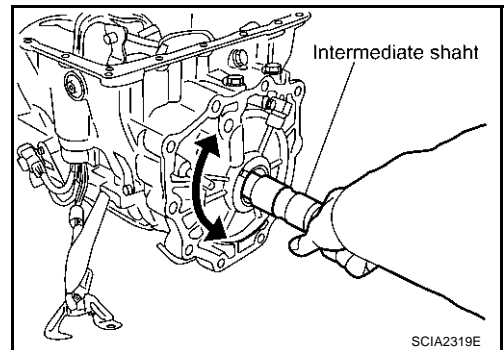
36. Tap output shaft & companion flange complement with soft hammer.



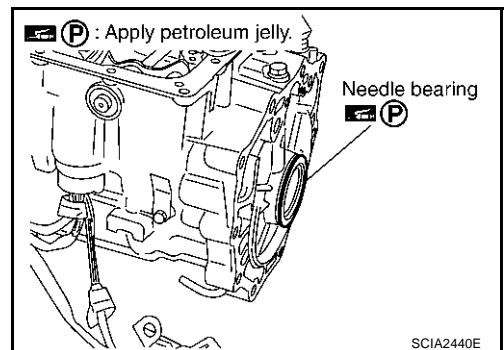
37. Remove output shaft & companion flange complement from transmission case. (With needle bearing)



38. Remove intermediate shaft from transmission case by rotating left/right.



39. Remove needle bearing from transmission case.

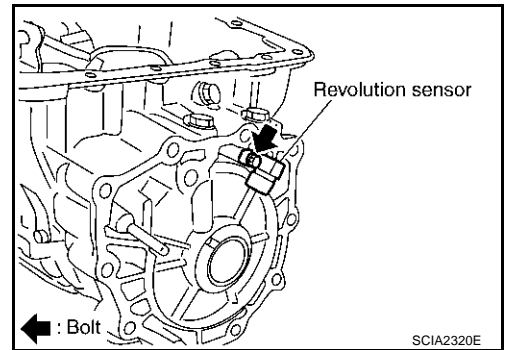


DISASSEMBLY

40. Remove revolution sensor from transmission case.

CAUTION:

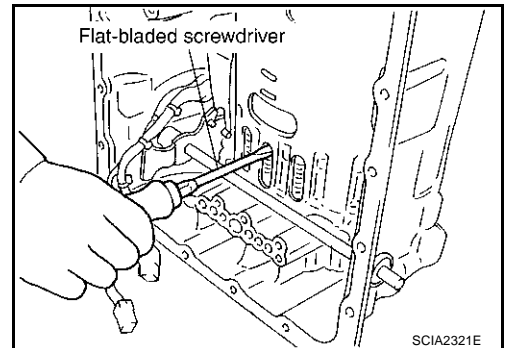
Be careful not to damage harness with the edge of case.



41. Remove reverse brake snap ring (fixing plate) using 2 flat-bladed screwdrivers.

NOTE:

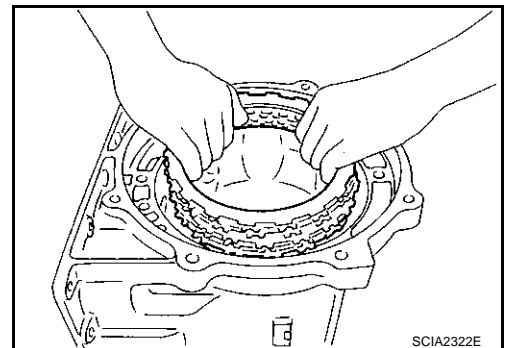
Press out snap ring from the transmission case oil pan side gap using a flat-bladed screwdriver, and remove it using another screwdriver.



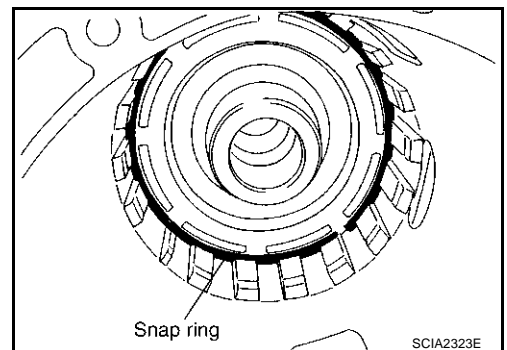
42. Remove reverse brake retaining plate, drive plate, driven plate and dish plate from transmission case.

CAUTION:

Be careful to remove it with N-spring.



43. Remove snap ring (fixing spring retainer) using a flat-bladed screwdriver.



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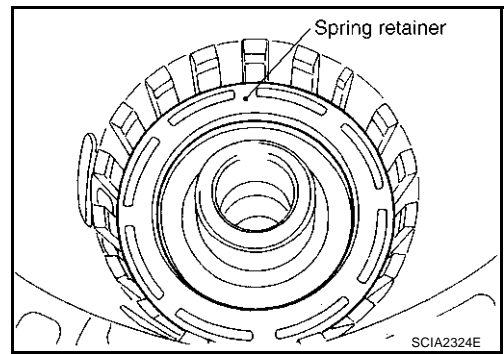
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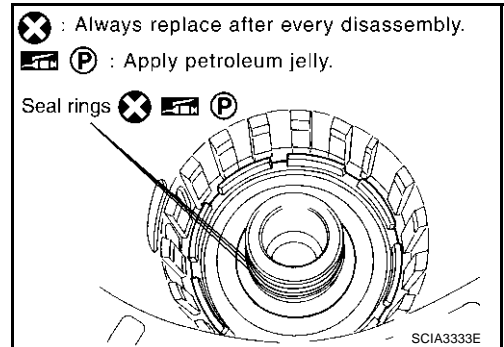
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DISASSEMBLY

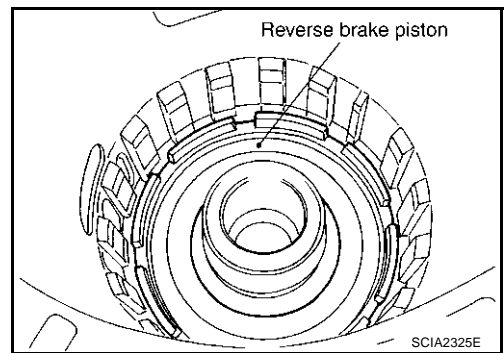
44. Remove spring retainer and return spring from transmission case.



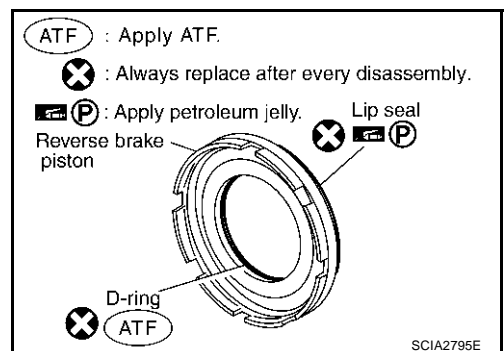
45. Remove seal rings from drum support.



46. Remove reverse brake piston from transmission case.

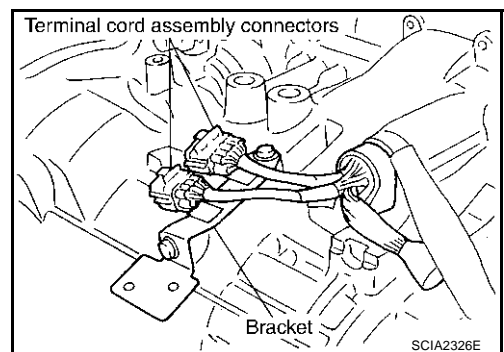


47. Remove lip seal and D-ring from reverse brake piston.



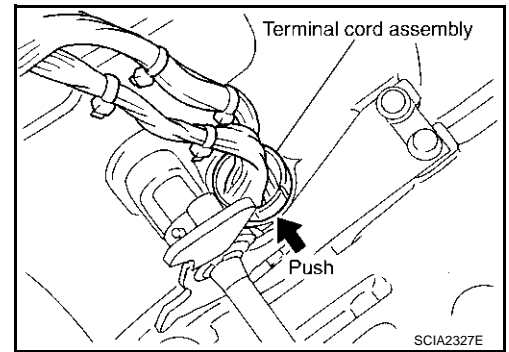
48. Remove terminal cord assembly connectors from bracket.

CAUTION:
 Be careful not to damage connector.



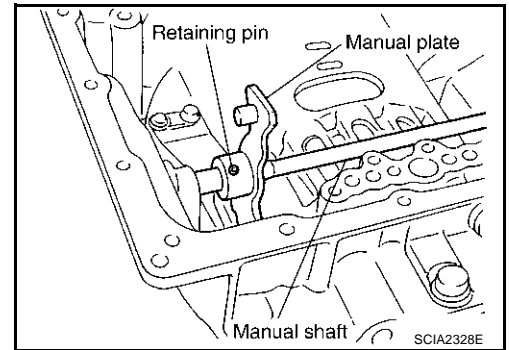
DISASSEMBLY

49. Remove terminal cord assembly from transmission case.



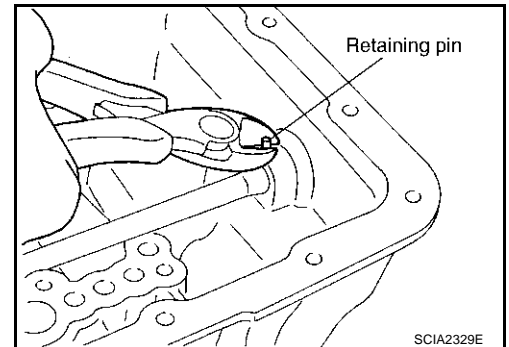
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50. Use a pin punch (4mm dia. commercial service tool) to knock out retaining pin.



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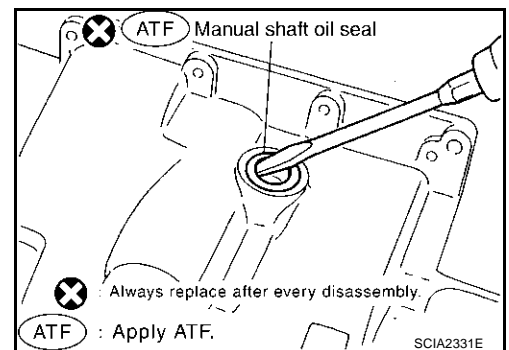
- 51. Remove manual shaft retaining pin with nippers.
- 52. Remove manual plate (with parking rod) from manual shaft.
- 53. Remove parking rod from manual plate.
- 54. Remove manual shaft from transmission case.



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55. Remove manual shaft oil seal using a flat-bladed screwdriver.

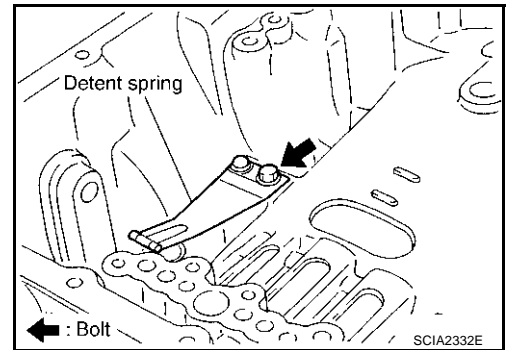
CAUTION:
Be careful not to scratch transmission case.



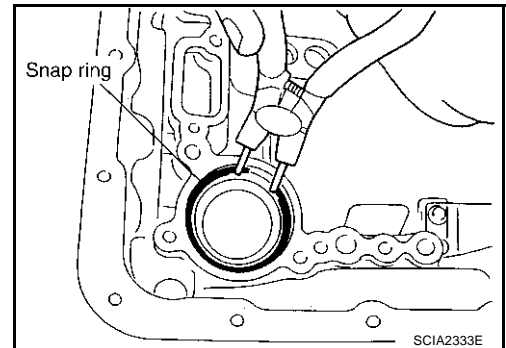
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DISASSEMBLY

56. Remove detent spring and spacer from transmission case.



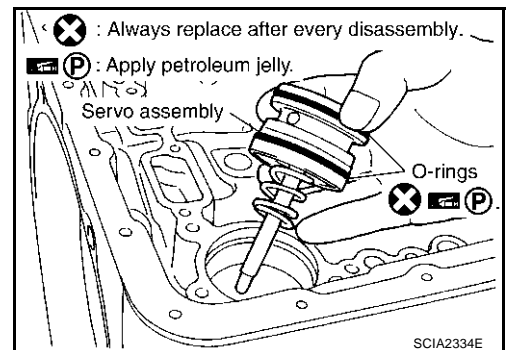
57. Using snap ring pliers, Remove snap ring from transmission case.



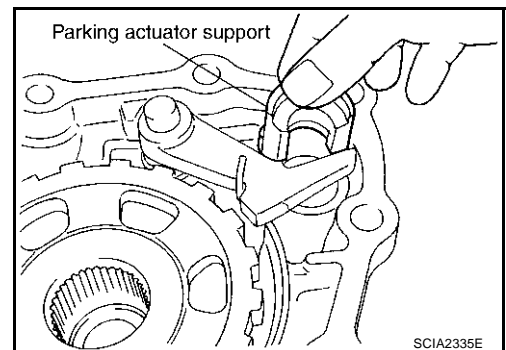
58. Remove servo assembly from transmission case.

59. Remove return spring from servo assembly.

60. Remove O-rings from servo assembly.

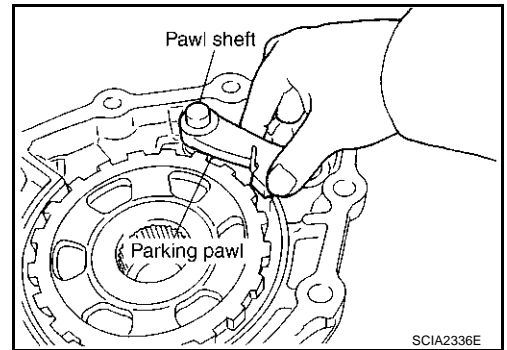


61. Remove parking actuator support from output shaft & companion flange complement.

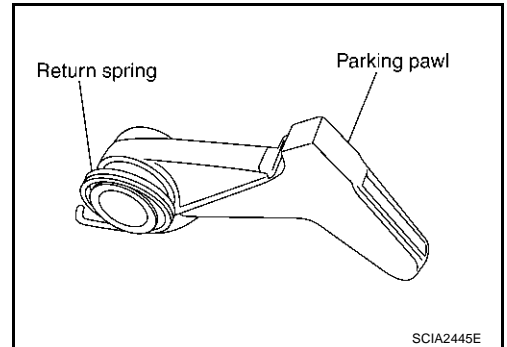


DISASSEMBLY

62. Remove parking pawl, parking pawl shaft and return spring from output shaft & companion flange complement.



63. Remove return spring from parking pawl.



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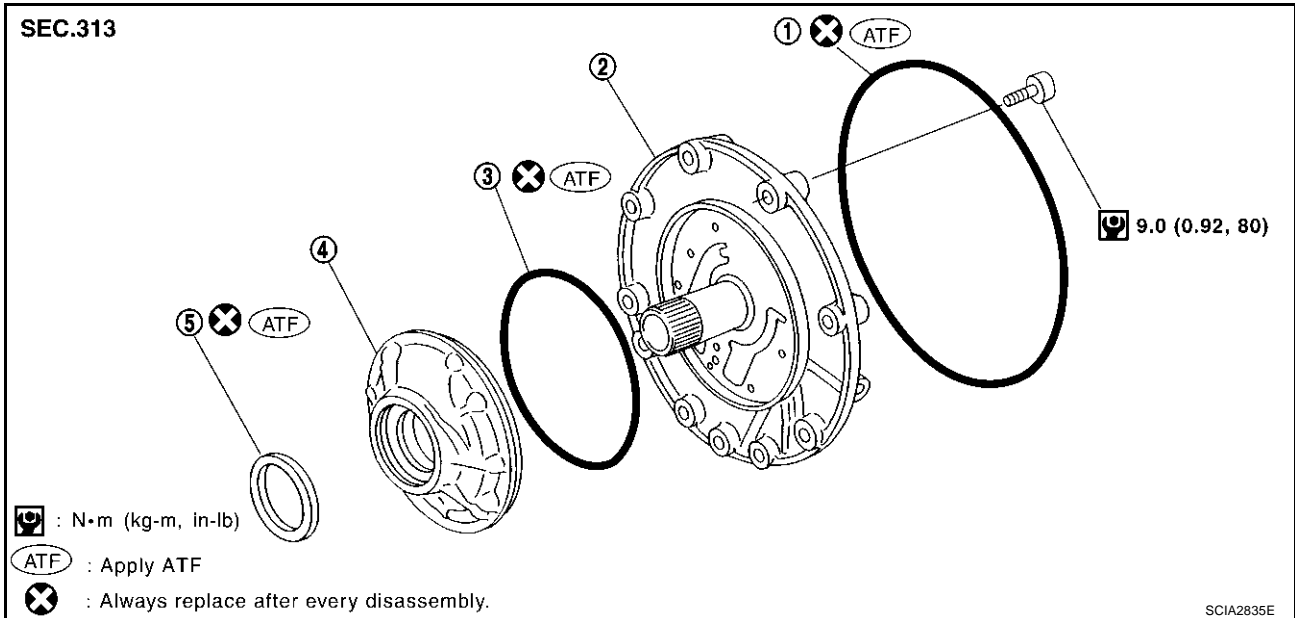
REPAIR FOR COMPONENT PARTS

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REPAIR FOR COMPONENT PARTS

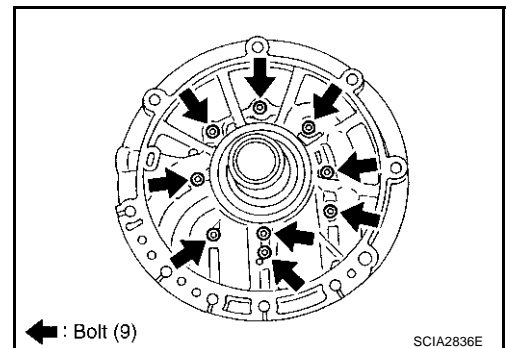
Oil Pump COMPONENTS



1. O-ring
2. Oil pump cover
3. O-ring
4. Oil pump housing
5. Oil pump housing oil seal

DISASSEMBLY

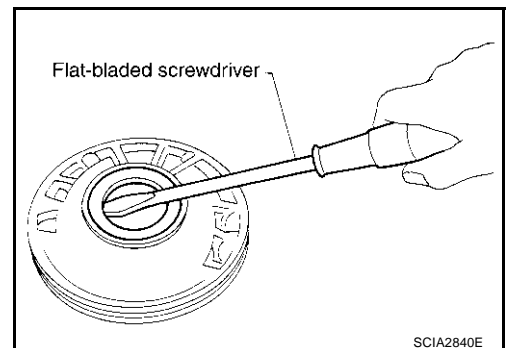
1. Remove oil pump housing from oil pump cover.



2. Remove oil pump housing oil seal using a flat-bladed screwdriver.

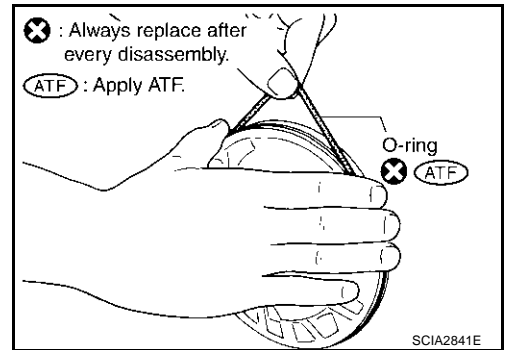
CAUTION:

Be careful not to scratch oil pump housing.

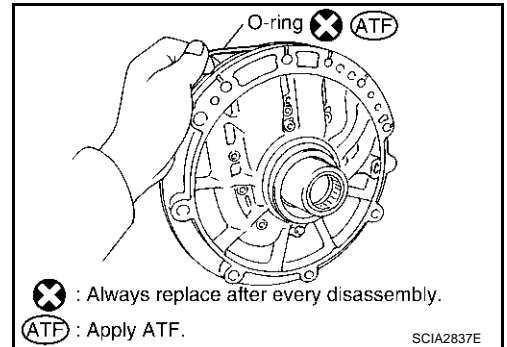


REPAIR FOR COMPONENT PARTS

3. Remove O-ring from oil pump housing.



4. Remove O-ring from oil pump cover.

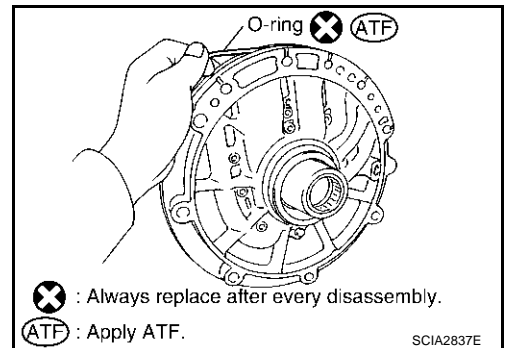


ASSEMBLY

1. Install O-ring in oil pump cover.

CAUTION:

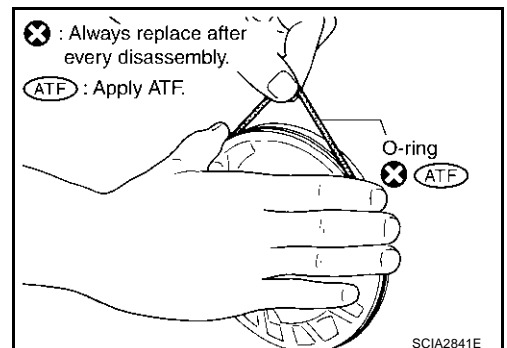
- Do not reuse O-ring.
- Apply ATF to O-ring.



2. Install O-ring in oil pump housing.

CAUTION:

- Do not reuse O-ring.
- Apply ATF to O-ring.



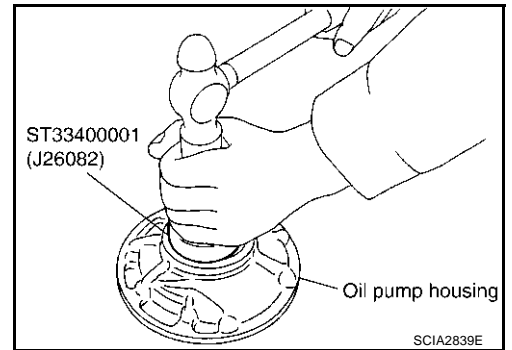
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REPAIR FOR COMPONENT PARTS

3. Install oil seal in oil pump housing.

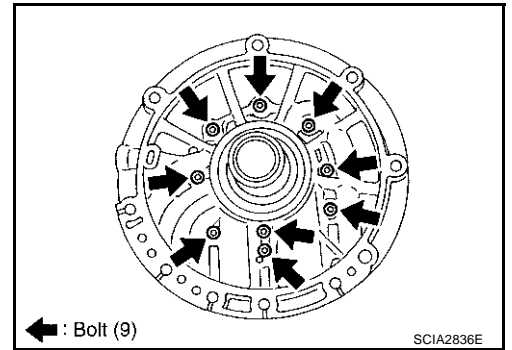
CAUTION:

- Do not reuse oil seal.
- Apply ATF to oil seal.



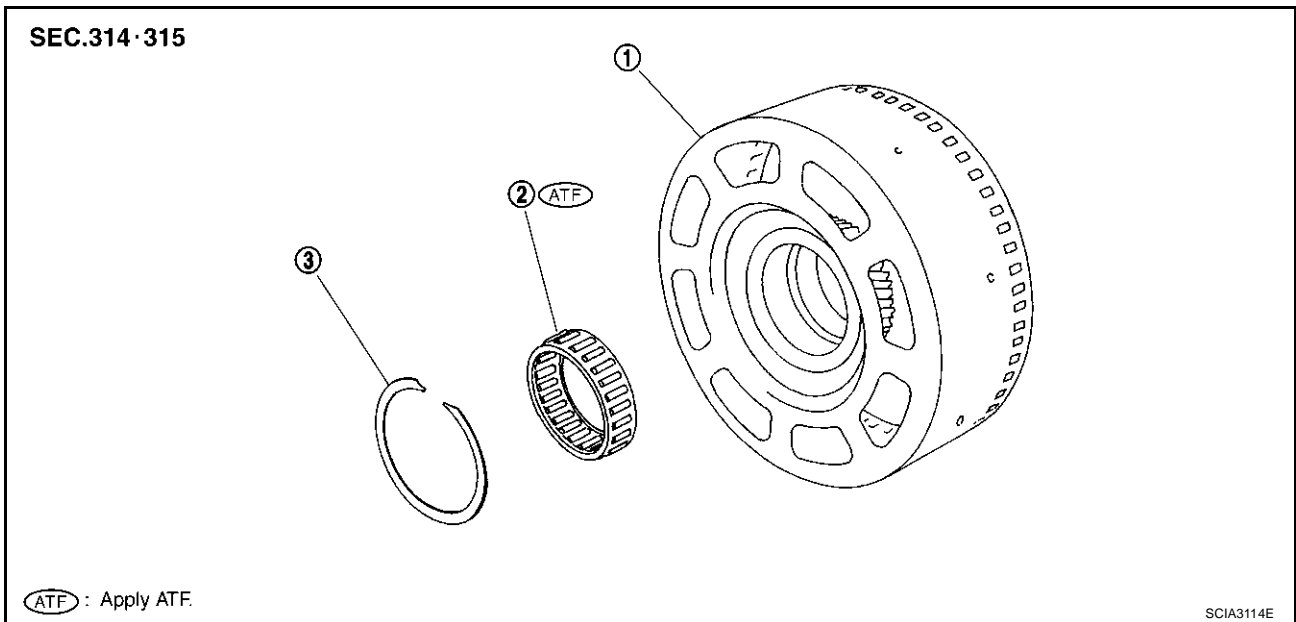
4. Install oil pump housing in oil pump cover.

 : 9.0 N·m (0.92 kg·m, 80 in·lb.)



Front Sun Gear, 3rd One-Way Clutch COMPONENTS

ECS00ADF



1. Front sun gear

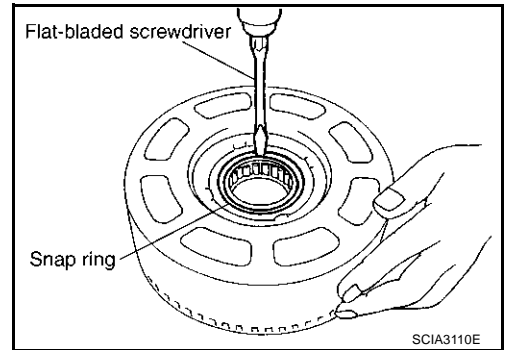
2. 3rd one-way clutch

3. Snap ring

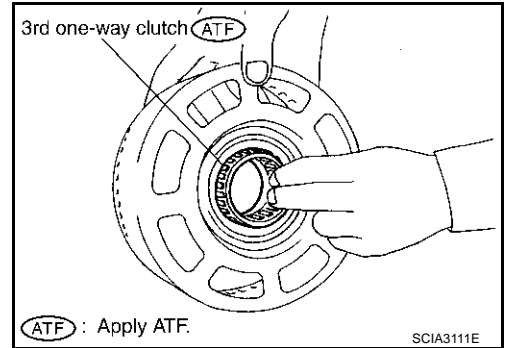
REPAIR FOR COMPONENT PARTS

DISASSEMBLY

1. Using a flat-bladed screwdriver, remove snap ring from front sun gear.



2. Remove 3rd one-way clutch from front sun gear.



INSPECTION

3rd One-Way Clutch

- Check frictional surface for wear or damage.

CAUTION:

If necessary, replace the 3rd one-way clutch.

Front Sun Gear Snap Ring

- Check for deformation, fatigue or damage.

CAUTION:

If necessary, replace the snap ring.

Front Sun Gear

- Check for deformation, fatigue or damage.

CAUTION:

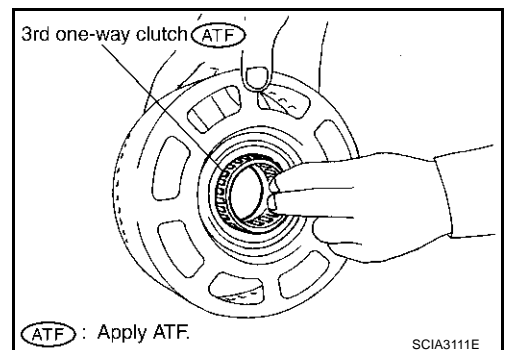
If necessary, replace the front sun gear.

ASSEMBLY

1. Install 3rd one-way clutch in front sun gear.

CAUTION:

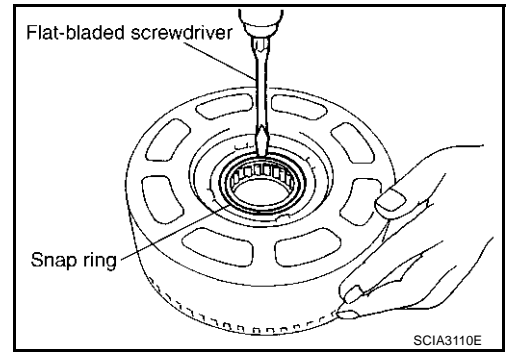
Apply ATF to 3rd one-way clutch.



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REPAIR FOR COMPONENT PARTS

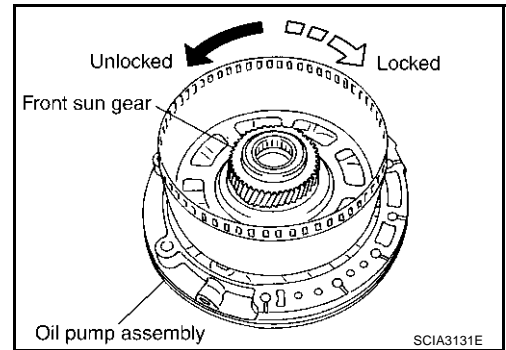
2. Using a flat-bladed screwdriver, install snap ring in front sun gear.



3. Check operation of 3rd one-way clutch.
 - a. Hold oil pump assembly and turn front sun gear.
 - b. Check 3rd one-way clutch for correct locking and unlocking directions.

CAUTION:

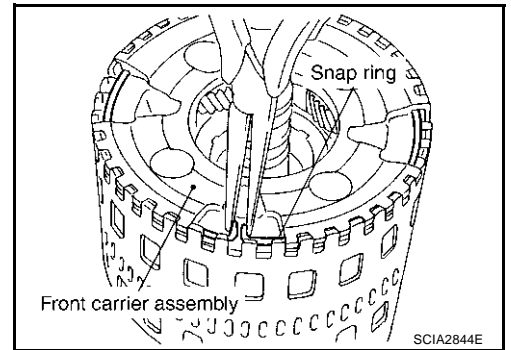
If not as shown in illustration, check installation direction of 3rd one-way clutch.



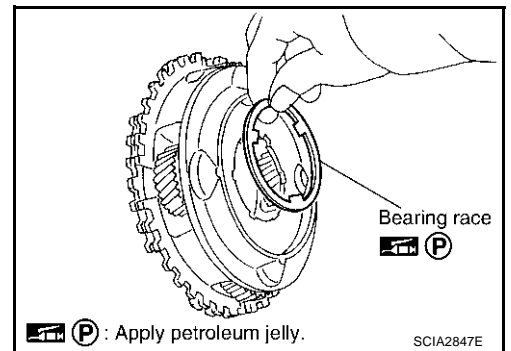
REPAIR FOR COMPONENT PARTS

DISASSEMBLY

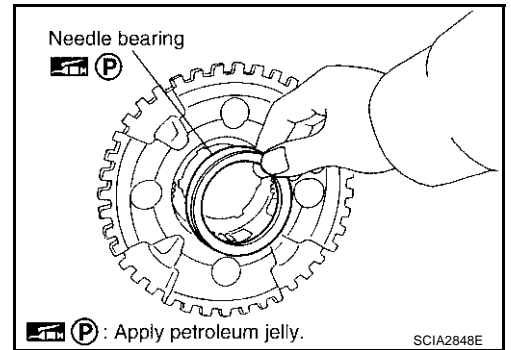
1. Remove front carrier assembly from rear internal gear.



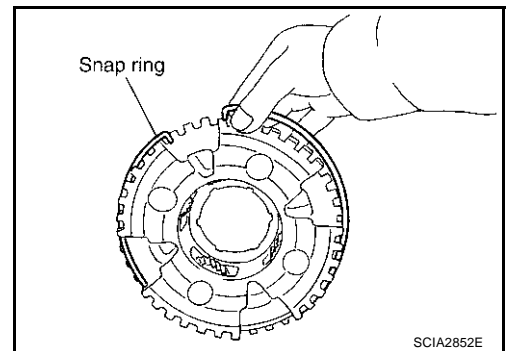
a. Remove bearing race from front carrier.



b. Remove needle bearing from front carrier.

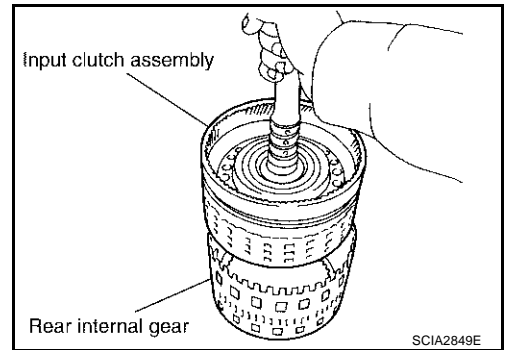


c. Remove snap ring from front carrier.

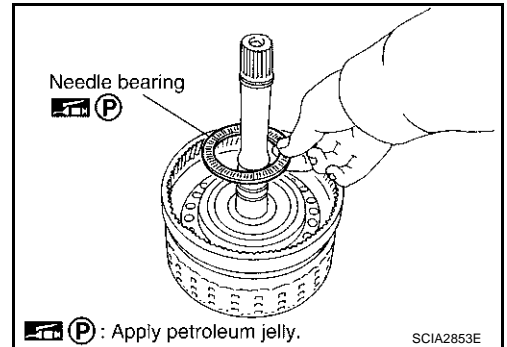


REPAIR FOR COMPONENT PARTS

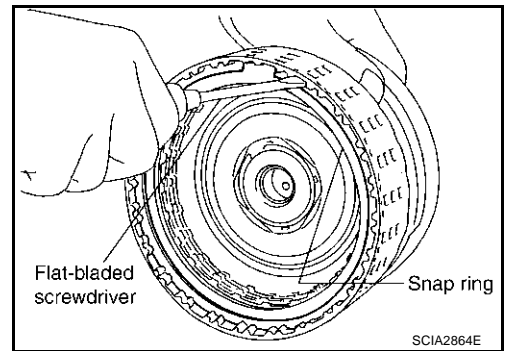
2. Remove input clutch assembly from rear internal gear.
 - a. Remove O-ring and seal rings from input clutch assembly.



- b. Remove needle bearing from input clutch assembly.



- c. Using a flat-bladed screwdriver, remove snap ring from input clutch drum.
 - d. Remove drive plate, driven plate and retaining plate from input clutch drum.



INSPECTION

Front Carrier Snap Ring

- Check for deformation, fatigue or damage.

CAUTION:

If necessary, replace the snap ring.

Input Clutch Snap Ring

- Check for deformation, fatigue or damage.

CAUTION:

If necessary, replace the input clutch assembly.

Input Clutch Drum

- Check for deformation, fatigue or damage or burns.

CAUTION:

If necessary, replace the input clutch assembly.

Input Clutch Drive Plates

- Check facing for burns, cracks or damage.

CAUTION:

If necessary, replace the input clutch assembly.

Input Clutch Retaining Plates and Driven Plates

- Check facing for burns, cracks or damage.

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REPAIR FOR COMPONENT PARTS

CAUTION:

If necessary, replace the input clutch assembly.

Front Carrier

- Check for deformation, fatigue or damage.

CAUTION:

If necessary, replace the front carrier assembly.

Rear Internal Gear

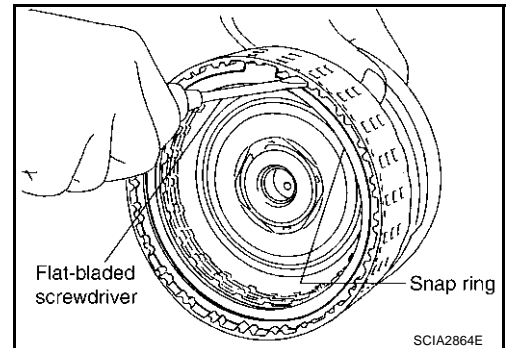
- Check for deformation, fatigue or damage.

CAUTION:

If necessary, replace the rear internal gear assembly.

ASSEMBLY

1. Install input clutch.
 - a. Install drive plate, driven plate and retaining plate in input clutch drum.
 - b. Using a flat-bladed screwdriver, install snap ring in input clutch drum.



- c. Install needle bearing in input clutch assembly.

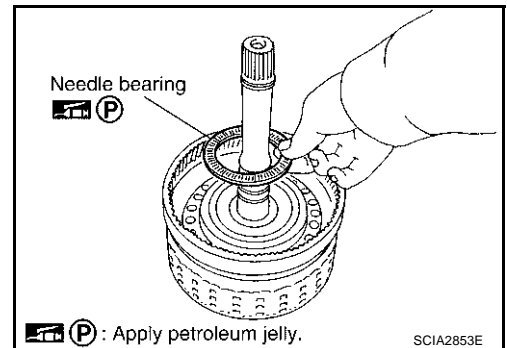
CAUTION:

Apply petroleum jelly to needle bearing.

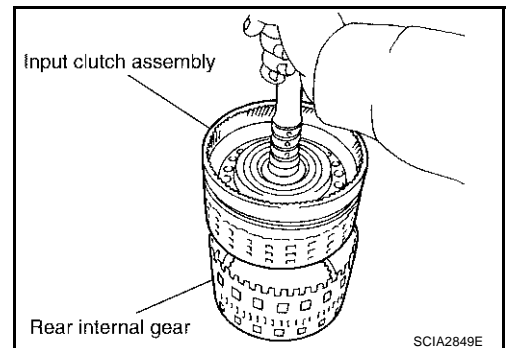
- d. Install O-ring and seal rings in input clutch assembly.

CAUTION:

- Do not reuse O-ring and seal rings.
- Apply ATF to O-ring.
- Apply petroleum jelly to seal rings.

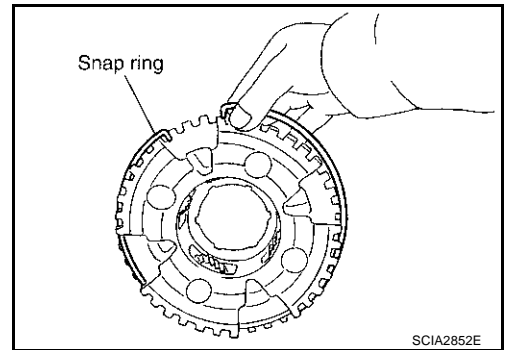


2. Install input clutch assembly in rear internal gear.

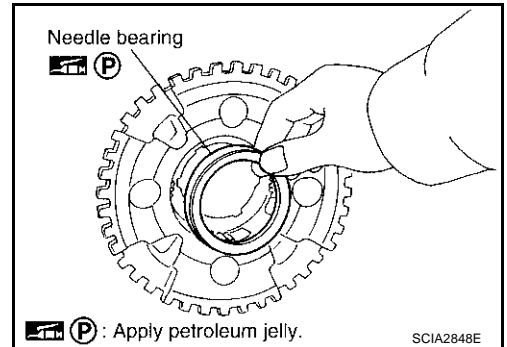


REPAIR FOR COMPONENT PARTS

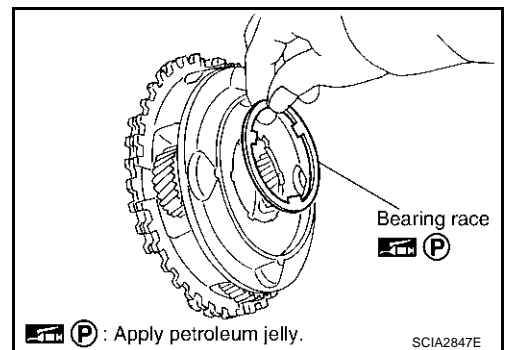
3. Install front carrier assembly.
 - a. Install snap ring in front carrier.



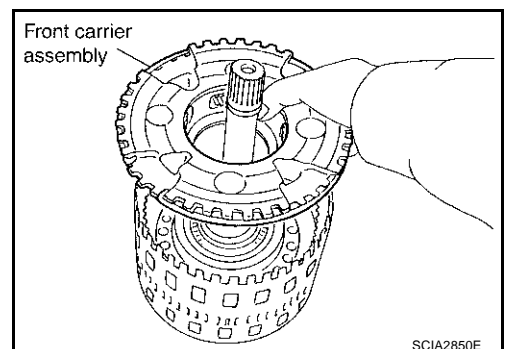
- b. Install needle bearing in front carrier.
CAUTION:
Apply petroleum jelly to needle bearing.



- c. Install bearing race in front carrier.
CAUTION:
Apply petroleum jelly to bearing race.



- d. Install front carrier assembly in input clutch and rear internal gear.

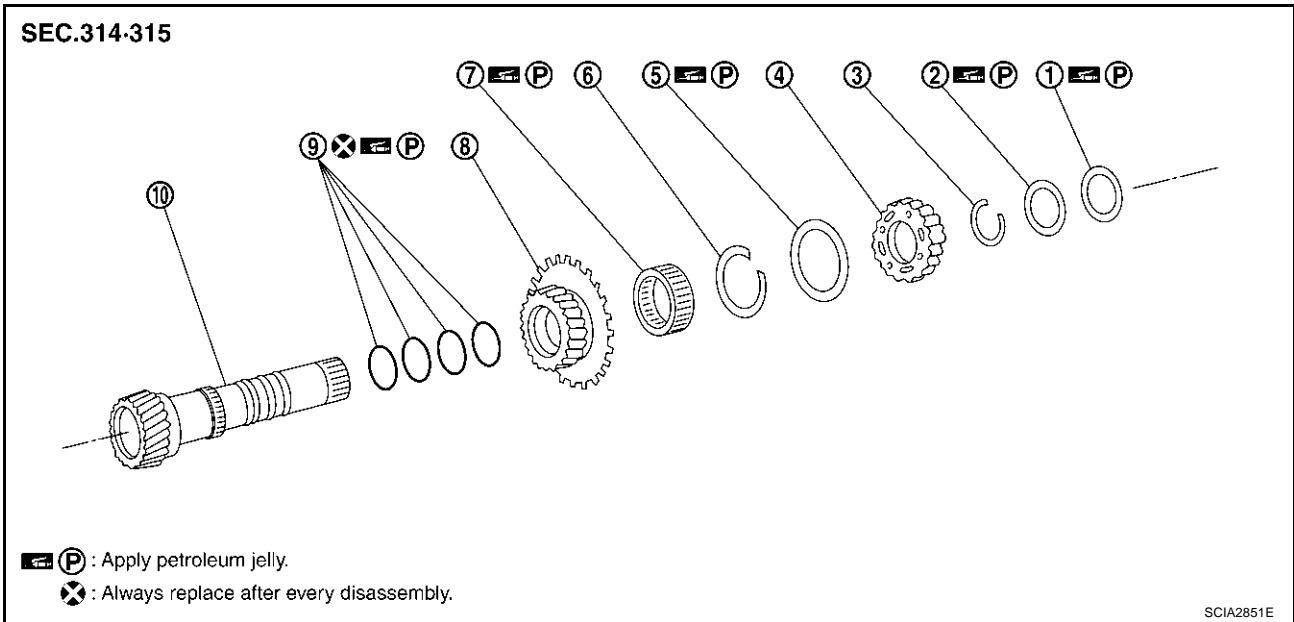


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REPAIR FOR COMPONENT PARTS

Mid Sun Gear, Rear Sun Gear, High and Low Reverse Clutch Hub COMPONENTS

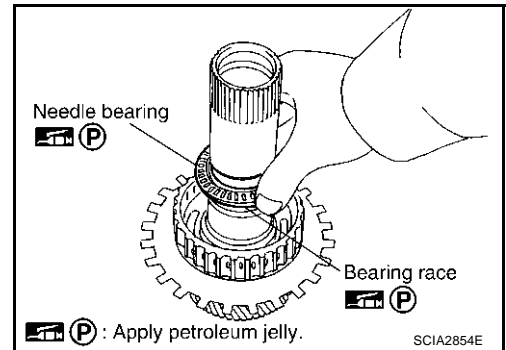
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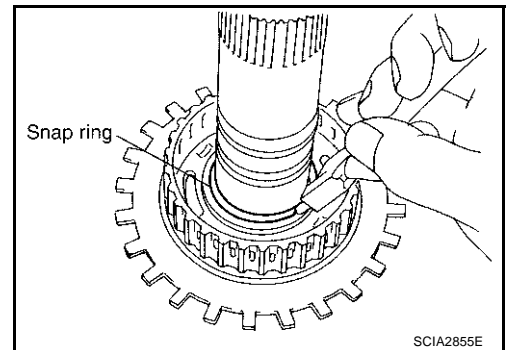
- | | | |
|------------------------------------|-------------------|--------------|
| 1. Needle bearing | 2. Bearing race | 3. Snap ring |
| 4. High and low reverse clutch hub | 5. Needle bearing | 6. Snap ring |
| 7. 1st one-way clutch | 8. Rear sun gear | 9. Seal ring |
| 10. Mid sun gear | | |

DISASSEMBLY

1. Remove needle bearing and bearing race.

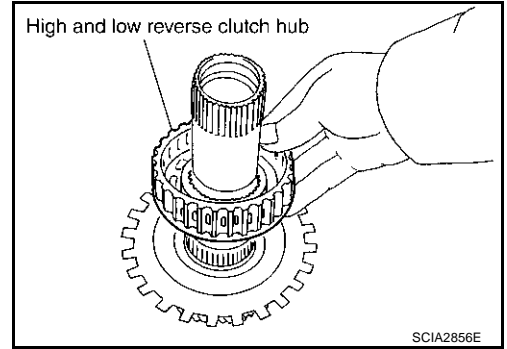


2. Using a snap ring pliers, remove snap ring from high and low reverse clutch hub.

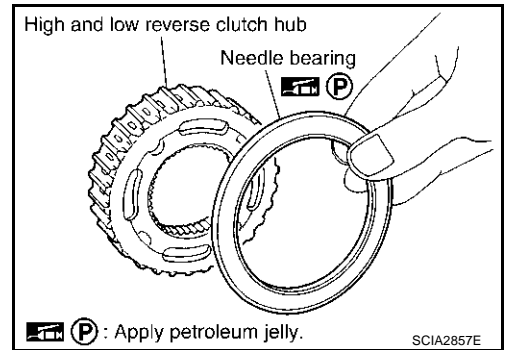


REPAIR FOR COMPONENT PARTS

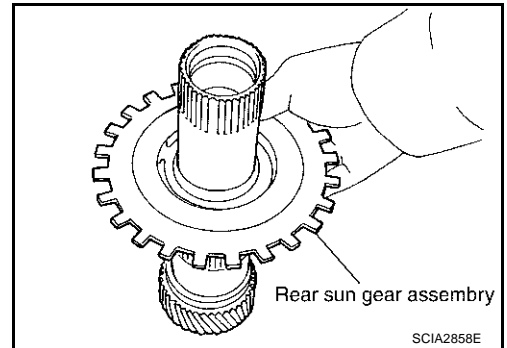
3. Remove high and low reverse clutch hub from mid sun gear assembly.



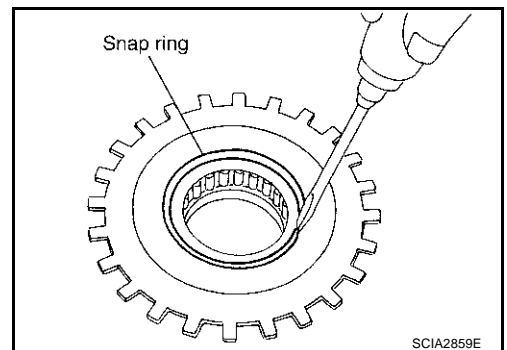
- a. Remove needle bearing from high and low reverse clutch hub.



4. Remove rear sun gear assembly from mid sun gear assembly.



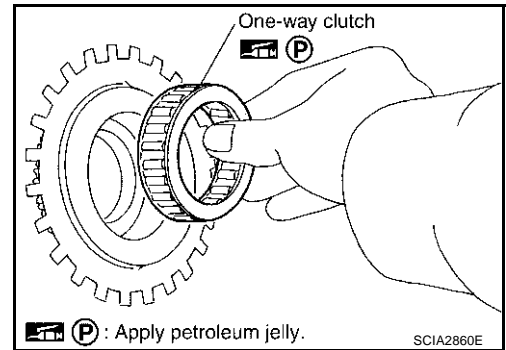
- a. Using a flat-bladed screwdriver, remove snap ring from rear sun gear.



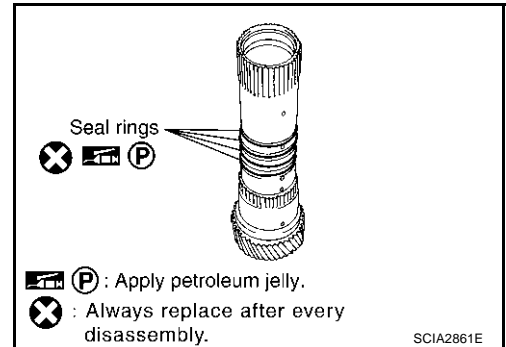
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REPAIR FOR COMPONENT PARTS

- b. Remove 1st one-way clutch from rear sun gear.



5. Remove seal rings from mid sun gear.



INSPECTION

High and Low Reverse Clutch Hub Snap Ring, Rear Sun Gear Snap Ring

- Check for deformation, fatigue or damage.

CAUTION:

If necessary, replace the snap ring.

1st One-Way Clutch

- Check frictional surface for wear or damage.

CAUTION:

If necessary, replace the 1st one-way clutch.

Mid Sun Gear

- Check for deformation, fatigue or damage.

CAUTION:

Replace mid sun gear assembly and high and low reverse clutch assembly as a set if necessary.

Rear Sun Gear

- Check for deformation, fatigue or damage.

CAUTION:

If necessary, replace the rear sun gear.

High and Low Reverse Clutch Hub

- Check for deformation, fatigue or damage.

CAUTION:

If necessary, replace the high and low reverse clutch hub.

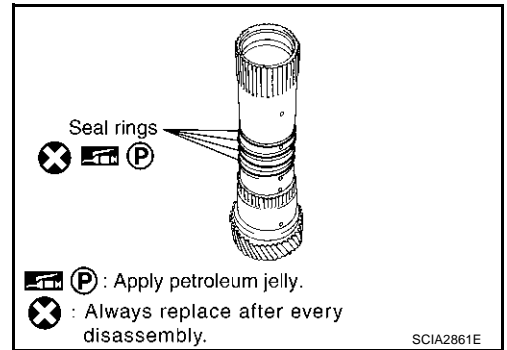
REPAIR FOR COMPONENT PARTS

ASSEMBLY

1. Install seal rings from mid sun gear.

CAUTION:

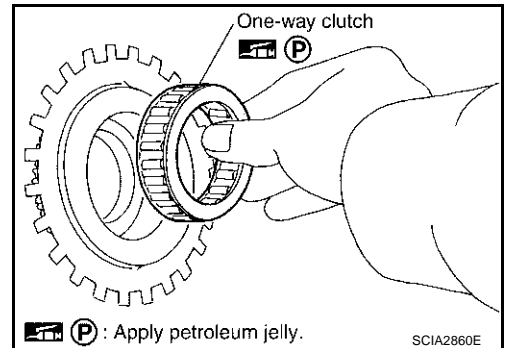
- Do not reuse seal rings.
- Apply petroleum jelly to seal rings.



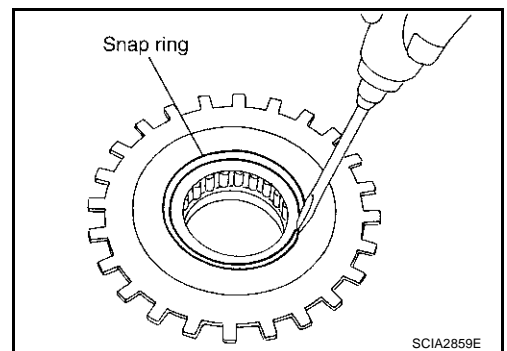
2. Install 1st one-way clutch in rear sun gear.

CAUTION:

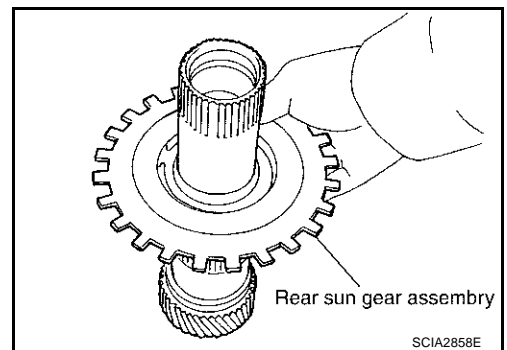
- Apply petroleum jelly to 1st one-way clutch.



3. Using a flat-bladed screwdriver, install snap ring in rear sun gear.



4. Install rear sun gear assembly in mid sun gear assembly.



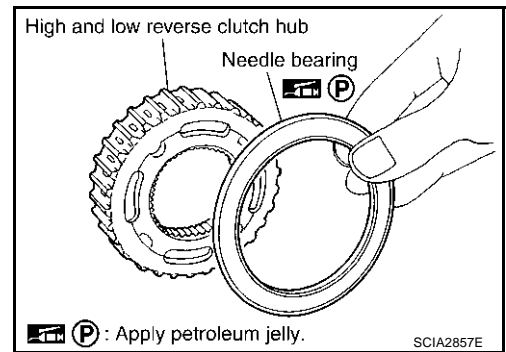
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REPAIR FOR COMPONENT PARTS

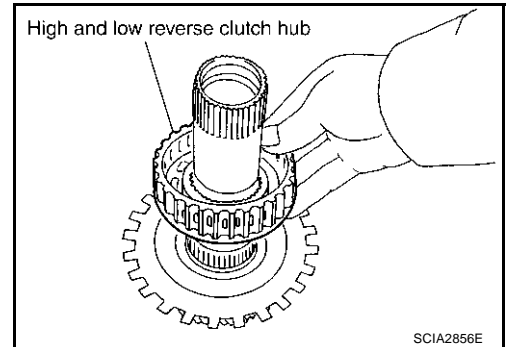
5. Install needle bearing in high and low reverse clutch hub.

CAUTION:

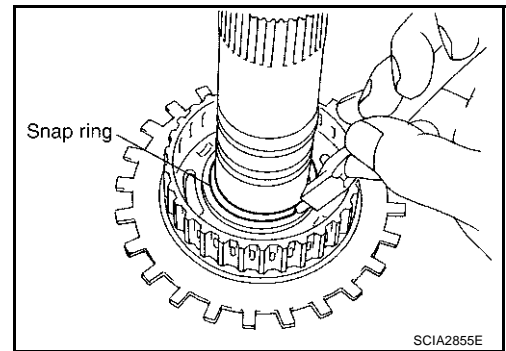
Apply petroleum jelly to needle bearing.



6. Install high and low reverse clutch hub in mid sun gear assembly.



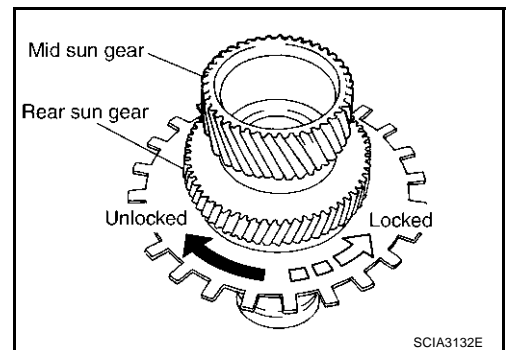
7. Using a snap ring pliers, install snap ring in high and low reverse clutch hub.



8. Check operation of 1st one-way clutch.
- a. Hold mid sun gear and turn rear sun gear.
- b. Check 1st one-way clutch for correct locking and unlocking directions.

CAUTION:

If not as shown in illustration, check installation direction of 1st one-way clutch.

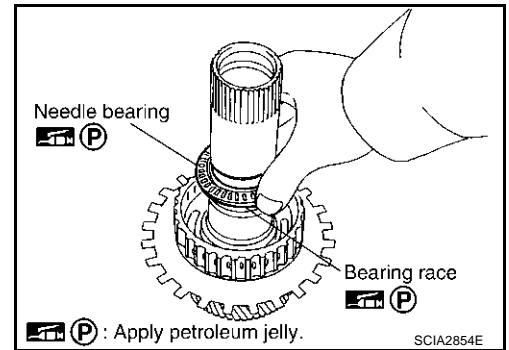


REPAIR FOR COMPONENT PARTS

9. Install needle bearing and bearing race.

CAUTION:

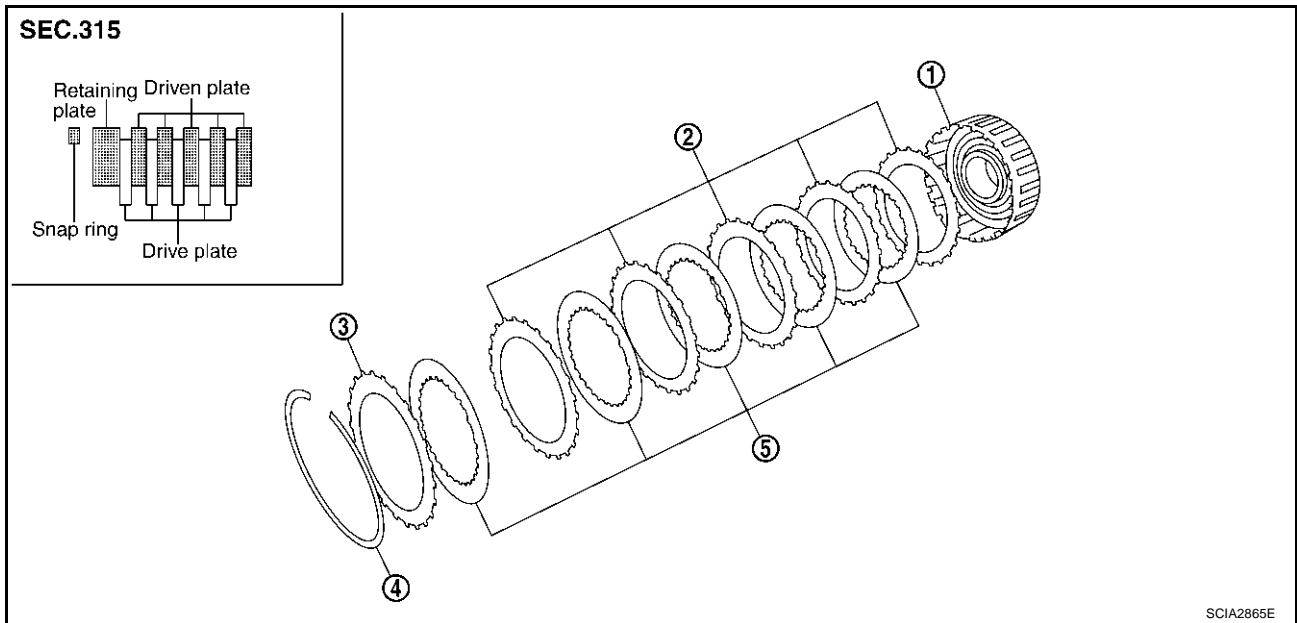
Apply petroleum jelly to needle bearing and bearing race.



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High and Low Reverse Clutch COMPONENTS

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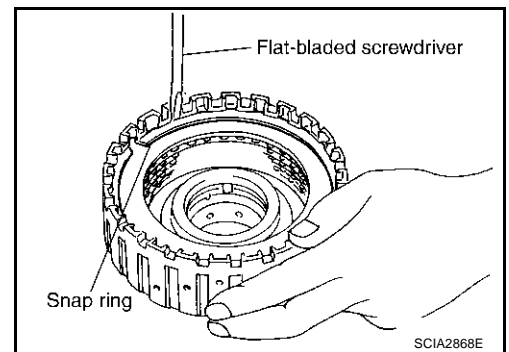


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| 1. High and low reverse clutch drum | 2. Driven plate | 3. Retaining plate |
| 4. Snap ring | 5. Drive plate | |

DISASSEMBLY

- Using a flat-bladed screwdriver, remove snap ring from high and low reverse clutch drum.
- Remove drive plates, driven plates and retaining plate from high and low reverse clutch drum.



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INSPECTION

- Check the following, and replace high and low reverse clutch assembly and mid sun gear assembly as a set if necessary.

High and Low Reverse Clutch Snap Ring

- Check for deformation, fatigue or damage.

High and Low Reverse Clutch Drive Plates

- Check facing for burns, cracks or damage.

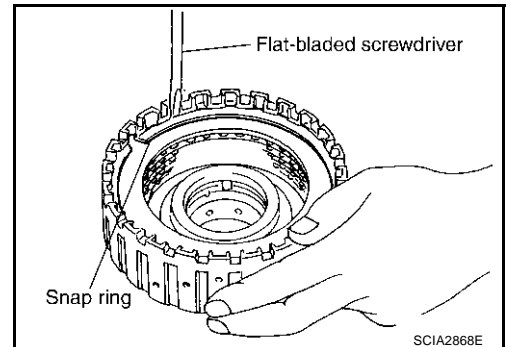
REPAIR FOR COMPONENT PARTS

High and Low Reverse Clutch Retaining Plates and Driven Plates

- Check facing for burns, cracks or damage.

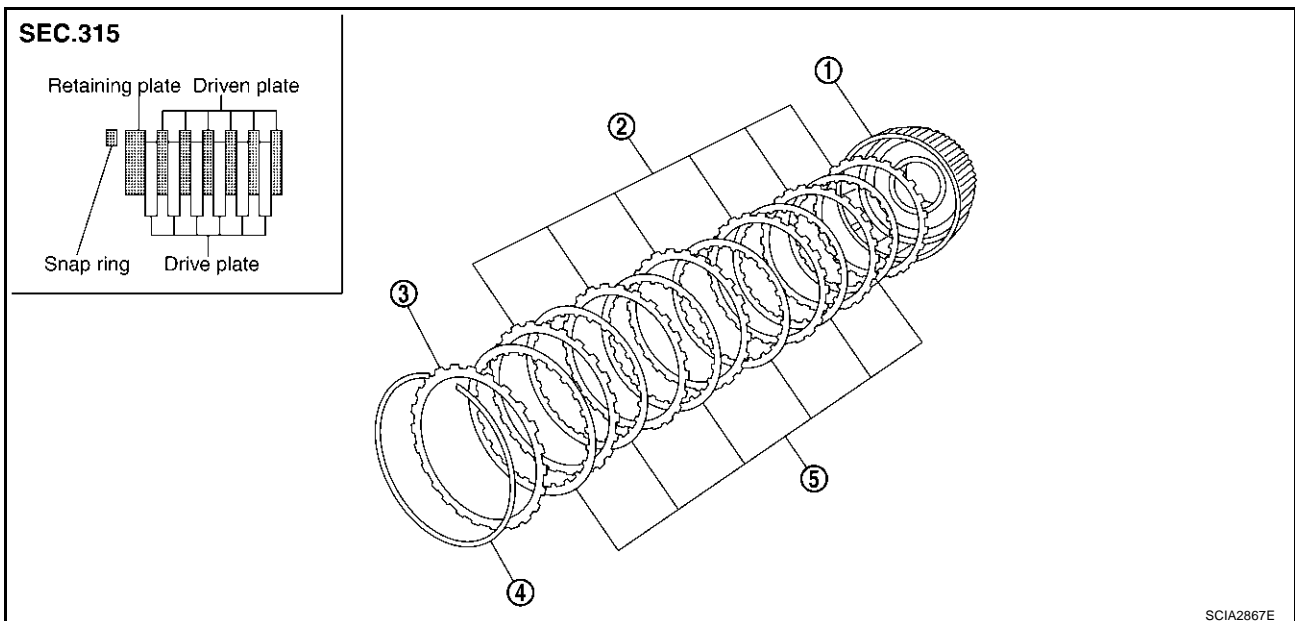
ASSEMBLY

1. Install drive plates, driven plates and retaining plate in high and low reverse clutch drum.
2. Using a flat-bladed screwdriver, install snap ring in high and low reverse clutch drum.



Direct Clutch COMPONENTS

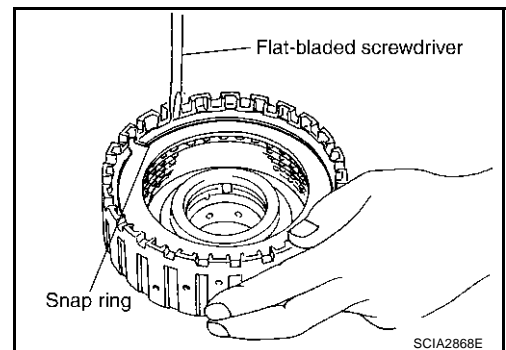
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1. Direct clutch drum
2. Driven plate
3. Retaining plate
4. Snap ring
5. Drive plate

DISASSEMBLY

1. Using a flat-bladed screwdriver, remove snap ring from direct clutch drum.
2. Remove drive plates, driven plates and retaining plate from direct clutch drum.



INSPECTION

- Check the following, and replace direct clutch assembly if necessary.

Direct Clutch Snap Ring

- Check for deformation, fatigue or damage.

REPAIR FOR COMPONENT PARTS

Direct Clutch Drive Plates

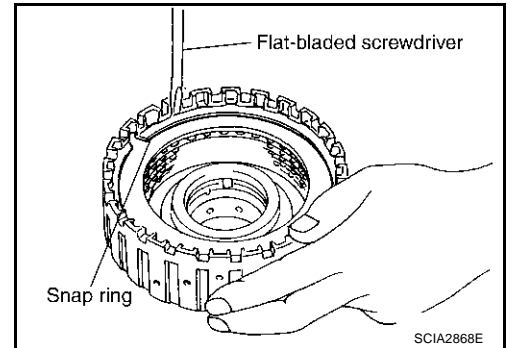
- Check facing for burns, cracks or damage.

Direct Clutch Retaining Plates and Driven Plates

- Check facing for burns, cracks or damage.

ASSEMBLY

1. Install drive plates, driven plates and retaining plate in direct clutch drum.
2. Using a flat-bladed screwdriver, install snap ring in direct clutch drum.



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ASSEMBLY

ASSEMBLY

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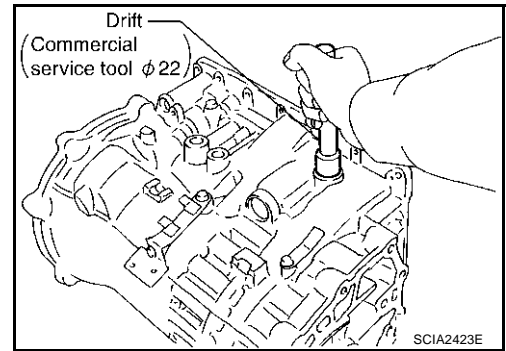
Assembly (1)

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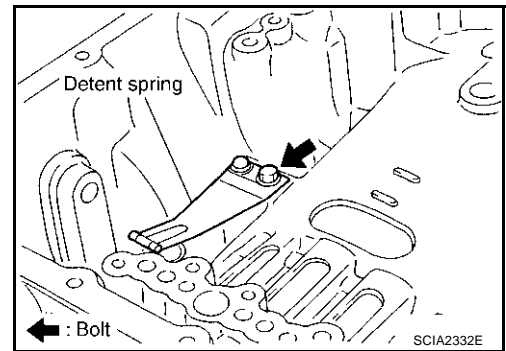
1. As shown below, use a drift (commercial service tool $\phi 22$) to drive manual shaft oil seal into the transmission case until it is flush.

CAUTION:

- Apply ATF to manual shaft oil seal.
- Do not reuse manual shaft oil seal.



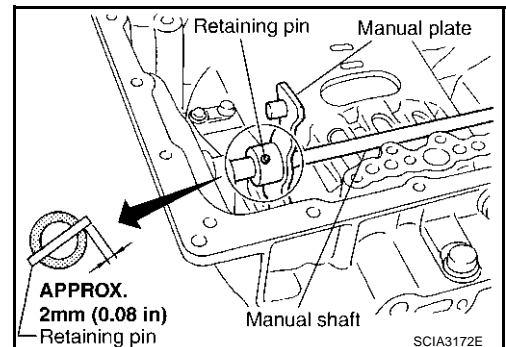
2. Install detent spring and spacer in transmission case.



3. Assemble manual shaft, manual plate, and parking rod after installing manual shaft to transmission case.
4. Install retaining pin into the manual plate and manual shaft.
 - a. Fit pinhole of the manual plate to pinhole of the manual shaft with a pin punch.
 - b. Use a hammer to tap the retaining pin into the manual plate.

CAUTION:

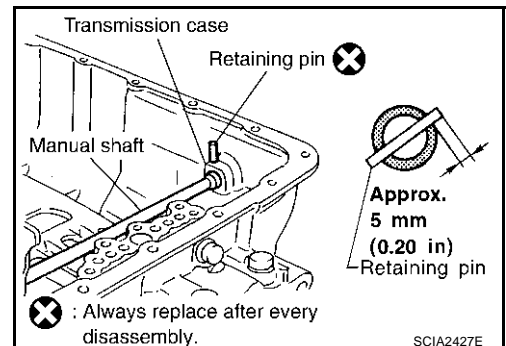
- Drive retaining pin to 2 ± 0.5 mm over the manual plate.
- Do not reuse retaining pin.



5. Install retaining pin into the transmission case and manual shaft.
 - a. Fit pinhole of the transmission case to pinhole of the manual shaft with a pin punch.
 - b. Use a hammer to tap the retaining pin into the transmission case.

CAUTION:

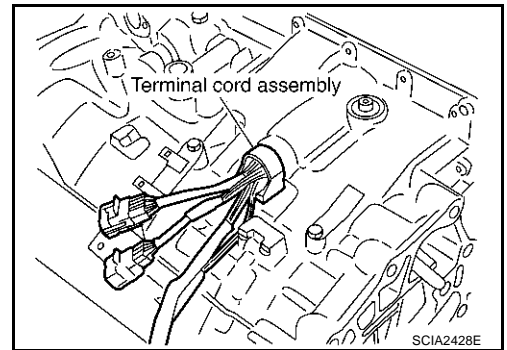
- Drive retaining pin to 5 ± 1 mm over the transmission case.
- Do not reuse retaining pin.



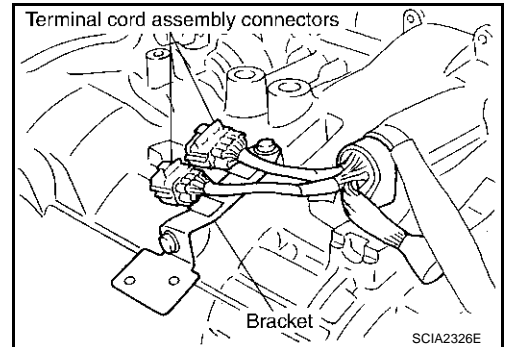
ASSEMBLY

6. Install terminal cord assembly in transmission case.

CAUTION:
Apply petroleum jelly to O-ring.



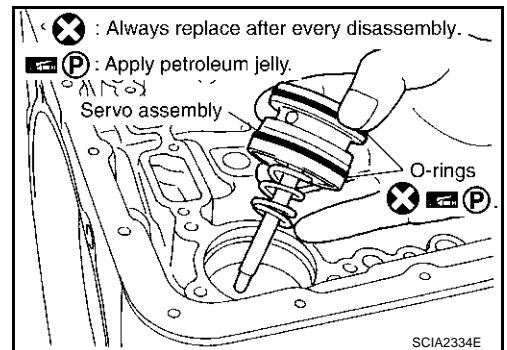
7. Install terminal cord assembly connectors in bracket.



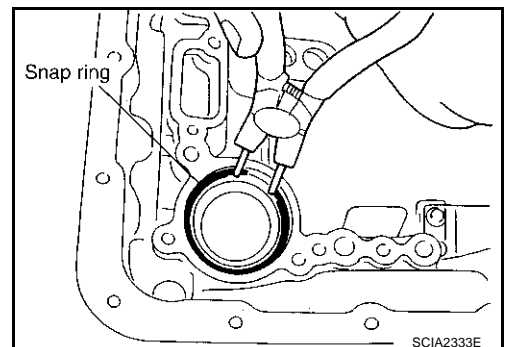
8. Install O-rings in servo assembly.

CAUTION:
Do not reuse O-rings.
Apply petroleum jelly to O-rings.

9. Install return spring in servo assembly.
10. Install servo assembly in transmission case.



11. Using snap ring pliers, install snap ring in transmission case.



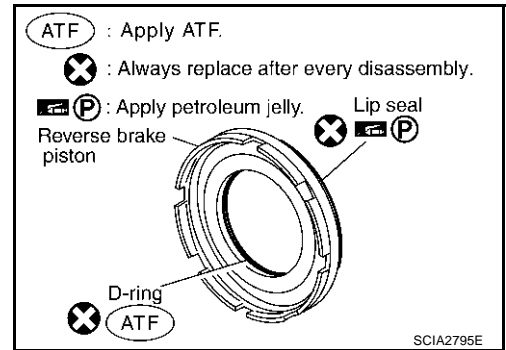
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ASSEMBLY

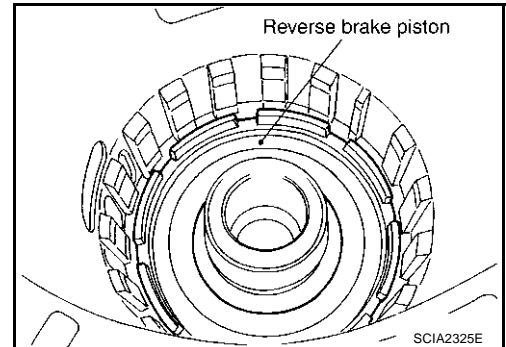
12. Install lip seal and D-ring in reverse brake piston.

CAUTION:

- Do not reuse lip seal and lathe cut seal ring.
- Apply petroleum jelly to lip seal.
- Apply ATF to D-ring.



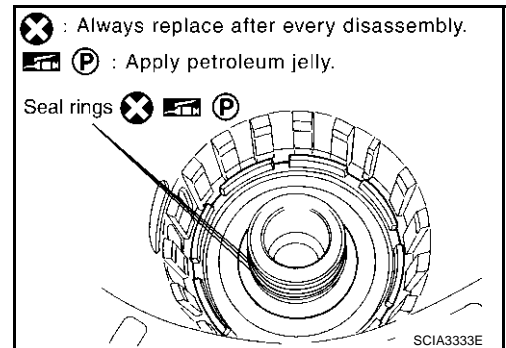
13. Install reverse brake piston in transmission case.



14. Install seal rings in drum support.

CAUTION:

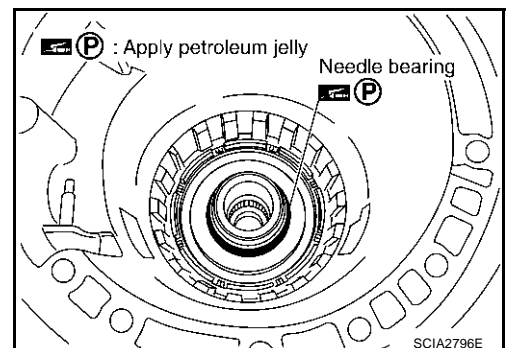
- Do not reuse seal rings.
- Apply petroleum jelly to seal rings.



15. Install needle bearing in transmission case.

CAUTION:

- Apply petroleum jelly to needle bearing.

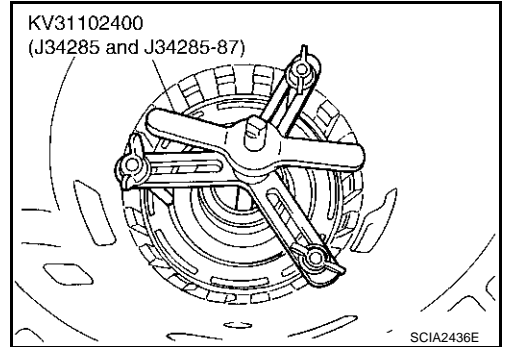


ASSEMBLY

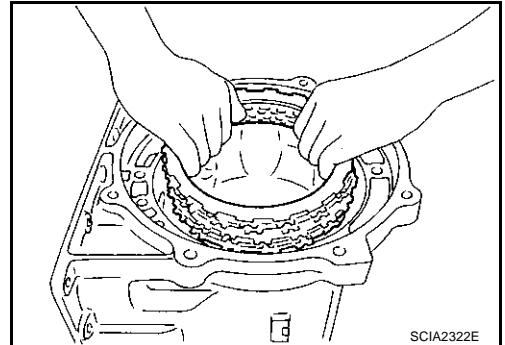
16. After installing the return spring and spring retainer in transmission case, use a clutch spring compressor to install snap ring in transmission case.

CAUTION:

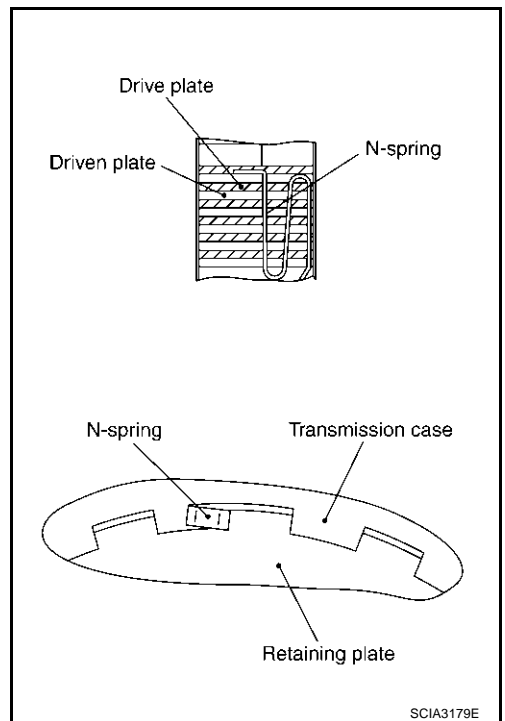
Securely assemble them using a flat-bladed screwdriver so that snap ring tension is slightly weak.



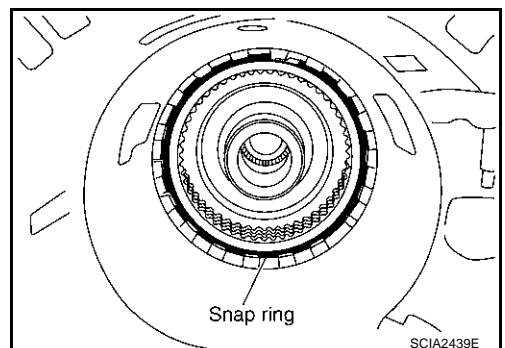
17. Install reverse brake retaining plate, drive plate, driven plate and dish plate in transmission case.



18. Assemble N-spring.



19. Install snap ring in transmission case.



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ASSEMBLY

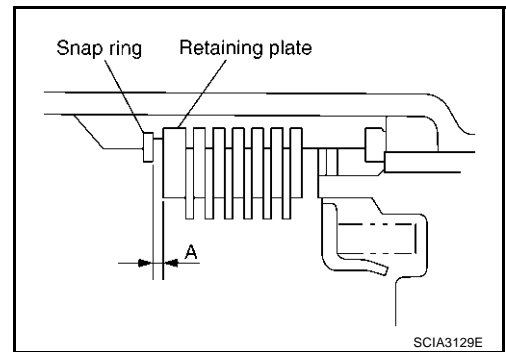
20. Measure clearance between retaining plate and snap ring. If not within specified clearance, select proper retaining plate.

Specified clearance "A":

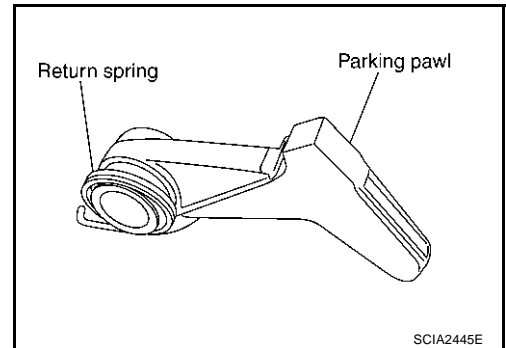
Standard: 0.7 - 1.1mm (0.028 - 0.043 in)

Retaining plate:

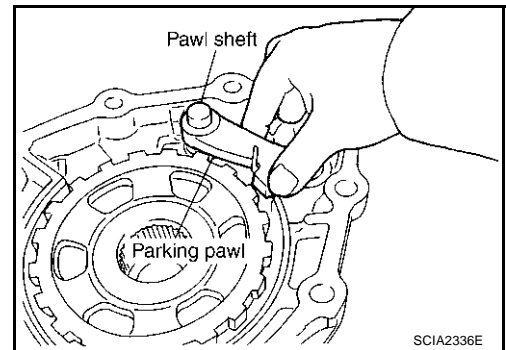
Refer to [AT-360, "Reverse Brake"](#) .



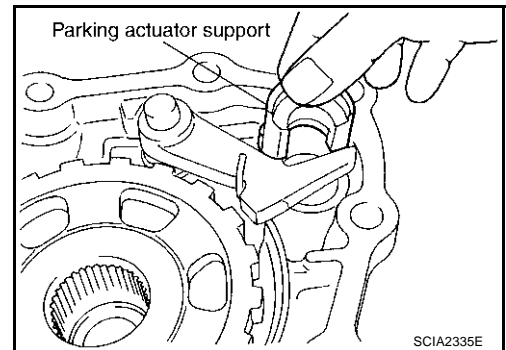
21. Install return spring in parking pawl.



22. Install parking pawl and pawl shaft in output shaft & companion flange complement.



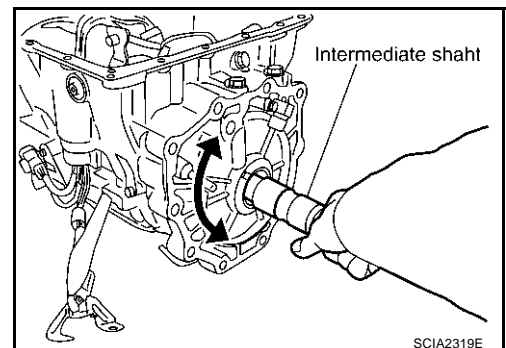
23. Install parking actuator support in output shaft & companion flange complement.



24. Install intermediate shaft in transmission case.

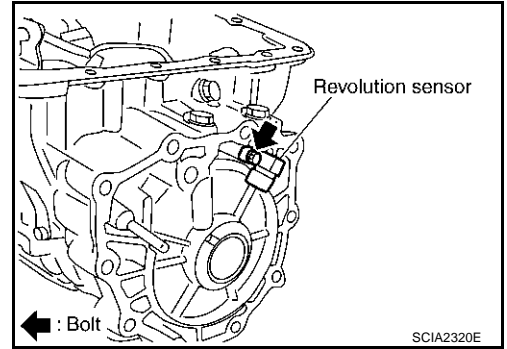
CAUTION:

Be careful not to mistake front for rear because both sides looks similar. (Thinner end is front side.)



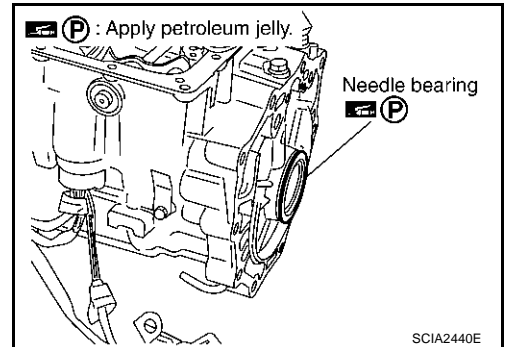
ASSEMBLY

25. Install revolution sensor in transmission case.



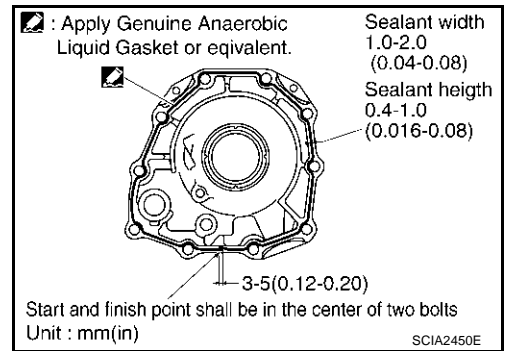
26. Install needle bearing in transmission case.

CAUTION:
Apply petroleum jelly to needle bearing.

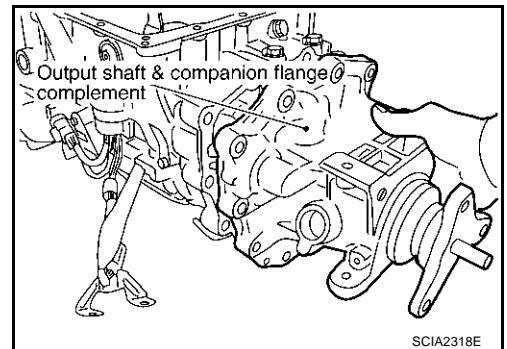


27. Apply recommended sealant (Genuine Anaerobic Liquid Gasket or equivalent. Refer to [GI-46. "Recommended Chemical Products and Sealants"](#) .) to output shaft & companion flange complement as shown in illustration.

CAUTION:
Complete remove all moisture, oil and old sealant, etc. From the transmission case and output shaft & companion flange complement mounting surfaces.



28. Install output shaft & companion flange complement in transmission case.

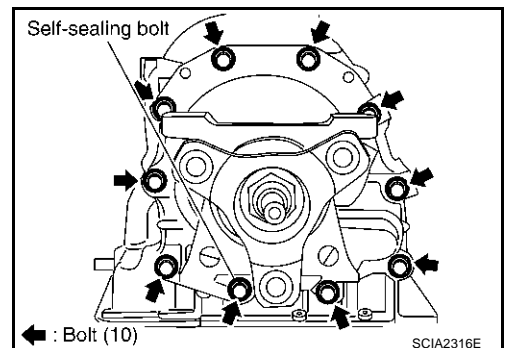


29. Tighten output shaft & companion flange complement mounting bolts to specified torque. (Because terminal bracket is tightened together with output shaft & companion flange, it should be installed before procedure 27.)

CAUTION:
Do not reuse self-sealing bolt.

Output shaft & companion flange complement mounting bolt:

 : 52 N·m (5.3 kg-m, 38 ft-lb)



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ASSEMBLY

Self-sealing bolt:

 : 61 N·m (6.2 kg·m, 45 ft·lb)

30. Install direct clutch assembly in transmission case.

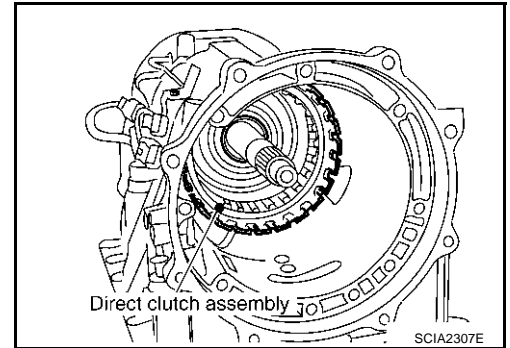
CAUTION:

Make sure that drum support edge surface and direct clutch inner boss edge surface come to almost same place.

31. Install needle bearing in high and low reverse clutch drum.

CAUTION:

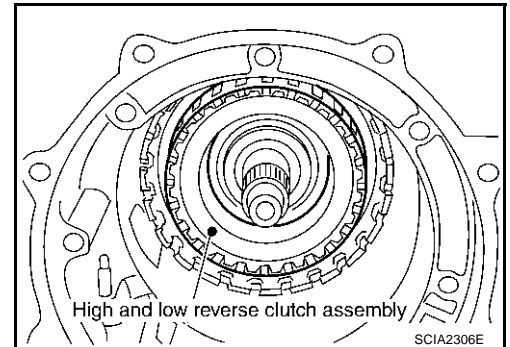
Apply petroleum jelly to needle bearing.



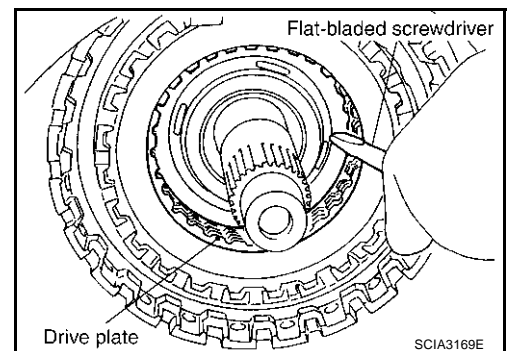
32. Install high and low reverse clutch assembly in transmission case.

CAUTION:

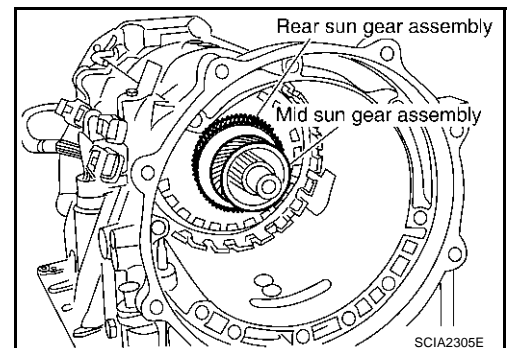
Be sure to replace high and low reverse clutch and mid sun gear as a set.



33. Using a flat-bladed screwdriver, range the drive plate.



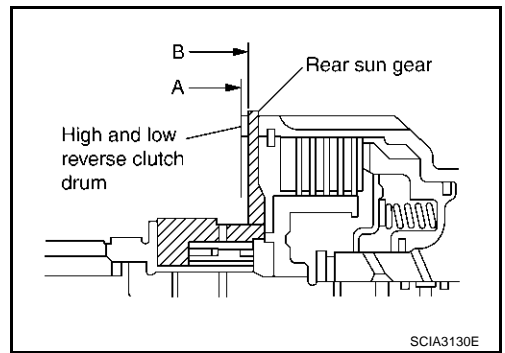
34. Install mid sun gear assembly in transmission case.



ASSEMBLY

CAUTION:

Check that portion A of high and low reverse clutch drum protrudes approximately 2 mm (0.08 in) beyond portion B of rear sun gear.



A
B
AT

35. Install needle bearing in rear carrier assembly.

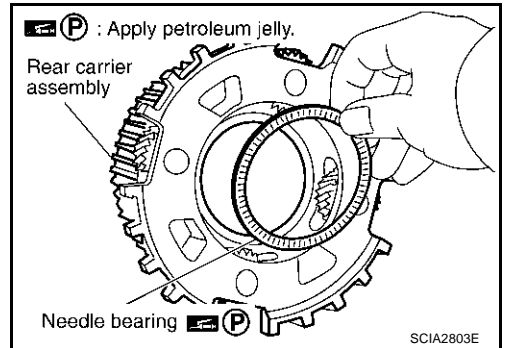
CAUTION:

Apply petroleum jelly to needle bearing.

36. Install bearing race in rear carrier assembly.

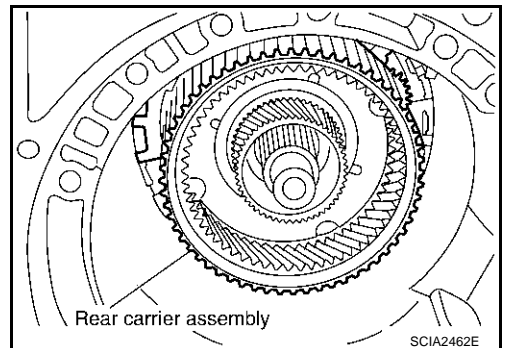
CAUTION:

Apply petroleum jelly to bearing race.



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37. Install rear carrier assembly in transmission case.

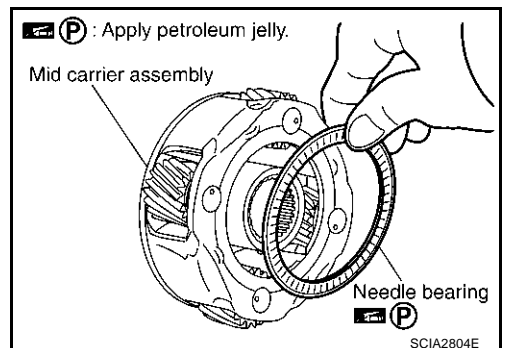


H
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K

38. Install needle bearing (rear side) in mid carrier assembly.

CAUTION:

Apply petroleum jelly to needle bearing.



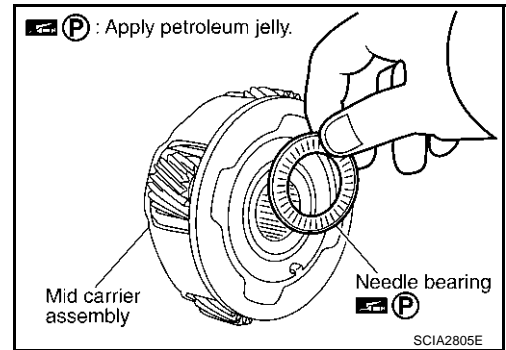
L
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ASSEMBLY

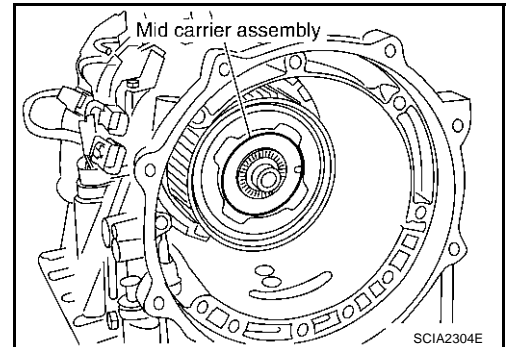
39. Install needle bearing (front side) in mid carrier assembly.

CAUTION:

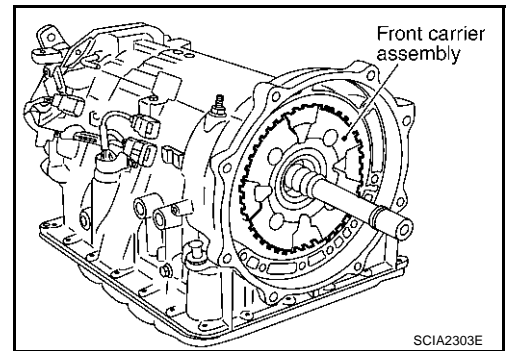
Apply petroleum jelly to needle bearing.



40. Install mid carrier assembly in transmission case.



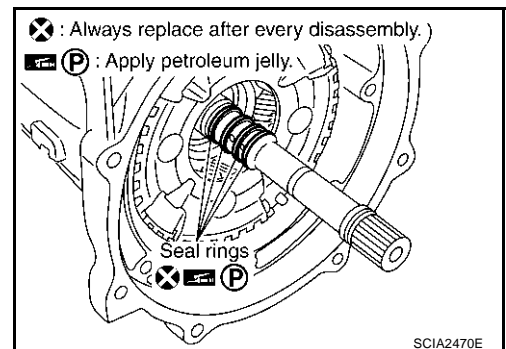
41. Install front carrier assembly in transmission case. (With input clutch assembly and rear internal gear.)



42. Install seal rings in input clutch assembly.

CAUTION:

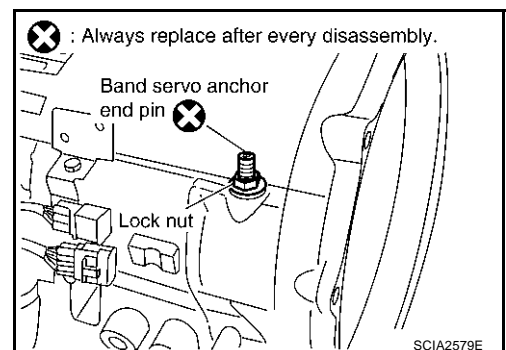
- Do not reuse seal rings.
- Apply petroleum jelly to seal rings.



43. Install band servo anchor end pin and lock nut in transmission case.

CAUTION:

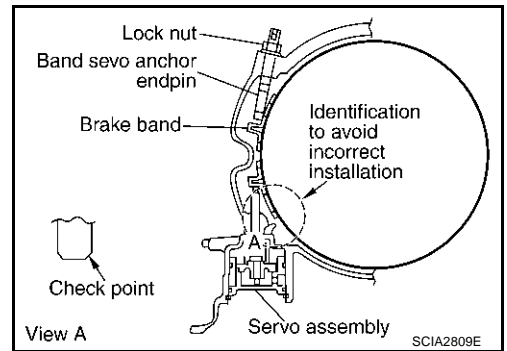
Do not reuse band servo anchor end pin.



ASSEMBLY

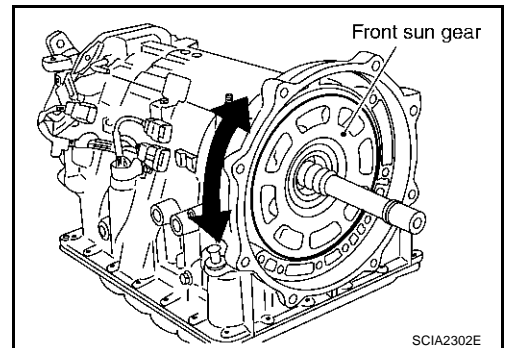
44. Install brake band in transmission case.

CAUTION:
Assemble it so that identification to avoid incorrect installation faces servo side.



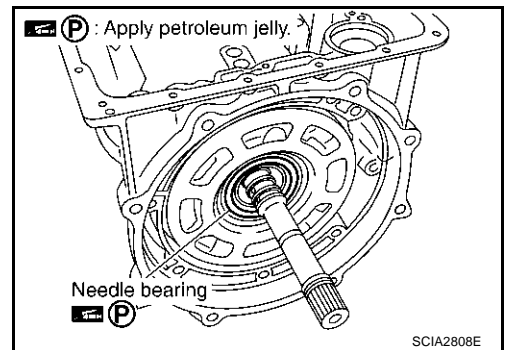
45. Install front sun gear in transmission case.

CAUTION:
Apply ATF to front sun gear bushing and one-way clutch end bearing.

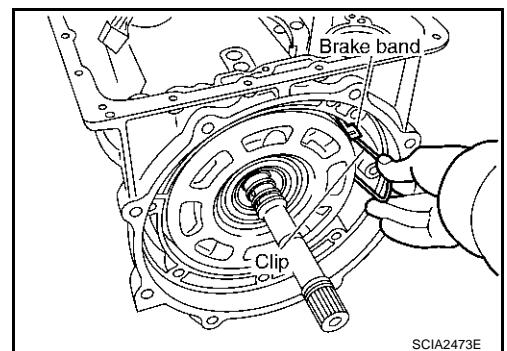


46. Install needle bearing in front sun gear.

CAUTION:
Apply petroleum jelly to needle bearing.



47. Adjust brake band tilting using clips so that brake band contacts front sun gear drum evenly.

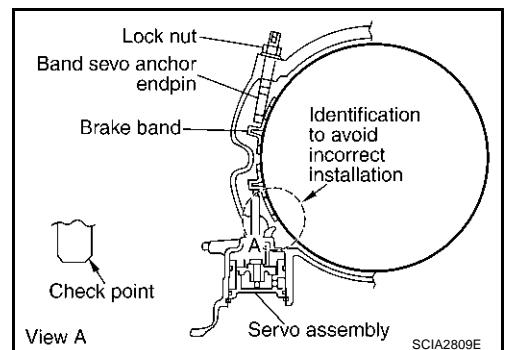


48. Adjust brake band.

- Loosen lock nut.
- Tighten band servo anchor end pin to specified torque.

 : 5.0 N·m (0.51 kg·m, 44 in·lb)

- Back of band servo anchor end pin three turns.
- While band servo anchor end pin, tighten lock nut to specified torque.



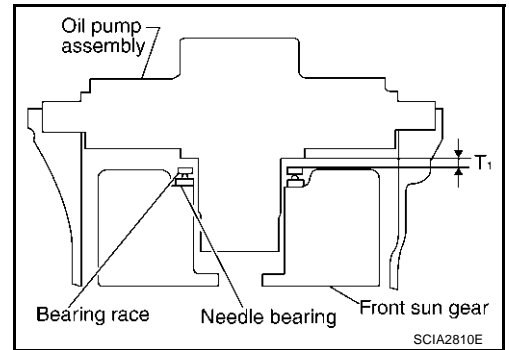
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ASSEMBLY

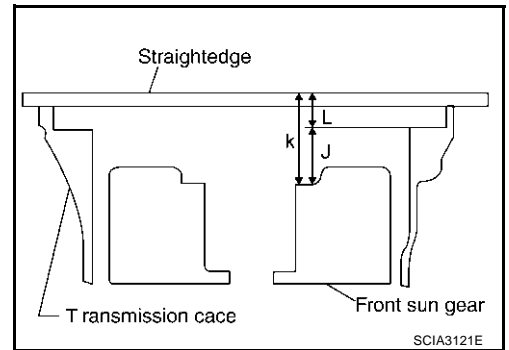
ECS00AEN

Adjustment TOTAL END PLAY

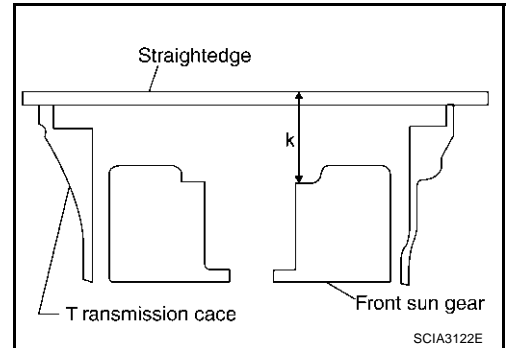
- Measure clearance between front sun gear and needle bearing for oil pump cover.
- Select proper thickness of bearing race so that end play is within specifications.



1. Measure dimensions "K" and "L" and then calculate dimension "J".



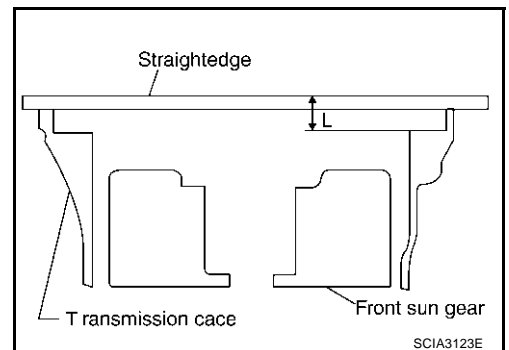
- a. Measure dimension "K".



- b. Measure dimension "L".
- c. Calculate dimension "J".

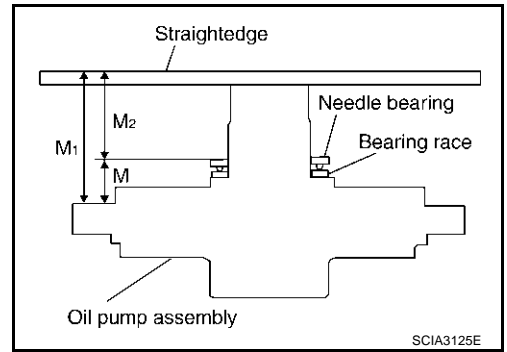
"J": Distance between oil pump fitting surface of transmission case and needle bearing mating surface of front sun gear.

$$J = K - L$$

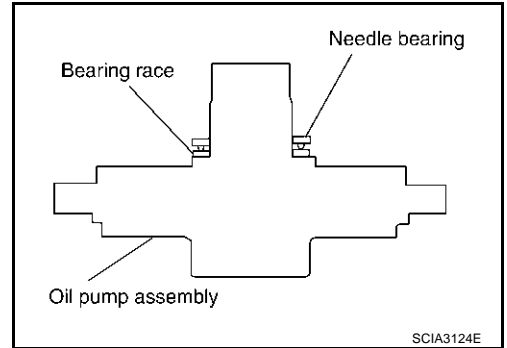


ASSEMBLY

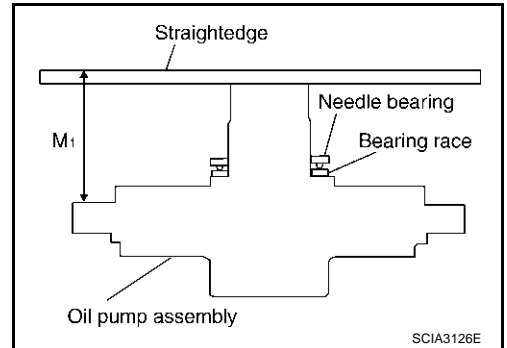
2. Measure dimensions "M₁" and "M₂" and then calculate dimension "M".



- a. Place bearing race and needle bearing on oil pump assembly.



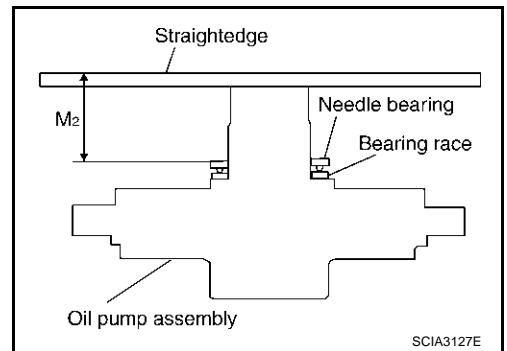
- b. Measure thickness of straightedge "M₁".



- c. Measure thickness of straightedge "M₂".
d. Calculate dimension "M".

"M": Distance between trans mission case fitting surface of oil pump and needle bearing on oil pump.

$$M = M_1 - M_2$$



3. Adjust total end play "T₁".

$$T_1 = J - M$$

Total end play "T₁":

0.25 - 0.55 mm (0.0098 - 0.0217 in)

- Select proper thickness of bearing race so that total end play is within specifications.

Bearing races: Refer to [AT-360, "BEARING RACE FOR ADJUSTING TOTAL END PLAY"](#).

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ASSEMBLY

ECS00AEO

Assembly (2)

CAUTION:

When replacing the control valve assembly, erase EEPROM in TCM. Refer to [AT-8, "Precautions for A/T Assembly Replacement"](#) .

1. Install O-ring in oil pump assembly.

CAUTION:

- Do not reuse O-ring.
- Apply ATF to O-ring.

2. Install bearing race in oil pump assembly.

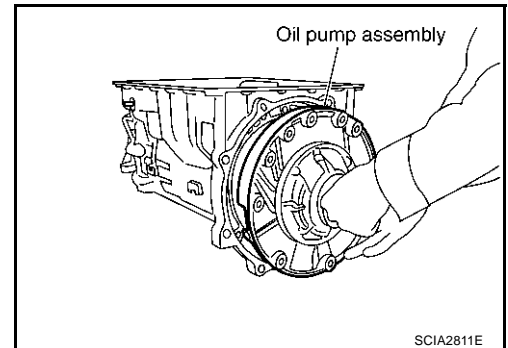
CAUTION:

Apply petroleum jelly to bearing race.

3. Install oil pump assembly in transmission case.

CAUTION:

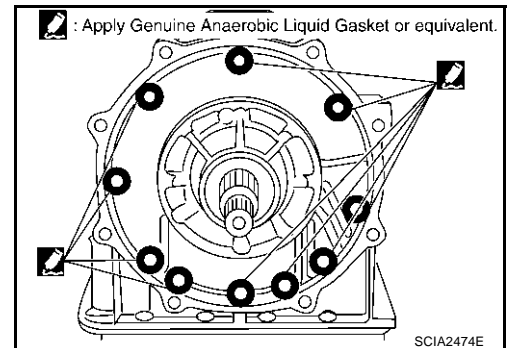
Apply ATF to oil pump bush.



4. Apply recommended sealant (Genuine Anaerobic Liquid Gasket or equivalent. Refer to [GI-46, "Recommended Chemical Products and Sealants"](#) .) to oil pump assembly as shown in illustration.

CAUTION:

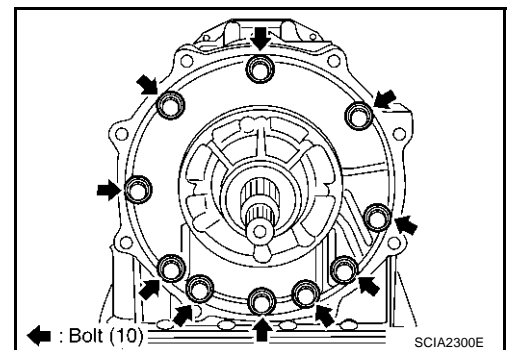
Complete remove all moisture, oil and old sealant, etc. From the oil pump mounting bolts and oil pump mounting bolt mounting surfaces.



5. Tighten oil pump mounting bolts to specified torque.

CAUTION:

Apply ATF to oil pump bushing.

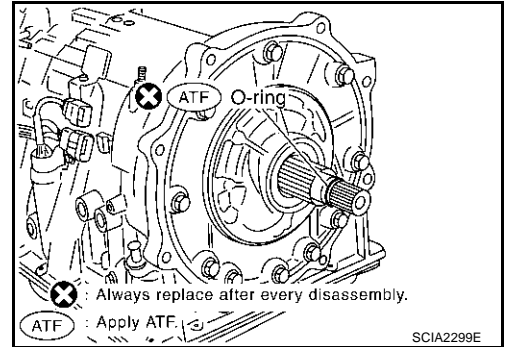


ASSEMBLY

6. Install O-ring in input shaft.

CAUTION:

- Do not reuse O-ring.
- Apply ATF to O-ring.



7. Install converter housing in transmission case.

CAUTION:

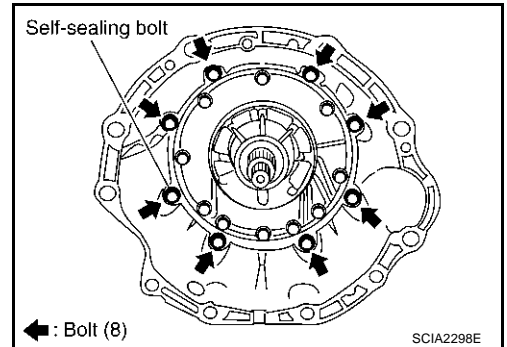
Do not reuse self-sealing bolt.

Converter housing mounting bolt:

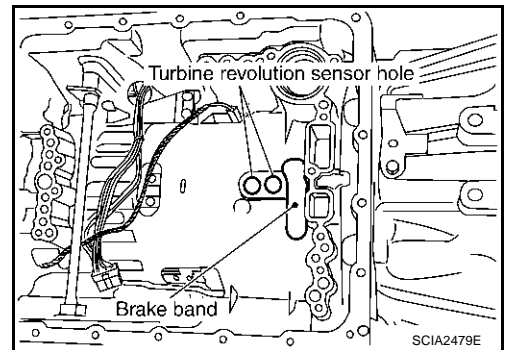
 : 52 N·m (5.3 kg-m, 38 ft-lb)

Self-sealing bolt:

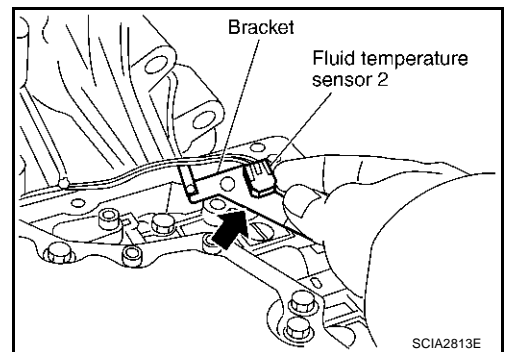
 : 61 N·m (6.2 kg-m, 45 ft-lb)



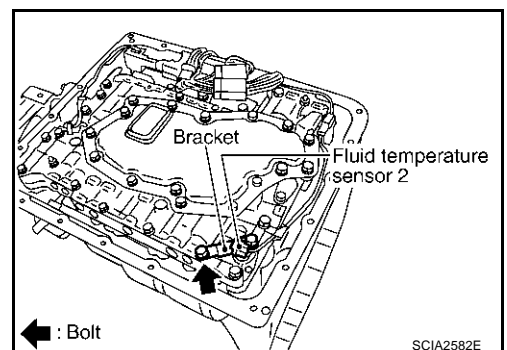
8. Make sure that brake band does not close turbine revolution sensor hole.



9. Install fluid temperature sensor 2 in bracket.



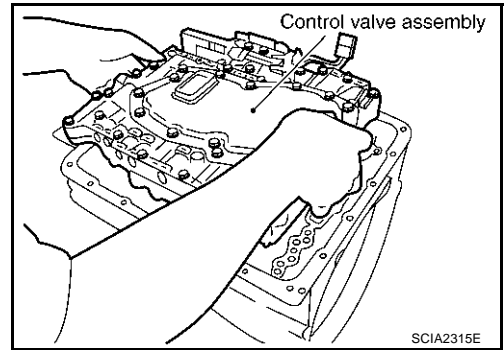
10. Install fluid temperature sensor 2 in control valve assembly. (With bracket.)



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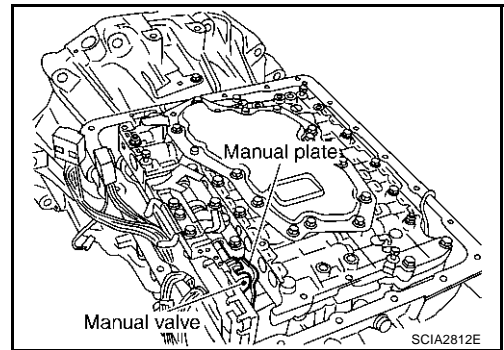
ASSEMBLY

11. Install control valve assembly.
 - a. Install control valve assembly in transmission case.



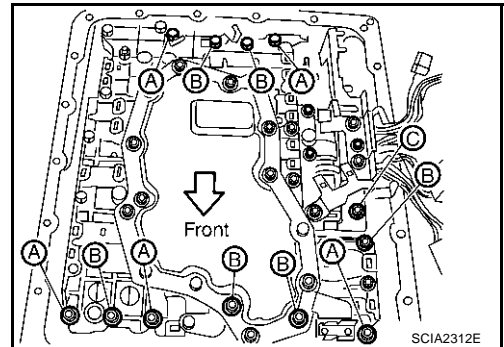
CAUTION:

- Hang down terminal cord assembly and revolution sensor harness toward outside so as not to disturb installation of control valve assembly.
- Make sure that turbine sensor securely installs turbine sensor hole.
- Assemble it so that manual valve cutout is engaged with manual plate projection.



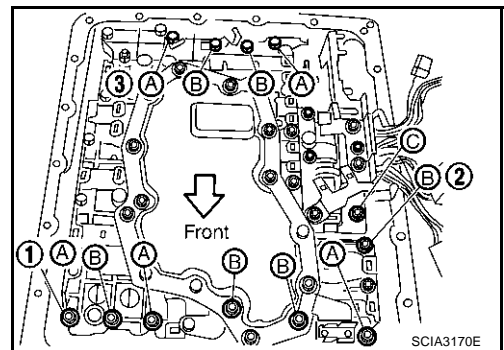
- b. Install bolts A, B and C in control valve assembly.

Bolt symbol	Length mm (in)	Number of bolts
A	42 (1.65)	5
B	55 (2.17)	6
C	40 (1.57)	1



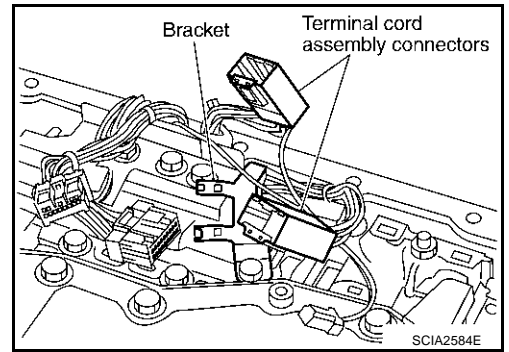
- c. Tighten bolt 1, 2 and 3 temporarily to prevent dislocation. After that tighten them in order (1 → 2 → 3), and then tighten other bolts.

 : 7.9 N·m (0.81 kg·m, 70 in·lb)

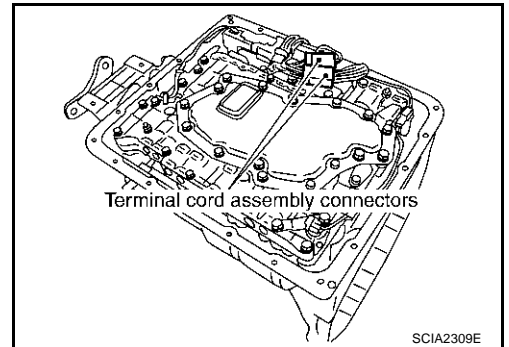


ASSEMBLY

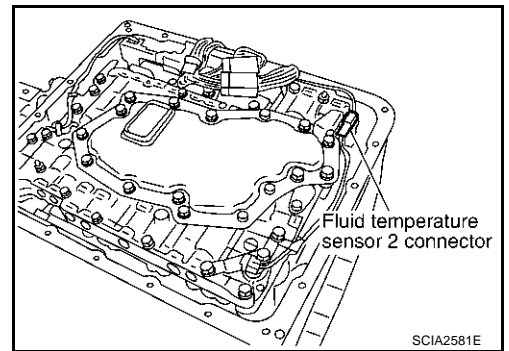
12. Install terminal cord assembly connectors in bracket.



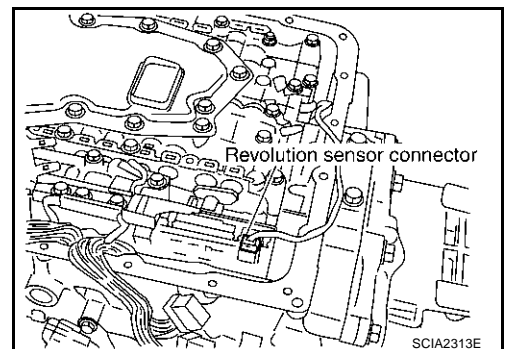
13. Connect terminal cord assembly connectors.



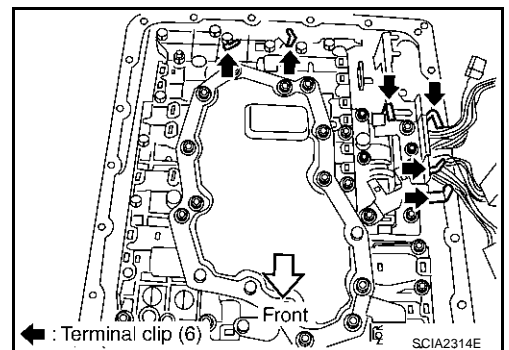
14. Connect fluid temperature sensor 2 connector.



15. Connect revolution sensor connector.



16. Securely fasten terminal harness with clip.



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ASSEMBLY

17. Install oil pan in transmission case.
 - a. Install oil pan gasket in transmission case.

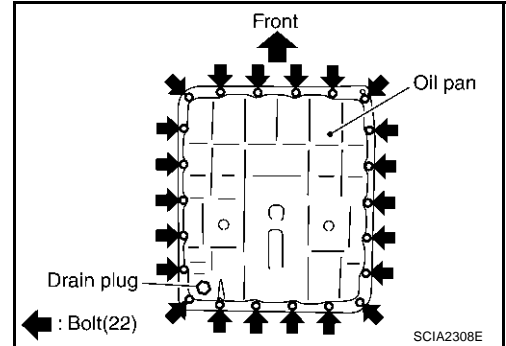
CAUTION:

- Do not reuse oil pan gasket.
- Install it in the direction to align hole positions.

- b. Install oil pan in transmission case.

CAUTION:

- Install it so that drain plug comes to the position as shown in the figure.
- Be careful not to pinch harnesses.



- c. Tighten oil pan mounting bolts to the specified torque in numerical order shown in the figure after temporarily tightening them.

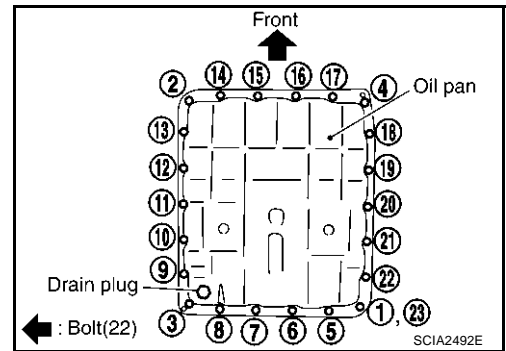
CAUTION:

Do not reuse oil pan mounting bolts.

18. Install drain plug in oil pan.

CAUTION:

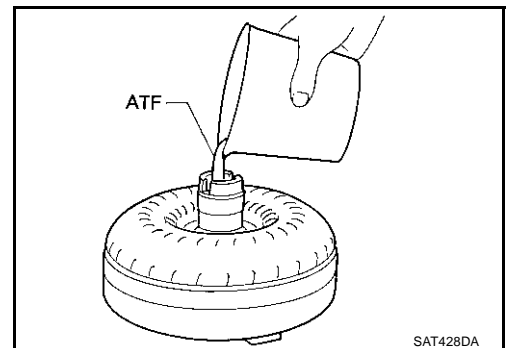
Do not reuse drain plug gasket.



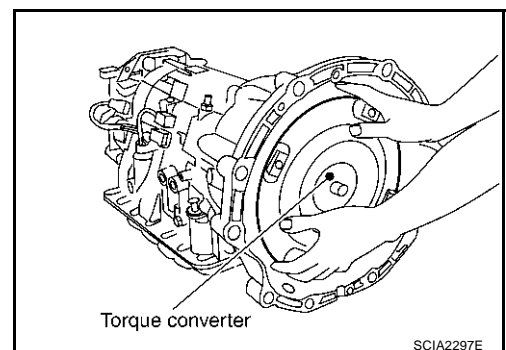
19. Install torque converter.

- a. Pour ATF into torque converter.

- Approximately 2 liter (2-1/8 US qt, 1-3/4 Imp qt) of fluid is required for a new torque converter.
- When reusing old torque converter, add the same amount of fluid as was drained.



- b. Install torque converter while aligning notches of torque converter with notches of oil pump.

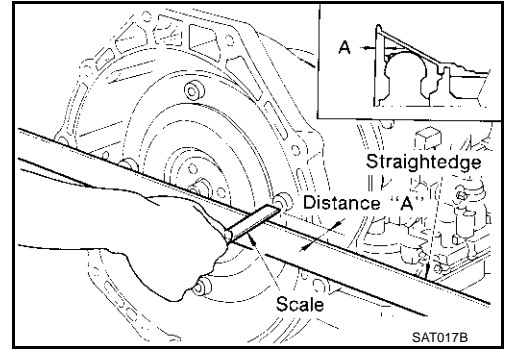


ASSEMBLY

- c. Measure distance "A" to check that torque converter is in proper position.

Distance "A":

22.0 mm (0.87 in) or more



A

B

AT

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SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

PFP:00030

General Specifications

ECS008A3

Applied model		VK45DE engine
Automatic transmission model		RE5R05A
Transmission model code number		90X69, 91X14
Stall torque ratio		2.0: 1
Transmission gear ratio	1st	3.540
	2nd	2.264
	3rd	1.417
	4th	1.000
	5th	0.834
	Reverse	2.370
Recommended fluid		Nissan Matic Fluid J*1
Fluid capacity		10.3 liter (10-7/8 US qt, 9-1/8 Imp qt)

CAUTION:

- Use only Nissan Genuine ATF Matic Fluid J. Do not mix with other fluid.
- Using automatic transmission fluid other than Nissan Genuine ATF Matic Fluid J will deteriorate in driveability and automatic transmission durability, and may damage the automatic transmission, which is not covered by the warranty.

*1: Refer to [MA-11, "Fluids and Lubricants"](#).

Vehicle Speed When Shifting Gears

ECS008A4

Throttle position	Vehicle speed km/h (MPH)							
	D1 →D2	D2 →D3	D3 →D4	D4 →D5	D5 →D4	D4 →D3	D3 →D2	D2 →D1
Full throttle	64 - 68 (40 - 42)	95 - 103 (59 - 64)	147 - 157 (91 - 98)	219 - 229 (136 - 142)	215 - 225 (134 - 140)	136 - 146 (85 - 91)	85 - 93 (53 - 58)	41 - 45 (25 - 28)
Half throttle	22 - 26 (14 - 16)	59 - 67 (37 - 42)	100 - 110 (62 - 68)	153 - 163 (95 - 101)	102 - 112 (63 - 70)	55 - 65 (34 - 40)	38 - 46 (24 - 29)	11 - 15 (7 - 9)

- At half throttle, the accelerator opening is 4/8 of the full opening.

Vehicle Speed When Performing and Releasing Complete Lock-up

ECS008A5

Throttle position	Vehicle speed km/h (MPH)	
	Lock-up "ON"	Lock-up "OFF"
Closed throttle	71 - 79 (44 - 49)	53 - 61 (33 - 38)
Half throttle	191 - 199 (119 - 124)	136 - 144 (85 - 89)

- At closed throttle, the accelerator opening is less than 1/8.
- At half throttle, the accelerator opening is 4/8 of the full opening.

Vehicle Speed When Performing and Releasing Slip Lock-up

ECS008A6

Throttle position	Gear position	Vehicle speed km/h (MPH)	
		Slip lock-up "ON"	Slip lock-up "OFF"
Closed throttle	3rd	27 - 35 (17 - 22)	24 - 32 (15 - 20)
	4th	39 - 47 (24 - 29)	36 - 44 (22 - 27)
	5th	48 - 56 (30 - 35)	45 - 53 (28 - 33)

- At closed throttle, the accelerator opening is less than 1/8.

Stall Speed

ECS008A7

Stall speed	2,300 - 2,600 rpm
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SERVICE DATA AND SPECIFICATIONS (SDS)

Line Pressure

ECS008A8

Engine speed	Line pressure kPa (kg/cm ² , psi)	
	R position	D, M positions
At idle speed	392 - 441 (4.0 - 4.5, 57 - 64)	373 - 422 (3.8 - 4.3, 54 - 61)
At stall speed	1,700 - 1,890 (17.3 - 19.3, 247 - 274)	1,310 - 1,500 (13.3 - 15.3, 190 - 218)

Solenoid Valves

ECS008A9

Name	Resistance (Approx.) (Ω)	Terminal No.
Line pressure solenoid valve	3 - 9	7
Torque converter clutch solenoid valve		8
Input clutch solenoid valve		6
High and low reverse clutch solenoid valve		3
Front brake solenoid valve		5
Direct clutch solenoid valve		4
Low coast brake solenoid valve	20 - 40	2

A/T Fluid Temperature Sensor

ECS008AA

Name	Condition	CONSULT-II "DATA MONITOR" (Approx.) (V)	Resistance (Approx.) (kΩ)
A/T fluid temperature sensor 1	0°C (32°F)	2.2	15
	20°C (68°F)	1.8	6.5
	80°C (176°F)	0.6	0.9
A/T fluid temperature sensor 2	0°C (32°F)	2.2	10
	20°C (68°F)	1.7	4
	80°C (176°F)	0.45	0.5

Turbine Revolution Sensor

ECS008AB

Name	Condition	Data (Approx.)
Turbine revolution sensor 1	When running at 50 km/h (31 MPH) in 4th gear with the closed throttle position signal "OFF", use the CONSULT-II pulse frequency measuring function. CAUTION: Connect the diagnosis data link connector to the vehicle diagnosis connector.	1.3 (kHz)
Turbine revolution sensor 2	When moving at 20 km/h (12 MPH) in 1st gear with the closed throttle position signal "OFF", use the CONSULT-II pulse frequency measuring function. CAUTION: Connect the diagnosis data link connector to the vehicle diagnosis connector.	

Revolution Sensor

ECS008AC

Name	Condition	Data (Approx.)
Revolution sensor	When moving at 20 km/h (12 MPH), use the CONSULT-II pulse frequency measuring function. CAUTION: Connect the diagnosis data link connector to the vehicle diagnosis connector.	185 (Hz)

SERVICE DATA AND SPECIFICATIONS (SDS)

Reverse Brake

ECS00ARF

Thickness of retaining plates	Thickness mm (in)	Part number*
	4.2 (0.165)	31667-90X14
4.4 (0.173)	31667-90X15	
4.6 (0.181)	31667-90X16	
4.8 (0.189)	31667-90X17	
5.0 (0.197)	31667-90X18	

*: Always check with the Parts Department for the latest parts information.

Total End Play

ECS00ARG

Total end play mm (in)	0.25 - 0.55 (0.0098 - 0.0217)
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BEARING RACE FOR ADJUSTING TOTAL END PLAY

Thickness mm (in)	Part number*
1.2 (0.047)	31435-90X02
1.4 (0.055)	31435-90X03
1.6 (0.063)	31435-90X04
1.8 (0.071)	31435-90X05
2.0 (0.079)	31435-90X06

*: Always check with the Parts Department for the latest parts information.