

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

# SECTION **AT**

## AUTOMATIC TRANSMISSION

### CONTENTS

<b>SERVICE INFORMATION</b> .....	6	<b>Malfunction Indicator Lamp (MIL)</b> .....	41
<b>INDEX FOR DTC</b> .....	6	<b>TROUBLE DIAGNOSIS</b> .....	43
Alphabetical Index .....	6	DTC Inspection Priority Chart .....	43
DTC No. Index .....	6	Fail-Safe .....	43
<b>PRECAUTIONS</b> .....	8	How To Perform Trouble Diagnosis for Quick and Accurate Repair .....	44
Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TEN- SIONER" .....	8	A/T Electrical Parts Location .....	50
Precaution for On Board Diagnosis (OBD) System of A/T and Engine .....	8	Circuit Diagram .....	51
Precaution .....	8	Inspections Before Trouble Diagnosis .....	51
Service Notice or Precaution .....	9	Check Before Engine Is Started .....	55
<b>PREPARATION</b> .....	11	Check at Idle .....	55
Special Service Tool .....	11	Cruise Test - Part 1 .....	56
Commercial Service Tool .....	12	Cruise Test - Part 2 .....	58
<b>A/T FLUID</b> .....	13	Cruise Test - Part 3 .....	59
Changing Automatic Transmission Fluid (ATF) .....	13	Vehicle Speed When Shifting Gears .....	59
Checking Automatic Transmission Fluid (ATF) .....	13	Vehicle Speed When Performing and Releasing Complete Lock-up .....	60
A/T Fluid Cooler Cleaning .....	15	Vehicle Speed When Performing and Releasing Slip Lock-up .....	60
<b>A/T CONTROL SYSTEM</b> .....	19	Symptom Chart .....	60
Cross-Sectional View (2WD models) .....	19	TCM Input/Output Signal Reference Value .....	82
Cross-Sectional View (4WD models) .....	20	CONSULT-II Function (A/T) .....	83
Shift Mechanism .....	20	<b>DTC U1000 CAN COMMUNICATION LINE</b> .....	91
TCM Function .....	31	Description .....	91
CAN Communication .....	32	On Board Diagnosis Logic .....	91
Input/Output Signal of TCM .....	33	Possible Cause .....	91
Line Pressure Control .....	33	DTC Confirmation Procedure .....	91
Shift Control .....	35	Wiring Diagram - AT - CAN .....	92
Lock-up Control .....	36	Diagnosis Procedure .....	93
Engine Brake Control .....	37	<b>DTC P0615 START SIGNAL CIRCUIT</b> .....	94
Control Valve .....	37	Description .....	94
<b>ON BOARD DIAGNOSTIC (OBD) SYSTEM</b> .....	39	CONSULT-II Reference Value in Data Monitor Mode .....	94
Introduction .....	39	On Board Diagnosis Logic .....	94
OBD-II Function for A/T System .....	39	Possible Cause .....	94
One or Two Trip Detection Logic of OBD-II .....	39	DTC Confirmation Procedure .....	94
OBD-II Diagnostic Trouble Code (DTC) .....	39	Wiring Diagram - AT - STSIG .....	95
		Diagnosis Procedure .....	95

<b>DTC P0700 TCM</b> .....	<b>98</b>	Description .....	113
Description .....	98	CONSULT-II Reference Value in Data Monitor	
On Board Diagnosis Logic .....	98	Mode .....	113
Possible Cause .....	98	On Board Diagnosis Logic .....	113
DTC Confirmation Procedure .....	98	Possible Cause .....	113
Diagnosis Procedure .....	98	DTC Confirmation Procedure .....	113
		Diagnosis Procedure .....	114
<b>DTC P0705 PARK/NEUTRAL POSITION SWITCH</b> .....	<b>99</b>	<b>DTC P0745 LINE PRESSURE SOLENOID VALVE</b> .....	<b>115</b>
Description .....	99	Description .....	115
CONSULT-II Reference Value in Data Monitor		CONSULT-II Reference Value in Data Monitor	
Mode .....	99	Mode .....	115
On Board Diagnosis Logic .....	99	On Board Diagnosis Logic .....	115
Possible Cause .....	99	Possible Cause .....	115
DTC Confirmation Procedure .....	99	DTC Confirmation Procedure .....	115
Wiring Diagram - AT - PNP/SW .....	100	Diagnosis Procedure .....	115
Diagnosis Procedure .....	100		
<b>DTC P0717 TURBINE REVOLUTION SENSOR</b> .....	<b>103</b>	<b>DTC P1705 THROTTLE POSITION SENSOR</b> .....	<b>117</b>
Description .....	103	Description .....	117
CONSULT-II Reference Value in Data Monitor		CONSULT-II Reference Value in Data Monitor	
Mode .....	103	Mode .....	117
On Board Diagnosis Logic .....	103	On Board Diagnosis Logic .....	117
Possible Cause .....	103	Possible Cause .....	117
DTC Confirmation Procedure .....	103	DTC Confirmation Procedure .....	117
Diagnosis Procedure .....	103	Diagnosis Procedure .....	117
<b>DTC P0720 VEHICLE SPEED SENSOR A/T (REVOLUTION SENSOR)</b> .....	<b>105</b>	<b>DTC P1710 A/T FLUID TEMPERATURE SENSOR CIRCUIT</b> .....	<b>119</b>
Description .....	105	Description .....	119
CONSULT-II Reference Value in Data Monitor		CONSULT-II Reference Value in Data Monitor	
Mode .....	105	Mode .....	119
On Board Diagnosis Logic .....	105	On Board Diagnosis Logic .....	119
Possible Cause .....	105	Possible Cause .....	119
DTC Confirmation Procedure .....	105	DTC Confirmation Procedure .....	119
Wiring Diagram - AT - VSSA/T .....	106	Wiring Diagram - AT - FTS .....	120
Diagnosis Procedure .....	107	Diagnosis Procedure .....	120
		Component Inspection .....	122
<b>DTC P0725 ENGINE SPEED SIGNAL</b> .....	<b>109</b>	<b>DTC P1721 VEHICLE SPEED SENSOR MTR.</b> .....	<b>124</b>
Description .....	109	Description .....	124
CONSULT-II Reference Value in Data Monitor		CONSULT-II Reference Value in Data Monitor	
Mode .....	109	Mode .....	124
On Board Diagnosis Logic .....	109	On Board Diagnosis Logic .....	124
Possible Cause .....	109	Possible Cause .....	124
DTC Confirmation Procedure .....	109	DTC Confirmation Procedure .....	124
Diagnosis Procedure .....	109	Diagnosis Procedure .....	124
<b>DTC P0740 TORQUE CONVERTER CLUTCH SOLENOID VALVE</b> .....	<b>111</b>	<b>DTC P1730 A/T INTERLOCK</b> .....	<b>126</b>
Description .....	111	Description .....	126
CONSULT-II Reference Value in Data Monitor		On Board Diagnosis Logic .....	126
Mode .....	111	Possible Cause .....	126
On Board Diagnosis Logic .....	111	DTC Confirmation Procedure .....	126
Possible Cause .....	111	Judgement of A/T Interlock .....	126
DTC Confirmation Procedure .....	111	Diagnosis Procedure .....	127
Diagnosis Procedure .....	111		
<b>DTC P0744 A/T TCC S/V FUNCTION (LOCK-UP)</b> .....	<b>113</b>	<b>DTC P1731 A/T 1ST ENGINE BRAKING</b> .....	<b>128</b>
		Description .....	128
		CONSULT-II Reference Value in Data Monitor	
		Mode .....	128

On Board Diagnosis Logic .....	128	On Board Diagnosis Logic .....	140
Possible Cause .....	128	Possible Cause .....	140
DTC Confirmation Procedure .....	128	DTC Confirmation Procedure .....	140
Diagnosis Procedure .....	128	Diagnosis Procedure .....	141
<b>DTC P1752 INPUT CLUTCH SOLENOID VALVE .....</b>	<b>130</b>	<b>DTC P1767 HIGH AND LOW REVERSE CLUTCH SOLENOID VALVE .....</b>	<b>142</b>
Description .....	130	Description .....	142
CONSULT-II Reference Value in Data Monitor Mode .....	130	CONSULT-II Reference Value in Data Monitor Mode .....	142
On Board Diagnosis Logic .....	130	On Board Diagnosis Logic .....	142
Possible Cause .....	130	Possible Cause .....	142
DTC Confirmation Procedure .....	130	DTC Confirmation Procedure .....	142
Diagnosis Procedure .....	130	Diagnosis Procedure .....	142
<b>DTC P1754 INPUT CLUTCH SOLENOID VALVE FUNCTION .....</b>	<b>132</b>	<b>DTC P1769 HIGH AND LOW REVERSE CLUTCH SOLENOID VALVE FUNCTION .....</b>	<b>144</b>
Description .....	132	Description .....	144
CONSULT-II Reference Value in Data Monitor Mode .....	132	CONSULT-II Reference Value in Data Monitor Mode .....	144
On Board Diagnosis Logic .....	132	On Board Diagnosis Logic .....	144
Possible Cause .....	132	Possible Cause .....	144
DTC Confirmation Procedure .....	132	DTC Confirmation Procedure .....	144
Diagnosis Procedure .....	133	Diagnosis Procedure .....	145
<b>DTC P1757 FRONT BRAKE SOLENOID VALVE .....</b>	<b>134</b>	<b>DTC P1772 LOW COAST BRAKE SOLENOID VALVE .....</b>	<b>146</b>
Description .....	134	Description .....	146
CONSULT-II Reference Value in Data Monitor Mode .....	134	CONSULT-II Reference Value in Data Monitor Mode .....	146
On Board Diagnosis Logic .....	134	On Board Diagnosis Logic .....	146
Possible Cause .....	134	Possible Cause .....	146
DTC Confirmation Procedure .....	134	DTC Confirmation Procedure .....	146
Diagnosis Procedure .....	134	Diagnosis Procedure .....	146
<b>DTC P1759 FRONT BRAKE SOLENOID VALVE FUNCTION .....</b>	<b>136</b>	<b>DTC P1774 LOW COAST BRAKE SOLENOID VALVE FUNCTION .....</b>	<b>148</b>
Description .....	136	Description .....	148
CONSULT-II Reference Value in Data Monitor Mode .....	136	CONSULT-II Reference Value in Data Monitor Mode .....	148
On Board Diagnosis Logic .....	136	On Board Diagnosis Logic .....	148
Possible Cause .....	136	Possible Cause .....	148
DTC Confirmation Procedure .....	136	DTC Confirmation Procedure .....	148
Diagnosis Procedure .....	137	Diagnosis Procedure .....	149
<b>DTC P1762 DIRECT CLUTCH SOLENOID VALVE .....</b>	<b>138</b>	<b>DTC P1841 ATF PRESSURE SWITCH 1 .....</b>	<b>150</b>
Description .....	138	Description .....	150
CONSULT-II Reference Value in Data Monitor Mode .....	138	CONSULT-II Reference Value in Data Monitor Mode .....	150
On Board Diagnosis Logic .....	138	On Board Diagnosis Logic .....	150
Possible Cause .....	138	Possible Cause .....	150
DTC Confirmation Procedure .....	138	DTC Confirmation Procedure .....	150
Diagnosis Procedure .....	138	Diagnosis Procedure .....	150
<b>DTC P1764 DIRECT CLUTCH SOLENOID VALVE FUNCTION .....</b>	<b>140</b>	<b>DTC P1843 ATF PRESSURE SWITCH 3 .....</b>	<b>152</b>
Description .....	140	Description .....	152
CONSULT-II Reference Value in Data Monitor Mode .....	140	CONSULT-II Reference Value in Data Monitor Mode .....	152
On Board Diagnosis Logic .....	140	On Board Diagnosis Logic .....	152
Possible Cause .....	140	Possible Cause .....	152

DTC Confirmation Procedure .....	152	A/T Does Not Shift: 5th gear → 4th gear .....	192
Diagnosis Procedure .....	152	A/T Does Not Shift: 4th gear → 3rd gear .....	194
<b>DTC P1845 ATF PRESSURE SWITCH 5 .....</b>	<b>154</b>	A/T Does Not Shift: 3rd gear → 2nd gear .....	196
Description .....	154	A/T Does Not Shift: 2nd gear → 1st gear .....	197
CONSULT-II Reference Value in Data Monitor		Vehicle Does Not Decelerate By Engine Brake ...	199
Mode .....	154	<b>A/T SHIFT LOCK SYSTEM .....</b>	<b>202</b>
On Board Diagnosis Logic .....	154	Description .....	202
Possible Cause .....	154	Shift Lock System Electrical Parts Location .....	202
DTC Confirmation Procedure .....	154	Wiring Diagram - AT - SHIFT .....	203
Diagnosis Procedure .....	154	Shift Lock Control Unit Reference Value .....	204
<b>DTC P1846 ATF PRESSURE SWITCH 6 .....</b>	<b>156</b>	Component Inspection .....	204
Description .....	156	<b>SHIFT CONTROL SYSTEM .....</b>	<b>207</b>
CONSULT-II Reference Value in Data Monitor		Control Device Removal and Installation .....	207
Mode .....	156	Adjustment of A/T Position .....	208
On Board Diagnosis Logic .....	156	Checking of A/T Position .....	208
Possible Cause .....	156	<b>ON-VEHICLE SERVICE .....</b>	<b>209</b>
DTC Confirmation Procedure .....	156	Oil Pan .....	209
Diagnosis Procedure .....	156	Control Valve with TCM and A/T Fluid Temperature Sensor 2 .....	210
<b>MAIN POWER SUPPLY AND GROUND CIRCUIT .....</b>	<b>158</b>	Rear Oil Seal .....	219
Wiring Diagram - AT - MAIN .....	158	<b>AIR BREATHER HOSE .....</b>	<b>221</b>
Diagnosis Procedure .....	159	Removal and Installation .....	221
<b>CLOSED THROTTLE POSITION AND WIDE OPEN THROTTLE POSITION CIRCUIT .....</b>	<b>161</b>	<b>TRANSMISSION ASSEMBLY .....</b>	<b>223</b>
CONSULT-II Reference Value in Data Monitor		Removal and Installation (2WD) .....	223
Mode .....	161	Removal and Installation (4WD) .....	225
Diagnosis Procedure .....	161	<b>OVERHAUL .....</b>	<b>228</b>
<b>BRAKE SIGNAL CIRCUIT .....</b>	<b>162</b>	Component .....	228
CONSULT-II Reference Value in Data Monitor		Oil Channel .....	235
Mode .....	162	Location of Adjusting Shims, Needle Bearings, Thrust Washers and Snap Rings .....	237
Diagnosis Procedure .....	162	<b>DISASSEMBLY .....</b>	<b>240</b>
<b>TOW MODE SWITCH .....</b>	<b>163</b>	Disassembly .....	240
Description .....	163	<b>REPAIR FOR COMPONENT PARTS .....</b>	<b>258</b>
Wiring Diagram - AT - TMSW .....	163	Oil Pump .....	258
Diagnosis Procedure .....	164	Front Sun Gear, 3rd One-Way Clutch .....	260
<b>TROUBLE DIAGNOSIS FOR SYMPTOMS ....</b>	<b>165</b>	Front Carrier, Input Clutch, Rear Internal Gear ....	262
Wiring Diagram - AT - NONDTC .....	165	Mid Sun Gear, Rear Sun Gear, High and Low Reverse Clutch Hub .....	267
A/T Check Indicator Lamp Does Not Come On ....	167	High and Low Reverse Clutch .....	272
Engine Cannot Be Started in "P" or "N" Position ..	168	Direct Clutch .....	274
In "P" Position, Vehicle Moves When Pushed ....	168	<b>ASSEMBLY .....</b>	<b>277</b>
In "N" Position, Vehicle Moves .....	169	Assembly (1) .....	277
Large Shock ("N" to "D" Position) .....	170	Adjustment .....	290
Vehicle Does Not Creep Backward in "R" Position ..	172	Assembly (2) .....	292
Vehicle Does Not Creep Forward in "D" Position ..	175	<b>SERVICE DATA AND SPECIFICATIONS (SDS) .....</b>	<b>298</b>
Vehicle Cannot Be Started from D1 .....	177	General Specification .....	298
A/T Does Not Shift: D1→ D2 .....	179	Vehicle Speed When Shifting Gears .....	298
A/T Does Not Shift: D2→ D3 .....	181	Vehicle Speed When Performing and Releasing Complete Lock-up .....	299
A/T Does Not Shift: D3→ D4 .....	183	Stall Speed .....	299
A/T Does Not Shift: D4→ D5 .....	185		
A/T Does Not Perform Lock-up .....	187		
A/T Does Not Hold Lock-up Condition .....	189		
Lock-up Is Not Released .....	190		
Engine Speed Does Not Return to Idle .....	191		

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Line Pressure .....	299	Vehicle Speed Sensor A/T (Revolution Sensor) ...	299
A/T Fluid Temperature Sensor .....	299	Reverse brake .....	300
Turbine Revolution Sensor .....	299	Total End Play .....	300

A

B

**AT**

D

E

F

G

H

I

J

K

L

M

N

O

P

# INDEX FOR DTC

< SERVICE INFORMATION >

## SERVICE INFORMATION

### INDEX FOR DTC

#### Alphabetical Index

INFOID:000000003532216

**NOTE:**

If DTC U1000 is displayed with other DTC, first perform the trouble diagnosis for DTC U1000. Refer to [AT-91](#).

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	<a href="#">AT-128</a>
ATF PRES SW 1/CIRC	—	P1841	<a href="#">AT-150</a>
ATF PRES SW 3/CIRC	—	P1843	<a href="#">AT-152</a>
ATF PRES SW 5/CIRC	—	P1845	<a href="#">AT-154</a>
ATF PRES SW 6/CIRC	—	P1846	<a href="#">AT-156</a>
A/T INTERLOCK	P1730	P1730	<a href="#">AT-126</a>
A/T TCC S/V FNCTN	P0744	P0744	<a href="#">AT-113</a>
ATF TEMP SEN/CIRC	P0710	P1710	<a href="#">AT-119</a>
CAN COMM CIRCUIT	U1000	U1000	<a href="#">AT-91</a>
D/C SOLENOID/CIRC	P1762	P1762	<a href="#">AT-138</a>
D/C SOLENOID FNCTN	P1764 (*2)	P1764	<a href="#">AT-140</a>
ENGINE SPEED SIG	—	P0725	<a href="#">AT-109</a>
FR/B SOLENOID/CIRC	P1757	P1757	<a href="#">AT-134</a>
FR/B SOLENOID FNCT	P1759	P1759	<a href="#">AT-136</a>
HLR/C SOL/CIRC	P1767	P1767	<a href="#">AT-142</a>
HLR/C SOL FNCTN	P1769 (*2)	P1769	<a href="#">AT-144</a>
I/C SOLENOID/CIRC	P1752	P1752	<a href="#">AT-130</a>
I/C SOLENOID FNCTN	P1754 (*2)	P1754	<a href="#">AT-132</a>
L/PRESS SOL/CIRC	P0745	P0745	<a href="#">AT-115</a>
LC/B SOLENOID/CIRC	P1772	P1772	<a href="#">AT-146</a>
LC/B SOLENOID FNCT	P1774	P1774	<a href="#">AT-148</a>
PNP SW/CIRC	P0705	P0705	<a href="#">AT-99</a>
STARTER RELAY/CIRC	—	P0615	<a href="#">AT-94</a>
TCC SOLENOID/CIRC	P0740	P0740	<a href="#">AT-111</a>
TCM	P0700	P0700	<a href="#">AT-98</a>
TP SEN/CIRC A/T	—	P1705	<a href="#">AT-117</a>
TURBINE REV S/CIRC	P0717	P0717	<a href="#">AT-103</a>
VEH SPD SE/CIR·MTR	—	P1721	<a href="#">AT-124</a>
VEH SPD SEN/CIR AT	P0720	P0720	<a href="#">AT-105</a>

\*1: These numbers are prescribed by SAE J2012.

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

#### DTC No. Index

INFOID:000000003532217

**NOTE:**

If DTC U1000 is displayed with other DTC, first perform the trouble diagnosis for DTC U1000. Refer to [AT-91](#).

# INDEX FOR DTC

## < SERVICE INFORMATION >

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	<a href="#">AT-94</a>
P0700	P0700	TCM	<a href="#">AT-98</a>
P0705	P0705	PNP SW/CIRC	<a href="#">AT-99</a>
P0710	P1710	ATF TEMP SEN/CIRC	<a href="#">AT-119</a>
P0717	P0717	TURBINE REV S/CIRC	<a href="#">AT-103</a>
P0720	P0720	VEH SPD SEN/CIR AT	<a href="#">AT-105</a>
—	P0725	ENGINE SPEED SIG	<a href="#">AT-109</a>
P0740	P0740	TCC SOLENOID/CIRC	<a href="#">AT-111</a>
P0744	P0744	A/T TCC S/V FNCTN	<a href="#">AT-113</a>
P0745	P0745	L/PRESS SOL/CIRC	<a href="#">AT-115</a>
—	P1705	TP SEN/CIRC A/T	<a href="#">AT-117</a>
—	P1721	VEH SPD SE/CIR·MTR	<a href="#">AT-124</a>
P1730	P1730	A/T INTERLOCK	<a href="#">AT-126</a>
—	P1731	A/T 1ST E/BRAKING	<a href="#">AT-128</a>
P1752	P1752	I/C SOLENOID/CIRC	<a href="#">AT-130</a>
P1754 (*2)	P1754	I/C SOLENOID FNCTN	<a href="#">AT-132</a>
P1757	P1757	FR/B SOLENOID/CIRC	<a href="#">AT-134</a>
P1759 (*2)	P1759	FR/B SOLENOID FNCT	<a href="#">AT-136</a>
P1762	P1762	D/C SOLENOID/CIRC	<a href="#">AT-138</a>
P1764 (*2)	P1764	D/C SOLENOID FNCTN	<a href="#">AT-140</a>
P1767	P1767	HLR/C SOL/CIRC	<a href="#">AT-142</a>
P1769	P1769	HLR/C SOL FNCTN	<a href="#">AT-144</a>
P1772	P1772	LC/B SOLENOID/CIRC	<a href="#">AT-146</a>
P1774	P1774	LC/B SOLENOID FNCT	<a href="#">AT-148</a>
—	P1841	ATF PRES SW 1/CIRC	<a href="#">AT-150</a>
—	P1843	ATF PRES SW 3/CIRC	<a href="#">AT-152</a>
—	P1845	ATF PRES SW 5/CIRC	<a href="#">AT-154</a>
—	P1846	ATF PRES SW 6/CIRC	<a href="#">AT-156</a>
U1000	U1000	CAN COMM CIRCUIT	<a href="#">AT-91</a>

\*1: These numbers are prescribed by SAE J2012.

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

# PRECAUTIONS

< SERVICE INFORMATION >

## PRECAUTIONS

### Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

INFOID:000000003532218

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.

### Precaution for On Board Diagnosis (OBD) System of A/T and Engine

INFOID:000000003532219

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.

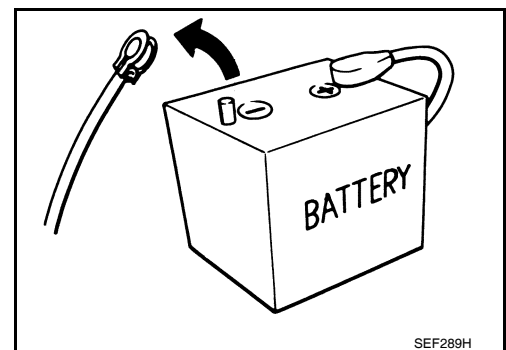
#### **CAUTION:**

- 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.

### Precaution

INFOID:000000003532220

- Before connecting or disconnecting the A/T assembly 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".

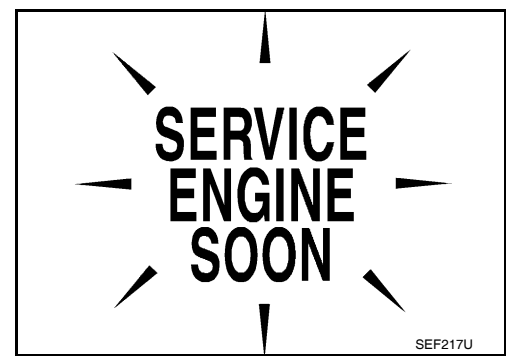




# PRECAUTIONS

## < SERVICE INFORMATION >

- 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”.



- Always use the specified brand of ATF. Refer to [MA-10](#).
- Use paper rags not cloth rags during work.
- After replacing the ATF, dispose of the waste oil using the methods prescribed by law, ordinance, etc.
- Before proceeding with disassembly, thoroughly clean the outside of the transmission. 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 transmission.
- 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 transmission 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.
- Clean or replace ATF cooler if excessive foreign material is found in oil pan or clogging strainer. Refer to [AT-15, "A/T Fluid Cooler Cleaning"](#).
- After overhaul, refill the transmission 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-13, "Changing Automatic Transmission Fluid \(ATF\)"](#), [AT-13, "Checking Automatic Transmission Fluid \(ATF\)"](#).

## Service Notice or Precaution

INFOID:000000003532221

### ATF COOLER SERVICE

If A/T fluid contains frictional material (clutches, bands, etc.), or if an A/T is repaired, overhauled, or replaced, inspect and clean the A/T fluid cooler mounted in the radiator or replace the radiator. Flush cooler lines using cleaning solvent and compressed air after repair. For A/T fluid cooler cleaning procedure, refer to [AT-15, "A/T Fluid Cooler Cleaning"](#). For radiator replacement, refer to [CO-13](#).

### CHECKING AND CHANGING A/T FLUID SERVICE

Increase ATF temperature by 80°C (176°F) once, and then check ATF level in 65°C (149°F) when adjusting ATF level.

#### NOTE:

JA60 uses both systems of a water-cooling and of an air-cooling. Air-cooling system has a by-pass valve. When ATF temperature is not over 50°C (122°F) with water-cooling system OFF, it does not flow to air-cooling system. If ATF level is set without the flow of ATF, the level will be 10mm lower than the standard. Therefore, piping should be filled with ATF when adjusting level.

### OBD-II SELF-DIAGNOSIS

- A/T self-diagnosis is performed by the TCM in combination with the ECM. Refer to the table on [AT-83, "CONSULT-II Function \(A/T\)"](#) for the indicator used to display each self-diagnostic result.

## PRECAUTIONS

### < SERVICE INFORMATION >

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- 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, "OBD-II Diagnostic Trouble Code \(DTC\)"](#) to complete the repair and avoid unnecessary blinking of the MIL.**  
For details of OBD-II, refer to [EC-48](#).
- **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-66](#).**

# PREPARATION

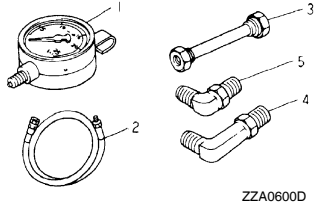
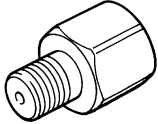
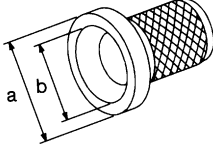
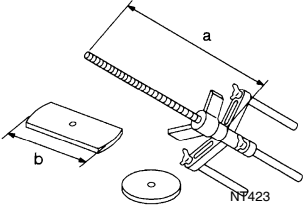
< SERVICE INFORMATION >

## PREPARATION

### Special Service Tool

INFOID:000000003532222

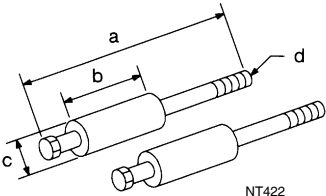
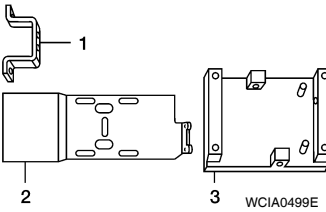
The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

Tool number (Kent-Moore No.) Tool name	Description
<p>ST2505S001 (J-34301-C) Oil pressure gauge set 1. ST25051001 ( — ) Oil pressure gauge 2. ST25052000 ( — ) Hose 3. ST25053000 ( — ) Joint pipe 4. ST25054000 ( — ) Adapter 5. ST25055000 ( — ) Adapter</p>  <p style="text-align: right;">ZZA0600D</p>	<p>Measuring line pressure</p>
<p>KV31103600 (J-45674) Joint pipe adapter (With ST25054000)</p>  <p style="text-align: right;">ZZA1227D</p>	<p>Measuring line pressure</p>
<p>ST33400001 (J-26082) Drift</p>  <p style="text-align: right;">NT086</p>	<ul style="list-style-type: none"> <li>• Installing rear oil seal (2WD models)</li> <li>• Installing oil pump housing oil seal</li> </ul> <p><b>a: 60 mm (2.36 in) dia.</b> <b>b: 47 mm (1.85 in) dia.</b></p>
<p>KV31102400 (J-34285 and J-34285-87) Clutch spring compressor</p>  <p style="text-align: right;">NT423</p>	<p>Installing reverse brake return spring retainer</p> <p><b>a: 320 mm (12.60 in)</b> <b>b: 174 mm (6.85 in)</b></p>

A  
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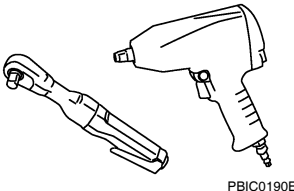
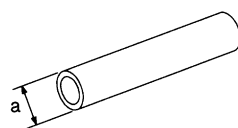
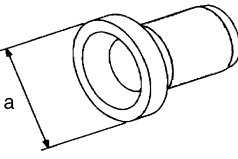
# PREPARATION

## < SERVICE INFORMATION >

Tool number (Kent-Moore No.) Tool name	Description
ST25850000 (J-25721-A) Sliding hammer	Remove oil pump assembly <b>a: 179 mm (7.05 in)</b> <b>b: 70 mm (2.76 in)</b> <b>c: 40 mm (1.57 in)</b> <b>d: M12X1.75P</b>
	
— (J-47002) Transmission jack adapter kit 1. — (J-47002-2) Center bracket 2. — (J-47002-3) Adapter plate 3. — (J-47002-4) Adapter block	Assist in removal of transmission and transfer case as one assembly using only one transmission jack.
	

## Commercial Service Tool

INFOID:000000003532223

Tool name	Description
Power tool	Loosening bolts and nuts
	
Drift	Installing manual shaft seals <b>a: 22 mm (0.87 in) dia.</b>
	
Drift	Installing rear oil seal (4WD models) <b>a: 64 mm (2.52 in) dia.</b>
	

# A/T FLUID

< SERVICE INFORMATION >

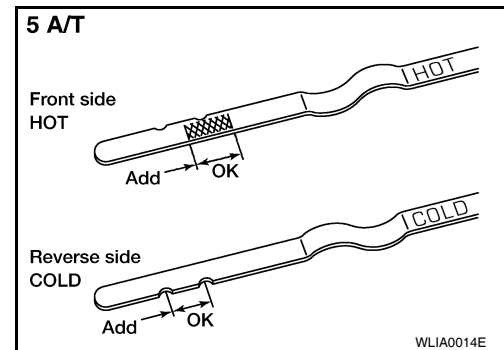
## A/T FLUID

### Changing Automatic Transmission Fluid (ATF)

INFOID:000000003532224

1. Drive the vehicle to warm up the ATF to 80° C (176° F).
2. Stop the engine.
3. Remove the ATF level gauge bolt.
4. Drain the ATF from the drain plug hole and then install the drain plug with a new gasket. Refill the transmission with new ATF. Always refill with the same volume as the drained ATF. Use the ATF level gauge to check the ATF level as shown. Add ATF as necessary.

**Drain plug** : Refer to [AT-228, "Component"](#).



- To flush out the old ATF from the coolers, pour new ATF into the charging pipe with the engine idling and at the same time drain the old ATF from the auxiliary transmission oil cooler hose return line.
- When the color of the ATF coming out of the auxiliary transmission oil cooler hose return line is about the same as the color of the new ATF, flushing out the old ATF is complete. The amount of new transmission ATF used for flushing should be 30% to 50% increase of the specified capacity.

**ATF type and capacity** : Refer to [MA-10, "Fluids and Lubricants"](#).

#### CAUTION:

- Use only the specified ATF. Do not mix with other fluids.
- Using an ATF other than the specified ATF will cause deterioration in driveability and automatic transmission durability, and may damage the automatic transmission, which is not covered by the warranty.
- When filling the transmission with ATF, do not spill the ATF on any heat generating parts such as the exhaust manifold.
- Do not reuse the drain plug gasket.

**Drain plug** : Refer to [AT-228, "Component"](#).

5. Install the ATF level gauge in the ATF charging pipe and tighten the ATF level gauge bolt to specification.

**ATF level gauge bolt** : Refer to [AT-223, "Removal and Installation \(2WD\)"](#),  
[AT-225, "Removal and Installation \(4WD\)"](#).

6. Drive the vehicle to warm up the ATF to 80° C (176° F).
7. Check the ATF level and condition. Refer to [AT-13, "Checking Automatic Transmission Fluid \(ATF\)"](#). If the ATF is still dirty, repeat steps 2 through 5.

### Checking Automatic Transmission Fluid (ATF)

INFOID:000000003532225

1. Remove the ATF level gauge bolt.

# A/T FLUID

## < SERVICE INFORMATION >

2. Before driving, the ATF level can be checked at ATF temperatures of 30° to 50°C (86° to 122°F) using the "COLD" range on the ATF level gauge as follows:
  - a. Park the vehicle on a level surface and set the parking brake.
  - b. Start the engine and move the selector lever through each gear position. Shift the selector lever into the "P" position.
  - c. Check the ATF level with the engine idling.
  - d. Remove the ATF level gauge and wipe it clean with a lint-free paper.

**CAUTION:**

**When wiping the ATF from the ATF level gauge, always use a lint-free paper, not a cloth.**

- e. Re-insert the ATF level gauge into the charging pipe until the cap contacts the top of the charging pipe as shown.

**CAUTION:**

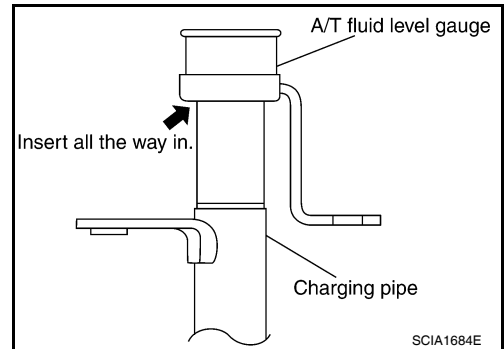
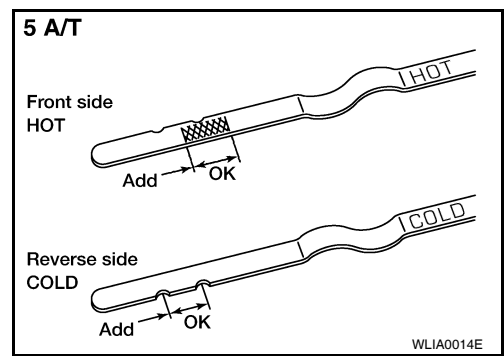
**To check ATF level, insert the ATF level gauge until the cap contacts the top of the charging pipe, with the gauge reversed from the normal inserted position.**

- f. Remove the ATF level gauge and note the ATF level. If the ATF level is at low side of range, add ATF to the transmission through the charging pipe.

**CAUTION:**

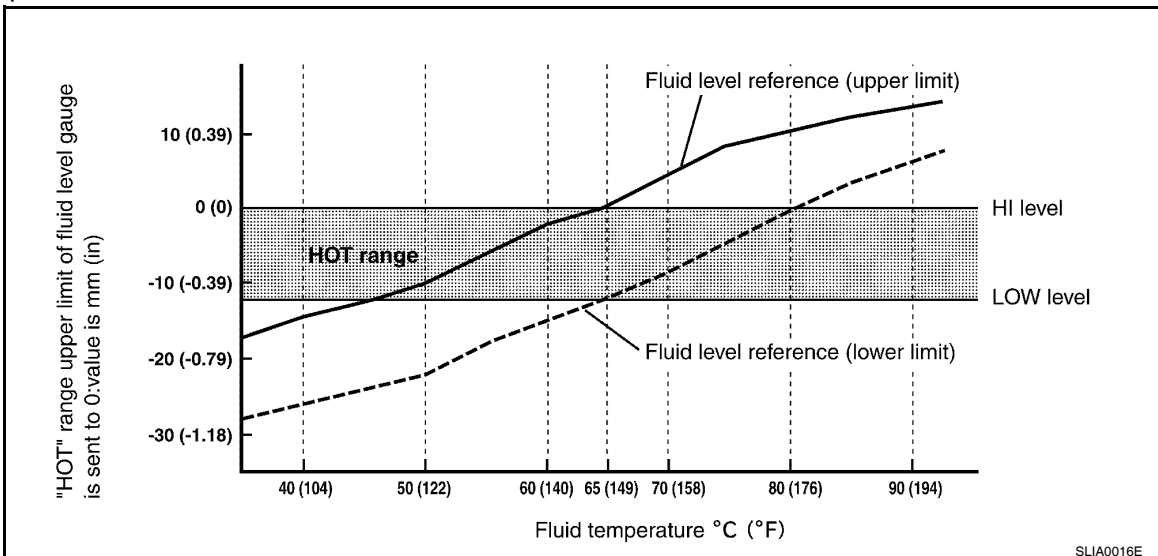
**Do not overfill the transmission with ATF.**

- g. Install the ATF level gauge and the ATF level gauge bolt.



**ATF level gauge bolt** : Refer to [AT-223, "Removal and Installation \(2WD\)"](#), [AT-225, "Removal and Installation \(4WD\)"](#).

3. Warm up the engine.
4. Check for any ATF leaks.
5. Drive the vehicle to increase the ATF temperature to 80° C (176° F).
6. Allow the ATF temperature to fall to approximately 65°C (149°F). Use the CONSULT-II to monitor the ATF temperature as follows:



**NOTE:**

ATF level will be greatly affected by temperature as shown. Therefore monitor the ATF temperature data using the CONSULT-II.

- a. Connect CONSULT-II to data link connector.
- b. Select "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
- c. Read out the value of "ATF TEMP 1".

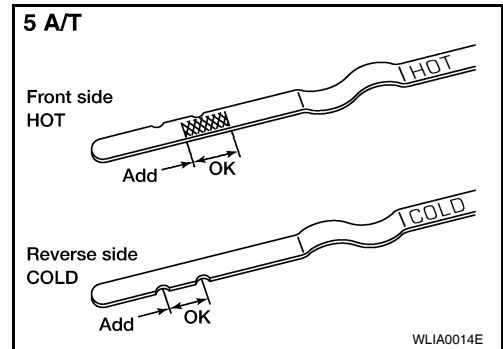
## A/T FLUID

### < SERVICE INFORMATION >

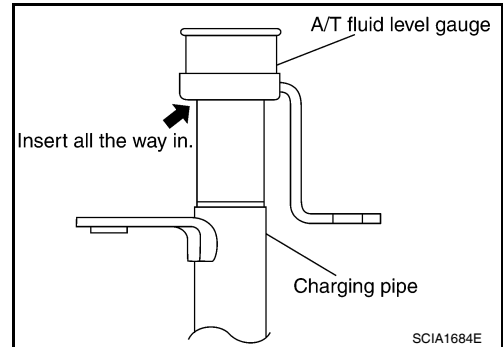
7. Re-check the ATF level at ATF temperatures of approximately 65°C (149°F) using the "HOT" range on the ATF level gauge as shown.

**CAUTION:**

- When wiping the ATF from the ATF level gauge, always use lint-free paper, not a cloth.



- To check the ATF level, insert the ATF level gauge until the cap contacts the top of the charging pipe, with the gauge reversed from the normal inserted position as shown.



8. Check the ATF condition.
  - If the ATF is very dark or has some burned smell, there may be an internal problem with the transmission. Refer to [AT-165](#). Flush the transmission cooling system after repairing the transmission.
  - If the ATF contains frictional material (clutches, bands, etc.), replace the radiator and flush the transmission cooler lines using cleaning solvent and compressed air after repairing the transmission.
9. Install the ATF level gauge in the ATF charging pipe and install the ATF level gauge bolt.
10. Tighten the level gauge bolt to specification.

**ATF level gauge bolt:** : Refer to [AT-223, "Removal and Installation \(2WD\)"](#),  
[AT-225, "Removal and Installation \(4WD\)"](#).

### A/T Fluid Cooler Cleaning

INFOID:000000003532226

Whenever an automatic transmission is repaired, overhauled, or replaced, the A/T fluid cooler mounted in the radiator must be inspected and cleaned.

Metal debris and friction material, if present, can become trapped in the A/T fluid cooler. This debris can contaminate the newly serviced A/T or, in severe cases, can block or restrict the flow of A/T fluid. In either case, malfunction of the newly serviced A/T may result.

Debris, if present, may build up as A/T fluid enters the cooler inlet. It will be necessary to back flush the cooler through the cooler outlet in order to flush out any built up debris.

#### A/T FLUID COOLER CLEANING PROCEDURE

1. Position an oil pan under the automatic transmission's inlet and outlet cooler hoses.
2. Identify the inlet and outlet fluid cooler hoses.

## A/T FLUID

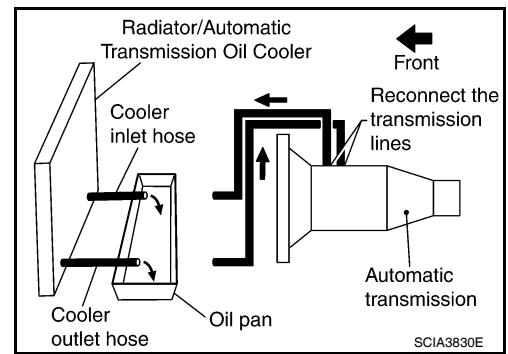
### < SERVICE INFORMATION >

3. Disconnect the fluid cooler inlet and outlet rubber hoses from the steel cooler tubes or bypass valve.

**NOTE:**

Replace the cooler hoses if rubber material from the hose remains on the tube fitting.

4. Allow any A/T fluid that remains in the cooler hoses to drain into the oil pan.

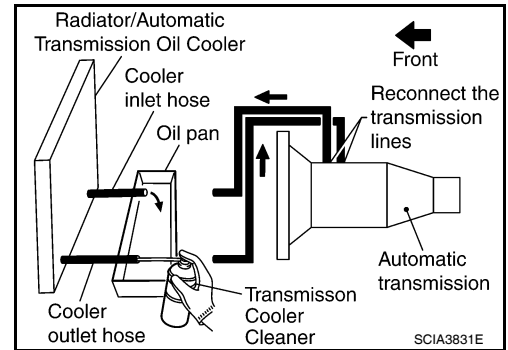


5. Insert the extension adapter hose of a can of Transmission Cooler Cleaner (Nissan P/N 999MP-AM006) into the cooler outlet hose.

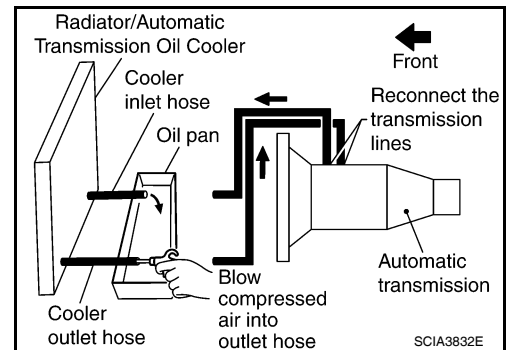
**CAUTION:**

- Wear safety glasses and rubber gloves when spraying the Transmission Cooler Cleaner.
- Spray cooler cleaner only with adequate ventilation.
- Avoid contact with eyes and skin.
- Do not breath vapors or spray mist.

6. Hold the hose and can as high as possible and spray Transmission Cooler Cleaner in a continuous stream into the cooler outlet hose until fluid flows out of the cooler inlet hose for 5 seconds.



7. Insert the tip of an air gun into the end of the cooler outlet hose.
8. Wrap a shop rag around the air gun tip and of the cooler outlet hose.



9. Blow compressed air regulated to 5 - 9 kg/cm<sup>2</sup> (70 - 130 psi) through the cooler outlet hose for 10 seconds to force out any remaining fluid.
10. Repeat steps 5 through 9 three additional times.
11. Position an oil pan under the banjo bolts that connect the fluid cooler steel lines to the transmission.
12. Remove the banjo bolts.
13. Flush each steel line from the cooler side back toward the transmission by spraying Transmission Cooler Cleaner in a continuous stream for 5 seconds.
14. Blow compressed air regulated to 5 - 9 kg/cm<sup>2</sup> (70 - 130 psi) through each steel line from the cooler side back toward the transmission for 10 seconds to force out any remaining fluid.
15. Ensure all debris is removed from the steel cooler lines.
16. Ensure all debris is removed from the banjo bolts and fittings.
17. Perform the A/T fluid cooler diagnosis procedure.

### A/T FLUID COOLER DIAGNOSIS PROCEDURE

**NOTE:**

Insufficient cleaning of the cooler inlet hose exterior may lead to inaccurate debris identification.

1. Position an oil pan under the automatic transmission's inlet and outlet cooler hoses.
2. Clean the exterior and tip of the cooler inlet hose.



# A/T FLUID

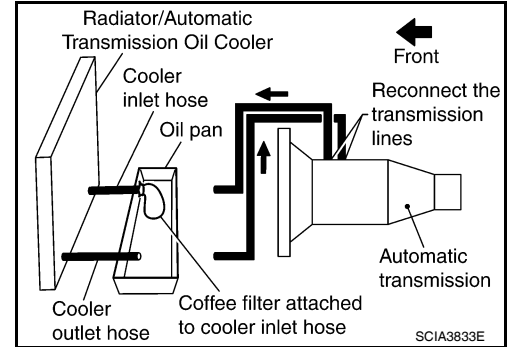
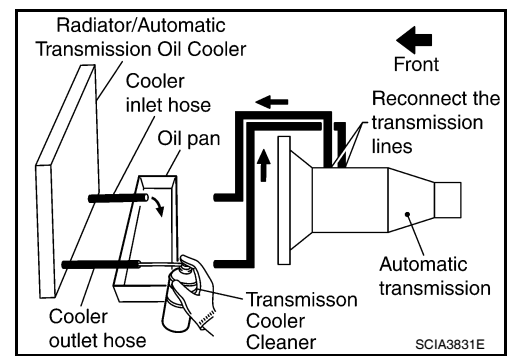
## < SERVICE INFORMATION >

3. Insert the extension adapter hose of a can of Transmission Cooler Cleaner (Nissan P/N 999MP-AM006) into the cooler outlet hose.

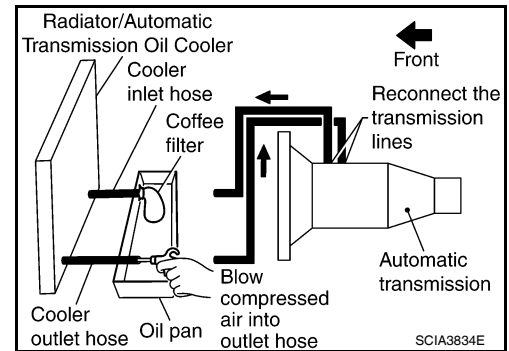
**CAUTION:**

- Wear safety glasses and rubber gloves when spraying the Transmission Cooler Cleaner.
- Spray cooler cleaner only with adequate ventilation.
- Avoid contact with eyes and skin.
- Do not breath vapors or spray mist.

4. Hold the hose and can as high as possible and spray Transmission Cooler Cleaner in a continuous stream into the cooler outlet hose until fluid flows out of the cooler inlet hose for 5 seconds.
5. Tie a common white, basket-type coffee filter to the end of the cooler inlet hose.

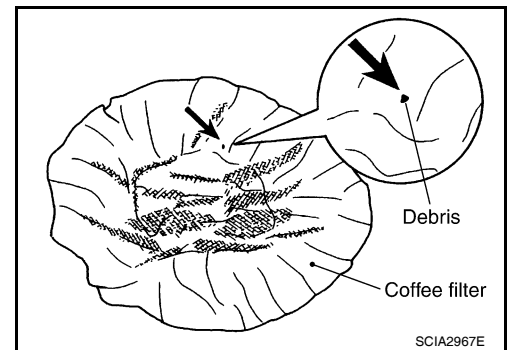


6. Insert the tip of an air gun into the end of the cooler outlet hose.
7. Wrap a shop rag around the air gun tip and end of cooler outlet hose.
8. Blow compressed air regulated to 5 - 9 kg/cm<sup>2</sup> (70 - 130 psi) through the cooler outlet hose to force any remaining A/T fluid into the coffee filter.
9. Remove the coffee filter from the end of the cooler inlet hose.
10. Perform the A/T fluid cooler inspection procedure.



## A/T FLUID COOLER INSPECTION PROCEDURE

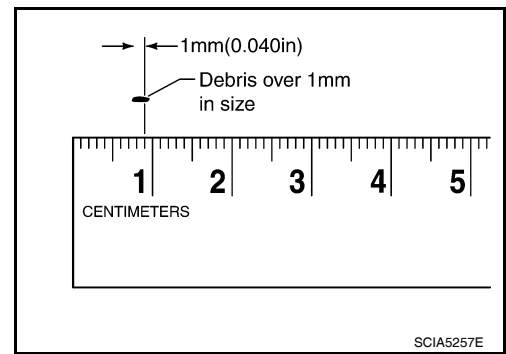
1. Inspect the coffee filter for debris.
  - a. If small metal debris less than 1mm (0.040 in) in size or metal powder is found in the coffee filter, this is normal. If normal debris is found, the A/T fluid cooler/radiator can be re-used and the procedure is ended.



## A/T FLUID

### < SERVICE INFORMATION >

- b. If one or more pieces of debris are found that are over 1mm (0.040 in) in size and/or peeled clutch facing material is found in the coffee filter, the fluid cooler is not serviceable. The A/T fluid cooler/radiator must be replaced and the inspection procedure is ended. Refer to [CO-13](#).



### A/T FLUID COOLER FINAL INSPECTION

After performing all procedures, ensure that all remaining oil is cleaned from all components.

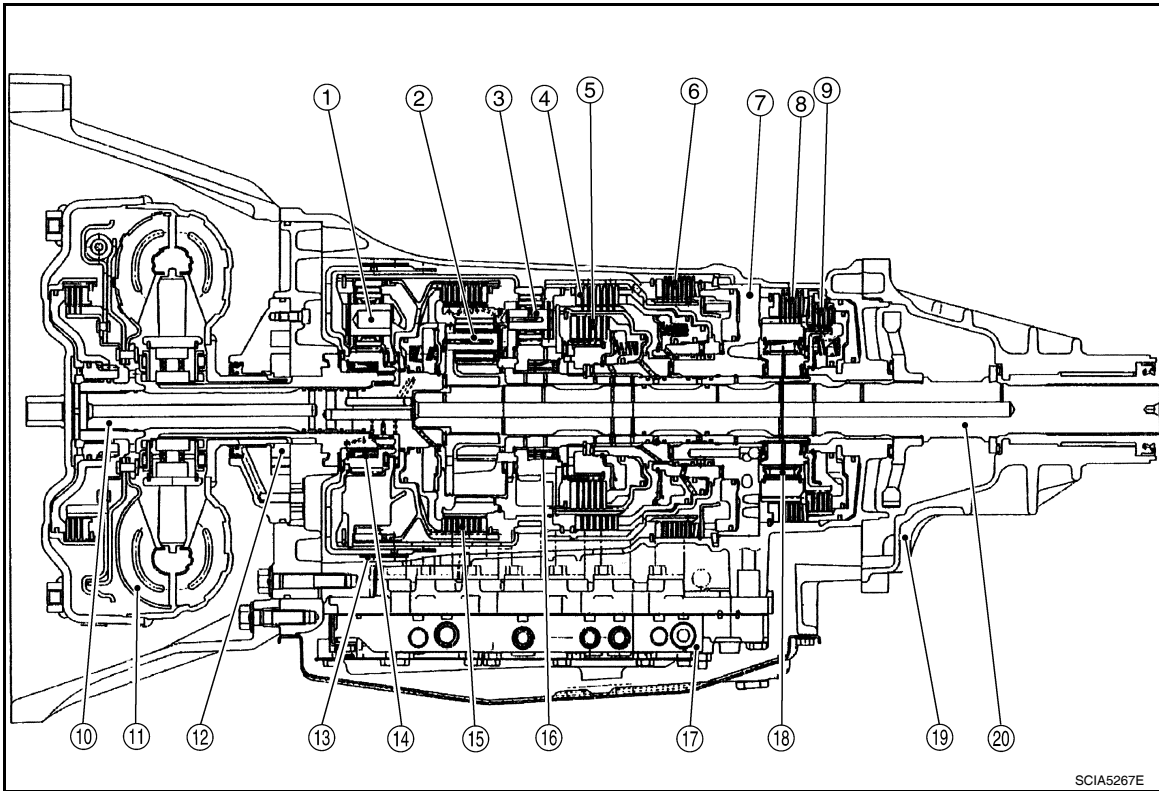
# A/T CONTROL SYSTEM

< SERVICE INFORMATION >

## A/T CONTROL SYSTEM

Cross-Sectional View (2WD models)

INFOID:000000003532227



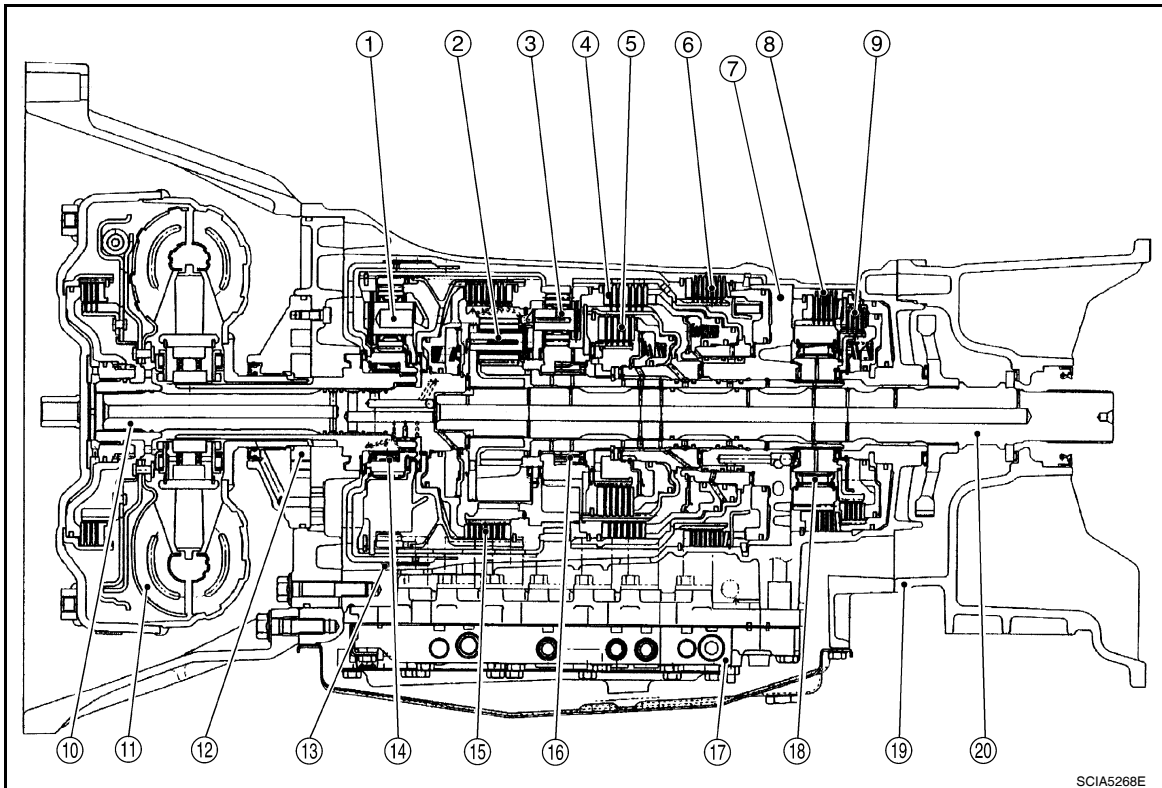
- |                         |                                |                            |
|-------------------------|--------------------------------|----------------------------|
| 1. Front planetary gear | 2. Mid planetary gear          | 3. Rear planetary gear     |
| 4. Direct clutch        | 5.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

# A/T CONTROL SYSTEM

< SERVICE INFORMATION >

## Cross-Sectional View (4WD models)

INFOID:000000003532228



- |                         |                                |                            |
|-------------------------|--------------------------------|----------------------------|
| 1. Front planetary gear | 2. Mid planetary gear          | 3. Rear planetary gear     |
| 4. Direct clutch        | 5. High and low reverse clutch | 6. Reverse brake           |
| 7. Drum support         | 8. Forward brake               | 9. Low coast brake         |
| 10. Input shaft         | 11. Torque converter           | 12. Oil pump               |
| 13. Front brake         | 14. 3rd one-way clutch         | 15. Input clutch           |
| 16. 1st one-way clutch  | 17. Control valve with TCM     | 18. Forward one-way clutch |
| 19. Adapter case        | 20. Output shaft               |                            |

## Shift Mechanism

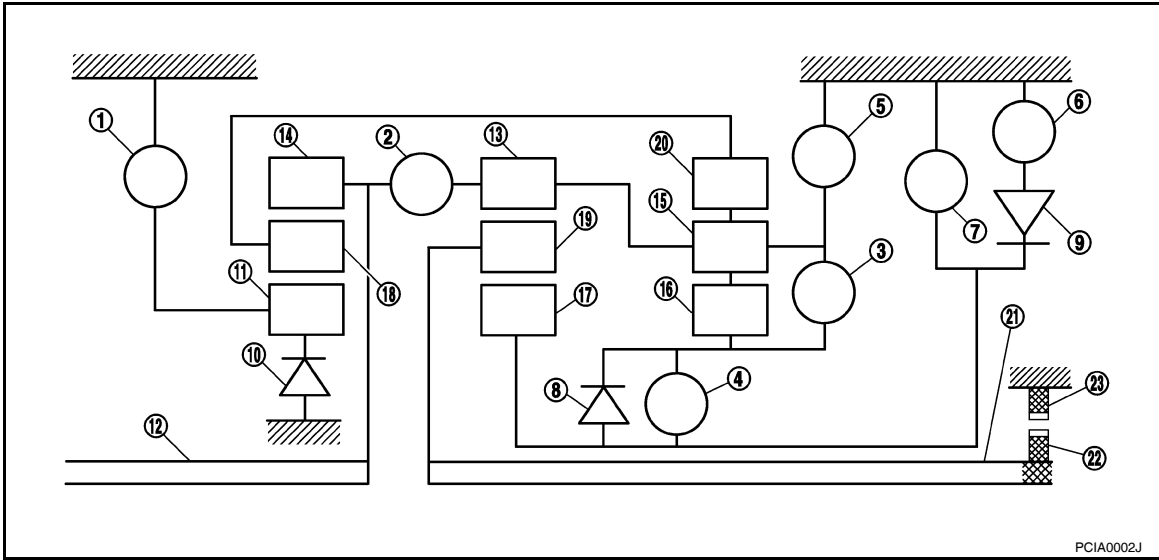
INFOID:000000003532229

The automatic transmission uses compact triple 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

# A/T CONTROL SYSTEM

< SERVICE INFORMATION >



- |                                |                         |                           |
|--------------------------------|-------------------------|---------------------------|
| 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)	HLR/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)	Fwd/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 OWC	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)	Fwd OWC	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 OWC	Allows the front sun gear (11) to turn freely in the forward direction but fastens it for reverse rotation.

## CLUTCH AND BAND CHART

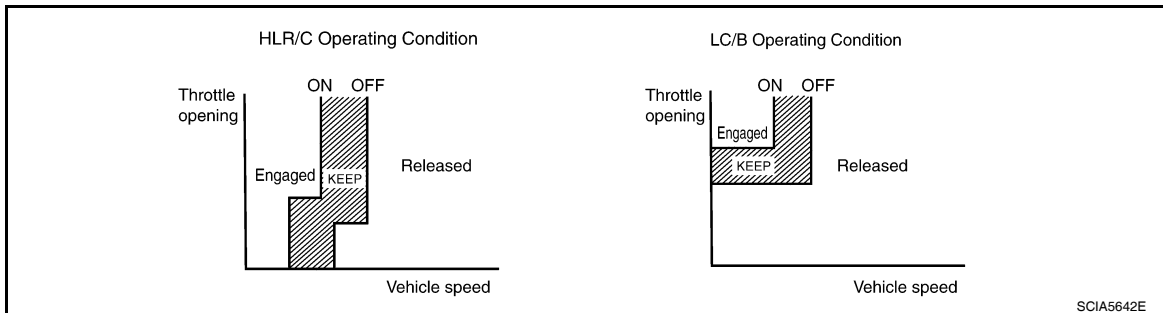
Shift position	I/C	HLR/C	D/C	R/B	FR/B	LC/B	Fwd/B	1st OWC	Fwd OWC	3rd OWC	Remarks
P		△			△						PARK POSITION
R		○		○	○			☆		☆	REVERSE POSITION

# A/T CONTROL SYSTEM

## < SERVICE INFORMATION >

Shift position	I/C	HLR/C	D/C	R/B	FR/B	LC/B	Fwd/B	1st OWC	Fwd OWC	3rd OWC	Remarks
N		△			△						NEUTRAL POSITION
D	1st	△*			△	△**	○	☆	☆	☆	Automatic shift 1↔2↔3↔4↔5
	2nd		○		△		○		☆	☆	
	3rd	○	○		○		△	★		☆	
	4th	○	○	○			△	★			
	5th	○	○		○		△	★		★	
4	1st	△*			△	△**	○	☆	☆	☆	Automatic shift 1↔2↔3↔4
	2nd		○		△		○		☆	☆	
	3rd	○	○		○		△	★		☆	
	4th	○	○	○			△	★			
3	1st	△*			△	△**	○	☆	☆	☆	Automatic shift 1↔2↔3↔4
	2nd		○		△		○		☆	☆	
	3rd	○	○		○		△	★		☆	
	4th	○	○	○			△	★			
2	1st	△*			△	△**	○	☆	☆	☆	Automatic shift 1↔2↔3↔4
	2nd		○		○	○	○		☆	☆	
	3rd	○	○		○		△	★		☆	
	4th	○	○	○			△	★			
1	1st	○			○	○	○	☆	☆	☆	Locks (held stationary in 1st gear) 1↔2↔3↔4
	2nd		○		○	○	○		☆	☆	
	3rd	○	○		○		△	★		☆	
	4th	○	○	○			△	★			

- ○—Operates
- ☆—Operates during “progressive” acceleration.
- ★—Operates and effects power transmission while coasting.
- △—Line pressure is applied but does not affect power transmission.
- △\*—Operates under conditions shown in HLR/C Operating Condition
- △\*\*—Operates under conditions shown in LC/B Operating Condition. Delay control is applied during D (4,3,2,1) ⇒N shift.



### POWER TRANSMISSION

“N” Position

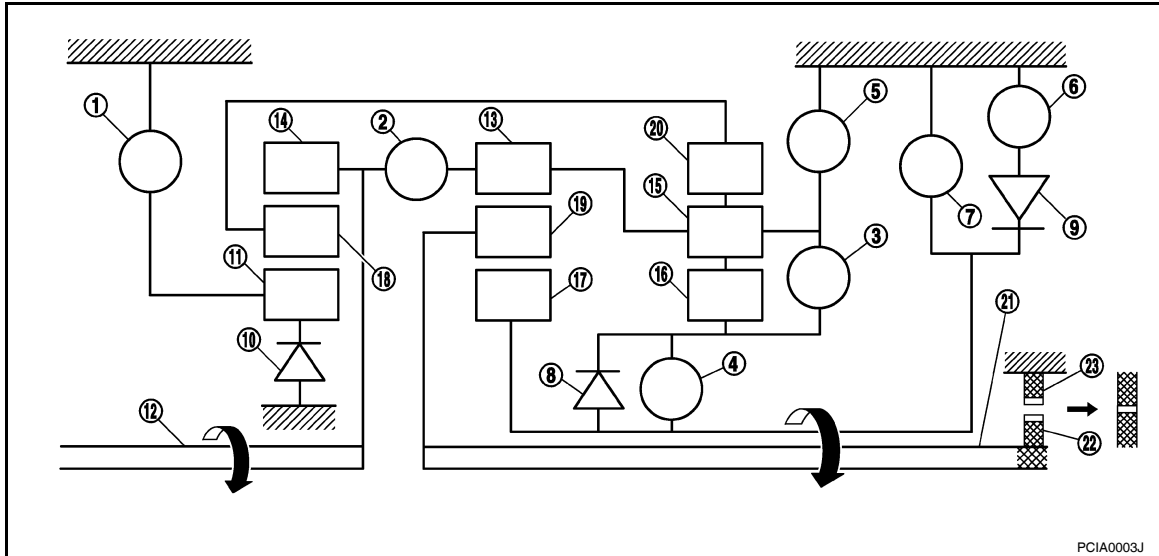
# A/T CONTROL SYSTEM

## < SERVICE INFORMATION >

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.



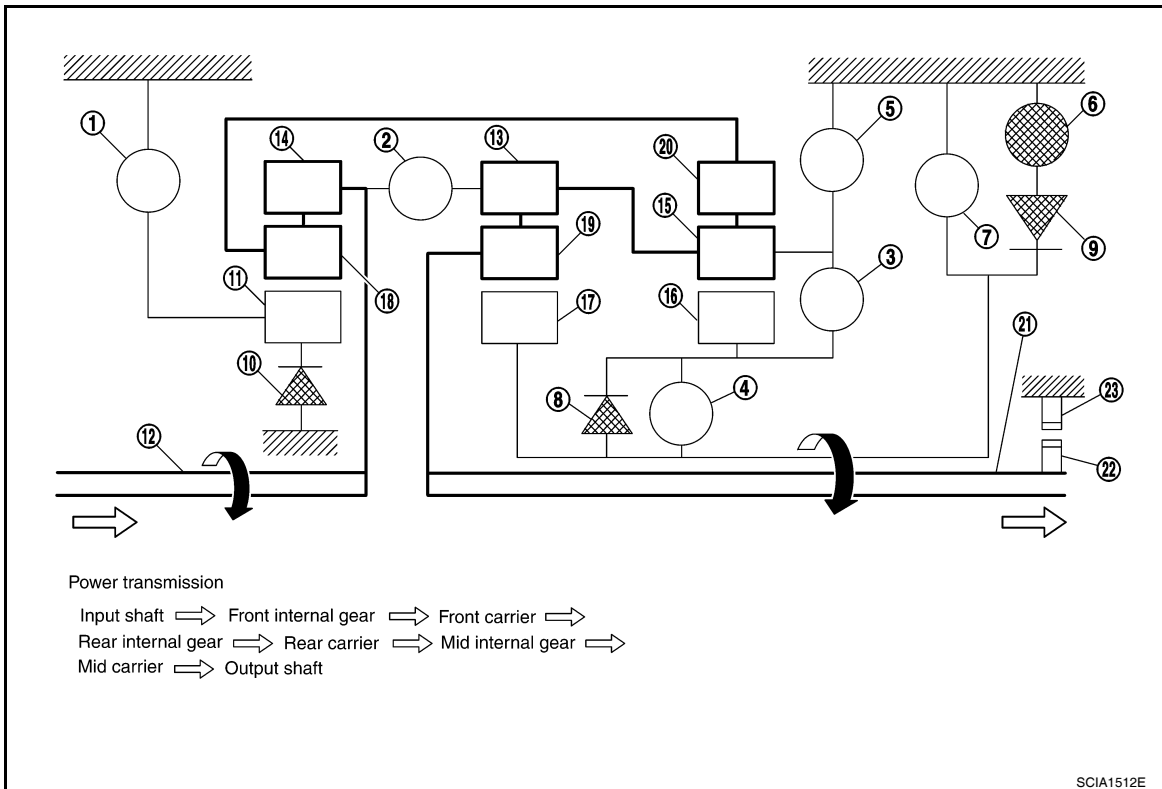
- |                                |                         |                           |
|--------------------------------|-------------------------|---------------------------|
| 1. Front brake                 | 2. Input clutch         | 3. Direct clutch          |
| 4. High and low reverse clutch | 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        |                           |

“D”, “4”, “3”, “2” Positions 1st Gear

- The forward brake and the forward one-way clutch regulate reverse rotation of the mid sun gear.
- The 1st one-way clutch regulates reverse rotation of the rear sun gear.
- The 3rd 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.

# A/T CONTROL SYSTEM

< SERVICE INFORMATION >



- |                                |                         |                           |
|--------------------------------|-------------------------|---------------------------|
| 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        |                           |

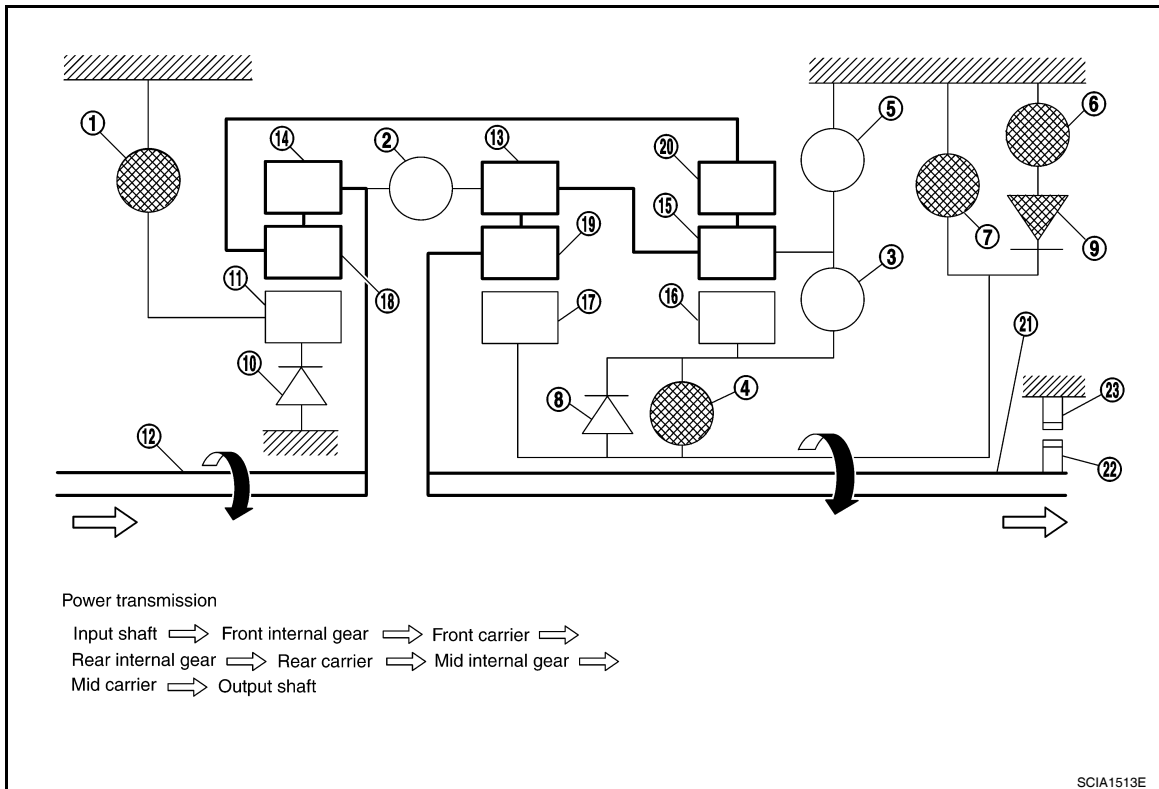
“1 ” Position 1st Gear

- 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.



# A/T CONTROL SYSTEM

< SERVICE INFORMATION >



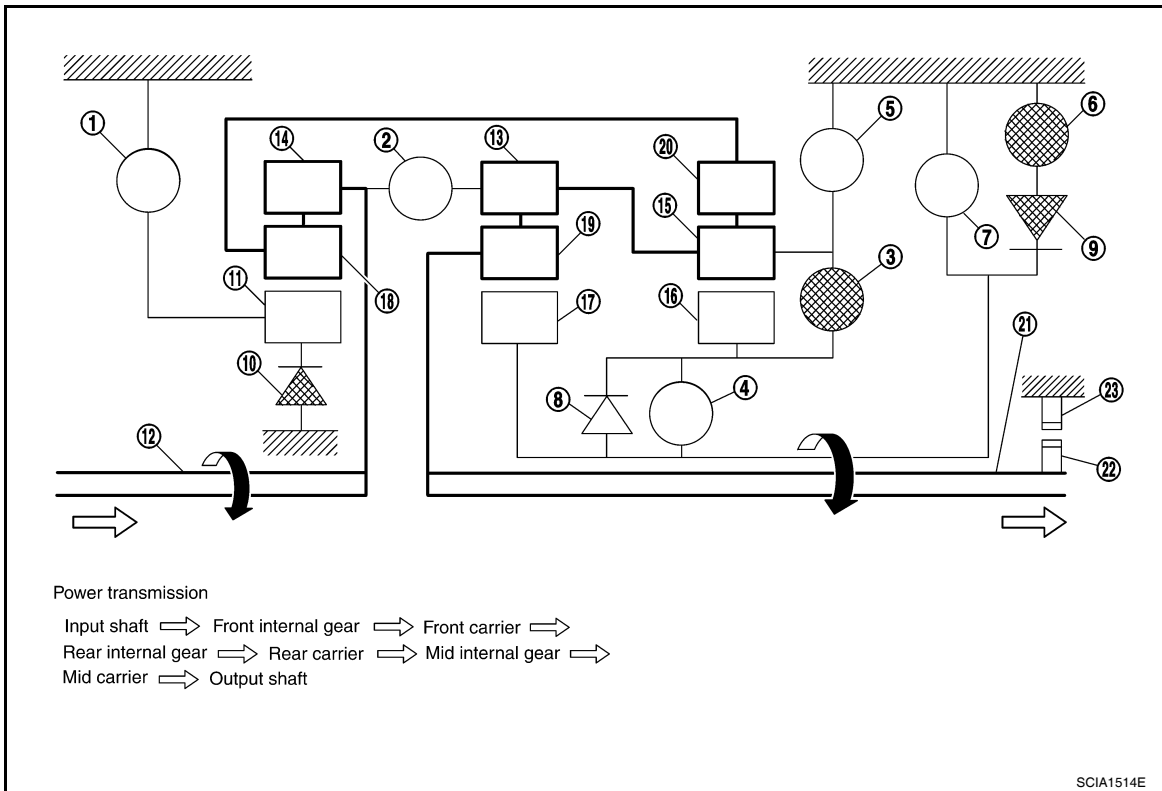
- |                                |                         |                           |
|--------------------------------|-------------------------|---------------------------|
| 1. Front brake                 | 2. Input clutch         | 3. Direct clutch          |
| 4. High and low reverse clutch | 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        |                           |

“D”, “4”, “3” Positions 2nd Gear

- The forward brake and the forward one-way clutch regulate reverse rotation of the mid sun gear.
- The 3rd 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.

# A/T CONTROL SYSTEM

< SERVICE INFORMATION >



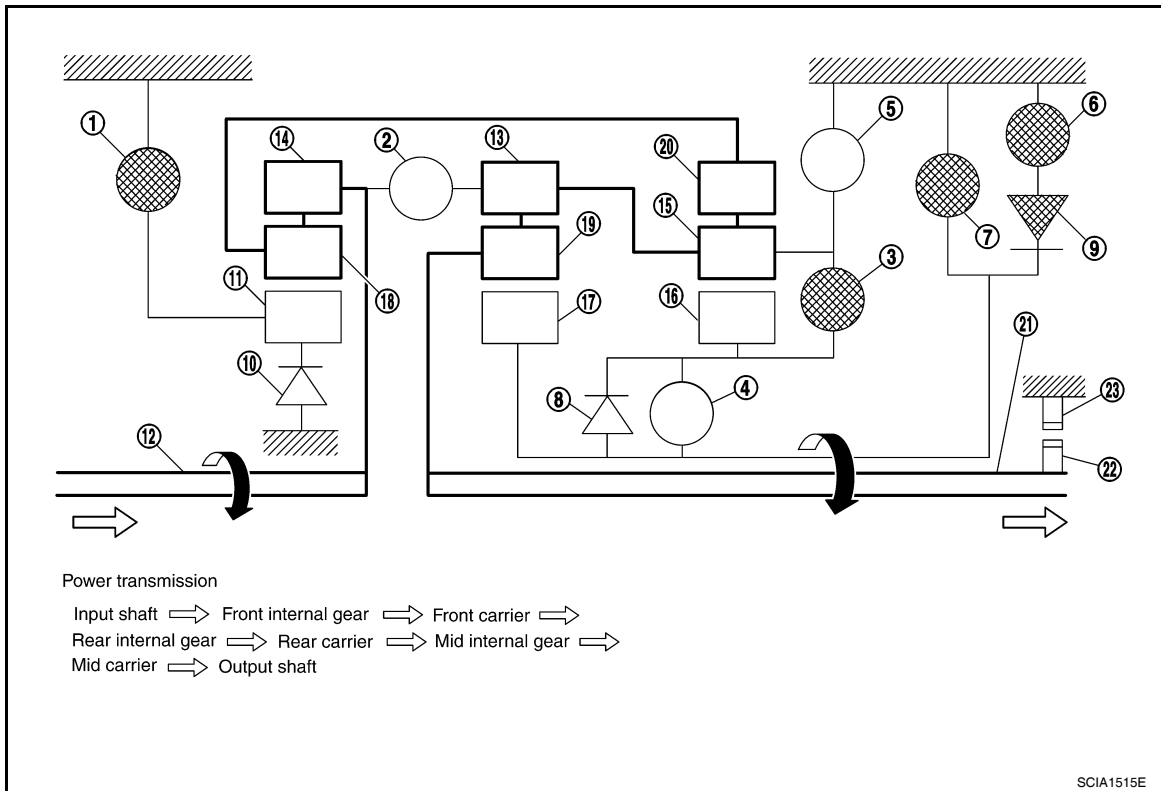
- |                                |                         |                           |
|--------------------------------|-------------------------|---------------------------|
| 1. Front brake                 | 2. Input clutch         | 3. Direct clutch          |
| 4. High and low reverse clutch | 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        |                           |

## "2", "1" Positions 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.

# A/T CONTROL SYSTEM

< SERVICE INFORMATION >



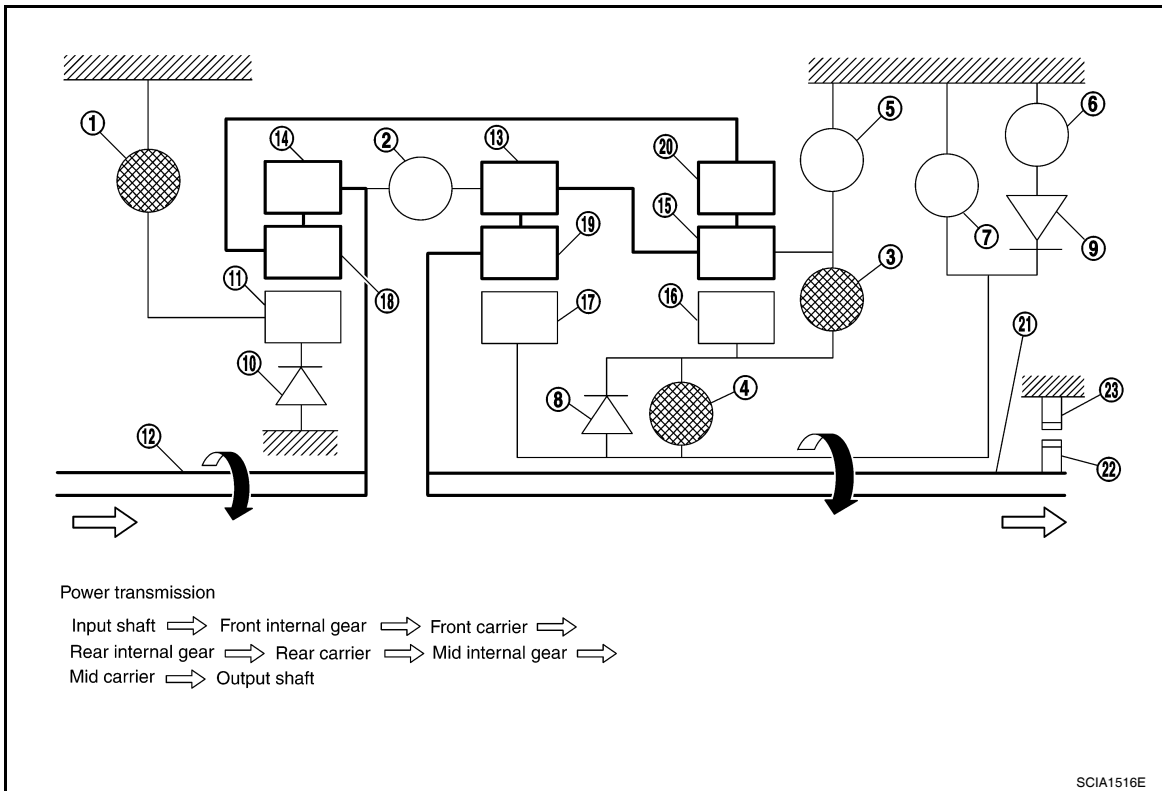
- |                                |                         |                           |
|--------------------------------|-------------------------|---------------------------|
| 1. Front brake                 | 2. Input clutch         | 3. Direct clutch          |
| 4. High and low reverse clutch | 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        |                           |

“D”, “4”, “3” 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.

# A/T CONTROL SYSTEM

< SERVICE INFORMATION >



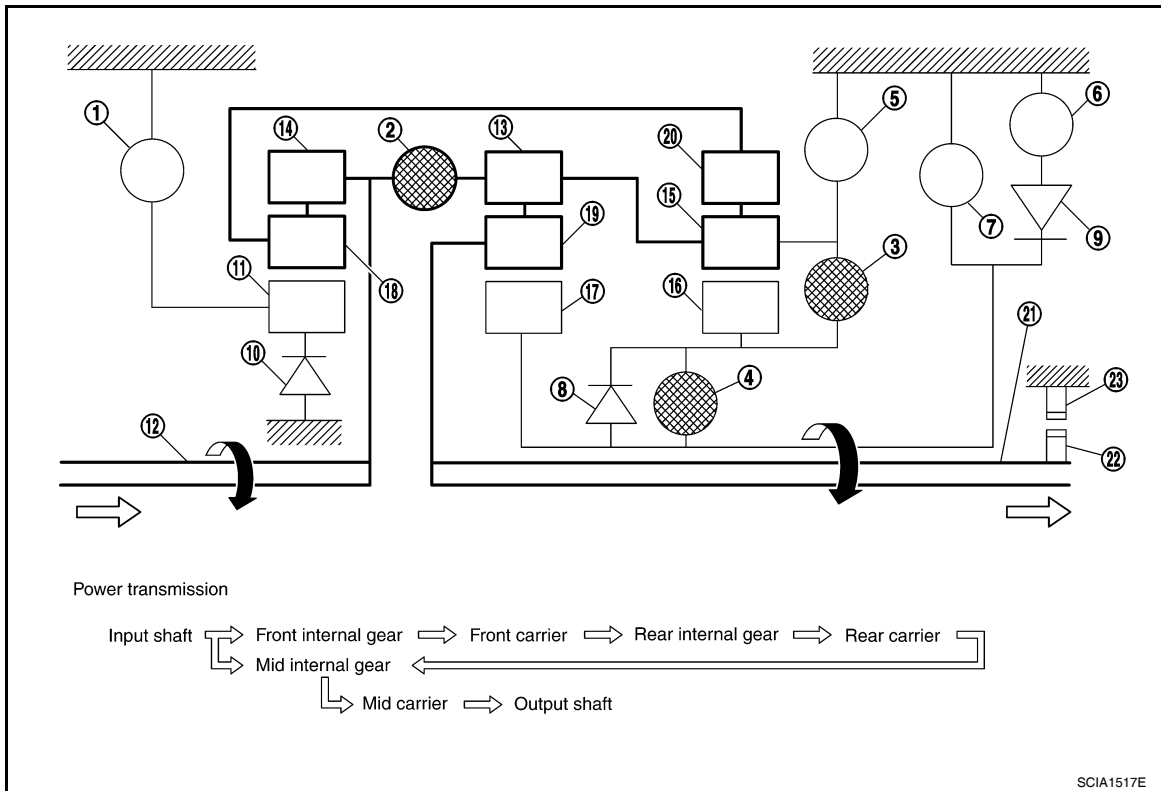
- |                                |                         |                           |
|--------------------------------|-------------------------|---------------------------|
| 1. Front brake                 | 2. Input clutch         | 3. Direct clutch          |
| 4. High and low reverse clutch | 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        |                           |

## "D", "4" 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.

# A/T CONTROL SYSTEM

< SERVICE INFORMATION >



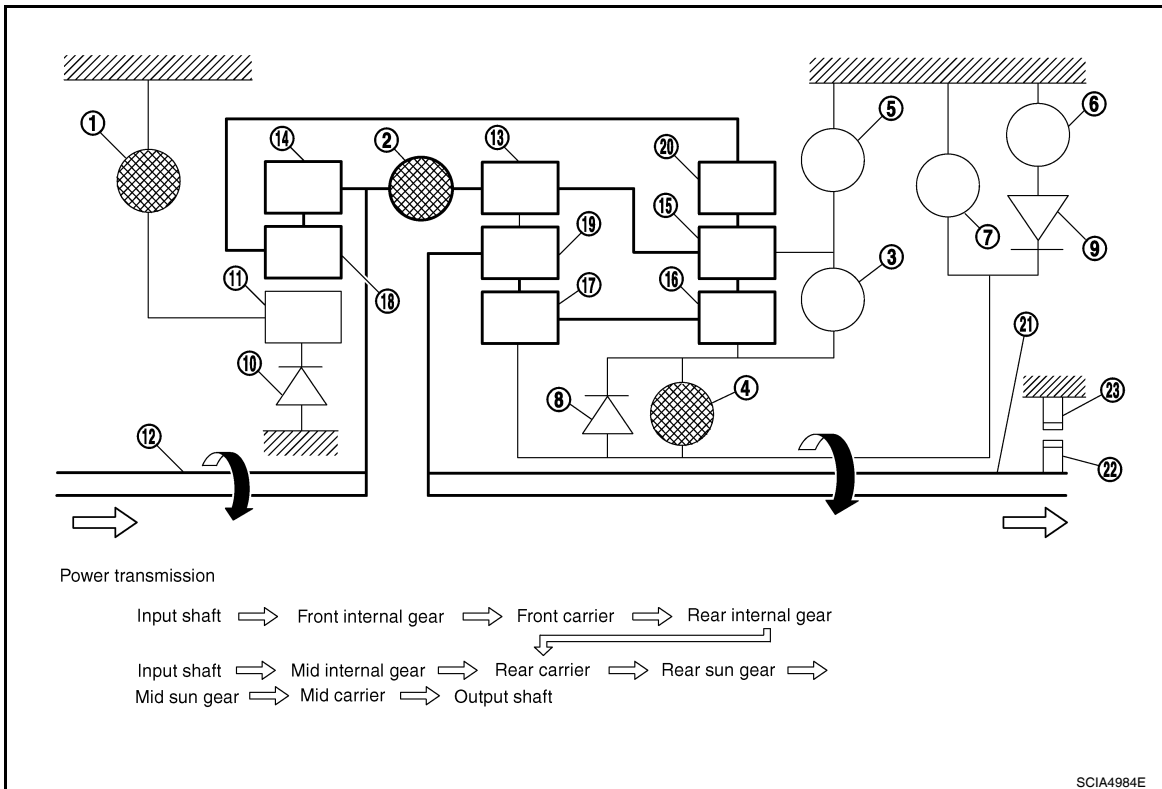
- |                                |                         |                           |
|--------------------------------|-------------------------|---------------------------|
| 1. Front brake                 | 2. Input clutch         | 3. Direct clutch          |
| 4. High and low reverse clutch | 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        |                           |

## "D" Position 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.

# A/T CONTROL SYSTEM

< SERVICE INFORMATION >



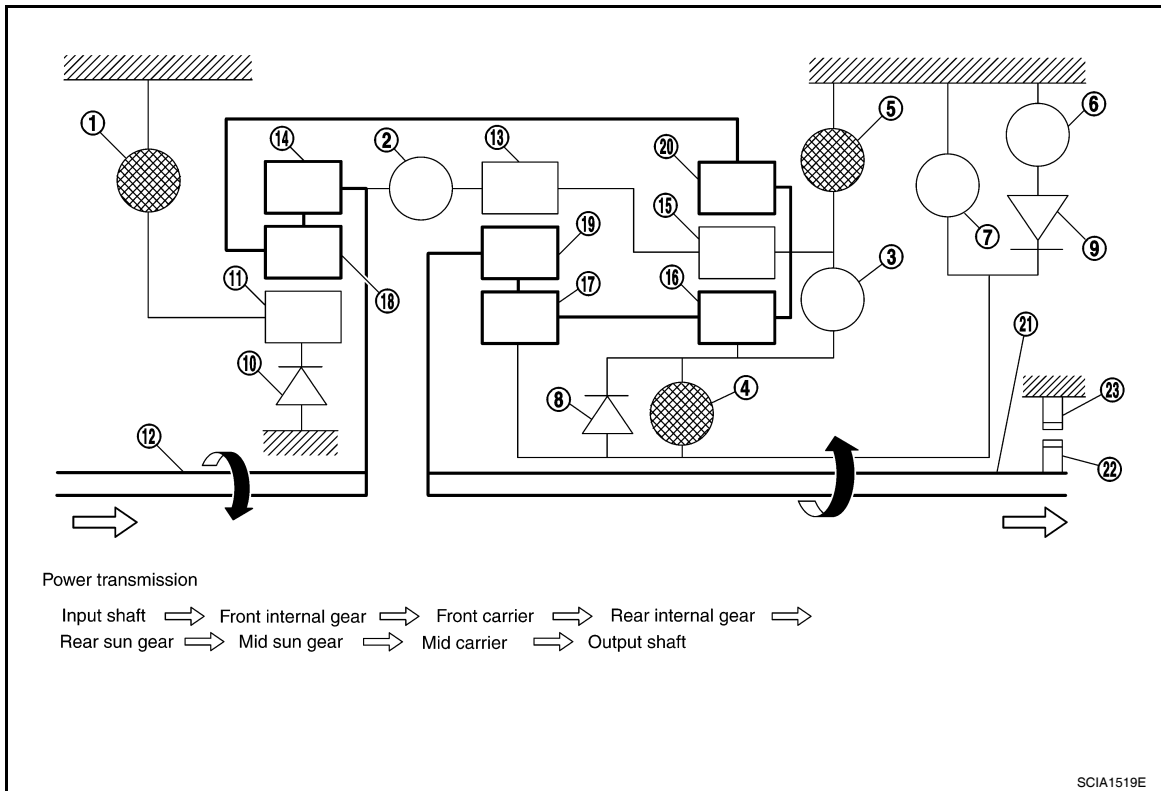
- |                                |                         |                           |
|--------------------------------|-------------------------|---------------------------|
| 1. Front brake                 | 2. Input clutch         | 3. Direct clutch          |
| 4. High and low reverse clutch | 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        |                           |

## "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.

# A/T CONTROL SYSTEM

< SERVICE INFORMATION >



- |                                |                         |                           |
|--------------------------------|-------------------------|---------------------------|
| 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        |                           |

## TCM Function

INFOID:000000003532230

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

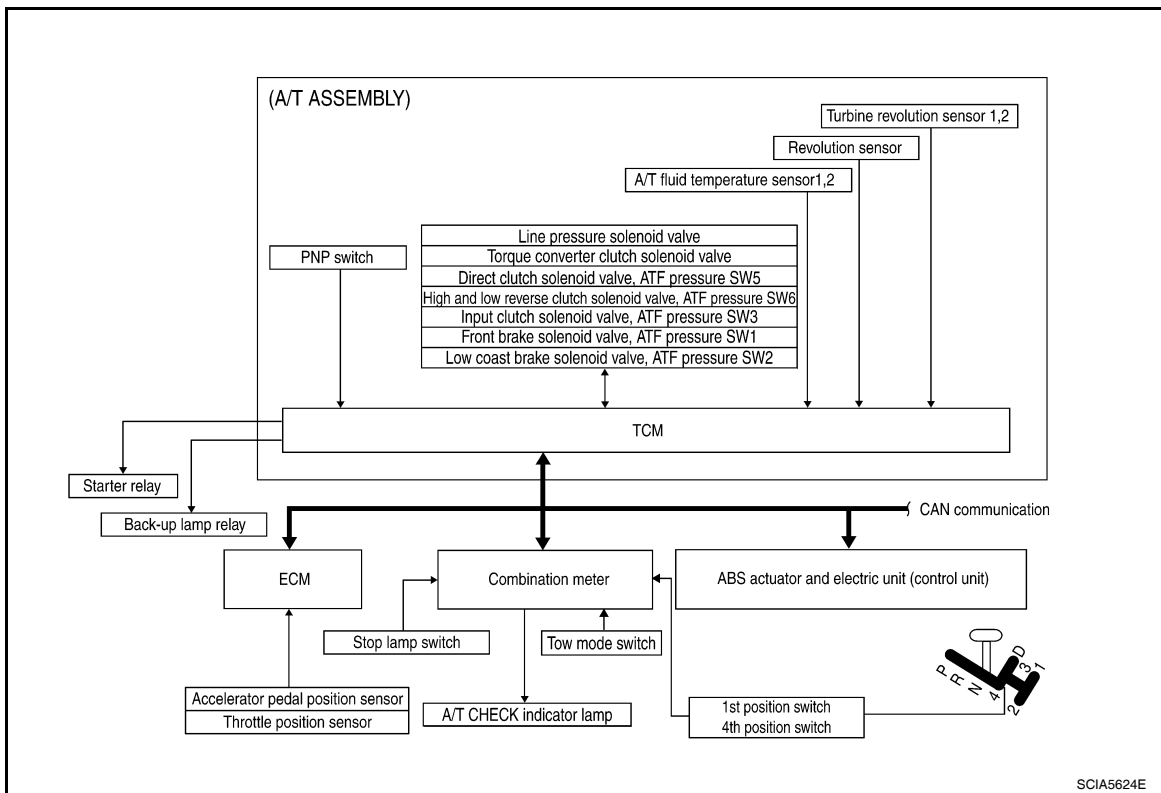
The automatic transmission senses vehicle operating conditions through various sensors or signals. It always controls the optimum shift position and reduces shifting and lock-up shocks.

# A/T CONTROL SYSTEM

## < SERVICE INFORMATION >

SENSORS (or SIGNALS)		TCM		ACTUATORS
PNP switch 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 signal Stop lamp switch signal Turbine revolution sensor 1st position switch signal 4th position switch signal ATF pressure switch signal Tow mode switch signal	⇒	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 and low reverse clutch solenoid valve Low coast brake solenoid valve Torque converter clutch solenoid valve Line pressure solenoid valve A/T CHECK indicator lamp Starter relay Back-up lamp relay

## CONTROL SYSTEM DIAGRAM



## CAN Communication

INFOID:000000003532231

## 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 details, refer to [LAN-4, "CAN Communication System"](#).



# A/T CONTROL SYSTEM

< SERVICE INFORMATION >

## Input/Output Signal of TCM

INFOID:000000003532232

Control item		Line pressure control	Vehicle speed control	Shift control	Lock-up control	Engine brake control	Fail-safe function (*3)	Self-diagnostics function	
Input	Accelerator pedal position signal (*4)	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) (*4)	X	X	X	X			X	
	Closed throttle position signal(*4)	(*2) X	(*2) X		X	(*2) X		X	
	Wide open throttle position signal(*4)	(*2) X	(*2) X			(*2) X		X	
	Turbine revolution sensor 1	X	X		X		X	X	
	Turbine revolution sensor 2 (for 4th speed only)	X	X		X		X	X	
	Engine speed signals(*4)				X			X	
	PNP switch	X	X	X	X	X	X	X	
	A/T fluid temperature sensors 1, 2	X	X	X	X	X	X	X	
	ASCD	Operation signal(*4)		X	X	X	X		
		Overdrive cancel signal(*4)		X		X	X		
		TCM power supply voltage signal	X	X	X	X	X		X
Output	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	
	Starter relay						X	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: CAN communications

## Line Pressure Control

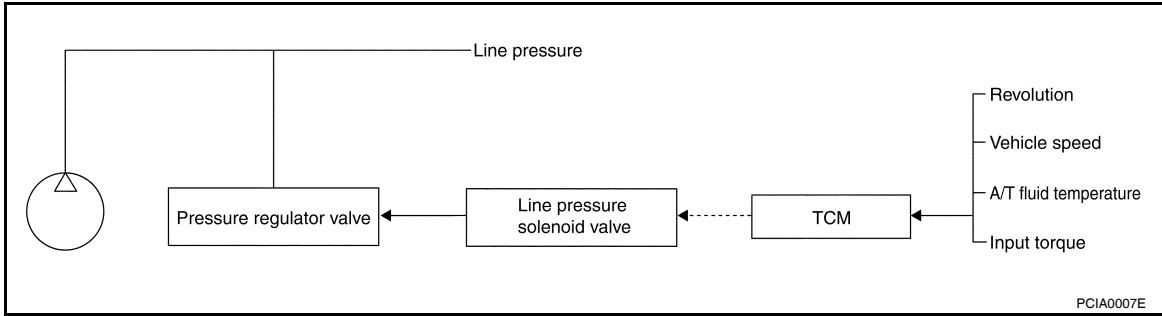
INFOID:000000003532233

- 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.

# A/T CONTROL SYSTEM

## < SERVICE INFORMATION >

- 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.

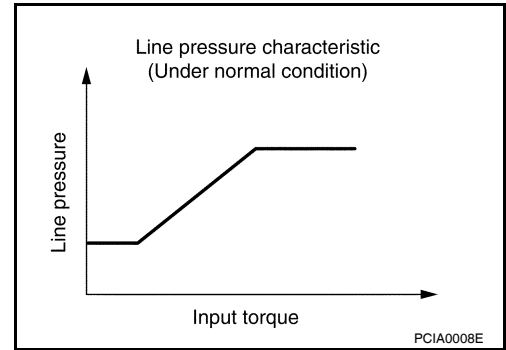


### LINE PRESSURE CONTROL IS BASED ON THE TCM LINE PRESSURE CHARACTERISTIC PATTERN

- 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 value and thus controls the line pressure.

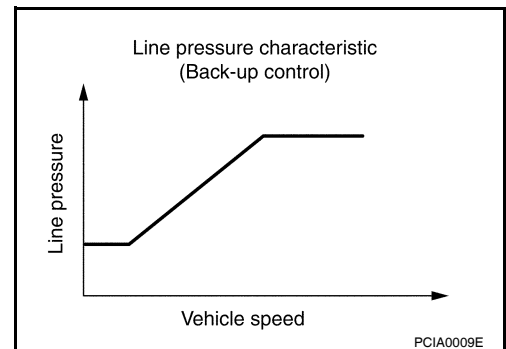
#### Normal Control

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



#### Back-up Control (Engine Brake)

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

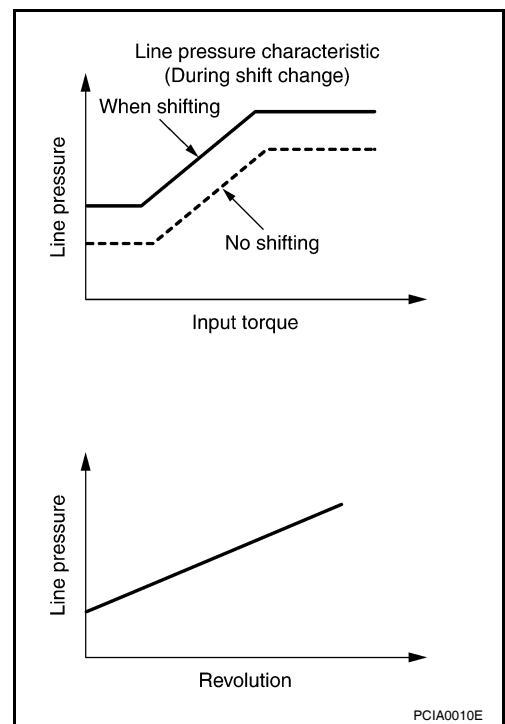


#### During Shift Change

# A/T CONTROL SYSTEM

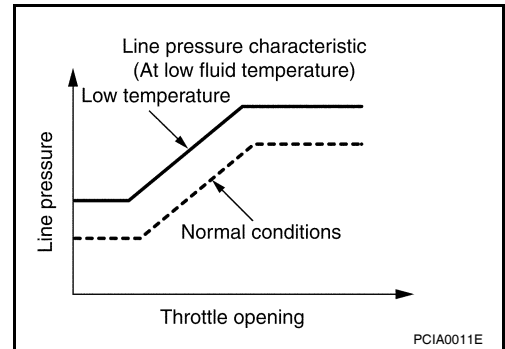
## < SERVICE INFORMATION >

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 set according to engine speed, during engine brake operation.



### At Low Fluid Temperature

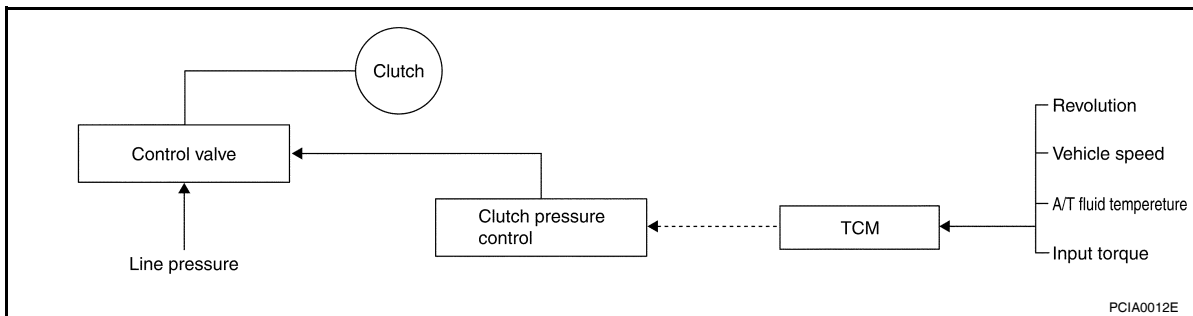
When the A/T fluid temperature drops below the prescribed temperature, in order to speed up the action of each friction element, the line pressure is set higher than the normal line pressure characteristic.



## Shift Control

INFOID:000000003532234

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.



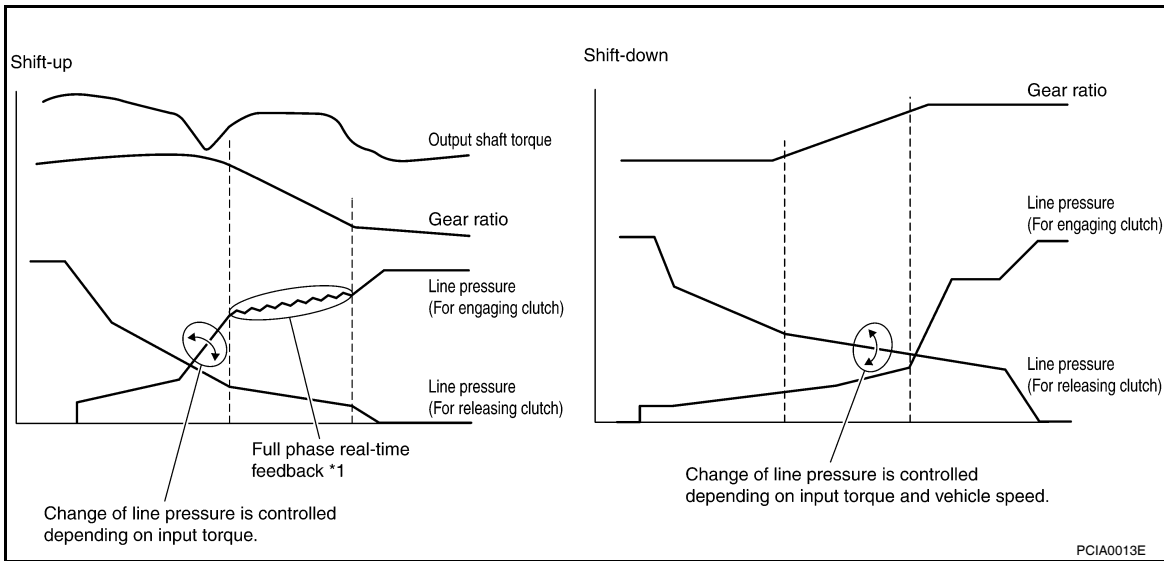
## SHIFT CHANGE

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

Shift Change System Diagram

# A/T CONTROL SYSTEM

## < SERVICE INFORMATION >



\*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.

### Lock-up Control

INFOID:000000003532235

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

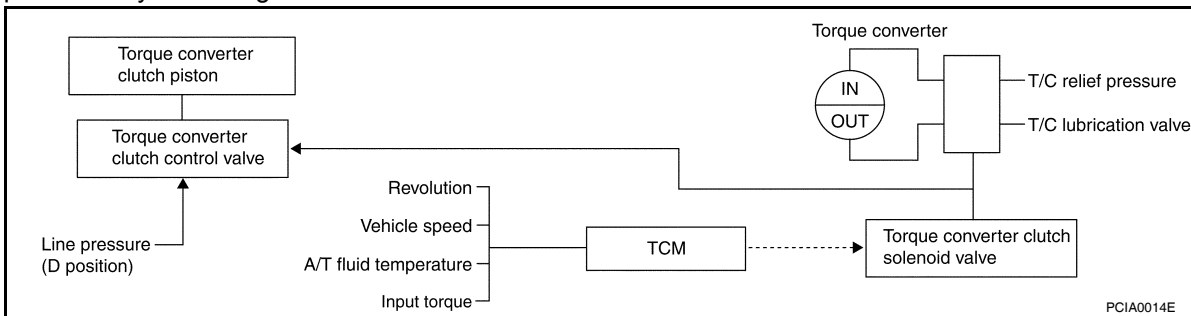
The torque converter clutch control valve operation is controlled by the torque converter clutch solenoid valve, which is controlled by a signal from TCM, and the torque converter clutch control valve engages or releases the torque converter clutch piston.

Lock-up Operation Condition Table

Select lever	D position		4 position	3 position	2 position
Gear position	5	4	4	3	2
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

# A/T CONTROL SYSTEM

## < SERVICE INFORMATION >

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 gradually 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.

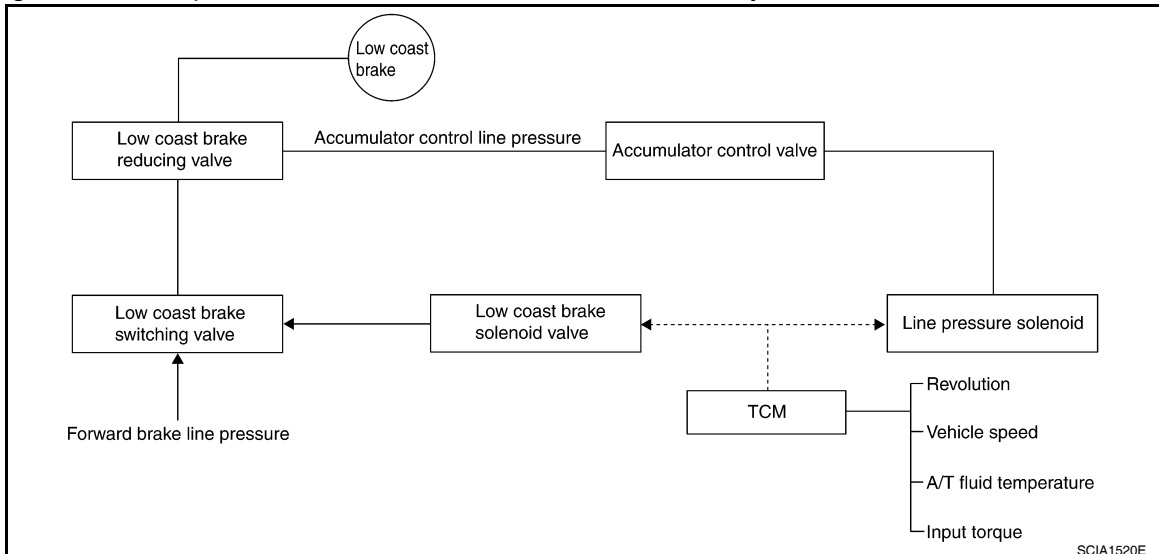
### Slip Lock-up Control

- 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 4th and 5th gears at both low speed and when the accelerator has a low degree of opening.

## Engine Brake Control

INFOID:000000003532236

- 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

INFOID:000000003532237

### FUNCTION OF CONTROL VALVE

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.

## A/T CONTROL SYSTEM

### < SERVICE INFORMATION >

Name	Function
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.)
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 performing 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 (HLR/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.

# ON BOARD DIAGNOSTIC (OBD) SYSTEM

< SERVICE INFORMATION >

## ON BOARD DIAGNOSTIC (OBD) SYSTEM

### Introduction

INFOID:000000003532238

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-83. "CONSULT-II Function \(A/T\)".](#)

### OBD-II Function for A/T System

INFOID:000000003532239

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

INFOID:000000003532240

#### ONE TRIP DETECTION LOGIC

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. — 1st Trip

If the same malfunction as that experienced during the first test drive is sensed during the second test drive, the MIL will illuminate. — 2nd 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)

INFOID:000000003532241

#### HOW TO READ DTC AND 1ST TRIP DTC

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.

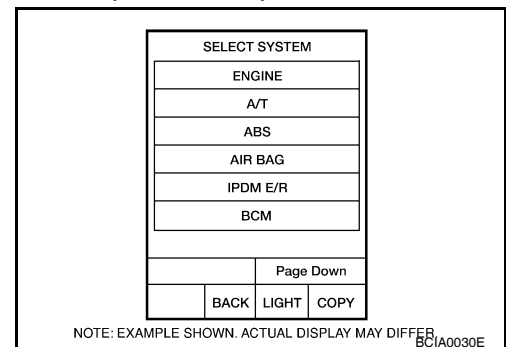
These DTC are prescribed by SAE J2012.

(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

## < SERVICE INFORMATION >

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 [AT-39](#).

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-49. "Emission-related Diagnostic Information"](#).

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



# ON BOARD DIAGNOSTIC (OBD) SYSTEM

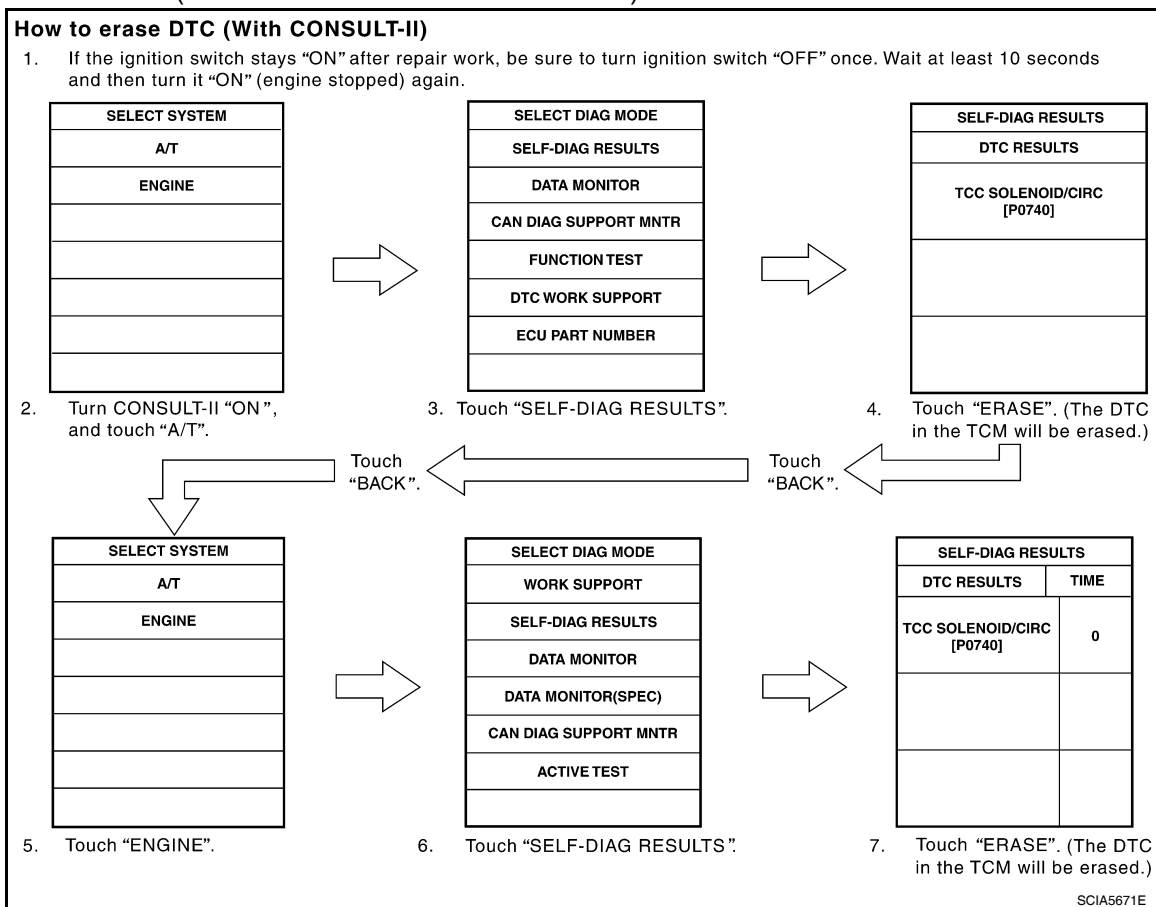
## < SERVICE INFORMATION >

- 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 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. Select Mode 4 with the Generic Scan Tool (GST). For details refer to [EC-122. "Generic Scan Tool \(GST\) Function"](#).

### HOW TO ERASE DTC (NO TOOLS)

1. Disconnect battery for 24 hours.
2. Reconnect battery.

## Malfunction Indicator Lamp (MIL)

INFOID:000000003532242

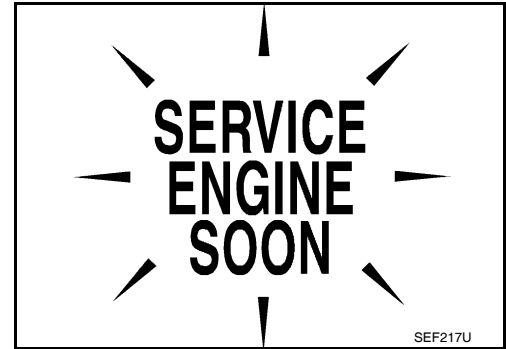
## DESCRIPTION

## ON BOARD DIAGNOSTIC (OBD) SYSTEM

### < SERVICE INFORMATION >

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-26](#).
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.



# TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

## TROUBLE DIAGNOSIS

### DTC Inspection Priority Chart

INFOID:000000003532243

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-91](#).**

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

### Fail-Safe

INFOID:000000003532244

The TCM has an electrical fail-safe mode. This mode makes it possible to operate even if there is an error in a main electronic control input/output signal circuit. In fail-safe mode the transmission is fixed in 2nd, 4th or 5th (depending on the breakdown position), so the customer should feel “slipping” or “poor acceleration”.

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. Therefore, the customer's vehicle has returned to normal, so handle according to the “diagnostics flow” (Refer to [AT-44, "How To Perform Trouble Diagnosis for Quick and Accurate Repair"](#)).

### FAIL-SAFE FUNCTION

If any malfunction occurs in a sensor or solenoid, this function controls the A/T to mark 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 is 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), the back-up lamp relay switched “OFF” (back-up lamp is OFF) and the position is fixed to the “D” range to make driving possible.

#### Starter Relay

- The starter relay is switched “OFF”. (Starter starting is disabled.)

#### 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 performed.

A/T INTERLOCK COUPLING PATTERN TABLE

# TROUBLE DIAGNOSIS

## < SERVICE INFORMATION >

I: NG X: OK

Gear position		ATF pressure switch output					Fail-safe function	Clutch pressure output pattern after fail-safe function					
		SW3 (I/C)	SW6 (HLR/C)	SW5 (D/C)	SW1 (FR/B)	SW2 (LC/B)		I/C	HLR/C	D/C	FR/B	LC/B	L/U
A/T interlock coupling pattern	3rd	–	X	X	–	1	Held in 2nd gear	OFF	OFF	ON	OFF	OFF	OFF
	4th	–	X	X	–	1	Held in 2nd gear	OFF	OFF	ON	OFF	OFF	OFF
	5th	X	X	–	X	1	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, the 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 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 is prohibited.

## How To Perform Trouble Diagnosis for Quick and Accurate Repair

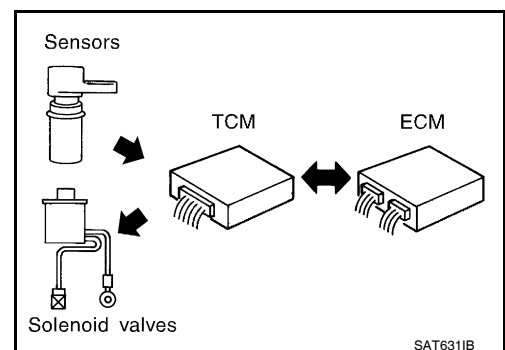
INFOID:000000003532245

### INTRODUCTION

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.

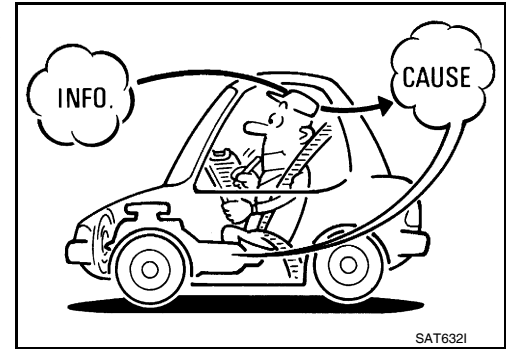


# TROUBLE DIAGNOSIS

## < SERVICE INFORMATION >

It is much more difficult to diagnose a 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.

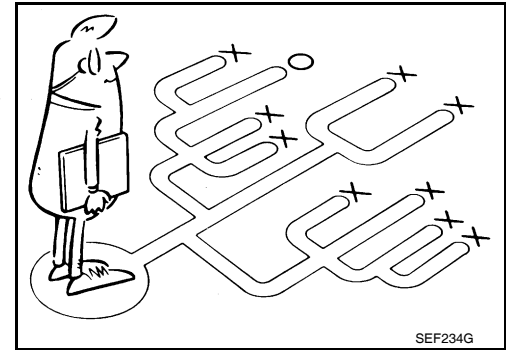
A visual check only may not find the cause of the errors. A road test with CONSULT-II (or GST) or a circuit tester connected should be performed. Follow the "WORK FLOW".



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 "Diagnostic Worksheet Chart") 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.



### 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.

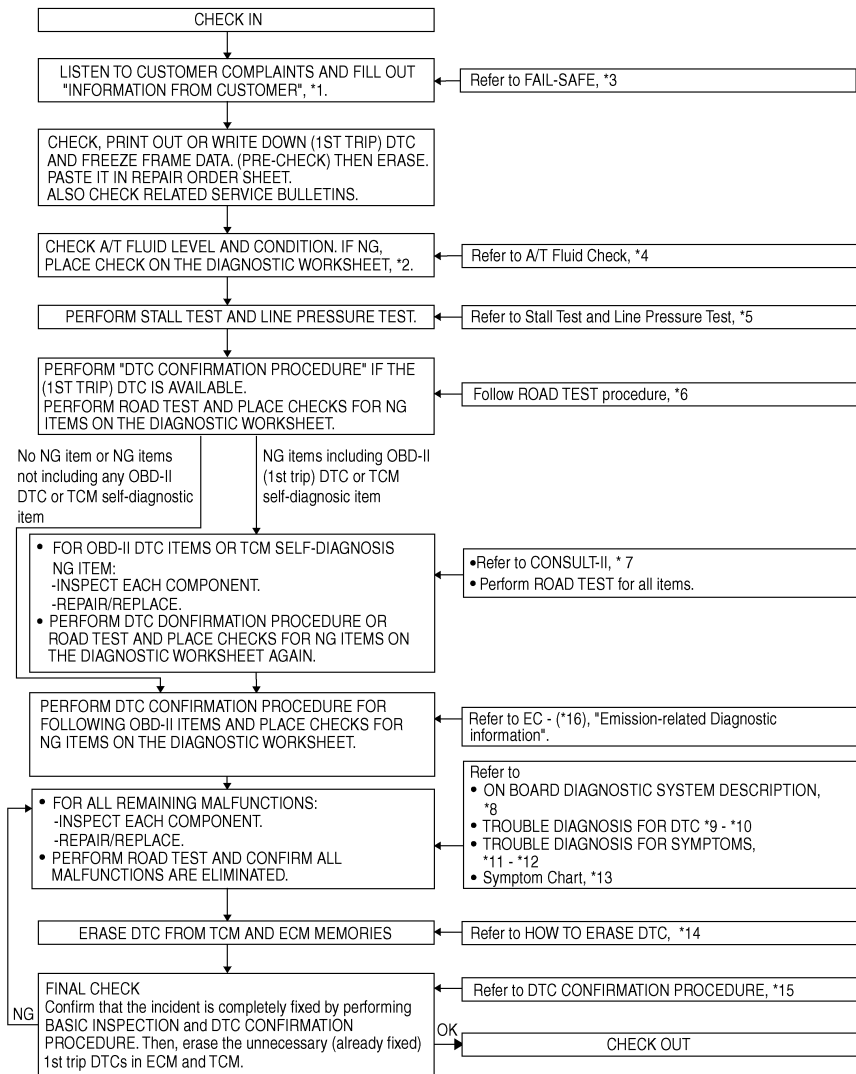
Make good use of the two sheets provided, "Information From Customer" (Refer to "Information From Customer") and "Diagnostic Worksheet" (Refer to "Diagnostic Worksheet Chart"), to perform the best troubleshooting possible.

Work Flow Chart

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

# TROUBLE DIAGNOSIS

## < SERVICE INFORMATION >



WCIA0251E

- |                                 |   |                             |
|---------------------------------|---|-----------------------------|
| *1. "Information From Customer" | *2. "Diagnostic Worksheet Chart"                  | *3. <a href="#">AT-43</a>   |
| *4. <a href="#">AT-51</a>       | *5. <a href="#">AT-51</a> , <a href="#">AT-51</a> | *6. <a href="#">AT-51</a>   |
| *7. <a href="#">AT-83</a>       | *8. <a href="#">AT-39</a>                         | *9. <a href="#">AT-91</a>   |
| *10. <a href="#">AT-163</a>     | *11. <a href="#">AT-165</a>                       | *12. <a href="#">AT-199</a> |
| *13. <a href="#">AT-60</a>      | *14. <a href="#">AT-39</a>                        | *15. <a href="#">AT-156</a> |
| *16. <a href="#">EC-49</a>      |   |                             |

## DIAGNOSTIC WORKSHEET

### Information From Customer

#### KEY POINTS

- **WHAT**..... Vehicle & A/T model
- **WHEN**..... Date, Frequencies
- **WHERE**..... Road conditions
- **HOW**..... Operating conditions, Symptoms



# TROUBLE DIAGNOSIS

## < SERVICE INFORMATION >

	o Perform all road tests and enter checks in required inspection items.	<a href="#">AT-51</a>
4	4-1. Check before engine is started	<a href="#">AT-55</a>
	o <a href="#">AT-167</a> , "A/T Check Indicator Lamp Does Not Come On". o Perform self-diagnostics Enter checks for detected items. <a href="#">AT-83</a>	
	o <a href="#">AT-91</a> o <a href="#">AT-94</a> o <a href="#">AT-98</a> o <a href="#">AT-99</a> o <a href="#">AT-103</a> o <a href="#">AT-105</a> o <a href="#">AT-109</a> o <a href="#">AT-111</a> o <a href="#">AT-113</a> o <a href="#">AT-115</a> o <a href="#">AT-117</a> o <a href="#">AT-119</a> o <a href="#">AT-124</a> o <a href="#">AT-126</a> o <a href="#">AT-128</a> o <a href="#">AT-130</a> o <a href="#">AT-132</a> o <a href="#">AT-134</a> o <a href="#">AT-136</a> o <a href="#">AT-138</a> o <a href="#">AT-140</a> o <a href="#">AT-142</a> o <a href="#">AT-144</a> o <a href="#">AT-146</a> o <a href="#">AT-148</a> o <a href="#">AT-150</a> o <a href="#">AT-152</a> o <a href="#">AT-154</a> o <a href="#">AT-156</a>	
4-2.	Idle inspection o <a href="#">AT-168</a> , "Engine Cannot Be Started in "P" or "N" Position" o <a href="#">AT-168</a> , "In "P" Position, Vehicle Moves When Pushed" o <a href="#">AT-169</a> , "In "N" Position, Vehicle Moves" o <a href="#">AT-170</a> , "Large Shock ("N" to "D" Position)" o <a href="#">AT-172</a> , "Vehicle Does Not Creep Backward in "R" Position" o <a href="#">AT-175</a> , "Vehicle Does Not Creep Forward in "D" Position"	<a href="#">AT-55</a>
4-3.	Driving tests Part 1 o <a href="#">AT-177</a> , "Vehicle Cannot Be Started from D1" o <a href="#">AT-179</a> , "A/T Does Not Shift: D1→ D2" o <a href="#">AT-181</a> , "A/T Does Not Shift: D2→ D3" o <a href="#">AT-183</a> , "A/T Does Not Shift: D3→ D4" o <a href="#">AT-185</a> , "A/T Does Not Shift: D4→ D5" o <a href="#">AT-187</a> , "A/T Does Not Perform Lock-up" o <a href="#">AT-189</a> , "A/T Does Not Hold Lock-up Condition" o <a href="#">AT-190</a> , "Lock-up Is Not Released" o <a href="#">AT-191</a> , "Engine Speed Does Not Return to Idle"	<a href="#">AT-56</a>



# TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

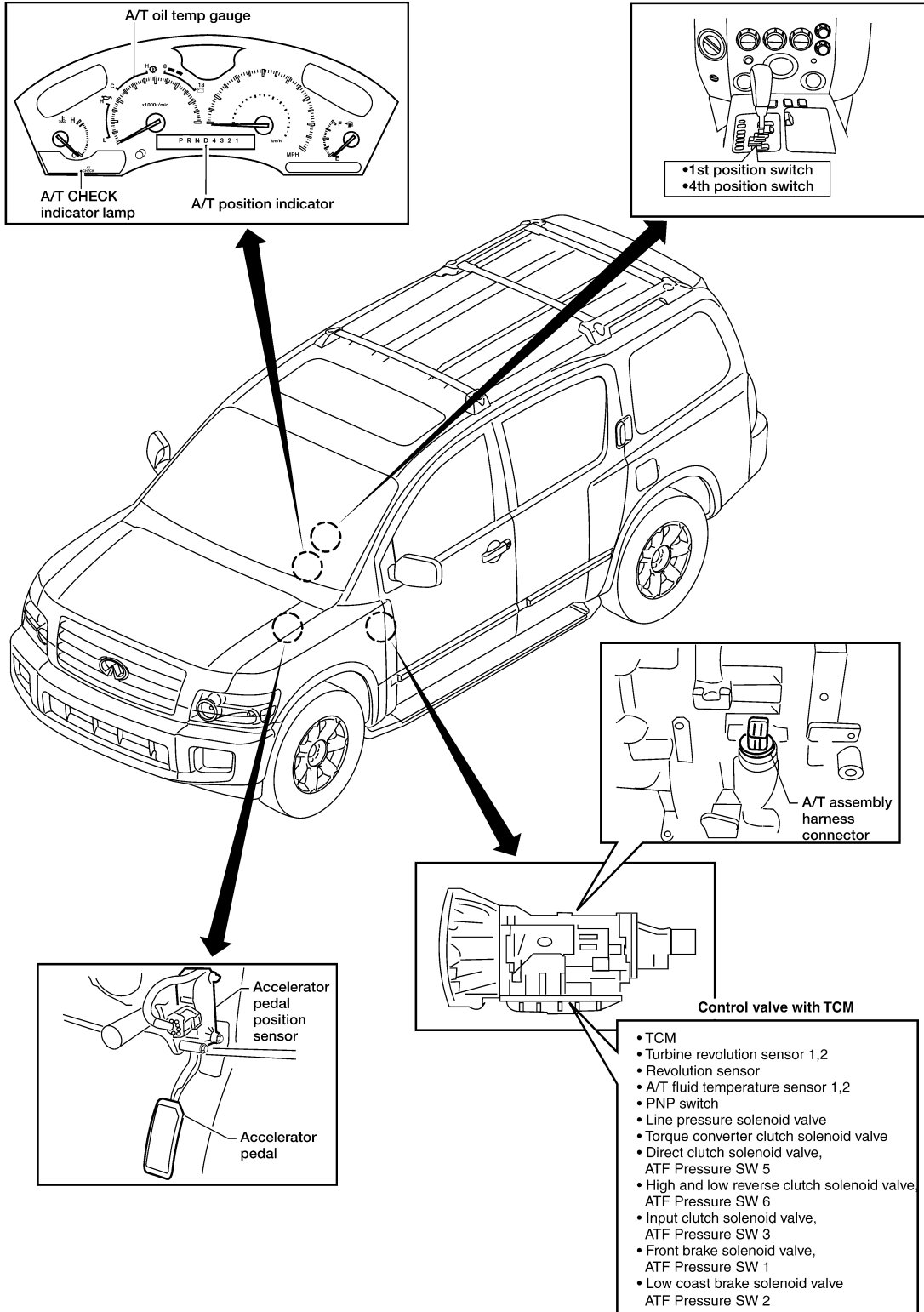
4	4-3	Part 2	<a href="#">AT-58</a>	A				
		<ul style="list-style-type: none"> <li>o <a href="#">AT-177, "Vehicle Cannot Be Started from D1"</a></li> <li>o <a href="#">AT-179, "A/T Does Not Shift: D1→ D2"</a></li> <li>o <a href="#">AT-181, "A/T Does Not Shift: D2→ D3"</a></li> <li>o <a href="#">AT-183, "A/T Does Not Shift: D3→ D4"</a></li> </ul>			B			
		Part 3	<a href="#">AT-59</a>			AT		
		<ul style="list-style-type: none"> <li>o <a href="#">AT-192, "A/T Does Not Shift: 5th gear → 4th gear"</a></li> <li>o <a href="#">AT-194, "A/T Does Not Shift: 4th gear → 3rd gear"</a></li> <li>o <a href="#">AT-196, "A/T Does Not Shift: 3rd gear → 2nd gear"</a></li> <li>o <a href="#">AT-197, "A/T Does Not Shift: 2nd gear → 1st gear"</a></li> <li>o <a href="#">AT-199, "Vehicle Does Not Decelerate By Engine Brake"</a></li> <li>o Perform self-diagnostics Enter checks for detected items. <a href="#">AT-83</a></li> </ul>			D			
<ul style="list-style-type: none"> <li>o <a href="#">AT-91</a></li> <li>o <a href="#">AT-94</a></li> <li>o <a href="#">AT-98</a></li> <li>o <a href="#">AT-99</a></li> <li>o <a href="#">AT-103</a></li> <li>o <a href="#">AT-105</a></li> <li>o <a href="#">AT-109</a></li> <li>o <a href="#">AT-111</a></li> <li>o <a href="#">AT-113</a></li> <li>o <a href="#">AT-115</a></li> <li>o <a href="#">AT-117</a></li> <li>o <a href="#">AT-119</a></li> <li>o <a href="#">AT-124</a></li> <li>o <a href="#">AT-126</a></li> <li>o <a href="#">AT-128</a></li> <li>o <a href="#">AT-130</a></li> <li>o <a href="#">AT-132</a></li> <li>o <a href="#">AT-134</a></li> <li>o <a href="#">AT-136</a></li> <li>o <a href="#">AT-138</a></li> <li>o <a href="#">AT-140</a></li> <li>o <a href="#">AT-142</a></li> <li>o <a href="#">AT-144</a></li> <li>o <a href="#">AT-146</a></li> <li>o <a href="#">AT-148</a></li> <li>o <a href="#">AT-150</a></li> <li>o <a href="#">AT-152</a></li> <li>o <a href="#">AT-154</a></li> <li>o <a href="#">AT-156</a></li> </ul>	E	F	G	H		I	J	K
5	o Inspect each system for items found to be NG in the self-diagnostics and repair or replace the malfunction parts.							
6	o Perform all road tests and enter the checks again for the required items.		<a href="#">AT-51</a>	M				
7	o For any remaining NG items, perform 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.)		<a href="#">AT-60</a>	N				
8	o Erase the results of the self-diagnostics from the TCM.		<a href="#">AT-39</a>	O				

# TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

## A/T Electrical Parts Location

INFOID:000000003532246



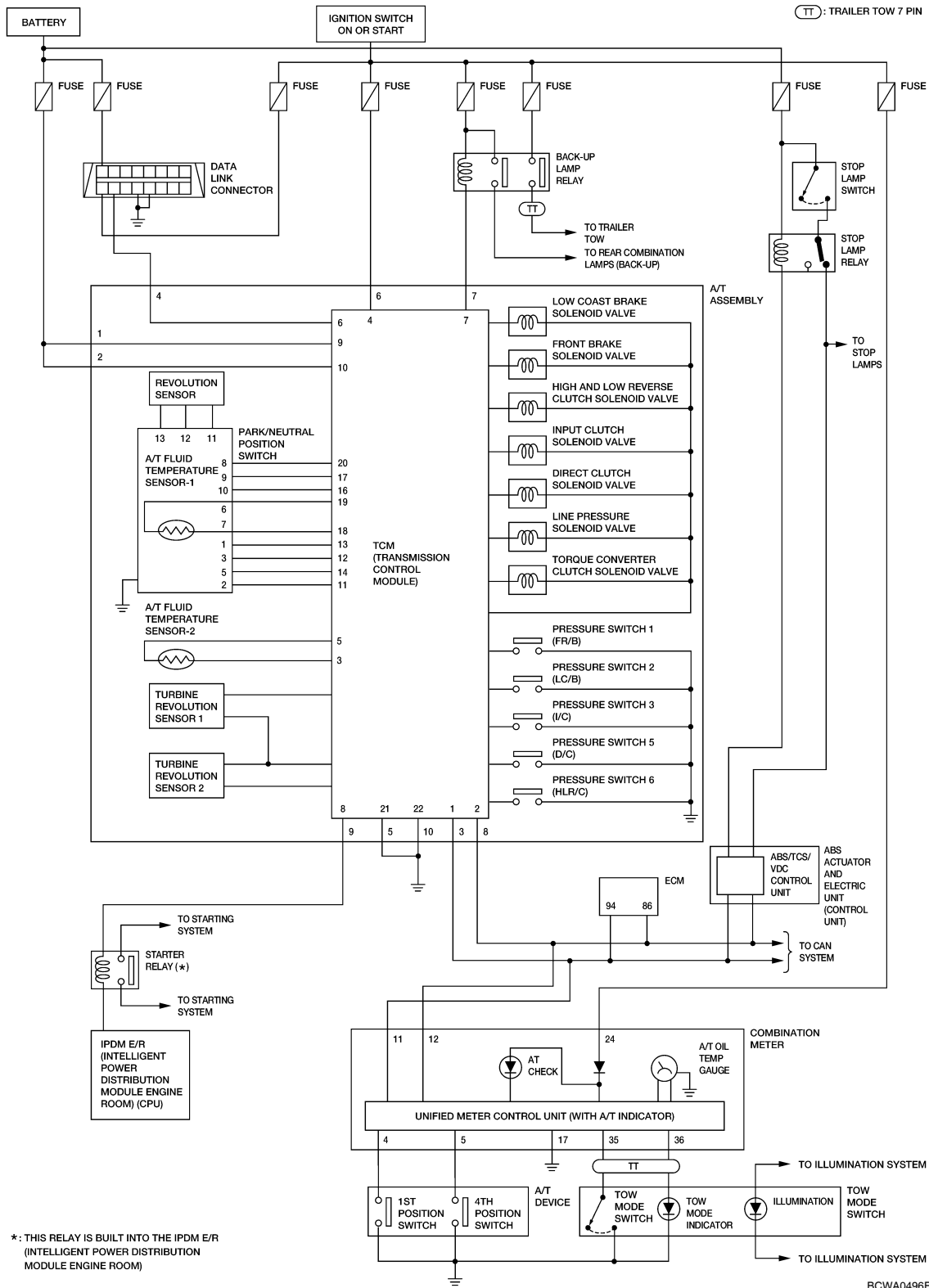
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# TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

## Circuit Diagram

INFOID:000000003532247



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

## Inspections Before Trouble Diagnosis

INFOID:000000003532248

### A/T FLUID CHECK

Fluid Leakage and Fluid Level Check

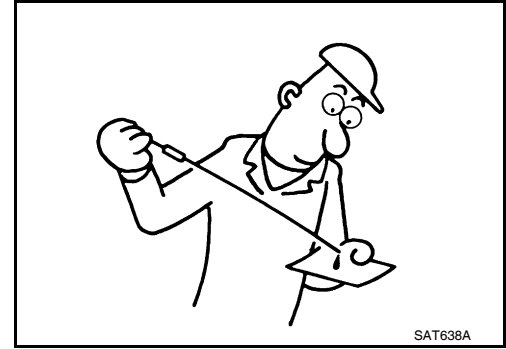
- Inspect for fluid leakage and check the fluid level. Refer to [AT-13. "Changing Automatic Transmission Fluid \(ATF\)".](#)

# TROUBLE DIAGNOSIS

## < SERVICE INFORMATION >

Fluid Condition Check  
Inspect the fluid condition.

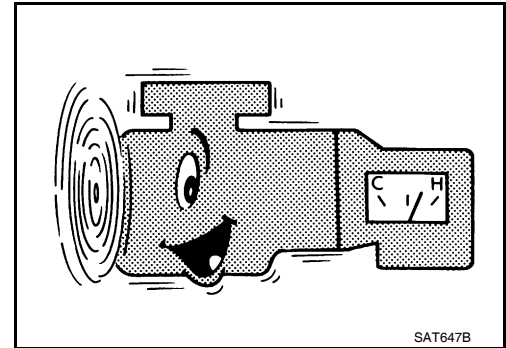
Fluid condition	Conceivable Cause	Required Operation
Varnished (viscous varnish state)	Clutch, brake scorched	Replace the ATF and check the A/T main unit and the vehicle for malfunctions (wire harnesses, cooler pipes, etc.)
Milky white or cloudy	Water in the fluid	Replace the ATF and check for places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



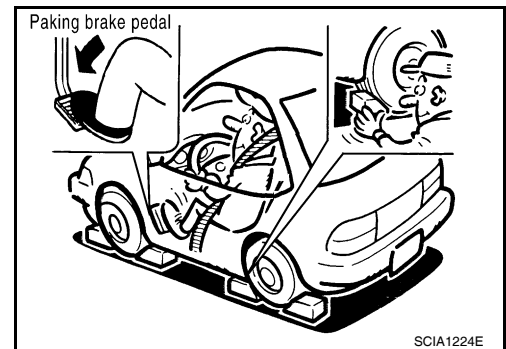
## STALL TEST

### Stall Test Procedure

1. Inspect the amount of engine oil. Replenish the engine oil if necessary.
2. 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 ATF. Replenish if necessary.



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



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

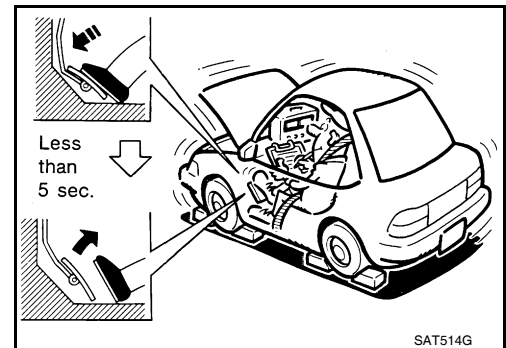
**CAUTION:**

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

7. Move the selector lever to the "N" position.
8. Cool down the ATF.

**CAUTION:**

**Run the engine at idle for at least one minute.**



**Stall speed: 2,500 - 2,800 rpm**

# TROUBLE DIAGNOSIS

## < SERVICE INFORMATION >

### Judgement of Stall Test

	Selector lever position		Expected problem location
	D	R	
Stall rotation	H	O	<ul style="list-style-type: none"> <li>• Forward brake</li> <li>• Forward one-way clutch</li> <li>• 1st one-way clutch</li> <li>• 3rd one-way clutch</li> </ul>
	O	H	<ul style="list-style-type: none"> <li>• Reverse brake</li> </ul>
	L	L	<ul style="list-style-type: none"> <li>• Engine and torque converter one-way clutch</li> </ul>
	H	H	<ul style="list-style-type: none"> <li>• Line pressure low</li> </ul>

O: Stall speed within standard value position

H: Stall speed higher than standard value

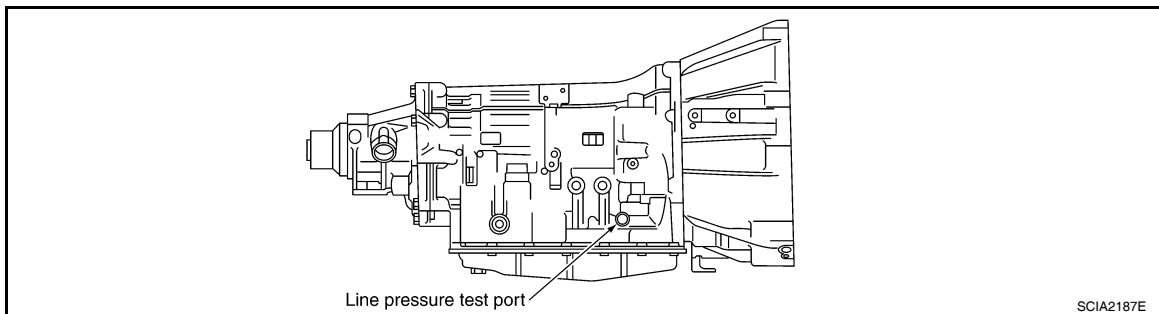
L: Stall speed lower than standard value

### Stall test standard value position

Does not shift-up D position 1 → 2	Slipping in 2nd, 3rd, 4th gears	Direct clutch slippage
Does not shift-up D position 2 → 3	Slipping in 3rd, 4th, 5th gears	High and low reverse clutch slippage
Does not shift-up D position 3 → 4	Slipping in 4th, 5th gears	Input clutch slippage
Does not shift-up D 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 ATF reaches in range of 50 to 80°C (122 to 176°F), then inspect the amount of ATF and replenish if necessary.

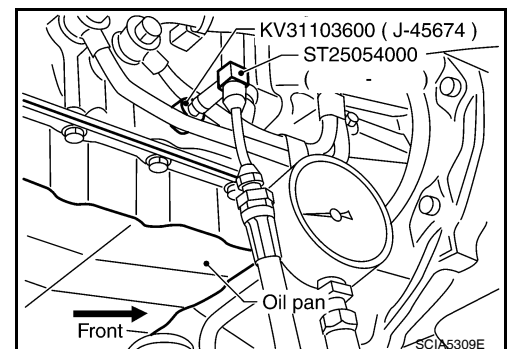
#### NOTE:

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

3. After warming up remove the oil pressure detection plug and install the oil pressure gauge [ST2505S001(J-34301-C)].

#### CAUTION:

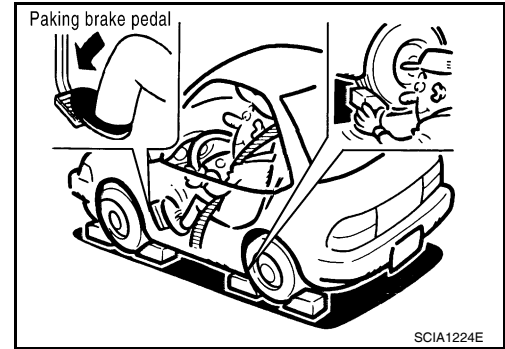
**When using the oil pressure gauge, be sure to use the O-ring attached to the oil pressure detection plug.**



# TROUBLE DIAGNOSIS

## < SERVICE INFORMATION >

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

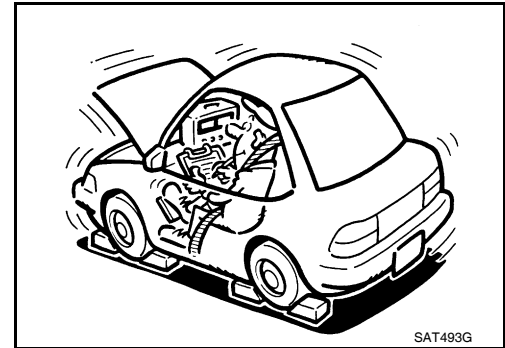


5. Start the engine, then measure the line pressure at both idle and the stall speed.

**CAUTION:**

- Keep the brake pedal pressed all the way down during measurement.
- When measuring the line pressure at the stall speed, refer to "STALL TEST".

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



 :7.3 N·m (0.74 kg-m, 65 in-lb)

**CAUTION:**

**Do not reuse the O-ring.**

Line Pressure

Engine speed	Line pressure [kPa (kg/cm <sup>2</sup> , psi)]	
	R position	D position
At idle speed	425 - 465 (4.3 - 4.7, 62 - 67)	379 - 428 (3.9 - 4.4, 55 - 62)
At stall speed	1,605 - 1,950 (16.4 - 19.9, 233 - 283)	1,310 - 1,500 (13.4 - 15.3, 190 - 218)

### Judgement of Line Pressure Test

Judgement		Possible cause
Idle speed	Low for all positions (P, R, N, D)	Possible causes include malfunctions in the pressure supply system and low oil pump output. For example <ul style="list-style-type: none"> <li>• Oil pump wear</li> <li>• Pressure regulator valve or plug sticking or spring fatigue</li> <li>• Oil strainer ⇒ oil pump ⇒ pressure regulator valve passage oil leak</li> <li>• Engine idle speed too low</li> </ul>
	Only low for a specific position	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.
	High	Possible causes include a sensor malfunction or malfunction in the line pressure adjustment function. For example <ul style="list-style-type: none"> <li>• Accelerator pedal position signal malfunction</li> <li>• ATF temperature sensor malfunction</li> <li>• Line pressure solenoid malfunction (sticking in "OFF" state, filter clog, cut line)</li> <li>• Pressure regulator valve or plug sticking</li> </ul>

# TROUBLE DIAGNOSIS

## < SERVICE INFORMATION >

Judgement		Possible cause
Stall speed	Oil pressure does not rise higher than the oil pressure for idle.	Possible causes include a sensor malfunction or malfunction in the pressure adjustment function. For example <ul style="list-style-type: none"><li>• Accelerator pedal position signal malfunction</li><li>• TCM breakdown</li><li>• Line pressure solenoid malfunction (shorting, sticking in "ON" state)</li><li>• Pressure regulator valve or plug sticking</li><li>• Pilot valve sticking or pilot filter clogged</li></ul>
	The pressure rises, but does not enter the standard position.	Possible causes include malfunctions in the pressure supply system and malfunction in the pressure adjustment function. For example <ul style="list-style-type: none"><li>• Accelerator pedal position signal malfunction</li><li>• Line pressure solenoid malfunction (sticking, filter clog)</li><li>• Pressure regulator valve or plug sticking</li><li>• Pilot valve sticking or pilot filter clogged</li></ul>
	Only low for a specific position	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.

## 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.

## Check Before Engine Is Started

INFOID:000000003532249

### 1. CHECK AT 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 AT CHECK indicator lamp light up for about 2 seconds?

- YES >> 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-83, "CONSULT-II Function \(A/T\)"](#).  
3. Go to [AT-55, "Check at Idle"](#).
- NO >> Stop the road test and go to [AT-167, "A/T Check Indicator Lamp Does Not Come On"](#).

## Check at Idle

INFOID:000000003532250

### 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-168, "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", "4", "3", "2", "1" or "R" position.

# TROUBLE DIAGNOSIS

## < SERVICE INFORMATION >

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3. Turn ignition switch to "START" position.

Does the engine start in either position?

- YES >> Stop the road test and go to [AT-168. "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. Release 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 "In "P" Position Vehicle Moves When Pushed" on the diagnostics worksheet, then continue the road test.  
NO >> GO TO 4.

### 4.CHECK "N" POSITION FUNCTIONS

---

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

Does vehicle move forward or backward?

- YES >> Enter a check mark at "In "N" Position Vehicle Moves" 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 ("N" to "D" Position) 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. Release 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 creeps forward when the transmission is put into the "D" position.

Does the vehicle creep 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 Creep Forward in "D" Position" on the diagnostics worksheet, then continue the road test.

## Cruise Test - Part 1

INFOID:000000003532251

### 1.CHECK STARTING OUT FROM D1

---

1. Drive the vehicle for about 10 minutes to warm up the engine oil and ATF.  
Appropriate temperature for the ATF: 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.



# TROUBLE DIAGNOSIS

## < SERVICE INFORMATION >

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.

### 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-59. "Vehicle Speed When Shifting Gears"](#).

**Ⓜ 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-59. "Vehicle Speed When Shifting Gears"](#).

**Ⓜ 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-59. "Vehicle Speed When Shifting Gears"](#).

**Ⓜ 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-59. "Vehicle Speed When Shifting Gears"](#).

**Ⓜ 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.

### 6.CHECK LOCK-UP

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

• Refer to [AT-59. "Vehicle Speed When Shifting Gears"](#).

**Ⓜ With CONSULT-II**

Select "TCC SOLENOID 0.00A" with the "MAIN SIGNAL" mode for A/T.

# TROUBLE DIAGNOSIS

## < SERVICE INFORMATION >

### 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 Does Not Hold 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.

### 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 "Engine Speed Does Not Return to Idle" on the diagnostics worksheet, then continue the road test. Go to Cruise test - Part 2 (Refer to [AT-58](#)).

## Cruise Test - Part 2

INFOID:000000003532252

## 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.

## 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-59, "Vehicle Speed When Shifting Gears"](#).

### **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.

# TROUBLE DIAGNOSIS

## < SERVICE INFORMATION >

- Refer to [AT-59, "Vehicle Speed When Shifting Gears"](#).

### 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. See [AT-59, "Cruise Test - Part 3"](#).

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

INFOID:000000003532253

### 1. CHECK SHIFT-DOWN

During D5 driving, move gear selector from D → 4 → 3 → 2 → 1.

#### With CONSULT-II

Read the gear position.

Is downshifting correctly performed?

YES >> GO TO 2.

NO >> Enter a check mark at "Vehicle does not shift" at the corresponding position (5th → 4th, 4th → 3rd, 3rd → 2nd, 2nd → 1st) on the diagnostics worksheet, then continue the road test.

### 2. CHECK ENGINE BRAKE

Does engine braking effectively reduce speed in 11 position?

YES >> 1. Stop the vehicle.

2. Carry out the self-diagnostics. Refer to [AT-83, "CONSULT-II Function \(A/T\)"](#).

NO >> Enter a check mark at "Vehicle Does Not Decelerate By Engine Brake" on the diagnostics worksheet, then continue trouble diagnosis.

## Vehicle Speed When Shifting Gears

INFOID:000000003532254

### NORMAL MODE

Final gear ratio	Throttle position	Vehicle speed km/h (MPH)							
		D1 → D2	D2 → D3	D3 → D4	D4 → D5	D5 → D4	D4 → D3	D3 → D2	D2 → D1
2.937	Full throttle	70 - 74 (44 - 46)	112 - 120 (70 - 75)	176 - 186 (110 - 116)	249 - 259 (155 - 161)	245 - 255 (152 - 159)	166 - 176 (103 - 110)	100 - 108 (62 - 67)	43 - 47 (27 - 30)
	Half throttle	46 - 50 (28 - 31)	74 - 82 (46 - 51)	103 - 113 (64 - 70)	135 - 145 (84 - 90)	109 - 119 (68 - 74)	69 - 79 (43 - 49)	44 - 52 (27 - 32)	11 - 15 (7 - 10)
3.357	Full throttle	61 - 65 (38 - 41)	97 - 105 (61 - 66)	153 - 163 (95 - 102)	236 - 246 (147 - 153)	232 - 242 (144 - 151)	143 - 153 (89 - 95)	87 - 95 (54 - 59)	43 - 47 (27 - 29)
	Half throttle	41 - 45 (26 - 28)	66 - 74 (41 - 46)	89 - 99 (56 - 62)	117 - 127 (73 - 79)	95 - 105 (59 - 65)	59 - 69 (37 - 43)	38 - 46 (24 - 29)	11 - 15 (7 - 10)

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

### TOW MODE

Final gear ratio	Throttle position	Vehicle speed km/h (MPH)							
		D1 → D2	D2 → D3	D3 → D4	D4 → D5	D5 → D4	D4 → D3	D3 → D2	D2 → D1

# TROUBLE DIAGNOSIS

## < SERVICE INFORMATION >

2.937	Full throttle	70 - 74 (44 - 46)	112 - 120 (70 - 75)	176 - 186 (110 - 116)	249 - 259 (155 - 161)	245 - 255 (152 - 159)	166 - 176 (103 - 110)	100 - 108 (62 - 67)	43 - 47 (27 - 30)
	Half throttle	50 - 54 (31 - 34)	81 - 89 (50 - 55)	113 - 123 (70 - 76)	135 - 145 (84 - 90)	109 - 119 (68 - 74)	68 - 78 (42 - 48)	44 - 52 (27 - 32)	11 - 15 (7 - 10)
3.357	Full throttle	61 - 65 (38 - 41)	97 - 105 (61 - 66)	153 - 163 (95 - 102)	236 - 246 (147 - 153)	232 - 242 (144 - 151)	143 - 153 (89 - 95)	87 - 95 (54 - 59)	43 - 47 (27 - 29)
	Half throttle	43 - 47 (27 - 29)	72 - 80 (45 - 50)	98 - 108 (61 - 67)	117 - 127 (73 - 79)	95 - 105 (59 - 65)	59 - 69 (37 - 43)	37 - 45 (23 - 28)	11 - 15 (7 - 10)

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

## Vehicle Speed When Performing and Releasing Complete Lock-up

INFOID:000000003532255

Final gear ratio	Throttle position	Vehicle speed km/h (MPH)	
		Lock-up "ON"	Lock-up "OFF"
2.937	Closed throttle	74 - 82 (46 - 51)	71 - 79 (45 - 49)
	Half throttle	188 - 196 (117 - 122)	136 - 144 (85 - 90)
3.357	Closed throttle	65 - 73 (41 - 46)	62 - 70 (39 - 44)
	Half throttle	168 - 176 (105 - 110)	118 - 126 (74 - 79)

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

## Vehicle Speed When Performing and Releasing Slip Lock-up

INFOID:000000003532256

Final gear ratio	Throttle position	Gear position	Vehicle speed km/h (MPH)	
			Slip lock-up "ON"	Slip lock-up "OFF"
2.937	Closed throttle	4th	52 - 60 (33 - 38)	49 - 57 (31 - 36)
		5th	52 - 60 (33 - 38)	49 - 57 (31 - 36)
3.357	Closed throttle	4th	46 - 54 (29 - 34)	43 - 51 (27 - 32)
		5th	46 - 54 (29 - 34)	43 - 51 (27 - 32)

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

## Symptom Chart

INFOID:000000003532257

- The diagnostics item numbers show the sequence for inspection. Inspect in order from item 1.
- Overhaul and inspect inside the A/T only if A/T fluid condition is NG. Refer to [AT-51, "Inspections Before Trouble Diagnosis"](#).

# TROUBLE DIAGNOSIS

## < SERVICE INFORMATION >

No.	Items	Symptom	Condition	Diagnostic Item	Reference page	
1		Large shock. ("N" → "D" position) Refer to <a href="#">AT-170</a> . <a href="#">"Large Shock ("N" to "D" Position)"</a> .	ON vehicle	1. Engine idle speed	<a href="#">EC-75</a>	A
				2. Engine speed signal	<a href="#">AT-109</a>	B
				3. Accelerator pedal position sensor	<a href="#">AT-117</a>	
				4. Control cable adjustment	<a href="#">AT-208</a>	AT
				5. ATF temperature sensor	<a href="#">AT-119</a>	
				6. ATF pressure switch 1 and front brake solenoid valve	<a href="#">AT-150</a> , <a href="#">AT-134</a>	D
				7. CAN communication line	<a href="#">AT-91</a>	
				8. Fluid level and state	<a href="#">AT-51</a>	E
				9. Line pressure test	<a href="#">AT-51</a>	
				10. Control valve with TCM	<a href="#">AT-210</a>	
			OFF vehicle	11. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-19</a> , <a href="#">AT-20</a> .)	<a href="#">AT-240</a>	F
2	Shift Shock	Shock is too large when changing D1 → D2.	ON vehicle	1. Accelerator pedal position sensor	<a href="#">AT-117</a>	G
				2. Control cable adjustment	<a href="#">AT-208</a>	
				3. ATF pressure switch 5 and direct clutch solenoid valve	<a href="#">AT-154</a> , <a href="#">AT-138</a>	H
				4. CAN communication line	<a href="#">AT-91</a>	
				5. Engine speed signal	<a href="#">AT-109</a>	I
				6. Turbine revolution sensor	<a href="#">AT-103</a>	
				7. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-105</a> , <a href="#">AT-124</a>	J
				8. Fluid level and state	<a href="#">AT-51</a>	
				9. Control valve with TCM	<a href="#">AT-210</a>	
			OFF vehicle	10. Direct clutch	<a href="#">AT-274</a>	K
3		Shock is too large when changing D2 → D3.	ON vehicle	1. Accelerator pedal position sensor	<a href="#">AT-117</a>	L
				2. Control cable adjustment	<a href="#">AT-208</a>	
				3. ATF pressure switch 6, high and low reverse clutch solenoid valve	<a href="#">AT-156</a> , <a href="#">AT-142</a>	M
				4. CAN communication line	<a href="#">AT-91</a>	
				5. Engine speed signal	<a href="#">AT-109</a>	N
				6. Turbine revolution sensor	<a href="#">AT-103</a>	
				7. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-105</a> , <a href="#">AT-124</a>	O
				8. Fluid level and state	<a href="#">AT-51</a>	
				9. Control valve with TCM	<a href="#">AT-210</a>	
			OFF vehicle	10. High and low reverse clutch	<a href="#">AT-272</a>	P

# TROUBLE DIAGNOSIS

## < SERVICE INFORMATION >

No.	Items	Symptom	Condition	Diagnostic Item	Reference page	
4		Shock is too large when changing D3 → D4.	ON vehicle	1. Accelerator pedal position sensor	<a href="#">AT-117</a>	
				2. Control cable adjustment	<a href="#">AT-208</a>	
				3. ATF pressure switch 3 and input clutch solenoid valve	<a href="#">AT-152</a> , <a href="#">AT-130</a>	
				4. CAN communication line	<a href="#">AT-91</a>	
				5. Engine speed signal	<a href="#">AT-109</a>	
				6. Turbine revolution sensor	<a href="#">AT-103</a>	
				7. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-105</a> , <a href="#">AT-124</a>	
				8. Fluid level and state	<a href="#">AT-51</a>	
				9. Control valve with TCM	<a href="#">AT-210</a>	
			OFF vehicle	10. Input clutch	<a href="#">AT-262</a>	
5	Shift Shock	Shock is too large when changing D4 → D5.	ON vehicle	1. Accelerator pedal position sensor	<a href="#">AT-117</a>	
				2. Control cable adjustment	<a href="#">AT-208</a>	
				3. ATF pressure switch 1 and front brake solenoid valve	<a href="#">AT-150</a> , <a href="#">AT-134</a>	
				4. CAN communication line	<a href="#">AT-91</a>	
				5. Engine speed signal	<a href="#">AT-109</a>	
				6. Turbine revolution sensor	<a href="#">AT-103</a>	
				7. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-105</a> , <a href="#">AT-124</a>	
				8. Fluid level and state	<a href="#">AT-51</a>	
				9. Control valve with TCM	<a href="#">AT-210</a>	
				OFF vehicle	10. Front brake (brake band)	<a href="#">AT-228</a>
					11. Input clutch	<a href="#">AT-262</a>
6		Shock is too large for downshift when accelerator pedal is pressed.	ON vehicle	1. Accelerator pedal position sensor	<a href="#">AT-117</a>	
				2. Control cable adjustment	<a href="#">AT-208</a>	
				3. CAN communication line	<a href="#">AT-91</a>	
				4. Engine speed signal	<a href="#">AT-109</a>	
				5. Turbine revolution sensor	<a href="#">AT-103</a>	
				6. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-105</a> , <a href="#">AT-124</a>	
				7. Fluid level and state	<a href="#">AT-51</a>	
				8. Control valve with TCM	<a href="#">AT-210</a>	
				OFF vehicle	9. Front brake (brake band)	<a href="#">AT-228</a>
					10. Input clutch	<a href="#">AT-262</a>
					11. High and low reverse clutch	<a href="#">AT-272</a> <a href="#">AT-272</a>
					12. Direct clutch	<a href="#">AT-274</a>

# TROUBLE DIAGNOSIS

## < SERVICE INFORMATION >

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
7		Shock is too large for upshift when accelerator pedal is released.	ON vehicle	1. Accelerator pedal position sensor	<a href="#">AT-117</a>
				2. Control cable adjustment	<a href="#">AT-208</a>
				3. Engine speed signal	<a href="#">AT-109</a>
				4. CAN communication line	<a href="#">AT-91</a>
				5. Turbine revolution sensor	<a href="#">AT-103</a>
				6. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-105, AT-124</a>
				7. Fluid level and state	<a href="#">AT-51</a>
				8. Control valve with TCM	<a href="#">AT-210</a>
			OFF vehicle	9. Front brake (brake band)	<a href="#">AT-228</a>
				10. Input clutch	<a href="#">AT-262</a>
				11. High and low reverse clutch	<a href="#">AT-272</a>
				12. Direct clutch	<a href="#">AT-274</a>
8	Shift Shock	Shock is too large for lock-up.	ON vehicle	1. Accelerator pedal position sensor	<a href="#">AT-117</a>
				2. Control cable adjustment	<a href="#">AT-208</a>
				3. Engine speed signal	<a href="#">AT-109</a>
				4. CAN communication line	<a href="#">AT-91</a>
				5. Turbine revolution sensor	<a href="#">AT-103</a>
				6. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-105, AT-124</a>
				7. Torque converter clutch solenoid valve	<a href="#">AT-111</a>
				8. Fluid level and state	<a href="#">AT-51</a>
				9. Control valve with TCM	<a href="#">AT-210</a>
			OFF vehicle	10. Torque converter	<a href="#">AT-240</a>
9		Shock is too large during engine brake.	ON vehicle	1. Accelerator pedal position sensor	<a href="#">AT-117</a>
				2. Control cable adjustment	<a href="#">AT-208</a>
				3. CAN communication line	<a href="#">AT-91</a>
				4. Fluid level and state	<a href="#">AT-51</a>
				5. Control valve with TCM	<a href="#">AT-210</a>
			OFF vehicle	6. Front brake (brake band)	<a href="#">AT-228</a>
				7. Input clutch	<a href="#">AT-262</a>
				8. High and low reverse clutch	<a href="#">AT-272</a>
				9. Direct clutch	<a href="#">AT-274</a>

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# TROUBLE DIAGNOSIS

## < SERVICE INFORMATION >

No.	Items	Symptom	Condition	Diagnostic Item	Reference page			
10		Gear does not change from D → D2. Refer to <a href="#">AT-179, "A/T Does Not Shift: D1→D2"</a> .	ON vehicle	1. Fluid level and state	<a href="#">AT-51</a>			
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-105, AT-124</a>			
				3. ATF pressure switch 5 and direct clutch solenoid valve	<a href="#">AT-154, AT-138</a>			
				4. Line pressure test	<a href="#">AT-51</a>			
				5. CAN communication line	<a href="#">AT-91</a>			
				6. Control valve with TCM	<a href="#">AT-210</a>			
			OFF vehicle	7. Direct clutch	<a href="#">AT-274</a>			
11		Gear does not change from D → D3. Refer to <a href="#">AT-181, "A/T Does Not Shift: D2→D3"</a> .	ON vehicle	1. Fluid level and state	<a href="#">AT-51</a>			
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-105, AT-124</a>			
				3. ATF pressure switch 6, high and low reverse clutch solenoid valve	<a href="#">AT-156, AT-142</a>			
				4. Line pressure test	<a href="#">AT-51</a>			
				5. CAN communication line	<a href="#">AT-91</a>			
				6. Control valve with TCM	<a href="#">AT-210</a>			
			OFF vehicle	7. High and low reverse clutch	<a href="#">AT-272</a>			
12	No Up Shift	Gear does not change from D → D4. Refer to <a href="#">AT-183, "A/T Does Not Shift: D3→D4"</a> .	ON vehicle	1. Fluid level and state	<a href="#">AT-51</a>			
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-105, AT-124</a>			
				3. ATF pressure switch 3 and input clutch solenoid valve	<a href="#">AT-152, AT-130</a>			
				4. ATF pressure switch 1 and front brake solenoid valve	<a href="#">AT-150, AT-134</a>			
				5. Line pressure test	<a href="#">AT-51</a>			
				6. CAN communication line	<a href="#">AT-91</a>			
				7. Control valve with TCM	<a href="#">AT-210</a>			
			OFF vehicle	8. Input clutch	<a href="#">AT-262</a>			
13		Gear does not change from D → D5. Refer to <a href="#">AT-185, "A/T Does Not Shift: D4→D5"</a> .	ON vehicle	1. Fluid level and state	<a href="#">AT-51</a>			
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-105, AT-124</a>			
				3. ATF pressure switch 1 and front brake solenoid valve	<a href="#">AT-150, AT-134</a>			
				4. ATF pressure switch 5 and direct clutch solenoid valve	<a href="#">AT-154, AT-138</a>			
				5. Turbine revolution sensor	<a href="#">AT-103</a>			
				6. Line pressure test	<a href="#">AT-51</a>			
				7. CAN communication line	<a href="#">AT-91</a>			
				8. Control valve with TCM	<a href="#">AT-210</a>			
						OFF vehicle	9. Front brake (brake band)	<a href="#">AT-240</a>
							10. Input clutch	<a href="#">AT-262</a>



# TROUBLE DIAGNOSIS

## < SERVICE INFORMATION >

No.	Items	Symptom	Condition	Diagnostic Item	Reference page				
14		In "D" or "4" range, does not downshift to 4th gear. Refer to <a href="#">AT-192, "A/T Does Not Shift: 5th gear → 4th gear"</a> .	ON vehicle	1. Fluid level and state	<a href="#">AT-51</a>	A			
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-105, AT-124</a>	B			
				3. ATF pressure switch 1 and front brake solenoid valve	<a href="#">AT-150, AT-134</a>	AT			
				4. ATF pressure switch 5 and direct clutch solenoid valve	<a href="#">AT-154, AT-138</a>				
				5. CAN communication line	<a href="#">AT-91</a>	D			
				6. Line pressure test	<a href="#">AT-51</a>				
				7. Control valve with TCM	<a href="#">AT-210</a>				
			OFF vehicle	8. Front brake (brake band)	<a href="#">AT-240</a>	E			
				9. Input clutch	<a href="#">AT-262</a>				
15	No Down Shift	In "D" or "3" range, does not downshift to 3rd gear. Refer to <a href="#">AT-194, "A/T Does Not Shift: 4th gear → 3rd gear"</a> .	ON vehicle	1. Fluid level and state	<a href="#">AT-51</a>	F			
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-105, AT-124</a>				
				3. ATF pressure switch 3 and input clutch solenoid valve	<a href="#">AT-152, AT-130</a>	G			
				4. ATF pressure switch 1 and front brake solenoid valve	<a href="#">AT-150, AT-134</a>				
				5. CAN communication line	<a href="#">AT-91</a>	H			
				6. Line pressure test	<a href="#">AT-51</a>				
				7. Control valve with TCM	<a href="#">AT-210</a>	I			
			OFF vehicle	8. Input clutch	<a href="#">AT-262</a>				
			16		In "D" or "2" range, does not downshift to 2nd gear. Refer to <a href="#">AT-196, "A/T Does Not Shift: 3rd gear → 2nd gear"</a> .	ON vehicle	1. Fluid level and state	<a href="#">AT-51</a>	J
2. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-105, AT-124</a>								
3. ATF pressure switch 6, high and low reverse clutch solenoid valve	<a href="#">AT-156, AT-142</a>	K							
4. CAN communication line	<a href="#">AT-91</a>								
5. Line pressure test	<a href="#">AT-51</a>	L							
6. Control valve with TCM	<a href="#">AT-210</a>								
OFF vehicle	7. High and low reverse clutch	<a href="#">AT-272</a>				M			
17		In "D" or "1" range, does not downshift to 1st gear. Refer to <a href="#">AT-197, "A/T Does Not Shift: 2nd gear → 1st gear"</a> .				ON vehicle	1. Fluid level and state	<a href="#">AT-51</a>	N
							2. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-105, AT-124</a>	
			3. ATF pressure switch 5 and direct clutch solenoid valve	<a href="#">AT-154, AT-138</a>	O				
			4. CAN communication line	<a href="#">AT-91</a>					
			5. Line pressure test	<a href="#">AT-51</a>					
			6. Control valve with TCM	<a href="#">AT-210</a>					
			OFF vehicle	7. Direct clutch	<a href="#">AT-274</a>	P			

# TROUBLE DIAGNOSIS

## < SERVICE INFORMATION >

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
18	Slips/Will Not engage	When "D" position, remains in 1st gear.	ON vehicle	1. Fluid level and state	<a href="#">AT-51</a>
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-105</a> , <a href="#">AT-124</a>
				3. Direct clutch solenoid valve	<a href="#">AT-138</a>
				4. Line pressure test	<a href="#">AT-51</a>
				5. CAN communication line	<a href="#">AT-91</a>
				6. Control valve with TCM	<a href="#">AT-210</a>
			OFF vehicle	7. <a href="#">AT-260</a> 3rd one-way clutch	<a href="#">AT-260</a>
				8. 1st one-way clutch	<a href="#">AT-267</a>
				9. Gear system	<a href="#">AT-228</a>
				10. Reverse brake	<a href="#">AT-240</a>
				11. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-19</a> , <a href="#">AT-20</a> .)	<a href="#">AT-240</a>
				12. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-19</a> , <a href="#">AT-20</a> .)	<a href="#">AT-240</a>
19		When "D" position, remains in 2nd gear.	ON vehicle	1. Fluid level and state	<a href="#">AT-51</a>
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-105</a> , <a href="#">AT-124</a>
				3. Low coast brake solenoid valve	<a href="#">AT-146</a>
				4. Line pressure test	<a href="#">AT-51</a>
				5. CAN communication line	<a href="#">AT-91</a>
				6. Control valve with TCM	<a href="#">AT-210</a>
			OFF vehicle	7. 3rd one-way clutch	<a href="#">AT-260</a>
				8. Gear system	<a href="#">AT-228</a>
				9. Direct clutch	<a href="#">AT-274</a>
				10. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-19</a> , <a href="#">AT-20</a> .)	<a href="#">AT-240</a>

# TROUBLE DIAGNOSIS

## < SERVICE INFORMATION >

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
20		When "D" position, re- mains in 3rd gear.	ON vehicle	1. Fluid level and state	<a href="#">AT-51</a>
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-105,</a> <a href="#">AT-124</a>
				3. Line pressure test	<a href="#">AT-51</a>
				4. CAN communication line	<a href="#">AT-91</a>
				5. Control valve with TCM	<a href="#">AT-210</a>
			OFF vehicle	6. 3rd one-way clutch	<a href="#">AT-260</a>
				7. Gear system	<a href="#">AT-228</a>
				8. High and low reverse clutch	<a href="#">AT-272</a>
				9. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-19</a> , <a href="#">AT-20</a> .)	<a href="#">AT-240</a>
				10. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-19</a> , <a href="#">AT-20</a> .)	<a href="#">AT-240</a>
21	Slips/Will Not en- gage	When "D" position, re- mains in 4th gear.	ON vehicle	1. Fluid level and state	<a href="#">AT-51</a>
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-105,</a> <a href="#">AT-124</a>
				3. ATF pressure switch 3 and input clutch solenoid valve	<a href="#">AT-152,</a> <a href="#">AT-130</a>
				4. ATF pressure switch 5 and direct clutch solenoid valve	<a href="#">AT-154,AT-</a> <a href="#">138</a>
				5. ATF pressure switch 6, high and low reverse clutch solenoid valve	<a href="#">AT-156,</a> <a href="#">AT-142</a>
				6. Low coast brake solenoid valve	<a href="#">AT-146</a>
				7. Front brake solenoid valve	<a href="#">AT-134</a>
				8. Line pressure test	<a href="#">AT-51</a>
				9. CAN communication line	<a href="#">AT-91</a>
				10. Control valve with TCM	<a href="#">AT-210</a>
			OFF vehicle	11. Input clutch	<a href="#">AT-262</a>
				12. Gear system	<a href="#">AT-228</a>
				13. High and low reverse clutch	<a href="#">AT-272</a>
				14. Direct clutch	<a href="#">AT-274</a>

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# TROUBLE DIAGNOSIS

## < SERVICE INFORMATION >

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
22		When "D" position, remains in 5th gear.	ON vehicle	1. Fluid level and state	<a href="#">AT-51</a>
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-105, AT-124</a>
				3. ATF pressure switch 1 and front brake solenoid valve	<a href="#">AT-150, AT-134</a>
				4. Line pressure test	<a href="#">AT-51</a>
				5. CAN communication line	<a href="#">AT-91</a>
				6. Control valve with TCM	<a href="#">AT-210</a>
			OFF vehicle	7. Front brake (brake band)	<a href="#">AT-240</a>
				8. Input clutch	<a href="#">AT-262</a>
				9. Gear system	<a href="#">AT-228</a>
				10. High and low reverse clutch	<a href="#">AT-272</a>
23	Slips/Will Not Engage	Vehicle cannot be started from D1. Refer to <a href="#">AT-177, "Vehicle Cannot Be Started from D1"</a> .	ON vehicle	1. Fluid level and state	<a href="#">AT-51</a>
				2. Accelerator pedal position sensor	<a href="#">AT-117</a>
				3. Line pressure test	<a href="#">AT-51</a>
				4. CAN communication line	<a href="#">AT-91</a>
				5. Control valve with TCM	<a href="#">AT-210</a>
			OFF vehicle	6. Torque converter	<a href="#">AT-240</a>
				7. Oil pump assembly	<a href="#">AT-258</a>
				8. 3rd one-way clutch	<a href="#">AT-260</a>
				9. 1st one-way clutch	<a href="#">AT-267</a>
				10. Gear system	<a href="#">AT-228</a>
				11. Reverse brake	<a href="#">AT-240</a>
				12. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-19, AT-20.</a> )	<a href="#">AT-240</a>
				13. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-19, AT-20.</a> )	<a href="#">AT-240</a>
24		Does not lock-up. Refer to <a href="#">AT-187, "A/T Does Not Perform Lock-up"</a> .	ON vehicle	1. Fluid level and state	<a href="#">AT-51</a>
				2. Line pressure test	<a href="#">AT-51</a>
				3. Engine speed signal	<a href="#">AT-109</a>
				4. Turbine revolution sensor	<a href="#">AT-103</a>
				5. Torque converter clutch solenoid valve	<a href="#">AT-111</a>
				6. CAN communication line	<a href="#">AT-91</a>
				7. Control valve with TCM	<a href="#">AT-210</a>
			OFF vehicle	8. Torque converter	<a href="#">AT-240</a>
				9. Oil pump assembly	<a href="#">AT-258</a>

# TROUBLE DIAGNOSIS

## < SERVICE INFORMATION >

No.	Items	Symptom	Condition	Diagnostic Item	Reference page	
25	Slips/Will Not engage	Does not hold lock-up condition. Refer to <a href="#">AT-189</a> , " <a href="#">A/T Does Not Hold Lock-up Condition</a> ".	ON vehicle	1. Fluid level and state	<a href="#">AT-51</a>	
				2. Line pressure test	<a href="#">AT-51</a>	
				3. Engine speed signal	<a href="#">AT-109</a>	
				4. Turbine revolution sensor	<a href="#">AT-103</a>	
				5. Torque converter clutch solenoid valve	<a href="#">AT-111</a>	
				6. CAN communication line	<a href="#">AT-91</a>	
				7. Control valve with TCM	<a href="#">AT-210</a>	
			OFF vehicle	8. Torque converter	<a href="#">AT-240</a>	
				9. Oil pump assembly	<a href="#">AT-258</a>	
26		Slips/Will Not engage	Lock-up is not released. Refer to <a href="#">AT-190</a> , " <a href="#">Lock-up Is Not Released</a> ".	ON vehicle	1. Fluid level and state	<a href="#">AT-51</a>
					2. Line pressure test	<a href="#">AT-51</a>
					3. Engine speed signal	<a href="#">AT-109</a>
					4. Turbine revolution sensor	<a href="#">AT-103</a>
					5. Torque converter clutch solenoid valve	<a href="#">AT-111</a>
					6. CAN communication line	<a href="#">AT-91</a>
					7. Control valve with TCM	<a href="#">AT-210</a>
				OFF vehicle	8. Torque converter	<a href="#">AT-240</a>
					9. Oil pump assembly	<a href="#">AT-258</a>
27	Slips/Will Not engage		No shock at all or the clutch slips when vehicle changes speed D1 → D2.	ON vehicle	1. Fluid level and state	<a href="#">AT-51</a>
					2. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-105</a> , <a href="#">AT-124</a>
					3. ATF pressure switch 5 and direct clutch solenoid valve	<a href="#">AT-154</a> , <a href="#">AT-138</a>
					4. CAN communication line	<a href="#">AT-91</a>
					5. Line pressure test	<a href="#">AT-51</a>
					6. Control valve with TCM	<a href="#">AT-210</a>
				OFF vehicle	7. Torque converter	<a href="#">AT-240</a>
					8. Oil pump assembly	<a href="#">AT-258</a>
					9. 3rd one-way clutch	<a href="#">AT-260</a>
		10. Gear system			<a href="#">AT-228</a>	
		11. Direct clutch			<a href="#">AT-274</a>	
		12. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-19</a> , <a href="#">AT-20</a> .)			<a href="#">AT-240</a>	

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# TROUBLE DIAGNOSIS

## < SERVICE INFORMATION >

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
28	Slips/Will Not engage	No shock at all or the clutch slips when vehicle changes speed D2 → D3.	ON vehicle	1. Fluid level and state	<a href="#">AT-51</a>
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-105</a> , <a href="#">AT-124</a>
				3. ATF pressure switch 6, high and low reverse clutch solenoid valve	<a href="#">AT-156</a> , <a href="#">AT-142</a>
				4. CAN communication line	<a href="#">AT-91</a>
				5. Line pressure test	<a href="#">AT-51</a>
				6. Control valve with TCM	<a href="#">AT-210</a>
			OFF vehicle	7. Torque converter	<a href="#">AT-240</a>
				8. Oil pump assembly	<a href="#">AT-258</a>
				9. 3rd one-way clutch	<a href="#">AT-260</a>
				10. Gear system	<a href="#">AT-228</a>
				11. High and low reverse clutch	<a href="#">AT-272</a>
				12. Forward one- way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-19</a> , <a href="#">AT-20</a> .)	<a href="#">AT-240</a>
				13. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-19</a> , <a href="#">AT-20</a> .)	<a href="#">AT-240</a>
29	Slips/Will Not engage	No shock at all or the clutch slips when vehicle changes speed D3 → D4.	ON vehicle	1. Fluid level and state	<a href="#">AT-51</a>
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-105</a> , <a href="#">AT-124</a>
				3. ATF pressure switch 3 and input clutch solenoid valve	<a href="#">AT-152</a> , <a href="#">AT-130</a>
				4. ATF pressure switch 1 and front brake solenoid valve	<a href="#">AT-150</a> , <a href="#">AT-134</a>
				5. CAN communication line	<a href="#">AT-91</a>
				6. Line pressure test	<a href="#">AT-51</a>
				7. Control valve with TCM	<a href="#">AT-210</a>
			OFF vehicle	8. Torque converter	<a href="#">AT-240</a>
				9. Oil pump assembly	<a href="#">AT-258</a>
				10. Input clutch	<a href="#">AT-262</a>
				11. Gear system	<a href="#">AT-228</a>
				12. High and low reverse clutch	<a href="#">AT-272</a>
				13. Direct clutch	<a href="#">AT-274</a>

# TROUBLE DIAGNOSIS

## < SERVICE INFORMATION >

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
30	Slips/Will Not engage	No shock at all or the clutch slips when vehicle changes speed D4 → D5.	ON vehicle	1. Fluid level and state	<a href="#">AT-51</a>
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-105, AT-124</a>
				3. ATF pressure switch 1 and front brake solenoid valve	<a href="#">AT-150, AT-134</a>
				4. ATF pressure switch 5 and direct clutch solenoid valve	<a href="#">AT-154, AT-138</a>
				5. CAN communication line	<a href="#">AT-91</a>
				6. Line pressure test	<a href="#">AT-51</a>
				7. Control valve with TCM	<a href="#">AT-210</a>
			OFF vehicle	8. Torque converter	<a href="#">AT-240</a>
				9. Oil pump assembly	<a href="#">AT-258</a>
				10. Front brake (brake band)	<a href="#">AT-240</a>
				11. Input clutch	<a href="#">AT-262</a>
				12. Gear system	<a href="#">AT-228</a>
				13. High and low reverse clutch	<a href="#">AT-272</a>
31	Slips/Will Not engage	When you press the accelerator pedal and shift speed D5 → D4 the engine idles or the transmission slips.	ON vehicle	1. Fluid level and state	<a href="#">AT-51</a>
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-105, AT-124</a>
				3. ATF pressure switch 1 and front brake solenoid valve	<a href="#">AT-150, AT-134</a>
				4. ATF pressure switch 5 and direct clutch solenoid valve	<a href="#">AT-154, AT-138</a>
				5. CAN communication line	<a href="#">AT-91</a>
				6. Line pressure test	<a href="#">AT-51</a>
				7. Control valve with TCM	<a href="#">AT-210</a>
			OFF vehicle	8. Torque converter	<a href="#">AT-240</a>
				9. Oil pump assembly	<a href="#">AT-258</a>
				10. Input clutch	<a href="#">AT-262</a>
				11. Gear system	<a href="#">AT-228</a>
				12. High and low reverse clutch	<a href="#">AT-272</a>
				13. Direct clutch	<a href="#">AT-274</a>

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AT  
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# TROUBLE DIAGNOSIS

## < SERVICE INFORMATION >

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
32	Slips/Will Not engage	When you press the accelerator pedal and shift speed D4 → D3 the engine idles or the transmission slips.	ON vehicle	1. Fluid level and state	<a href="#">AT-51</a>
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-105, AT-124</a>
				3. ATF pressure switch 3 and input clutch solenoid valve	<a href="#">AT-152, AT-130</a>
				4. ATF pressure switch 1 and front brake solenoid valve	<a href="#">AT-150, AT-134</a>
				5. CAN communication line	<a href="#">AT-91</a>
				6. Line pressure test	<a href="#">AT-51</a>
				7. Control valve with TCM	<a href="#">AT-210</a>
			OFF vehicle	8. Torque converter	<a href="#">AT-240</a>
				9. Oil pump assembly	<a href="#">AT-258</a>
				10. 3rd one-way clutch	<a href="#">AT-260</a>
				11. Gear system	<a href="#">AT-228</a>
				12. High and low reverse clutch	<a href="#">AT-272</a>
				13. Forward one- way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-19, AT-20.</a> )	<a href="#">AT-240</a>
				14. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-19, AT-20.</a> )	<a href="#">AT-240</a>
33		When you press the accelerator pedal and shift speed D3 → D2 the engine idles or the transmission slips.	ON vehicle	1. Fluid level and state	<a href="#">AT-51</a>
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-105, AT-124</a>
				3. ATF pressure switch 6, high and low reverse clutch solenoid valve	<a href="#">AT-156, AT-142</a>
				4. ATF pressure switch 5 and direct clutch solenoid valve	<a href="#">AT-154, AT-138</a>
				5. CAN communication line	<a href="#">AT-91</a>
				6. Line pressure test	<a href="#">AT-51</a>
				7. Control valve with TCM	<a href="#">AT-210</a>
			OFF vehicle	8. Torque converter	<a href="#">AT-240</a>
				9. Oil pump assembly	<a href="#">AT-258</a>
				10. 3rd one-way clutch	<a href="#">AT-260</a>
				11. Gear system	<a href="#">AT-228</a>
				12. Direct clutch	<a href="#">AT-274</a>
				13. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-19, AT-20.</a> )	<a href="#">AT-240</a>



# TROUBLE DIAGNOSIS

## < SERVICE INFORMATION >

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
34	Slips/Will Not Engage	When you press the accelerator pedal and shift speed D2 → D1 the engine idles or the transmission slips.	ON vehicle	1. Fluid level and state	<a href="#">AT-51</a>
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-105, AT-124</a>
				3. ATF pressure switch 5 and direct clutch solenoid valve	<a href="#">AT-154, AT-138</a>
				4. CAN communication line	<a href="#">AT-91</a>
				5. Line pressure test	<a href="#">AT-51</a>
				6. Control valve with TCM	<a href="#">AT-210</a>
			OFF vehicle	7. Torque converter	<a href="#">AT-240</a>
				8. Oil pump assembly	<a href="#">AT-258</a>
				9. 3rd one-way clutch	<a href="#">AT-260</a>
				10. 1st one-way clutch	<a href="#">AT-267</a>
				11. Gear system	<a href="#">AT-228</a>
				12. Reverse brake	<a href="#">AT-240</a>
				13. Forward one- way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-19, AT-20.</a> )	<a href="#">AT-240</a>
				14. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-19, AT-20.</a> )	<a href="#">AT-240</a>
35	With selector lever in "D" position, acceleration is extremely poor.		ON vehicle	1. Fluid level and state	<a href="#">AT-51</a>
				2. Line pressure test	<a href="#">AT-51</a>
				3. Accelerator pedal position sensor	<a href="#">AT-117</a>
				4. CAN communication line	<a href="#">AT-91</a>
				5. PNP switch	<a href="#">AT-99</a>
				6. Control cable adjustment	<a href="#">AT-208</a>
				7. Control valve with TCM	<a href="#">AT-210</a>
			OFF vehicle	8. Torque converter	<a href="#">AT-240</a>
				9. Oil pump assembly	<a href="#">AT-258</a>
				10. 1st one-way clutch	<a href="#">AT-267</a>
				11. Gear system	<a href="#">AT-228</a>
				12. Reverse brake	<a href="#">AT-240</a>
				13. Forward one- way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-19, AT-20.</a> )	<a href="#">AT-240</a>
				14. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-19, AT-20.</a> )	<a href="#">AT-240</a>

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# TROUBLE DIAGNOSIS

## < SERVICE INFORMATION >

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
36		With selector lever in "R" position, acceleration is extremely poor.	ON vehicle	1. Fluid level and state	<a href="#">AT-51</a>
				2. Line pressure test	<a href="#">AT-51</a>
				3. Accelerator pedal position sensor	<a href="#">AT-117</a>
				4. ATF pressure switch 6, high and low reverse clutch solenoid valve	<a href="#">AT-156</a> , <a href="#">AT-142</a>
				5. CAN communication line	<a href="#">AT-91</a>
				6. PNP switch	<a href="#">AT-99</a>
				7. Control cable adjustment	<a href="#">AT-208</a>
				8. Control valve with TCM	<a href="#">AT-210</a>
			OFF vehicle	9. Gear system	<a href="#">AT-228</a>
				10. Output shaft	<a href="#">AT-240</a>
				11. Reverse brake	<a href="#">AT-240</a>
37	Slips/Will Not Engage	While starting off by accelerating in 1st, engine races or slippage occurs.	ON vehicle	1. Fluid level and state	<a href="#">AT-51</a>
				2. Line pressure test	<a href="#">AT-51</a>
				3. Accelerator pedal position sensor	<a href="#">AT-117</a>
				4. CAN communication line	<a href="#">AT-91</a>
				5. Control valve with TCM	<a href="#">AT-210</a>
			OFF vehicle	6. Torque converter	<a href="#">AT-240</a>
				7. Oil pump assembly	<a href="#">AT-258</a>
				8. 3rd one-way clutch	<a href="#">AT-260</a>
				9. 1st one-way clutch	<a href="#">AT-267</a>
				10. Gear system	<a href="#">AT-228</a>
				11. Reverse brake	<a href="#">AT-240</a>
				12. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-19</a> , <a href="#">AT-20</a> .)	<a href="#">AT-240</a>
				13. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-19</a> , <a href="#">AT-20</a> .)	<a href="#">AT-240</a>
38		While accelerating in 2nd, engine races or slippage occurs.	ON vehicle	1. Fluid level and state	<a href="#">AT-51</a>
				2. Line pressure test	<a href="#">AT-51</a>
				3. Accelerator pedal position sensor	<a href="#">AT-117</a>
				4. CAN communication line	<a href="#">AT-91</a>
				5. ATF pressure switch 5 and direct clutch solenoid valve	<a href="#">AT-154</a> , <a href="#">AT-138</a>
				6. Control valve with TCM	<a href="#">AT-210</a>
			OFF vehicle	7. Torque converter	<a href="#">AT-240</a>
				8. Oil pump assembly	<a href="#">AT-258</a>
				9. 3rd one-way clutch	<a href="#">AT-260</a>
				10. Gear system	<a href="#">AT-228</a>
				11. Direct clutch	<a href="#">AT-274</a>
				12. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-19</a> , <a href="#">AT-20</a> .)	<a href="#">AT-240</a>

# TROUBLE DIAGNOSIS

## < SERVICE INFORMATION >

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
39	Slips/Will Not Engage	While accelerating in 3rd, engine races or slippage occurs.	ON vehicle	1. Fluid level and state	<a href="#">AT-51</a>
				2. Line pressure test	<a href="#">AT-51</a>
				3. Accelerator pedal position sensor	<a href="#">AT-117</a>
				4. CAN communication line	<a href="#">AT-91</a>
				5. ATF pressure switch 6, high and low reverse clutch solenoid valve	<a href="#">AT-156</a> , <a href="#">AT-142</a>
				6. Control valve with TCM	<a href="#">AT-210</a>
			OFF vehicle	7. Torque converter	<a href="#">AT-240</a>
				8. Oil pump assembly	<a href="#">AT-258</a>
				9. 3rd one-way clutch	<a href="#">AT-260</a>
				10. Gear system	<a href="#">AT-228</a>
				11. High and low reverse clutch	<a href="#">AT-272</a>
				12. Forward one- way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-19</a> , <a href="#">AT-20</a> .)	<a href="#">AT-240</a>
				13. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-19</a> , <a href="#">AT-20</a> .)	<a href="#">AT-240</a>
40		While accelerating in 4th, engine races or slippage occurs.	ON vehicle	1. Fluid level and state	<a href="#">AT-51</a>
				2. Line pressure test	<a href="#">AT-51</a>
				3. Accelerator pedal position sensor	<a href="#">AT-117</a>
				4. CAN communication line	<a href="#">AT-91</a>
				5. ATF pressure switch 3 and input clutch solenoid valve	<a href="#">AT-152</a> , <a href="#">AT-130</a>
				6. Control valve with TCM	<a href="#">AT-210</a>
			OFF vehicle	7. Torque converter	<a href="#">AT-240</a>
				8. Oil pump assembly	<a href="#">AT-258</a>
				9. Input clutch	<a href="#">AT-262</a>
				10. Gear system	<a href="#">AT-228</a>
				11. High and low reverse clutch	<a href="#">AT-272</a>
				12. Direct clutch	<a href="#">AT-274</a>

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AT  
D  
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# TROUBLE DIAGNOSIS

## < SERVICE INFORMATION >

No.	Items	Symptom	Condition	Diagnostic Item	Reference page				
41		While accelerating in 5th, engine races or slippage occurs.	ON vehicle	1. Fluid level and state	<a href="#">AT-51</a>				
				2. Line pressure test	<a href="#">AT-51</a>				
				3. Accelerator pedal position sensor	<a href="#">AT-117</a>				
				4. CAN communication line	<a href="#">AT-91</a>				
				5. ATF pressure switch 1 and front brake solenoid valve	<a href="#">AT-150,</a> <a href="#">AT-134</a>				
				6. Control valve with TCM	<a href="#">AT-210</a>				
			OFF vehicle	7. Torque converter	<a href="#">AT-240</a>				
				8. Oil pump assembly	<a href="#">AT-258</a>				
				9. Front brake (brake band)	<a href="#">AT-240</a>				
				10. Input clutch	<a href="#">AT-262</a>				
				11. Gear system	<a href="#">AT-228</a>				
				12. High and low reverse clutch	<a href="#">AT-272</a>				
42	Slips/Will Not Engage	Slips at lock-up.	ON vehicle	1. Fluid level and state	<a href="#">AT-51</a>				
				2. Line pressure test	<a href="#">AT-51</a>				
				3. Engine speed signal	<a href="#">AT-109</a>				
				4. Turbine revolution sensor	<a href="#">AT-103</a>				
				5. Torque converter clutch solenoid valve	<a href="#">AT-111</a>				
				6. CAN communication line	<a href="#">AT-91</a>				
				7. Control valve with TCM	<a href="#">AT-210</a>				
			OFF vehicle	8. Torque converter	<a href="#">AT-240</a>				
				9. Oil pump assembly	<a href="#">AT-258</a>				
				43		No creep at all. Refer to <a href="#">AT-172</a> , " <a href="#">Vehicle Does Not Creep Backward in "R" Position</a> ", <a href="#">AT-175</a> , " <a href="#">Vehicle Does Not Creep Forward in "D" Position</a> "	ON vehicle	1. Fluid level and state	<a href="#">AT-51</a>
								2. Line pressure test	<a href="#">AT-51</a>
								3. Accelerator pedal position sensor	<a href="#">AT-117</a>
4. ATF pressure switch 5 and direct clutch solenoid valve	<a href="#">AT-154,</a> <a href="#">AT-138</a>								
5. PNP switch	<a href="#">AT-99</a>								
6. CAN communication line	<a href="#">AT-91</a>								
7. Control cable adjustment	<a href="#">AT-208</a>								
8. Control valve with TCM	<a href="#">AT-210</a>								
OFF vehicle	9. Torque converter	<a href="#">AT-240</a>							
	10. Oil pump assembly	<a href="#">AT-258</a>							
	11. 1st one-way clutch	<a href="#">AT-267</a>							
	12. Gear system	<a href="#">AT-228</a>							
	13. Reverse brake	<a href="#">AT-240</a>							
	14. Direct clutch	<a href="#">AT-274</a>							
	15. Forward one- way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-19</a> , <a href="#">AT-20</a> .)	<a href="#">AT-240</a>							
	16. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-19</a> , <a href="#">AT-20</a> .)	<a href="#">AT-240</a>							

# TROUBLE DIAGNOSIS

## < SERVICE INFORMATION >

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
44		Vehicle cannot run in all positions.	ON vehicle	1. Fluid level and state	<a href="#">AT-51</a>
				2. Line pressure test	<a href="#">AT-51</a>
				3. PNP switch	<a href="#">AT-99</a>
				4. Control cable adjustment	<a href="#">AT-208</a>
				5. Control valve with TCM	<a href="#">AT-210</a>
			OFF vehicle	6. Oil pump assembly	<a href="#">AT-258</a>
				7. Gear system	<a href="#">AT-228</a>
				8. Output shaft	<a href="#">AT-240</a>
45	Slips/Will Not Engage	With selector lever in "D" position, driving is not possible.	ON vehicle	1. Fluid level and state	<a href="#">AT-51</a>
				2. Line pressure test	<a href="#">AT-51</a>
				3. PNP switch	<a href="#">AT-99</a>
				4. Control cable adjustment	<a href="#">AT-208</a>
				5. Control valve with TCM	<a href="#">AT-210</a>
			OFF vehicle	6. Torque converter	<a href="#">AT-240</a>
				7. Oil pump assembly	<a href="#">AT-258</a>
				8. 1st one-way clutch	<a href="#">AT-267</a>
				9. Gear system	<a href="#">AT-228</a>
				10. Reverse brake	<a href="#">AT-240</a>
				11. Forward one- way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-19</a> , <a href="#">AT-20</a> .)	<a href="#">AT-240</a>
				12. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-19</a> , <a href="#">AT-20</a> .)	<a href="#">AT-240</a>
46		With selector lever in "R" position, driving is not possible.	ON vehicle	1. Fluid level and state	<a href="#">AT-51</a>
				2. Line pressure test	<a href="#">AT-51</a>
				3. PNP switch	<a href="#">AT-99</a>
				4. Control cable adjustment	<a href="#">AT-208</a>
				5. Control valve with TCM	<a href="#">AT-210</a>
			OFF vehicle	6. Gear system	<a href="#">AT-228</a>
				7. Output shaft	<a href="#">AT-240</a>
				8. Reverse brake	<a href="#">AT-240</a>
47	Others	Shift point is high in "D" position.	ON vehicle	1. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-105</a> , <a href="#">AT-124</a>
				2. Accelerator pedal position sensor	<a href="#">AT-117</a>
				3. CAN communication line	<a href="#">AT-91</a>
				4. ATF temperature sensor	<a href="#">AT-119</a>
				5. Control valve with TCM	<a href="#">AT-210</a>

A  
B  
AT  
D  
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O  
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# TROUBLE DIAGNOSIS

## < SERVICE INFORMATION >

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
48		Shift point is low in "D" position.	ON vehicle	1. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-105</a> , <a href="#">AT-124</a>
				2. Accelerator pedal position sensor	<a href="#">AT-117</a>
				3. CAN communication line	<a href="#">AT-91</a>
				4. Control valve with TCM	<a href="#">AT-210</a>
49		Judder occurs during lock-up.	ON vehicle	1. Fluid level and state	<a href="#">AT-51</a>
				2. Engine speed signal	<a href="#">AT-109</a>
				3. Turbine revolution sensor	<a href="#">AT-103</a>
				4. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-105</a> , <a href="#">AT-124</a>
			OFF vehicle	5. Accelerator pedal position sensor	<a href="#">AT-117</a>
				6. CAN communication line	<a href="#">AT-91</a>
				7. Torque converter clutch solenoid valve	<a href="#">AT-111</a>
				8. Control valve with TCM	<a href="#">AT-210</a>
9. Torque converter	<a href="#">AT-240</a>				
50	Others	Strange noise in "R" position.	ON vehicle	1. Fluid level and state	<a href="#">AT-51</a>
				2. Engine speed signal	<a href="#">AT-109</a>
				3. CAN communication line	<a href="#">AT-91</a>
				4. Control valve with TCM	<a href="#">AT-210</a>
			OFF vehicle	5. Torque converter	<a href="#">AT-240</a>
				6. Oil pump assembly	<a href="#">AT-258</a>
				7. Gear system	<a href="#">AT-228</a>
				8. High and low reverse clutch	<a href="#">AT-272</a>
				9. Reverse brake	<a href="#">AT-240</a>
51		Strange noise in "N" position.	ON vehicle	1. Fluid level and state	<a href="#">AT-51</a>
				2. Engine speed signal	<a href="#">AT-109</a>
				3. CAN communication line	<a href="#">AT-91</a>
				4. Control valve with TCM	<a href="#">AT-210</a>
			OFF vehicle	5. Torque converter	<a href="#">AT-240</a>
				6. Oil pump assembly	<a href="#">AT-258</a>
				7. Gear system	<a href="#">AT-228</a>
52		Strange noise in "D" position.	ON vehicle	1. Fluid level and state	<a href="#">AT-51</a>
				2. Engine speed signal	<a href="#">AT-109</a>
				3. CAN communication line	<a href="#">AT-91</a>
				4. Control valve with TCM	<a href="#">AT-210</a>
			OFF vehicle	5. Torque converter	<a href="#">AT-240</a>
				6. Oil pump assembly	<a href="#">AT-258</a>
				7. Gear system	<a href="#">AT-228</a>
				8. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-19</a> , <a href="#">AT-20</a> .)	<a href="#">AT-240</a>

# TROUBLE DIAGNOSIS

## < SERVICE INFORMATION >

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
53		Vehicle dose not decelerate by engine brake. Refer to <a href="#">AT-199</a> . " <a href="#">Vehicle Does Not Decelerate By Engine Brake</a> ".	ON vehicle	1. PNP switch	<a href="#">AT-99</a>
				2. Fluid level and state	<a href="#">AT-51</a>
				3. Control cable adjustment	<a href="#">AT-208</a>
				4. 1st position switch	<a href="#">AT-199</a>
				5. ATF pressure switch 5	<a href="#">AT-154</a>
				6. CAN communication line	<a href="#">AT-91</a>
				7. Control valve with TCM	<a href="#">AT-210</a>
			OFF vehicle	8. Input clutch	<a href="#">AT-262</a>
				9. High and low reverse clutch	<a href="#">AT-272</a>
				10. Direct clutch	<a href="#">AT-274</a>
54	Others	Engine brake does not operate in "2" position.	ON vehicle	1. PNP switch	<a href="#">AT-99</a>
				2. Fluid level and state	<a href="#">AT-51</a>
				3. Control cable adjustment	<a href="#">AT-208</a>
				5. ATF pressure switch 6	<a href="#">AT-156</a>
				6. CAN communication line	<a href="#">AT-91</a>
				7. Control valve with TCM	<a href="#">AT-210</a>
				OFF vehicle	8. Front brake (brake band)
			9. Input clutch		<a href="#">AT-262</a>
			10. High and low reverse clutch		<a href="#">AT-272</a>
			55		Engine brake does not operate in "1" position.
2. Fluid level and state	<a href="#">AT-51</a>				
3. Control cable adjustment	<a href="#">AT-208</a>				
4. 1st position switch	<a href="#">AT-199</a>				
5. ATF pressure switch 5	<a href="#">AT-154</a>				
6. CAN communication line	<a href="#">AT-91</a>				
7. Control valve with TCM	<a href="#">AT-210</a>				
OFF vehicle	8. Input clutch	<a href="#">AT-262</a>			
	9. High and low reverse clutch	<a href="#">AT-272</a>			
	10. Direct clutch	<a href="#">AT-274</a>			

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# TROUBLE DIAGNOSIS

## < SERVICE INFORMATION >

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
56		Maximum speed low.	ON vehicle	1. Fluid level and state	<a href="#">AT-51</a>
				2. Line pressure test	<a href="#">AT-51</a>
				3. Accelerator pedal position sensor	<a href="#">AT-117</a>
				4. CAN communication line	<a href="#">AT-91</a>
				5. Direct clutch solenoid valve	<a href="#">AT-138</a>
				6. Control valve with TCM	<a href="#">AT-210</a>
			OFF vehicle	7. Torque converter	<a href="#">AT-240</a>
				8. Oil pump assembly	<a href="#">AT-258</a>
				9. Input clutch	<a href="#">AT-262</a>
				10. Gear system	<a href="#">AT-228</a>
				11. High and low reverse clutch	<a href="#">AT-272</a>
				12. Direct clutch	<a href="#">AT-274</a>
				13. Forward one- way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-19</a> , <a href="#">AT-20</a> .)	<a href="#">AT-240</a>
				14 Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-19</a> , <a href="#">AT-20</a> .)	<a href="#">AT-240</a>
57	Others	Extremely large creep.	ON vehicle	1. Engine idle speed	<a href="#">EC-75</a>
				2. CAN communication line	<a href="#">AT-91</a>
				3. ATF pressure switch 5	<a href="#">AT-154</a>
			OFF vehicle	4. Torque converter	<a href="#">AT-240</a>
58		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 <a href="#">AT-168</a> , " <a href="#">In "P" Position, Vehicle Moves When Pushed</a> ".	ON vehicle	1. PNP switch	<a href="#">AT-99</a>
				2. Control cable adjustment	<a href="#">AT-208</a>
			OFF vehicle	3. Parking pawl components	<a href="#">AT-228</a>
59		Vehicle runs with transmission in "P" position.	ON vehicle	1. PNP switch	<a href="#">AT-99</a>
				2. Fluid level and state	<a href="#">AT-51</a>
				3. Control cable adjustment	<a href="#">AT-208</a>
				4. Control valve with TCM	<a href="#">AT-210</a>
				5. Parking pawl components	<a href="#">AT-228</a>
			OFF vehicle	6. Gear system	<a href="#">AT-228</a>



# TROUBLE DIAGNOSIS

## < SERVICE INFORMATION >

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
60		Vehicle runs with transmission in "N" position. Refer to <a href="#">AT-169, "In "N" Position, Vehicle Moves"</a> .	ON vehicle	1. PNP switch	<a href="#">AT-99</a>
				2. Fluid level and state	<a href="#">AT-51</a>
				3. Control cable adjustment	<a href="#">AT-208</a>
				4. Control valve with TCM	<a href="#">AT-210</a>
			OFF vehicle	5. Input clutch	<a href="#">AT-262</a>
				6. Gear system	<a href="#">AT-228</a>
				7. Direct clutch	<a href="#">AT-274</a>
				8. Reverse brake	<a href="#">AT-240</a>
				9. Forward one- way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-19, AT-20.</a> )	<a href="#">AT-240</a>
				10. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-19, AT-20.</a> )	<a href="#">AT-240</a>
61	Others	Engine does not start in "N" or "P" position. Refer to <a href="#">AT-168, "Engine Cannot Be Started in "P" or "N" Position"</a> .	ON vehicle	1. Ignition switch and starter	<a href="#">PG-3, SC-9</a>
				2. Control cable adjustment	<a href="#">AT-208</a>
				3. PNP switch	<a href="#">AT-99</a>
62	Others	Engine starts in positions other than "N" or "P".	ON vehicle	1. Ignition switch and starter	<a href="#">PG-3, SC-9</a>
				2. Control cable adjustment	<a href="#">AT-208</a>
				3. PNP switch	<a href="#">AT-99</a>
63		Engine stall.	ON vehicle	1. Fluid level and state	<a href="#">AT-51</a>
				2. Engine speed signal	<a href="#">AT-109</a>
				3. Turbine revolution sensor	<a href="#">AT-103</a>
				4. Torque converter clutch solenoid valve	<a href="#">AT-111</a>
				5. CAN communication line	<a href="#">AT-91</a>
				6. Control valve with TCM	<a href="#">AT-210</a>
			OFF vehicle	7. Torque converter	<a href="#">AT-240</a>
64		Engine stalls when select lever shifted "N" → "D", "R".	ON vehicle	1. Fluid level and state	<a href="#">AT-51</a>
				2. Engine speed signal	<a href="#">AT-109</a>
				3. Turbine revolution sensor	<a href="#">AT-103</a>
				4. Torque converter clutch solenoid valve	<a href="#">AT-111</a>
				5. CAN communication line	<a href="#">AT-91</a>
				6. Control valve with TCM	<a href="#">AT-210</a>
			OFF vehicle	7. Torque converter	<a href="#">AT-240</a>

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# TROUBLE DIAGNOSIS

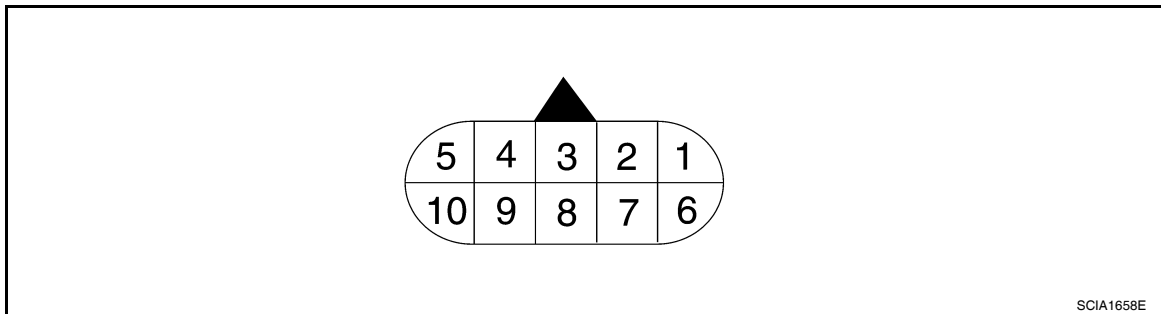
## < SERVICE INFORMATION >

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
65	Others	Engine speed does not return to idle. Refer to <a href="#">AT-191</a> , " <a href="#">Engine Speed Does Not Return to Idle</a> ".	ON vehicle	1. Fluid level and state	<a href="#">AT-51</a>
				2. ATF pressure switch 5 and direct clutch solenoid valve	<a href="#">AT-154</a> , <a href="#">AT-138</a>
				3. ATF pressure switch 1 and front brake solenoid valve	<a href="#">AT-150</a> , <a href="#">AT-134</a>
				4. Accelerator pedal position sensor	<a href="#">AT-117</a>
				5. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-105</a> , <a href="#">AT-124</a>
				6. CAN communication line	<a href="#">AT-91</a>
				7. Control valve with TCM	<a href="#">AT-210</a>
			OFF vehicle	8. Front brake (brake band)	<a href="#">AT-240</a>
			9. Direct clutch	<a href="#">AT-274</a>	

## TCM Input/Output Signal Reference Value




INFOID:000000003532258

## A/T ASSEMBLY HARNESS CONNECTOR TERMINAL LAYOUT




## TERMINAL AND REFERENCE VALUES FOR TCM

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

Terminal No.	Wire color	Item	Condition	Data (Pyrex.)
1	P	Power supply (Memory back-up)	Always	Battery voltage
2	P	Power supply (Memory back-up)	Always	Battery voltage
3	L	CAN-H	-	-
4	V	K-line (CONSULT-II signal)	The terminal is connected to the data link connector for CONSULT-II.	
5	B	Ground	Always	0V
6	Y/R	Power supply	 -	Battery voltage
			 -	0V
7	R	Back-up lamp relay	 Selector lever in "R" position.	0V
			Selector lever in other positions.	Battery voltage
8	P	CAN-L	-	-

# TROUBLE DIAGNOSIS

## < SERVICE INFORMATION >

Terminal No.	Wire color	Item	Condition	Data (Pyrex.)
9	B/R	Starter relay	 Selector lever in "N", "P" positions.	Battery voltage
			Selector lever in other positions.	0V
10	B	Ground	Always	0V

## CONSULT-II Function (A/T)

INFOID:000000003532259

CONSULT-II can display each diagnostic item using the diagnostic test modes shown following.

TCM diagnostic mode	Description
WORK SUPPORT	Supports inspections and adjustments. Commands are transmitted to the TCM for setting the status suitable for required operation, input/output signals are received from the TCM and received data is displayed.
SELF-DIAG RESULTS	Displays TCM self-diagnosis results.
DATA MONITOR	Displays TCM input/output data in real time.
CAN DIAG SUPPORT MNTR	The result of transmit/receive diagnosis of CAN communication can be read.
ACTIVE TEST	Operation of electrical loads can be checked by sending drive signal to them.
FUNCTION TEST	Conducted by CONSULT-II instead of a technician to determine whether each system is "OK" or "NG".
ECU PART NUMBER	TCM part number can be read.

## CONSULT-II REFERENCE VALUE

### 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).

Item name	Condition	Display value (Approx.)
ATF TEMP SE 1	0°C (32° F) - 20°C (68°F) - 80°C (176°F)	3.3 - 2.7 - 0.9 V
ATF TEMP SE 2		3.3 - 2.5 - 0.7 V
TCC SOLENOID	When perform slip lock-up	0.2 - 0.4 A
	When perform lock-up	0.4 - 0.6 A
SLCT LVR POSI	Selector lever in "N", "P" position.	N/P
	Selector lever in "R" position.	R
	Selector lever in "D" position.	D
	Selector lever in "4" position.	4
	Selector lever in "3" position.	3
	Selector lever in "2" position.	2
VHCL/S SE-A/T	During driving	Approximately matches the speedometer reading.
	ENGINE SPEED	Closely matches the tachometer reading.

# TROUBLE DIAGNOSIS

## < SERVICE INFORMATION >

Item name	Condition	Display value (Approx.)
LINE PRES SOL	During driving	0.2 - 0.6 A
TURBINE REV	During driving (lock-up ON)	Approximately matches the engine speed.
VHCL/S SE-MTR	During driving	Approximately matches the speedometer reading.
ATF PRES SW 1	Front brake engaged. Refer to <a href="#">AT-20</a>	ON
	Front brake disengaged. Refer to <a href="#">AT-20</a>	OFF
ATF PRES SW 2	Low coast brake engaged. Refer to <a href="#">AT-20</a>	ON
	Low coast brake disengaged. Refer to <a href="#">AT-20</a>	OFF
ATF PRES SW 3	Input clutch engaged. Refer to <a href="#">AT-20</a>	ON
	Input clutch disengaged. Refer to <a href="#">AT-20</a>	OFF
ATF PRES SW 5	Direct clutch engaged. Refer to <a href="#">AT-20</a>	ON
	Direct clutch disengaged. Refer to <a href="#">AT-20</a>	OFF
ATF PRES SW 6	High and low reverse clutch engaged. Refer to <a href="#">AT-20</a>	ON
	High and low reverse clutch disengaged. Refer to <a href="#">AT-20</a>	OFF
I/C SOLENOID	Input clutch disengaged. Refer to <a href="#">AT-20</a>	0.6 - 0.8 A
	Input clutch engaged. Refer to <a href="#">AT-20</a>	0 - 0.05 A
FR/B SOLENOID	Front brake engaged. Refer to <a href="#">AT-20</a>	0.6 - 0.8 A
	Front brake disengaged. Refer to <a href="#">AT-20</a>	0 - 0.05 A
D/C SOLENOID	Direct clutch disengaged. Refer to <a href="#">AT-20</a>	0.6 - 0.8 A
	Direct clutch engaged. Refer to <a href="#">AT-20</a>	0 - 0.05 A
HLR/C SOL	High and low reverse clutch disengaged. Refer to <a href="#">AT-20</a>	0.6 - 0.8 A
	High and low reverse clutch engaged. Refer to <a href="#">AT-20</a>	0 - 0.05 A
ON OFF SOL	Low coast brake engaged. Refer to <a href="#">AT-20</a>	ON
	Low coast brake disengaged. Refer to <a href="#">AT-20</a>	OFF
STARTER RELAY	Selector lever in "N", "P" position.	ON
	Selector lever in other position.	OFF
ACCELE POSI	Released accelerator pedal.	0.0/8
	Fully depressed accelerator pedal.	8/8
CLSD THL POS	Released accelerator pedal.	ON
	Fully depressed accelerator pedal.	OFF
W/O THL POS	Fully depressed accelerator pedal.	ON
	Released accelerator pedal.	OFF
BRAKE SW	Depressed brake pedal.	ON
	Released brake pedal.	OFF

### CONSULT-II START PROCEDURE

Refer to [GI-36, "CONSULT-II Start Procedure"](#).

### SELF-DIAGNOSTIC RESULT MODE

#### Operation Procedure

After performing SELF-DIAGNOSTIC RESULT MODE, place check marks for results on the [AT-44, "How To Perform Trouble Diagnosis for Quick and Accurate Repair"](#). Reference pages are provided following the items.

Display Items List

# TROUBLE DIAGNOSIS

## < SERVICE INFORMATION >

X: Applicable, —: Not applicable

Items (CONSULT-II screen terms)	Malfunction is detected when...	TCM self-diagnosis	OBD-II (DTC)
		"A/T" with CONSULT-II	MIL indicator lamp*1, "ENGINE" with CONSULT-II or GST
CAN COMM CIRCUIT	<ul style="list-style-type: none"> <li>When a malfunction is detected in CAN communications</li> </ul>	U1000	U1000
STARTER RELAY/CIRC	<ul style="list-style-type: none"> <li>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.)</li> </ul>	P0615	—
TCM	<ul style="list-style-type: none"> <li>TCM is malfunctioning.</li> </ul>	P0700	P0700
PNP SW/CIRC	<ul style="list-style-type: none"> <li>PNP switch 1-4 signals input with impossible pattern</li> <li>"P" position is detected from N position without any other position being detected in between.</li> </ul>	P0705	P0705
TURBINE REV S/CIRC	<ul style="list-style-type: none"> <li>TCM does not receive the proper voltage signal from the sensor.</li> <li>TCM detects an irregularity only at position of 4th gear for turbine revolution sensor 2.</li> </ul>	P0717	P0717
VEH SPD SEN/CIR AT (Revolution sensor)	<ul style="list-style-type: none"> <li>Signal from vehicle speed sensor A/T (Revolution sensor) not input due to cut line or the like</li> <li>Unexpected signal input during running</li> <li>After ignition switch is turned ON, unexpected signal input from vehicle speed sensor MTR before the vehicle starts moving</li> </ul>	P0720	P0720
ENGINE SPEED SIG	<ul style="list-style-type: none"> <li>TCM does not receive the CAN communication signal from the ECM.</li> </ul>	P0725	—
TCC SOLENOID/CIRC	<ul style="list-style-type: none"> <li>Normal voltage not applied to solenoid due to cut line, short, or the like</li> </ul>	P0740	P0740
A/T TCC S/V FNCTN	<ul style="list-style-type: none"> <li>A/T cannot perform lock-up even if electrical circuit is good.</li> <li>TCM detects as irregular by comparing difference value with slip rotation.</li> </ul>	P0744	P0744*2
L/PRESS SOL/CIRC	<ul style="list-style-type: none"> <li>Normal voltage not applied to solenoid due to cut line, short, or the like</li> <li>TCM detects as irregular by comparing target value with monitor value.</li> </ul>	P0745	P0745
TP SEN/CIRC A/T	<ul style="list-style-type: none"> <li>TCM does not receive the proper accelerator pedal position signals (input by CAN communication) from ECM.</li> </ul>	P1705	P1705
ATF TEMP SEN/CIRC	<ul style="list-style-type: none"> <li>During running, the ATF temperature sensor signal voltage is excessively high or low</li> </ul>	P1710	P0710
VEH SPD SE/CIR·MTR	<ul style="list-style-type: none"> <li>Signal (CAN communication) from vehicle speed sensor MTR not input due to cut line or the like</li> <li>Unexpected signal input during running</li> </ul>	P1721	—
A/T INTERLOCK	<ul style="list-style-type: none"> <li>Except during shift change, the gear position and ATF pressure switch states are monitored and comparative judgement made.</li> </ul>	P1730	P1730
A/T 1ST E/BRAKING	<ul style="list-style-type: none"> <li>Each ATF pressure switch and solenoid current is monitored and if a pattern is detected having engine braking 1st gear other than in the "1" position, a malfunction is detected.</li> </ul>	P1731	—
I/C SOLENOID/CIRC	<ul style="list-style-type: none"> <li>Normal voltage not applied to solenoid due to functional malfunction, cut line, short, or the like</li> <li>TCM detects as irregular by comparing target value with monitor value.</li> </ul>	P1752	P1752
I/C SOLENOID FNCTN	<ul style="list-style-type: none"> <li>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)</li> <li>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)</li> </ul>	P1754	P1754*2
FR/B SOLENOID/CIRC	<ul style="list-style-type: none"> <li>Normal voltage not applied to solenoid due to functional malfunction, cut line, short, or the like</li> <li>TCM detects as irregular by comparing target value with monitor value.</li> </ul>	P1757	P1757

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# TROUBLE DIAGNOSIS

## < SERVICE INFORMATION >

Items (CONSULT-II screen terms)	Malfunction is detected when...	TCM self-diagnosis	OBD-II (DTC)
		"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"> <li>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)</li> <li>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)</li> </ul>	P1759	P1759*2
D/C SOLENOID/CIRC	<ul style="list-style-type: none"> <li>Normal voltage not applied to solenoid due to cut line, short, or the like</li> <li>TCM detects as irregular by comparing target value with monitor value.</li> </ul>	P1762	P1762
D/C SOLENOID FNCTN	<ul style="list-style-type: none"> <li>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)</li> <li>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)</li> </ul>	P1764	P1764*2
HLR/C SOL/CIRC	<ul style="list-style-type: none"> <li>Normal voltage not applied to solenoid due to functional malfunction, cut line, short, or the like</li> <li>TCM detects as irregular by comparing target value with monitor value.</li> </ul>	P1767	P1767
HLR/C SOL FNCTN	<ul style="list-style-type: none"> <li>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)</li> <li>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)</li> </ul>	P1769	P1769*2
LC/B SOLENOID/CIRC	<ul style="list-style-type: none"> <li>Normal voltage not applied to solenoid due to functional malfunction, cut line, short, or the like</li> </ul>	P1772	P1772
LC/B SOLENOID FNCT	<ul style="list-style-type: none"> <li>TCM detects an improper voltage drop when it tries to operate the solenoid valve.</li> <li>Condition of ATF pressure switch 2 is different from monitor value, and relation between gear position and actual gear ratio is irregular.</li> </ul>	P1774	P1774*2
ATF PRES SW 1/CIRC	<ul style="list-style-type: none"> <li>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)</li> </ul>	P1841	—
ATF PRES SW 3/CIRC	<ul style="list-style-type: none"> <li>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)</li> </ul>	P1843	—
ATF PRES SW 5/CIRC	<ul style="list-style-type: none"> <li>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)</li> </ul>	P1845	—
ATF PRES SW 6/CIRC	<ul style="list-style-type: none"> <li>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)</li> </ul>	P1846	—
NO DTC IS DETECTED FURTHER TESTING MAY BE REQUIRED	<ul style="list-style-type: none"> <li>No NG item has been detected.</li> </ul>	X	X

\*1: Refer to [EC-63, "Malfunction Indicator Lamp \(MIL\)"](#).

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

## DATA MONITOR MODE

Display Items List

# TROUBLE DIAGNOSIS

## < SERVICE INFORMATION >

X: Standard, —: Not applicable

Monitored item (Unit)	Monitor Item Selection			Remarks
	ECU IN-PUT SIG-NALS	MAIN SIG-NALS	SELEC-TION 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.
CLSD THL POS (ON-OFF display)	X	—	X	Signal input with CAN communications
W/O THL POS (ON-OFF display)	X	—	X	
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)
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	
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.
1 POSITION SW (ON-OFF display)	X	—	X	1st position switch
OD CONT SW (ON-OFF display)	X	—	X	4th position switch

# TROUBLE DIAGNOSIS

## < SERVICE INFORMATION >

Monitored item (Unit)	Monitor Item Selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
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	
SFT DWN ST SW (ON-OFF display)	—	—	X	
ASCD-OD CUT (ON-OFF display)	—	—	X	ICC (Intelligent cruise control)
ASCD-CRUISE (ON-OFF display)	—	—	X	
ABS SIGNAL (ON-OFF display)	—	—	X	
ACC OD CUT (ON-OFF display)	—	—	X	
ACC SIGNAL (ON-OFF display)	—	—	X	
TCS GR/P KEEP (ON-OFF display)	—	—	X	
TCS SIGNAL 2 (ON-OFF display)	—	—	X	
TCS SIGNAL 1 (ON-OFF display)	—	—	X	
TCC SOLENOID (A)	—	X	X	LC/B solenoid
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	
TCC SOL MON (A)	—	—	X	
L/P SOL MON (A)	—	—	X	LC/B solenoid
I/C SOL 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	
P POSI IND (ON-OFF display)	—	—	X	
R POSI IND (ON-OFF display)	—	—	X	
N POSI IND (ON-OFF display)	—	—	X	Not mounted but displayed.
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	



# TROUBLE DIAGNOSIS

## < SERVICE INFORMATION >

Monitored item (Unit)	Monitor Item Selection			Remarks	
	ECU IN-PUT SIG-NALS	MAIN SIG-NALS	SELEC-TION FROM MENU		
ATF WARN LAMP (ON-OFF display)	—	—	X		A
BACK-UP LAMP (ON-OFF display)	—	—	X		B
STARTER RELAY (ON-OFF display)	—	—	X		AT
PNP SW3 MON (ON-OFF display)	—	—	X		
C/V CLB ID1	—	—	X		D
C/V CLB ID2	—	—	X		
C/V CLB ID3	—	—	X		
UNIT CLB ID1	—	—	X		E
UNIT CLB ID2	—	—	X		
UNIT CLB ID3	—	—	X		
TRGT GR RATIO	—	—	X		F
TRGT PRES TCC (kPa)	—	—	X		
TRGT PRES L/P (kPa)	—	—	X		G
TRGT PRES I/C (kPa)	—	—	X		
TRGT PRE FR/B (kPa)	—	—	X		H
TRGT PRES D/C (kPa)	—	—	X		
TRG PRE HLR/C (kPa)	—	—	X		
SHIFT PATTERN	—	—	X		I
DRV CST JUDGE	—	—	X		
START RLY MON	—	—	X		J
NEXT GR POSI	—	—	X		
SHIFT MODE	—	—	X		
MANU GR POSI	—	—	X		K
VEHICLE SPEED (km/h)	—	X	X	Vehicle speed recognized by the TCM.	
Voltage (V)	—	—	X	Displays the value measured by the voltage probe.	L
Frequency (Hz)	—	—	X	The value measured by the pulse probe is displayed.	
DUTY-HI (high) (%)	—	—	X		M
DUTY-LOW (low) (%)	—	—	X		
PLS WIDTH-HI (ms)	—	—	X		
PLS WIDTH-LOW (ms)	—	—	X		N

## DTC WORK SUPPORT MODE

### Display Items List

DTC work support item	Description	Check item	
I/C SOL FUNCTN CHECK*	—	—	P
FR/B SOL FUNCTN CHECK*	—	—	
D/C SOL FUNCTN CHECK*	—	—	
HLR/C SOL FUNCTN CHECK*	—	—	

## TROUBLE DIAGNOSIS

### < SERVICE INFORMATION >

DTC work support item	Description	Check item
LC/B SOL FUNCTN CHECK*	—	—
TCC SOL FUNCTN CHECK	Following items for "TCC solenoid function (lock-up) " can be confirmed. <ul style="list-style-type: none"><li>• Self-diagnosis status (whether the diagnosis is being conducted or not)</li><li>• Self-diagnosis result (OK or NG)</li></ul>	<ul style="list-style-type: none"><li>• TCC solenoid valve</li><li>• Hydraulic control circuit</li></ul>

\*: Do not use, but displayed.

# DTC U1000 CAN COMMUNICATION LINE

< SERVICE INFORMATION >

## DTC U1000 CAN COMMUNICATION LINE

### Description

INFOID:000000003532260

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

INFOID:000000003532261

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "U1000 CAN COMM CIRCUIT" with CONSULT-II is detected when TCM cannot communicate to other control units.

### Possible Cause

INFOID:000000003532262

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

### DTC Confirmation Procedure

INFOID:000000003532263

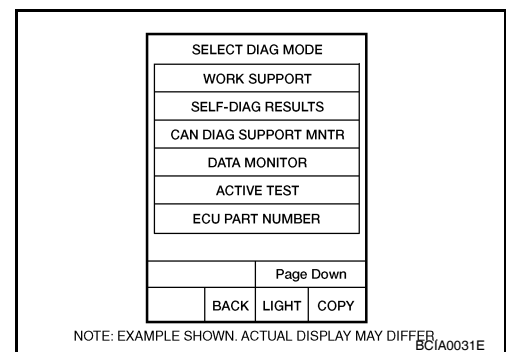
#### NOTE:

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

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

#### Ⓟ WITH CONSULT-II

1. Turn ignition switch "ON". (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-93, "Diagnosis Procedure"](#).



#### Ⓟ WITH GST

Follow the procedure "WITH CONSULT-II".




# DTC U1000 CAN COMMUNICATION LINE

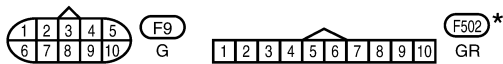
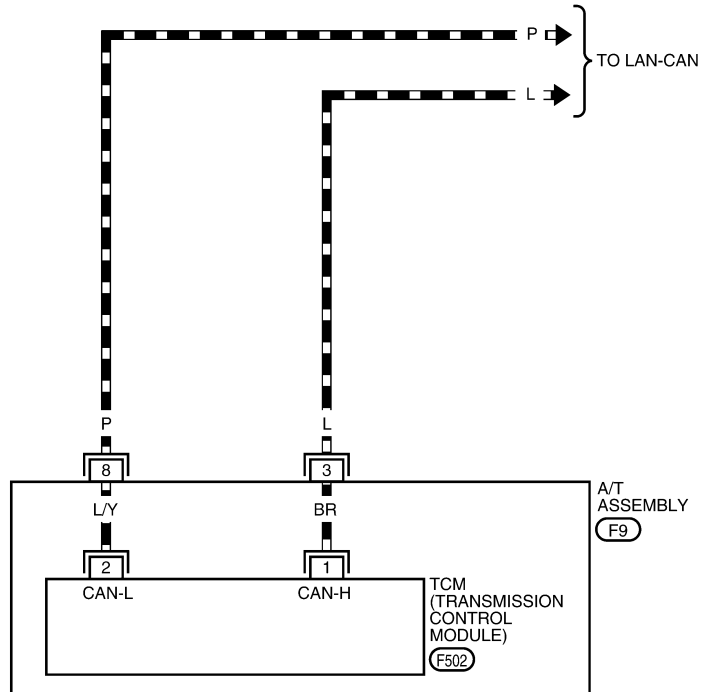
< SERVICE INFORMATION >

## Wiring Diagram - AT - CAN

INFOID:000000003532264

### AT-CAN-01

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



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

BCWA0320E

TCM Input/Output Signal Reference Values  
 Refer to [AT-82, "TCM Input/Output Signal Reference Value"](#).

# DTC U1000 CAN COMMUNICATION LINE

< SERVICE INFORMATION >

## Diagnosis Procedure

INFOID:000000003532265

### 1. CHECK CAN COMMUNICATION CIRCUIT

#### Ⓜ With CONSULT-II

1. Turn ignition switch "ON" and start engine.
2. Select "SELF-DIAG RESULTS" 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-38, "Precaution When Using CONSULT-II"](#).

NO >> **INSPECTION END**

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

PCIA0061E

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

# DTC P0615 START SIGNAL CIRCUIT

< SERVICE INFORMATION >

## DTC P0615 START SIGNAL CIRCUIT

### Description

INFOID:000000003532266

- TCM prohibits cranking other than at “P” or “N” position.

### CONSULT-II Reference Value in Data Monitor Mode

INFOID:000000003532267

Item name	Condition	Display value
STARTER RELAY	Selector lever in “N”, “P” position.	ON
	Selector lever in other position.	OFF

### On Board Diagnosis Logic

INFOID:000000003532268

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0615 STARTER RELAY/CIRC” with CONSULT-II is detected when park/neutral (PNP) relay (starter relay) is switched “ON” other than at “P” or “N” position. (Or when switched “OFF” at “P” or “N” position).

### Possible Cause

INFOID:000000003532269

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

### DTC Confirmation Procedure

INFOID:000000003532270

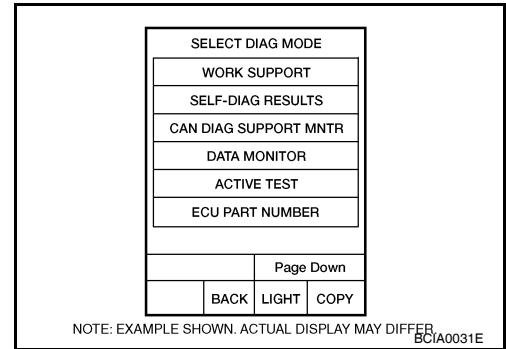
#### NOTE:

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

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

#### ④ WITH CONSULT-II

1. Turn ignition switch “ON”. (Do not start engine.)
2. Select “DATA MONITOR” mode for “A/T” with CONSULT-II.
3. Start engine.
4. Drive vehicle for at least 2 consecutive seconds.
5. If DTC is detected, go to [AT-93, "Diagnosis Procedure"](#) .



# DTC P0615 START SIGNAL CIRCUIT

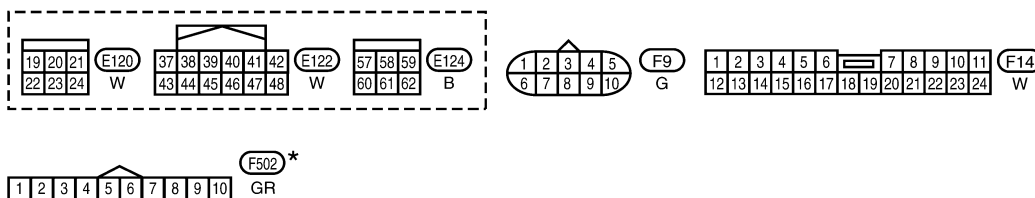
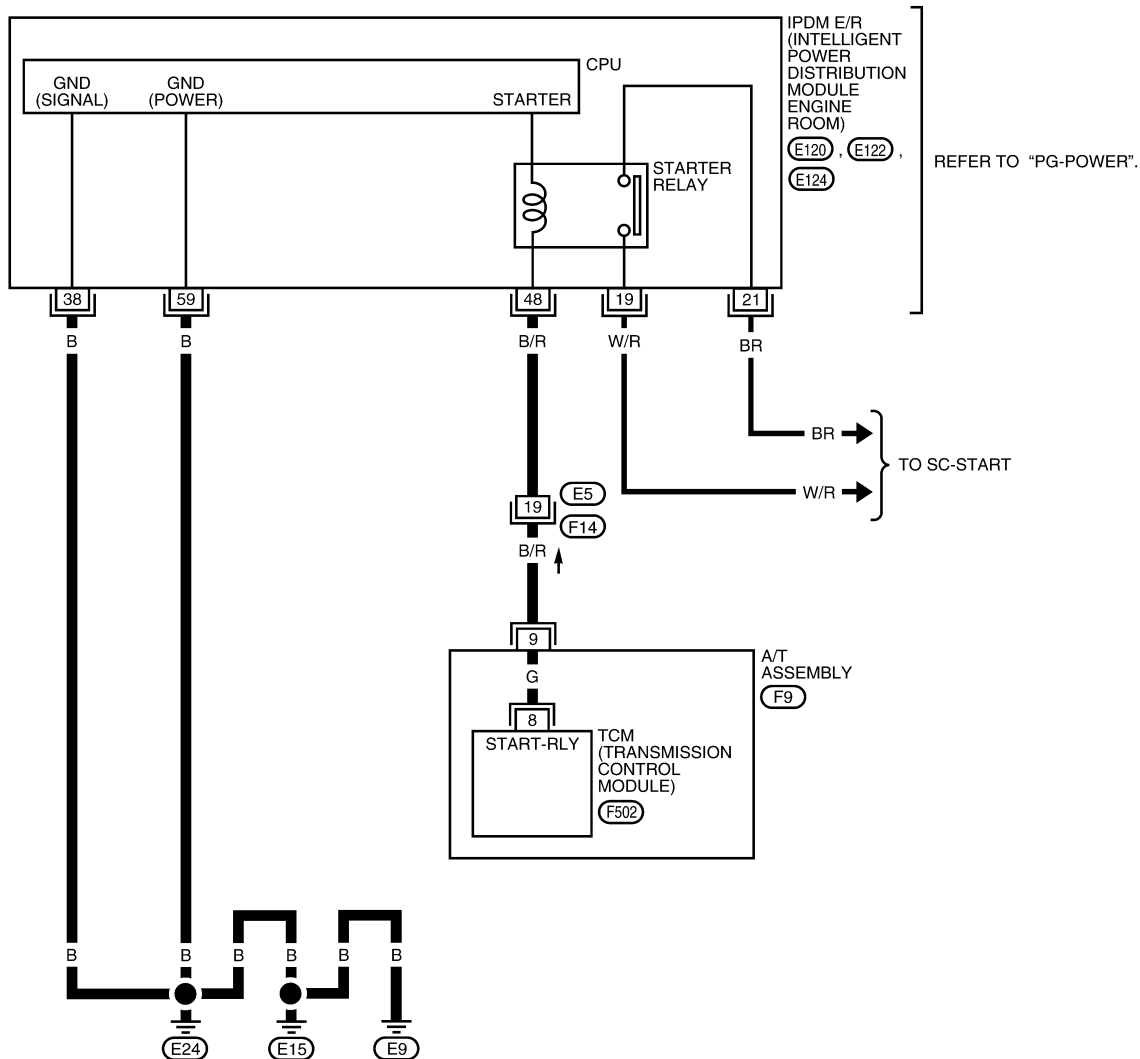
< SERVICE INFORMATION >

## Wiring Diagram - AT - STSIG

INFOID:000000003532271

### AT-STSIG-01

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



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

BCWA0321E

TCM Input/Output Signal Reference Values  
 Refer to [AT-82. "TCM Input/Output Signal Reference Value"](#).

## Diagnosis Procedure

INFOID:000000003532272

### 1. CHECK STARTER RELAY

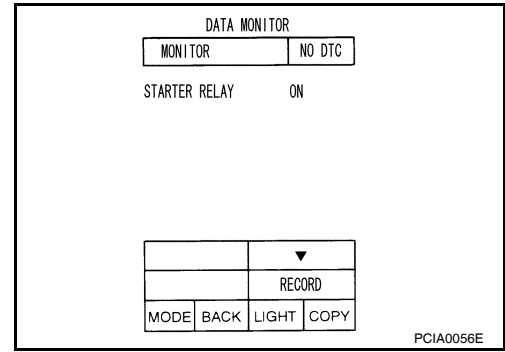
# DTC P0615 START SIGNAL CIRCUIT

## < SERVICE INFORMATION >

### ① With CONSULT-II

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

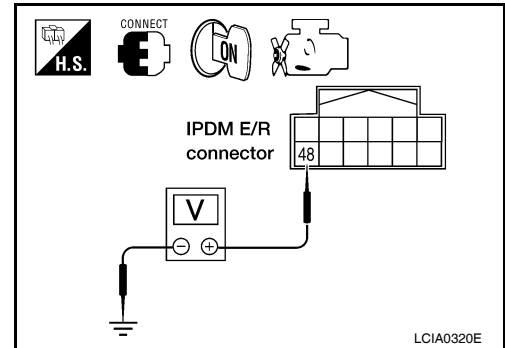
Item name	Condition	Display value
STARTER RELAY	Selector lever in "N", "P" positions.	ON
	Selector lever in other positions.	OFF



### ② Without CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Check voltage between the IPDM E/R connector and ground.

Item	Terminal	Shift position	Voltage (Approx.)
Starter relay	48	"N" and "P"	Battery voltage
		"R" and "D"	0V



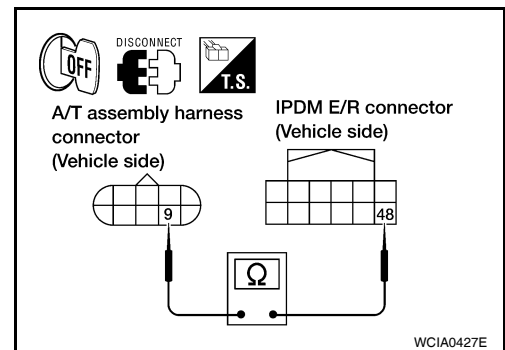
#### OK or NG

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

## 2. CHECK HARNESS BETWEEN A/T ASSEMBLY HARNESS CONNECTOR AND IPDM E/R CONECTOR.

1. Turn ignition switch OFF.
2. Disconnect A/T assembly harness connector and IPDM E/R connector.

Item	Connector	Terminal	Continuity
A/T assembly harness connector	F9	9	Yes
IPDM E/R connector	E122	48	



3. Check continuity between A/T assembly harness connector and IPDM E/R connector.
4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

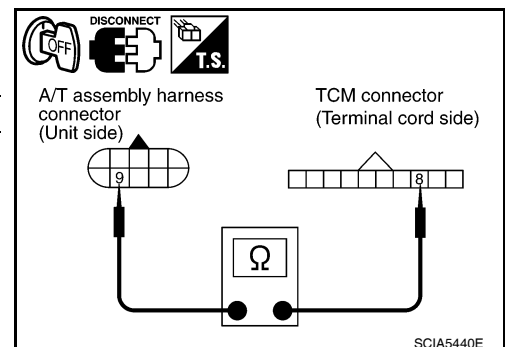
#### OK or NG

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

## 3. CHECK TERMINAL CORD ASSEMBLY

1. Remove control valve with TCM. Refer to [AT-210. "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Disconnect A/T assembly harness connector and TCM connector.
3. Check continuity between A/T assembly harness connector terminal and TCM connector terminal.

Item	Connector	Terminal	Continuity
A/T assembly harness connector	F9	9	Yes
TCM connector	F502	8	



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

#### OK or NG



## DTC P0615 START SIGNAL CIRCUIT

### < SERVICE INFORMATION >

---

OK >> GO TO 4.

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

A

### 4.DETECT MALFUNCTIONING ITEM

---

Check the following items:

• Starter relay, Refer to [SC-9](#).

• IPDM E/R, Refer to [PG-17](#).

B

#### OK or NG

OK >> Replace the control valve with TCM. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#)

AT

G >> Repair or replace damaged parts.

### 5.CHECK DTC

---

D

Perform "DTC Confirmation Procedure".

• Refer to [AT-91, "DTC Confirmation Procedure"](#).

E

#### OK or NG

OK >> **INSPECTION END**

NG >> GO TO 2.

F

G

H

I

J

K

L

M

N

O

P

# DTC P0700 TCM

< SERVICE INFORMATION >

## DTC P0700 TCM

### Description

INFOID:000000003532273

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

### On Board Diagnosis Logic

INFOID:000000003532274

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "P0700 TCM" with CONSULT-II is detected when the TCM is malfunctioning.

### Possible Cause

INFOID:000000003532275

TCM.

### DTC Confirmation Procedure

INFOID:000000003532276

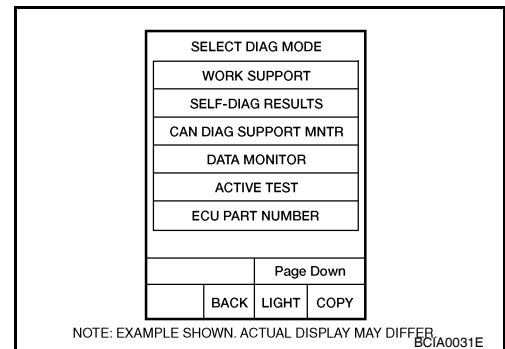
#### NOTE:

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

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

#### WITH CONSULT-II

1. Turn ignition switch "ON". (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-98. "Diagnosis Procedure"](#).



#### WITH GST

Follow the procedure "With CONSULT-II".

### Diagnosis Procedure

INFOID:000000003532277

## 1. CHECK DTC

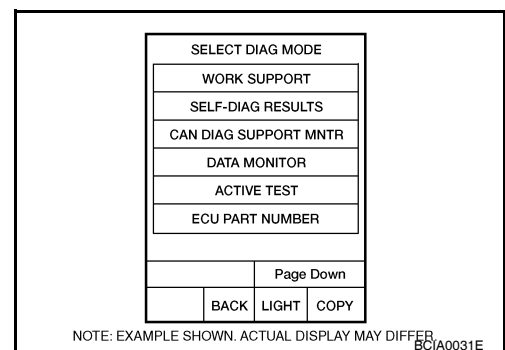
#### With CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "SELF DIAG RESULTS" mode for "A/T" with CONSULT-II.
3. Touch "ERASE".
4. Turn ignition switch "OFF" and wait at least 10 seconds.
5. Perform DTC Confirmation Procedure, [AT-98. "DTC Confirmation Procedure"](#).

Is the "TCM" displayed again?

YES >> Replace the control valve with TCM. Refer to [AT-210. "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).

NO >> **INSPECTION END**



# DTC P0705 PARK/NEUTRAL POSITION SWITCH

< SERVICE INFORMATION >

## DTC P0705 PARK/NEUTRAL POSITION SWITCH

### Description

INFOID:000000003532278

- 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.

### CONSULT-II Reference Value in Data Monitor Mode

INFOID:000000003532279

Item name	Condition	Display value
SLCTLVR POSI	Selector lever in "N", "P" positions.	N/P
	Selector lever in "R" position.	R
	Selector lever in "D" position.	D
	Selector lever in "4" position.	4
	Selector lever in "3" position.	3
	Selector lever in "2" position.	2
	Selector lever in "1" position.	1

### On Board Diagnosis Logic

INFOID:000000003532280

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "P0705 PNP SW/CIRC" with 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 no other position but "P" position is detected from "N" positions.

### Possible Cause

INFOID:000000003532281

- 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

### DTC Confirmation Procedure

INFOID:000000003532282

#### CAUTION:

**Always drive vehicle at a safe speed.**

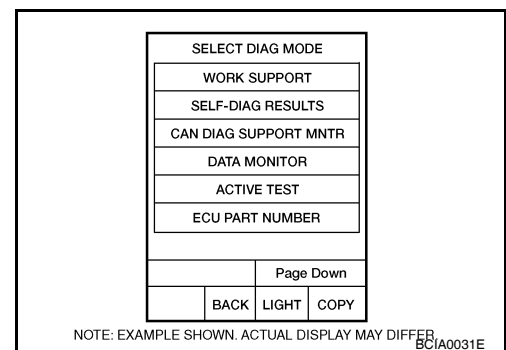
#### NOTE:

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

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

#### WITH CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "DATA MONITOR" mode for "ENGINE" with CONSULT-II.
3. Start engine.
4. Drive vehicle and 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-100. "Diagnosis Procedure"](#).



#### WITH GST

Follow the procedure "With CONSULT-II".

# DTC P0705 PARK/NEUTRAL POSITION SWITCH

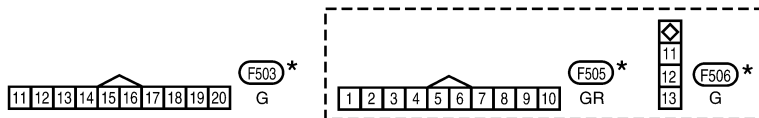
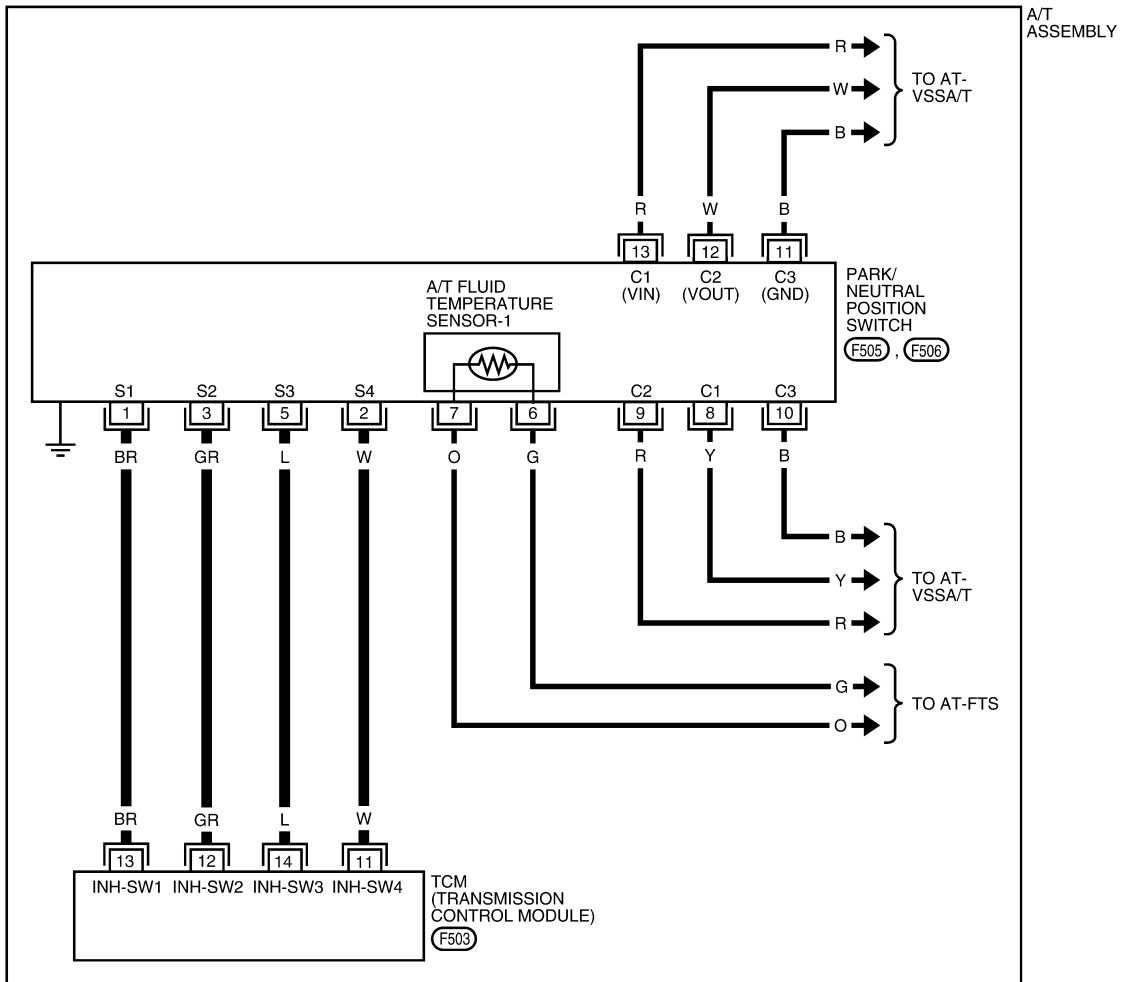
< SERVICE INFORMATION >

## Wiring Diagram - AT - PNP/SW

INFOID:000000003532283

### AT-PNP/SW-01

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



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

BCWA0520E

## Diagnosis Procedure

INFOID:000000003532284

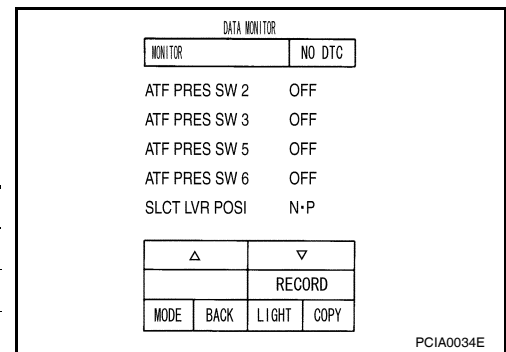
### 1. CHECK PNP SW CIRCUIT

Ⓟ With CONSULT-II

# DTC P0705 PARK/NEUTRAL POSITION SWITCH

## < SERVICE INFORMATION >

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "SELECTION FROM MENU" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Check if correct selector lever position (N/P, R or D) is displayed as selector lever is moved into each position.



Item name	Condition	Display value
SLCTLVR POSI	Selector lever in "N", "P" positions.	N/P
	Selector lever in "R" position.	R
	Selector lever in "D" position.	D
	Selector lever in "4" position.	4
	Selector lever in "3" position.	3
	Selector lever in "2" position.	2
	Selector lever in "1" position.	1

### OK or NG

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

## 2.CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Perform TCM power supply and ground circuit. Refer to [AT-158](#).

### OK or NG

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

## 3.DETECT MALFUNCTIONING ITEM

Check the following items:

- A/T assembly harness connector pin terminals for damage or loose connection with harness connector.

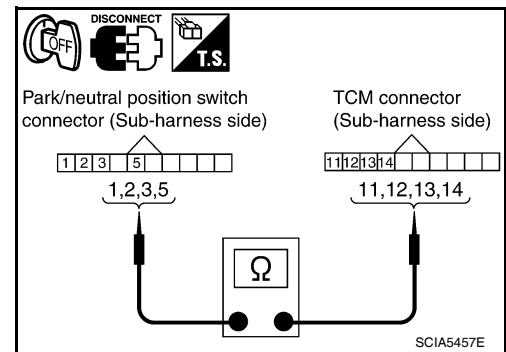
### OK or NG

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

## 4.CHECK SUB-HARNESS

1. Remove control valve with TCM. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Disconnect park/neutral position switch connector and TCM connector.
3. Check continuity between park/neutral position switch connector terminals and TCM connector terminals.

Item	Connector	Terminal	Continuity
Park/neutral position switch connector	F505	1	Yes
TCM connector	F503	13	
Park/neutral position switch connector	F505	2	Yes
TCM connector	F503	11	
Park/neutral position switch connector	F505	3	Yes
TCM connector	F503	12	
Park/neutral position switch connector	F505	5	Yes
TCM connector	F503	14	



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

## DTC P0705 PARK/NEUTRAL POSITION SWITCH

< SERVICE INFORMATION >

---

OK or NG

- OK >> Replace the control valve with TCM. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
- NG >> Replace open circuit or short to ground and short to power in harness or connectors.

### 5. CHECK DTC

---

Perform "DTC Confirmation Procedure".

- Refer to [AT-99, "DTC Confirmation Procedure"](#).

OK or NG

- OK >> **INSPECTION END**
- NG >> GO TO 2.

# DTC P0717 TURBINE REVOLUTION SENSOR

< SERVICE INFORMATION >

## DTC P0717 TURBINE REVOLUTION SENSOR

### Description

INFOID:000000003532285

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.

### CONSULT-II Reference Value in Data Monitor Mode

INFOID:000000003532286

Item name	Condition	Display value (rpm)
TURBINE REV	During driving (lock-up ON)	Approximately matches the engine speed.

### On Board Diagnosis Logic

INFOID:000000003532287

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0717 TURBINE REV S/CIRC” with 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

INFOID:000000003532288

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

### DTC Confirmation Procedure

INFOID:000000003532289

#### **CAUTION:**

**Always drive vehicle at a safe speed.**

#### **NOTE:**

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

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

#### ④ WITH CONSULT-II

1. Turn ignition switch “ON”. (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**

**Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.**

4. If DTC is detected, go to [AT-103, "Diagnosis Procedure"](#).

#### ④ WITH GST

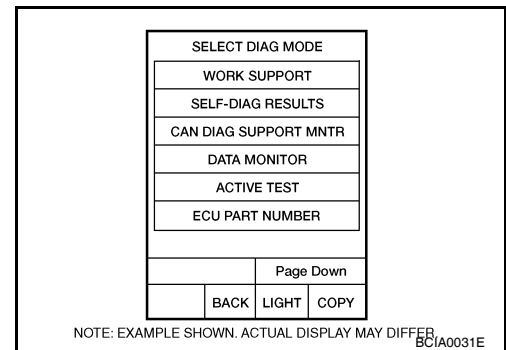
Follow the procedure “With CONSULT-II”.

### Diagnosis Procedure

INFOID:000000003532290

#### 1. CHECK INPUT SIGNAL

#### ④ With CONSULT-II



# DTC P0717 TURBINE REVOLUTION SENSOR

## < SERVICE INFORMATION >

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 "TURBINE REV".

Item name	Condition	Display value (rpm)
TURBINE REV	During driving (lock-up ON)	Approximately matches the engine speed.

### OK or NG

- OK >> GO TO 4.  
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 TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit. Refer to [AT-158](#).

### OK or NG

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

## 3.DETECT MALFUNCTIONING ITEM

Check the following items:

- The A/T assembly harness connector pin terminals for damage or loose connection with harness connector.

### OK or NG

- OK >> Replace the control valve with TCM. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).  
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 2.



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

< SERVICE INFORMATION >

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

### Description

INFOID:000000003532291

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.

### CONSULT-II Reference Value in Data Monitor Mode

INFOID:000000003532292

Item name	Condition	Display value (km/h)
VHCL/S SE·A/T	During driving	Approximately matches the speedometer reading.

### On Board Diagnosis Logic

INFOID:000000003532293

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0720 VEH SPD SEN/CIR AT” with 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

INFOID:000000003532294

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

### DTC Confirmation Procedure

INFOID:000000003532295

#### 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 performed, always turn ignition switch “OFF” and wait at least 10 seconds before performing the next test.

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

#### Ⓟ WITH CONSULT-II

1. Turn ignition switch “ON”. (Do not start engine.)
2. Select “DATA MONITOR” mode for “A/T” with CONSULT-II.
3. Drive vehicle and 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-107, "Diagnosis 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**

**Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.**

If the check result is NG, go to [AT-107, "Diagnosis Procedure"](#).

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

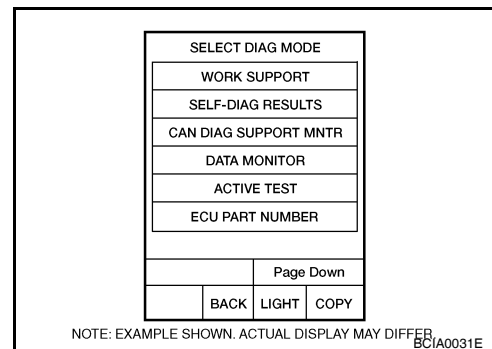
6. Maintain the following conditions for at least 5 consecutive seconds.

**ENGINE SPEED: 3,500 rpm or more**

**THRTL POS SEN: More than 1.0/8**

**Selector lever: “D” position**

**Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.**



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

## < SERVICE INFORMATION >

If the check result is NG, go to [AT-107. "Diagnosis Procedure"](#).

WITH GST

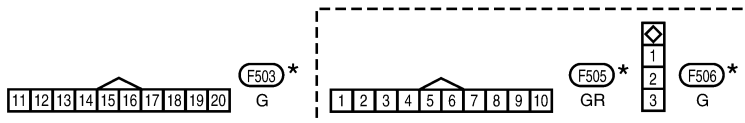
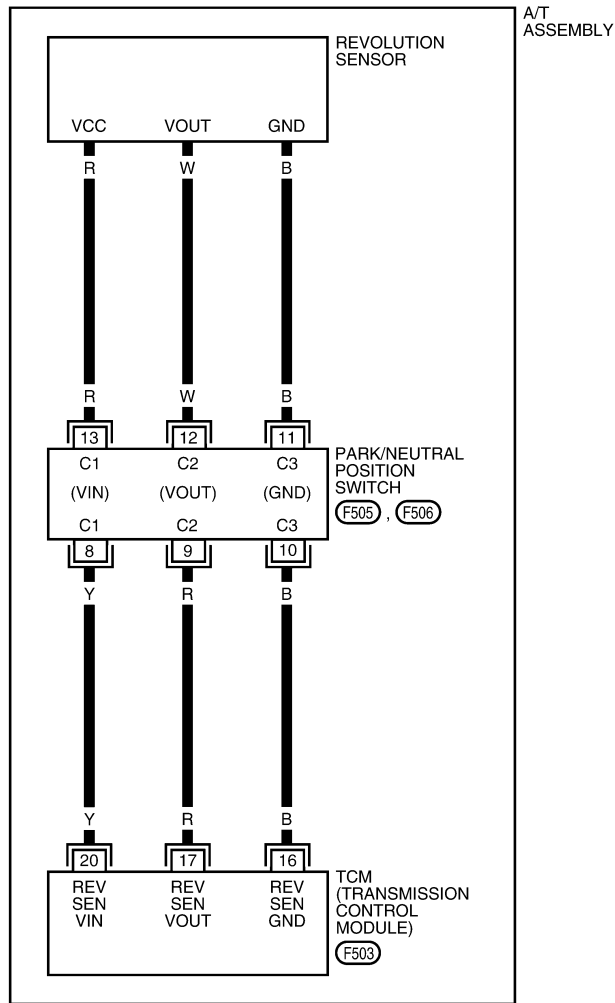
Follow the procedure "With CONSULT-II".

### Wiring Diagram - AT - VSSA/T

INFOID:000000003532296

## AT-VSSA/T-01

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



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

BCWA0497E

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

< SERVICE INFORMATION >

## Diagnosis Procedure

INFOID:000000003532297

### 1. CHECK INPUT SIGNAL

#### With CONSULT-II

- Turn ignition switch "ON".
- Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
- Start the engine.
- Read out the value of "VHCL/S SE·A/T" while driving. Check the value changes according to driving speed.

DATA MONITOR	
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

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Item name	Condition	Display value (km/h)
VHCL/S SE·A/T	During driving	Approximately matches the speedometer reading.

#### OK or NG

- OK >> GO TO 6.  
 NG >> GO TO 2.

### 2. CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit. Refer to [AT-158](#)

#### OK or NG

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

### 3. DETECT MALFUNCTIONING ITEM

Check the following items:

- The A/T assembly harness connector pin terminals for damage or loose connection with harness connector.

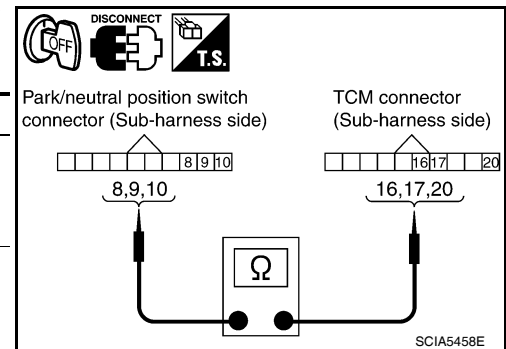
#### OK or NG

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

### 4. CHECK SUB-HARNESS

- Remove control valve with TCM. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
- Disconnect park/neutral position switch connector and TCM connector.
- Check continuity between park/neutral position switch connector terminals and TCM connector terminals.

Item	Connector	Terminal	Continuity
Park/neutral position switch connector	F505	8	Yes
TCM connector	F503	20	
Park/neutral position switch connector	F505	9	Yes
TCM connector	F503	17	
Park/neutral position switch connector	F505	10	Yes
TCM connector	F503	16	



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

#### OK or NG

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

### 5. REPLACE THE REVOLUTION SENSOR AND CHECK DTC

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

< SERVICE INFORMATION >

---

1. Replace the revolution sensor. Refer to [AT-240, "Disassembly"](#).
2. Perform "DTC Confirmation Procedure". Refer to [AT-105, "DTC Confirmation Procedure"](#).

OK or NG

OK >> **INSPECTION END**

NG >> Replace the control valve with TCM. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).

### 6. CHECK DTC

---

Perform "DTC Confirmation Procedure".

- Refer to [AT-105, "DTC Confirmation Procedure"](#).

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 2.

# DTC P0725 ENGINE SPEED SIGNAL

< SERVICE INFORMATION >

## DTC P0725 ENGINE SPEED SIGNAL

### Description

INFOID:000000003532298

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

### CONSULT-II Reference Value in Data Monitor Mode

INFOID:000000003532299

Item name	Condition	Display value (rpm)
ENGINE SPEED	Engine running	Closely matches the tachometer reading.

### On Board Diagnosis Logic

INFOID:000000003532300

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code "P0725 ENGINE SPEED SIG" with CONSULT-II is detected when TCM does not receive the ignition signal from ECM during engine cranking or running.

### Possible Cause

INFOID:000000003532301

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

### DTC Confirmation Procedure

INFOID:000000003532302

#### CAUTION:

**Always drive vehicle at a safe speed.**

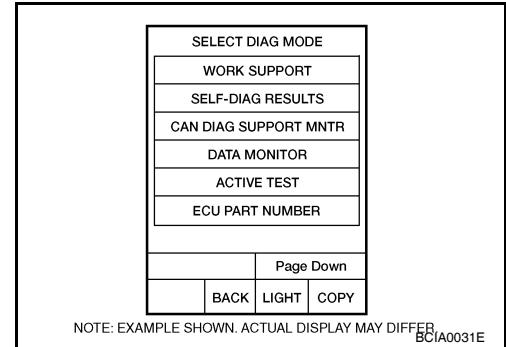
#### NOTE:

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

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

#### WITH CONSULT-II

1. Turn ignition switch "ON" 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-109, "Diagnosis Procedure"](#).



### Diagnosis Procedure

INFOID:000000003532303

#### 1. CHECK CAN COMMUNICATION LINE

Perform the self-diagnosis. Refer to [AT-83, "CONSULT-II Function \(A/T\)"](#).

Is a malfunction in the CAN communication indicated in the results?

- YES >> Check CAN communication line. Refer to [AT-91](#).  
NO >> GO TO 2.

#### 2. CHECK DTC WITH TCM

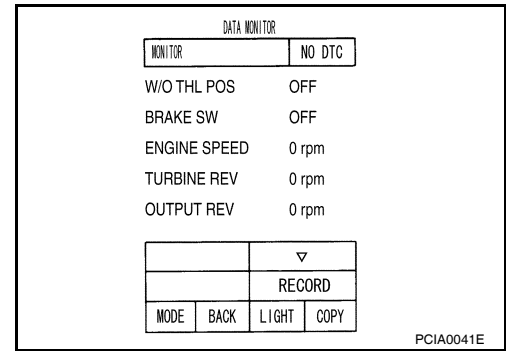
#### With CONSULT-II

# DTC P0725 ENGINE SPEED SIGNAL

## < SERVICE INFORMATION >

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

Item name	Condition	Display value (rpm)
ENGINE SPEED	Engine running	Closely matches the tachometer reading.



### OK or NG

- OK >> GO TO 3.
- NG >> Check the ignition signal circuit.
  - Refer to [EC-626](#).

### **3.CHECK DTC**

Perform "DTC Confirmation Procedure".

- Refer to [AT-109, "DTC Confirmation Procedure"](#).

### OK or NG

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

### **4.CHECK TCM POWER SUPPLY AND GROUND CIRCUIT**

Check TCM power supply and ground circuit. Refer to [AT-158](#).

### OK or NG

- OK >> GO TO 5.
- NG >> Repair or replace damaged parts.

### **5.DETECT MALFUNCTIONING ITEM**

Check the following items:

- The A/T assembly harness connector pin terminals for damage or loose connection with harness connector.

### OK or NG

- OK >> Replace the control valve with TCM. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
- NG >> Repair or replace damaged parts.

# DTC P0740 TORQUE CONVERTER CLUTCH SOLENOID VALVE

< SERVICE INFORMATION >

## DTC P0740 TORQUE CONVERTER CLUTCH SOLENOID VALVE

### Description

INFOID:000000003532304

- 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 in Data Monitor Mode

INFOID:000000003532305

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

### On Board Diagnosis Logic

INFOID:000000003532306

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "P0740 TCC SOLENOID/CIRC" with 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

INFOID:000000003532307

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

### DTC Confirmation Procedure

INFOID:000000003532308

#### CAUTION:

Always drive vehicle at a safe speed.

#### NOTE:

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

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

#### WITH CONSULT-II

1. Turn ignition switch "ON". (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.

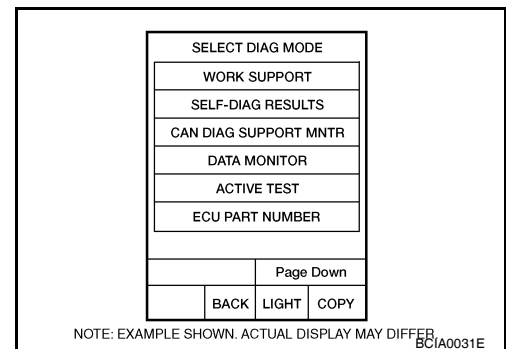
**VHCL SPEED SE: 80 km/h (50 MPH) or more**

**ACCELE POS: 0.5/8 - 1.0/8**

**SELECTOR LEVER: "D" position**

**Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.**

4. If DTC is detected go to [AT-111, "Diagnosis Procedure"](#).



#### WITH GST

Follow the procedure "With CONSULT-II".

### Diagnosis Procedure

INFOID:000000003532309

#### 1. CHECK INPUT SIGNAL

#### With CONSULT-II

# DTC P0740 TORQUE CONVERTER CLUTCH SOLENOID VALVE

## < SERVICE INFORMATION >

1. Turn ignition switch "ON".
2. Select "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Start engine.
4. Read out the value of "TCC SOLENOID" while driving.

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

### OK or NG

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

## 2.CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit. Refer to [AT-158](#).

### OK or NG

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

## 3.DETECT MALFUNCTIONING ITEM

Check the following items:

- The A/T assembly harness connector pin terminals for damage or loose connection with harness connector.

### OK or NG

- OK >> Replace the control valve with TCM. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).  
NG >> Repair or replace damaged parts.

## 4.CHECK DTC

Perform "DTC Confirmation Procedure".

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

### OK or NG

- OK >> **INSPECTION END**  
NG >> GO TO 2.

DATA MONITOR			
MONITOR		NO DTC	
TCC SOLENOID		XXXX	
LINE PRES SOL		XXXX	
I/C SOLENOID		XXXX	
FR/B SOLENOID		XXXX	
D/C SOLENOID		XXXX	
HLR/C SOL		XXXX	
		▽	
		RECORD	
MODE	BACK	LIGHT	COPY

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

< SERVICE INFORMATION >

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

### Description

INFOID:000000003532310

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.

### CONSULT-II Reference Value in Data Monitor Mode

INFOID:000000003532311

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

### On Board Diagnosis Logic

INFOID:000000003532312

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "P0744 A/T TCC S/V FNCTN" with 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

INFOID:000000003532313

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

### DTC Confirmation Procedure

INFOID:000000003532314

#### CAUTION:

Always drive vehicle at a safe speed.

#### NOTE:

If "DTC Confirmation Procedure" has been previously performed, always turn ignition switch "OFF" and wait at least 10 seconds before performing 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.)

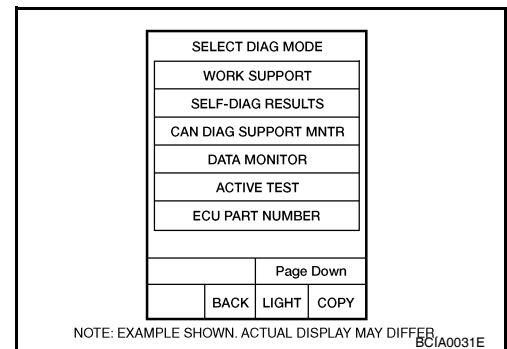
**ACCELE POSI: More than 1.0/8 (at all times during step 4)**

**TCC SOLENOID: 0.4 - 0.6 A**

**Selector lever: "D" position**

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

- Make sure "GEAR" shows "5".
  - For shift schedule, refer to [AT-299, "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-114, "Diagnosis Procedure"](#).



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

## < SERVICE INFORMATION >

Refer to shift schedule, [AT-299. "Vehicle Speed When Performing and Releasing Complete Lock-up"](#).

### Ⓢ WITH GST

Follow the procedure "With CONSULT-II".

## Diagnosis Procedure

INFOID:000000003532315

### 1. CHECK INPUT SIGNAL

#### Ⓢ With CONSULT-II

1. Turn ignition switch "ON".
2. Select "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Start the engine.
4. Read out the value of "TCC SOLENOID" while driving.

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

#### OK or NG

OK >> GO TO 4.

NG >> GO TO 2.

### 2. CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit. Refer to [AT-158](#).

#### OK or NG

OK >> GO TO 3.

NG >> Repair or replace damaged parts.

### 3. DETECT MALFUNCTIONING ITEM

Check the following items:

- The A/T assembly harness connector pin terminals for damage or loose connection with harness connector.

#### OK or NG

OK >> Replace the control valve with TCM. Refer to [AT-210. "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).

NG >> Repair or replace damaged parts.

### 4. CHECK DTC

Perform "DTC Confirmation Procedure".

- Refer to [AT-113. "DTC Confirmation Procedure"](#).

#### OK or NG

OK >> **INSPECTION END**

NG >> GO TO 2.

DATA MONITOR			
MONITOR		NO DTC	
TCC SOLENOID		XXXX	
LINE PRES SOL		XXXX	
I/C SOLENOID		XXXX	
FR/B SOLENOID		XXXX	
D/C SOLENOID		XXXX	
HLR/C SOL		XXXX	
		▽	
		RECORD	
MODE	BACK	LIGHT	COPY

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# DTC P0745 LINE PRESSURE SOLENOID VALVE

< SERVICE INFORMATION >

## DTC P0745 LINE PRESSURE SOLENOID VALVE

### Description

INFOID:000000003532316

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”.**

### CONSULT-II Reference Value in Data Monitor Mode

INFOID:000000003532317

Item name	Condition	Display value (Approx.)
LINE PRES SOL	During driving	0.2 - 0.6 A

### On Board Diagnosis Logic

INFOID:000000003532318

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0745 L/PRESS SOL/CIRC” with 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

INFOID:000000003532319

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

### DTC Confirmation Procedure

INFOID:000000003532320

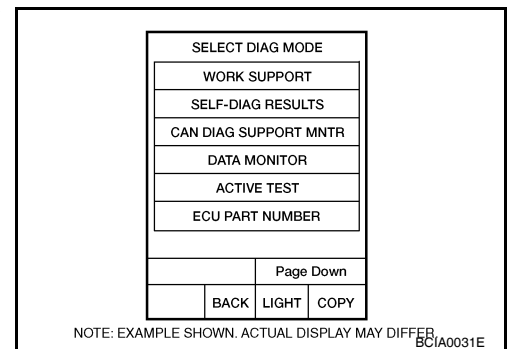
#### NOTE:

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

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

#### ④ WITH CONSULT-II

1. Turn ignition switch “ON” 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-115, "Diagnosis Procedure"](#).



#### ④ WITH GST

Follow the procedure “With CONSULT-II”.

### Diagnosis Procedure

INFOID:000000003532321

#### 1. CHECK INPUT SIGNAL

#### ④ With CONSULT-II

# DTC P0745 LINE PRESSURE SOLENOID VALVE

## < SERVICE INFORMATION >

1. Turn ignition switch "ON".
2. Select "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Start the engine.
4. Read out the value of "LINE PRES SOL" while driving.

Item name	Condition	Display value (Approx.)
LINE PRES SOL	During driving	0.2 - 0.6 A

DATA MONITOR			
MONITOR		NO DTC	
TCC SOLENOID		XXXX	
LINE PRES SOL		XXXX	
I/C SOLENOID		XXXX	
FR/B SOLENOID		XXXX	
D/C SOLENOID		XXXX	
HLR/C SOL		XXXX	
		▽	
		RECORD	
MODE	BACK	LIGHT	COPY

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### OK or NG

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

## 2. CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit. Refer to [AT-158](#).

### OK or NG

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

## 3. DETECT MALFUNCTIONING ITEM

Check the following items:

- The A/T assembly harness connector pin terminals for damage or loose connection with harness connector.

### OK or NG

- OK >> Replace the control valve with TCM. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).  
NG >> Repair or replace damaged parts.

## 4. CHECK DTC

Perform "DTC Confirmation Procedure".

- Refer to [AT-115, "DTC Confirmation Procedure"](#).

### OK or NG

- OK >> **INSPECTION END**  
NG >> GO TO 2.

# DTC P1705 THROTTLE POSITION SENSOR

< SERVICE INFORMATION >

## DTC P1705 THROTTLE POSITION SENSOR

### Description

INFOID:000000003532322

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.

### CONSULT-II Reference Value in Data Monitor Mode

INFOID:000000003532323

Item name	Condition	Display value (Approx.)
ACCELE POSI	Released accelerator pedal.	0.0/8
	Fully depressed accelerator pedal.	8/8

### On Board Diagnosis Logic

INFOID:000000003532324

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code "P1705 TP SEN/CIRC A/T" with CONSULT-II is detected when TCM does not receive the proper accelerator pedal position signals (input by CAN communication) from ECM.

### Possible Cause

INFOID:000000003532325

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

### DTC Confirmation Procedure

INFOID:000000003532326

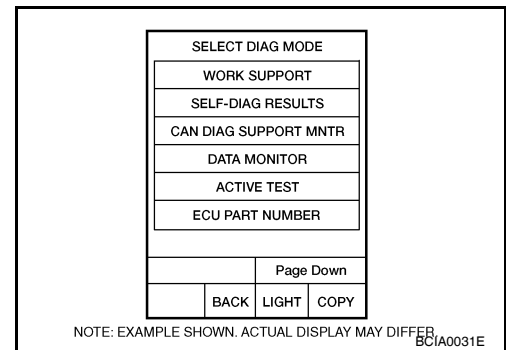
#### NOTE:

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

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

#### ⓐ WITH CONSULT-II

1. Turn ignition switch "ON". (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-117, "Diagnosis Procedure"](#).



### Diagnosis Procedure

INFOID:000000003532327

#### 1. CHECK CAN COMMUNICATION LINE

Perform the self-diagnosis. Refer to [AT-83, "CONSULT-II Function \(A/T\)"](#).

Is a malfunction in the CAN communication indicated in the results?

- YES >> Check CAN communication line. Refer to [AT-91](#).  
NO >> GO TO 2.

#### 2. CHECK DTC WITH TCM

#### ⓐ With CONSULT-II

# DTC P1705 THROTTLE POSITION SENSOR

## < SERVICE INFORMATION >

1. Turn ignition switch "ON". (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 "ACCELE POSI".

Item name	Condition	Display value (Approx.)
ACCELE POSI	Released accelerator pedal.	0.0/8
	Fully depressed accelerator pedal.	8/8

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. Select "SELF-DIAG RESULTS" mode for "A/T" with CONSULT-II. Refer to [AT-83. "CONSULT-II Function \(A/T\)".](#)

### OK or NG

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

## 3. CHECK DTC WITH ECM

### With CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "SELF-DIAG RESULTS" mode for "ENGINE" with CONSULT-II. Refer to [AT-83. "CONSULT-II Function \(A/T\)".](#)

### OK or NG

- OK >> GO TO 4.  
 NG >> Check the DTC detected item. Refer to [AT-83. "CONSULT-II Function \(A/T\)".](#)
- If CAN communication line is detected, go to [AT-91.](#)

SELECT DIAG MODE		
WORK SUPPORT		
SELF-DIAG RESULTS		
CAN DIAG SUPPORT MNTR		
DATA MONITOR		
ACTIVE TEST		
ECU PART NUMBER		
Page Down		
BACK	LIGHT	COPY

NOTE: EXAMPLE SHOWN. ACTUAL DISPLAY MAY DIFFER. PCIA0031E

## 4. CHECK DTC

Perform "DTC Confirmation Procedure".

- Refer to [AT-117. "DTC Confirmation Procedure".](#)

### OK or NG

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

## 5. CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit. Refer to [AT-158.](#)

### OK or NG

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

## 6. DETECT MALFUNCTIONING ITEM

Check the following items:

- The A/T assembly harness connector pin terminals for damage or loose connection with harness connector.

### OK or NG

- OK >> Replace the control valve with TCM. Refer to [AT-210. "Control Valve with TCM and A/T Fluid Temperature Sensor 2".](#)  
 NG >> Repair or replace damaged parts.

# DTC P1710 A/T FLUID TEMPERATURE SENSOR CIRCUIT

< SERVICE INFORMATION >

## DTC P1710 A/T FLUID TEMPERATURE SENSOR CIRCUIT

### Description

INFOID:000000003532328

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

### CONSULT-II Reference Value in Data Monitor Mode

INFOID:000000003532329

Item name	Condition °C (°F)	Display value (Approx.)
ATF TEMP SE 1	0 (32) - 20 (68) - 80 (176)	3.3 - 2.7 - 0.9 V
ATF TEMP SE 2		3.3 - 2.5 - 0.7 V

### On Board Diagnosis Logic

INFOID:000000003532330

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P1710 (A/T), P0710 (ENGINE) ATF TEMP SEN/CIRC” with CONSULT-II is detected when TCM receives an excessively low or high voltage from the sensor.

### Possible Cause

INFOID:000000003532331

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

### DTC Confirmation Procedure

INFOID:000000003532332

#### CAUTION:

**Always drive vehicle at a safe speed.**

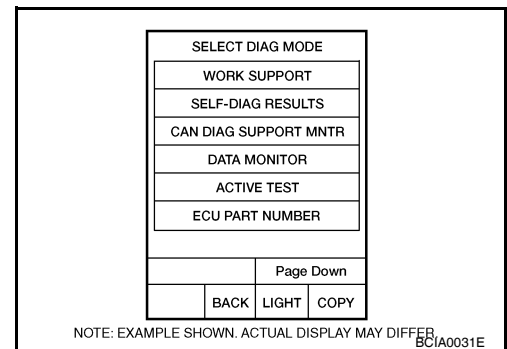
#### NOTE:

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

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

#### Ⓟ WITH CONSULT-II

1. Turn ignition switch “ON”. (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-120, "Diagnosis Procedure"](#).



#### Ⓟ WITH GST

Follow the procedure “With CONSULT-II”.

# DTC P1710 A/T FLUID TEMPERATURE SENSOR CIRCUIT

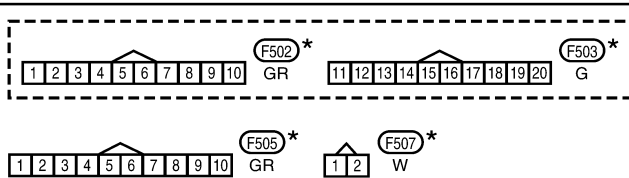
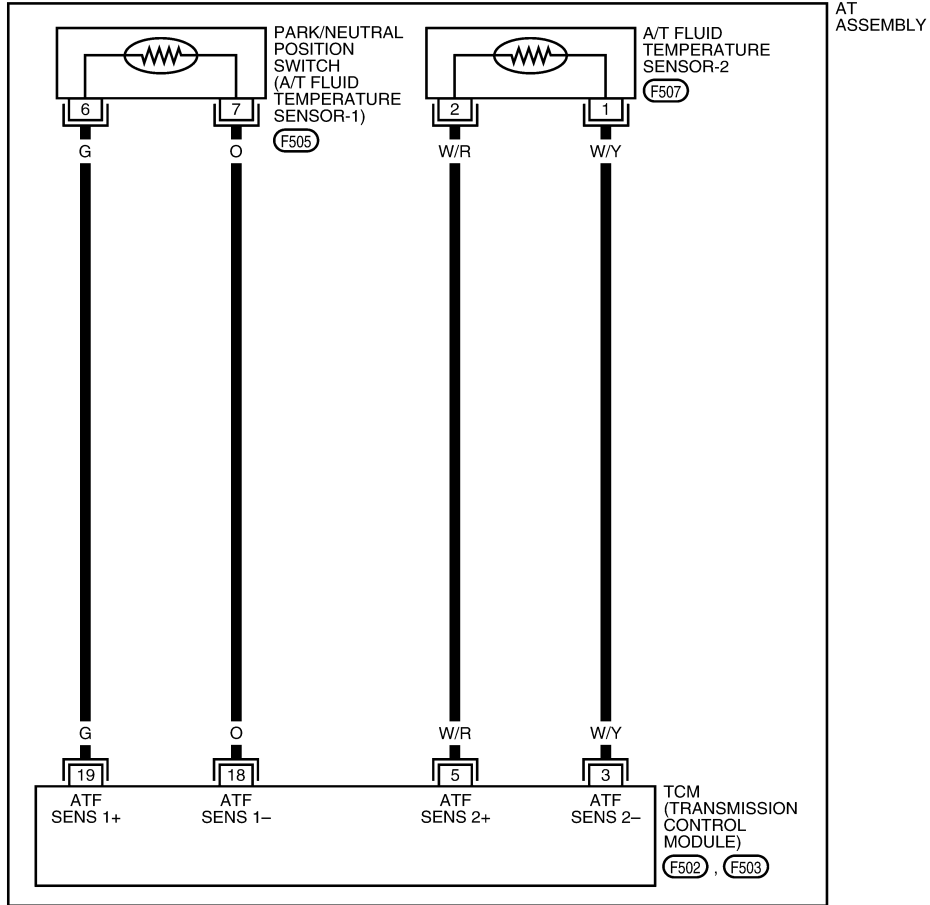
< SERVICE INFORMATION >

## Wiring Diagram - AT - FTS

INFOID:000000003532333

### AT-FTS-01

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



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

BCWA0323E

## Diagnosis Procedure

INFOID:000000003532334

### 1. CHECK A/T FLUID TEMPERATURE SENSOR 1 SIGNAL

Ⓟ With CONSULT-II



# DTC P1710 A/T FLUID TEMPERATURE SENSOR CIRCUIT

## < SERVICE INFORMATION >

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".

Item name	Condition °C (°F)	Display value (Approx.)
ATF TEMP SE 1	0 (32) - 20 (68) - 80 (176)	3.3 - 2.7 - 09 V

### OK or NG

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

DATA MONITOR									
MONITOR	NO DTC								
OUTPUT REV	0 rpm								
ATF TEMP SE 1	1.84 v								
ATF TEMP SE 2	1.72 v								
BATTERY BOLT	11.5 v								
ATF PRES SW 1	OFF								
<table border="1"> <tr> <td>△</td> <td>▽</td> </tr> <tr> <td colspan="2" style="text-align: center;">RECORD</td> </tr> <tr> <td>MODE</td> <td>BACK</td> </tr> <tr> <td>LIGHT</td> <td>COPY</td> </tr> </table>		△	▽	RECORD		MODE	BACK	LIGHT	COPY
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RECORD									
MODE	BACK								
LIGHT	COPY								

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## 2.CHECK A/T FLUID TEMPERATURE SENSOR 2 SIGNAL

### 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 2".

Item name	Condition °C (°F)	Display value (Approx.)
ATF TEMP SE 2	0 (32) - 20 (68) - 80 (176)	3.3 - 2.5 - 0.7 V

### OK or NG

- OK >> GO TO 8.  
NG >> GO TO 5.

DATA MONITOR									
MONITOR	NO DTC								
OUTPUT REV	0 rpm								
ATF TEMP SE 1	1.84 v								
ATF TEMP SE 2	1.72 v								
BATTERY BOLT	11.5 v								
ATF PRES SW 1	OFF								
<table border="1"> <tr> <td>△</td> <td>▽</td> </tr> <tr> <td colspan="2" style="text-align: center;">RECORD</td> </tr> <tr> <td>MODE</td> <td>BACK</td> </tr> <tr> <td>LIGHT</td> <td>COPY</td> </tr> </table>		△	▽	RECORD		MODE	BACK	LIGHT	COPY
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RECORD									
MODE	BACK								
LIGHT	COPY								

PCIA0039E

## 3.CHECK A/T FLUID TEMPERATURE SENSOR 1

Check A/T fluid temperature sensor 1. Refer to [AT-122, "Component Inspection"](#).

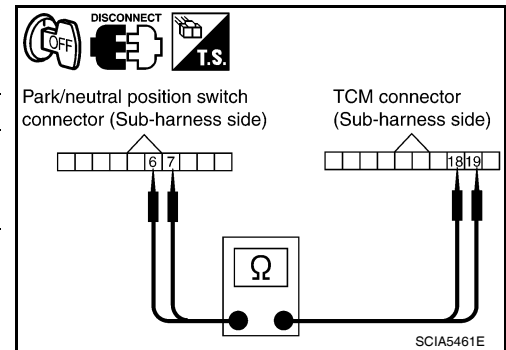
### OK or NG

- OK >> GO TO 4.  
NG >> Replace the control valve with TCM. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).

## 4.CHECK SUB-HARNESS

1. Disconnect park/neutral position switch connector and TCM connector.
2. Check continuity between park/neutral position switch connector terminals and TCM connector terminals.

Item	Connector	Terminal	Continuity
Park/neutral position switch connector	F505	6	Yes
TCM connector	F503	19	
Park/neutral position switch connector	F505	7	Yes
TCM connector	F503	18	



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

### OK or NG

- OK >> GO TO 7.  
NG >> Replace open circuit or short to ground and short to power in harness or connectors.

## 5.CHECK A/T FLUID TEMPERATURE SENSOR 2

Check A/T fluid temperature sensor 2. Refer to [AT-122, "Component Inspection"](#).

### OK or NG

- OK >> GO TO 6.  
NG >> Replace the A/T fluid temperature sensor 2. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).

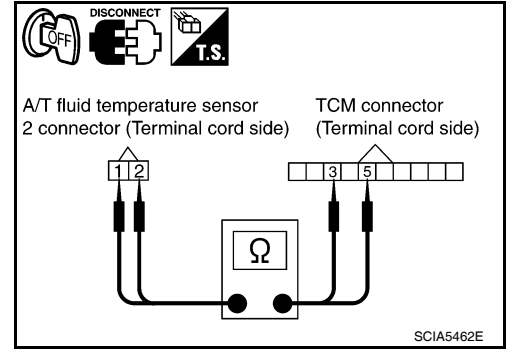
## 6.CHECK TERMINAL CORD ASSEMBLY

# DTC P1710 A/T FLUID TEMPERATURE SENSOR CIRCUIT

## < SERVICE INFORMATION >

1. Disconnect A/T fluid temperature sensor 2 connector and TCM connector.
2. Check continuity between A/T fluid temperature sensor 2 connector terminals and TCM connector terminals.

Item	Connector	Terminal	Continuity
A/T fluid temperature sensor 2 connector	F507	1	Yes
TCM connector	F502	3	
A/T fluid temperature sensor 2 connector	F507	2	Yes
TCM connector	F502	5	



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

### OK or NG

- OK >> GO TO 7.
- NG >> Replace open circuit or short to ground and short to power in harness or connectors.

## 7. CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

1. Check TCM power supply and ground circuit. Refer to [AT-158](#).
2. Reinstall any part removed.

### OK or NG

- OK >> Replace the control valve with TCM. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
- NG >> Repair or replace damaged parts.

## 8. CHECK DTC

Perform "DTC Confirmation Procedure".

- Refer to [AT-119, "DTC Confirmation Procedure"](#).

### OK or NG

- OK >> **INSPECTION END**
- NG >> GO TO 1.

## Component Inspection

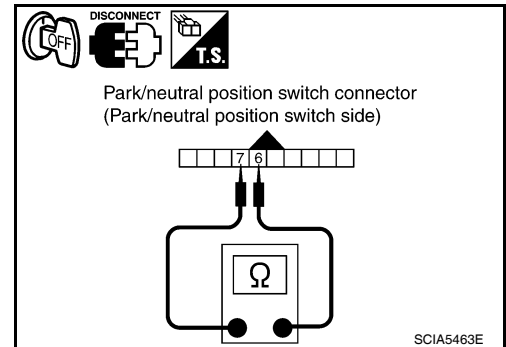
INFOID:000000003532335

### A/T FLUID TEMPERATURE SENSOR 1

1. Remove control valve with TCM. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Check resistance between terminals.

Name	Terminal	Temperature °C (°F)	Resistance (Approx.) (kΩ)
A/T fluid temperature sensor 1	6-7	0 (32)	15
		20 (68)	6.5
		80 (176)	0.9

3. If NG, replace the control valve with TCM. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).



### A/T FLUID TEMPERATURE SENSOR 2

1. Remove A/T fluid temperature sensor 2. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).

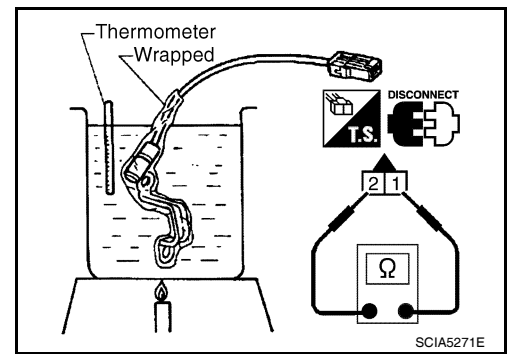
# DTC P1710 A/T FLUID TEMPERATURE SENSOR CIRCUIT

## < SERVICE INFORMATION >

2. Check resistance between terminals.

Name	Terminal	Temperature °C (°F)	Resistance (Approx.) (k $\Omega$ )
A/T fluid temperature sensor 2	1-2	0 (32)	10
		20 (68)	4
		80 (176)	0.5

3. If NG, replace the A/T fluid temperature sensor 2. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#)



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

# DTC P1721 VEHICLE SPEED SENSOR MTR

< SERVICE INFORMATION >

## DTC P1721 VEHICLE SPEED SENSOR MTR

### Description

INFOID:000000003532336

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.

### CONSULT-II Reference Value in Data Monitor Mode

INFOID:000000003532337

Item name	Condition	Display value (km/h)
VHCL/S SE·MTR	During driving	Approximately matches the speedometer reading.

### On Board Diagnosis Logic

INFOID:000000003532338

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code "P1721 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

INFOID:000000003532339

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

### DTC Confirmation Procedure

INFOID:000000003532340

#### CAUTION:

Always drive vehicle at a safe speed.

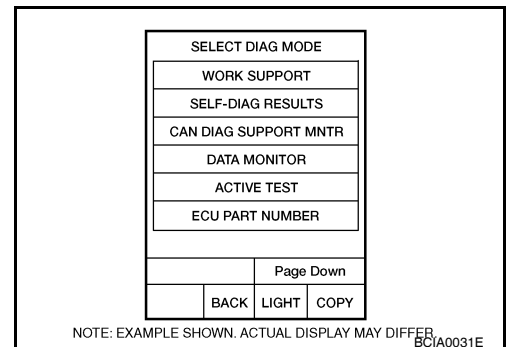
#### NOTE:

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

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

#### ④ WITH CONSULT-II

1. Turn ignition switch "ON". (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-124, "Diagnosis Procedure"](#).



### Diagnosis Procedure

INFOID:000000003532341

#### 1. CHECK CAN COMMUNICATION LINE

Perform the self-diagnosis. Refer [AT-83, "CONSULT-II Function \(A/T\)"](#).

Is a malfunction in the CAN communication indicated in the results?

YES >> Check CAN communication line. Refer to [AT-91](#).

NO >> GO TO 2.

#### 2. CHECK INPUT SIGNAL

#### ④ With CONSULT-II

# DTC P1721 VEHICLE SPEED SENSOR MTR

## < SERVICE INFORMATION >

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

Item name	Condition	Display value (Approx.)(km/h)
VHCL/S SE·MTR	During driving	Approximately matches the speedometer reading.

### OK or NG

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

DATA MONITOR	
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

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## 3.CHECK COMBINATION METERS

Check CAN communication line. Refer to [DI-15, "How to Proceed with Trouble Diagnosis"](#).

### OK or NG

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

## 4.CHECK DTC

Perform "DTC Confirmation Procedure".

- Refer to [AT-124, "DTC Confirmation Procedure"](#).

### OK or NG

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

## 5.CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit. Refer to [AT-158](#).

### OK or NG

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

## 6.DETECT MALFUNCTIONING ITEM

Check the following items:

- The A/T assembly harness connector pin terminals for damage or loose connection with harness connector.

### OK or NG

- OK >> Replace the control valve with TCM. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).  
 NG >> Repair or replace damaged parts.

# DTC P1730 A/T INTERLOCK

< SERVICE INFORMATION >

## DTC P1730 A/T INTERLOCK

### Description

INFOID:000000003532342

- Fail-safe function to detect interlock conditions.

### On Board Diagnosis Logic

INFOID:000000003532343

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "P1730 A/T INTERLOCK" with 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 ATF pressure switch when gear is steady.

### Possible Cause

INFOID:000000003532344

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

### DTC Confirmation Procedure

INFOID:000000003532345

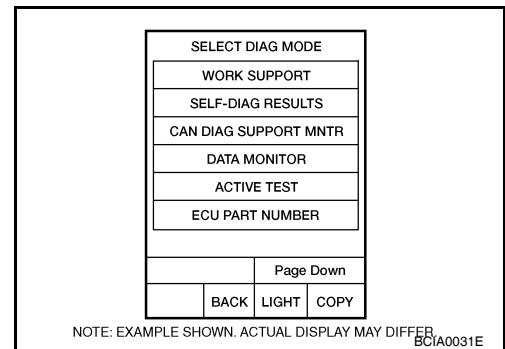
#### NOTE:

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

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

#### Ⓜ WITH CONSULT-II

1. Turn ignition switch "ON". (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-127, "Diagnosis Procedure"](#).



#### Ⓜ WITH GST

Follow the procedure "With CONSULT-II".

### Judgement of A/T Interlock

INFOID:000000003532346

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 performed.

### A/T INTERLOCK COUPLING PATTERN TABLE

# DTC P1730 A/T INTERLOCK

< SERVICE INFORMATION >

I: NG, X: OK

Gear position	ATF pressure switch output					Fail-safe function	Clutch pressure output pattern after fail-safe function						
	SW3 (I/C)	SW6 (HLR/C)	SW5 (D/C)	SW1 (FR/B)	SW2 (LC/B)		I/C	HLR/C	D/C	FR/B	LC/B	L/U	
A/T interlock coupling pattern	3rd	-	X	X	-	1	Held in 2nd gear	OFF	OFF	ON	OFF	OFF	OFF
	4th	-	X	X	-	1	Held in 2nd gear	OFF	OFF	ON	OFF	OFF	OFF
	5th	X	X	-	X	1	Held in 2nd gear	OFF	OFF	ON	OFF	OFF	OFF

## Diagnosis Procedure

INFOID:000000003532347

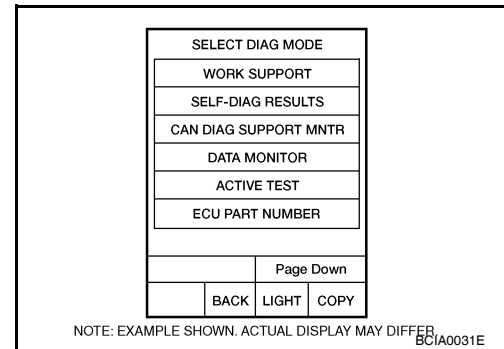
### 1. SELF-DIAGNOSIS

#### With CONSULT-II

1. Drive vehicle.
2. Stop vehicle and turn ignition switch "OFF".
3. Turn ignition switch "ON".
4. Select "SELF-DIAG RESULTS" mode for "A/T" with CONSULT-II.

#### OK or NG

- OK >> GO TO 2.  
 NG >> Check low coast brake solenoid valve circuit and function. Refer to [AT-146](#), [AT-148](#).



### 2. CHECK DTC

Perform "DTC Confirmation Procedure".

- Refer to [AT-126](#), "DTC Confirmation Procedure".

#### OK or NG

- OK >> **INSPECTION END**  
 NG >> GO TO 3.

### 3. CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit. Refer to [AT-158](#).

#### OK or NG

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

### 4. DETECT MALFUNCTIONING ITEM

Check the following items:

- The A/T assembly harness connector pin terminals for damage or loose connection with harness connector.

#### OK or NG

- OK >> Replace the control valve with TCM. Refer to [AT-210](#), "Control Valve with TCM and A/T Fluid Temperature Sensor 2".  
 NG >> Repair or replace damaged parts.

# DTC P1731 A/T 1ST ENGINE BRAKING

< SERVICE INFORMATION >

## DTC P1731 A/T 1ST ENGINE BRAKING

### Description

INFOID:000000003532348

Fail-safe function to prevent sudden decrease in speed by engine brake other than at "1" position.

### CONSULT-II Reference Value in Data Monitor Mode

INFOID:000000003532349

Item name	Condition	Display value
ON OFF SOL	Low coast brake engaged. Refer to <a href="#">AT-20</a> .	ON
	Low coast brake disengaged. Refer to <a href="#">AT-20</a> .	OFF
ATF PRES SW 2	Low coast brake engaged. Refer to <a href="#">AT-20</a> .	ON
	Low coast brake disengaged. Refer to <a href="#">AT-20</a> .	OFF

### On Board Diagnosis Logic

INFOID:000000003532350

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code "P1731 A/T 1ST E/BRAKING" with CONSULT-II is detected under the following conditions.
  - When TCM does not receive the proper voltage signal from the sensor.
  - When TCM monitors each ATF pressure switch and solenoid monitor value, and detects as irregular when engine brake of 1st gear acts other than at 1 position.

### Possible Cause

INFOID:000000003532351

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

### DTC Confirmation Procedure

INFOID:000000003532352

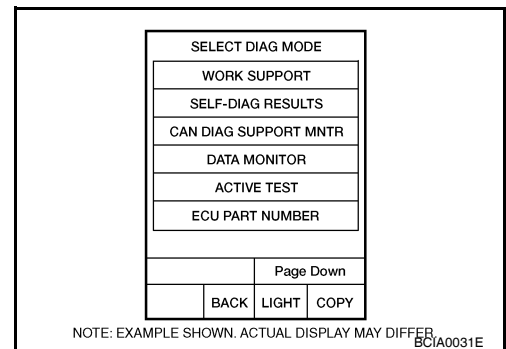
#### NOTE:

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

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

#### ④ WITH CONSULT-II

1. Turn ignition switch "ON". (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.  
**ENGINE SPEED: 1,200 rpm**  
**Selector lever: "1" position**  
**Gear position: 1st gear**
5. If DTC is detected, go to [AT-128](#). "Diagnosis Procedure".



### Diagnosis Procedure

INFOID:000000003532353

#### 1. CHECK INPUT SIGNALS

#### ④ With CONSULT-II

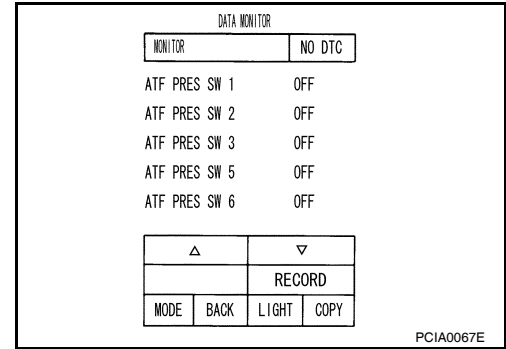


# DTC P1731 A/T 1ST ENGINE BRAKING

## < SERVICE INFORMATION >

1. Start the engine.
2. Select "SELECTION FROM MENU" in "DATA MONITOR" for "A/T" with CONSULT-II"
3. Drive vehicle in the "1" position (1st gear), and confirm the ON/OFF actuation of "ATF PRES SW 2" and "ON OFF SOL".

Item name	Condition	Display value
ON OFF SOL	Low coast brake engaged. Refer to <a href="#">AT-20</a> .	ON
	Low coast brake disengaged. Refer to <a href="#">AT-20</a> .	OFF
ATF PRES SW 2	Low coast brake engaged. Refer to <a href="#">AT-20</a> .	ON
	Low coast brake disengaged. Refer to <a href="#">AT-20</a> .	OFF



### OK or NG

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

## 2.CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit. Refer to [AT-158](#).

### OK or NG

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

## 3.DETECT MALFUNCTIONING ITEM

Check the following items:

- The A/T assembly harness connector pin terminals for damage or loose connection with harness connector.

### OK or NG

- OK >> Replace the control valve with TCM. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
- NG >> Repair or replace damaged parts.

## 4.CHECK DTC

Perform "DTC Confirmation Procedure".

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

### OK or NG

- OK >> **INSPECTION END**
- NG >> GO TO 2.

# DTC P1752 INPUT CLUTCH SOLENOID VALVE

< SERVICE INFORMATION >

## DTC P1752 INPUT CLUTCH SOLENOID VALVE

### Description

INFOID:000000003532354

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.

### CONSULT-II Reference Value in Data Monitor Mode

INFOID:000000003532355

Item name	Condition	Display value (Approx.)
I/C SOLENOID	Input clutch disengaged. Refer to <a href="#">AT-20</a> .	0.6 - 0.8 A
	Input clutch engaged. Refer to <a href="#">AT-20</a> .	0 - 0.05 A

### On Board Diagnosis Logic

INFOID:000000003532356

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "P1752 I/C SOLENOID/CIRC" with 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

INFOID:000000003532357

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

### DTC Confirmation Procedure

INFOID:000000003532358

#### CAUTION:

**Always drive vehicle at a safe speed.**

#### NOTE:

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

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

#### ④ WITH CONSULT-II

1. Turn ignition switch "ON". (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 5 consecutive seconds.

**ACCELE POS: 1.5/8 - 2.0/8**

**Selector lever: "D" position**

**Gear position: 3rd ⇒ 4th Gear (I/C ON/OFF)**

**Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.**

5. If DTC is detected go to [AT-130, "Diagnosis Procedure"](#).

#### ④ WITH GST

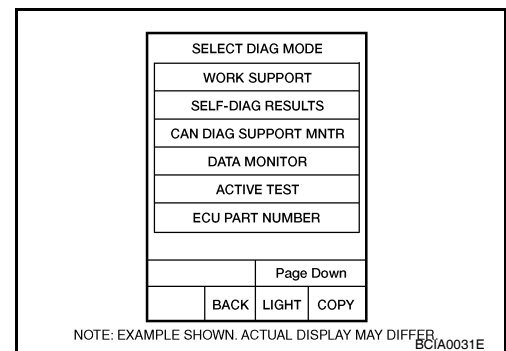
Follow the procedure "With CONSULT-II".

### Diagnosis Procedure

INFOID:000000003532359

#### 1. CHECK INPUT SIGNAL

##### ④ With CONSULT-II



# DTC P1752 INPUT CLUTCH SOLENOID VALVE

## < SERVICE INFORMATION >

1. Turn ignition switch "ON".
2. Select "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Start the engine.
4. Read out the value of "I/C SOLENOID" while driving.

Item name	Condition	Display value (Approx.)
I/C SOLENOID	Input clutch disengaged. Refer to <a href="#">AT-20</a> .	0.6 - 0.8 A
	Input clutch engaged. Refer to <a href="#">AT-20</a> .	0 - 0.05 A

DATA MONITOR			
MONITOR		NO DTC	
TCC SOLENOID	XXXX		
LINE PRES SOL	XXXX		
I/C SOLENOID	XXXX		
FR/B SOLENOID	XXXX		
D/C SOLENOID	XXXX		
HLR/C SOL	XXXX		
		▽	
		RECORD	
MODE	BACK	LIGHT	COPY

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### OK or NG

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

## 2. CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit. Refer to [AT-158](#).

### OK or NG

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

## 3. DETECT MALFUNCTIONING ITEM

Check the following items:

- The A/T assembly harness connector pin terminals for damage or loose connection with harness connector.

### OK or NG

- OK >> Replace the control valve with TCM. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).  
 NG >> Repair or replace damaged parts.

## 4. CHECK DTC

Perform "DTC Confirmation Procedure".

- Refer to [AT-130, "DTC Confirmation Procedure"](#)

### OK or NG

- OK >> **INSPECTION END**  
 NG >> GO TO 2.

# DTC P1754 INPUT CLUTCH SOLENOID VALVE FUNCTION

< SERVICE INFORMATION >

## DTC P1754 INPUT CLUTCH SOLENOID VALVE FUNCTION

### Description

INFOID:000000003532360

- 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.

### CONSULT-II Reference Value in Data Monitor Mode

INFOID:000000003532361

Item name	Condition	Display value (Approx.)
I/C SOLENOID	Input clutch disengaged. Refer to <a href="#">AT-20</a> .	0.6 - 0.8 A
	Input clutch engaged. Refer to <a href="#">AT-20</a> .	0 - 0.05 A
ATF PRES SW 3	Input clutch engaged. Refer to <a href="#">AT-20</a> .	ON
	Input clutch disengaged. Refer to <a href="#">AT-20</a> .	OFF

### On Board Diagnosis Logic

INFOID:000000003532362

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P1754 I/C SOLENOID FNCTN” with 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 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

INFOID:000000003532363

- Harness or connectors  
(The solenoid and switch circuits are open or shorted.)
- Input clutch solenoid valve
- ATF pressure switch 3

### DTC Confirmation Procedure

INFOID:000000003532364

#### CAUTION:

**Always drive vehicle at a safe speed.**

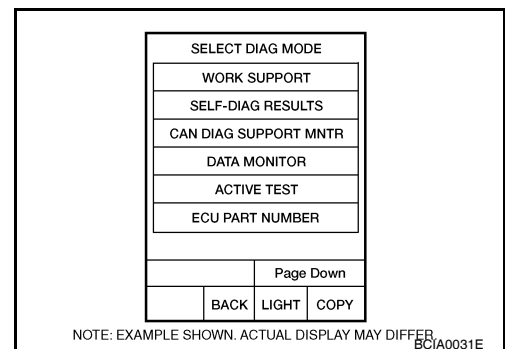
#### NOTE:

If “DTC Confirmation Procedure” has been previously performed, always turn ignition switch “OFF” and wait at least 10 seconds before performing 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 conditions.  
**ACCELE POSI: 1.5/8 - 2.0/8**  
**Selector lever: “D” position**  
**Gear position: 3rd ⇒ 4th Gear (I/C ON/OFF)**  
**Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.**
3. Perform step “2” again.
4. Turn ignition switch “OFF”, 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-133, "Diagnosis Procedure"](#).  
If DTC (P1752) is detected, go to [AT-133, "Diagnosis Procedure"](#).  
If DTC (P1843) is detected, go to [AT-152, "Diagnosis Procedure"](#).



# DTC P1754 INPUT CLUTCH SOLENOID VALVE FUNCTION

< SERVICE INFORMATION >

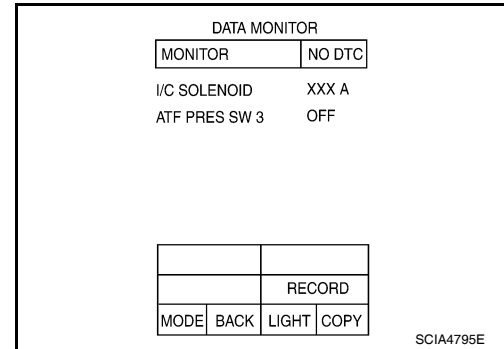
## Diagnosis Procedure

INFOID:000000003532365

### 1. CHECK INPUT SIGNALS

#### With CONSULT-II

- Turn ignition switch "ON". (Do not start engine.)
- Select "SELECTION FROM MENU" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
- Start the engine.
- Drive vehicle in the "D" position (3rd ⇒ 4th gear), and confirm the ON/OFF actuation of the "ATF PRES SW 3" and electrical current value of "I/C SOLENOID".



Item name	Condition	Display value (Approx.)
I/C SOLENOID	Input clutch disengaged. Refer to <a href="#">AT-20</a> .	0.6 - 0.8 A
	Input clutch engaged. Refer to <a href="#">AT-20</a> .	0 - 0.05 A
ATF PRES SW 3	Input clutch engaged. Refer to <a href="#">AT-20</a> .	ON
	Input clutch disengaged. Refer to <a href="#">AT-20</a> .	OFF

#### OK or NG

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

### 2. CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit. Refer to [AT-158](#).

#### OK or NG

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

### 3. DETECT MALFUNCTIONING ITEM

Check the following items:

- The A/T assembly harness connector pin terminals for damage or loose connection with harness connector.

#### OK or NG

- OK >> Replace the control valve with TCM. Refer to [AT-210](#), "[Control Valve with TCM and A/T Fluid Temperature Sensor 2](#)".  
NG >> Repair or replace damaged parts.

### 4. CHECK DTC

Perform "DTC Confirmation Procedure".

- Refer to [AT-132](#), "[DTC Confirmation Procedure](#)".

#### OK or NG

- OK >> **INSPECTION END**  
NG >> GO TO 2.

# DTC P1757 FRONT BRAKE SOLENOID VALVE

< SERVICE INFORMATION >

## DTC P1757 FRONT BRAKE SOLENOID VALVE

### Description

INFOID:000000003532366

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.

### CONSULT-II Reference Value in Data Monitor Mode

INFOID:000000003532367

Item name	Condition	Display value (Approx.)
FR/B SOLENOID	Front brake engaged. Refer to <a href="#">AT-20</a> .	0.6 - 0.8 A
	Front brake disengaged. Refer to <a href="#">AT-20</a> .	0 - 0.05 A

### On Board Diagnosis Logic

INFOID:000000003532368

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P1757 FR/B SOLENOID/CIRC” with 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

INFOID:000000003532369

- Harness or connectors  
(The solenoid circuit is open or shorted.)
- Front brake solenoid valve

### DTC Confirmation Procedure

INFOID:000000003532370

#### CAUTION:

**Always drive vehicle at a safe speed.**

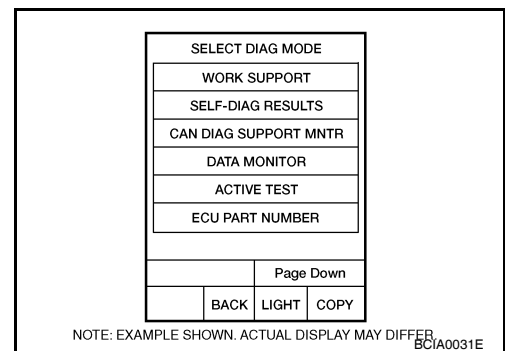
#### NOTE:

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

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

#### ④ WITH CONSULT-II

1. Turn ignition switch “ON”. (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 5 consecutive seconds.  
**ACCELE POS: 1.5/8 - 2.0/8**  
**Selector lever: “D” position**  
**Gear position: 3rd ⇒ 4th Gear (FR/B ON/OFF)**  
**Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.**
5. If DTC is detected go to [AT-134, "Diagnosis Procedure"](#).



#### ④ WITH GST

Follow the procedure “With CONSULT-II”.

### Diagnosis Procedure

INFOID:000000003532371

#### 1. CHECK INPUT SIGNAL

##### ④ With CONSULT-II

# DTC P1757 FRONT BRAKE SOLENOID VALVE

## < SERVICE INFORMATION >

1. Turn ignition switch "ON".
2. Select "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Start engine.
4. Read out the value of "FR/B SOLENOID" while driving.

Item name	Condition	Display value (Approx.)
FR/B SOLENOID	Front brake engaged. Refer to <a href="#">AT-20</a> .	0.6 - 0.8 A
	Front brake disengaged. Refer to <a href="#">AT-20</a>	0 - 0.05 A

DATA MONITOR			
MONITOR		NO DTC	
TCC SOLENOID	XXXX		
LINE PRES SOL	XXXX		
I/C SOLENOID	XXXX		
FR/B SOLENOID	XXXX		
D/C SOLENOID	XXXX		
HLR/C SOL	XXXX		
			▽
			RECORD
MODE	BACK	LIGHT	COPY

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### OK or NG

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

## 2.CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit. Refer to [AT-158](#).

### OK or NG

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

## 3.DETECT MALFUNCTIONING ITEM

Check the following items:

- The A/T assembly harness connector pin terminals for damage or loose connection with harness connector.

### OK or NG

- OK >> Replace the control valve with TCM. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).  
 NG >> Repair or replace damaged parts.

## 4.CHECK DTC

Perform "DTC Confirmation Procedure".

- Refer to [AT-134, "DTC Confirmation Procedure"](#).

### OK or NG

- OK >> **INSPECTION END**  
 NG >> GO TO 2.

# DTC P1759 FRONT BRAKE SOLENOID VALVE FUNCTION

< SERVICE INFORMATION >

## DTC P1759 FRONT BRAKE SOLENOID VALVE FUNCTION

### Description

INFOID:000000003532372

- 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.

### CONSULT-II Reference Value in Data Monitor Mode

INFOID:000000003532373

Item name	Condition	Display value (Approx.)
FR/B SOLENOID	Front brake engaged. Refer to <a href="#">AT-20</a> .	0.6 - 0.8 A
	Front brake disengaged. Refer to <a href="#">AT-20</a> .	0 - 0.05 A
ATF PRES SW 1	Front brake engaged. Refer to <a href="#">AT-20</a> .	ON
	Front brake disengaged. Refer to <a href="#">AT-20</a> .	OFF

### On Board Diagnosis Logic

INFOID:000000003532374

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "P1759 FR/B SOLENOID FNCT" with 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

INFOID:000000003532375

- Harness or connectors  
(The solenoid and switch circuits are open or shorted.)
- Front brake solenoid valve
- ATF pressure switch 1

### DTC Confirmation Procedure

INFOID:000000003532376

#### CAUTION:

**Always drive vehicle at a safe speed.**

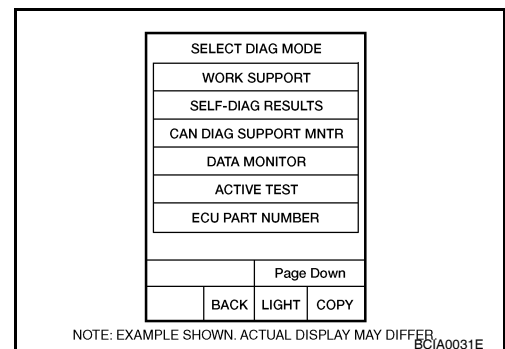
#### NOTE:

**If "DTC Confirmation Procedure" has been previously performed, always turn ignition switch "OFF" and wait at least 10 seconds before performing 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 conditions.  
**ACCELE POS: 1.5/8 - 2.0/8**  
**Selector lever: "D" position**  
**Gear position: 3rd ⇒ 4th Gear (FR/B ON/OFF)**  
**Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.**
3. Perform step "2" again.
4. Turn ignition switch "OFF", 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-137, "Diagnosis Procedure"](#).  
If DTC (P1757) is detected, go to [AT-134, "Diagnosis Procedure"](#).  
If DTC (P1841) is detected, go to [AT-150, "Diagnosis Procedure"](#).





# DTC P1759 FRONT BRAKE SOLENOID VALVE FUNCTION

< SERVICE INFORMATION >

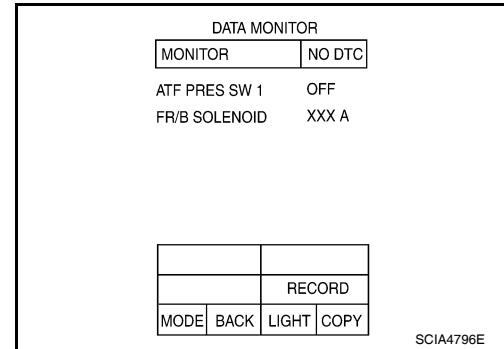
## Diagnosis Procedure

INFOID:000000003532377

### 1. CHECK INPUT SIGNALS

#### With CONSULT-II

1. Start engine.
2. Select "SELECTION FROM MENU" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Drive vehicle in the "D" position (3rd ⇒ 4th gear), and confirm the ON/OFF actuation of the "ATF PRES SW 1" and electrical current value of "FR/B SOLENOID".



Item name	Condition	Display value (Approx.)
FR/B SOLENOID	Front brake engaged. Refer to <a href="#">AT-20</a> .	0.6 - 0.8 A
	Front brake disengaged. Refer to <a href="#">AT-20</a> .	0 - 0.05 A
ATF PRES SW 1	Front brake engaged. Refer to <a href="#">AT-20</a> .	ON
	Front brake disengaged. Refer to <a href="#">AT-20</a> .	OFF

#### OK or NG

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

### 2. CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit. Refer to [AT-158](#).

#### OK or NG

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

### 3. DETECT MALFUNCTIONING ITEM

Check the following items:

- The A/T assembly harness connector pin terminals for damage or loose connection with harness connector.

#### OK or NG

- OK >> Replace the control valve with TCM. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
- NG >> Repair or replace damaged parts.

### 4. CHECK DTC

Perform "DTC Confirmation Procedure".

- Refer to [AT-136, "DTC Confirmation Procedure"](#).

#### OK or NG

- OK >> **INSPECTION END**
- NG >> GO TO 2.

# DTC P1762 DIRECT CLUTCH SOLENOID VALVE

< SERVICE INFORMATION >

## DTC P1762 DIRECT CLUTCH SOLENOID VALVE

### Description

INFOID:000000003532378

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.

### CONSULT-II Reference Value in Data Monitor Mode

INFOID:000000003532379

Item name	Condition	Display value (Approx.)
D/C SOLENOID	Direct clutch disengaged. Refer to <a href="#">AT-20</a> .	0.6 - 0.8 A
	Direct clutch engaged. Refer to <a href="#">AT-20</a> .	0 - 0.05 A

### On Board Diagnosis Logic

INFOID:000000003532380

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "P1762 D/C SOLENOID/CIRC" with 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

INFOID:000000003532381

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

### DTC Confirmation Procedure

INFOID:000000003532382

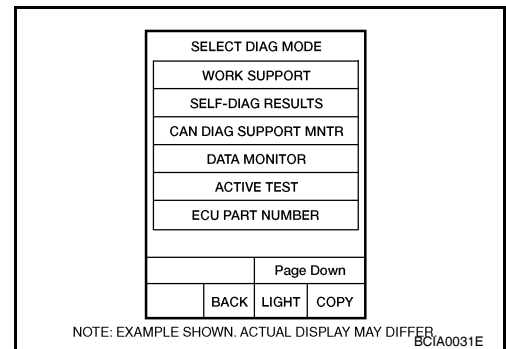
#### NOTE:

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

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

#### ④ WITH CONSULT-II

1. Turn ignition switch "ON". (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 5 consecutive seconds.  
**ACCELE POS: 1.5/8 - 2.0/8**  
**Selector lever: "D" position**  
**Gear position: 1st ⇒ 2nd Gear (D/C ON/OFF)**  
**Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.**
5. If DTC is detected, go to [AT-138, "Diagnosis Procedure"](#).



#### ④ WITH GST

Follow the procedure "With CONSULT-II".

### Diagnosis Procedure

INFOID:000000003532383

#### 1. CHECK INPUT SIGNAL

#### ④ With CONSULT-II

# DTC P1762 DIRECT CLUTCH SOLENOID VALVE

## < SERVICE INFORMATION >

1. Turn ignition switch "ON".
2. Select "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Start the engine.
4. Read out the value of "D/C SOLENOID" while driving.

Item name	Condition	Display value (Approx.)
D/C SOLENOID	Direct clutch disengaged. Refer to <a href="#">AT-20</a> .	0.6 - 0.8 A
	Direct clutch engaged. Refer to <a href="#">AT-20</a> .	0 - 0.05 A

DATA MONITOR			
MONITOR		NO DTC	
TCC SOLENOID	XXXX		
LINE PRES SOL	XXXX		
I/C SOLENOID	XXXX		
FR/B SOLENOID	XXXX		
D/C SOLENOID	XXXX		
HLR/C SOL	XXXX		
			▽
			RECORD
MODE	BACK	LIGHT	COPY

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### OK or NG

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

## 2.CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit. Refer to [AT-158](#).

### OK or NG

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

## 3.DETECT MALFUNCTIONING ITEM

Check the following items:

- The A/T assembly harness connector pin terminals for damage or loose connection with harness connector.

### OK or NG

- OK >> Replace the control valve with TCM. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).  
 NG >> Repair or replace damaged parts.

## 4.CHECK DTC

Perform "DTC Confirmation Procedure".

- Refer to [AT-138, "DTC Confirmation Procedure"](#).

### OK or NG

- OK >> **INSPECTION END**  
 NG >> GO TO 2.

# DTC P1764 DIRECT CLUTCH SOLENOID VALVE FUNCTION

< SERVICE INFORMATION >

## DTC P1764 DIRECT CLUTCH SOLENOID VALVE FUNCTION

### Description

INFOID:000000003532384

- 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.

### CONSULT-II Reference Value in Data Monitor Mode

INFOID:000000003532385

Item name	Condition	Display value (Approx.)
D/C SOLENOID	Direct clutch disengaged. Refer to <a href="#">AT-20</a> .	0.6 - 0.8 A
	Direct clutch engaged. Refer to <a href="#">AT-20</a> .	0 - 0.05 A
ATF PRES SW 5	Direct clutch engaged. Refer to <a href="#">AT-20</a> .	ON
	Direct clutch disengaged. Refer to <a href="#">AT-20</a> .	OFF

### On Board Diagnosis Logic

INFOID:000000003532386

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "P1764 D/C SOLENOID FNCTN" with 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

INFOID:000000003532387

- Harness or connectors  
(The solenoid and switch circuits are open or shorted.)
- Direct clutch solenoid valve
- ATF pressure switch 5

### DTC Confirmation Procedure

INFOID:000000003532388

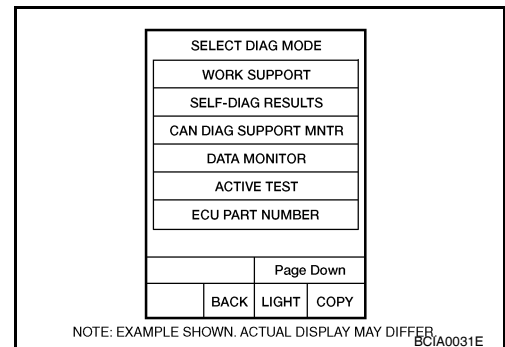
#### NOTE:

If "DTC Confirmation Procedure" has been previously performed, always turn ignition switch "OFF" and wait at least 10 seconds before performing 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 conditions.  
**ACCELE POS: 1.5/8 - 2.0/8**  
**Selector lever: "D" position**  
**Gear position: 1st ⇒ 2nd Gear (D/C ON/OFF)**  
**Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.**
3. Perform step "2" again.
4. Turn ignition switch "OFF", 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-141. "Diagnosis Procedure"](#).  
If DTC (P1762) is detected, go to [AT-138. "Diagnosis Procedure"](#).  
If DTC (P1845) is detected, go to [AT-154. "Diagnosis Procedure"](#).



#### WITH GST

# DTC P1764 DIRECT CLUTCH SOLENOID VALVE FUNCTION

< SERVICE INFORMATION >

Follow the procedure "With CONSULT-II".

## Diagnosis Procedure

INFOID:000000003532389

### 1. CHECK INPUT SIGNALS

#### With CONSULT-II

1. Start the engine.
2. Select "SELECTION FROM MENU" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Drive vehicle in the "D" position (1st ⇒ 2nd gear), and confirm the display actuation of the "ATF PRES SW 5" and electrical current value of "D/C SOLENOID".

DATA MONITOR			
MONITOR	NO DTC		
D/C SOLENOID	XXXX		
ATF PRES SW 5	OFF		
		RECORD	
MODE	BACK	LIGHT	COPY

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Item name	Condition	Display value (Approx.)
D/C SOLENOID	Direct clutch disengaged. Refer to <a href="#">AT-20</a> .	0.6 - 0.8 A
	Direct clutch engaged. Refer to <a href="#">AT-20</a> .	0 - 0.05 A
ATF PRES SW 5	Direct clutch engaged. Refer to <a href="#">AT-20</a> .	ON
	Direct clutch disengaged. Refer to <a href="#">AT-20</a> .	OFF

#### OK or NG

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

### 2. CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit. Refer to [AT-158](#).

#### OK or NG

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

### 3. DETECT MALFUNCTIONING ITEM

Check the following items:

- The A/T assembly harness connector pin terminals for damage or loose connection with harness connector.

#### OK or NG

- OK >> Replace the control valve with TCM. Refer to [AT-210](#), "[Control Valve with TCM and A/T Fluid Temperature Sensor 2](#)".
- NG >> Repair or replace damaged parts.

### 4. CHECK DTC

Perform "DTC Confirmation Procedure".

- Refer to [AT-140](#), "[DTC Confirmation Procedure](#)".

#### OK or NG

- OK >> **INSPECTION END**
- NG >> GO TO 2.

# DTC P1767 HIGH AND LOW REVERSE CLUTCH SOLENOID VALVE

< SERVICE INFORMATION >

## DTC P1767 HIGH AND LOW REVERSE CLUTCH SOLENOID VALVE

### Description

INFOID:000000003532390

High and 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.

### CONSULT-II Reference Value in Data Monitor Mode

INFOID:000000003532391

Item name	Condition	Display value (Approx.)
HLR/C SOL	High and low reverse clutch disengaged. Refer to <a href="#">AT-20</a> .	0.6 - 0.8 A
	High and low reverse clutch engaged. Refer to <a href="#">AT-20</a> .	0 - 0.05 A

### On Board Diagnosis Logic

INFOID:000000003532392

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P1767 HLR/C SOL/CIRC” with CONSULT-II or 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

INFOID:000000003532393

- Harness or connectors  
(The solenoid circuit is open or shorted.)
- High and low reverse clutch solenoid valve

### DTC Confirmation Procedure

INFOID:000000003532394

#### CAUTION:

**Always drive vehicle at a safe speed.**

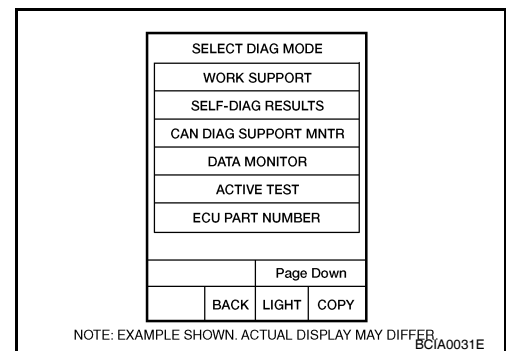
#### NOTE:

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

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

#### WITH CONSULT-II

1. Turn ignition switch “ON”. (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 5 consecutive seconds.  
**ACCELE POS: 1.5/8 - 2.0/8**  
**Selector lever: “D” position**  
**Gear position: 2nd ⇒ 3rd Gear (HLR/C ON/OFF)**  
**Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.**
5. If DTC is detected, go to [AT-142, "Diagnosis Procedure"](#).



#### WITH GST

Follow the procedure “With CONSULT-II”.

### Diagnosis Procedure

INFOID:000000003532395

#### 1. CHECK INPUT SIGNAL

##### With CONSULT-II

# DTC P1767 HIGH AND LOW REVERSE CLUTCH SOLENOID VALVE

## < SERVICE INFORMATION >

1. Turn ignition switch "ON".
2. Select "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Start the engine.
4. Read out the value of "HLR/C SOLENOID" while driving.

Item name	Condition	Display value (Approx.)
HLR/C SOL	High and low reverse clutch disengaged. Refer to <a href="#">AT-20</a> .	0.6 - 0.8 A
	High and low reverse clutch engaged. Refer to <a href="#">AT-20</a> .	0 - 0.05 A

DATA MONITOR			
MONITOR		NO DTC	
TCC SOLENOID	XXXX		
LINE PRES SOL	XXXX		
I/C SOLENOID	XXXX		
FR/B SOLENOID	XXXX		
D/C SOLENOID	XXXX		
HLR/C SOL	XXXX		
		▽	
		RECORD	
MODE	BACK	LIGHT	COPY

SCIA4793E

### OK or NG

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

## 2.CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit Refer to [AT-158](#).

### OK or NG

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

## 3.DETECT MALFUNCTIONING ITEM

Check the following items:

- The A/T assembly harness connector pin terminals for damage or loose connection with harness connector.

### OK or NG

- OK >> Replace the control valve with TCM. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).  
 NG >> Repair or replace damaged parts.

## 4.CHECK DTC

Perform "DTC Confirmation Procedure".

- Refer to [AT-142, "DTC Confirmation Procedure"](#).

### OK or NG

- OK >> **INSPECTION END**  
 NG >> GO TO 2.

# DTC P1769 HIGH AND LOW REVERSE CLUTCH SOLENOID VALVE FUNCTION

< SERVICE INFORMATION >

## DTC P1769 HIGH AND LOW REVERSE CLUTCH SOLENOID VALVE FUNCTION

### Description

INFOID:000000003532396

- High and 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.

### CONSULT-II Reference Value in Data Monitor Mode

INFOID:000000003532397

Item name	Condition	Display value (Approx.)
HLR/C SOL	High and low reverse clutch disengaged. Refer to <a href="#">AT-20</a> .	0.6 - 0.8 A
	High and low reverse clutch engaged. Refer to <a href="#">AT-20</a> .	0 - 0.05 A
ATF PRES SW 6	High and low reverse clutch engaged. Refer to <a href="#">AT-20</a> .	ON
	High and low reverse clutch disengaged. Refer to <a href="#">AT-20</a> .	OFF

### On Board Diagnosis Logic

INFOID:000000003532398

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "P1769 HLR/C SOL FNCTN" with 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

INFOID:000000003532399

- Harness or connectors  
(The solenoid and switch circuits are open or shorted.)
- High and low reverse clutch solenoid valve
- ATF pressure switch 6

### DTC Confirmation Procedure

INFOID:000000003532400

#### CAUTION:

**Always drive vehicle at a safe speed.**

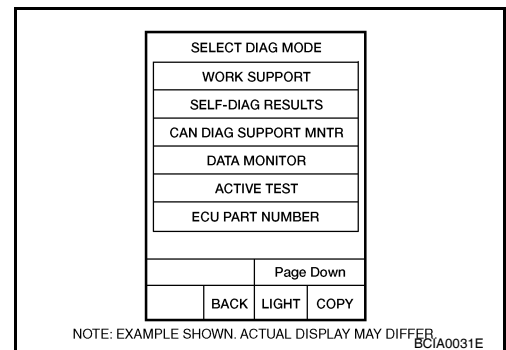
#### NOTE:

**If "DTC Confirmation Procedure" has been previously performed, always turn ignition switch "OFF" and wait at least 10 seconds before performing 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 conditions.  
**ACCELE POS: 1.5/8 - 2.0/8**  
**Selector lever: "D" position**  
**Gear position: 2nd ⇒ 3rd Gear (HLR/C ON/OFF)**  
**Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.**
3. Perform step "2" again.
4. Turn ignition switch "OFF", 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-145, "Diagnosis Procedure"](#).





# DTC P1769 HIGH AND LOW REVERSE CLUTCH SOLENOID VALVE FUNCTION

## < SERVICE INFORMATION >

If DTC (P1767) is detected, go to [AT-142, "Diagnosis Procedure"](#).

If DTC (P1846) is detected, go to [AT-156, "Diagnosis Procedure"](#).

## Diagnosis Procedure

INFOID:000000003532401

### 1. CHECK INPUT SIGNALS

#### With CONSULT-II

1. Start the engine.
2. Select "SELECTION FROM MENU" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Drive vehicle in the "D" position (2nd ⇒ 3rd gear), and confirm the ON/OFF actuation of the "ATF PRES SW 6" and electrical current value of "HLR/C SOL".

DATA MONITOR			
MONITOR	NO DTC		
HLR/C SOL	XXX A		
ATF PRES SW 6	OFF		
		RECORD	
MODE	BACK	LIGHT	COPY

SCIA4798E

Item name	Condition	Display value (Approx.)
HLR/C SOL	High and low reverse clutch disengaged. Refer to <a href="#">AT-20</a> .	0.6 - 0.8 A
	High and low reverse clutch engaged. Refer to <a href="#">AT-20</a> .	0 - 0.05 A
ATF PRES SW 6	High and low reverse clutch engaged. Refer to <a href="#">AT-20</a> .	ON
	High and low reverse clutch disengaged. Refer to <a href="#">AT-20</a> .	OFF

#### OK or NG

OK >> GO TO 4.

NG >> GO TO 2.

### 2. CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit. Refer to [AT-158](#).

#### OK or NG

OK >> GO TO 3.

NG >> Repair or replace damaged parts.

### 3. DETECT MALFUNCTIONING ITEM

Check the following items:

- The A/T assembly harness connector pin terminals for damage or loose connection with harness connector.

#### OK or NG

OK >> Replace the control valve with TCM. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).

NG >> Repair or replace damaged parts.

### 4. CHECK DTC

Perform "DTC Confirmation Procedure".

- Refer to [AT-144, "DTC Confirmation Procedure"](#).

#### OK or NG

OK >> **INSPECTION END**

NG >> GO TO 2.

# DTC P1772 LOW COAST BRAKE SOLENOID VALVE

< SERVICE INFORMATION >

## DTC P1772 LOW COAST BRAKE SOLENOID VALVE

### Description

INFOID:000000003532402

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.

### CONSULT-II Reference Value in Data Monitor Mode

INFOID:000000003532403

Item name	Condition	Display value
ON OFF SOL	Low coast brake engaged. Refer to <a href="#">AT-20</a> .	ON
	Low coast brake disengaged. Refer to <a href="#">AT-20</a> .	OFF

### On Board Diagnosis Logic

INFOID:000000003532404

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P1772 LC/B SOLENOID/CIRC” with CONSULT-II is detected when TCM detects an improper voltage drop when it tries to operate the solenoid valve.

### Possible Cause

INFOID:000000003532405

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

### DTC Confirmation Procedure

INFOID:000000003532406

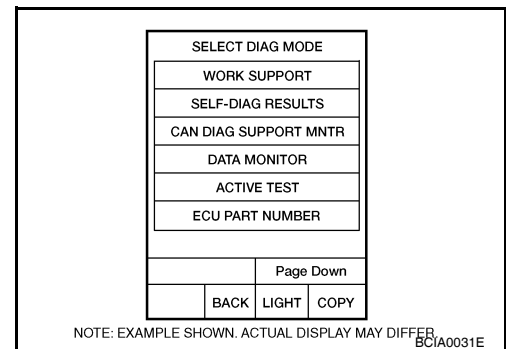
#### NOTE:

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

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

#### Ⓟ WITH CONSULT-II

1. Turn ignition switch “ON”. (Do not start engine.)
2. Select “DATA MONITOR” mode for “ENGINE” with CONSULT-II.
3. Start engine.
4. Drive vehicle and maintain the following conditions for at least 5 consecutive seconds.  
**Selector lever: “1” or “2”**  
**Gear position: “1st” or “2nd” gear (LC/B ON/OFF)**
5. If DTC is detected, go to [AT-146, "Diagnosis Procedure"](#).



#### Ⓟ WITH GST

Follow the procedure “With CONSULT-II”.

### Diagnosis Procedure

INFOID:000000003532407

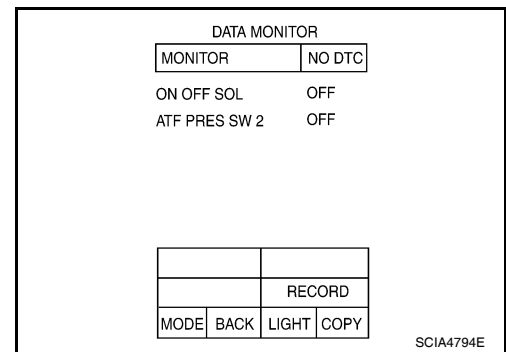
#### 1. CHECK INPUT SIGNAL

#### Ⓟ With CONSULT-II

# DTC P1772 LOW COAST BRAKE SOLENOID VALVE

## < SERVICE INFORMATION >

1. Turn ignition switch "ON".
2. Select "SELECTION FROM MENU" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Start the engine.
4. Read out the value of "ON OFF SOL" while driving.



Item name	Condition	Display value
ON OFF SOL	Low coast brake engaged. Refer to <a href="#">AT-20</a> .	ON
	Low coast brake disengaged. Refer to <a href="#">AT-20</a> .	OFF

### OK or NG

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

## 2.CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit. Refer to [AT-158](#).

### OK or NG

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

## 3.DETECT MALFUNCTIONING ITEM

Check the following items:

- The A/T assembly harness connector pin terminals for damage or loose connection with harness connector.

### OK or NG

- OK >> Replace the control valve with TCM. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).  
 NG >> Repair or replace damaged parts.

## 4.CHECK DTC

Perform "DTC Confirmation Procedure".

- Refer to [AT-146, "DTC Confirmation Procedure"](#).

### OK or NG

- OK >> **INSPECTION END**  
 NG >> GO TO 2.

# DTC P1774 LOW COAST BRAKE SOLENOID VALVE FUNCTION

< SERVICE INFORMATION >

## DTC P1774 LOW COAST BRAKE SOLENOID VALVE FUNCTION

### Description

INFOID:000000003532408

- 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.

### CONSULT-II Reference Value in Data Monitor Mode

INFOID:000000003532409

Item name	Condition	Display value
ON OFF SOL	Low coast brake engaged. Refer to <a href="#">AT-20</a> .	ON
	Low coast brake disengaged. Refer to <a href="#">AT-20</a> .	OFF
ATF PRES SW 2	Low coast brake engaged. Refer to <a href="#">AT-20</a> .	ON
	Low coast brake disengaged. Refer to <a href="#">AT-20</a> .	OFF

### On Board Diagnosis Logic

INFOID:000000003532410

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P1774 LC/B SOLENOID FNCT” with 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

INFOID:000000003532411

- Harness or connectors  
(The solenoid and switch circuits are open or shorted.)
- Low coast brake solenoid valve
- ATF pressure switch 2

### DTC Confirmation Procedure

INFOID:000000003532412

#### CAUTION:

Always drive vehicle at a safe speed.

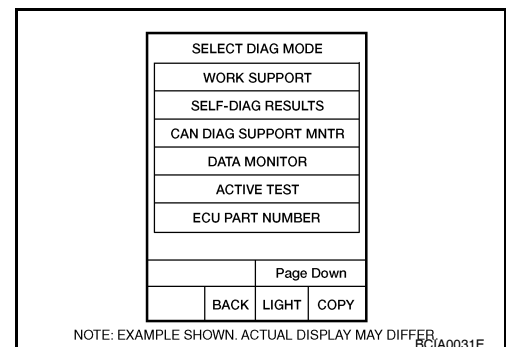
#### NOTE:

If “DTC Confirmation Procedure” has been previously performed, always turn ignition switch “OFF” and wait at least 10 seconds before performing 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 conditions.  
**Selector lever: “1” or “2” position**  
**Gear position: “1st” or “2nd” gear (LC/B ON/OFF)**
3. Perform step “2” again.
4. Turn ignition switch “OFF”, 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-149. "Diagnosis Procedure"](#).  
If DTC (P1772) is detected, go to [AT-146. "Diagnosis Procedure"](#).



#### WITH GST

Follow the procedure “With CONSULT-II”.

# DTC P1774 LOW COAST BRAKE SOLENOID VALVE FUNCTION

< SERVICE INFORMATION >

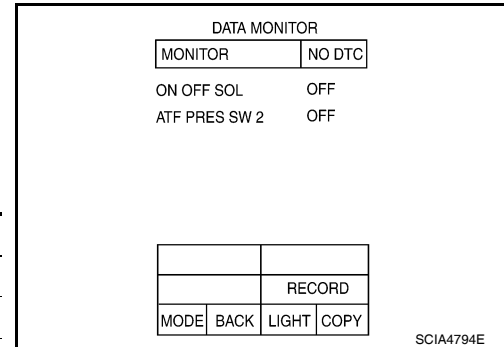
## Diagnosis Procedure

INFOID:000000003532413

### 1. CHECK INPUT SIGNALS

#### With CONSULT-II

1. Start the engine.
2. Select "SELECTION FROM MENU" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Drive vehicle in the "1" or "2" position ("11" or "22" gear) and confirm the ON/OFF actuation of the "ATF PRES SW 2" and "ON OFF SOL".



Item name	Condition	Display value
ON OFF SOL	Low coast brake engaged. Refer to <a href="#">AT-20</a> .	ON
	Low coast brake disengaged. Refer to <a href="#">AT-20</a> .	OFF
ATF PRES SW 2	Low coast brake engaged. Refer to <a href="#">AT-20</a> .	ON
	Low coast brake disengaged. Refer to <a href="#">AT-20</a> .	OFF

#### OK or NG

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

### 2. CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit. Refer to [AT-158](#).

#### OK or NG

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

### 3. DETECT MALFUNCTIONING ITEM

Check the following items:

- The A/T assembly harness connector pin terminals for damage or loose connection with harness connector.

#### OK or NG

- OK >> Replace the control valve with TCM. Refer to [AT-210](#), "[Control Valve with TCM and A/T Fluid Temperature Sensor 2](#)".
- NG >> Repair or replace damaged parts.

### 4. CHECK DTC

Perform "DTC Confirmation Procedure".

- Refer to [AT-148](#), "[DTC Confirmation Procedure](#)".

#### OK or NG

- OK >> **INSPECTION END**
- NG >> GO TO 2.

# DTC P1841 ATF PRESSURE SWITCH 1

< SERVICE INFORMATION >

## DTC P1841 ATF PRESSURE SWITCH 1

### Description

INFOID:000000003532414

Fail-safe function to detect front brake clutch solenoid valve condition.

### CONSULT-II Reference Value in Data Monitor Mode

INFOID:000000003532415

Item name	Condition	Display value
ATF PRES SW 1	Front brake engaged. Refer to <a href="#">AT-20</a> .	ON
	Front brake disengaged. Refer to <a href="#">AT-20</a> .	OFF

### On Board Diagnosis Logic

INFOID:000000003532416

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code “P1841 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

INFOID:000000003532417

- ATF pressure switch 1
- Harness or connectors  
(The switch circuit is open or shorted.)

### DTC Confirmation Procedure

INFOID:000000003532418

#### CAUTION:

**Always drive vehicle at a safe speed.**

#### NOTE:

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

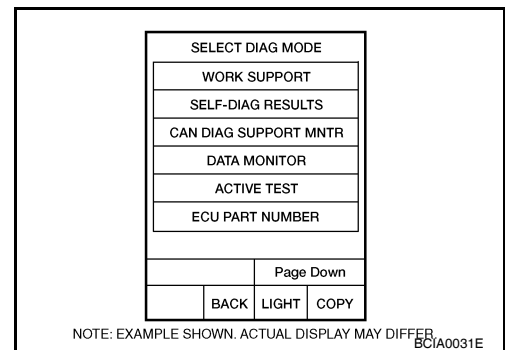
After the repair, perform the following procedure to confirm the malfunction is eliminated.

#### Ⓜ WITH CONSULT-II

1. Start engine.
2. Accelerate vehicle to maintain the following conditions.  
**ACCELE POS: 1.5/8 - 2.0/8**  
**Selector lever: “D” position**  
**Gear position: 3rd ⇒ 4th Gear (FR/B ON/OFF)**  
**Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.**
3. Perform step “2” again.
4. Turn ignition switch “OFF”, 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-150, "Diagnosis Procedure"](#).

If DTC (P1757) is detected, go to [AT-134, "Diagnosis Procedure"](#).



### Diagnosis Procedure

INFOID:000000003532419

#### 1. CHECK INPUT SIGNAL

#### Ⓜ With CONSULT-II

# DTC P1841 ATF PRESSURE SWITCH 1

## < SERVICE INFORMATION >

1. Start engine.
2. Select "ECU INPUT SIGNALS" or "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Drive vehicle in the "D" position (3rd ⇒ 4th gear), and confirm the ON/OFF actuation of the "ATF PRES SW 1".

Item name	Condition	Display value
ATF PRES SW 1	Front brake engaged. Refer to <a href="#">AT-20</a> .	ON
	Front brake disengaged. Refer to <a href="#">AT-20</a> .	OFF

### OK or NG

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

## 2.CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit. Refer to [AT-158](#).

### OK or NG

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

## 3.DETECT MALFUNCTIONING ITEM

Check the following items:

- The A/T assembly harness connector pin terminals for damage or loose connection with harness connector.

### OK or NG

- OK >> Replace the control valve with TCM. Refer to [AT-210](#), "[Control Valve with TCM and A/T Fluid Temperature Sensor 2](#)".  
NG >> Repair or replace damaged parts.

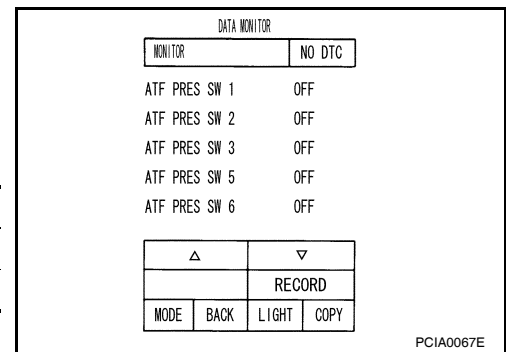
## 4.CHECK DTC

Perform "DTC Confirmation Procedure".

- Refer to [AT-150](#), "[DTC Confirmation Procedure](#)".

### OK or NG

- OK >> **INSPECTION END**  
NG >> GO TO 2.



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# DTC P1843 ATF PRESSURE SWITCH 3

< SERVICE INFORMATION >

## DTC P1843 ATF PRESSURE SWITCH 3

### Description

INFOID:000000003532420

Fail-safe function to detect input clutch solenoid valve condition.

### CONSULT-II Reference Value in Data Monitor Mode

INFOID:000000003532421

Item name	Condition	Display value
ATF PRES SW 3	Input clutch engaged. Refer to <a href="#">AT-20</a> .	ON
	Input clutch disengaged. Refer to <a href="#">AT-20</a> .	OFF

### On Board Diagnosis Logic

INFOID:000000003532422

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code "P1843 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

INFOID:000000003532423

- ATF pressure switch 3
- Harness or connectors  
(The switch circuit is open or shorted.)

### DTC Confirmation Procedure

INFOID:000000003532424

#### CAUTION:

**Always drive vehicle at a safe speed.**

#### NOTE:

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

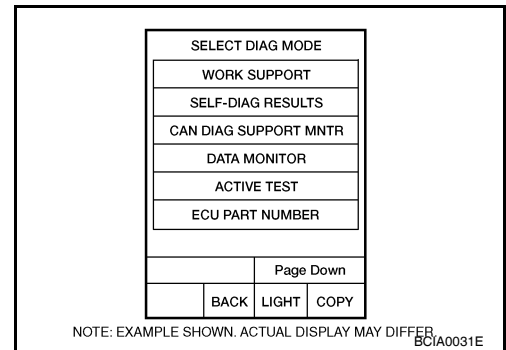
After the repair, perform the following procedure to confirm the malfunction is eliminated.

#### ④ WITH CONSULT-II

1. Start engine.
2. Accelerate vehicle to maintain the following conditions.  
**ACCELE POS: 1.5/8 - 2.0/8**  
**Selector lever: "D" position**  
**Gear position: 3rd ⇒ 4th Gear (I/C ON/OFF)**  
**Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.**
3. Perform step "2" again.
4. Turn ignition switch "OFF", 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-152, "Diagnosis Procedure"](#).

If DTC (P1752) is detected, go to [AT-130, "Diagnosis Procedure"](#).



### Diagnosis Procedure

INFOID:000000003532425

#### 1. CHECK INPUT SIGNAL

#### ④ With CONSULT-II



# DTC P1843 ATF PRESSURE SWITCH 3

## < SERVICE INFORMATION >

1. Start engine.
2. Select "ECU INPUT SIGNALS" or "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Drive vehicle in the "D" position (3rd ⇒ 4th gear), and confirm the ON/OFF actuation of the "ATF PRES SW 3".

Item name	Condition	Display value
ATF PRES SW 3	Input clutch engaged. Refer to <a href="#">AT-20</a> .	ON
	Input clutch disengaged. Refer to <a href="#">AT-20</a> .	OFF

### OK or NG

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

## 2.CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit. Refer to [AT-158](#).

### OK or NG

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

## 3.DETECT MALFUNCTIONING ITEM

Check the following items:

- The A/T assembly harness connector pin terminals for damage or loose connection with harness connector.

### OK or NG

- OK >> Replace the control valve with TCM. Refer to [AT-210](#), "[Control Valve with TCM and A/T Fluid Temperature Sensor 2](#)".  
 NG >> Repair or replace damaged parts.

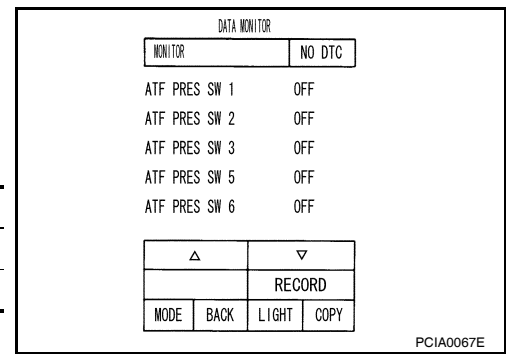
## 4.CHECK DTC

Perform "DTC Confirmation Procedure".

- Refer to [AT-152](#), "[DTC Confirmation Procedure](#)".

### OK or NG

- OK >> **INSPECTION END**  
 NG >> GO TO 2.



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# DTC P1845 ATF PRESSURE SWITCH 5

< SERVICE INFORMATION >

## DTC P1845 ATF PRESSURE SWITCH 5

### Description

INFOID:000000003532426

Fail-safe function to detect direct clutch solenoid valve condition.

### CONSULT-II Reference Value in Data Monitor Mode

INFOID:000000003532427

Item name	Condition	Display value
ATF PRES SW 5	Direct clutch engaged. Refer to <a href="#">AT-20</a> .	ON
	Direct clutch disengaged. Refer to <a href="#">AT-20</a> .	OFF

### On Board Diagnosis Logic

INFOID:000000003532428

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code "P1845 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

INFOID:000000003532429

- ATF pressure switch 5
- Harness or connectors  
(The switch circuit is open or shorted.)

### DTC Confirmation Procedure

INFOID:000000003532430

#### CAUTION:

Always drive vehicle at a safe speed.

#### NOTE:

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

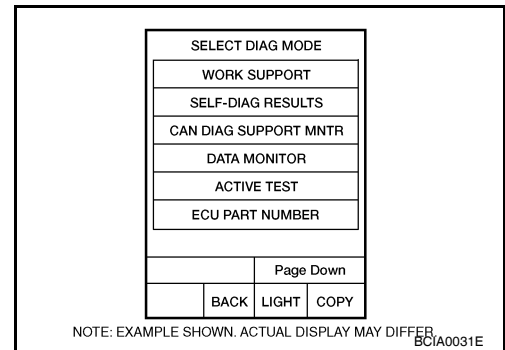
After the repair, perform the following procedure to confirm the malfunction is eliminated.

#### Ⓜ WITH CONSULT-II

1. Start engine.
2. Accelerate vehicle to maintain the following conditions.  
**ACCELE POS: 1.5/8 - 2.0/8**  
**Selector lever: "D" position**  
**Gear position: 1st ⇒ 2nd Gear (D/C ON/OFF)**  
**Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.**
3. Perform step "2" again.
4. Turn ignition switch "OFF", 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-154, "Diagnosis Procedure"](#).

If DTC (P1762) is detected, go to [AT-138, "Diagnosis Procedure"](#).



### Diagnosis Procedure

INFOID:000000003532431

#### 1. CHECK INPUT SIGNAL

#### Ⓜ With CONSULT-II

# DTC P1845 ATF PRESSURE SWITCH 5

## < SERVICE INFORMATION >

1. Start engine.
2. Select "ECU INPUT SIGNALS" or "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Drive vehicle in the "D" position (1st ⇒ 2nd gear), and confirm the ON/OFF actuation of the "ATF PRES SW 5".

Item name	Condition	Display value
ATF PRES SW 5	Direct clutch engaged. Refer to <a href="#">AT-20</a> .	ON
	Direct clutch disengaged. Refer to <a href="#">AT-20</a> .	OFF

### OK or NG

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

## 2.CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit. Refer to [AT-158](#).

### OK or NG

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

## 3.DETECT MALFUNCTIONING ITEM

Check the following items:

- The A/T assembly harness connector pin terminals for damage or loose connection with harness connector.

### OK or NG

- OK >> Replace the control valve with TCM. Refer to [AT-210](#), "[Control Valve with TCM and A/T Fluid Temperature Sensor 2](#)".  
NG >> Repair or replace damaged parts.

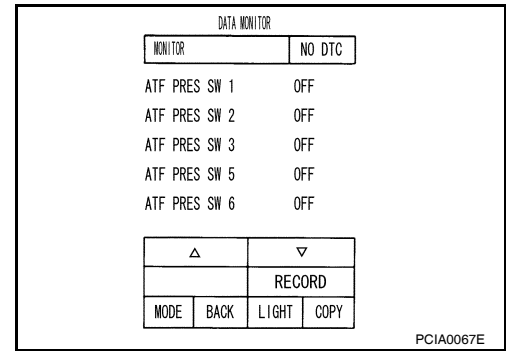
## 4.CHECK DTC

Perform "DTC Confirmation Procedure".

- Refer to [AT-154](#), "[DTC Confirmation Procedure](#)".

### OK or NG

- OK >> **INSPECTION END**  
NG >> GO TO 2.



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# DTC P1846 ATF PRESSURE SWITCH 6

< SERVICE INFORMATION >

## DTC P1846 ATF PRESSURE SWITCH 6

### Description

INFOID:000000003532432

Fail-safe function to detect high and low reverse clutch solenoid valve condition.

### CONSULT-II Reference Value in Data Monitor Mode

INFOID:000000003532433

Item name	Condition	Display value
ATF PRES SW 6	High and low reverse clutch engaged. Refer to <a href="#">AT-20</a> .	ON
	High and low reverse clutch disengaged. Refer to <a href="#">AT-20</a> .	OFF

### On Board Diagnosis Logic

INFOID:000000003532434

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code "P1846 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

INFOID:000000003532435

- ATF pressure switch 6
- Harness or connectors  
(The switch circuit is open or shorted.)

### DTC Confirmation Procedure

INFOID:000000003532436

#### CAUTION:

**Always drive vehicle at a safe speed.**

#### NOTE:

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

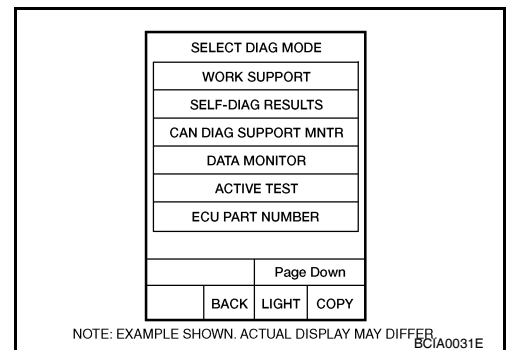
After the repair, perform the following procedure to confirm the malfunction is eliminated.

#### ④ WITH CONSULT-II

1. Start engine.
2. Accelerate vehicle to maintain the following conditions.  
**ACCELE POS: 1.5/8 - 2.0/8**  
**Selector lever: "D" position**  
**Gear position: 2nd ⇒ 3rd Gear (HLR/C ON/OFF)**  
**Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.**
3. Perform step "2" again.
4. Turn ignition switch "OFF", 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-156, "Diagnosis Procedure"](#).

If DTC (P1767) is detected, go to [AT-142, "Diagnosis Procedure"](#).



### Diagnosis Procedure

INFOID:000000003532437

#### 1. CHECK INPUT SIGNAL

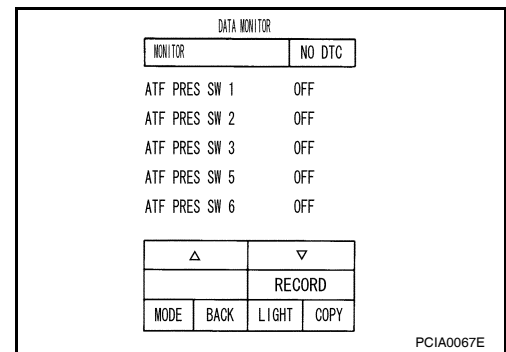
#### ④ With CONSULT-II

## DTC P1846 ATF PRESSURE SWITCH 6

### < SERVICE INFORMATION >

1. Start the engine.
2. Select "ECU INPUT SIGNALS" or "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Drive vehicle in the "D" position (2nd ⇒ 3rd gear), and confirm the ON/OFF actuation of the "ATF PRES SW 6".

Item name	Condition	Display value
ATF PRES SW 6	High and low reverse clutch engaged. Refer to <a href="#">AT-20</a> .	ON
	High and low reverse clutch disengaged. Refer to <a href="#">AT-20</a> .	OFF



#### OK or NG

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

### 2. CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit. Refer to [AT-158](#).

#### OK or NG

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

### 3. DETECT MALFUNCTIONING ITEM

Check the following items:

- The A/T assembly harness connector pin terminals for damage or loose connection with harness connector.

#### OK or NG

- OK >> Replace the control valve with TCM. Refer to [AT-210. "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
- NG >> Repair or replace damaged parts.

### 4. CHECK DTC

Perform "DTC Confirmation Procedure".

- Refer to [AT-156. "DTC Confirmation Procedure"](#).

#### OK or NG

- OK >> **INSPECTION END**
- NG >> GO TO 2.

# MAIN POWER SUPPLY AND GROUND CIRCUIT

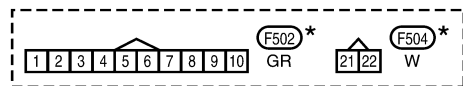
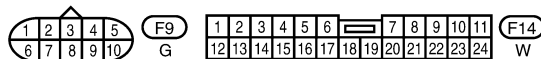
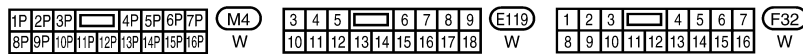
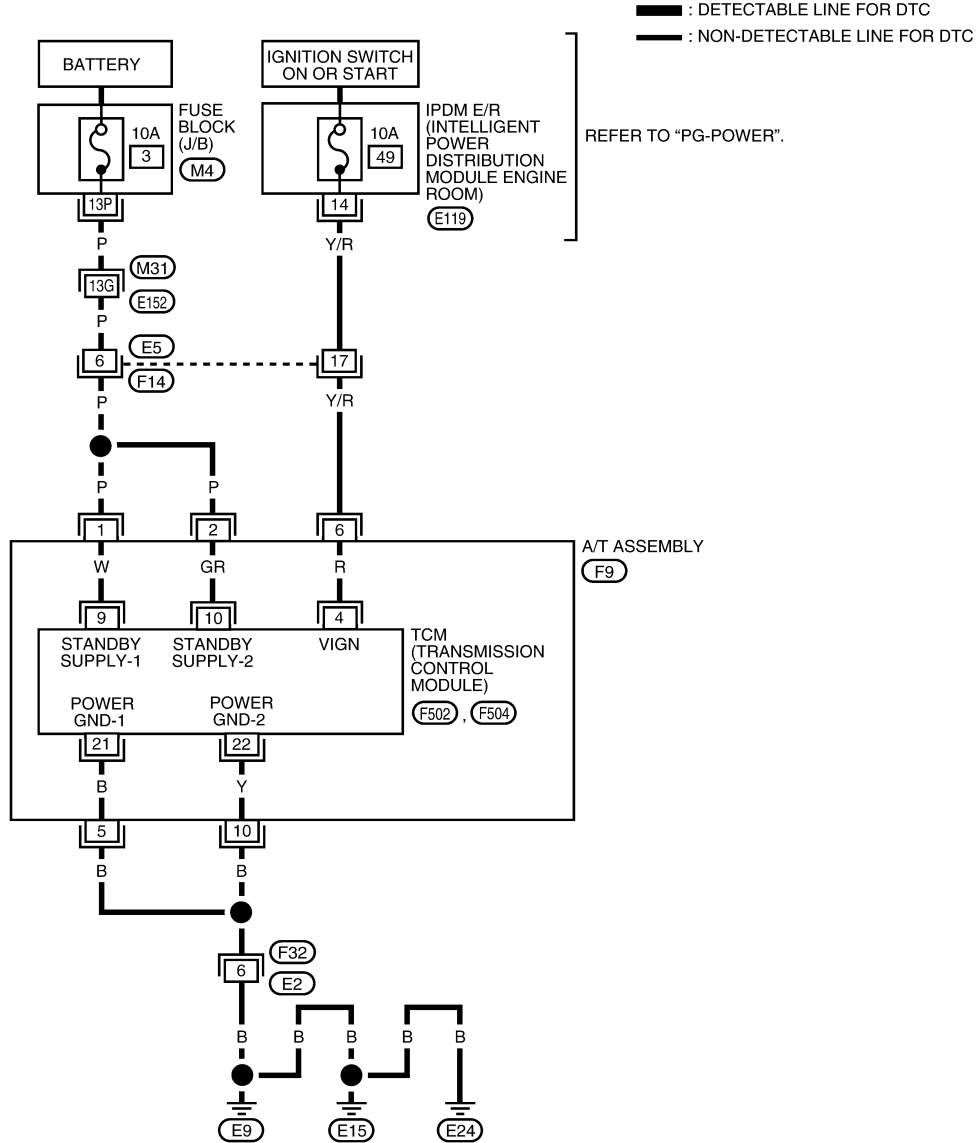
< SERVICE INFORMATION >

## MAIN POWER SUPPLY AND GROUND CIRCUIT

Wiring Diagram - AT - MAIN

INFOID:000000003532438

### AT-MAIN-01



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

REFER TO THE FOLLOWING.

(M31) - SUPER MULTIPLE JUNCTION (SMJ)

TCM Input/Output Signal Reference Values

Refer to [AT-82, "TCM Input/Output Signal Reference Value"](#).

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# MAIN POWER SUPPLY AND GROUND CIRCUIT

< SERVICE INFORMATION >

## Diagnosis Procedure

INFOID:000000003532439

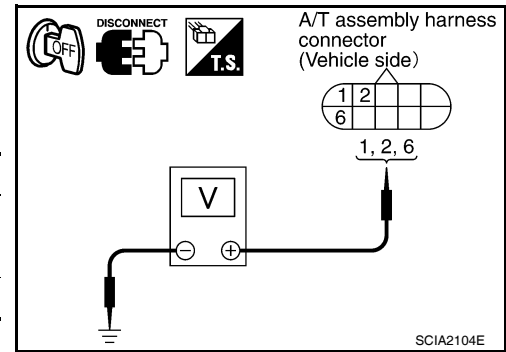
### 1. CHECK TCM POWER SOURCE STEP 1

1. Turn ignition switch OFF.
2. Disconnect A/T assembly harness connector.
3. Check voltage between A/T assembly harness connector terminals and ground.

Item	Connector	Terminal	Voltage
TCM	F9	1 - Ground	Battery voltage
		2 - Ground	
		6 - Ground	0V

#### OK or NG

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



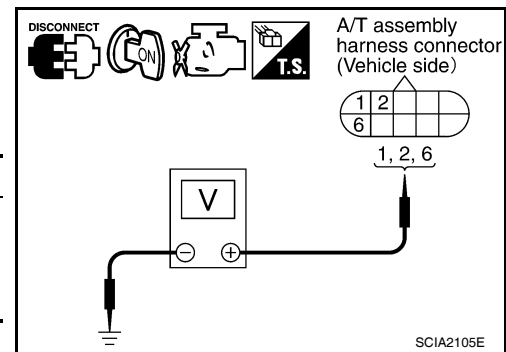
### 2. CHECK TCM POWER SOURCE STEP 2

1. Disconnect A/T assembly harness connector.
2. Turn ignition switch ON. (Do not start engine.)
3. Check voltage between A/T assembly harness connector terminals and ground.

Item	Connector	Terminal	Voltage
TCM	F9	1 - Ground	Battery voltage
		2 - Ground	
		6 - 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 A/T assembly harness connector terminals 1, 2
- Harness for short or open between ignition switch and A/T assembly harness connector terminal 6
- 10A fuse [No. 3, located in the fuse block (J/B)] and 10A fuse (No. 49, located in the IPDM E/R)
- Ignition switch, Refer to [PG-3](#).

#### OK or NG

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

### 4. CHECK TCM GROUND CIRCUIT

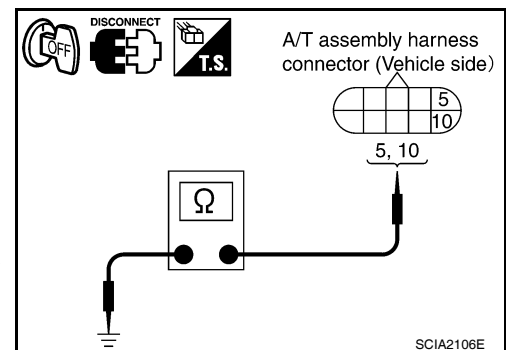
1. Turn ignition switch OFF.
2. Disconnect A/T assembly harness connector.
3. Check continuity between A/T assembly harness connector F9 terminals 5, 10 and ground.

**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. DETECT MALFUNCTIONING ITEM

# MAIN POWER SUPPLY AND GROUND CIRCUIT

## < SERVICE INFORMATION >

Check the following items:

- The A/T assembly harness connector terminals for damage or loose connection with harness connector.

### OK or NG

OK >> GO TO 6.

NG >> Repair or replace damaged parts.

## 6. PERFORM SELF-DIAGNOSIS

Perform self-diagnosis. Refer to [AT-83, "CONSULT-II Function \(A/T\)"](#).

### OK or NG

OK >> **INSPECTION END**

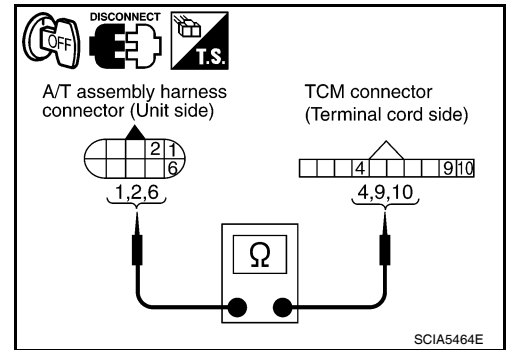
NG-1 >> Self-diagnosis does not activate: GO TO 7.

NG-2 >> DTC is displayed: Check the malfunctioning system. Refer to [AT-83, "CONSULT-II Function \(A/T\)"](#).

## 7. CHECK TERMINAL CORD ASSEMBLY

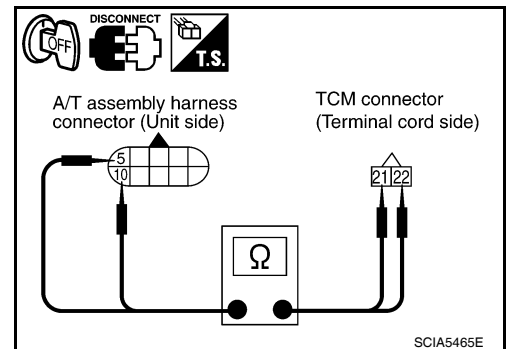
1. Remove control valve with TCM. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Disconnect A/T assembly harness connector and TCM connector.
3. Check continuity between A/T assembly harness connector terminals and TCM connector terminals.

Item	Connector	Terminal	Continuity
A/T assembly harness connector	F9	1	Yes
TCM connector	F502	9	
A/T assembly harness connector	F9	2	Yes
TCM connector	F502	10	
A/T assembly harness connector	F9	6	Yes
TCM connector	F502	4	



4. Check continuity between A/T assembly harness connector terminals and TCM connector terminals.

Item	Connector	Terminal	Continuity
A/T assembly harness connector	F9	5	Yes
TCM connector	F504	21	
A/T assembly harness connector	F9	10	Yes
TCM connector	F504	22	



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

### OK or NG

OK >> Replace the control valve with TCM. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).

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



# CLOSED THROTTLE POSITION AND WIDE OPEN THROTTLE POSITION CIRCUIT

< SERVICE INFORMATION >

## CLOSED THROTTLE POSITION AND WIDE OPEN THROTTLE POSITION CIRCUIT

CONSULT-II Reference Value in Data Monitor Mode

INFOID:000000003532440

Item name	Condition	Display value
CLSD THL POS	Released accelerator pedal.	ON
	Fully depressed accelerator pedal.	OFF
W/O THL POS	Fully depressed accelerator pedal.	ON
	Released accelerator pedal.	OFF

### Diagnosis Procedure

INFOID:000000003532441

#### 1. CHECK CAN COMMUNICATION LINE

Perform the self-diagnosis. Refer to [AT-83, "CONSULT-II Function \(A/T\)"](#).

Is a malfunction in the CAN communication indicated in the results?

- YES >> Check CAN communication line. Refer to [AT-91](#).  
 NO >> GO TO 2.

#### 2. CHECK THROTTLE POSITION SIGNAL CIRCUIT

##### With CONSULT-II

- Turn ignition switch "ON". (Do not start engine.)
- Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
- Depress accelerator pedal and read out the value of "CLSD THL POS" and "W/O THL POS".

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

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Accelerator Pedal Operation	Monitor Item	
	CLSD THL POS	W/O THL POS
Released	ON	OFF
Fully depressed	OFF	ON

OK or NG

OK >> **INSPECTION END**

NG >> Check the following items. If NG, repair or replace damaged parts.

- Perform the self-diagnosis for "ENGINE" with CONSULT-II.
- Open circuit or short to ground or short to power in harness or connectors.
- Pin terminals for damage or loose connection with harness connector.

# BRAKE SIGNAL CIRCUIT

< SERVICE INFORMATION >

## BRAKE SIGNAL CIRCUIT

### CONSULT-II Reference Value in Data Monitor Mode

INFOID:000000003532442

Item name	Condition	Display value
BRAKE SW	Depressed brake pedal.	ON
	Released brake pedal.	OFF

### Diagnosis Procedure

INFOID:000000003532443

#### 1. CHECK CAN COMMUNICATION LINE

Perform the self-diagnosis. Refer to [AT-83. "CONSULT-II Function \(A/T\)"](#).

Is a malfunction in the CAN communication indicated in the results?

- YES >> Check CAN communication line. Refer to [AT-91](#).
- NO >> GO TO 2.

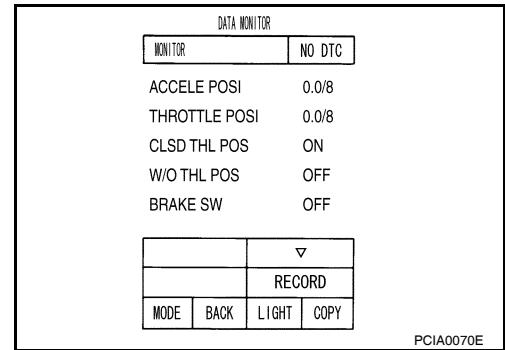
#### 2. CHECK STOP LAMP SWITCH CIRCUIT

##### With CONSULT-II

1. Turn ignition switch "ON". (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 >> **INSPECTION END**
- NG >> GO TO 3.



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

#### 3. CHECK STOP LAMP SWITCH

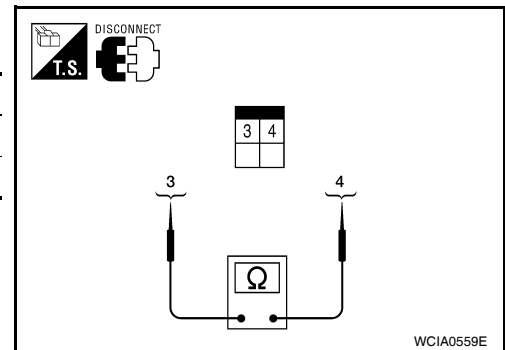
Check continuity between stop lamp switch terminals 3 and 4.

Condition	Continuity
When brake pedal is depressed	Yes
When brake pedal is released	No

Check stop lamp switch after adjusting brake pedal — refer to [BR-5](#).

OK or NG

- OK >> Check stop lamp switch circuit.
- NG >> Repair or replace stop lamp switch.





# TOW MODE SWITCH

< SERVICE INFORMATION >

## Diagnosis Procedure

INFOID:000000003532446

### 1. CHECK CAN COMMUNICATION LINE

Perform the self-diagnosis. Refer to [AT-83, "CONSULT-II Function \(A/T\)"](#).

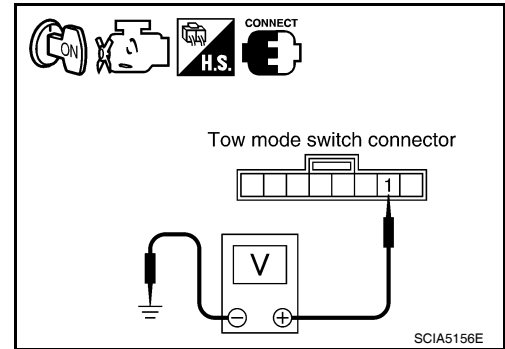
Is any malfunction in the CAN communication indicated in the results?

- YES >> Check CAN communication line. Refer to [AT-91](#).
- NO >> GO TO 2.

### 2. CHECK POWER SOURCE

1. Turn ignition switch "ON". (Do not start engine.)
2. Check the voltage between tow mode switch connector M67 terminal 1 and ground.

Condition	Tow mode switch	Data (Approx.)
When ignition switch is turned to "ON"	ON	0V
	OFF	Battery voltage



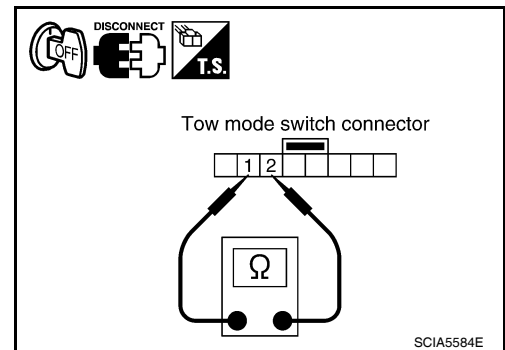
OK or NG

- OK >> **INSPECTION END**
- NG >> GO TO 3.

### 3. CHECK TOW MODE SWITCH

1. Turn ignition switch "OFF".
2. Disconnect tow mode switch connector.
3. Check continuity between tow mode switch terminals 1 and 2.

Condition	Continuity
Tow mode switch "ON"	Yes
Tow mode switch "OFF"	No



OK or NG

- OK >> GO TO 4.
- NG >> Repair or replace tow mode switch.

### 4. DETECT MALFUNCTIONING ITEM

Check the following items. If any items are damaged, repair or replace damaged parts.

- Harness for short or open between combination meter connector terminal 35 and tow mode switch connector terminal 1.
- Harness for short or open between tow mode switch connector terminal 2 and ground.

OK or NG

- OK >> GO TO 5.
- NG >> Repair or replace damaged parts.

### 5. CHECK COMBINATION METER

Check the combination meter. Refer to [DI-15, "How to Proceed with Trouble Diagnosis"](#).

OK or NG

- OK >> **INSPECTION END**
- NO >> Repair or replace damaged parts.

# TROUBLE DIAGNOSIS FOR SYMPTOMS

< SERVICE INFORMATION >

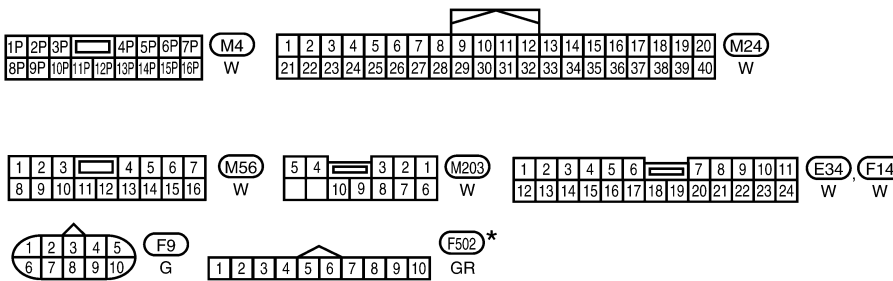
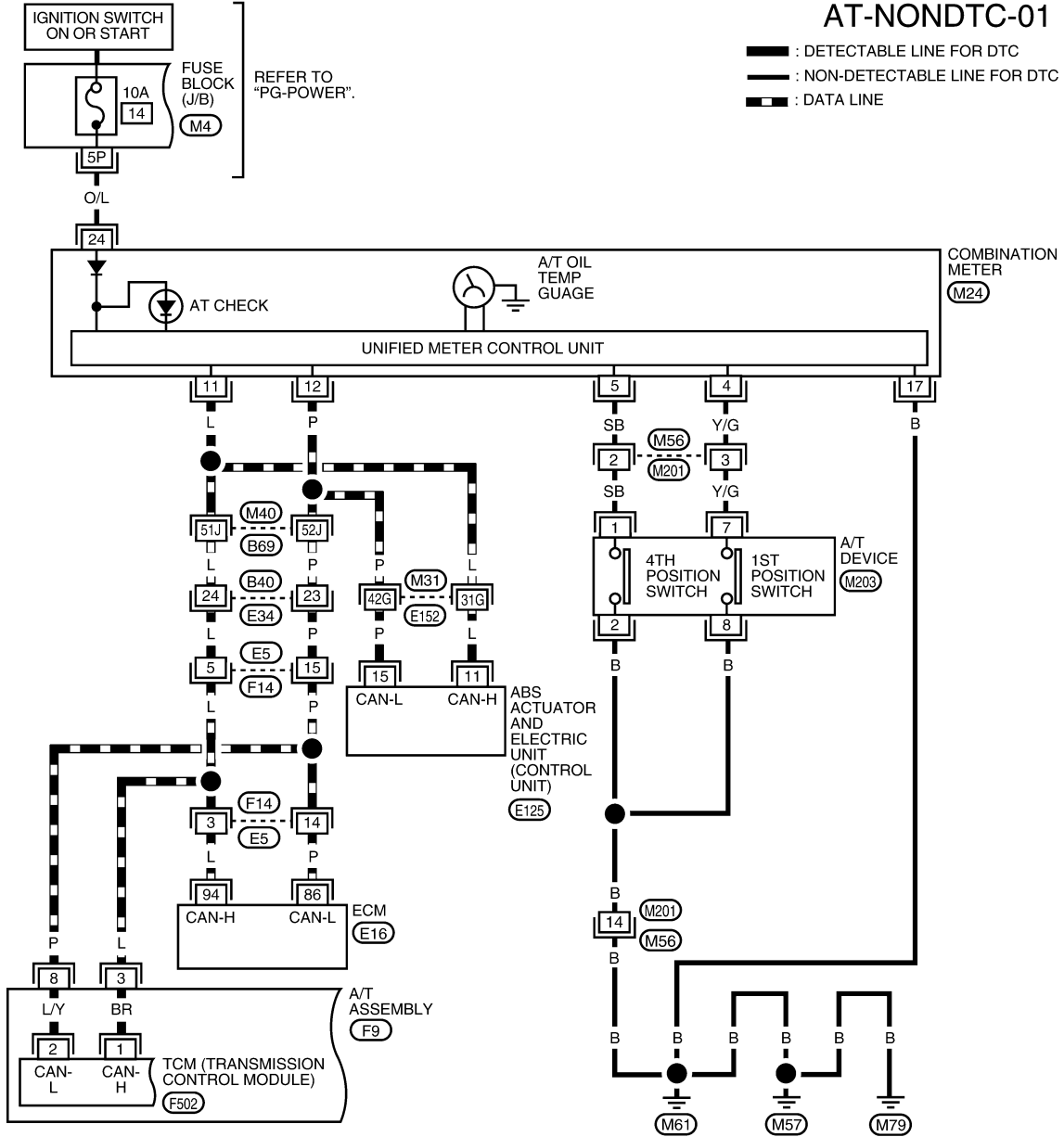
## TROUBLE DIAGNOSIS FOR SYMPTOMS

### Wiring Diagram - AT - NONDTC

INFOID:00000003532447

#### AT-NONDTC-01

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



REFER TO THE FOLLOWING.  
 (E16), (E125) - ELECTRICAL UNITS  
 (M31), (M40) - SUPER MULTIPLE JUNCTION (SMJ)

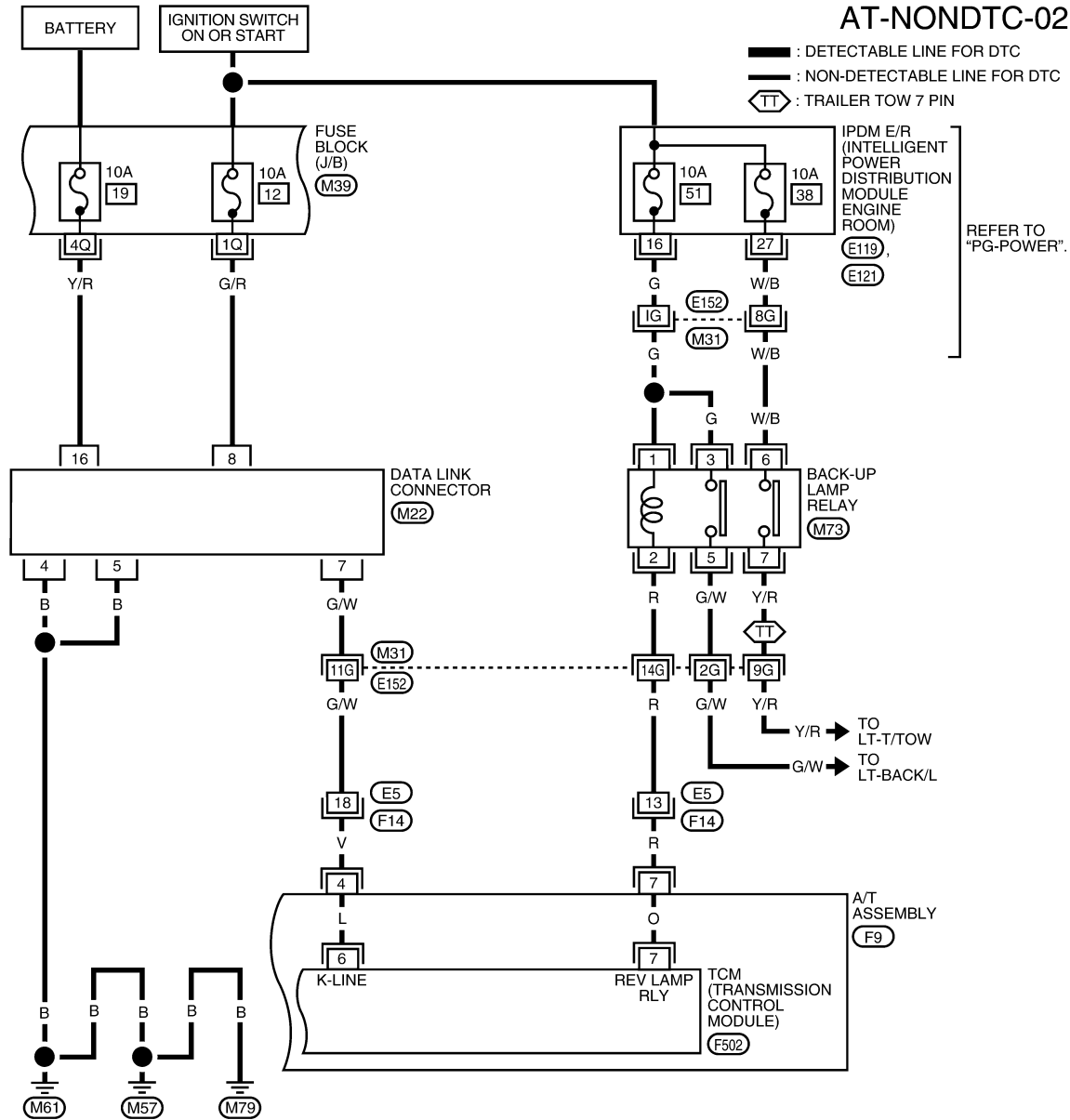
\*: THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT" OF PG SECTION.

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# TROUBLE DIAGNOSIS FOR SYMPTOMS

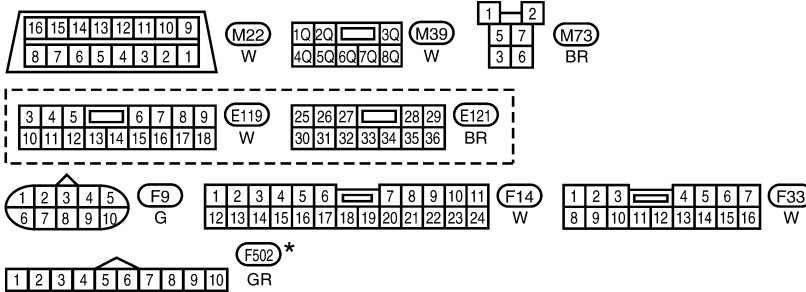
< SERVICE INFORMATION >

## AT-NONDTC-02



REFER TO "PG-POWER".

TO LT-T/TOW  
 TO LT-BACK/L



REFER TO THE FOLLOWING.  
 (M31) - SUPER MULTIPLE JUNCTION (SMJ)

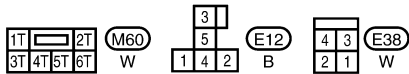
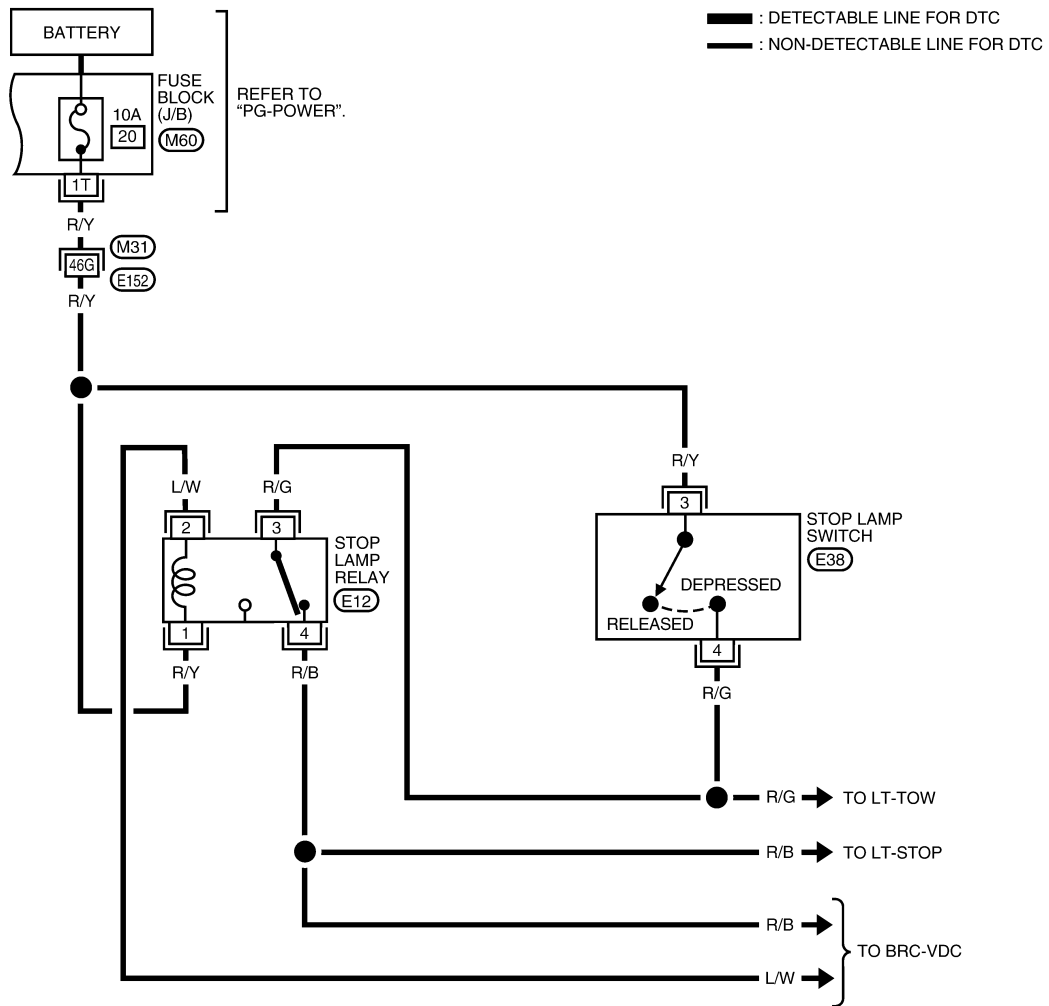
\*: THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT" OF PG SECTION.

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# TROUBLE DIAGNOSIS FOR SYMPTOMS

< SERVICE INFORMATION >

AT-NONDTC-03



REFER TO THE FOLLOWING.  
 (M31) - SUPER MULTIPLE JUNCTION (SMJ)

BCWA0501E

TCM Input/Output Signal Reference Values  
 Refer to [AT-82. "TCM Input/Output Signal Reference Value"](#).  
 A/T Check Indicator Lamp Does Not Come On

SYMPTOM:

# TROUBLE DIAGNOSIS FOR SYMPTOMS

< SERVICE INFORMATION >

**AT CHECK indicator lamp does not come on for about 2 seconds when turning ignition switch to "ON".**

## DIAGNOSTIC PROCEDURE

### 1. CHECK CAN COMMUNICATION LINE

Perform the self-diagnosis. Refer to [AT-83. "CONSULT-II Function \(A/T\)"](#).

Is a malfunction in the CAN communication indicated in the results?

- YES >> Check CAN communication line. Refer to [AT-91](#).
- NO >> GO TO 2.

### 2. CHECK A/T CHECK INDICATOR LAMP CIRCUIT

Check the combination meter. Refer to [DI-5](#).

OK or NG

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

### 3. CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit. Refer to [AT-158](#).

OK or NG

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

## Engine Cannot Be Started in "P" or "N" Position

INFOID:000000003532449

SYMPTOM:

- 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 SELF-DIAGNOSIS RESULTS

Perform self-diagnosis. Refer to [AT-83. "CONSULT-II Function \(A/T\)"](#).

Do the self-diagnosis results indicate PNP switch?

- YES >> Check the malfunctioning system. Refer to [AT-99](#).
- NO >> GO TO 2.

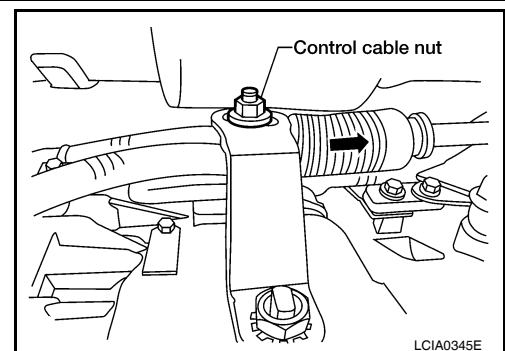
### 2. CHECK CONTROL CABLE

Check the control cable.

- Refer to [AT-208. "Checking of A/T Position"](#).

OK or NG

- OK >> GO TO 3.
- NG >> Adjust control cable. Refer to [AT-208. "Adjustment of A/T Position"](#).



### 3. CHECK STARTING SYSTEM

Check the starting system. Refer to [SC-9](#).

OK or NG

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

## In "P" Position, Vehicle Moves When Pushed

INFOID:000000003532450

SYMPTOM:



# TROUBLE DIAGNOSIS FOR SYMPTOMS

< SERVICE INFORMATION >

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

Perform self-diagnosis. Refer to [AT-83. "CONSULT-II Function \(A/T\)"](#).

Do the self-diagnosis results indicate PNP switch?

- YES >> Check the malfunctioning system. Refer to [AT-99](#).
- NO >> GO TO 2.

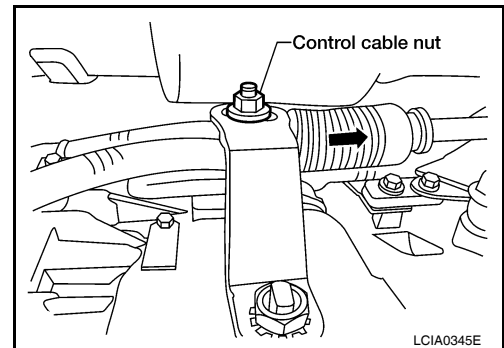
### 2. CHECK CONTROL CABLE

Check the control cable.

- Refer to [AT-208. "Checking of A/T Position"](#).

OK or NG

- OK >> GO TO 3.
- NG >> Adjust control cable. Refer to [AT-208. "Adjustment of A/T Position"](#).

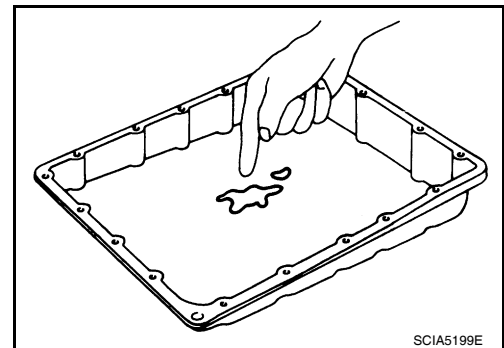


### 3. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-210. "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Check A/T fluid condition. Refer to [AT-13. "Checking Automatic Transmission Fluid \(ATF\)"](#).

OK or NG

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



### 4. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-60. "Symptom Chart"](#) (Symptom No.58).

OK or NG

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

## In "N" Position, Vehicle Moves

INFOID:000000003532451

SYMPTOM:

Vehicle moves forward or backward when selecting "N" position.

## DIAGNOSTIC PROCEDURE

### 1. CHECK PNP SWITCH CIRCUIT

Perform self-diagnosis. Refer to [AT-83. "CONSULT-II Function \(A/T\)"](#).

Do the self-diagnostic results indicate PNP switch?

- YES >> Check the malfunctioning system. Refer to [AT-99](#).
- NO >> GO TO 2.

### 2. CHECK CONTROL CABLE

# TROUBLE DIAGNOSIS FOR SYMPTOMS

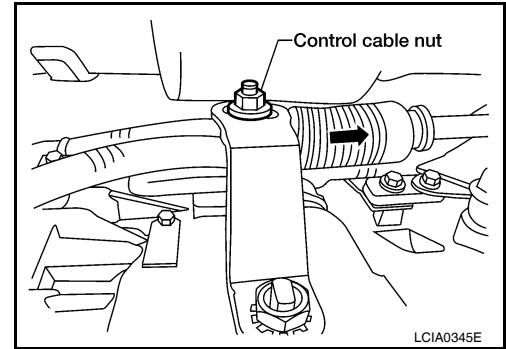
## < SERVICE INFORMATION >

Check the control cable.

- Refer to [AT-208, "Checking of A/T Position"](#).

### OK or NG

- OK >> GO TO 3.
- NG >> Adjust control cable. Refer to [AT-208, "Adjustment of A/T Position"](#).

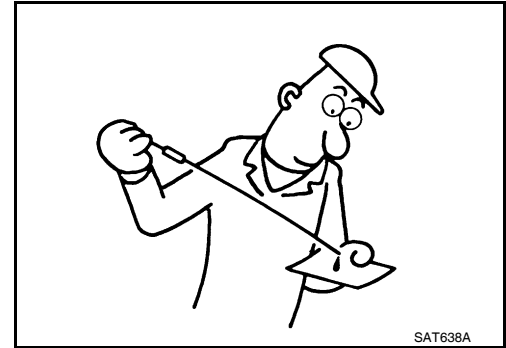


## 3.CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to [AT-13, "Checking Automatic Transmission Fluid \(ATF\)"](#).

### OK or NG

- OK >> GO TO 4.
- NG >> Refill ATF.

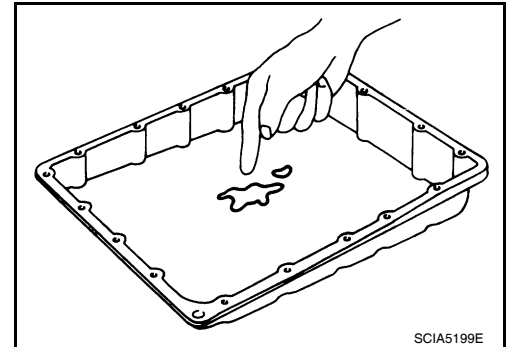


## 4.CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Check A/T fluid condition. Refer to [AT-13, "Checking Automatic Transmission Fluid \(ATF\)"](#).

### 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"](#) (Symptom No.60).



## 5.CHECK SYMPTOM

Check again. Refer to [AT-55, "Check at Idle"](#).

### OK or NG

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

## 6.PERFORM TCM INSPECTION

1. Perform TCM input/output signals inspection. Refer to [AT-82, "TCM Input/Output Signal Reference Value"](#).
2. If NG, recheck A/T assembly harness connector 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)

INFOID:000000003532452

SYMPTOM:

A noticeable shock occurs when the selector lever is shifted from the "N" to "D" position.

# TROUBLE DIAGNOSIS FOR SYMPTOMS

< SERVICE INFORMATION >

## DIAGNOSTIC PROCEDURE

### 1. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis. Refer to [AT-83, "CONSULT-II Function \(A/T\)"](#).

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-119](#), [AT-109](#), [AT-117](#), [AT-150](#), [AT-134](#), [AT-91](#).  
NO >> GO TO 2.

### 2. ENGINE IDLE SPEED

Check the engine idle speed. Refer to [EC-75, "Idle Speed and Ignition Timing Check"](#).

OK or NG

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

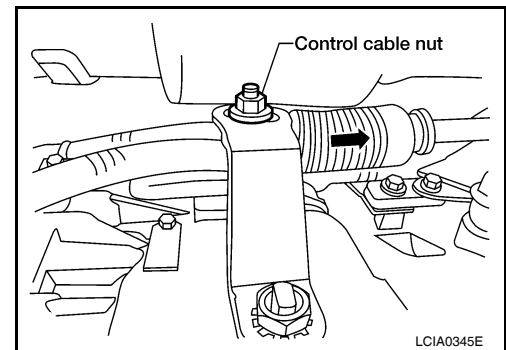
### 3. CHECK CONTROL CABLE

Check the control cable.

- Refer to [AT-208, "Checking of A/T Position"](#).

OK or NG

- OK >> GO TO 4.  
NG >> Adjust control cable. Refer to [AT-208, "Adjustment of A/T Position"](#).

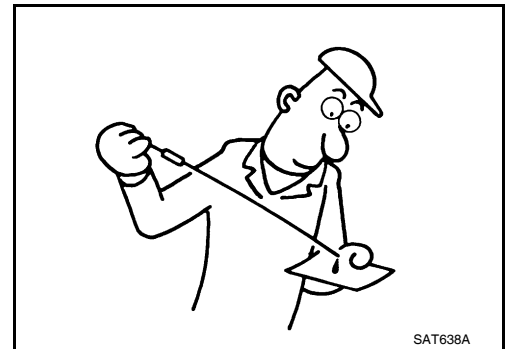


### 4. CHECK A/T FLUID LEVEL

Check the A/T fluid level. Refer to [AT-13, "Checking Automatic Transmission Fluid \(ATF\)"](#).

OK or NG

- OK >> GO TO 5.  
NG >> Refill ATF.

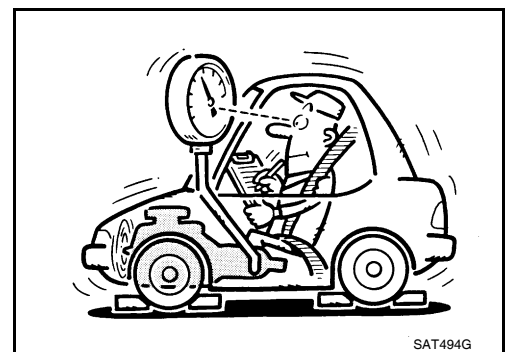


### 5. CHECK LINE PRESSURE

Check line pressure at idle with selector lever in "D" position. Refer to [AT-51, "Inspections Before Trouble Diagnosis"](#).

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. Check control valve with TCM. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Disassemble A/T. Refer to [AT-240, "Disassembly"](#).
3. Check the following items:

## TROUBLE DIAGNOSIS FOR SYMPTOMS

### < SERVICE INFORMATION >

- Oil pump assembly. Refer to [AT-258, "Oil Pump"](#).

#### OK or NG

- OK >> GO TO 8.
- NG >> Repair or replace damaged parts.

### 7. DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Disassemble A/T. Refer to [AT-240, "Disassembly"](#).
3. Check the following items:
  - Oil pump assembly. Refer to [AT-258, "Oil Pump"](#).
  - Power train system. Refer to [AT-240, "Disassembly"](#).
  - Transmission case. Refer to [AT-240, "Disassembly"](#).

#### OK or NG

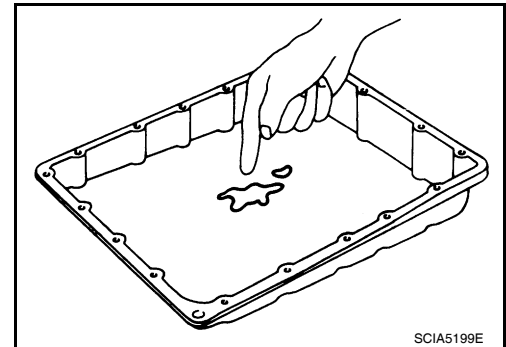
- OK >> GO TO 8.
- NG >> Repair or replace damaged parts.

### 8. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Check A/T fluid condition. Refer to [AT-13, "Checking Automatic Transmission Fluid \(ATF\)"](#).

#### OK or NG

- OK >> GO TO 10.
- NG >> GO TO 9.



### 9. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-60, "Symptom Chart"](#) (Symptom No.1).

#### OK or NG

- OK >> GO TO 10.
- NG >> Repair or replace damaged parts.

### 10. CHECK SYMPTOM

Check again. Refer to [AT-55, "Check at Idle"](#).

#### OK or NG

- OK >> **INSPECTION END**
- NG >> GO TO 11.

### 11. PERFORM TCM INSPECTION

1. Perform TCM input/output signals inspection. Refer to [AT-82, "TCM Input/Output Signal Reference Value"](#).
2. If NG, recheck A/T assembly harness connector terminals for damage or loose connection with harness connector.

#### OK or NG

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

## Vehicle Does Not Creep Backward in "R" Position

INFOID:000000003532453

#### SYMPTOM:

The vehicle does not creep in the "R" position. Or an extreme lack of acceleration is observed.

#### DIAGNOSTIC PROCEDURE

# TROUBLE DIAGNOSIS FOR SYMPTOMS

< SERVICE INFORMATION >

## 1. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis. Refer to [AT-83. "CONSULT-II Function \(A/T\)"](#).

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-117'](#) [AT-156](#), [AT-142](#), [AT-91'](#) [AT-99](#).
- NO >> GO TO 2.

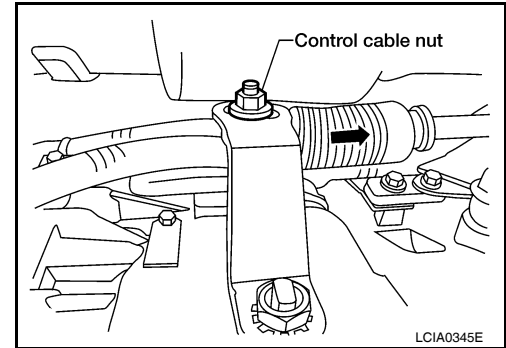
## 2. CHECK CONTROL CABLE

Check the control cable.

- Refer to [AT-208. "Checking of A/T Position"](#).

OK or NG

- OK >> GO TO 3.
- NG >> Adjust control cable. Refer to [AT-208. "Adjustment of A/T Position"](#).

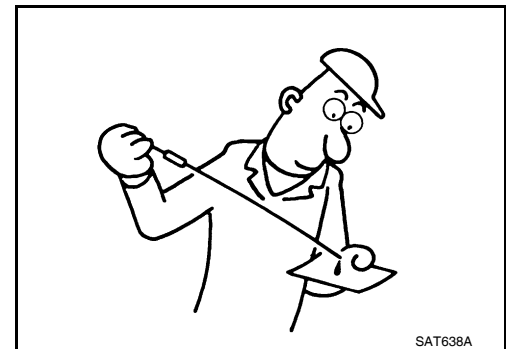


## 3. CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to [AT-13. "Checking Automatic Transmission Fluid \(ATF\)"](#).

OK or NG

- OK >> GO TO 4.
- NG >> Refill ATF.

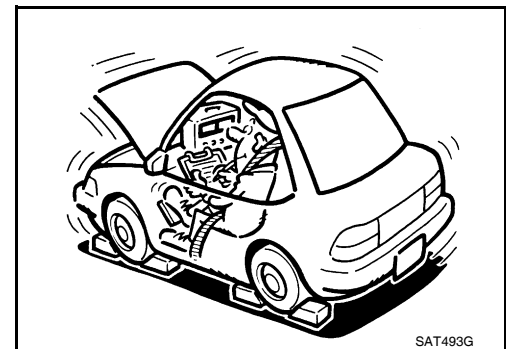


## 4. CHECK STALL TEST

Check stall revolution with selector lever in "1" and "R" positions. Refer to [AT-51. "Inspections Before Trouble Diagnosis"](#).

OK or NG

- OK >> GO TO 6.
- OK in "1" position, NG in "R" position >> GO TO 5.
- NG in both "1" and "R" positions >> GO TO 8.



## 5. DETECT MALFUNCTIONING ITEM

1. Disassemble A/T. Refer to [AT-240. "Disassembly"](#).
2. Check the following items:
  - Reverse brake. Refer to [AT-240. "Disassembly"](#).

OK or NG

- OK >> GO TO 9.
- NG >> Repair or replace damaged parts.

## 6. CHECK LINE PRESSURE

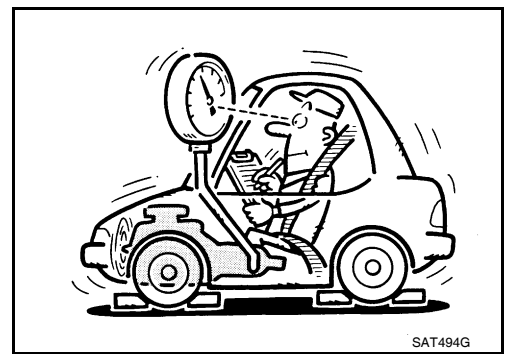
## TROUBLE DIAGNOSIS FOR SYMPTOMS

### < SERVICE INFORMATION >

Check the line pressure with the engine idling. Refer to [AT-51, "Inspections Before Trouble Diagnosis"](#).

#### OK or NG

- OK >> GO TO 9.
- NG - 1 >> Line pressure high. GO TO 7.
- NG - 2 >> Line pressure low. GO TO 8.



### 7. DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Disassemble A/T. Refer to [AT-240, "Disassembly"](#).
3. Check the following items:
  - Oil pump assembly. Refer to [AT-258, "Oil Pump"](#).

#### OK or NG

- OK >> GO TO 9.
- NG >> Repair or replace damaged parts.

### 8. DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Disassemble A/T. Refer to [AT-240, "Disassembly"](#).
3. Check the following items:
  - Oil pump assembly. Refer to [AT-258, "Oil Pump"](#).
  - Power train system. Refer to [AT-240, "Disassembly"](#).
  - Transmission case. Refer to [AT-240, "Disassembly"](#).

#### OK or NG

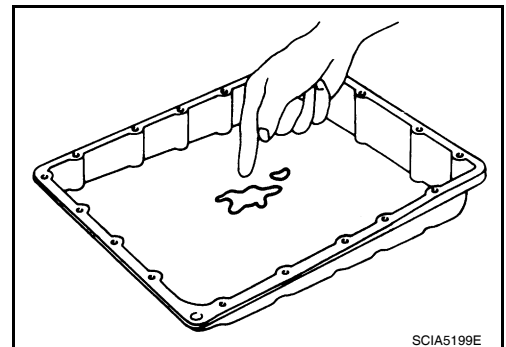
- OK >> GO TO 9.
- NG >> Repair or replace damaged parts.

### 9. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Check A/T fluid condition. Refer to [AT-51, "Inspections Before Trouble Diagnosis"](#).

#### OK or NG

- OK >> GO TO 10.
- NG >> GO TO 13.



### 10. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-60, "Symptom Chart"](#) (Symptom No.43).

#### OK or NG

- OK >> GO TO 11.
- NG >> Repair or replace damaged parts.

### 11. CHECK SYMPTOM

Check again. Refer to [AT-55, "Check at Idle"](#).

#### OK or NG

# TROUBLE DIAGNOSIS FOR SYMPTOMS

## < SERVICE INFORMATION >

- OK >> **INSPECTION END**
- NG >> GO TO 12.

### 12.PERFORM TCM INSPECTION

1. Perform TCM input/output signals inspection. Refer to [AT-82. "TCM Input/Output Signal Reference Value"](#).
2. If NG, recheck A/T assembly harness connector terminals for damage or loose connection with harness connector.

#### OK or NG

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

### 13.DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-60. "Symptom Chart"](#) (Symptom No.43).

#### OK or NG

- OK >> GO TO 11.
- NG >> Repair or replace damaged parts.

## Vehicle Does Not Creep Forward in "D" Position

INFOID:000000003532454

### SYMPTOM:

**Vehicle does not creep forward when selecting "D" position.**

### DIAGNOSTIC PROCEDURE

#### 1.CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis. Refer to [AT-83. "CONSULT-II Function \(A/T\)"](#).

Do the self-diagnostic results indicate accelerator pedal position sensor, CAN communication line, PNP switch?

- YES >> Check the malfunctioning system. Refer to [AT-117'](#) [AT-91'](#) [AT-99](#).
- NO >> GO TO 2.

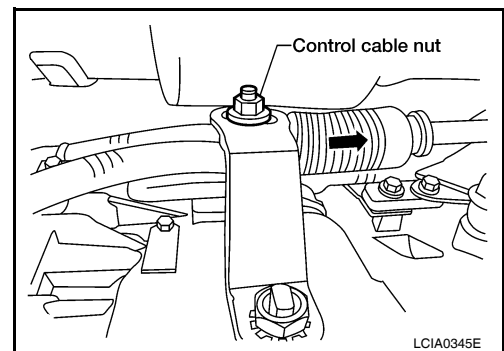
#### 2.CHECK CONTROL CABLE

Check the control cable.

- Refer to [AT-208. "Checking of A/T Position"](#).

#### OK or NG

- OK >> GO TO 3.
- NG >> Adjust control cable. Refer to [AT-208. "Adjustment of A/T Position"](#).

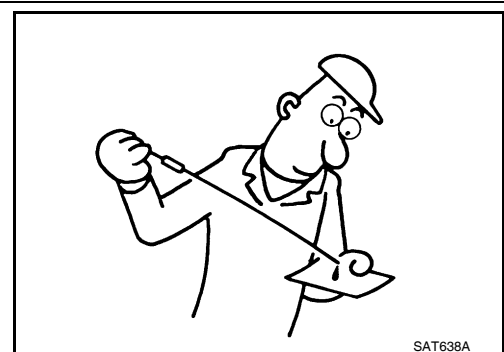


#### 3.CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to [AT-13. "Checking Automatic Transmission Fluid \(ATF\)"](#).

#### OK or NG

- OK >> GO TO 4.
- NG >> Refill ATF.



# TROUBLE DIAGNOSIS FOR SYMPTOMS

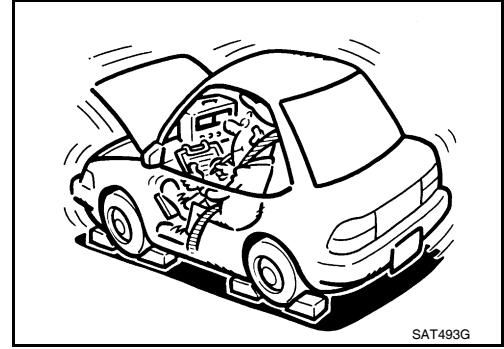
< SERVICE INFORMATION >

## 4. CHECK STALL TEST

Check stall revolution with selector lever in "D" position. Refer to [AT-51, "Inspections Before Trouble Diagnosis"](#).

OK or NG

- OK >> GO TO 5.
- NG >> GO TO 7.

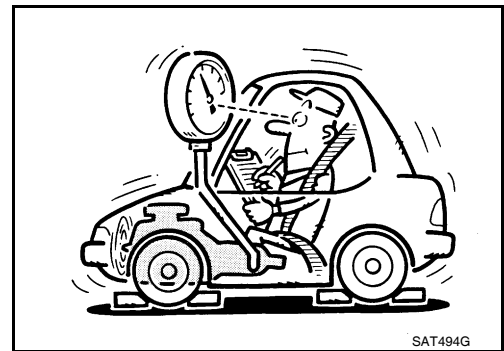


## 5. CHECK LINE PRESSURE

Check line pressure at idle with selector lever in "D" position. Refer to [AT-51, "Inspections Before Trouble Diagnosis"](#).

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. Check control valve with TCM. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Disassemble A/T. Refer to [AT-240, "Disassembly"](#).
3. Check the following items:
  - Oil pump assembly. Refer to [AT-258, "Oil Pump"](#).

OK or NG

- OK >> GO TO 8.
- NG >> Repair or replace damaged parts.

## 7. DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Disassemble A/T. Refer to [AT-240, "Disassembly"](#).
3. Check the following items:
  - Oil pump assembly. Refer to [AT-258, "Oil Pump"](#).
  - Power train system. Refer to [AT-240, "Disassembly"](#).
  - Transmission case. Refer to [AT-240, "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-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).



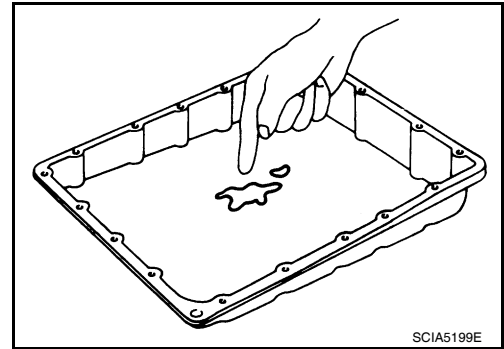
# TROUBLE DIAGNOSIS FOR SYMPTOMS

## < SERVICE INFORMATION >

2. Check A/T fluid condition. Refer to [AT-51. "Inspections Before Trouble Diagnosis"](#).

### 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"](#) (Symptom No.43).

### OK or NG

- OK >> GO TO 10.
- NG >> Repair or replace damaged parts.

## 10. CHECK SYMPTOM

Check again. Refer to [AT-55. "Check at Idle"](#).

### OK or NG

- OK >> **INSPECTION END**
- NG >> GO TO 11.

## 11. PERFORM TCM INSPECTION

1. Perform TCM input/output signals inspection. Refer to [AT-82. "TCM Input/Output Signal Reference Value"](#).
2. If NG, recheck A/T assembly harness connector 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"](#) (Symptom No.43).

### OK or NG

- OK >> GO TO 10.
- NG >> Repair or replace damaged parts.

## Vehicle Cannot Be Started from D1

INFOID:000000003532455

### 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-172. "Vehicle Does Not Creep Backward in "R" Position"](#).

## 2. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis. Refer to [AT-83. "CONSULT-II Function \(A/T\)"](#).

Is any malfunction detected by self-diagnostic results?

- YES >> Check the malfunctioning system.

## TROUBLE DIAGNOSIS FOR SYMPTOMS

### < SERVICE INFORMATION >

NO >> GO TO 3.

### 3. CHECK ACCELERATOR PEDAL POSITION (APP) SENSOR

Check accelerator pedal position (APP) sensor. Refer to [AT-117](#)

#### OK or NG

OK >> GO TO 4.

NG >> Repair or replace accelerator pedal position (APP) sensor.

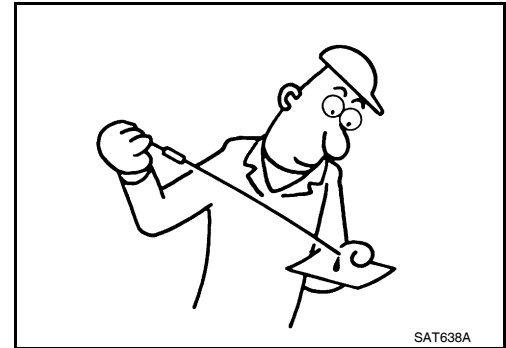
### 4. CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to [AT-13, "Checking Automatic Transmission Fluid \(ATF\)"](#).

#### OK or NG

OK >> GO TO 5.

NG >> Refill ATF.



### 5. CHECK LINE PRESSURE

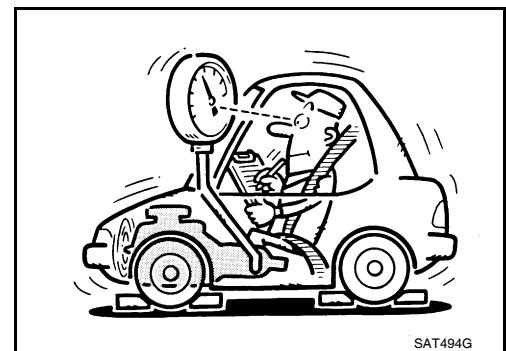
Check line pressure at the engine stall point. Refer to [AT-51, "Inspections Before Trouble Diagnosis"](#).

#### 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. Check control valve with TCM. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Disassemble A/T. Refer to [AT-240, "Disassembly"](#).
3. Check the following items:
  - Oil pump assembly. Refer to [AT-258, "Oil Pump"](#).

#### OK or NG

OK >> GO TO 8.

NG >> Repair or replace damaged parts.

### 7. DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Disassemble A/T. Refer to [AT-240, "Disassembly"](#).
3. Check the following items:
  - Oil pump assembly. Refer to [AT-258, "Oil Pump"](#).
  - Power train system. Refer to [AT-240, "Disassembly"](#).
  - Transmission case. Refer to [AT-240, "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-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).

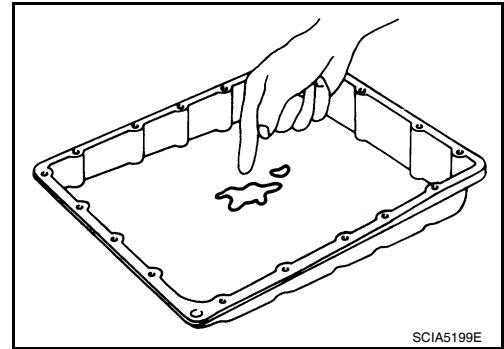
# TROUBLE DIAGNOSIS FOR SYMPTOMS

< SERVICE INFORMATION >

2. Check A/T fluid condition. Refer to [AT-51, "Inspections Before Trouble Diagnosis"](#).

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"](#) (Symptom No.23).

OK or NG

- OK >> GO TO 10.
- NG >> Repair or replace damaged parts.

## 10. CHECK SYMPTOM

Check again. Refer to [AT-55, "Check at Idle"](#), [AT-58, "Cruise Test - Part 2"](#).

OK or NG

- OK >> **INSPECTION END**
- NG >> GO TO 11.

## 11. PERFORM TCM INSPECTION

1. Perform TCM input/output signals inspection. Refer to [AT-82, "TCM Input/Output Signal Reference Value"](#).
2. If NG, recheck A/T assembly harness connector 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"](#) (Symptom No.23).

OK or NG

- OK >> GO TO 10.
- NG >> Repair or replace damaged parts.

A/T Does Not Shift: D1 → D2

INFOID:000000003532456

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-175, "Vehicle Does Not Creep Forward in "D" Position"](#), [AT-177, "Vehicle Cannot Be Started from D1"](#).

## 2. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis. Refer to [AT-83, "CONSULT-II Function \(A/T\)"](#).

## TROUBLE DIAGNOSIS FOR SYMPTOMS

### < SERVICE INFORMATION >

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-154](#)' [AT-138](#)' [AT-117](#)' [AT-105](#), [AT-124](#).

NO >> GO TO 3.

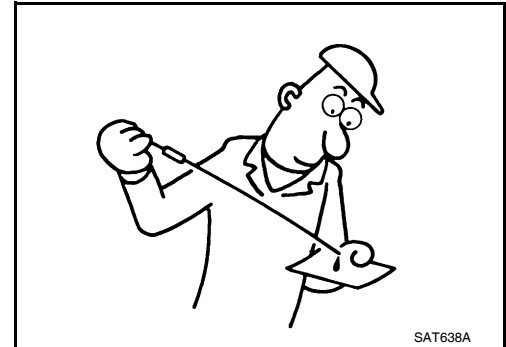
### 3. CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to [AT-13](#), "[Checking Automatic Transmission Fluid \(ATF\)](#)".

#### OK or NG

OK >> GO TO 4.

NG >> Refill ATF.



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### 4. CHECK LINE PRESSURE

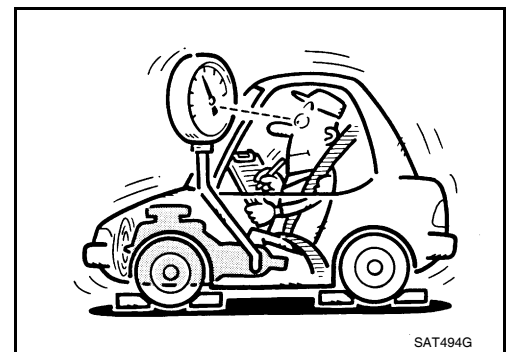
Check line pressure at the engine stall point. Refer to [AT-51](#), "[Inspections Before Trouble Diagnosis](#)".

#### OK or NG

OK >> GO TO 7.

NG - 1 >> Line pressure high. GO TO 5.

NG - 2 >> Line pressure low. GO TO 6.



SAT494G

### 5. DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-210](#), "[Control Valve with TCM and A/T Fluid Temperature Sensor 2](#)".

2. Disassemble A/T. Refer to [AT-240](#), "[Disassembly](#)".

3. Check the following items:

- Oil pump assembly. Refer to [AT-258](#), "[Oil Pump](#)".

#### OK or NG

OK >> GO TO 7.

NG >> Repair or replace damaged parts.

### 6. DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-210](#), "[Control Valve with TCM and A/T Fluid Temperature Sensor 2](#)".

2. Disassemble A/T. Refer to [AT-240](#), "[Disassembly](#)".

3. Check the following items:

- Oil pump assembly. Refer to [AT-258](#), "[Oil Pump](#)".

- Power train system. Refer to [AT-240](#), "[Disassembly](#)".

- Transmission case. Refer to [AT-240](#), "[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-210](#), "[Control Valve with TCM and A/T Fluid Temperature Sensor 2](#)".

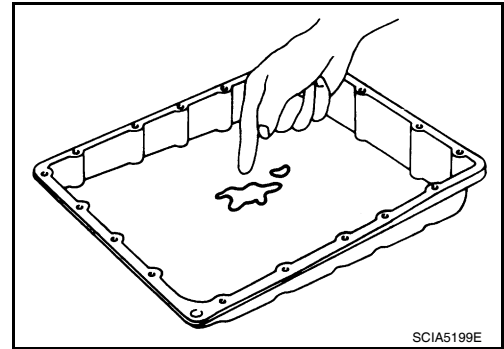
# TROUBLE DIAGNOSIS FOR SYMPTOMS

## < SERVICE INFORMATION >

2. Check A/T fluid condition. Refer to [AT-51, "Inspections Before Trouble Diagnosis"](#).

### 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"](#) (Symptom No.10).

### OK or NG

- OK >> GO TO 9.
- NG >> Repair or replace damaged parts.

## 9. CHECK SYMPTOM

Check again. Refer to [AT-55, "Check at Idle"](#), [AT-58, "Cruise Test - Part 2"](#).

### OK or NG

- OK >> **INSPECTION END**
- NG >> GO TO 10.

## 10. PERFORM TCM INSPECTION

1. Perform TCM input/output signals inspection. Refer to [AT-82, "TCM Input/Output Signal Reference Value"](#).
2. If NG, recheck A/T assembly harness connector 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"](#) (Symptom No.10).

### OK or NG

- OK >> GO TO 9.
- NG >> Repair or replace damaged parts.

## A/T Does Not Shift: D2→D3

INFOID:000000003532457

### SYMPTOM:

**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-175, "Vehicle Does Not Creep Forward in "D" Position"](#), [AT-177, "Vehicle Cannot Be Started from D1"](#).

## 2. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis. Refer to [AT-83, "CONSULT-II Function \(A/T\)"](#).

## TROUBLE DIAGNOSIS FOR SYMPTOMS

### < SERVICE INFORMATION >

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?

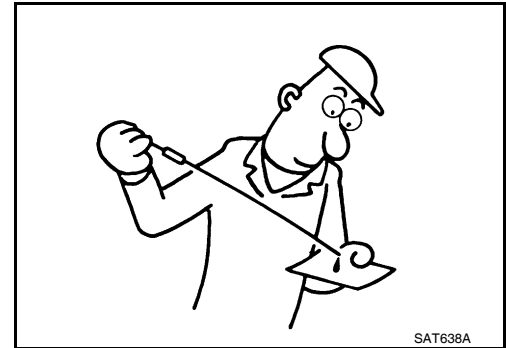
- YES >> Check the malfunctioning system. Refer to [AT-156](#) [AT-142](#) [AT-117](#) [AT-105](#) [AT-124](#).  
NO >> GO TO 3.

### 3.CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to [AT-13](#), "[Checking Automatic Transmission Fluid \(ATF\)](#)".

#### OK or NG

- OK >> GO TO 4.  
NG >> Refill ATF.

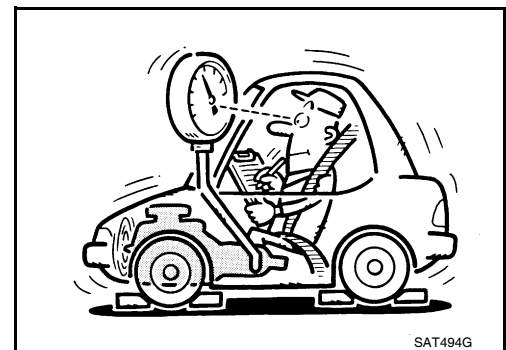


### 4.CHECK LINE PRESSURE

Check line pressure at the engine stall point. Refer to [AT-51](#), "[Inspections Before Trouble Diagnosis](#)".

#### 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. Check control valve with TCM. Refer to [AT-210](#), "[Control Valve with TCM and A/T Fluid Temperature Sensor 2](#)".
2. Disassemble A/T. Refer to [AT-240](#), "[Disassembly](#)".
3. Check the following items:
  - Oil pump assembly. Refer to [AT-258](#), "[Oil Pump](#)".

#### OK or NG

- OK >> GO TO 7.  
NG >> Repair or replace damaged parts.

### 6.DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-210](#), "[Control Valve with TCM and A/T Fluid Temperature Sensor 2](#)".
2. Disassemble A/T. Refer to [AT-240](#), "[Disassembly](#)".
3. Check the following items:
  - Oil pump assembly. Refer to [AT-258](#), "[Oil Pump](#)".
  - Power train system. Refer to [AT-240](#), "[Disassembly](#)".
  - Transmission case. Refer to [AT-240](#), "[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-210](#), "[Control Valve with TCM and A/T Fluid Temperature Sensor 2](#)".

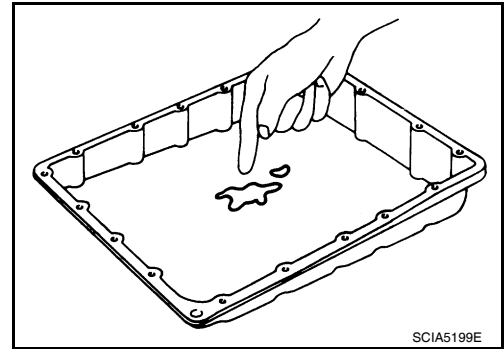
## TROUBLE DIAGNOSIS FOR SYMPTOMS

< SERVICE INFORMATION >

2. Check A/T fluid condition. Refer to [AT-51, "Inspections Before Trouble Diagnosis"](#).

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"](#) (Symptom No.11).

OK or NG

- OK >> GO TO 9.
- NG >> Repair or replace damaged parts.

### 9. CHECK SYMPTOM

Check again. Refer to [AT-55, "Check at Idle"](#), [AT-58, "Cruise Test - Part 2"](#).

OK or NG

- OK >> **INSPECTION END**
- NG >> GO TO 10.

### 10. PERFORM TCM INSPECTION

1. Perform TCM input/output signals inspection. Refer to [AT-82, "TCM Input/Output Signal Reference Value"](#).
2. If NG, recheck A/T assembly harness connector 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"](#) (Symptom No.11).

OK or NG

- OK >> GO TO 9.
- NG >> Repair or replace damaged parts.

A/T Does Not Shift: D3→D4

INFOID:0000000003532458

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-175, "Vehicle Does Not Creep Forward in "D" Position"](#), [AT-177, "Vehicle Cannot Be Started from D1"](#).

#### 2. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis. Refer to [AT-83, "CONSULT-II Function \(A/T\)"](#).

## TROUBLE DIAGNOSIS FOR SYMPTOMS

### < SERVICE INFORMATION >

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-150](#), [AT-152](#), [AT-130](#), [AT-134](#), [AT-117](#), [AT-105](#), [AT-124](#).

NO >> GO TO 3.

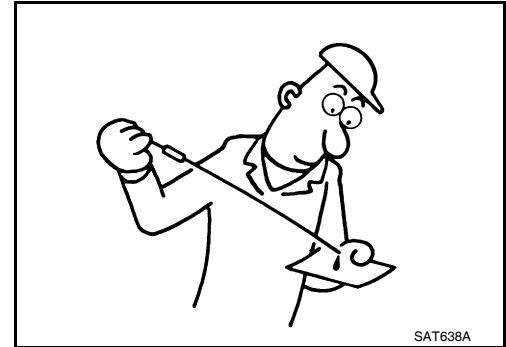
### 3. CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to [AT-13](#), "[Checking Automatic Transmission Fluid \(ATF\)](#)".

#### OK or NG

OK >> GO TO 4.

NG >> Refill ATF.



### 4. CHECK LINE PRESSURE

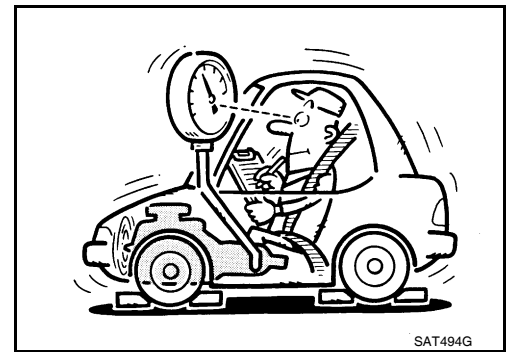
Check line pressure at the engine stall point. Refer to [AT-51](#), "[Inspections Before Trouble Diagnosis](#)".

#### 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. Check control valve with TCM. Refer to [AT-210](#), "[Control Valve with TCM and A/T Fluid Temperature Sensor 2](#)".

2. Disassemble A/T. Refer to [AT-240](#), "[Disassembly](#)".

3. Check the following items:

- Oil pump assembly. Refer to [AT-258](#), "[Oil Pump](#)".

#### OK or NG

OK >> GO TO 7.

NG >> Repair or replace damaged parts.

### 6. DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-210](#), "[Control Valve with TCM and A/T Fluid Temperature Sensor 2](#)".

2. Disassemble A/T. Refer to [AT-240](#), "[Disassembly](#)".

3. Check the following items:

- Oil pump assembly. Refer to [AT-258](#), "[Oil Pump](#)".

- Power train system. Refer to [AT-240](#), "[Disassembly](#)".

- Transmission case. Refer to [AT-240](#), "[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-210](#), "[Control Valve with TCM and A/T Fluid Temperature Sensor 2](#)".



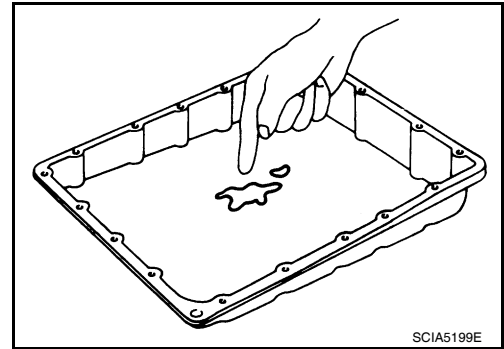
# TROUBLE DIAGNOSIS FOR SYMPTOMS

## < SERVICE INFORMATION >

2. Check A/T fluid condition. Refer to [AT-51, "Inspections Before Trouble Diagnosis"](#).

### 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"](#) (Symptom No.12).

### OK or NG

- OK >> GO TO 9.
- NG >> Repair or replace damaged parts.

## 9. CHECK SYMPTOM

Check again. Refer to [AT-55, "Check at Idle"](#), [AT-58, "Cruise Test - Part 2"](#).

### OK or NG

- OK >> **INSPECTION END**
- NG >> GO TO 10.

## 10. PERFORM TCM INSPECTION

1. Perform TCM input/output signals inspection. Refer to [AT-82, "TCM Input/Output Signal Reference Value"](#).
2. If NG, recheck A/T assembly harness connector 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"](#) (Symptom No.12).

### OK or NG

- OK >> GO TO 9.
- NG >> Repair or replace damaged parts.

## A/T Does Not Shift: D4 → D5

INFOID:0000000003532459

### 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-175, "Vehicle Does Not Creep Forward in "D" Position"](#), [AT-177, "Vehicle Cannot Be Started from D1"](#).

## 2. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis. Refer to [AT-83, "CONSULT-II Function \(A/T\)"](#).

## TROUBLE DIAGNOSIS FOR SYMPTOMS

### < SERVICE INFORMATION >

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-150](#)' [AT-154](#), [AT-134](#)' [AT-138](#)' [AT-117](#)' [AT-103](#), [AT-105](#)' [AT-124](#).

NO >> GO TO 3.

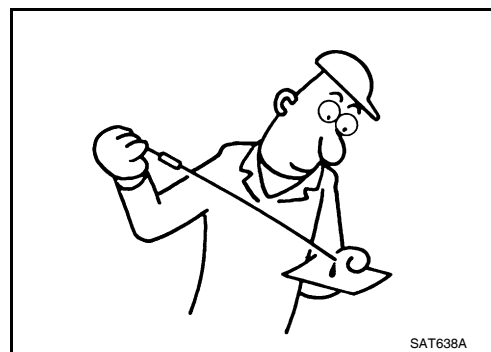
### 3.CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to [AT-13](#). "[Checking Automatic Transmission Fluid \(ATF\)](#)".

#### OK or NG

OK >> GO TO 4.

NG >> Refill ATF.



### 4.CHECK LINE PRESSURE

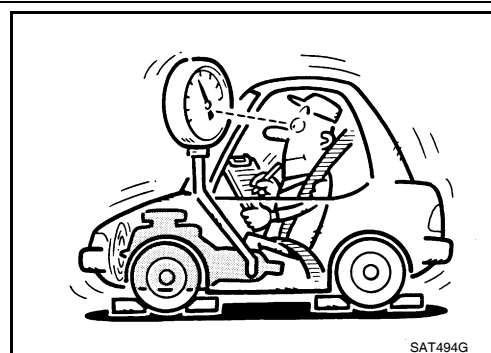
Check line pressure at the engine stall point. Refer to [AT-51](#). "[Inspections Before Trouble Diagnosis](#)".

#### 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. Check control valve with TCM. Refer to [AT-210](#). "[Control Valve with TCM and A/T Fluid Temperature Sensor 2](#)".

2. Disassemble A/T. Refer to [AT-240](#). "[Disassembly](#)".

3. Check the following items:

- Oil pump assembly. Refer to [AT-258](#). "[Oil Pump](#)".

#### OK or NG

OK >> GO TO 7.

NG >> Repair or replace damaged parts.

### 6.DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-210](#). "[Control Valve with TCM and A/T Fluid Temperature Sensor 2](#)".

2. Disassemble A/T. Refer to [AT-240](#). "[Disassembly](#)".

3. Check the following items:

- Oil pump assembly. Refer to [AT-258](#). "[Oil Pump](#)".

- Power train system. Refer to [AT-240](#). "[Disassembly](#)".

- Transmission case. Refer to [AT-240](#). "[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-210](#). "[Control Valve with TCM and A/T Fluid Temperature Sensor 2](#)".

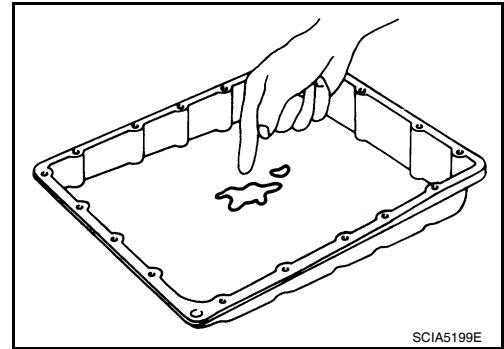
# TROUBLE DIAGNOSIS FOR SYMPTOMS

< SERVICE INFORMATION >

2. Check A/T fluid condition. Refer to [AT-51, "Inspections Before Trouble Diagnosis"](#).

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"](#) (Symptom No.13).

OK or NG

- OK >> GO TO 9.
- NG >> Repair or replace damaged parts.

## 9. CHECK SYMPTOM

Check again. Refer to [AT-55, "Check at Idle"](#).

OK or NG

- OK >> **INSPECTION END**
- NG >> GO TO 10.

## 10. PERFORM TCM INSPECTION

1. Perform TCM input/output signals inspection. Refer to [AT-82, "TCM Input/Output Signal Reference Value"](#).
2. If NG, recheck A/T assembly harness connector 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"](#) (Symptom No.13).

OK or NG

- OK >> GO TO 9.
- NG >> Repair or replace damaged parts.

## A/T Does Not Perform Lock-up

INFOID:000000003532460

SYMPTOM:

**A/T does not perform lock-up at the specified speed.**

DIAGNOSTIC PROCEDURE

### 1. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis. Refer to [AT-83, "CONSULT-II Function \(A/T\)"](#).

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-111, AT-109' AT-103' AT-117' AT-91](#).
- NO >> GO TO 2.

### 2. CHECK A/T FLUID LEVEL

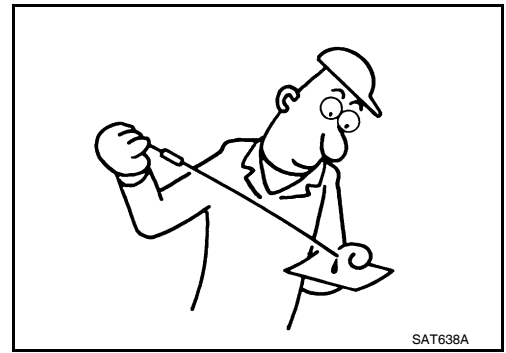
## TROUBLE DIAGNOSIS FOR SYMPTOMS

### < SERVICE INFORMATION >

Check A/T fluid level. Refer to [AT-13, "Checking Automatic Transmission Fluid \(ATF\)"](#).

#### OK or NG

- OK >> GO TO 3.
- NG >> Refill ATF.

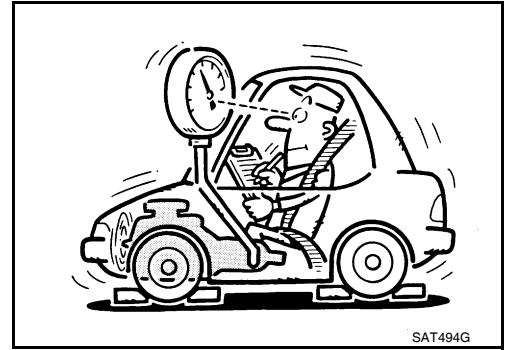


### 3. CHECK LINE PRESSURE

Check line pressure at the engine stall point. Refer to [AT-51, "Inspections Before Trouble Diagnosis"](#).

#### 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. Check control valve with TCM. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Disassemble A/T. Refer to [AT-240, "Disassembly"](#).
3. Check the following items:
  - Oil pump assembly. Refer to [AT-258, "Oil Pump"](#).

#### OK or NG

- OK >> GO TO 7.
- NG >> Repair or replace damaged parts.

### 5. DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Disassemble A/T. Refer to [AT-240, "Disassembly"](#).
3. Check the following items:
  - Oil pump assembly. Refer to [AT-258, "Oil Pump"](#).
  - Power train system. Refer to [AT-240, "Disassembly"](#).
  - Transmission case. Refer to [AT-240, "Disassembly"](#).

#### OK or NG

- OK >> GO TO 7.
- NG >> Repair or replace damaged parts.

### 6. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).

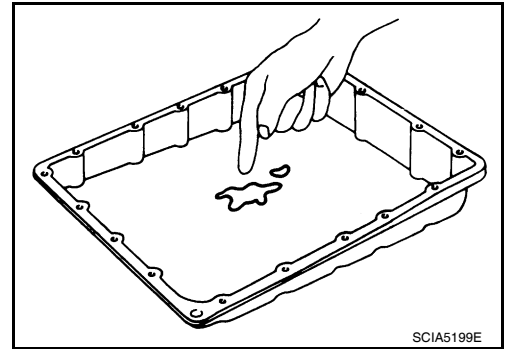
# TROUBLE DIAGNOSIS FOR SYMPTOMS

## < SERVICE INFORMATION >

2. Check A/T fluid condition. Refer to [AT-51, "Inspections Before Trouble Diagnosis"](#).

### 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"](#) (Symptom No.24).

### OK or NG

- OK >> GO TO 8.
- NG >> Repair or replace damaged parts.

## 8. CHECK SYMPTOM

Check again. Refer to [AT-55, "Check at Idle"](#).

### OK or NG

- OK >> **INSPECTION END**
- NG >> GO TO 9.

## 9. PERFORM TCM INSPECTION

1. Perform TCM input/output signals inspection. Refer to [AT-82, "TCM Input/Output Signal Reference Value"](#).
2. If NG, recheck A/T assembly harness connector 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"](#) (Symptom No.24).

### OK or NG

- OK >> GO TO 8.
- NG >> Repair or replace damaged parts.

## A/T Does Not Hold Lock-up Condition

INFOID:000000003532461

### SYMPTOM:

**The lock-up condition cannot be maintained for more than 30 seconds.**

### DIAGNOSTIC PROCEDURE

#### 1. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis. Refer to [AT-83, "CONSULT-II Function \(A/T\)"](#).

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-111' AT-109' AT-103' AT-91](#).
- NO >> GO TO 2.

#### 2. CHECK A/T FLUID LEVEL

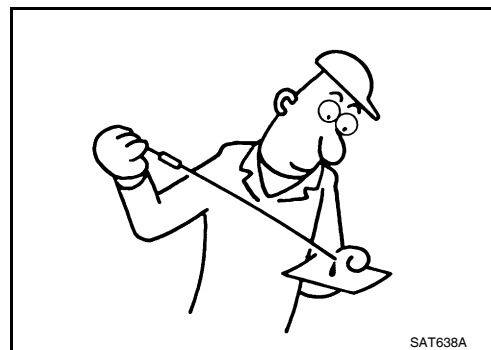
## TROUBLE DIAGNOSIS FOR SYMPTOMS

### < SERVICE INFORMATION >

Check A/T fluid level. Refer to [AT-13, "Checking Automatic Transmission Fluid \(ATF\)"](#).

#### OK or NG

- OK >> GO TO 3.
- NG >> Refill ATF.



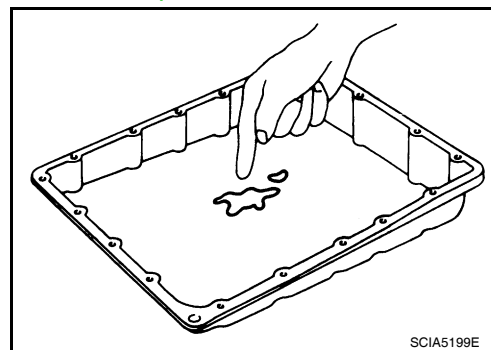
SAT638A

### 3.CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Check A/T fluid condition. Refer to [AT-51, "Inspections Before Trouble Diagnosis"](#).

#### OK or NG

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



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### 4.DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-60, "Symptom Chart"](#) (Symptom No.25).

#### OK or NG

- OK >> GO TO 5.
- NG >> Repair or replace damaged parts.

### 5.CHECK SYMPTOM

Check again. Refer to [AT-55, "Check at Idle"](#).

#### OK or NG

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

### 6.PERFORM TCM INSPECTION

1. Perform TCM input/output signals inspection. Refer to [AT-82, "TCM Input/Output Signal Reference Value"](#).
2. If NG, recheck A/T assembly harness connector 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"](#) (Symptom No.25).

#### OK or NG

- OK >> GO TO 5.
- NG >> Repair or replace damaged parts.

Lock-up Is Not Released

INFOID:000000003532462

SYMPTOM:

# TROUBLE DIAGNOSIS FOR SYMPTOMS

< SERVICE INFORMATION >

**The lock-up condition cannot be cancelled even after releasing the accelerator pedal.**

## DIAGNOSTIC PROCEDURE

### 1. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis. Refer to [AT-83, "CONSULT-II Function \(A/T\)"](#).

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-111'](#) [AT-109'](#) [AT-103'](#) [AT-91](#).  
NO >> GO TO 2.

### 2. CHECK SYMPTOM

Check again. Refer to [AT-55, "Check at Idle"](#).

OK or NG

- OK >> **INSPECTION END**  
NG >> GO TO 3.

### 3. PERFORM TCM INSPECTION

1. Perform TCM input/output signals inspection. Refer to [AT-82, "TCM Input/Output Signal Reference Value"](#).
2. If NG, recheck A/T assembly harness connector terminals for damage or loose connection with harness connector.

OK or NG

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

## Engine Speed Does Not Return to Idle

INFOID:000000003532463

SYMPTOM:

**When a shift-down is performed, the engine speed does not smoothly return to the idling speed.**

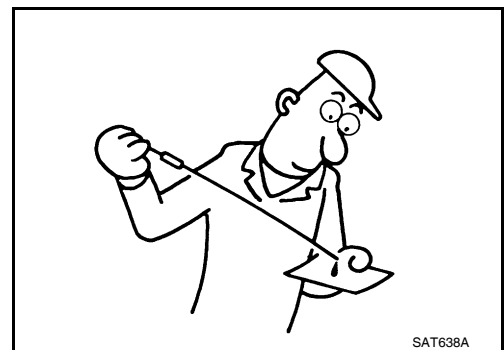
## DIAGNOSTIC PROCEDURE

### 1. CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to [AT-13, "Checking Automatic Transmission Fluid \(ATF\)"](#).

OK or NG

- OK >> GO TO 2.  
NG >> Refill ATF.



### 2. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis. Refer to [AT-83, "CONSULT-II Function \(A/T\)"](#).

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-134'](#) [AT-138,](#) [AT-150'](#) [AT-154'](#) [AT-117,](#) [AT-105'](#) [AT-124](#).  
NO >> GO TO 3.

### 3. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).

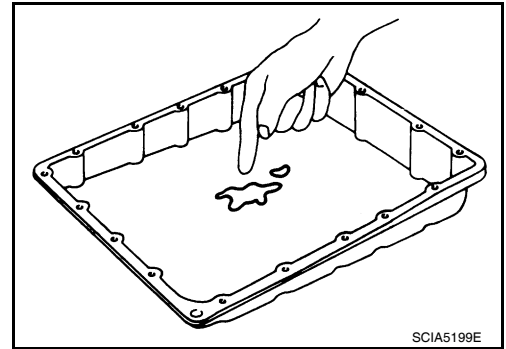
## TROUBLE DIAGNOSIS FOR SYMPTOMS

< SERVICE INFORMATION >

2. Check A/T fluid condition. Refer to [AT-51, "Inspections Before Trouble Diagnosis"](#).

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"](#) (Symptom No.65).

OK or NG

- OK >> GO TO 5.
- NG >> Repair or replace damaged parts.

### 5. CHECK SYMPTOM

Check again. Refer to [AT-55, "Check at Idle"](#).

OK or NG

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

### 6. PERFORM TCM INSPECTION

1. Perform TCM input/output signals inspection. Refer to [AT-82, "TCM Input/Output Signal Reference Value"](#).
2. If NG, recheck A/T assembly harness connector 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"](#) (Symptom No.65).

OK or NG

- OK >> GO TO 5.
- NG >> Repair or replace damaged parts.

A/T Does Not Shift: 5th gear → 4th gear

INFOID:000000003532464

SYMPTOM:

**When shifted from D5 to 44 position, does not downshift from 5th to 4th gears.**

DIAGNOSTIC PROCEDURE

### 1. CHECK SELF-DIAGNOSIS RESULTS

Perform self-diagnosis. Refer to [AT-83, "CONSULT-II Function \(A/T\)"](#).

Do the self-diagnosis results indicate PNP switch, ATF pressure switch 1?

- YES >> Check the malfunctioning system. Refer to [AT-117](#), [AT-150](#).
- NO >> GO TO 2.

### 2. CHECK 4TH POSITION SWITCH CIRCUIT

 With CONSULT-II



# TROUBLE DIAGNOSIS FOR SYMPTOMS

## < SERVICE INFORMATION >

1. Turn ignition switch "ON".
2. Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Read out "OD CONT SW" switch moving selector lever to each position.

Monitor item	Condition	Display value
OD CONT SW	When setting the selector lever to "4" and "3" position.	ON
	When setting selector lever to other positions.	OFF

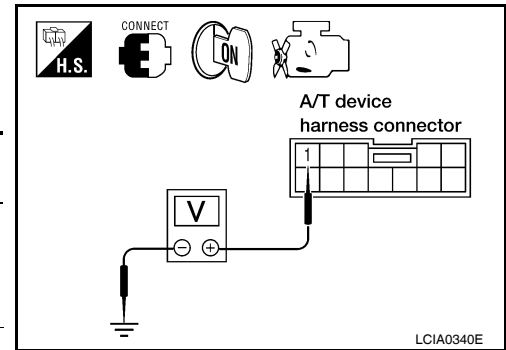
DATA MONITOR	
MONITORING	
1 POSITION SW	OFF
OD CONT SW	ON
POWERSHIFT SW	OFF
HOLD SW	OFF
MANU MODE SW	OFF

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### ⊗ Without CONSULT-II

1. Turn ignition switch "ON". (Do not start engine)
2. Check voltage between A/T device harness connector terminal and ground.

Item	Connector No.	Terminal No.	Condition	Data (Approx.)
4th position switch	M203	1 - Ground	When setting the selector lever to "4" and "3" position.	0V
			When setting selector lever to other positions.	Battery voltage



### OK or NG

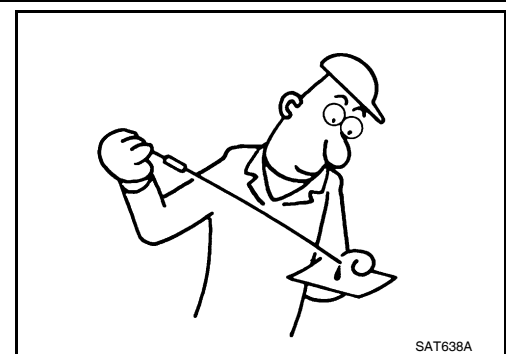
- OK >> GO TO 3.  
 NG >> Repair or replace damaged parts.

## 3.CHECK A/T FLUID LEVEL

Check the A/T fluid level. Refer to [AT-13, "Checking Automatic Transmission Fluid \(ATF\)"](#).

### OK or NG

- OK >> GO TO 4.  
 NG >> Refill ATF.



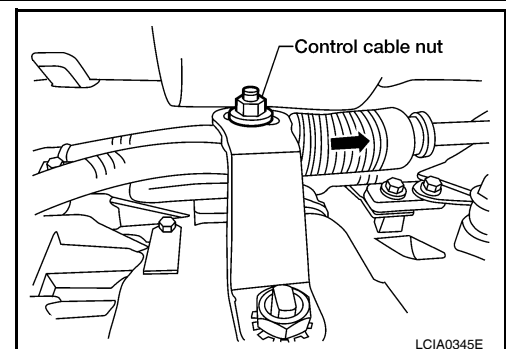
## 4.CHECK CONTROL CABLE

Check the control cable.

- Refer to [AT-208, "Checking of A/T Position"](#).

### OK or NG

- OK >> GO TO 5.  
 NG >> Adjust control cable. Refer to [AT-208, "Adjustment of A/T Position"](#).



# TROUBLE DIAGNOSIS FOR SYMPTOMS

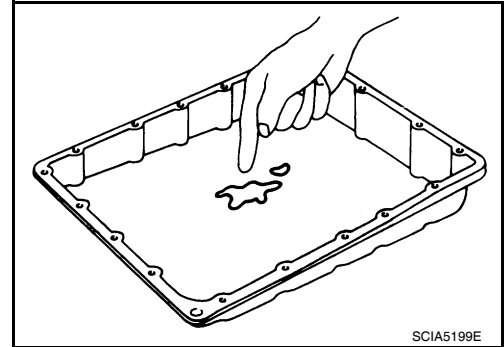
< SERVICE INFORMATION >

## 5. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Check A/T fluid condition. Refer to [AT-51, "Inspections Before Trouble Diagnosis"](#).

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"](#) (Symptom No.14).

OK or NG

- OK >> GO TO 7.  
NG >> Repair or replace damaged parts.

## 7. CHECK SYMPTOM

Check again. Refer to [AT-59, "Cruise Test - Part 3"](#).

OK or NG

- OK >> **INSPECTION END**  
NG >> GO TO 8.

## 8. PERFORM TCM INSPECTION

1. Perform TCM input/output signals inspection. Refer to [AT-82, "TCM Input/Output Signal Reference Value"](#).
2. If NG, recheck A/T assembly harness connector 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"](#) (Symptom No.14).

OK or NG

- OK >> GO TO 7.  
NG >> Repair or replace damaged parts.

A/T Does Not Shift: 4th gear → 3rd gear

INFOID:000000003532465

SYMPTOM:

**When shifted from 44 to 33 position, does not downshift from 4th to 3rd gears.**

DIAGNOSTIC PROCEDURE

## 1. CHECK SELF-DIAGNOSIS RESULTS

Perform self-diagnosis. Refer to [AT-83, "CONSULT-II Function \(A/T\)"](#).

Do the self-diagnosis results indicate PNP switch, ATF pressure switch 1, ATF pressure switch 3?

- YES >> Check the malfunctioning system. Refer to [AT-99, AT-150, AT-152](#).  
NO >> GO TO 2.

## 2. CHECK A/T FLUID LEVEL

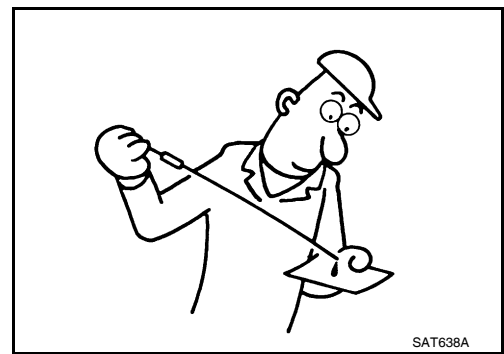
# TROUBLE DIAGNOSIS FOR SYMPTOMS

## < SERVICE INFORMATION >

Check the A/T fluid level. Refer to [AT-13, "Checking Automatic Transmission Fluid \(ATF\)"](#).

### OK or NG

- OK >> GO TO 3.
- NG >> Refill ATF.



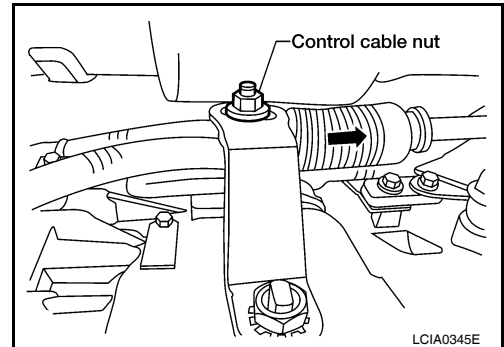
## 3. CHECK CONTROL CABLE

Check the control cable.

- Refer to [AT-208, "Checking of A/T Position"](#).

### OK or NG

- OK >> GO TO 4.
- NG >> Adjust control cable. Refer to [AT-208, "Adjustment of A/T Position"](#).

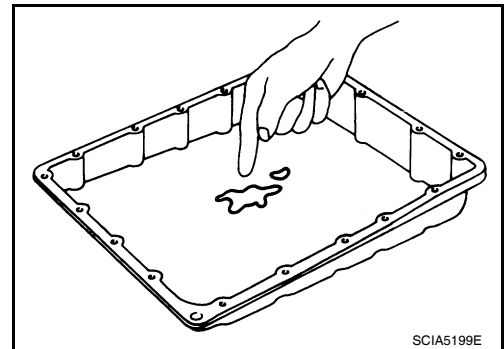


## 4. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Check A/T fluid condition. Refer to [AT-51, "Inspections Before Trouble Diagnosis"](#).

### OK or NG

- OK >> GO TO 5.
- NG >> GO TO 8.



## 5. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-60, "Symptom Chart"](#) (Symptom No.15).

### OK or NG

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

## 6. CHECK SYMPTOM

Check again. Refer to [AT-59, "Cruise Test - Part 3"](#).

### OK or NG

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

## 7. PERFORM TCM INSPECTION

1. Perform TCM input/output signals inspection. Refer to [AT-82, "TCM Input/Output Signal Reference Value"](#).
2. If NG, recheck A/T assembly harness connector terminals for damage or loose connection with harness connector.

### OK or NG

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

# TROUBLE DIAGNOSIS FOR SYMPTOMS

## < SERVICE INFORMATION >

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

### 8. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-60, "Symptom Chart"](#) (Symptom No.15).

#### OK or NG

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

A/T Does Not Shift: 3rd gear → 2nd gear

INFOID:000000003532466

#### SYMPTOM:

**When shifted from 33 to 22 position, does not downshift from 3rd to 2nd gears.**

#### DIAGNOSTIC PROCEDURE

### 1. CHECK SELF-DIAGNOSIS RESULTS

Perform self-diagnosis. Refer to [AT-83, "CONSULT-II Function \(A/T\)"](#).

Do the self-diagnosis results indicate PNP switch, ATF pressure switch 6?

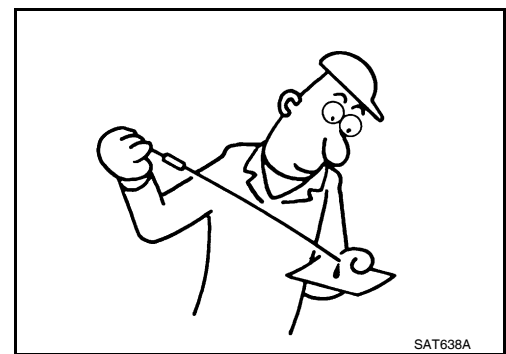
- YES >> Check the malfunctioning system. Refer to [AT-99](#)' [AT-156](#).  
NO >> GO TO 2.

### 2. CHECK A/T FLUID LEVEL

Check the A/T fluid level. Refer to [AT-13, "Checking Automatic Transmission Fluid \(ATF\)"](#).

#### OK or NG

- OK >> GO TO 3.  
NG >> Refill ATF.



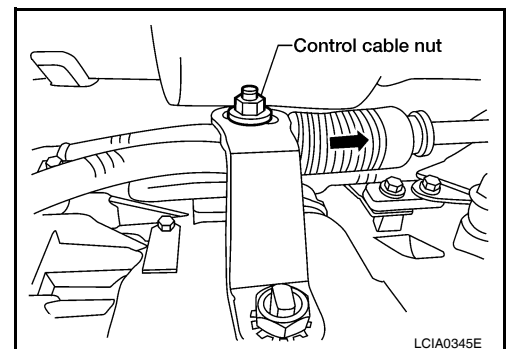
### 3. CHECK CONTROL CABLE

Check the control cable.

- Refer to [AT-208, "Checking of A/T Position"](#).

#### OK or NG

- OK >> GO TO 4.  
NG >> Adjust control cable. Refer to [AT-208, "Adjustment of A/T Position"](#).



### 4. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).

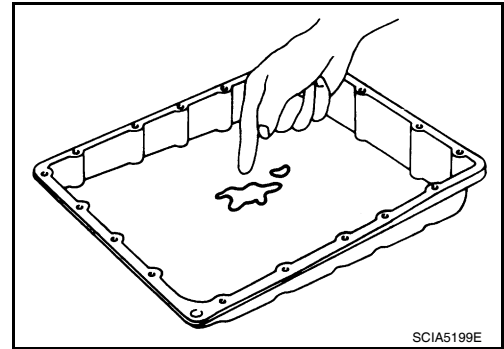
# TROUBLE DIAGNOSIS FOR SYMPTOMS

## < SERVICE INFORMATION >

2. Check A/T fluid condition. Refer to [AT-51. "Inspections Before Trouble Diagnosis"](#).

### OK or NG

- OK >> GO TO 5.
- NG >> GO TO 8.



## 5. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-60. "Symptom Chart"](#) (Symptom No.16).

### OK or NG

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

## 6. CHECK SYMPTOM

Check again. Refer to [AT-59. "Cruise Test - Part 3"](#).

### OK or NG

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

## 7. PERFORM TCM INSPECTION

1. Perform TCM input/output signals inspection. Refer to [AT-82. "TCM Input/Output Signal Reference Value"](#).
2. If NG, recheck A/T assembly harness connector terminals for damage or loose connection with harness connector.

### OK or NG

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

## 8. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-60. "Symptom Chart"](#) (Symptom No.16).

### OK or NG

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

## A/T Does Not Shift: 2nd gear → 1st gear

INFOID:000000003532467

SYMPTOM:

**When shifted from 2<sup>nd</sup> to 1<sup>st</sup> position, does not downshift from 2<sup>nd</sup> to 1<sup>st</sup> gears.**

## DIAGNOSTIC PROCEDURE

### 1. CHECK SELF-DIAGNOSIS RESULTS

Perform self-diagnosis. Refer to [AT-83. "CONSULT-II Function \(A/T\)"](#).

Do the self-diagnosis results indicate PNP switch, ATF pressure switch 5?

- YES >> Check the malfunctioning system. Refer to [AT-99'](#) [AT-154](#).
- NO >> GO TO 2.

### 2. CHECK 1ST POSITION SWITCH CIRCUIT

 **With CONSULT-II**

# TROUBLE DIAGNOSIS FOR SYMPTOMS

## < SERVICE INFORMATION >

1. Turn ignition switch "ON".
2. Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Read out "1 POSITION SW" switch moving selector lever to each position.

Monitor item	Condition	Display value
1 POSITION SW	When setting the selector lever to "1" position.	ON
	When setting selector lever to other positions.	OFF

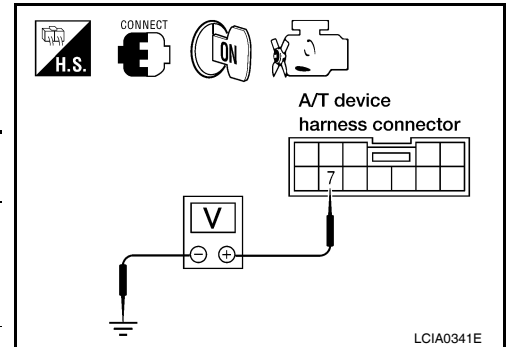
DATA MONITOR	
MONITORING	
1 POSITION SW	OFF
OD CONT SW	ON
POWERSHIFT SW	OFF
HOLD SW	OFF
MANU MODE SW	OFF

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### ⊗ Without CONSULT-II

1. Turn ignition switch "ON". (Do not start engine)
2. Check voltage between A/T device harness connector terminal and ground.

Item	Connector No.	Terminal No.	Condition	Data (Approx.)
1st position switch	M203	7 - Ground	When setting the selector lever to "1" position.	0V
			When setting selector lever to other positions.	Battery voltage



### OK or NG

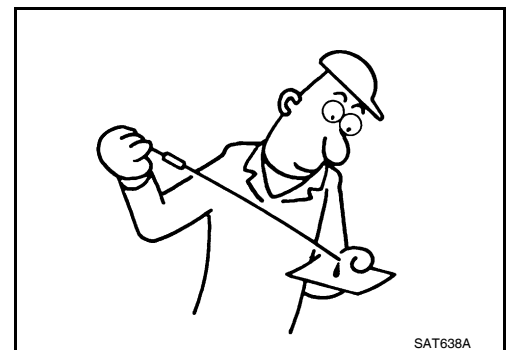
- OK >> GO TO 3.
- NG >> Repair or replace damaged parts.

## 3. CHECK A/T FLUID LEVEL

Check the A/T fluid level. Refer to [AT-13, "Checking Automatic Transmission Fluid \(ATF\)"](#).

### OK or NG

- OK >> GO TO 4.
- NG >> Refill ATF.



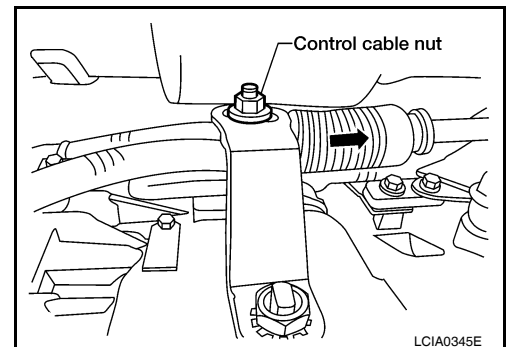
## 4. CHECK CONTROL CABLE

Check the control cable.

- Refer to [AT-208, "Checking of A/T Position"](#).

### OK or NG

- OK >> GO TO 5.
- NG >> Adjust control cable. Refer to [AT-208, "Adjustment of A/T Position"](#).



## 5. CHECK A/T FLUID CONDITION

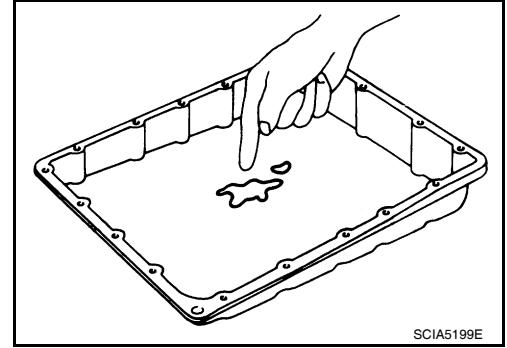
# TROUBLE DIAGNOSIS FOR SYMPTOMS

## < SERVICE INFORMATION >

1. Remove oil pan. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Check A/T fluid condition. Refer to [AT-51, "Inspections Before Trouble Diagnosis"](#).

### 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"](#) (Symptom No.17).

### OK or NG

- OK >> GO TO 7.  
NG >> Repair or replace damaged parts.

## 7. CHECK SYMPTOM

Check again. Refer to [AT-58, "Cruise Test - Part 2"](#).

### OK or NG

- OK >> **INSPECTION END**  
NG >> GO TO 8.

## 8. PERFORM TCM INSPECTION

1. Perform TCM input/output signals inspection. Refer to [AT-82, "TCM Input/Output Signal Reference Value"](#).
2. If NG, recheck A/T assembly harness connector 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"](#) (Symptom No.17).

### OK or NG

- OK >> GO TO 7.  
NG >> Repair or replace damaged parts.

## Vehicle Does Not Decelerate By Engine Brake

INFOID:000000003532468

### SYMPTOM:

**No engine brake is applied when the gear is shifted from the 22 to 11.**

### DIAGNOSTIC PROCEDURE

#### 1. CHECK SELF-DIAGNOSIS RESULTS

Perform self-diagnosis.

Do the self-diagnosis results indicate PNP switch, ATF pressure switch 5?

- YES >> Check the malfunctioning system. Refer to [AT-99' AT-154](#).  
NO >> GO TO 2.

#### 2. CHECK 1ST POSITION SWITCH CIRCUIT

With **CONSULT-II**

# TROUBLE DIAGNOSIS FOR SYMPTOMS

## < SERVICE INFORMATION >

1. Turn ignition switch "ON".
2. Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Read out "1 POSITION SW" moving switch selector lever to each position.

Monitor item	Condition	Display value
1 POSITION SW	When setting the selector lever to "1" position.	ON
	When setting selector lever to other positions.	OFF

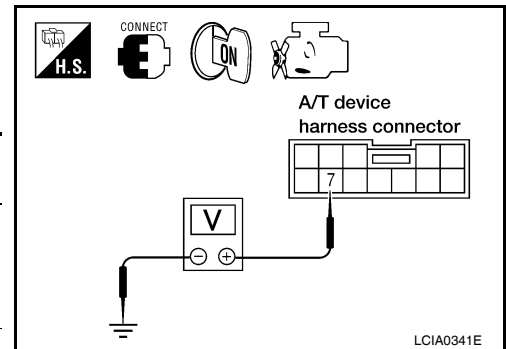
DATA MONITOR	
MONITORING	
1 POSITION SW	OFF
OD CONT SW	ON
POWERSHIFT SW	OFF
HOLD SW	OFF
MANU MODE SW	OFF

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### ⊗ Without CONSULT-II

1. Turn ignition switch "ON". (Do not start engine)
2. Check voltage between A/T device harness connector terminal and ground.

Item	Connector No.	Terminal No.	Condition	Data (Approx.)
1st position switch	M203	7 - Ground	When setting the selector lever to "1" position.	0V
			When setting selector lever to other positions.	Battery voltage



### OK or NG

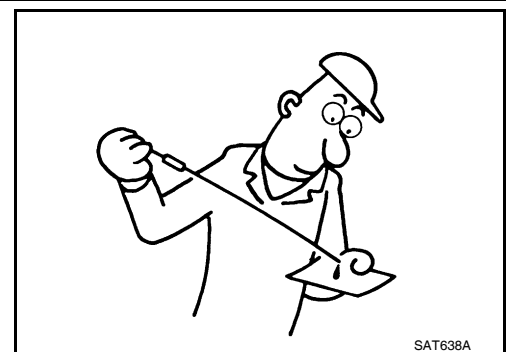
- OK >> GO TO 3.
- NG >> Repair or replace damaged parts.

## 3. CHECK A/T FLUID LEVEL

Check the A/T fluid level. Refer to [AT-13, "Checking Automatic Transmission Fluid \(ATF\)"](#).

### OK or NG

- OK >> GO TO 4.
- NG >> Refill ATF.



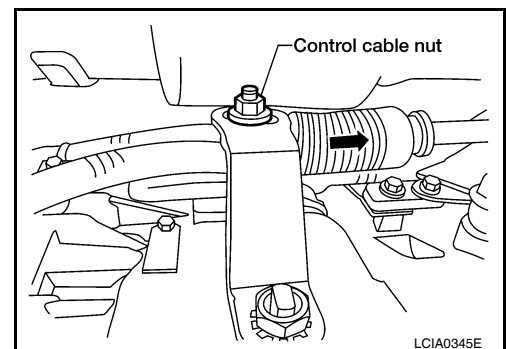
## 4. CHECK CONTROL CABLE

Check the control cable.

- Refer to [AT-208, "Checking of A/T Position"](#).

### OK or NG

- OK >> GO TO 5.
- NG >> Adjust control cable. Refer to [AT-208, "Adjustment of A/T Position"](#).



## 5. CHECK A/T FLUID CONDITION



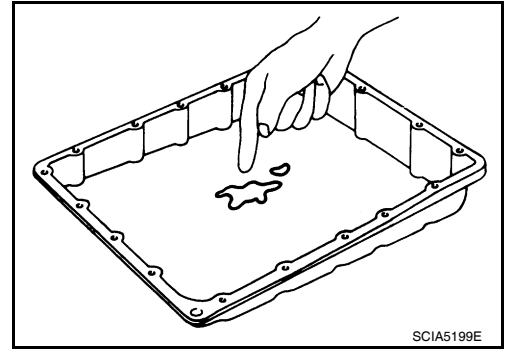
# TROUBLE DIAGNOSIS FOR SYMPTOMS

## < SERVICE INFORMATION >

1. Remove oil pan. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Check A/T fluid condition. Refer to [AT-51, "Inspections Before Trouble Diagnosis"](#).

### 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"](#) (Symptom No.53).

### OK or NG

- OK >> GO TO 7.  
NG >> Repair or replace damaged parts.

## 7. CHECK SYMPTOM

Check again. Refer to [AT-59, "Cruise Test - Part 3"](#).

### OK or NG

- OK >> **INSPECTION END**  
NG >> GO TO 8.

## 8. PERFORM TCM INSPECTION

1. Perform TCM input/output signals inspection. Refer to [AT-82, "TCM Input/Output Signal Reference Value"](#).
2. If NG, recheck A/T assembly harness connector 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"](#) (Symptom No.53).

### OK or NG

- OK >> GO TO 7.  
NG >> Repair or replace damaged parts.

# A/T SHIFT LOCK SYSTEM

< SERVICE INFORMATION >

## A/T SHIFT LOCK SYSTEM

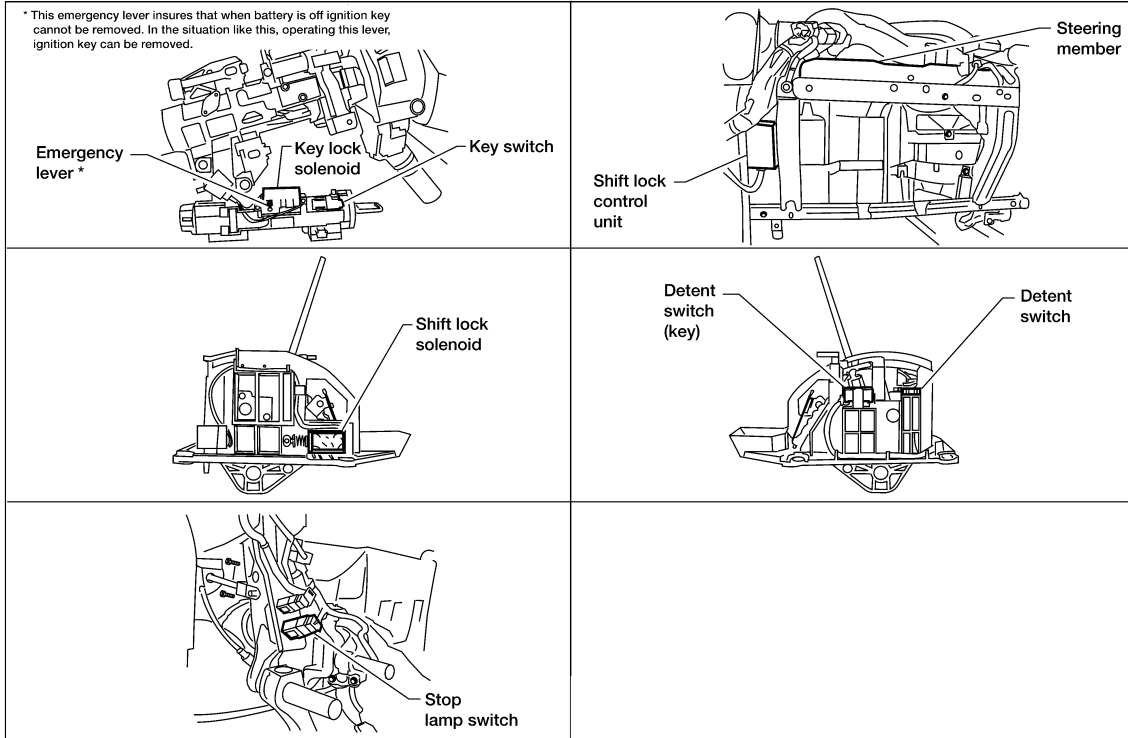
### Description

INFOID:000000003532469

- 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

INFOID:000000003532470



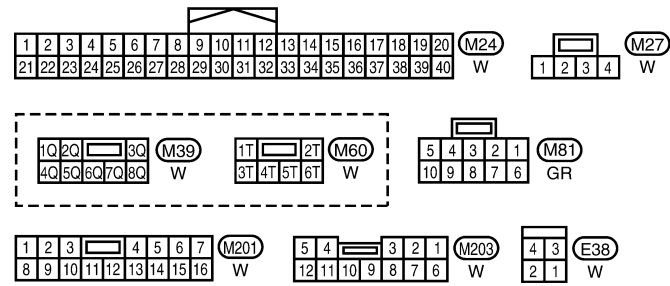
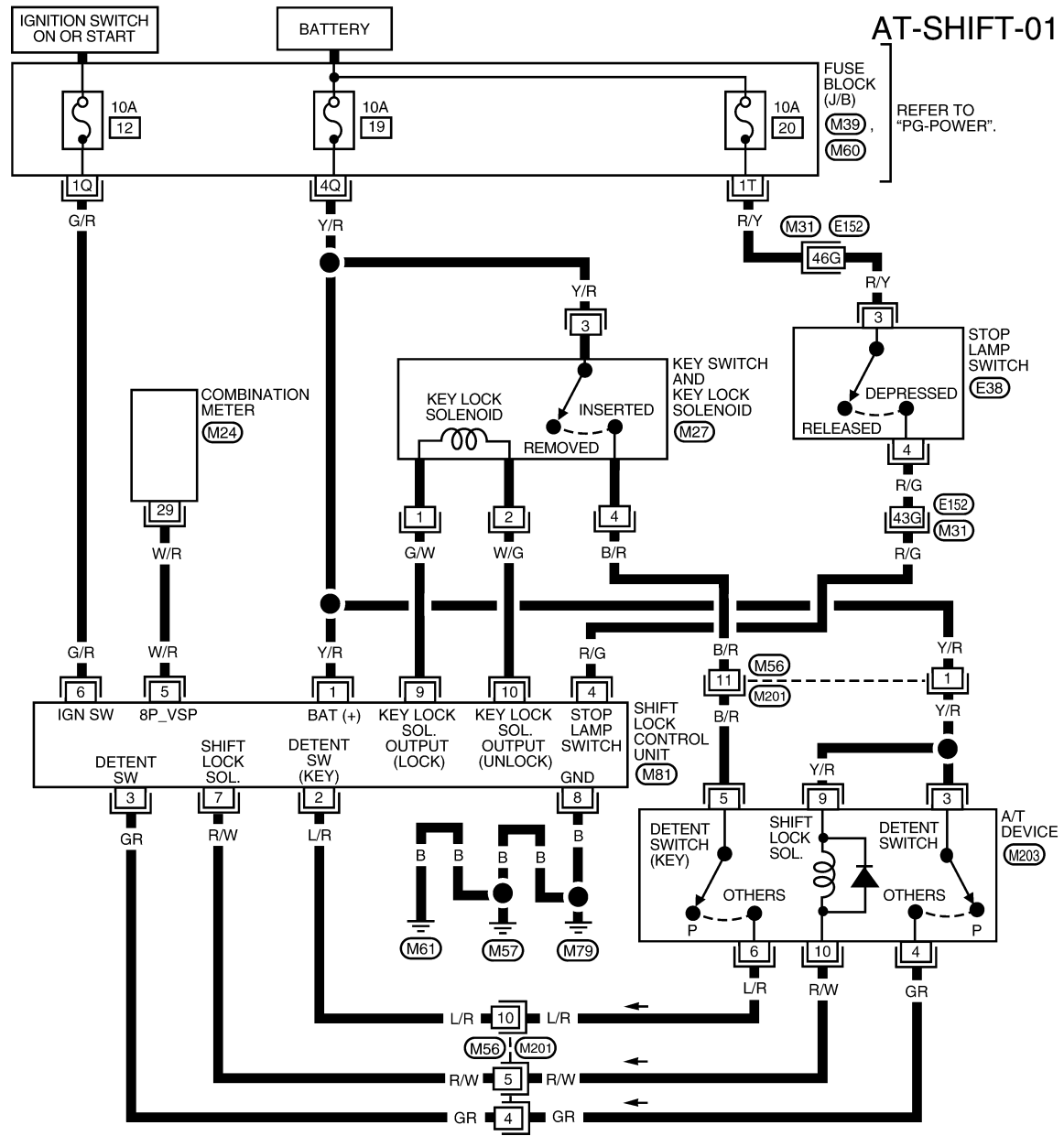
LCIA0326E

# A/T SHIFT LOCK SYSTEM

< SERVICE INFORMATION >

## Wiring Diagram - AT - SHIFT

INFOID:000000003532471



REFER TO THE FOLLOWING.  
 (M31) - SUPER MULTIPLE JUNCTION (SMJ)

BCWA0502E

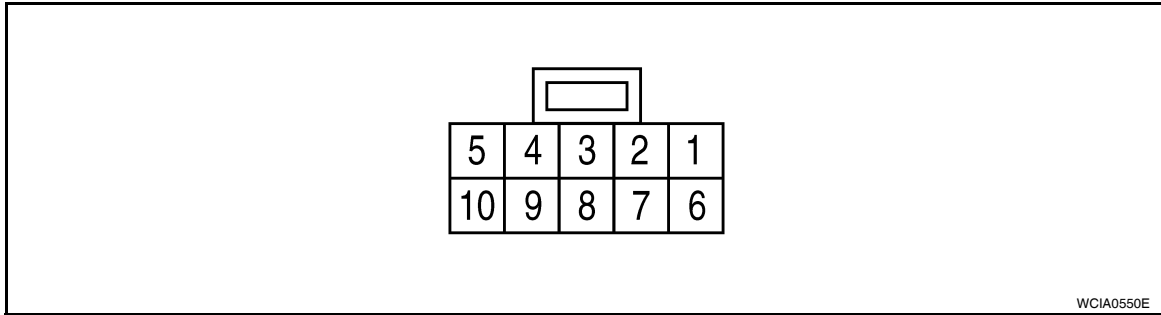
# A/T SHIFT LOCK SYSTEM

< SERVICE INFORMATION >

## Shift Lock Control Unit Reference Value

INFOID:000000003532472

### SHIFT LOCK HARNESS CONNECTOR TERMINALS LAYOUT



### SHIFT LOCK CONTROL UNIT INSPECTION TABLE

Data are reference values.

TER-MINAL NO.	WIRE COLOR	ITEM	CONDITION	VOLTAGE (Approx.)
1	Y/R	Power source	Ignition switch: "ON"	Battery voltage
			Ignition switch: "OFF"	Battery voltage
2	L/R	Detention switch (for key)	When selector lever is not in "P" position with key inserted.	Battery voltage
			Except the above	0V
3	GR	Detention switch (for shift)	When selector lever is not in "P" position	Battery voltage
			Except the above	0V
4	R/G	Stop lamp switch	When brake pedal is depressed	Battery voltage
			When brake pedal is released	0V
5	W/R	Vehicle speed signal	—	—
6	G/R	Ignition signal	Ignition switch: "OFF"	0V
			Ignition switch: "ON"	Battery voltage
7	R/W	Shift lock solenoid	When brake pedal is depressed with ignition switch "ON".	0V
			When brake pedal is depressed.	Battery voltage
8	B	Ground	Always	0V
9	G/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. 0.1 sec. (Note)
			Except the above	0V
10	W/G	Key unlock solenoid	When ignition switch is not in "ON" position with key inserted.	Battery voltage for approx. 0.1 sec. (Note)
			Except the above	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

INFOID:000000003532473

### SHIFT LOCK SOLENOID

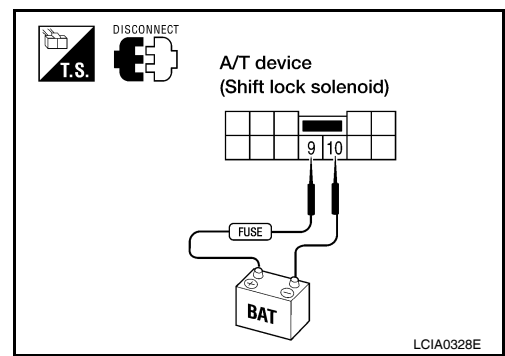
# A/T SHIFT LOCK SYSTEM

## < SERVICE INFORMATION >

- Check operation by applying battery voltage to A/T device terminal 9 and ground to terminal 10.

**CAUTION:**

Be sure to apply the voltage of the correct polarity to the respective terminals. Otherwise, the part may be damaged.

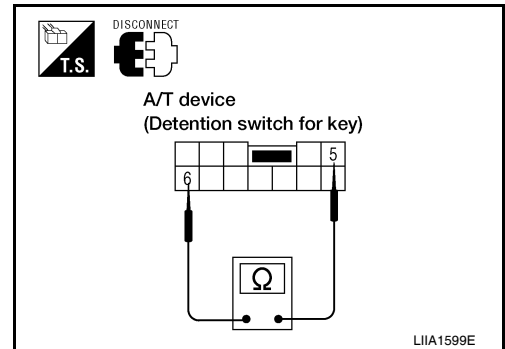


## DETENTION SWITCH

For key:

- Check continuity between terminals of the A/T device.

Condition	Terminal No.	Continuity
When selector lever is "P" position.	5 - 6	No
When selector lever is not "P" position.		Yes

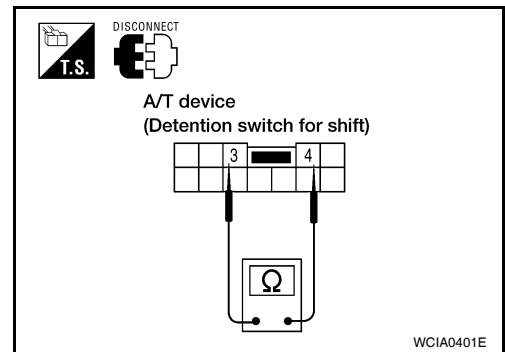


## DETENTION SWITCH

For shift:

- Check continuity between terminals of the A/T device.

Condition	Terminal No.	Continuity
When selector lever is "P" position.	3 - 4	No
When selector lever is not "P" position.		Yes



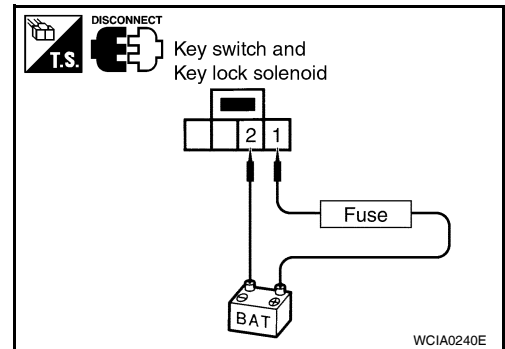
## KEY LOCK SOLENOID

Key lock

- Check operation by applying battery voltage to key switch and key lock solenoid terminal 1 and ground to terminal 2.

**CAUTION:**

Be careful not to cause burnout of the harness.



Key unlock

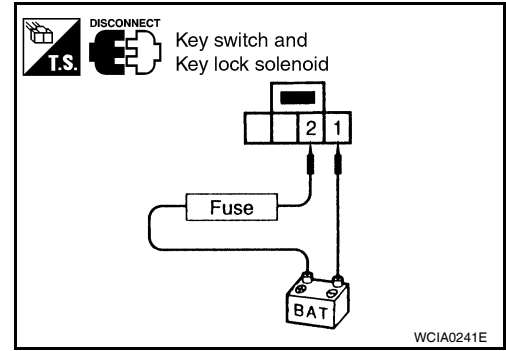
# A/T SHIFT LOCK SYSTEM

## < SERVICE INFORMATION >

- Check operation by applying battery voltage to key switch and key lock solenoid terminal 2 and ground to terminal 1.

**CAUTION:**

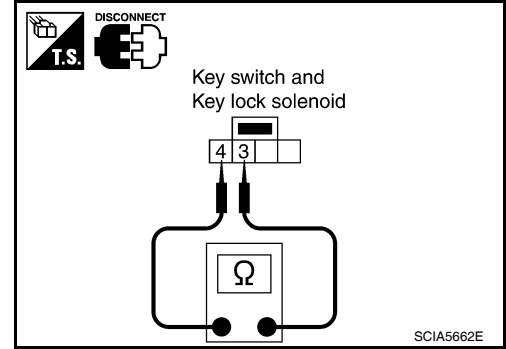
**Be careful not to cause burnout of the harness.**



## KEY SWITCH

- Check continuity between terminals of the key switch and key lock solenoid.

Condition	Terminal No.	Continuity
Key inserted	3 - 4	Yes
Key withdrawn		No

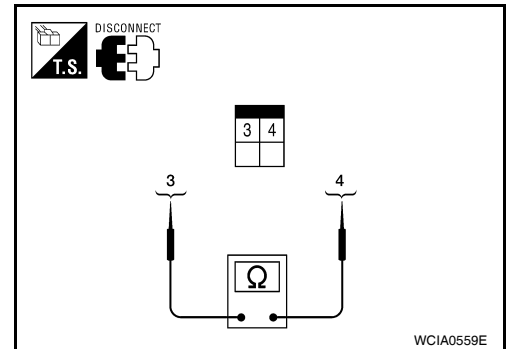


## STOP LAMP SWITCH

- Check continuity between terminals of the stop lamp switch connector.

Condition	Terminal No.	Continuity
When brake pedal is depressed	3 - 4	Yes
When brake pedal is released		No

Check stop lamp switch after adjusting brake pedal.



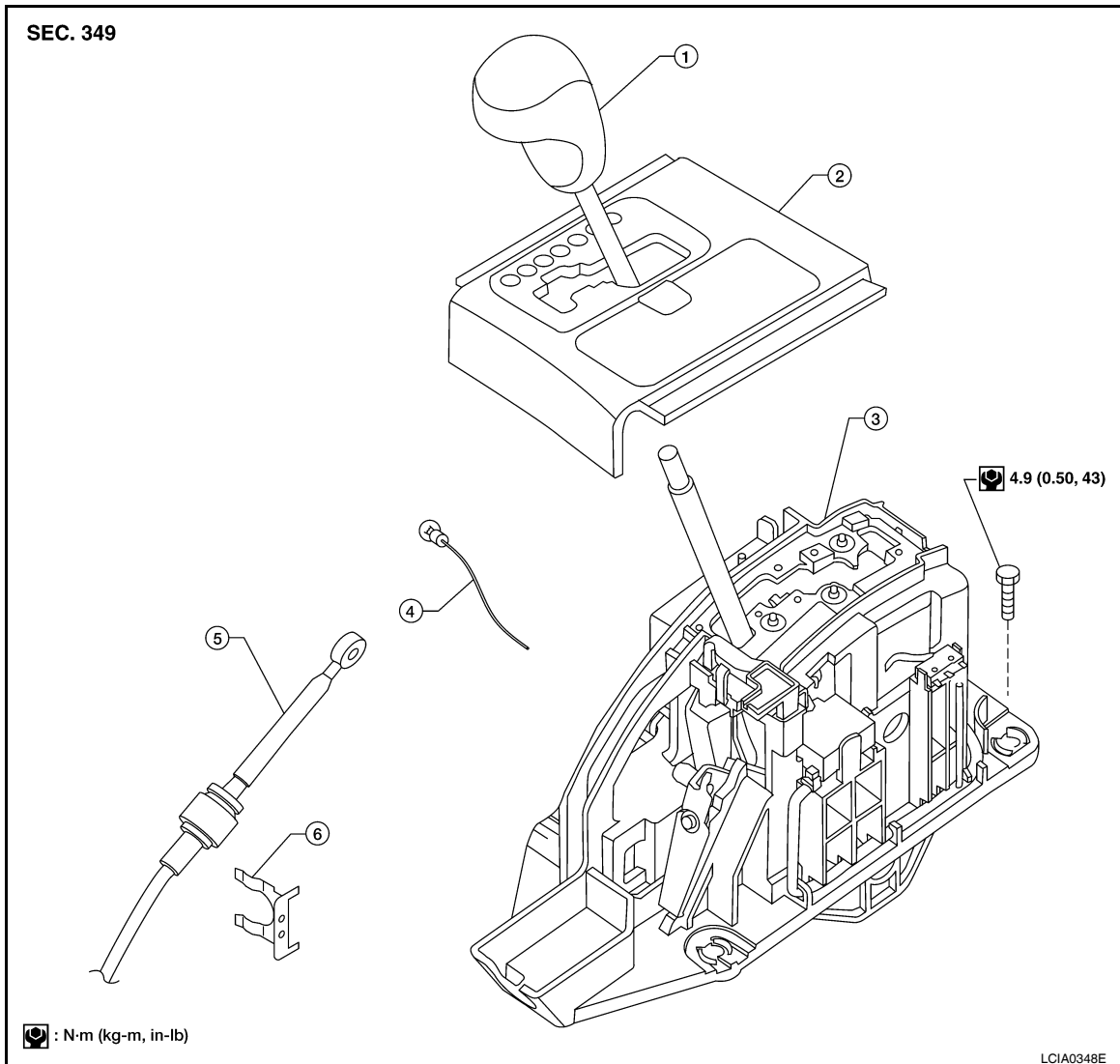
# SHIFT CONTROL SYSTEM

< SERVICE INFORMATION >

## SHIFT CONTROL SYSTEM

### Control Device Removal and Installation

INFOID:000000003532474



- |                      |                               |                            |
|----------------------|-------------------------------|----------------------------|
| 1. Select lever knob | 2. A/T console finisher       | 3. Control device assembly |
| 4. Position lamp     | 5. A/T selector control cable | 6. Lock plate              |

#### REMOVAL

1. Remove negative battery terminal. Refer to [SC-4](#).
2. Remove A/T finisher. Refer to [IP-10, "Removal and Installation"](#).
3. Disconnect selector control cable.
4. Disconnect A/T device harness connector.
5. Remove control device assembly.

#### INSTALLATION

- Installation is in reverse order of removal. Be careful of the following:
- After installation is completed, adjust and check A/T position.

# SHIFT CONTROL SYSTEM

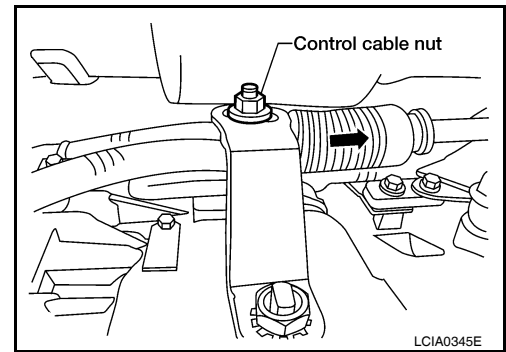
## < SERVICE INFORMATION >

### Adjustment of A/T Position

INFOID:000000003532475

1. Loosen nut of control cable.
2. Place PNP switch and selector lever in "P" position.
3. After pushing the control cable in the direction shown with a force of 9.8 N·m (1kg-m, 2.2 lb-ft), release it. This is in the natural state, tighten control cable nut to specifications.

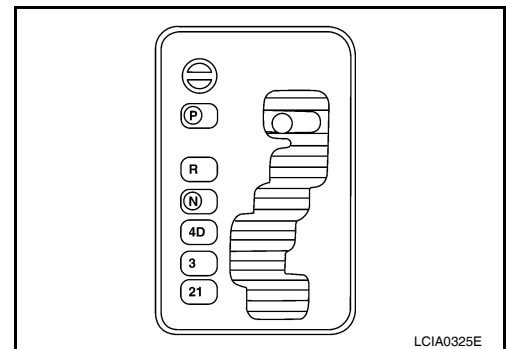
**Control cable nut : 14.5 N·m (1.5 kg-m, 11 ft-lb)**



### Checking of A/T Position

INFOID:000000003532476

1. Place selector lever in "P" position, and turn ignition switch ON (engine stop).
2. Make sure selector lever can be shifted to other than "P" position when brake pedal is depressed. Also make sure 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.
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 pushed against "R" position in the "P" or "N" position.
7. Confirm the engine can only be started with the selector lever in the "P" and "N" positions.
8. Make sure transmission is locked completely in "P" position.





# ON-VEHICLE SERVICE

< SERVICE INFORMATION >

## ON-VEHICLE SERVICE

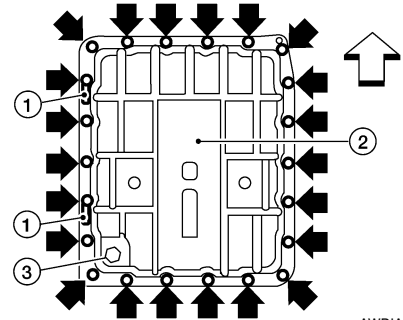
### Oil Pan

INFOID:000000003532477

#### REMOVAL AND INSTALLATION

##### Removal

1. Drain A/T fluid. Refer to [AT-13. "Changing Automatic Transmission Fluid \(ATF\)"](#).
2. Remove oil pan clips (1).
3. Remove oil pan (2).
4. Remove oil pan gasket.
  - ⇐ : Front
  - ◀ : Oil pan bolts
  - ○ : Drain plug (3)

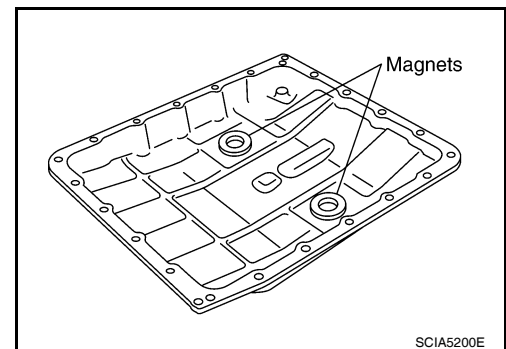


5. Check foreign materials in oil pan to help determine cause of malfunction. If the A/T fluid is very dark, has some burned smell, or contains foreign particles, friction material (clutches, band) may need replacement. A tacky film that will not wipe clean indicates varnish build up. Varnish can cause valves, servo, and clutches to stick and can inhibit pump pressure.

**CAUTION:**

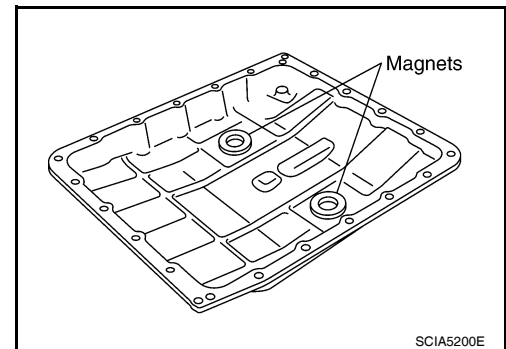
If friction material is detected, flush the transmission cooler after repair. Refer to [AT-15. "A/T Fluid Cooler Cleaning"](#).

6. Remove magnets from oil pan.



##### Installation

1. Install the oil pan magnets as shown.



# ON-VEHICLE SERVICE

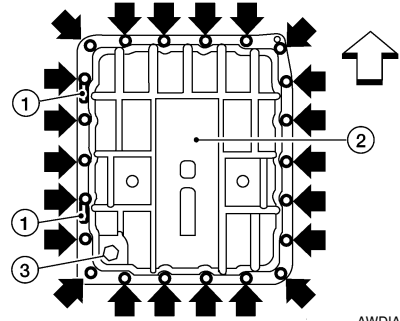
## < SERVICE INFORMATION >

2. Install the oil pan (2) and new oil pan gasket.

- Oil pan clips (1)
- Drain plug (3)
- ↶ : Front
- ◀ : Oil pan bolts

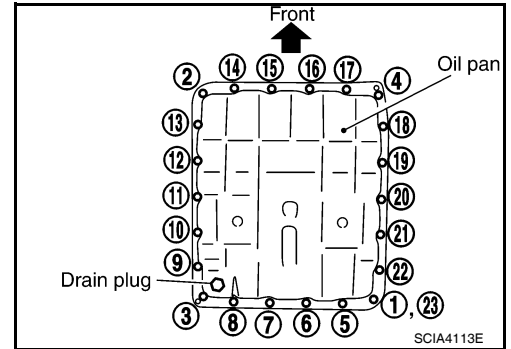
**CAUTION:**

- Do not reuse the oil pan gasket.
- Completely remove all moisture, oil and old gasket from the oil pan gasket mating surfaces and holes.
- Always replace the oil pan bolts as they are self-sealing.
- Be sure the oil pan drain plug hole is located to the rear of the transmission assembly.
- Partially install the oil pan bolts in a criss-cross pattern to prevent dislocation of the gasket.
- Be careful not to pinch harnesses.



3. Tighten new oil pan bolts in numerical order as shown.

**Oil pan bolts : 7.9 N·m (0.81 kg-m, 70 in-lb)**



4. Install drain plug in oil pan with new gasket.

**CAUTION:**

**Do not reuse the drain plug gasket.**

**Drain plug : 34 N·m (3.5 kg-m, 25 ft-lb)**

5. Refill the transmission assembly with fluid. Refer to [AT-13, "Changing Automatic Transmission Fluid \(ATF\)"](#).

Control Valve with TCM and A/T Fluid Temperature Sensor 2

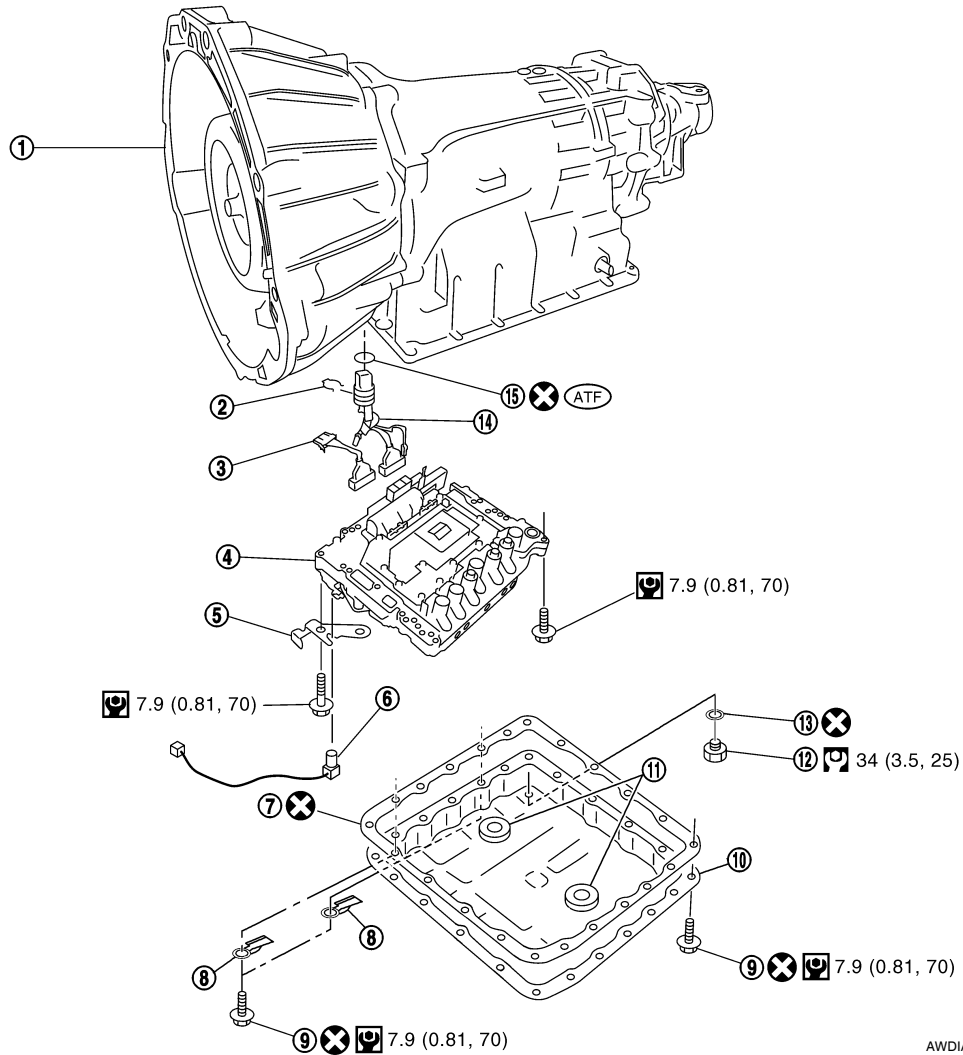
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COMPONENTS

# ON-VEHICLE SERVICE

< SERVICE INFORMATION >

SEC.313 · 314 · 315 · 316 · 317 · 319



AWDIA0024ZZ

- |                           |                            |                                   |
|---------------------------|----------------------------|-----------------------------------|
| 1. Transmission           | 2. Snap ring               | 3. Sub-harness                    |
| 4. Control valve with TCM | 5. Bracket                 | 6. A/T fluid temperature sensor 2 |
| 7. Oil pan gasket         | 8. Brackets                | 9. Oil pan bolt                   |
| 10. Oil pan               | 11. Magnet                 | 12. Drain plug                    |
| 13. Drain plug gasket     | 14. Terminal cord assembly | 15. O-ring                        |

## CONTROL VALVE WITH TCM REMOVAL AND INSTALLATION

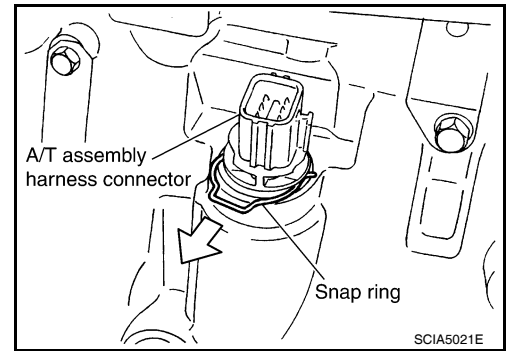
### Removal

1. Disconnect negative battery terminal
2. Drain ATF through drain plug.
3. Disconnect A/T assembly harness connector.

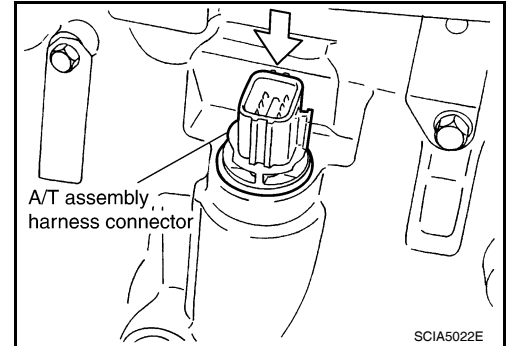
## ON-VEHICLE SERVICE

### < SERVICE INFORMATION >

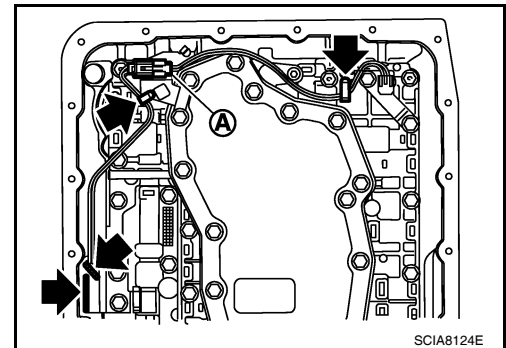
4. Remove snap ring from A/T assembly harness connector.



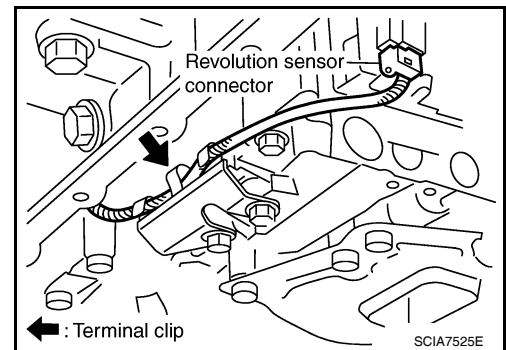
5. Push A/T assembly harness connector.  
**CAUTION:**  
**Be careful not to damage connector.**



6. Remove oil pan and oil pan gasket. Refer to [AT-209, "Oil Pan"](#).
7. Disconnect A/T fluid temperature sensor 2 connector (A).  
**CAUTION:**  
**Be careful not to damage connector.**
8. Straighten the four terminal clips to free the terminal cord assembly for A/T fluid temperature sensor 2 harness.
  - ◀ : Terminal clip



9. Straighten terminal clip to free the revolution sensor harness.
10. Disconnect revolution sensor connector.  
**CAUTION:**  
**Be careful not to damage connector.**



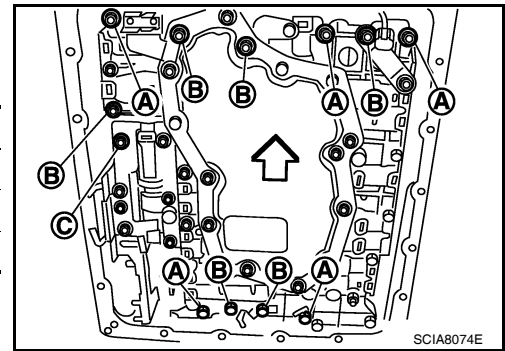
# ON-VEHICLE SERVICE

## < SERVICE INFORMATION >

11. Remove bolts (A), (B) and (C) from control valve with TCM.

- ← : Front

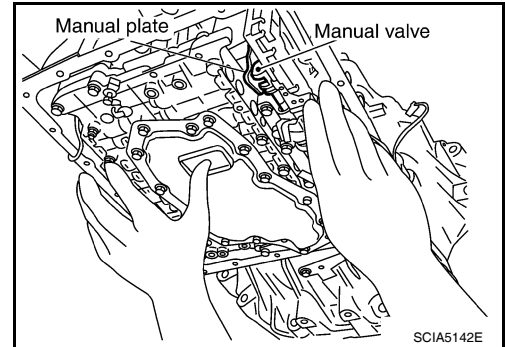
Bolt symbol	Length mm (in)	Number of bolts
A	42 (1.65)	5
B	55 (2.17)	6
C	40 (1.57)	1



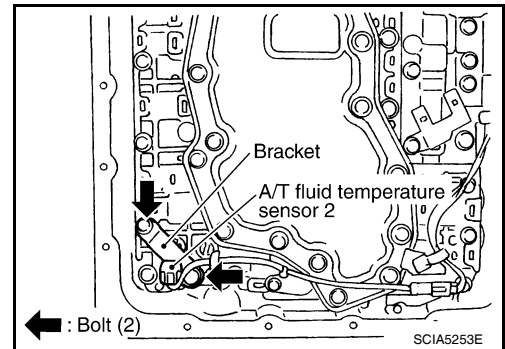
12. Remove control valve with TCM from transmission case.

**CAUTION:**

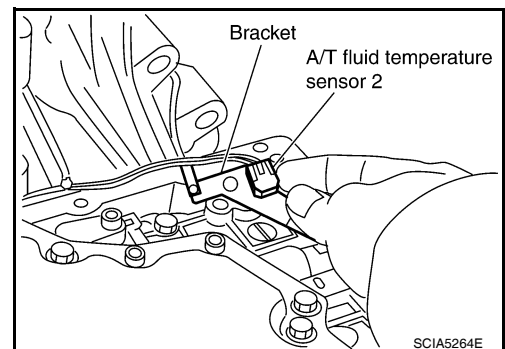
Be careful with the manual valve notch and manual plate height. Remove it vertically.



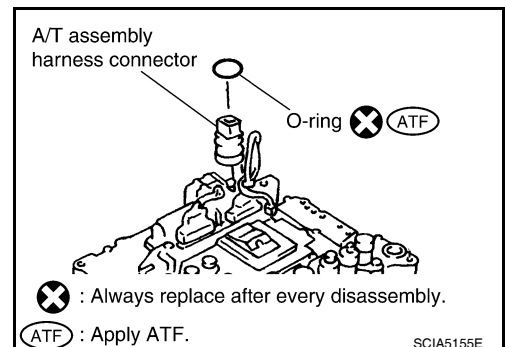
13. Remove A/T fluid temperature sensor 2 with bracket from control valve with TCM.



14. Remove bracket from A/T fluid temperature sensor 2.



15. Remove O-ring from A/T assembly harness connector.



A  
B  
AT  
D  
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F  
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H  
I  
J  
K  
L  
M  
N  
O  
P

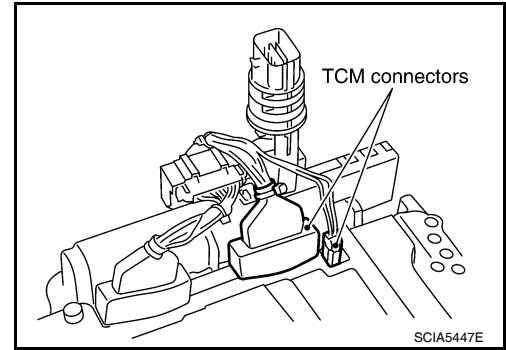
# ON-VEHICLE SERVICE

## < SERVICE INFORMATION >

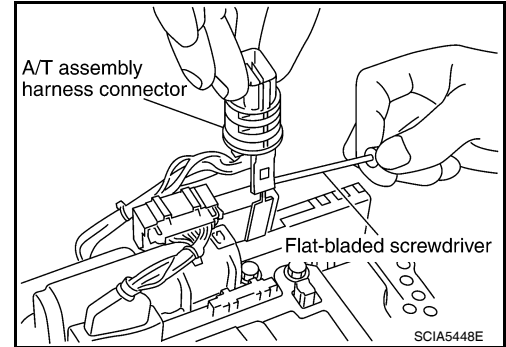
16. Disconnect TCM connectors.

**CAUTION:**

**Be careful not to damage connectors.**



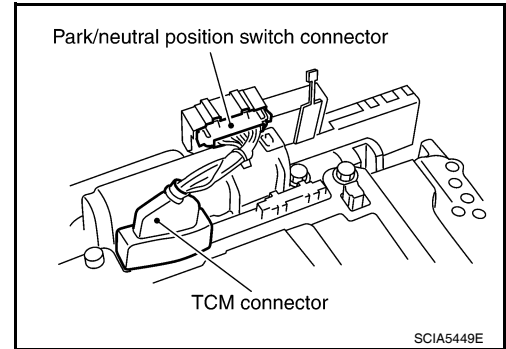
17. Remove A/T assembly harness connector from control valve with TCM using suitable tool.



18. Disconnect TCM connector and park/neutral position switch connector

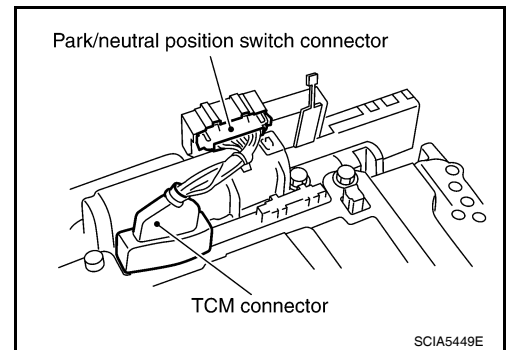
**CAUTION:**

**Be careful not to damage connectors.**



## Installation

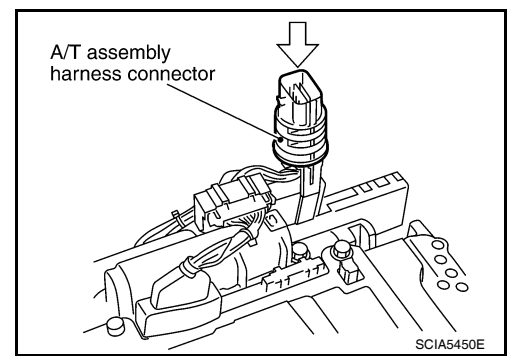
1. Connect TCM connector and park/neutral position switch connector.



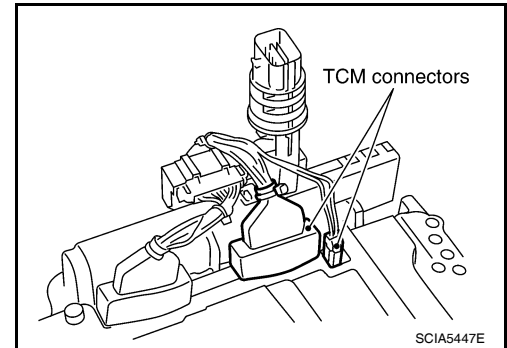
# ON-VEHICLE SERVICE

## < SERVICE INFORMATION >

2. Install A/T assembly harness connector to control valve with TCM.



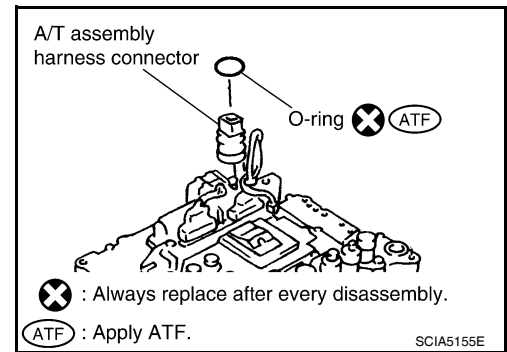
3. Connect TCM connector.



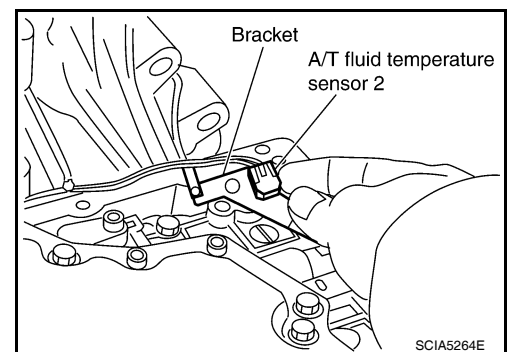
4. Install new O-ring in A/T assembly harness connector.

**NOTE:**

- Do not reuse O-ring.
- Apply ATF to O-ring.



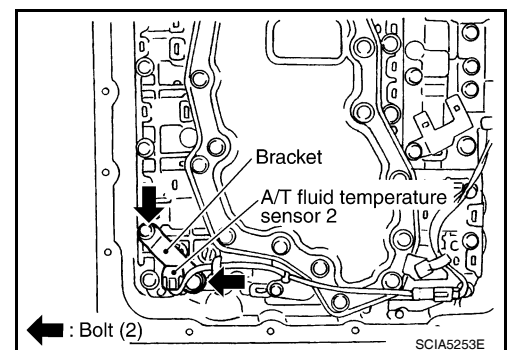
5. Install A/T fluid temperature sensor 2 to bracket.



6. Install A/T fluid temperature sensor 2 (with bracket) in control valve with TCM. Tighten A/T fluid temperature sensor 2 bolts to the specified torque. Refer to [AT-228, "Component"](#).

**CAUTION:**

Adjust bolt hole of bracket to bolt hole of control valve with TCM.



A  
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AT  
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P

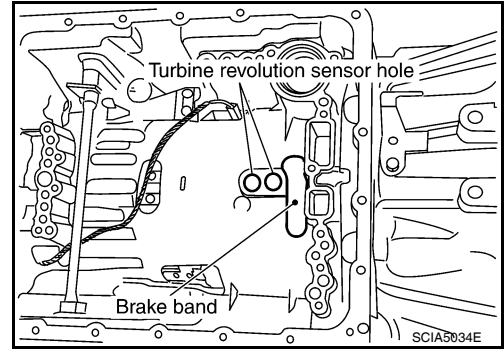
# ON-VEHICLE SERVICE

## < SERVICE INFORMATION >

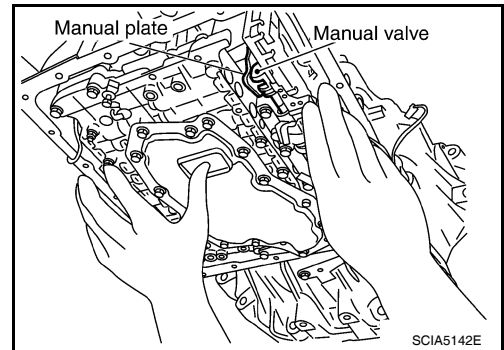
7. Install control valve with TCM in transmission case.

**CAUTION:**

- Make sure that turbine revolution sensor securely installs turbine revolution sensor hole.
- Hang down revolution sensor harness toward outside so as not to disturb installation of control valve with TCM.
- Adjust A/T assembly harness connector of control valve with TCM to terminal hole of transmission case.



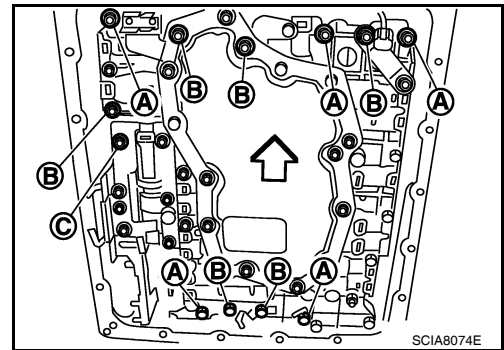
- Assemble it so that manual valve cutout is engaged with manual plate projection.



8. Install bolts (A), (B) and (C) in control valve with TCM.

- ← : Front

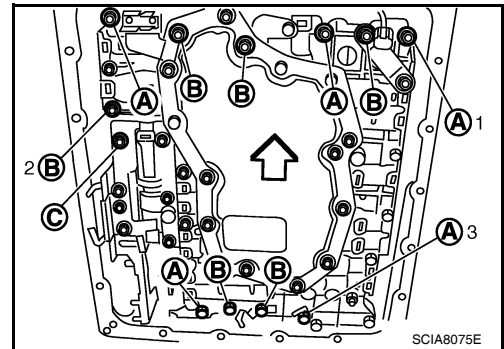
Bolt symbol	Length mm (in)	Number of bolts
A	42 (1.65)	5
B	55 (2.17)	6
C	40 (1.57)	1



9. Tighten bolt (1), (2) and (3) temporarily to prevent dislocation. Then tighten them in order (1 → 2 → 3), and then tighten other bolts.

- ← : Front

10. Tighten control valve with TCM bolts to the specified torque. Refer to [AT-228, "Component"](#).

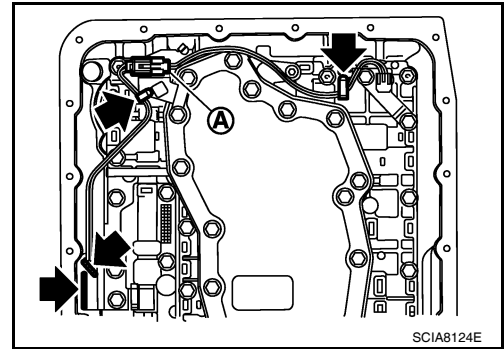




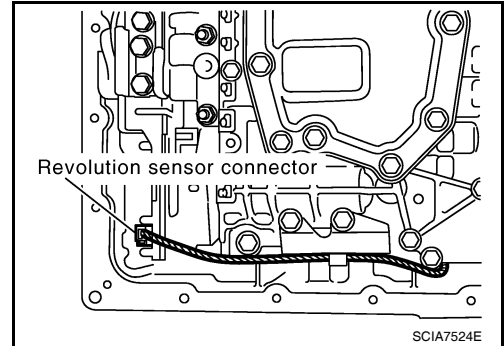
# ON-VEHICLE SERVICE

## < SERVICE INFORMATION >

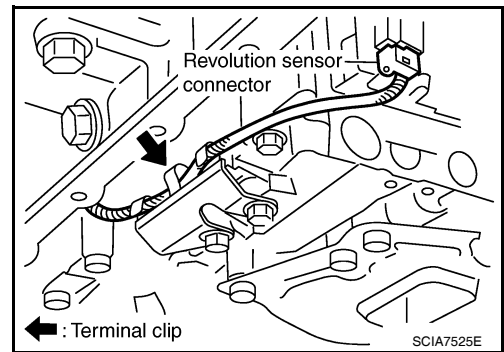
11. Connect A/T fluid temperature sensor 2 connector (A).
12. Securely fasten terminal cord assembly and A/T fluid temperature sensor 2 harness with terminal clips.
  - ◀ : Terminal clip



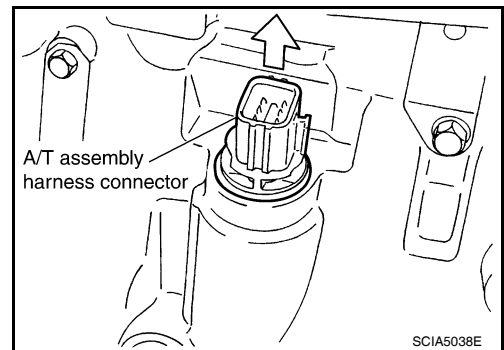
13. Connect revolution sensor connector.



14. Securely fasten revolution sensor harness with terminal clip.



15. Install oil pan to transmission case. Refer to [AT-209, "Oil Pan"](#).
16. Pull up A/T assembly harness connector.  
**CAUTION:**  
**Be careful not to damage connector.**



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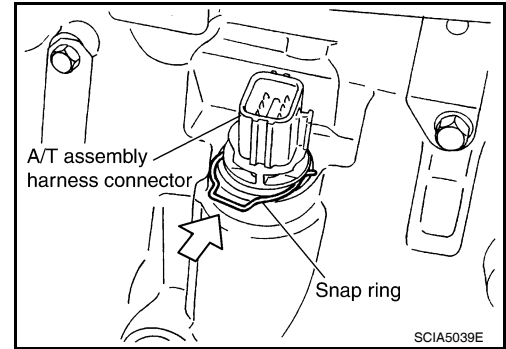
# ON-VEHICLE SERVICE

## < SERVICE INFORMATION >

17. Install snap ring to A/T assembly harness connector.
18. Connect A/T assembly harness connector.
19. Connect the negative battery terminal
20. Refill the A/T with fluid and check fluid level and for fluid leakage. Refer to [AT-13, "Changing Automatic Transmission Fluid \(ATF\)"](#).

### CAUTION:

After completing installation, check A/T fluid leakage and fluid level. Refer to [AT-13, "Changing Automatic Transmission Fluid \(ATF\)"](#), [AT-13, "Checking Automatic Transmission Fluid \(ATF\)"](#).



## A/T FLUID TEMPERATURE SENSOR 2 REMOVAL AND INSTALLATION

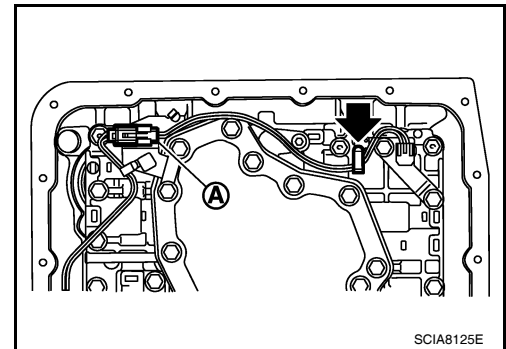
### Removal

1. Disconnect negative battery terminal
2. Remove oil pan and oil pan gasket. Refer to [AT-209, "Oil Pan"](#).
3. Disconnect A/T fluid temperature sensor 2 connector (A).

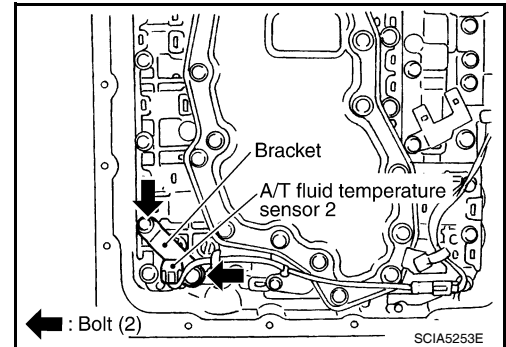
### CAUTION:

Be careful not to damage connector.

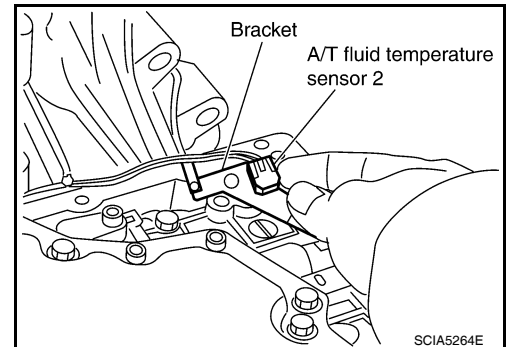
4. Straighten terminal clip to free A/T fluid temperature sensor 2 harness.
  - ← : Terminal clip



5. Remove A/T fluid temperature sensor 2 with bracket from control valve with TCM.



6. Remove bracket from A/T fluid temperature sensor 2.

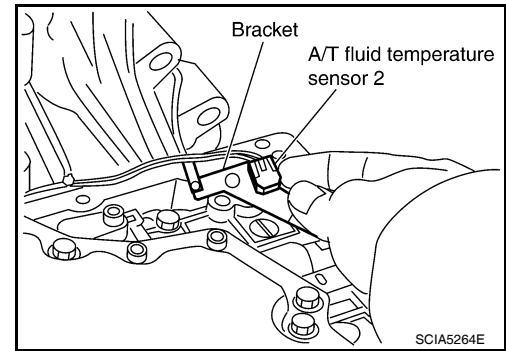


### Installation

# ON-VEHICLE SERVICE

## < SERVICE INFORMATION >

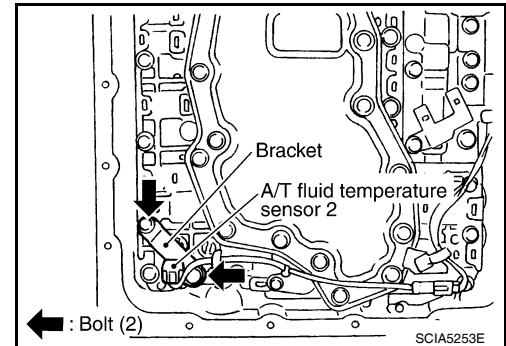
1. Install A/T fluid temperature sensor 2 to bracket.



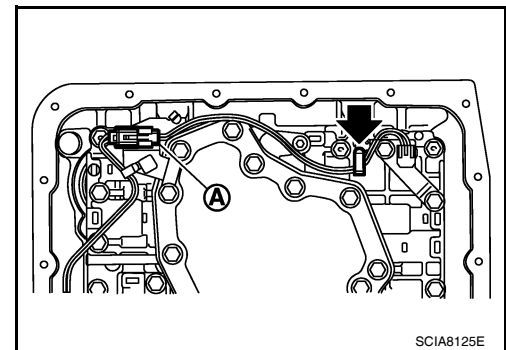
2. Install A/T fluid temperature sensor 2 (with bracket) in control valve with TCM. Tighten A/T fluid temperature sensor 2 bolt to the specified torque. Refer to [AT-228, "Component"](#).

**CAUTION:**

**Adjust bolt hole of bracket to bolt hole of control valve with TCM.**



3. Connect A/T fluid temperature sensor 2 connector (A).
4. Securely fasten A/T fluid temperature sensor 2 harness with terminal clip.
  - ◀ : Terminal clip



5. Install oil pan to transmission case. Refer to [AT-209, "Oil Pan"](#).
6. Connect the negative battery terminal
7. Refill the A/T with fluid and check fluid level and for fluid leakage. Refer to [AT-13, "Changing Automatic Transmission Fluid \(ATF\)"](#).

**CAUTION:**

**After completing installation, check for A/T fluid leakage and fluid level. Refer to [AT-13, "Changing Automatic Transmission Fluid \(ATF\)"](#), [AT-13, "Checking Automatic Transmission Fluid \(ATF\)"](#).**

## Rear Oil Seal

INFOID:000000003532479

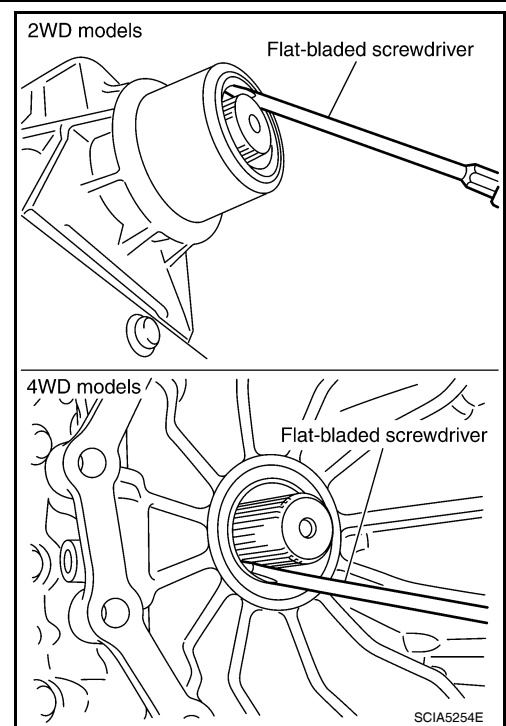
## REMOVAL AND INSTALLATION

### Removal

# ON-VEHICLE SERVICE

## < SERVICE INFORMATION >

1. Remove rear propeller shaft. Refer to [PR-8, "Removal and Installation"](#).
2. Remove transfer from transmission (4WD models). Refer to [TF-128, "Removal and Installation"](#).
3. Remove rear oil seal using suitable tool.  
**CAUTION:**  
Be careful not to scratch rear extension assembly (2WD models) or adapter case assembly (4WD models).



## Installation

1. Install new rear oil seal until it is flush with component face into the extension case (2WD models) using Tool, or adapter case (4WD models) using suitable tool.

**Tool number** : **ST33400001 (J-26082)**

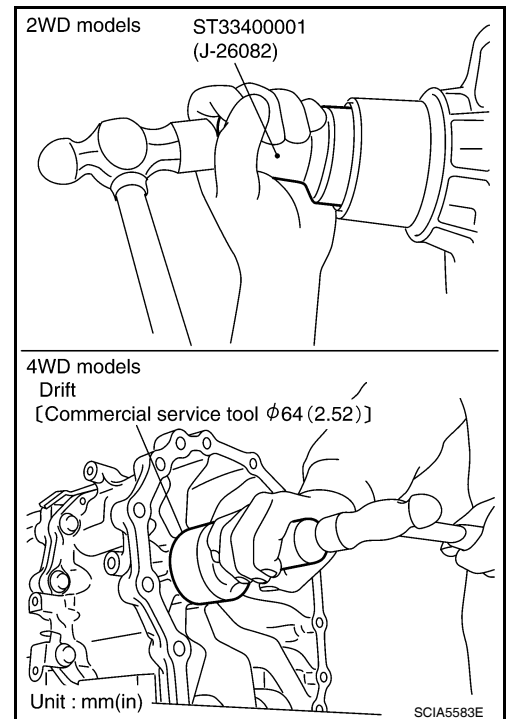
### **CAUTION:**

- Apply ATF to rear oil seal.
- Do not reuse rear oil seal.

2. Install transfer to transmission (4WD models). Refer to [TF-128, "Removal and Installation"](#).
3. Install rear propeller shaft. Refer to [PR-8, "Removal and Installation"](#).

### **CAUTION:**

After completing installation, check for A/T fluid leakage and fluid level. Refer to [AT-13, "Changing Automatic Transmission Fluid \(ATF\)"](#) and [AT-13, "Checking Automatic Transmission Fluid \(ATF\)"](#).



# AIR BREATHER HOSE

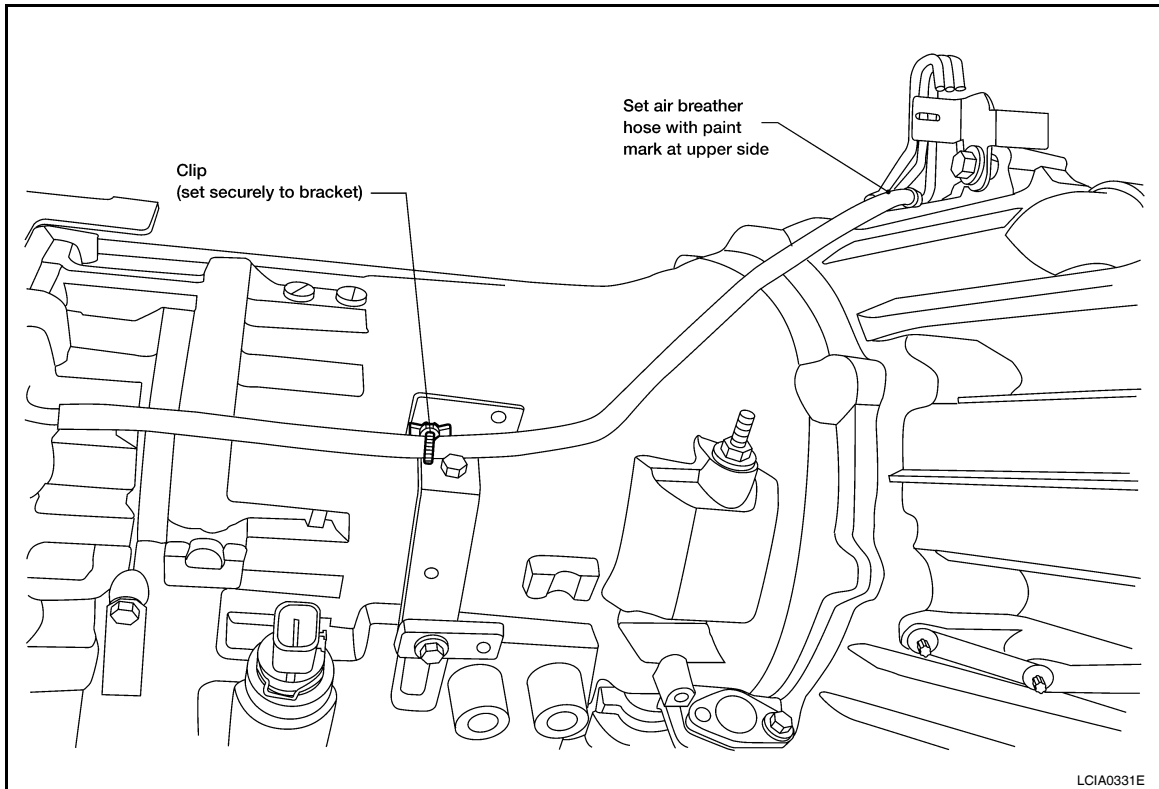
< SERVICE INFORMATION >

## AIR BREATHER HOSE

### Removal and Installation

INFOID:000000003532480

2WD



#### CAUTION:

- When installing an air breather hose, do not crush or block 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 portion.

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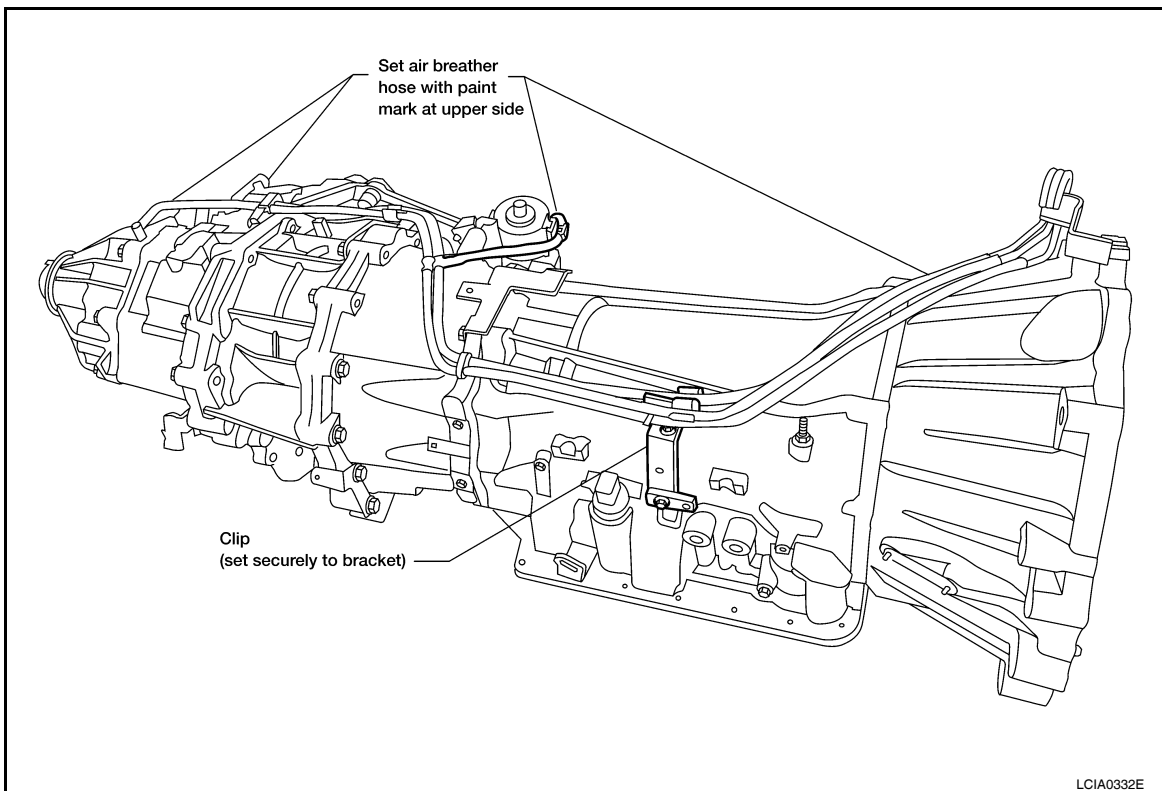
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## AIR BREATHER HOSE

< SERVICE INFORMATION >



### CAUTION:

- When installing an air breather hose, do not crush or block 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 portion.

# TRANSMISSION ASSEMBLY

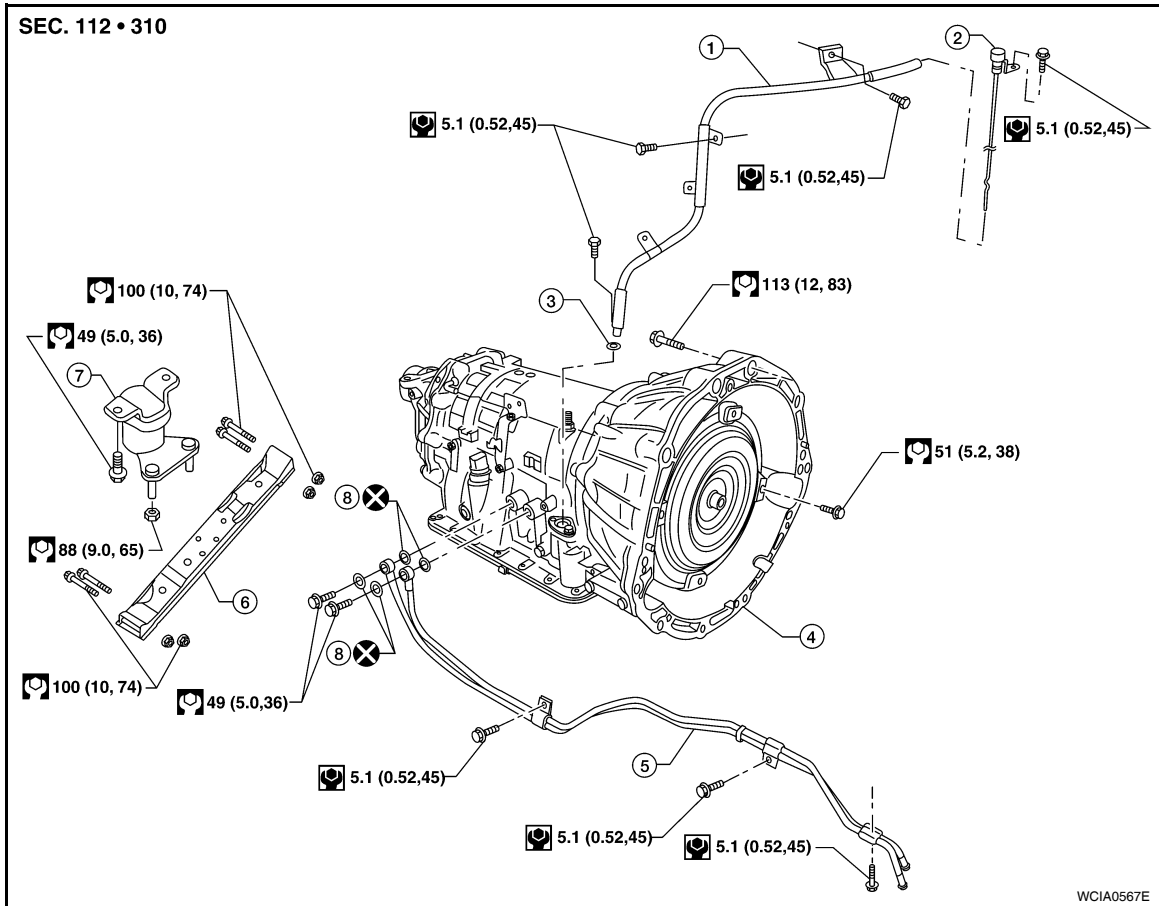
< SERVICE INFORMATION >

## TRANSMISSION ASSEMBLY

### Removal and Installation (2WD)

INFOID:000000003532481

#### COMPONENTS



- |                             |                        |                     |
|-----------------------------|------------------------|---------------------|
| 1. A/T fluid indicator pipe | 2. A/T fluid indicator | 3. O-ring           |
| 4. Transmission assembly    | 5. Fluid cooler tube   | 6. A/T cross member |
| 7. Insulator                | 8. Copper washers      |                     |

#### 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 cover.
3. Remove A/T fluid indicator gauge.
4. Remove undercovers using power tool.
5. Remove exhaust front tube and center muffler using power tool. Refer to [EX-3. "Removal and Installation"](#).
6. Remove rear propeller shaft. Refer to [PR-8. "Removal and Installation"](#).
7. Remove A/T control cable. Refer to [AT-207. "Control Device Removal and Installation"](#).

# TRANSMISSION ASSEMBLY

## < SERVICE INFORMATION >

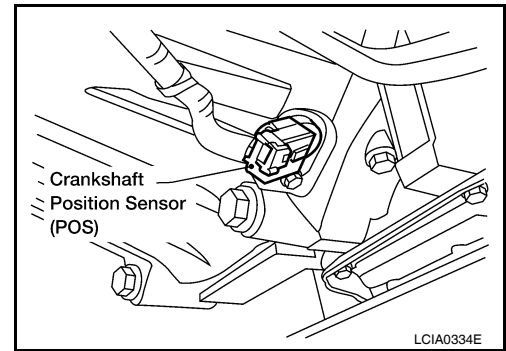
8. Remove crankshaft position sensor (POS) from A/T assembly.

**CAUTION:**

- Do not subject it to impact by dropping or hitting it.
- Do not disassemble.
- Do not allow metal filings or foreign material to get on the sensor front edge magnetic area.
- Do not place in an area affected by magnetism.

9. Remove fluid cooler tube.

10. Remove dust cover from converter housing.



11. Turn crankshaft to access and remove the four bolts for drive plate and torque converter.

**CAUTION:**

**When turning crankshaft, turn it clockwise as viewed from the front of the engine.**

12. Support A/T assembly with a transmission jack.

**CAUTION:**

**When setting the transmission jack, be careful not to allow it to collide against the drain plug.**

13. Remove cross member using power tool.

14. Remove air breather hose. Refer to [AT-221, "Removal and Installation"](#).

15. Disconnect A/T assembly connector.

16. Remove A/T fluid indicator pipe from A/T assembly.

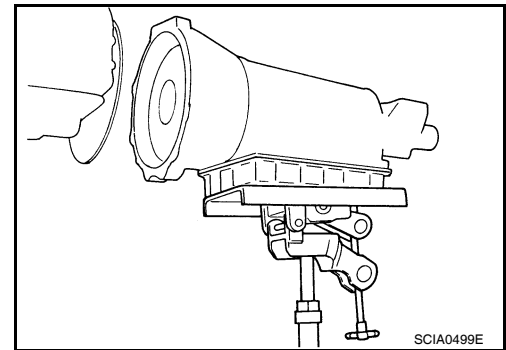
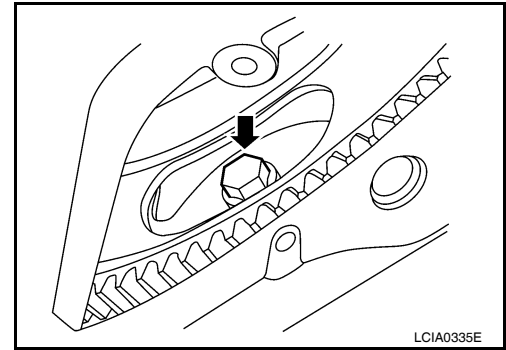
17. Plug any openings such as the A/T fluid indicator pipe hole.

18. Remove the A/T assembly to engine bolts using power tool.

19. Remove A/T assembly from vehicle using transmission jack.

**CAUTION:**

- Secure torque converter to prevent it from dropping.
- Secure A/T assembly to a transmission jack.

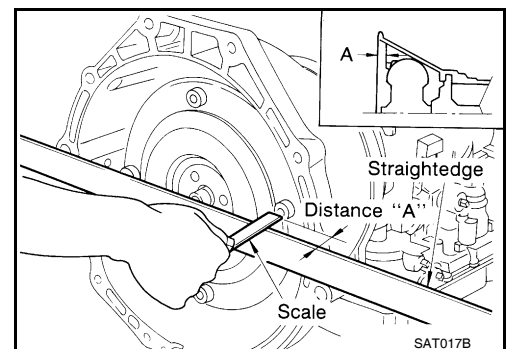


## INSPECTION

### 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 specifications.

**Dimension A : 24.0 mm (0.94 in) or more**



## INSTALLATION

Installation of the remaining components is in the reverse order of the removal, while paying attention to the following:



# TRANSMISSION ASSEMBLY

## < SERVICE INFORMATION >

- When installing transmission to the engine, attach the bolts as shown.

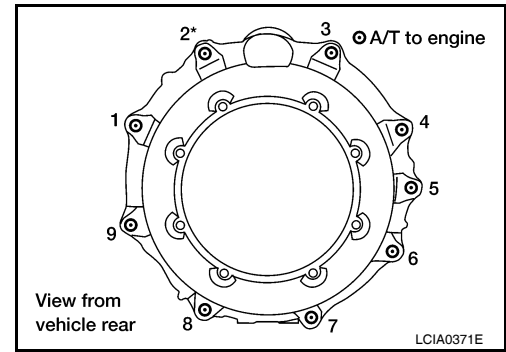
**Transmission to engine bolts : 113 N·m (12 kg-m, 83 ft-lb)**

### NOTE:

\*: No.2 bolt also secures air breather vent.

### CAUTION:

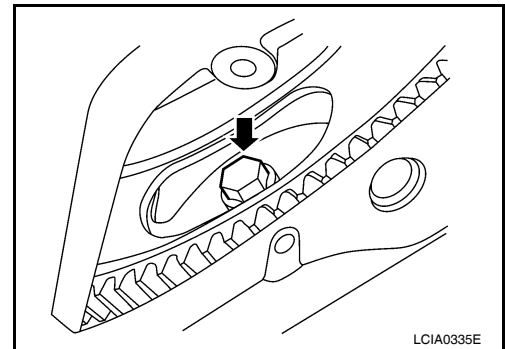
- When replacing an engine or transmission you must make sure the dowels are installed correctly during re-assembly.
- Improper alignment caused by missing dowels may cause vibration, oil leaks or breakage of drivetrain components.



- Align the positions of bolts for drive plate with those of the torque converter, and temporarily tighten the bolts. Then tighten the bolts with the specified torque.

### CAUTION:

- When turning crankshaft, turn it clockwise as viewed from the front of the engine.
- 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).
- After completing installation check fluid leakage, fluid level and the positions of A/T. Refer to [AT-13, "Checking Automatic Transmission Fluid \(ATF\)"](#), [AT-208, "Checking of A/T Position"](#) and [AT-208, "Adjustment of A/T Position"](#).

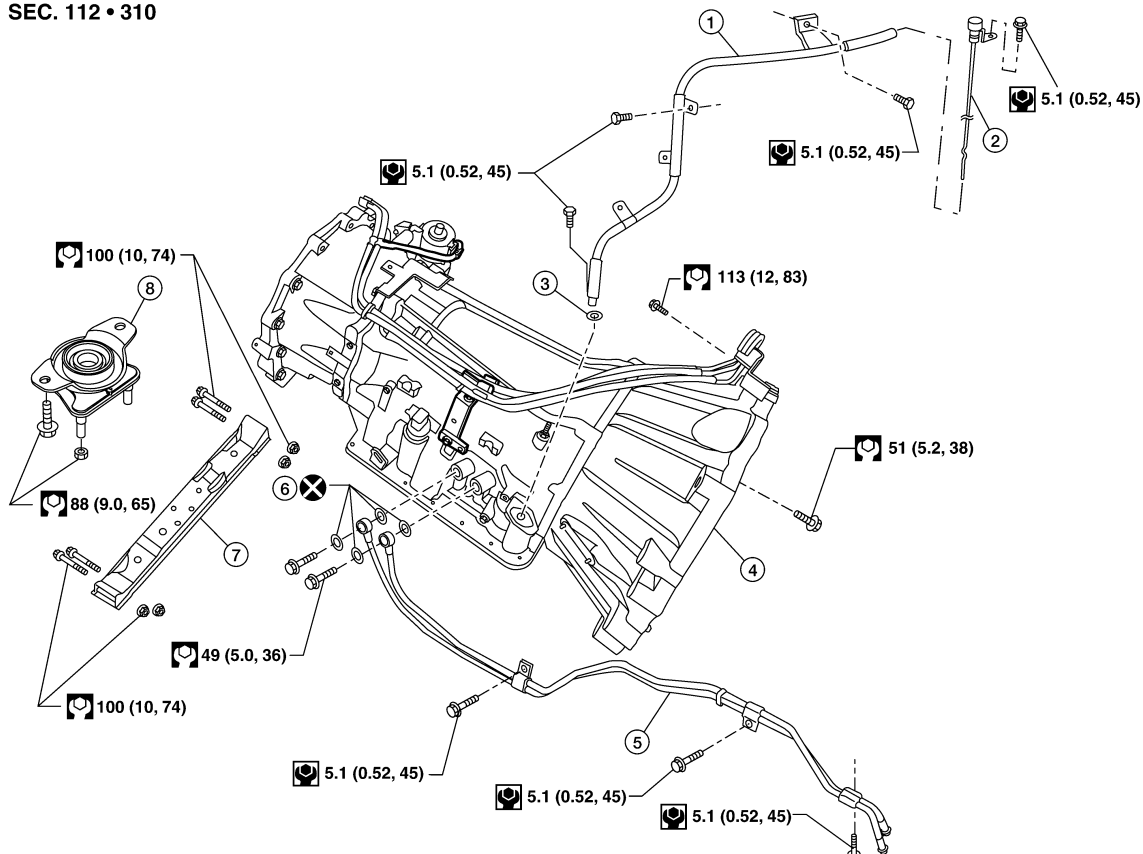


## Removal and Installation (4WD)

INFOID:000000003532482

## COMPONENTS

SEC. 112 • 310



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# TRANSMISSION ASSEMBLY

## < SERVICE INFORMATION >

- |                             |                        |                  |
|-----------------------------|------------------------|------------------|
| 1. A/T fluid indicator pipe | 2. A/T fluid indicator | 3. O-ring        |
| 4. Transmission assembly    | 5. Fluid cooler tube   | 6. Copper washer |
| 7. A/T cross member         | 8. Insulator           |                  |

### REMOVAL

#### CAUTION:

When removing the A/T assembly from engine, first remove the crankshaft position sensor (POS) from the A/T assembly.

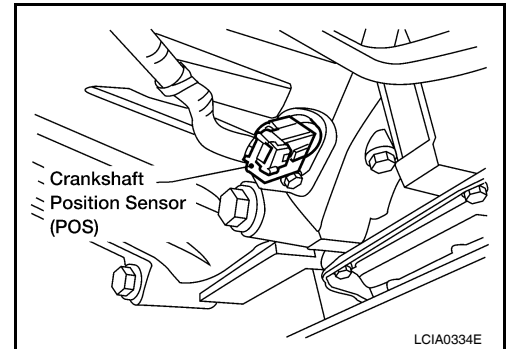
Be careful not to damage sensor edge.

1. Disconnect the negative battery terminal.
2. Remove engine cover using power tool.
3. Remove A/T fluid indicator.
4. Remove undercovers using power tool.
5. Remove exhaust front tube and center muffler using power tool. Refer to [EX-3. "Removal and Installation"](#).
6. Remove propeller shafts. Refer to [PR-4. "Removal and Installation"](#) and [PR-8. "Removal and Installation"](#).
7. Remove A/T control cable. Refer to [AT-207. "Control Device Removal and Installation"](#).
8. Remove crankshaft position sensor (POS) from A/T assembly.

#### CAUTION:

- Do not subject it to impact by dropping or hitting it.
- Do not disassemble.
- Do not allow metal filings or foreign material to get on the sensor's front edge magnetic area.
- Do not place in an area affected by magnetism.

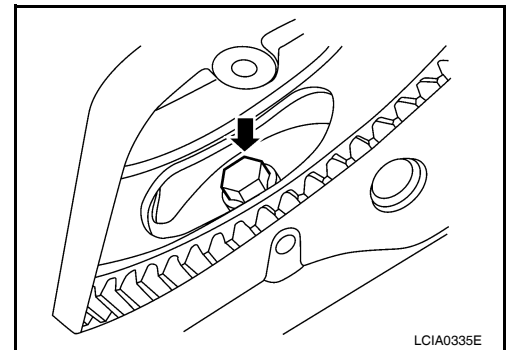
9. Disconnect A/T fluid cooler tube from A/T assembly.
10. Remove dust cover from converter housing.



11. Turn crankshaft, and remove the four bolts for drive plate and torque converter.

#### CAUTION:

When turning crankshaft, turn it clockwise as viewed from the front of the engine.



12. Support A/T assembly using transmission jack and Tool.

Tool number : — (J-47002)

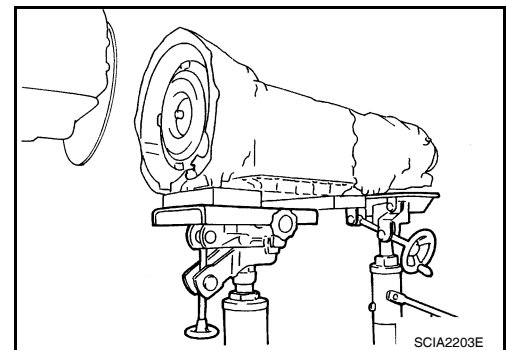
#### CAUTION:

When setting the transmission jack, be careful not to allow it to collide against the drain plug.

#### NOTE:

The actual special service tool may differ from tool shown.

13. Remove cross member using power tool.
14. Tilt the transmission slightly to keep the clearance between body and transmission, then disconnect air breather hose from A/T fluid indicator pipe. Refer to [AT-221. "Removal and Installation"](#).
15. Disconnect A/T assembly connector and transfer unit connector.
16. Remove A/T fluid indicator pipe.



# TRANSMISSION ASSEMBLY

## < SERVICE INFORMATION >

17. Plug any openings such as the fluid charging pipe hole.
18. Remove A/T assembly to engine bolts using power tool.
19. Remove A/T assembly with transfer from vehicle.

### CAUTION:

- Secure torque converter to prevent it from dropping.
- Secure A/T assembly to transmission jack.

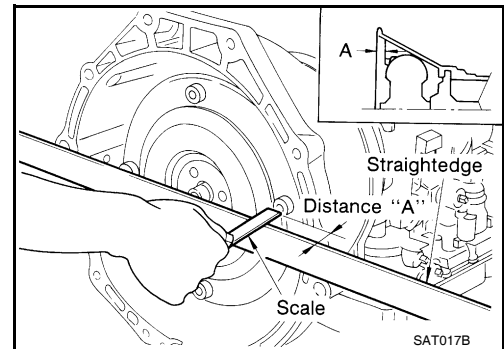
20. Remove transfer from A/T assembly. Refer to [TF-128. "Removal and Installation"](#).

## 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 specifications.

**Dimension A : 24.0 mm (0.94 in) or more**



## INSTALLATION

Installation of the remaining components is in the reverse order of removal, while paying attention to the following:

- When installing transmission to the engine, attach the bolts as shown.

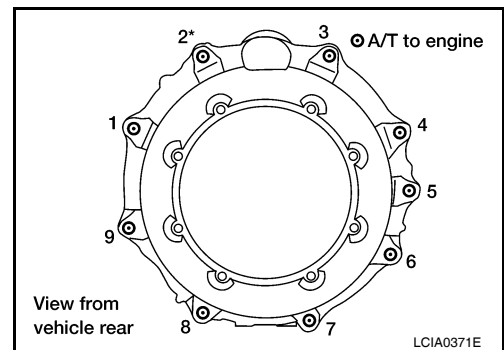
**Transmission to engine bolts : 113 N·m (12 kg-m, 83 ft-lb)**

### NOTE:

\*: No.2 bolt also secures air breather vent.

### CAUTION:

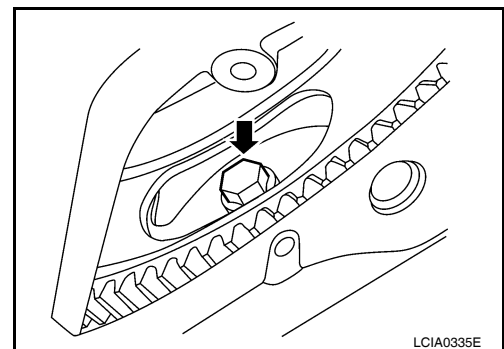
- When replacing an engine or transmission you must make sure the dowels are installed correctly during re-assembly.
- Improper alignment caused by missing dowels may cause vibration, oil leaks or breakage of drivetrain components.



- Align the positions of bolts for drive plate with those of the torque converter, and temporarily tighten the bolts. Then tighten the bolts with the specified torque.

### CAUTION:

- When turning crankshaft, turn it clockwise as viewed from the front of the engine.
- 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).
- After completing installation, check fluid leakage, fluid level, and the positions of A/T. Refer to [AT-13. "Checking Automatic Transmission Fluid \(ATF\)"](#), [AT-208. "Checking of A/T Position"](#) and [AT-208. "Adjustment of A/T Position"](#).



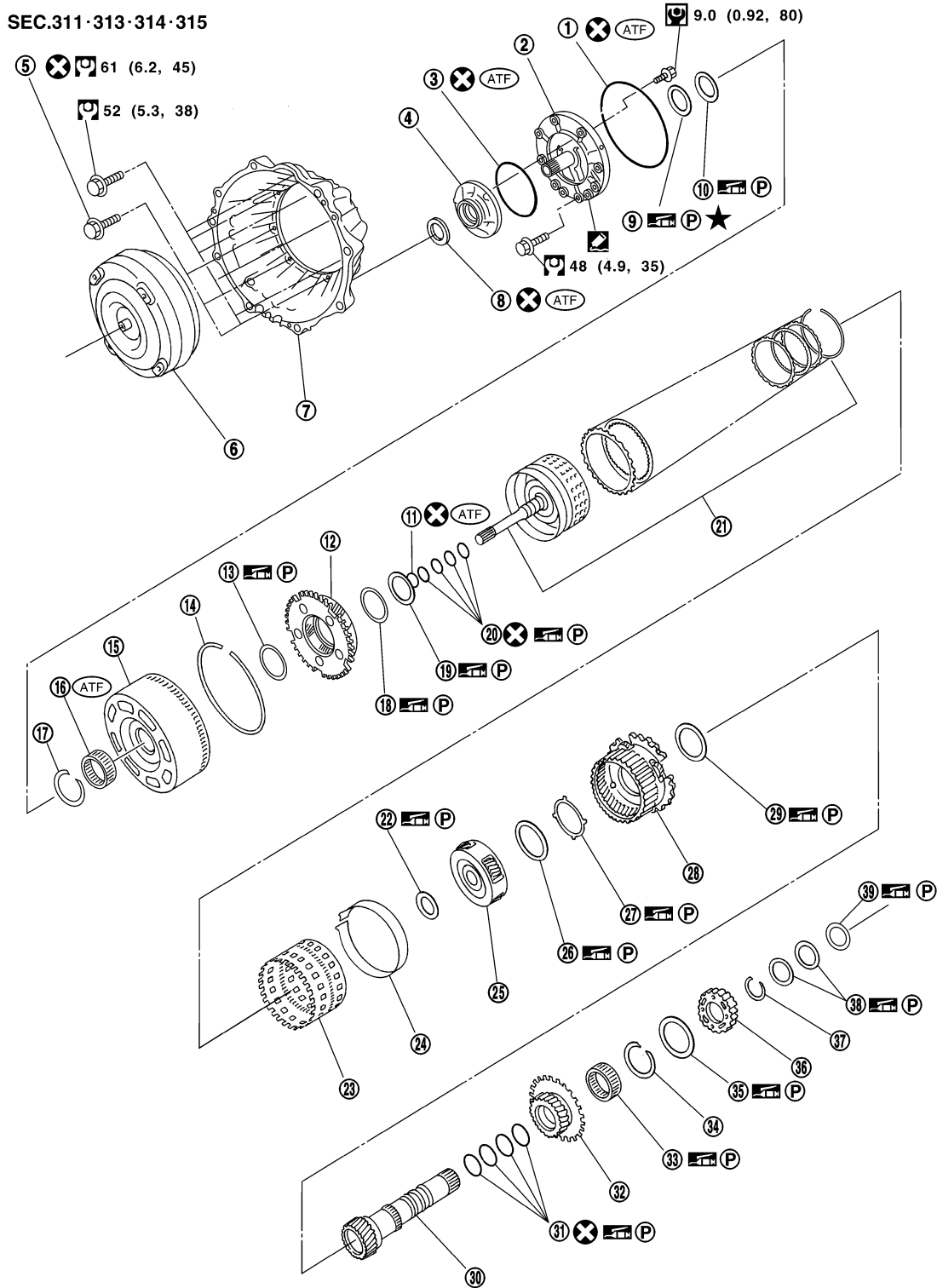
# OVERHAUL

< SERVICE INFORMATION >

## OVERHAUL

Component

INFOID:000000003532483



- |                      |                              |                     |
|----------------------|------------------------------|---------------------|
| 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     |


AT-228

WCIA0622E

# OVERHAUL

## < SERVICE INFORMATION >

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|---------------------------|------------------------|-------------------------------------|
| 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                  |

 Apply Genuine Silicone RTV or the equivalent. Refer to [GI-45. "Recommended Chemical Product and Sealant"](#).

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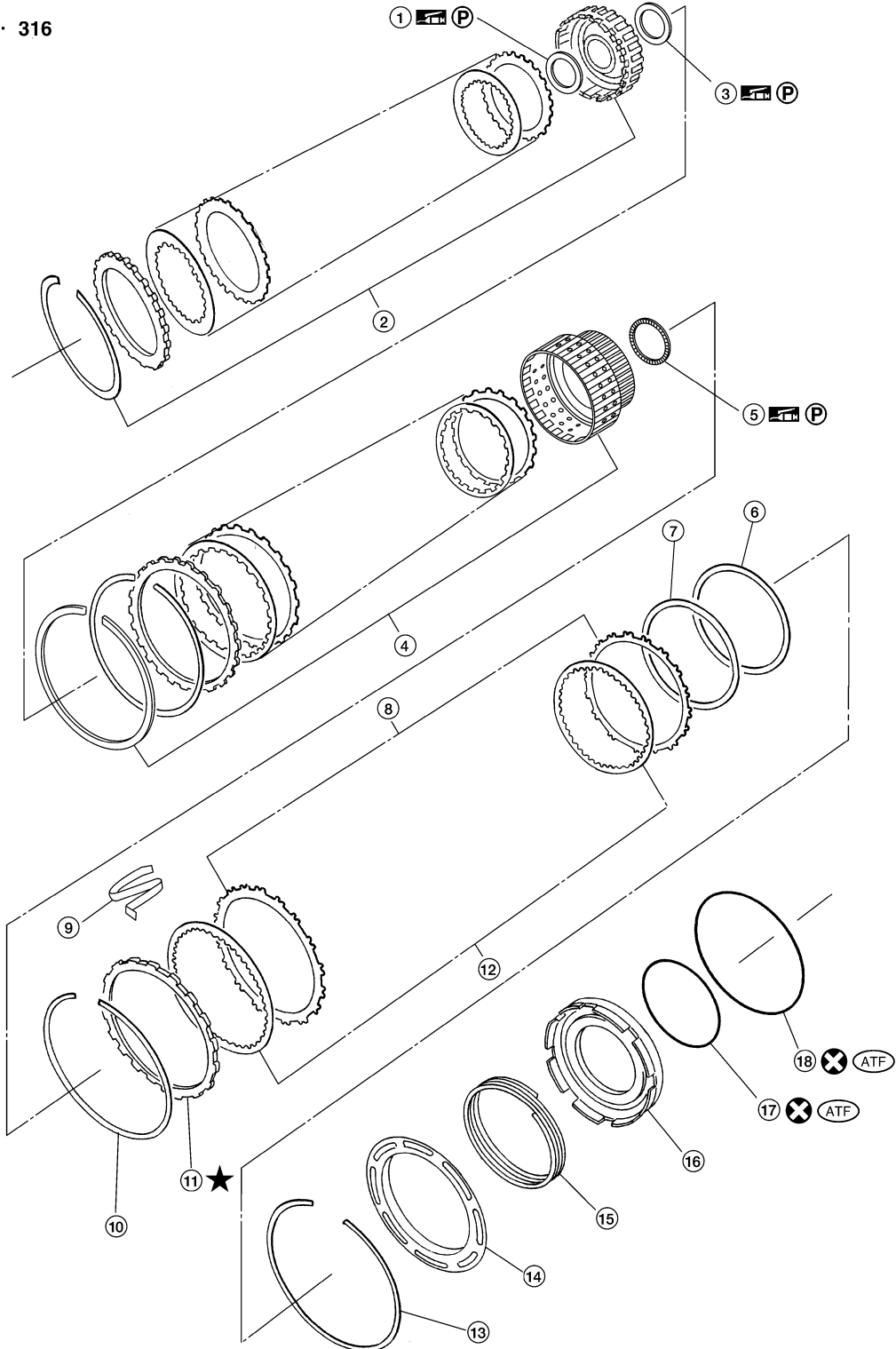
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# OVERHAUL

< SERVICE INFORMATION >

SEC.315· 316



WCIA0623E

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|-------------------------------|---|-------------------------------|
| 1. Bearing race               | 2. High and low reverse clutch assembly | 3. Needle bearing             |
| 4. Direct clutch assembly     | 5. Needle bearing                       | 6. Reverse brake dish plate   |
| 7. Reverse brake driven plate | 8. Reverse brake driven plate           | 9. N-spring                   |
| 10. Snap ring                 | 11. Reverse brake retaining plate       | 12. Reverse brake drive plate |

AT-230

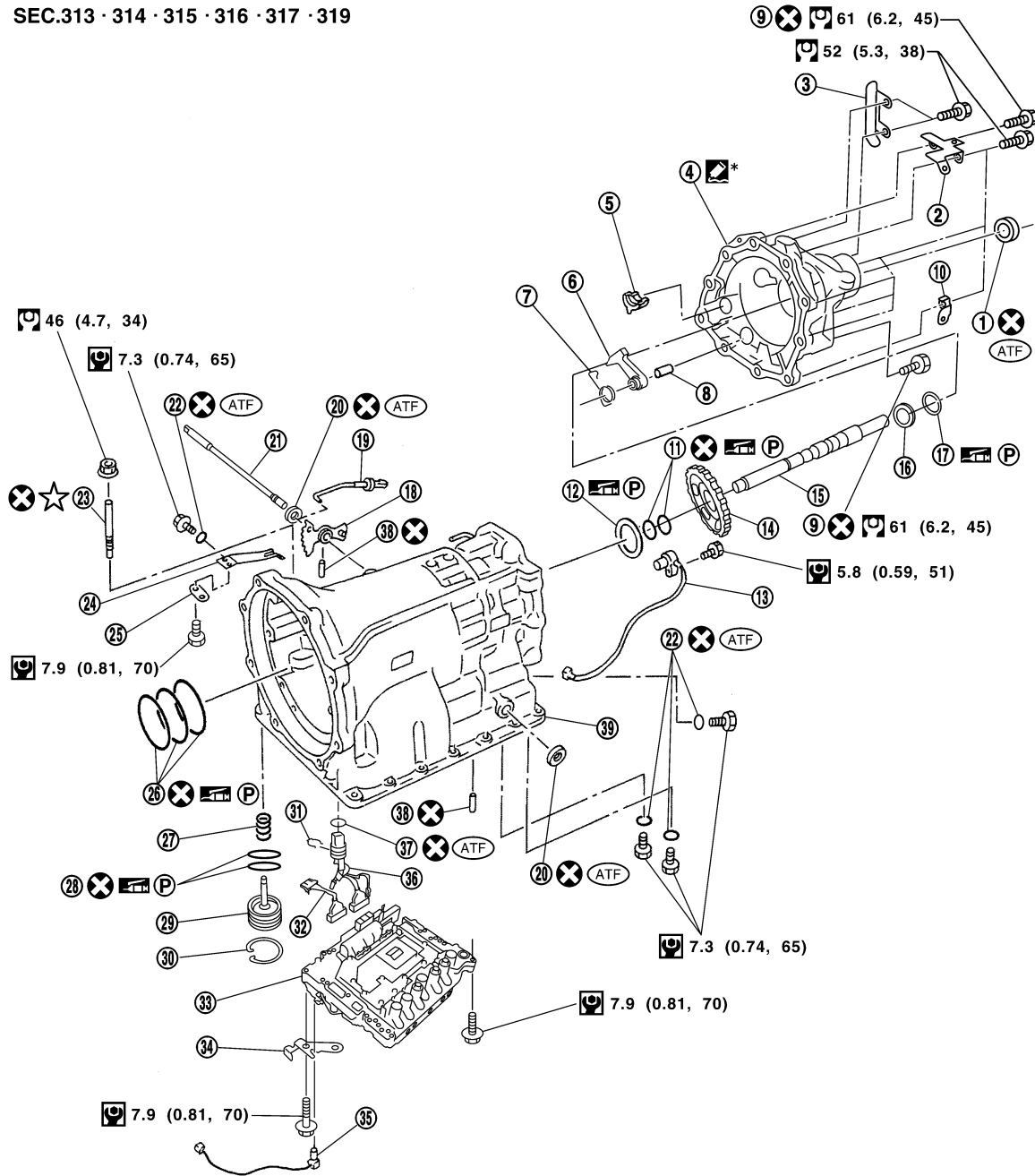
# OVERHAUL

## < SERVICE INFORMATION >

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|--------------------------|---------------------|-------------------|
| 13. Snap ring            | 14. Spring retainer | 15. Return spring |
| 16. Reverse brake piston | 17. D-ring          | 18. D-ring        |

2WD models

SEC.313 · 314 · 315 · 316 · 317 · 319



- |                  |                             |                      |
|------------------|-----------------------------|----------------------|
| 1. Rear oil seal | 2. Bracket                  | 3. Bracket           |
| 4. Adapter case  | 5. Parking actuator support | 6. Parking pawl      |
| 7. Return spring | 8. Pawl shaft               | 9. Self-sealing bolt |
| 10. Bracket      | 11. Seal ring               | 12. Needle bearing   |

AT-231

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# OVERHAUL

## < SERVICE INFORMATION >

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|-----------------------|------------------------------------|----------------------------|
| 13. Revolution sensor | 14. Parking gear                   | 15. Output shaft           |
| 16. Bearing race      | 17. Needle bearing                 | 18. Manual plate           |
| 19. Parking rod       | 20. Manual shaft oil seal          | 21. Manual shaft           |
| 22. O-ring            | 23. Band servo anchor end pin      | 24. Detent spring          |
| 25. Spacer            | 26. Seal ring                      | 27. Snap ring              |
| 28. Return spring     | 29. O-ring                         | 30. Servo assembly         |
| 31. Snap ring         | 32. Sub-harness                    | 33. Control valve with TCM |
| 34. Bracket           | 35. A/T fluid temperature sensor 2 | 36. Terminal cord assembly |
| 37. O-ring            | 38. Retaining pin                  | 39. Transmission case      |

\*: Apply Genuine Anaerobic Liquid Gasket or equivalent.  
Refer to [GI-45. "Recommended Chemical Product and Sealant"](#).

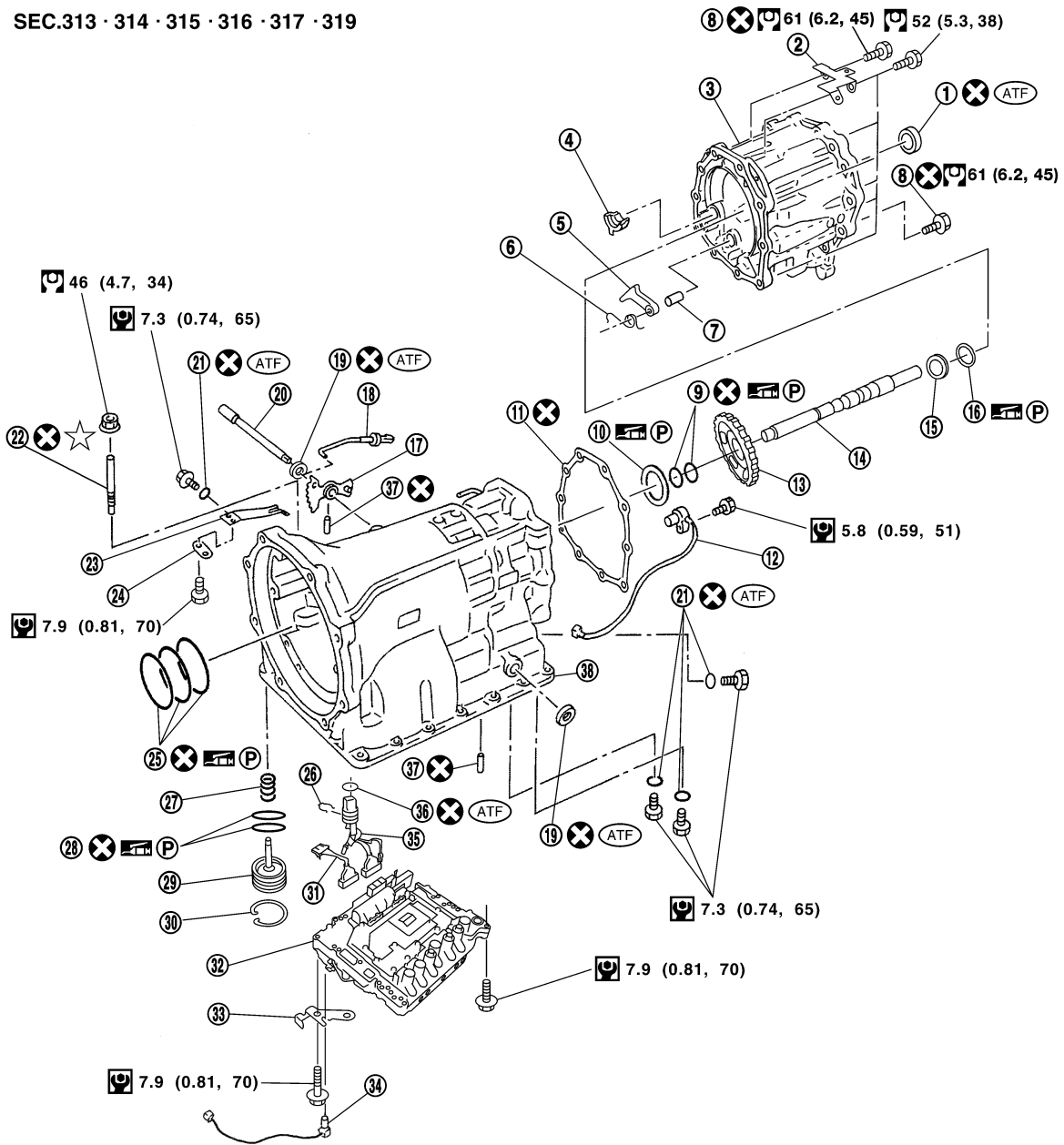


# OVERHAUL

< SERVICE INFORMATION >

4WD models

SEC.313 · 314 · 315 · 316 · 317 · 319



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|-----------------------------|----------------------|-----------------------|
| 1. Rear oil seal            | 2. Bracket           | 3. Adapter case       |
| 4. Parking actuator support | 5. Parking pawl      | 6. Return spring      |
| 7. Pawl shaft               | 8. Self-sealing bolt | 9. Seal ring          |
| 10. Needle bearing          | 11. Gasket           | 12. Revolution sensor |
| 13. Parking gear            | 14. Output shaft     | 15. Bearing race      |
| 16. Needle bearing          | 17. Manual plate     | 18. Parking rod       |

AWDIA0455GB

# OVERHAUL

## < SERVICE INFORMATION >

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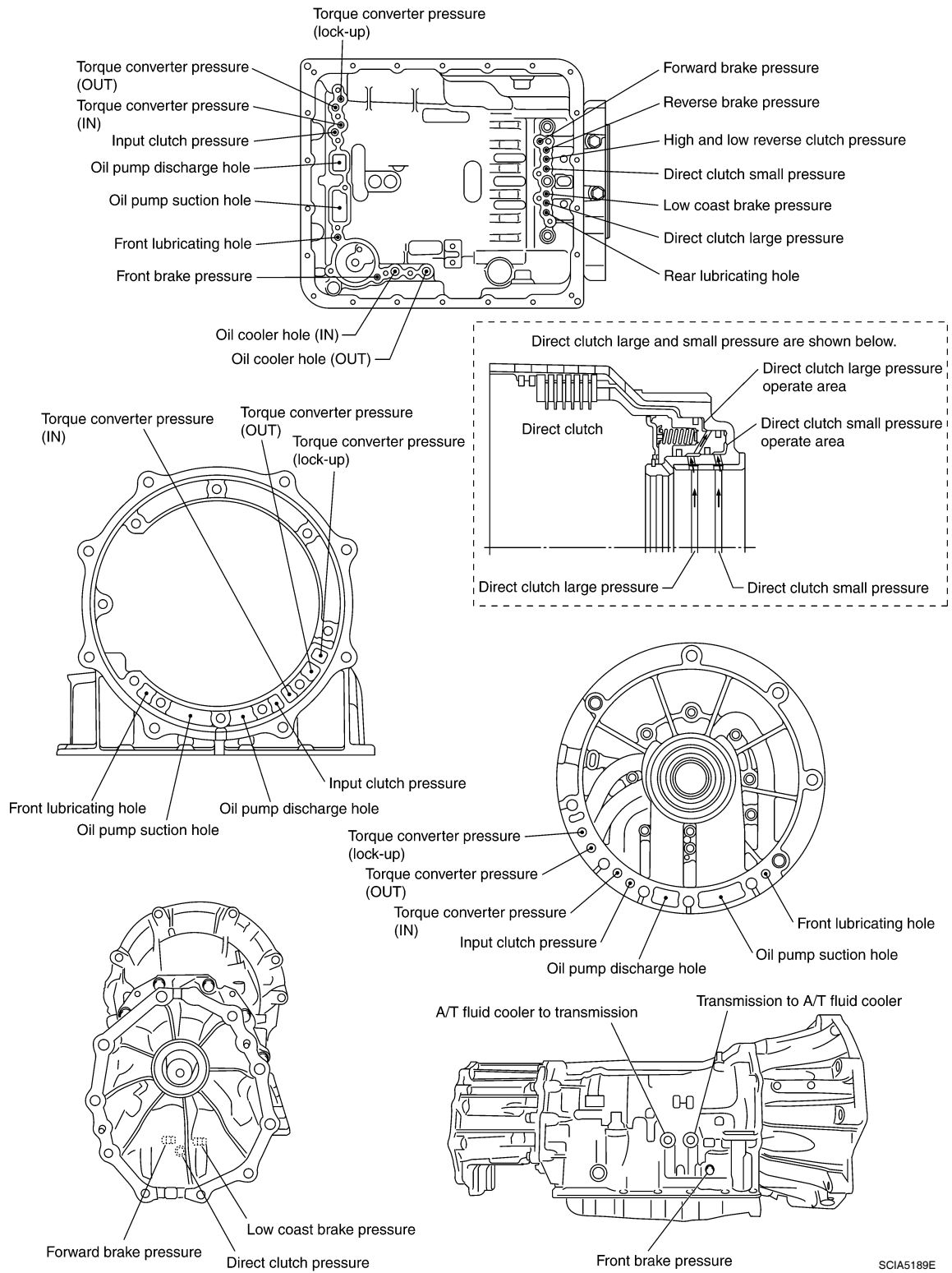
- |                                    |                            |                   |
|------------------------------------|----------------------------|-------------------|
| 19. Manual shaft oil seal          | 20. Manual shaft           | 21. O-ring        |
| 22. Band servo anchor end pin      | 23. Detent spring          | 24. Spacer        |
| 25. Seal ring                      | 26. Snap ring              | 27. Return spring |
| 28. O-ring                         | 29. Servo assembly         | 30. Snap ring     |
| 31. Sub-harness                    | 32. Control valve with TCM | 33. Bracket       |
| 34. A/T fluid temperature sensor 2 | 35. Terminal cord assembly | 36. O-ring        |
| 37. Retaining pin                  | 38. Transmission case      |                   |



# OVERHAUL

< SERVICE INFORMATION >

4WD models



SCIA5189E

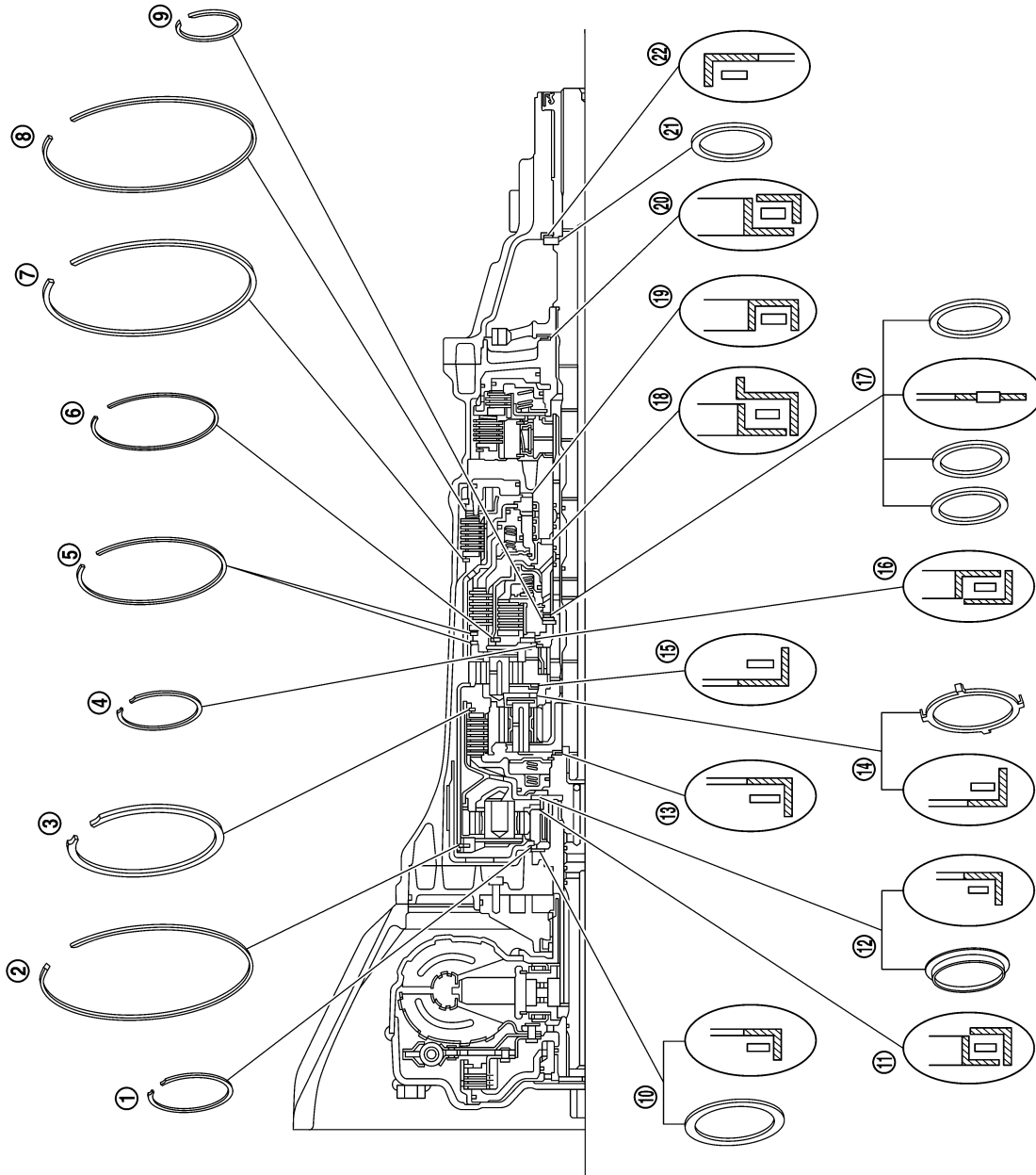
# OVERHAUL

< SERVICE INFORMATION >

## Location of Adjusting Shims, Needle Bearings, Thrust Washers and Snap Rings

INFOID:000000003532485

2WD models



- |                                    |                                    |                                    |
|------------------------------------|------------------------------------|------------------------------------|
| 1. Outer diameter 68 mm (2.68 in)  | 2. Outer diameter 182 mm (7.17 in) | 3. Outer diameter 172 mm (6.77 in) |
| 4. Outer diameter 71 mm (2.80 in)  | 5. Outer diameter 169 mm (6.65 in) | 6. Outer diameter 134 mm (5.28 in) |
| 7. Outer diameter 181 mm (7.13 in) | 8. Outer diameter 181 mm (7.13 in) | 9. Outer diameter 48 mm (1.89 in)  |

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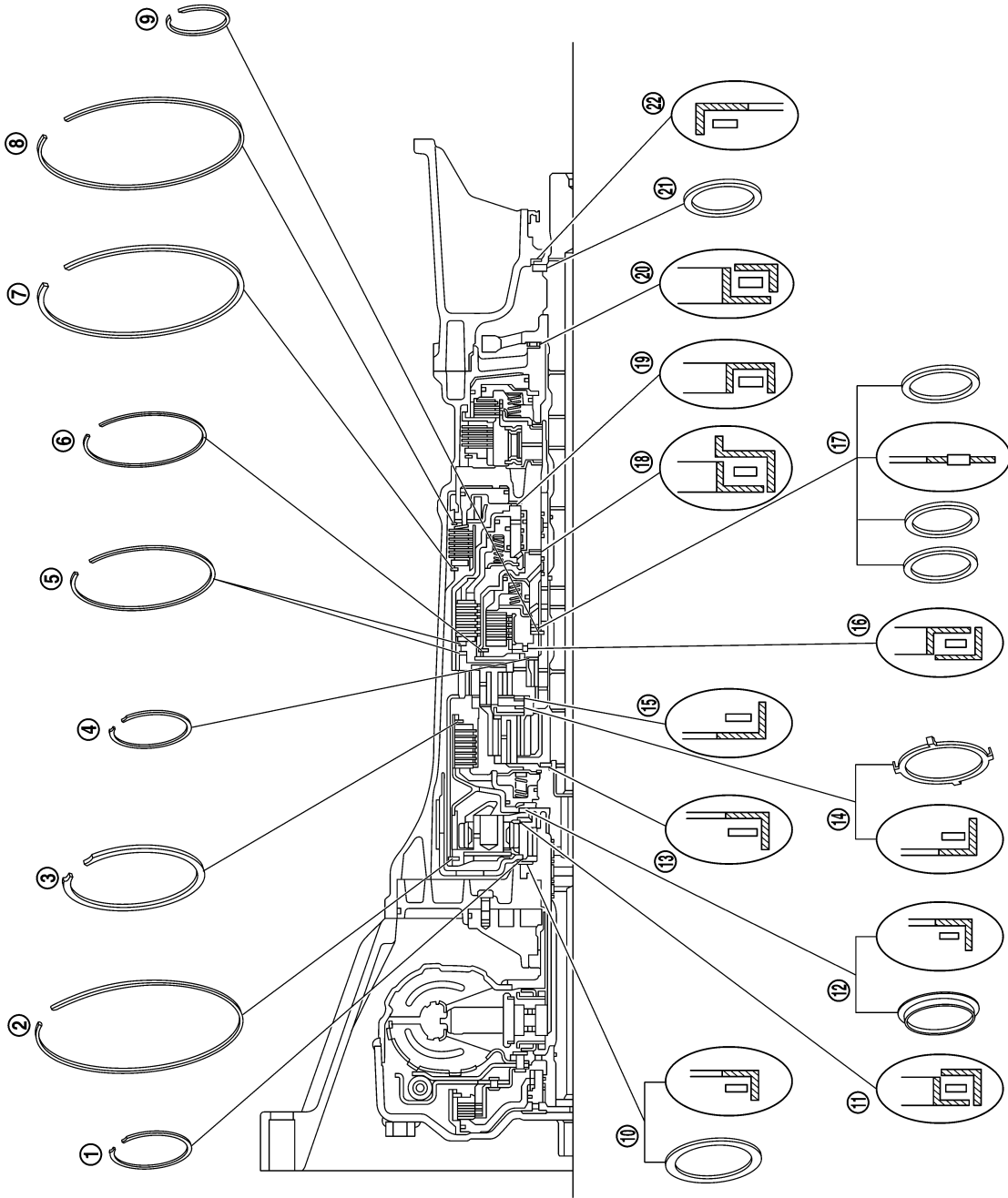
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# OVERHAUL

## < SERVICE INFORMATION >

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|------------------------------------|------------------------------------|------------------------------------|
| 10. Outer diameter 80 mm (3.15 in) | 11. Outer diameter 77 mm (3.03 in) | 12. Outer diameter 77 mm (3.03 in) |
| 13. Outer diameter 47 mm (1.85 in) | 14. Outer diameter 84 mm (3.31 in) | 15. Outer diameter 84 mm (3.31 in) |
| 16. Outer diameter 92 mm (3.62 in) | 17. Outer diameter 60 mm (2.36 in) | 18. Outer diameter 63 mm (2.48 in) |
| 19. Outer diameter 92 mm (3.62 in) | 20. Outer diameter 65 mm (2.56 in) | 21. Bearing race                   |
| 22. Outer diameter 60 mm (2.36 in) |                                    |                                    |

### 4WD models



# OVERHAUL

## < SERVICE INFORMATION >

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- |                                    |                                    |                                    |    |
|------------------------------------|------------------------------------|------------------------------------|----|
| 1. Outer diameter 68 mm (2.68 in)  | 2. Outer diameter 182 mm (7.17 in) | 3. Outer diameter 172 mm (6.77 in) | A  |
| 4. Outer diameter 71 mm (2.80 in)  | 5. Outer diameter 169 mm (6.65 in) | 6. Outer diameter 134 mm (5.28 in) |    |
| 7. Outer diameter 181 mm (7.13 in) | 8. Outer diameter 181 mm (7.13 in) | 9. Outer diameter 48 mm (1.89 in)  | B  |
| 10. Outer diameter 80 mm (3.15 in) | 11. Outer diameter 77 mm (3.03 in) | 12. Outer diameter 77 mm (3.03 in) |    |
| 13. Outer diameter 47 mm (1.85 in) | 14. Outer diameter 84 mm (3.31 in) | 15. Outer diameter 84 mm (3.31 in) |    |
| 16. Outer diameter 92 mm (3.62 in) | 17. Outer diameter 60 mm (2.36 in) | 18. Outer diameter 63 mm (2.48 in) |    |
| 19. Outer diameter 92 mm (3.62 in) | 20. Outer diameter 65 mm (2.56 in) | 21. Bearing race                   | AT |
| 22. Outer diameter 60 mm (2.36 in) |                                    |                                    |    |

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# DISASSEMBLY

< SERVICE INFORMATION >

## DISASSEMBLY

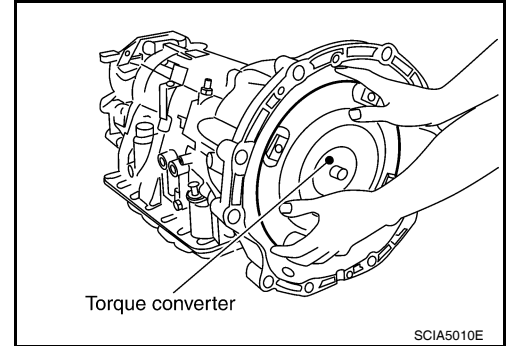
### Disassembly

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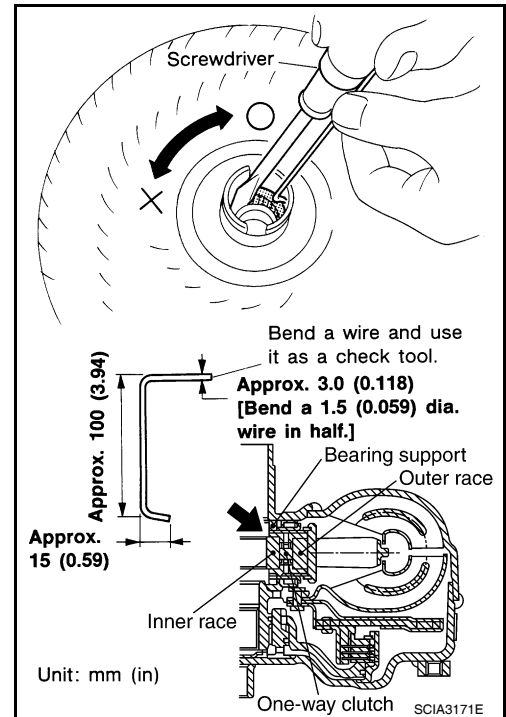
#### CAUTION:

Do not disassemble parts behind drum support. Refer to [AT-19, "Cross-Sectional View \(2WD models\)"](#) or [AT-20, "Cross-Sectional View \(4WD models\)"](#).

1. Drain ATF through drain plug.
2. Remove torque converter by holding it firmly and turning while pulling straight out.



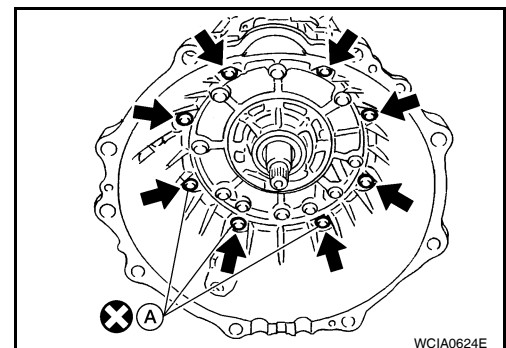
3. Check torque converter one-way clutch using check tool as shown.
  - a. Insert check tool into the groove of bearing support built into one-way clutch outer race.
  - b. While holding bearing support with check tool, rotate one-way clutch spline using suitable tool.
  - c. Check that inner race rotates clockwise only. If not, replace torque converter assembly.



4. Remove converter housing from transmission case.
  - A: Self-sealing bolts

#### CAUTION:

Be careful not to scratch converter housing.

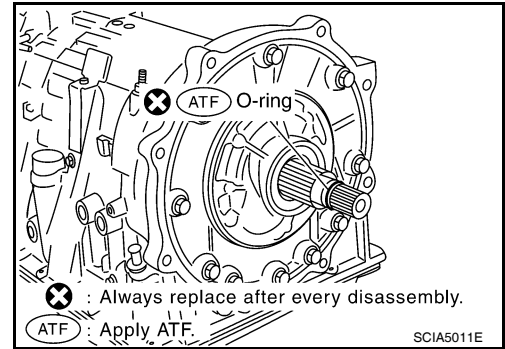




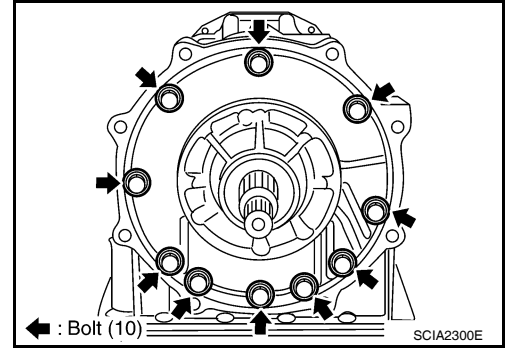
# DISASSEMBLY

## < SERVICE INFORMATION >

5. Remove O-ring from input clutch assembly.



6. Remove bolts for oil pump assembly and transmission case.

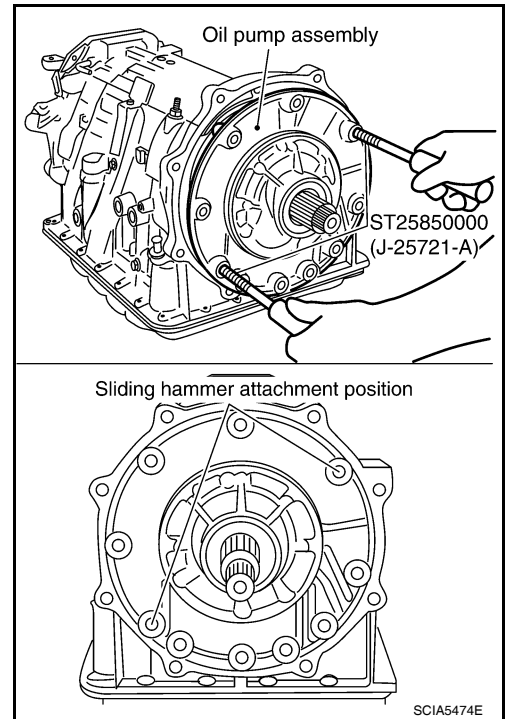


7. Extract oil pump assembly evenly from transmission case using Tool.

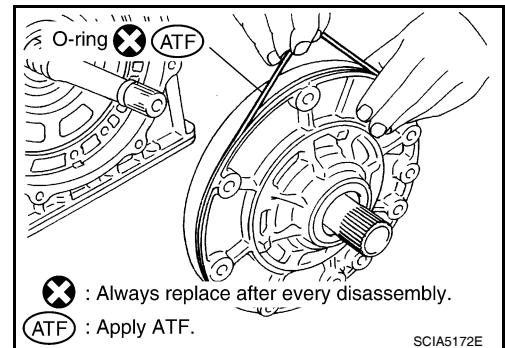
**Tool number** : ST25850000 (J-25721-A)

**CAUTION:**

- Fully tighten sliding hammer screw.
- Make sure that bearing race is installed to the oil pump assembly edge surface.



8. Remove O-ring from oil pump assembly.

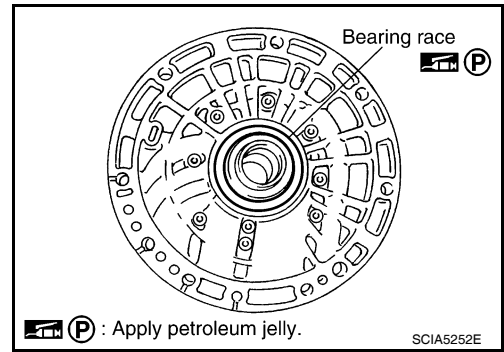


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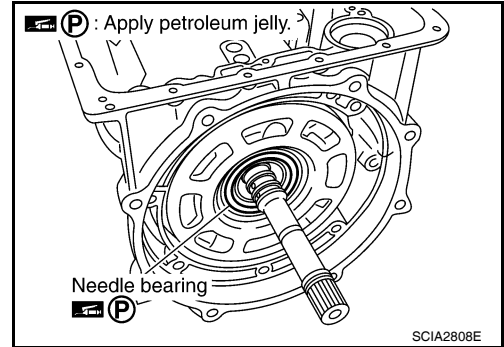
# DISASSEMBLY

## < SERVICE INFORMATION >

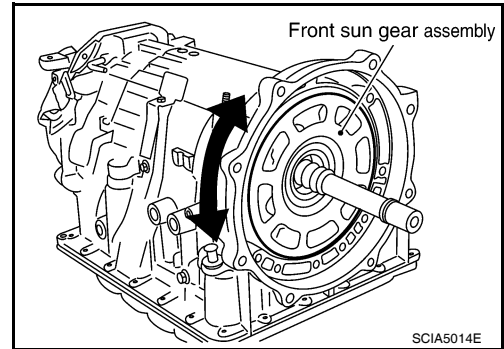
9. Remove bearing race from oil pump assembly.



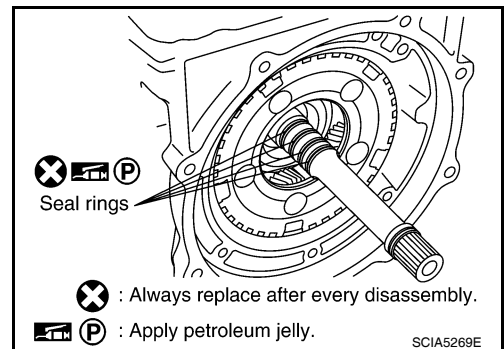
10. Remove needle bearing from front sun gear assembly.



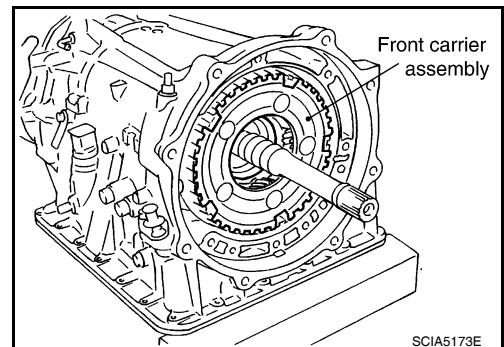
11. Remove front sun gear assembly from front carrier assembly.  
**NOTE:**  
Remove front sun gear assembly by rotating left/right.



12. Remove seal rings from input clutch assembly.



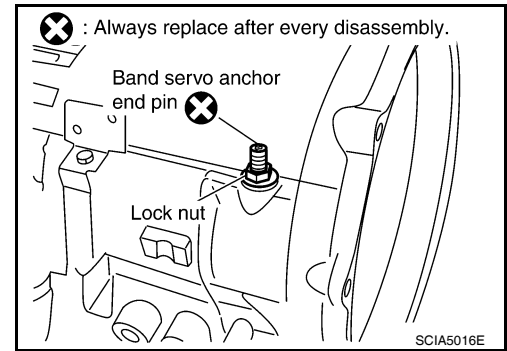
13. Remove front carrier assembly, input clutch assembly and rear internal gear as a unit.  
**CAUTION:**  
Be careful to remove it with needle bearing.



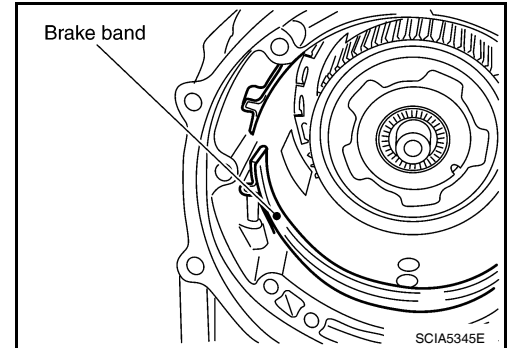
# DISASSEMBLY

## < SERVICE INFORMATION >

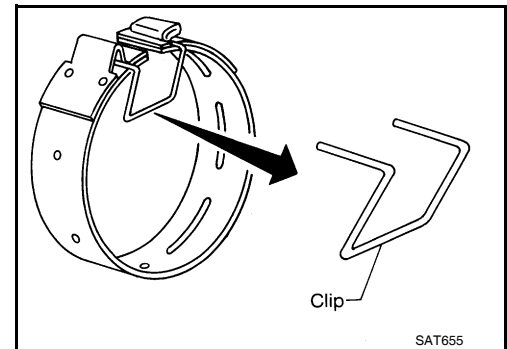
14. Loosen lock nut and remove band servo anchor end pin from transmission case.



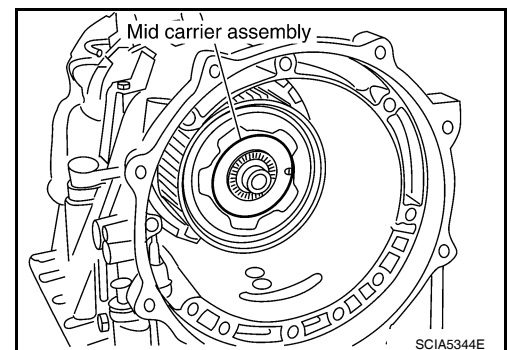
15. Remove brake band from transmission case.



- 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. Leave the clip in position after removing the brake band.
- Check brake band facing for damage, cracks, wear or burns.



16. Remove mid carrier assembly and rear carrier assembly as a unit.

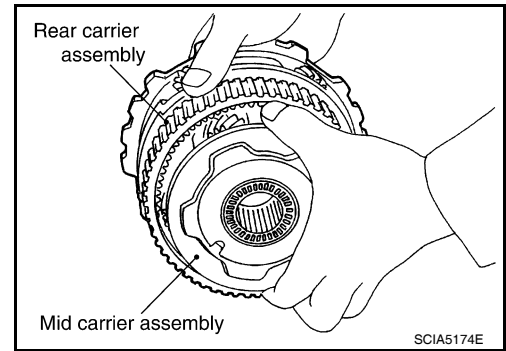


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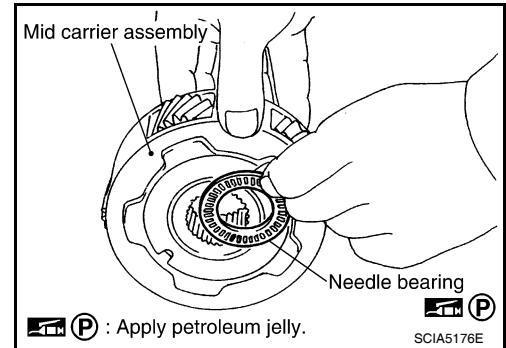
# DISASSEMBLY

## < SERVICE INFORMATION >

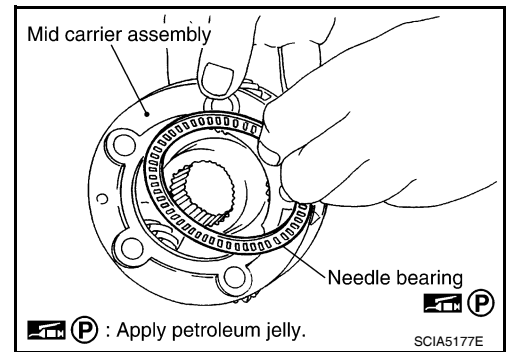
17. Remove mid carrier assembly from rear carrier assembly.



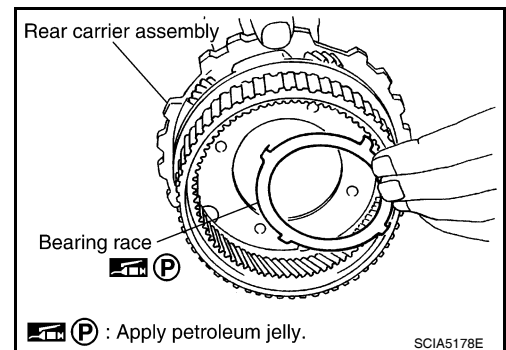
18. Remove needle bearing (front side) from mid carrier assembly.



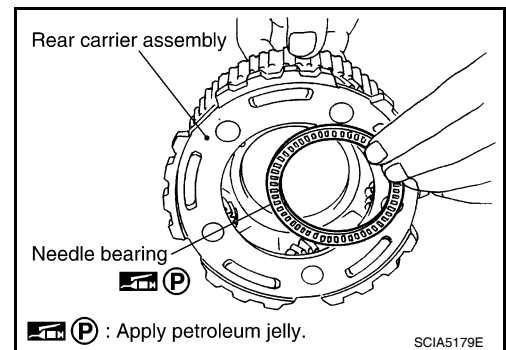
19. Remove needle bearing (rear side) from mid carrier assembly.



20. Remove bearing race from rear carrier assembly.



21. Remove needle bearing from rear carrier assembly.



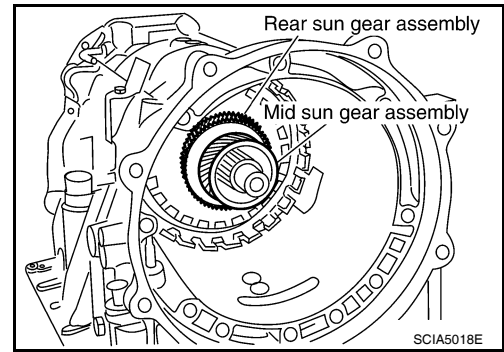
# DISASSEMBLY

## < SERVICE INFORMATION >

22. Remove mid sun gear assembly, rear sun gear assembly and high and low reverse clutch hub as a unit.

**CAUTION:**

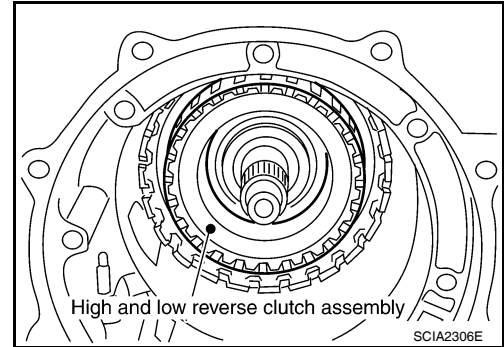
Be careful to remove them with bearing races and needle bearing.



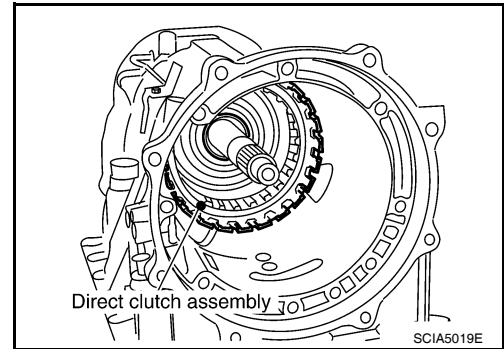
23. Remove high and low reverse clutch assembly from direct clutch assembly.

**CAUTION:**

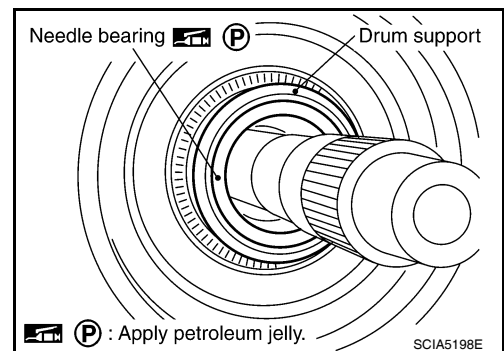
Make sure that needle bearing is installed to the high and low reverse clutch assembly edge surface.



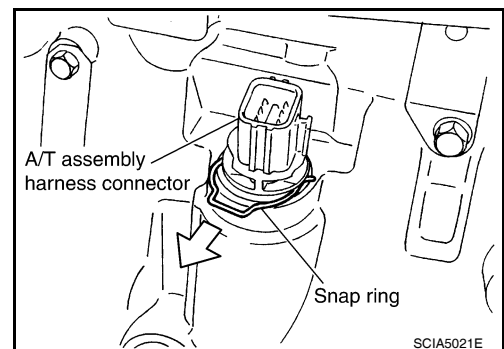
24. Remove direct clutch assembly from reverse brake.



25. Remove needle bearing from drum support edge surface.



26. Remove snap ring from A/T assembly harness connector.



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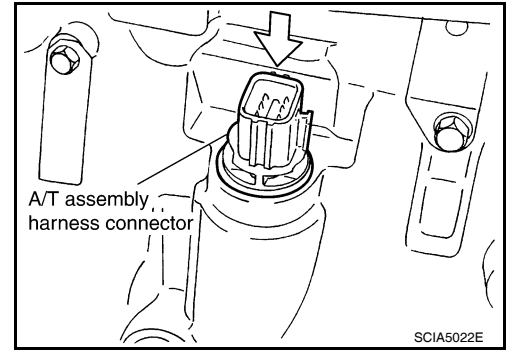
# DISASSEMBLY

## < SERVICE INFORMATION >

27. Push A/T assembly harness connector.

**CAUTION:**

**Be careful not to damage connector.**



28. Remove oil pan and oil pan gasket. Refer to [AT-209. "Oil Pan"](#).

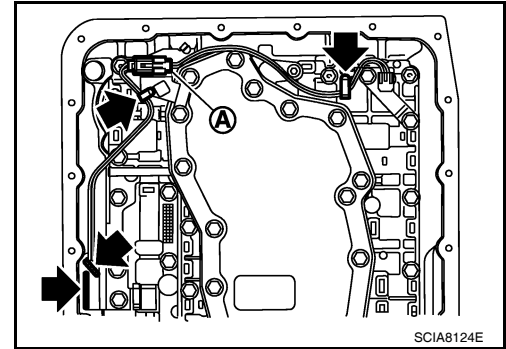
29. Disconnect A/T fluid temperature sensor 2 connector (A).

**CAUTION:**

**Be careful not to damage connector.**

30. Straighten the four terminal clips to free terminal cord assembly and A/T fluid temperature sensor 2 harness.

- ◀ : Terminal clip

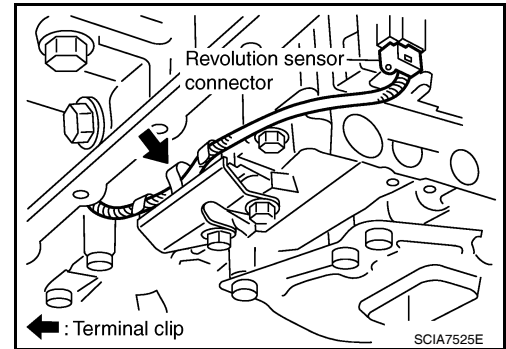


31. Straighten terminal clip to free revolution sensor harness.

32. Disconnect revolution sensor connector.

**CAUTION:**

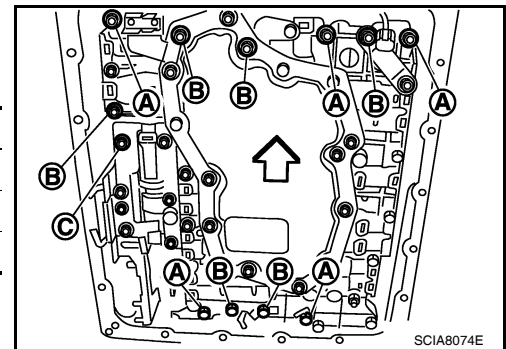
**Be careful not to damage connector.**



33. Remove bolts (A), (B) and (C) from control valve with TCM.

- ◀ : Front

Bolt symbol	Length mm (in)	Number of bolts
A	42 (1.65)	5
B	55 (2.17)	6
C	40 (1.57)	1



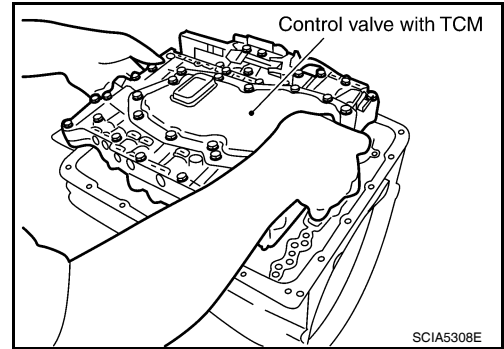
# DISASSEMBLY

## < SERVICE INFORMATION >

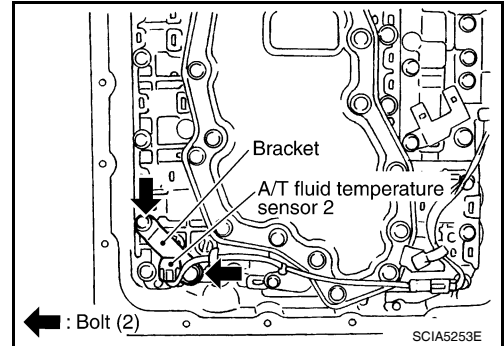
34. Remove control valve with TCM from transmission case.

**CAUTION:**

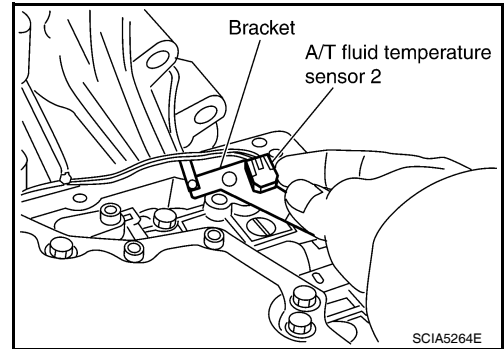
When removing, be careful with transmission assembly terminal connector and the manual valve notch and manual plate height. Remove it vertically.



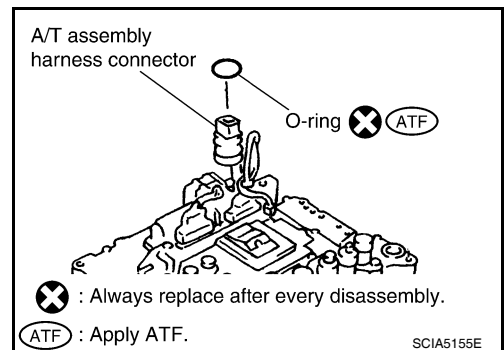
35. Remove A/T fluid temperature sensor 2 with bracket from control valve with TCM.



36. Remove bracket from A/T fluid temperature sensor 2.



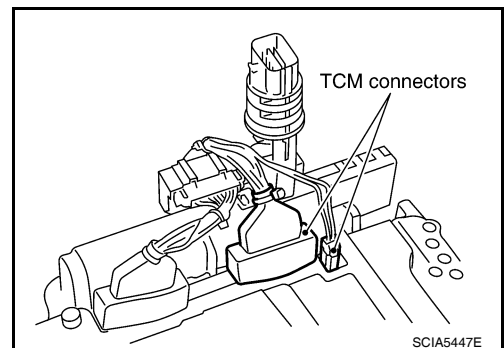
37. Remove O-ring from A/T assembly harness connector.



38. Disconnect TCM connectors.

**CAUTION:**

Be careful not to damage connectors.

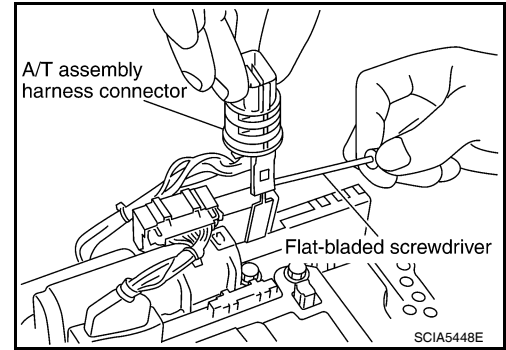


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# DISASSEMBLY

## < SERVICE INFORMATION >

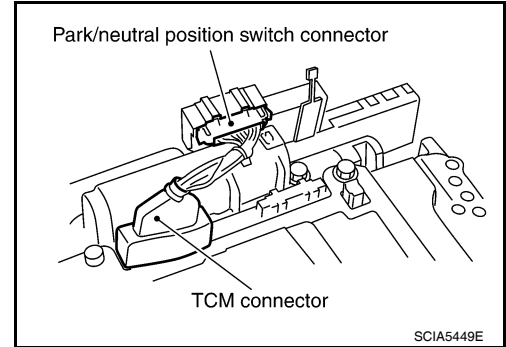
39. Remove A/T assembly harness connector from control valve with TCM using suitable tool.



40. Disconnect TCM connector and park/neutral position switch connector.

**CAUTION:**

**Be careful not to damage connectors.**

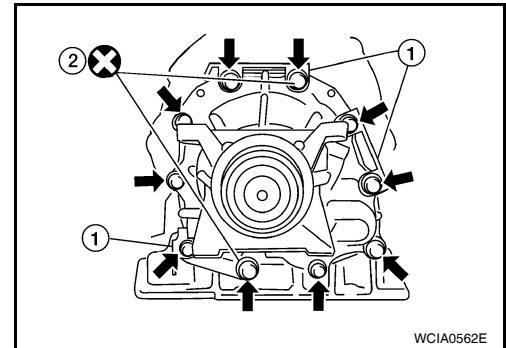


41. Remove rear extension assembly (2WD models) or adapter case assembly (4WD models) according to the following procedures.

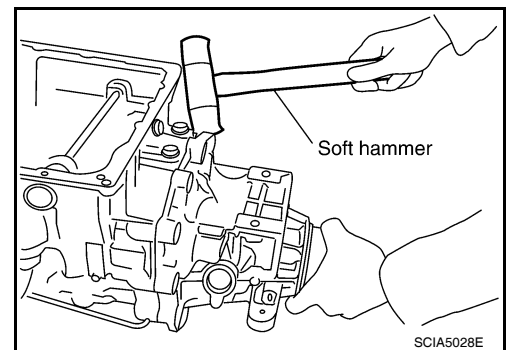
a. **2WD models**

- Self-sealing bolts (2)

- Remove bolts for rear extension assembly and transmission case.
- Remove brackets (1).



- Tap rear extension assembly using suitable tool.

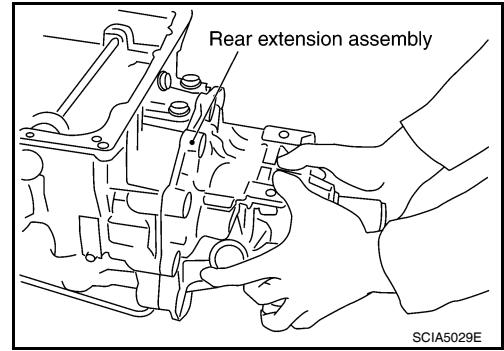




# DISASSEMBLY

## < SERVICE INFORMATION >

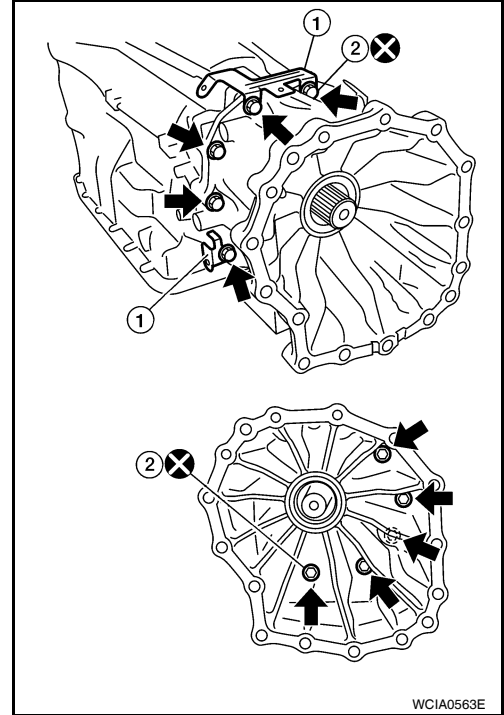
- iv. Remove rear extension assembly with needle bearing from transmission case.



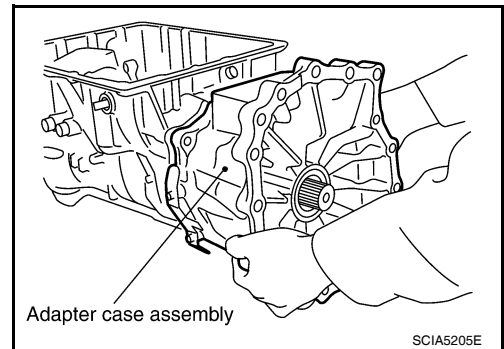
- b. **4WD models**

- Self-sealing bolts (2)

- i. Remove bolts for adapter case assembly and transmission case.
- ii. Remove brackets (1).



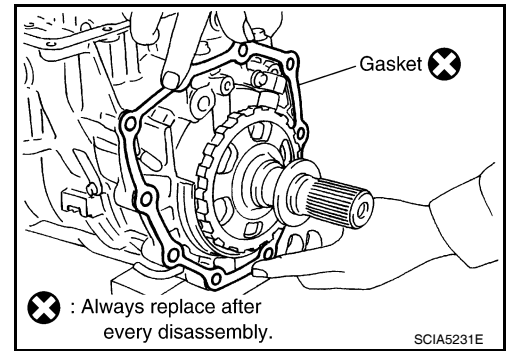
- iii. Tap adapter case assembly using suitable tool.
- iv. Remove adapter case assembly with needle bearing from transmission case.



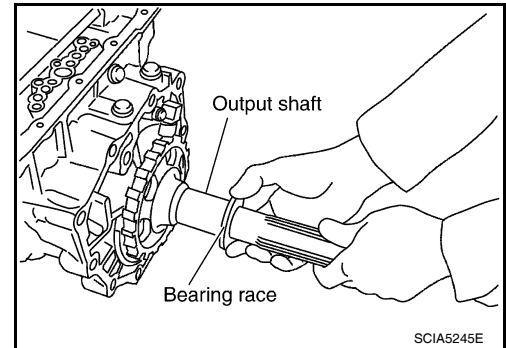
# DISASSEMBLY

## < SERVICE INFORMATION >

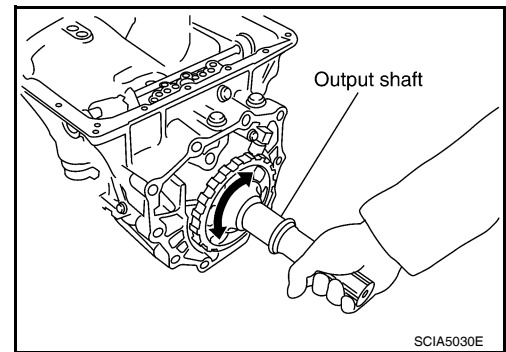
v. Remove gasket from transmission case.



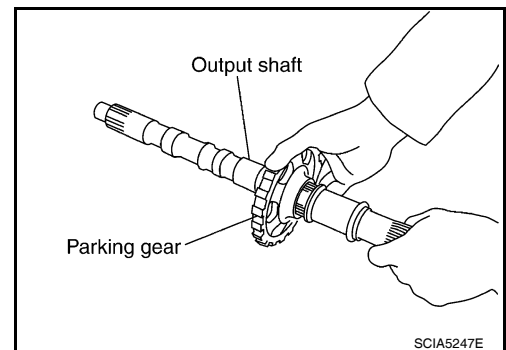
42. Remove bearing race from output shaft.



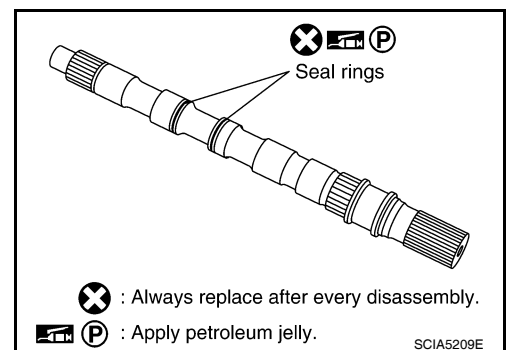
43. Remove output shaft from transmission case by rotating left/right.



44. Remove parking gear from output shaft.



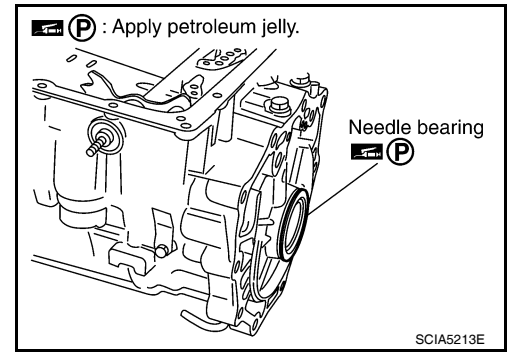
45. Remove seal rings from output shaft.



# DISASSEMBLY

## < SERVICE INFORMATION >

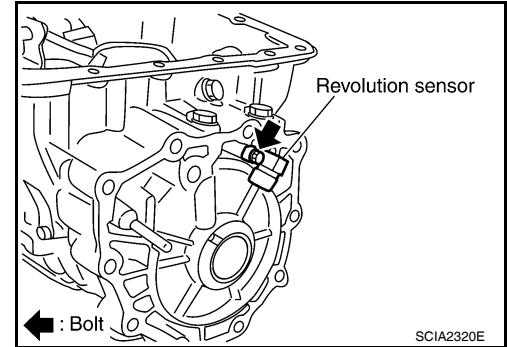
46. Remove needle bearing from transmission case.



47. Remove revolution sensor from transmission case.

**CAUTION:**

- Do not subject it to impact by dropping or hitting it.
- Be careful not to damage harness with the edge of case.
- Do not allow metal filings or foreign material to get on the sensor front edge magnetic area.
- Do not place in an area affected by magnetism.

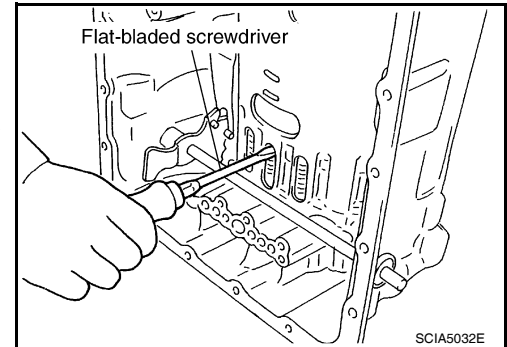


48. Remove reverse brake snap ring using 2 flat-bladed screwdrivers.

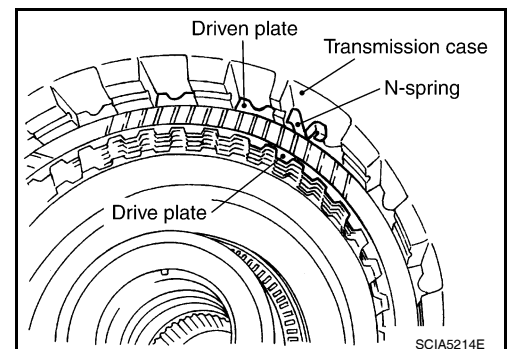
**NOTE:**

Press out snap ring from the transmission case oil pan side gap using a flat-bladed screwdriver, and remove it using another screwdriver.

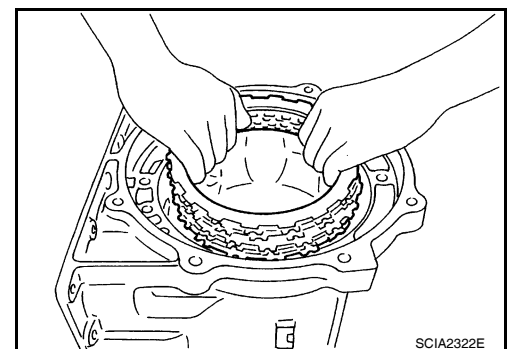
49. Remove reverse brake retaining plate from transmission case.



50. Remove N-spring from transmission case.



51. Remove reverse brake drive plates, driven plates and dish plate from transmission case.



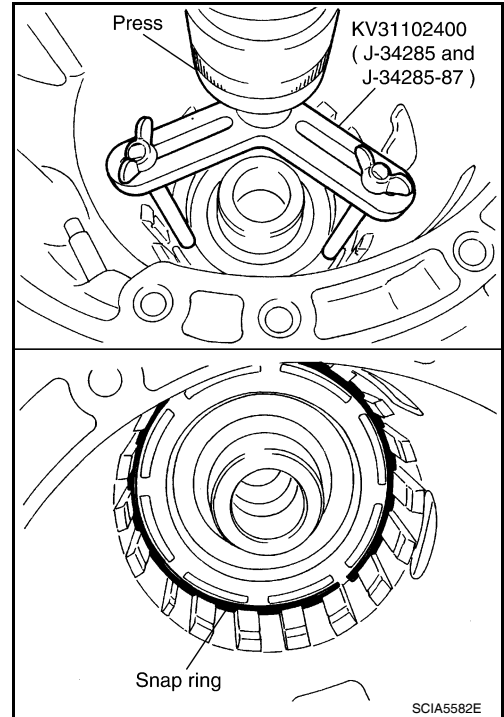
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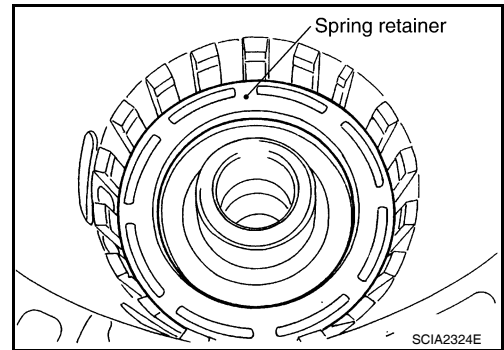
## < SERVICE INFORMATION >

52. Remove snap ring from transmission case while compressing return spring, using Tool.

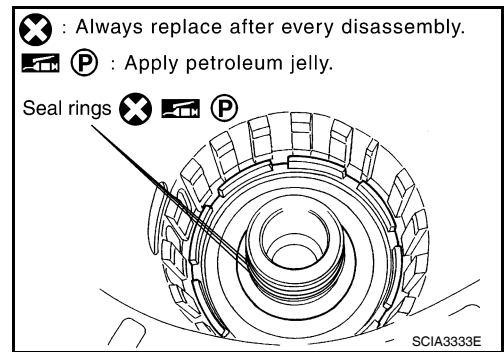
**Tool number : KV31102400 (J-34285 and J- 34285-87)**



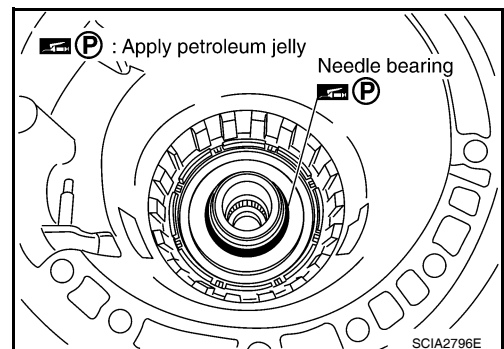
53. Remove spring retainer and return spring from transmission case.



54. Remove seal rings from drum support.



55. Remove needle bearing from drum support edge surface.



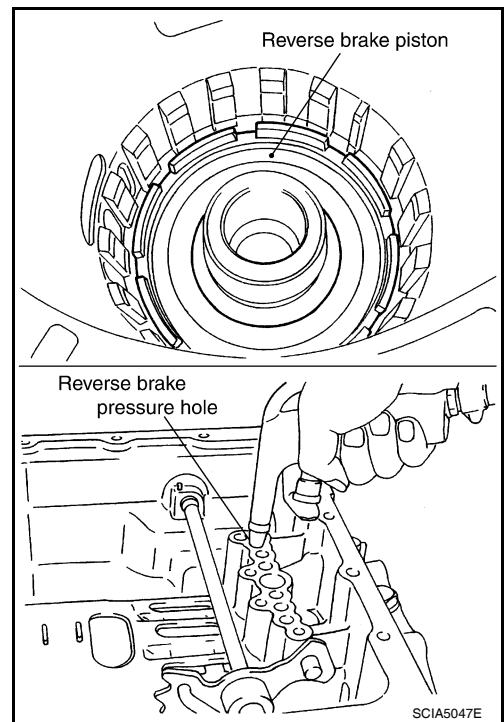
# DISASSEMBLY

## < SERVICE INFORMATION >

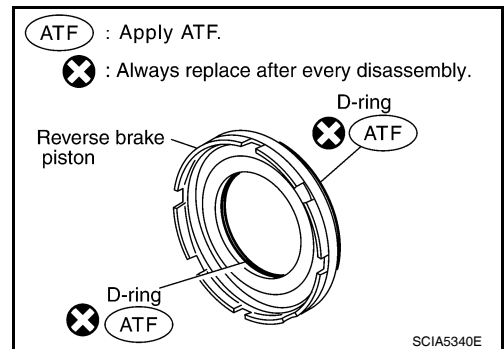
56. Remove reverse brake piston from transmission case with compressed air. Refer to [AT-235, "Oil Channel"](#).

**CAUTION:**

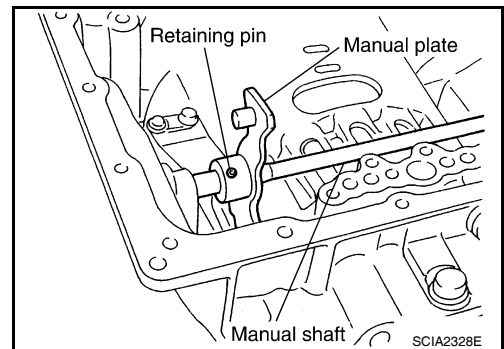
Care should be taken not to abruptly blow air. It makes pistons incline, as the result, it becomes hard to disassemble the pistons.



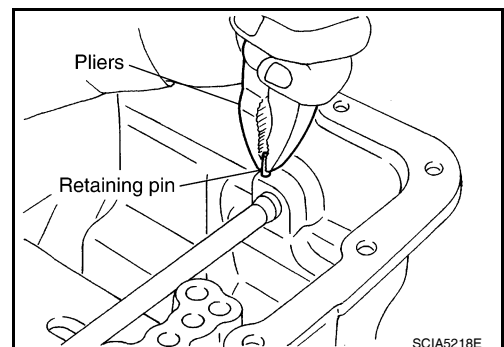
57. Remove D-rings from reverse brake piston.



58. Knock out retaining pin using suitable tool.



59. Remove manual shaft retaining pin using suitable tool.

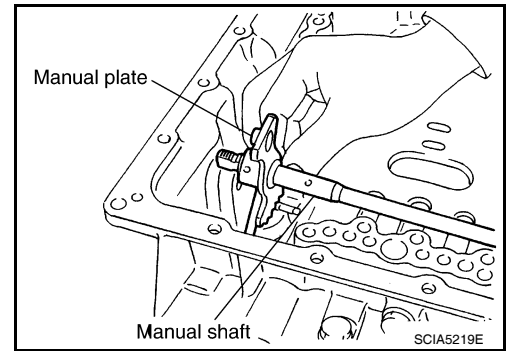


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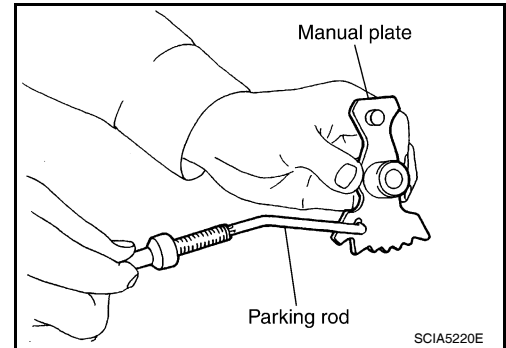
# DISASSEMBLY

## < SERVICE INFORMATION >

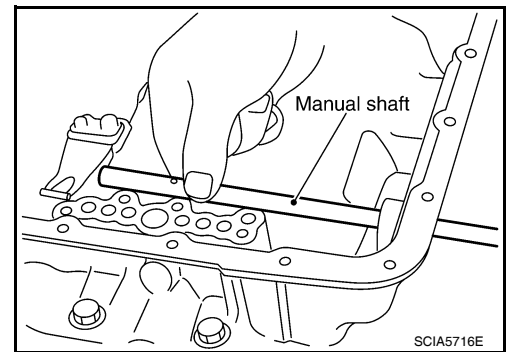
60. Remove manual plate (with parking rod) from manual shaft.



61. Remove parking rod from manual plate.



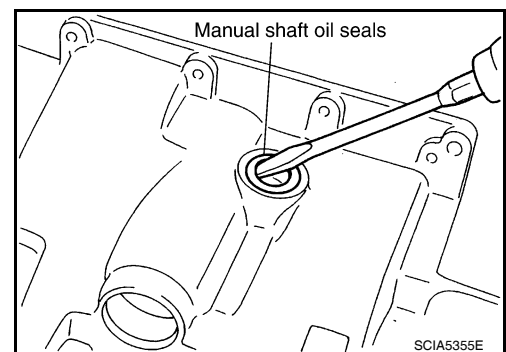
62. Remove manual shaft from transmission case.



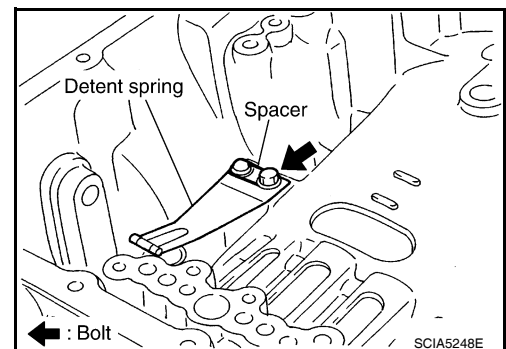
63. Remove manual shaft oil seals using suitable tool.

**CAUTION:**

**Be careful not to scratch transmission case.**



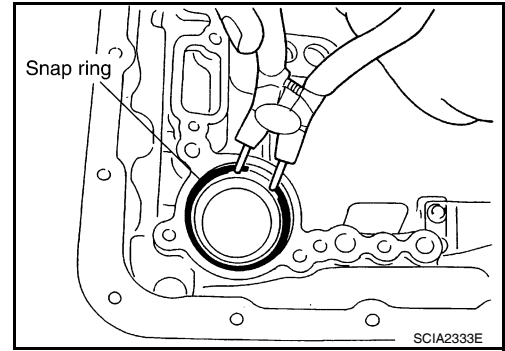
64. Remove detent spring and spacer from transmission case.



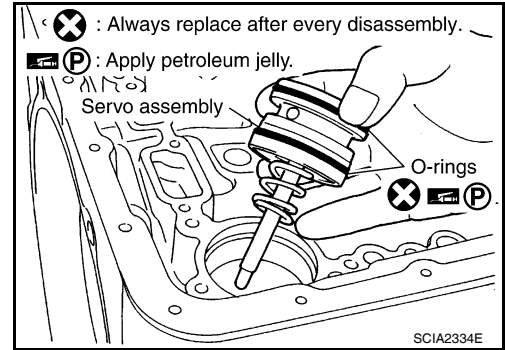
# DISASSEMBLY

## < SERVICE INFORMATION >

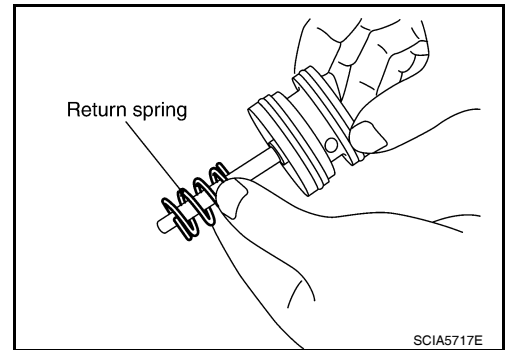
65. Remove snap ring from transmission case using suitable tool.



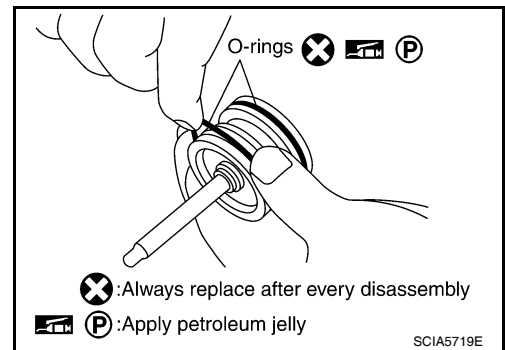
66. Remove servo assembly (with return spring) from transmission case.



67. Remove return spring from servo assembly.



68. Remove O-rings from servo assembly.

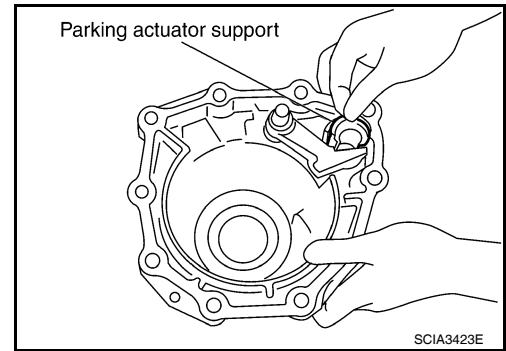


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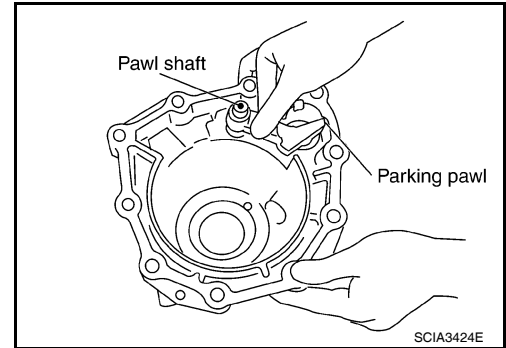
## DISASSEMBLY

### < SERVICE INFORMATION >

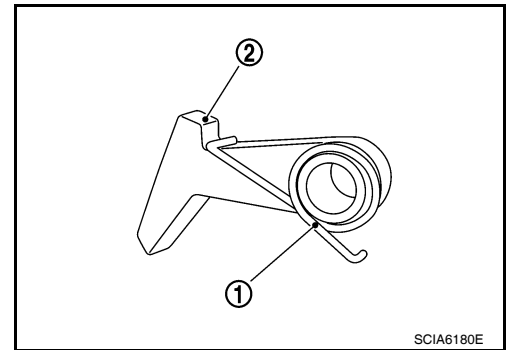
69. Remove parking actuator support from rear extension (2WD models) or adapter case (4WD models).



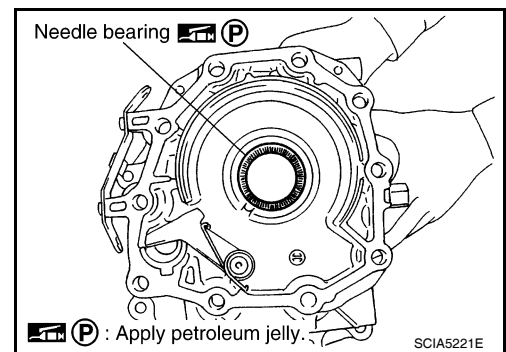
70. Remove parking pawl (with return spring) and pawl shaft from rear extension (2WD models) or adapter case (4WD models).



71. Remove return spring (1) from parking pawl (2).



72. Remove needle bearing from rear extension (2WD models) or adapter case (4WD models).





# DISASSEMBLY

## < SERVICE INFORMATION >

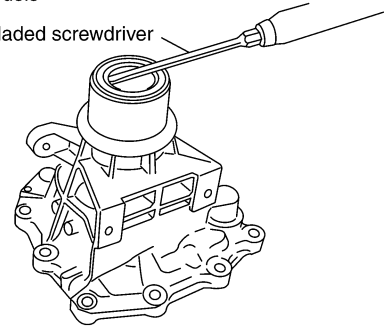
73. Remove rear oil seal from rear extension (2WD models) or adapter case (4WD models) using suitable tool.

**CAUTION:**

**Be careful not to scratch rear extension (2WD models) or adapter case (4WD models).**

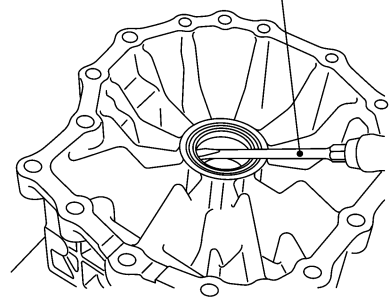
2WD models

Flat-bladed screwdriver



4WD models

Flat-bladed screwdriver



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# REPAIR FOR COMPONENT PARTS

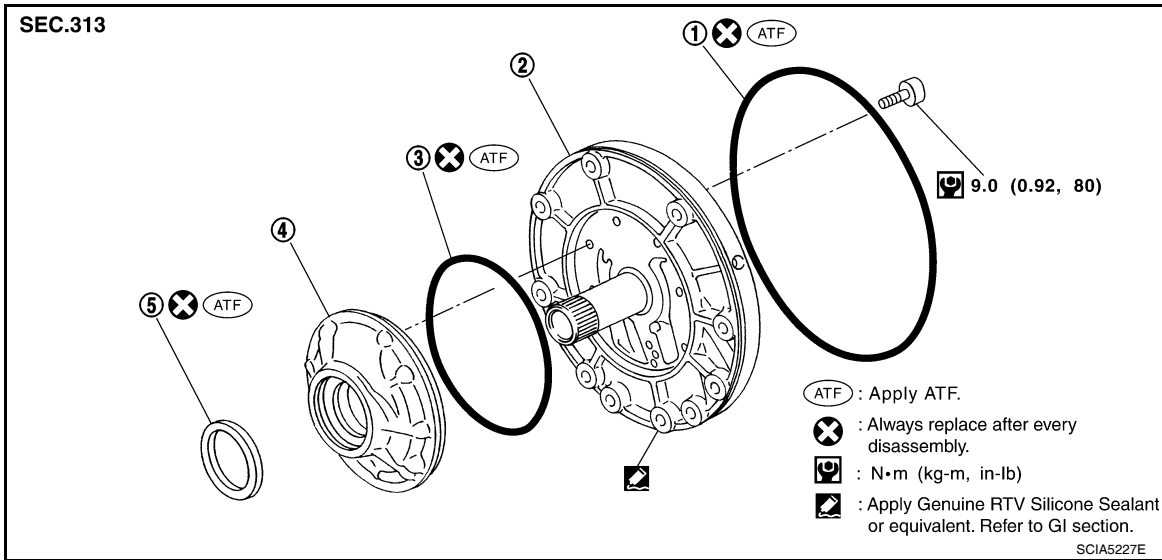
< SERVICE INFORMATION >

## REPAIR FOR COMPONENT PARTS

### Oil Pump

INFOID:000000003532487

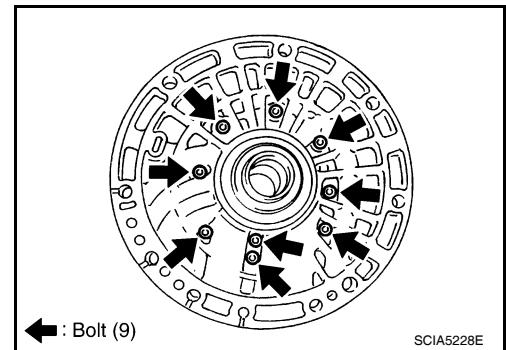
### COMPONENTS



- 1. O-ring
- 2. Oil pump cover
- 3. O-ring
- 4. Oil pump housing
- 5. Oil pump housing oil seal

### DISASSEMBLY

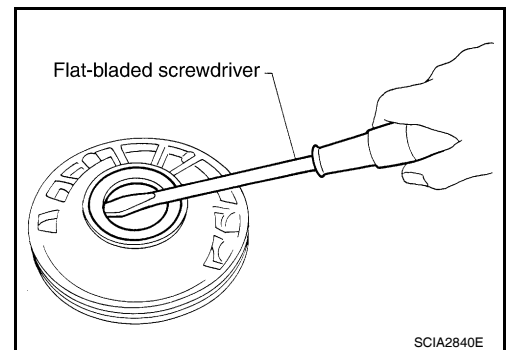
1. Remove oil pump housing from oil pump cover.



2. Remove oil pump housing oil seal using suitable tool.

**CAUTION:**

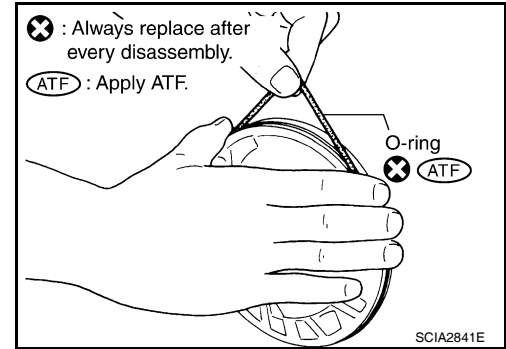
**Be careful not to scratch oil pump housing.**



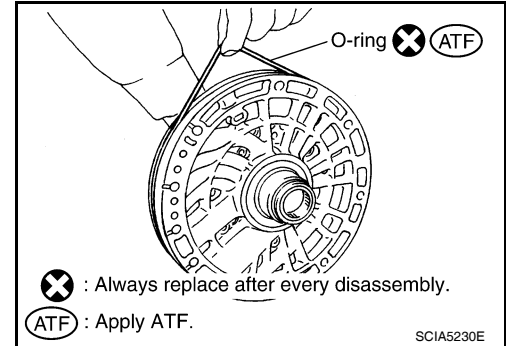
# REPAIR FOR COMPONENT PARTS

## < SERVICE INFORMATION >

3. Remove O-ring from oil pump housing.



4. Remove O-ring from oil pump cover.

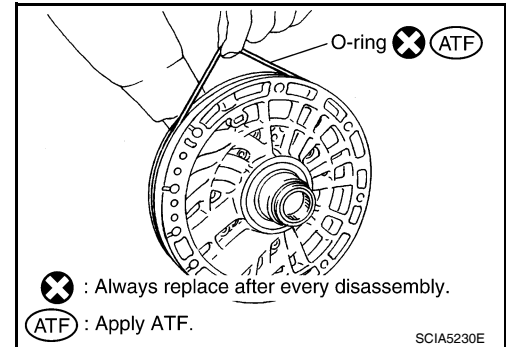


## ASSEMBLY

1. Install new O-ring to oil pump cover.

### CAUTION:

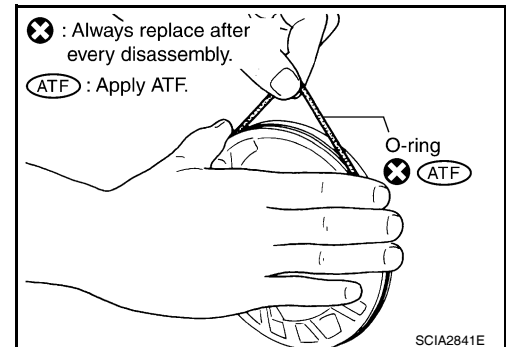
- Do not reuse O-ring.
- Apply ATF to O-ring.



2. Install new O-ring to oil pump housing.

### CAUTION:

- Do not reuse O-ring.
- Apply ATF to O-ring.



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# REPAIR FOR COMPONENT PARTS

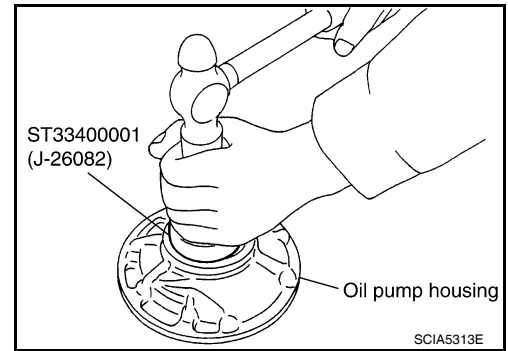
## < SERVICE INFORMATION >

3. Install new oil pump housing oil seal to the oil pump housing until it is flush with the face of oil pump housing using Tool.

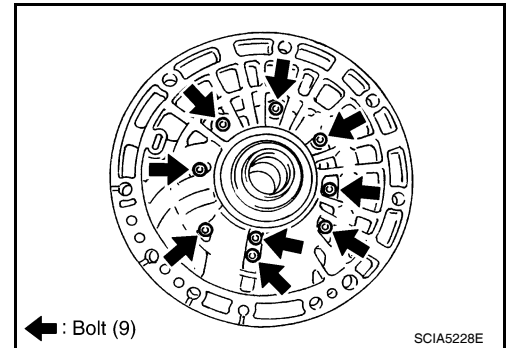
**CAUTION:**

- Do not reuse oil seal.
- Apply ATF to oil seal.

**Tool number : ST33400001 (J-26082)**



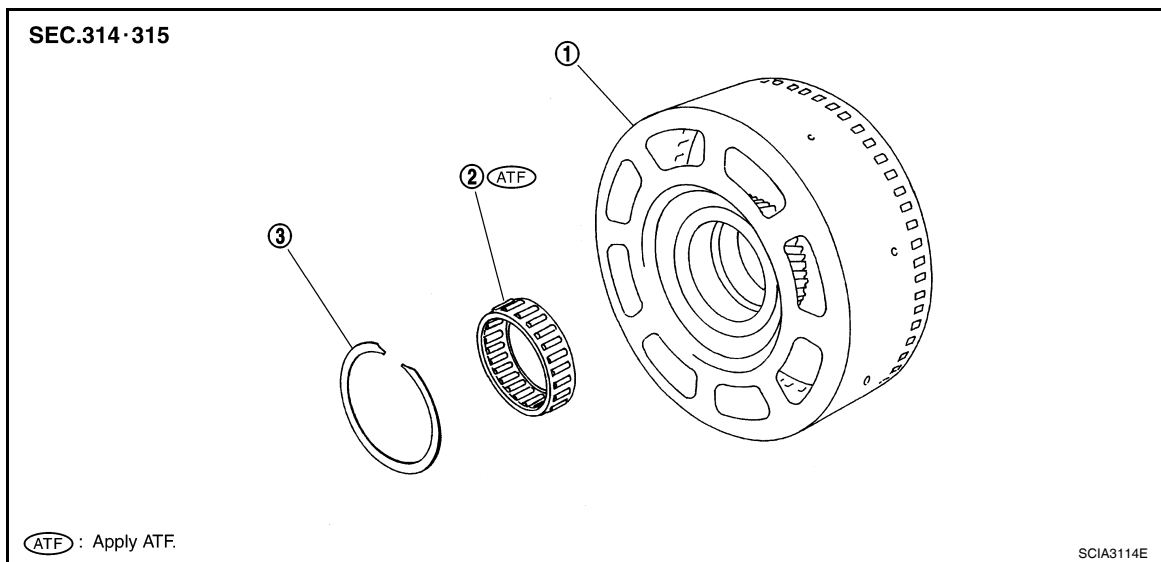
4. Install oil pump housing in oil pump cover. Tighten oil pump housing bolts to the specified torque. Refer to [AT-228, "Component"](#).



## Front Sun Gear, 3rd One-Way Clutch

INFOID:000000003532488

### COMPONENTS



1. Front sun gear

2. 3rd one-way clutch

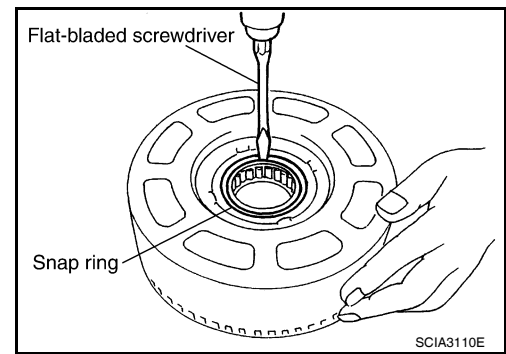
3. Snap ring

### DISASSEMBLY

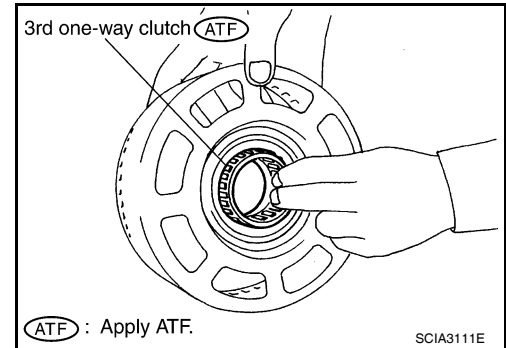
# REPAIR FOR COMPONENT PARTS

## < SERVICE INFORMATION >

1. Remove snap ring from front sun gear using suitable tool.



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:**

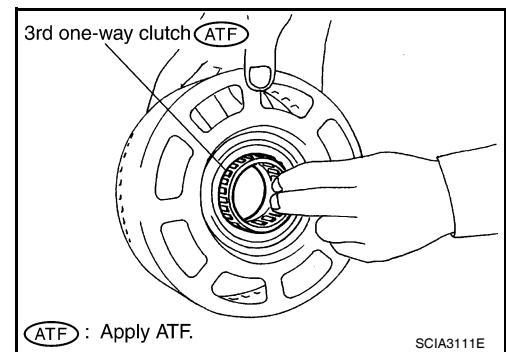
**If necessary, replace the front sun gear.**

## ASSEMBLY

1. Install 3rd one-way clutch in front sun gear.

#### **CAUTION:**

**Apply ATF to 3rd one-way clutch.**

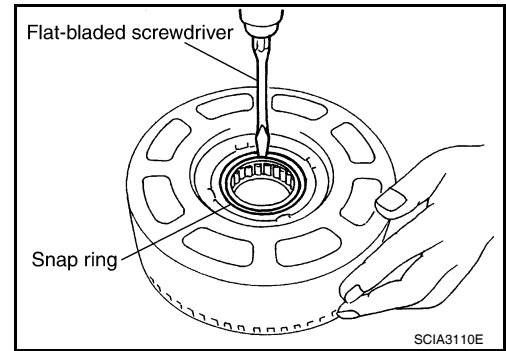


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## REPAIR FOR COMPONENT PARTS

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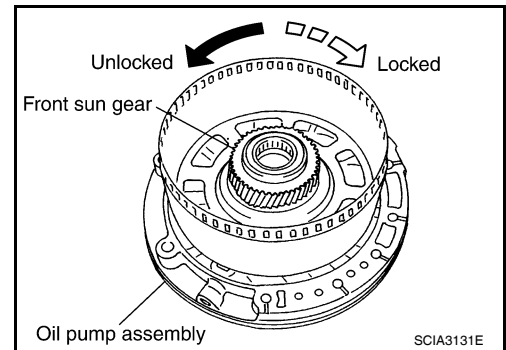
2. Install snap ring in front sun gear using suitable tool.



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, check installation direction of 3rd one-way clutch.**



Front Carrier, Input Clutch, Rear Internal Gear

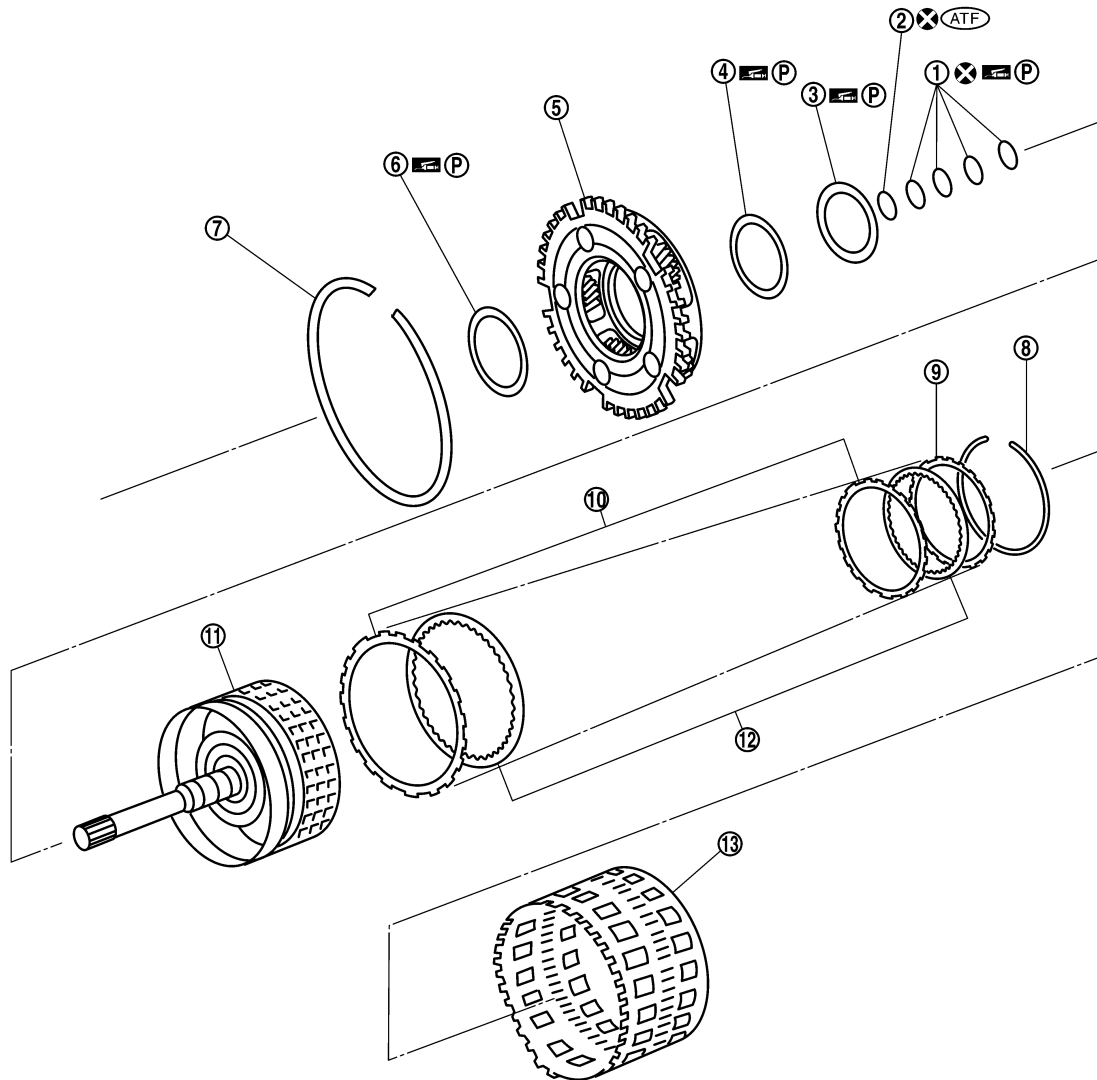
COMPONENTS

INFOID:000000003532489

# REPAIR FOR COMPONENT PARTS

< SERVICE INFORMATION >

SEC.314·315



(ATF) : Apply ATF

(P) : Apply petroleum jelly.

(X) : Always replace after every disassembly.

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|------------------------|---------------------------|--------------------|
| 1. Seal ring           | 2. O-ring                 | 3. Needle bearing  |
| 4. Bearing race        | 5. Front carrier assembly | 6. Needle bearing  |
| 7. Snap ring           | 8. Snap ring              | 9. Retaining plate |
| 10. Driven plate       | 11. Input clutch drum     | 12. Drive plate    |
| 13. Rear internal gear |                           |                    |

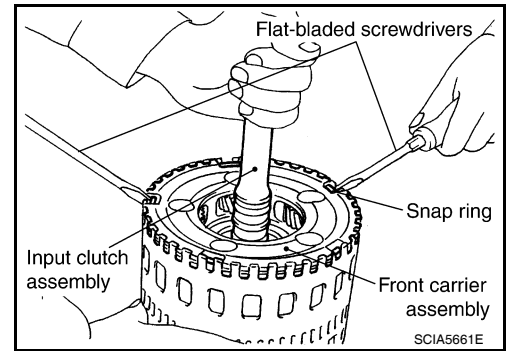
## DISASSEMBLY

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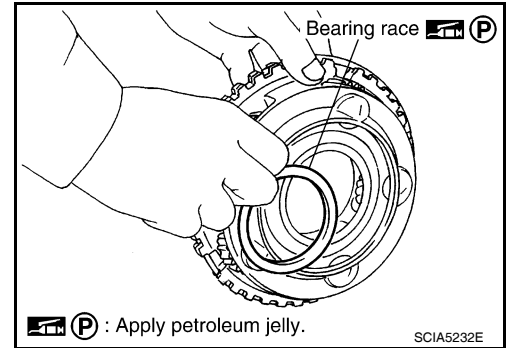
## REPAIR FOR COMPONENT PARTS

### < SERVICE INFORMATION >

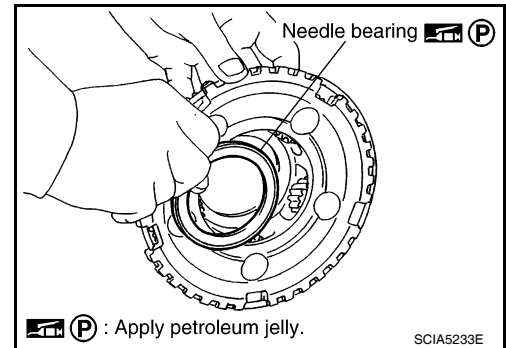
1. Compress snap ring using suitable tool.
2. Remove front carrier assembly and input clutch assembly from rear internal gear.
3. Remove front carrier assembly from input clutch assembly.



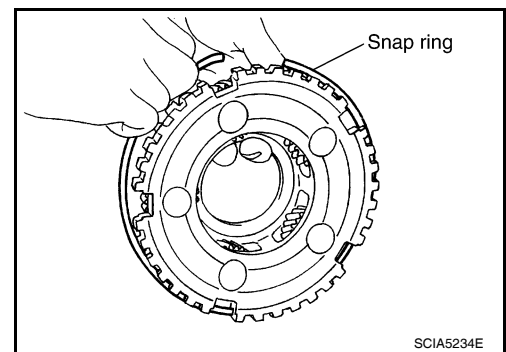
- a. Remove bearing race from front carrier assembly.



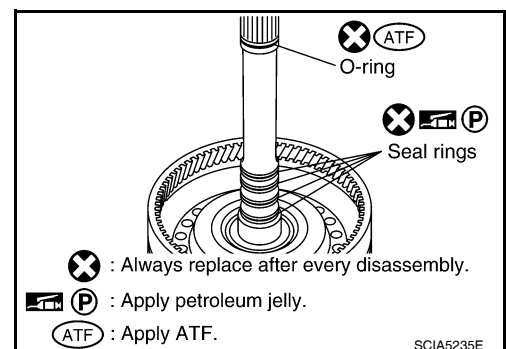
- b. Remove needle bearing from front carrier assembly.



- c. Remove snap ring from front carrier assembly.  
**CAUTION:**  
Do not expand snap ring excessively.



4. Disassemble input clutch assembly.
  - a. Remove O-ring and seal rings from input clutch assembly.

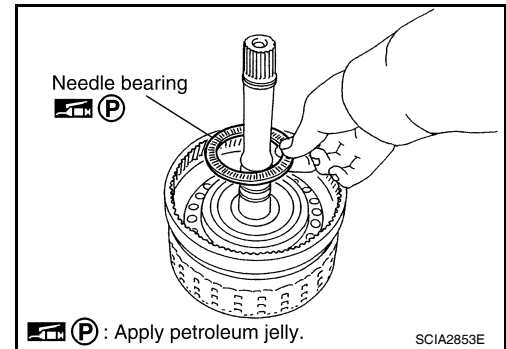




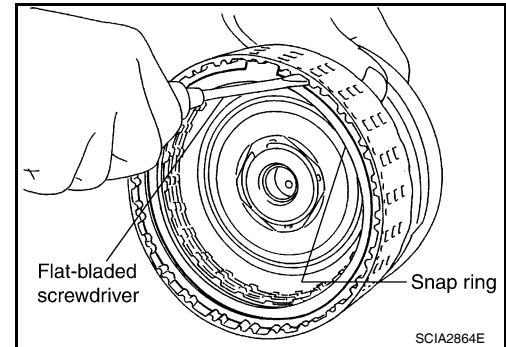
# REPAIR FOR COMPONENT PARTS

## < SERVICE INFORMATION >

b. Remove needle bearing from input clutch assembly.



c. Remove snap ring from input clutch drum using suitable tool.  
d. Remove drive plates, driven plates 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 Plate and Driven Plates

- Check facing for burns, cracks or damage.

**CAUTION:**

**If necessary, replace the input clutch assembly.**

### Front Carrier Assembly

- 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

1. Install input clutch.

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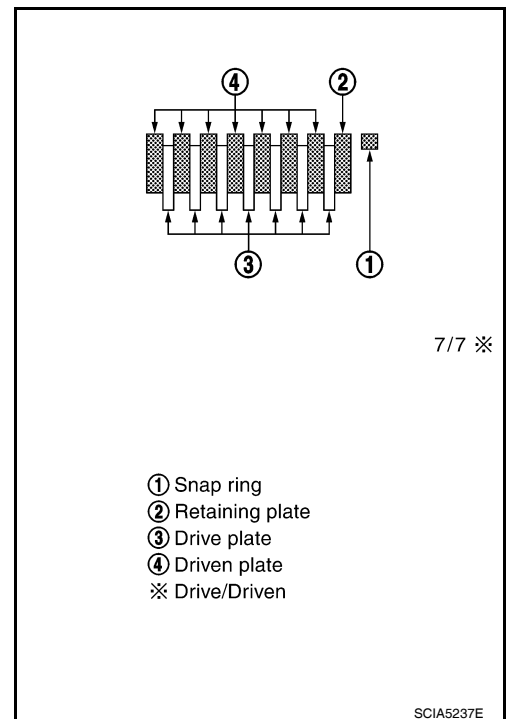
## REPAIR FOR COMPONENT PARTS

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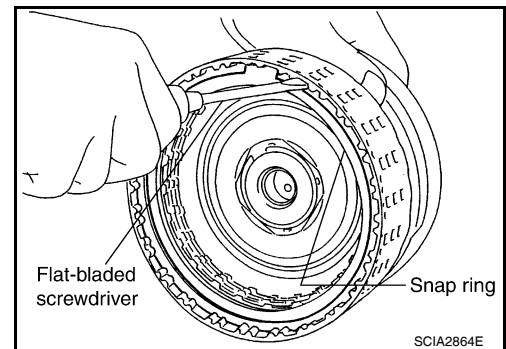
- a. Install drive plates, driven plates and retaining plate in input clutch drum.

**CAUTION:**

Take care with order of plates.



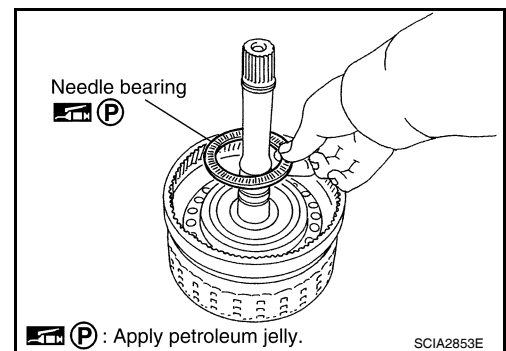
- b. Install snap ring in input clutch drum using suitable tool.



- c. Install needle bearing in input clutch assembly.

**CAUTION:**

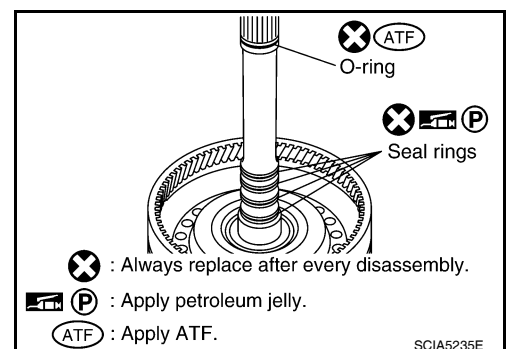
Apply petroleum jelly to needle bearing.



- d. Install new O-ring and new seal rings in input clutch assembly.

**CAUTION:**

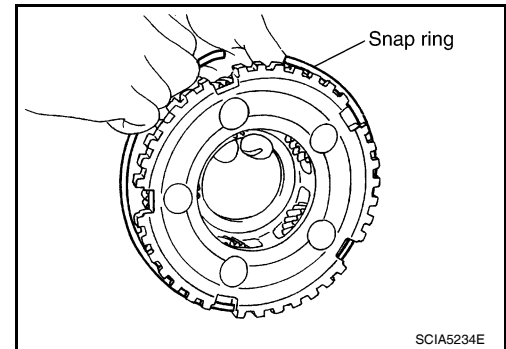
- Do not reuse O-ring and seal rings.
- Apply ATF to O-ring.
- Apply petroleum jelly to seal rings.



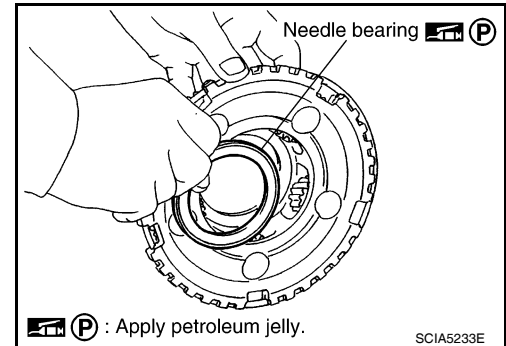
## REPAIR FOR COMPONENT PARTS

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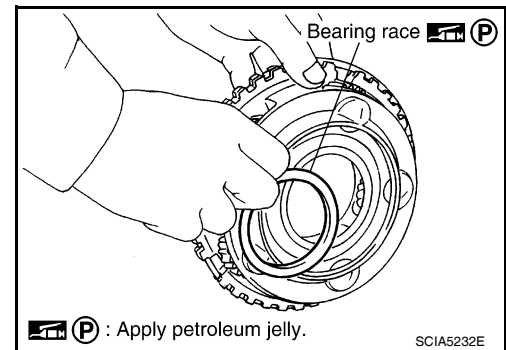
2. Install front carrier assembly.
  - a. Install snap ring to front carrier assembly.  
**CAUTION:**  
Do not expand snap ring excessively.



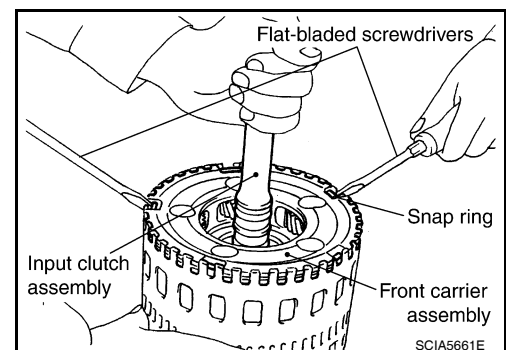
- b. Install needle bearing in front carrier assembly.  
**CAUTION:**
      - Take care with the direction of needle bearing. Refer to [AT-237, "Location of Adjusting Shims, Needle Bearings, Thrust Washers and Snap Rings"](#).
      - Apply petroleum jelly to needle bearing.



- c. Install bearing race in front carrier assembly.  
**CAUTION:**  
Apply petroleum jelly to bearing race.
      - d. Install front carrier assembly to input clutch assembly.



3. Compress snap ring using suitable tool.
4. Install front carrier assembly and input clutch assembly to rear internal gear.



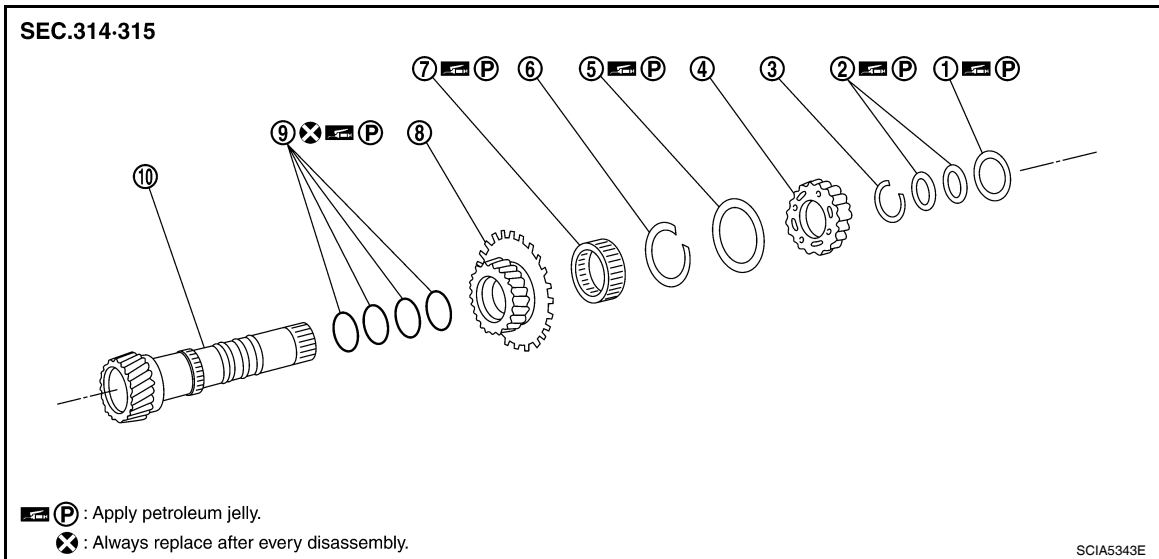
Mid Sun Gear, Rear Sun Gear, High and Low Reverse Clutch Hub

INFOID:000000003532490

COMPONENTS

# REPAIR FOR COMPONENT PARTS

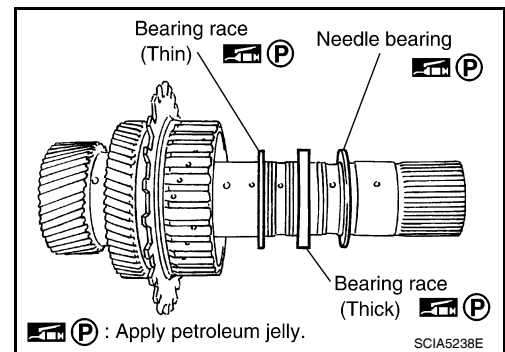
< SERVICE INFORMATION >



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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

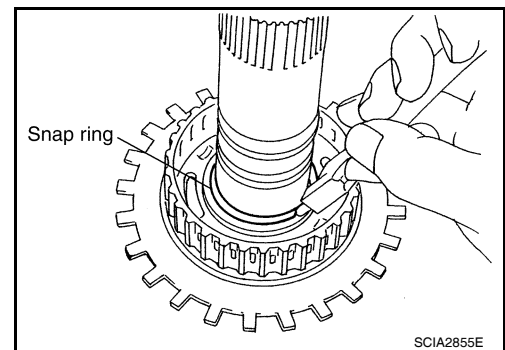
- Remove needle bearing and bearing races from high and low reverse clutch hub.



- Remove snap ring from mid sun gear assembly using suitable tool.

**CAUTION:**

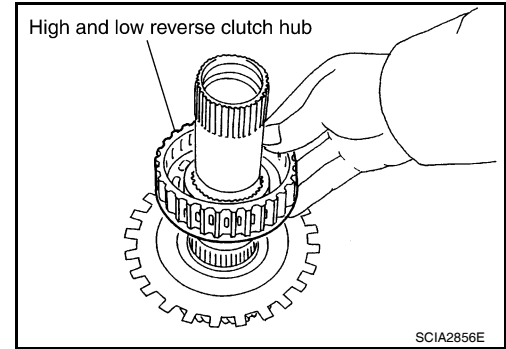
**Do not expand snap ring excessively.**



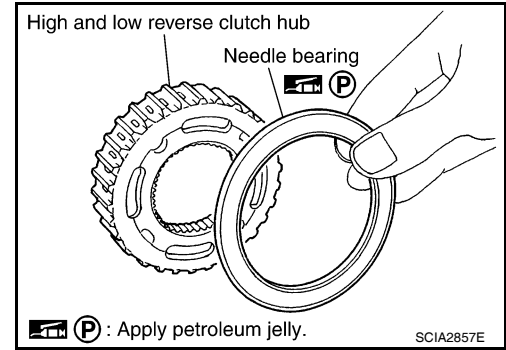
# REPAIR FOR COMPONENT PARTS

## < SERVICE INFORMATION >

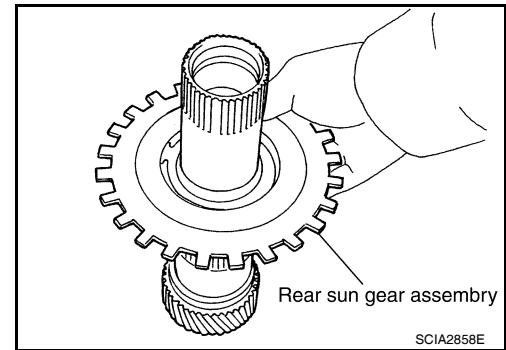
3. Remove high and low reverse clutch hub from mid sun gear assembly.



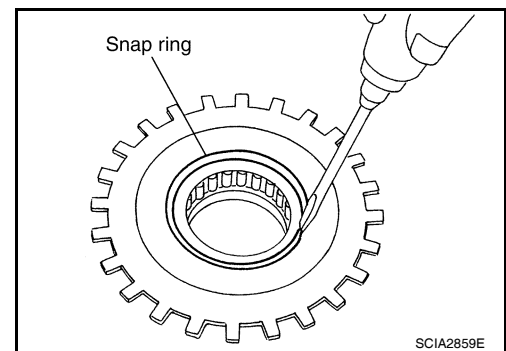
- a. Remove needle bearing from high and low reverse clutch hub.



4. Remove rear sun gear assembly from mid sun gear assembly.



- a. Remove snap ring from rear sun gear using suitable tool.

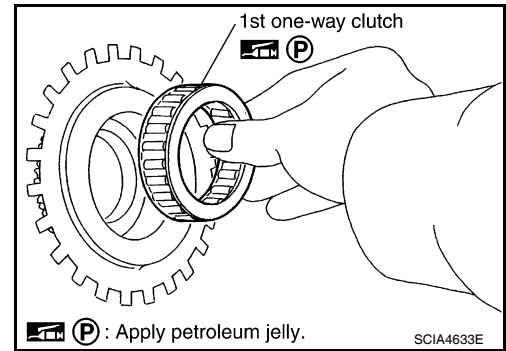


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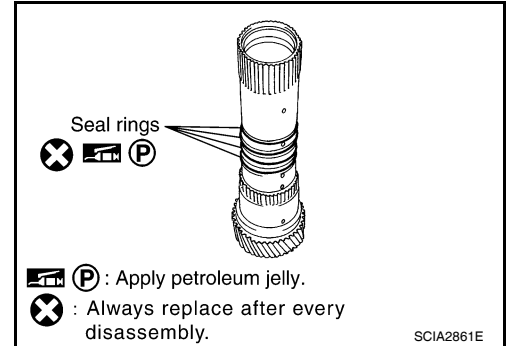
## REPAIR FOR COMPONENT PARTS

### < SERVICE INFORMATION >

- 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:**

**If necessary, replace the mid sun gear.**

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.**

### ASSEMBLY

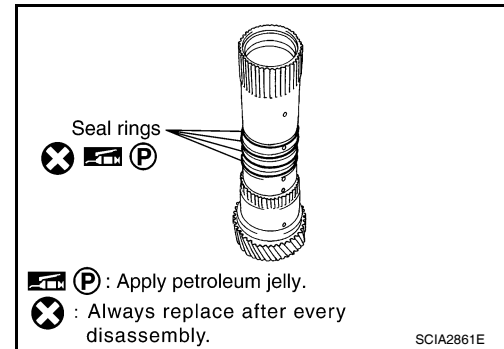
## REPAIR FOR COMPONENT PARTS

### < SERVICE INFORMATION >

1. Install new seal rings to mid sun gear.

**CAUTION:**

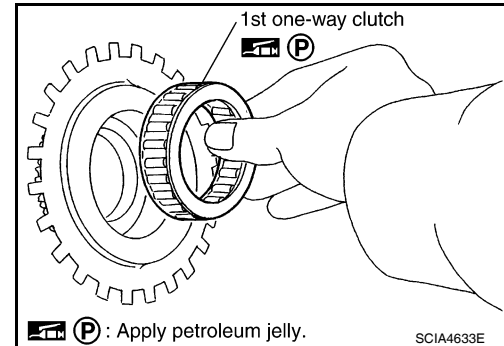
- Do not reuse seal rings.
- Apply petroleum jelly to seal rings.



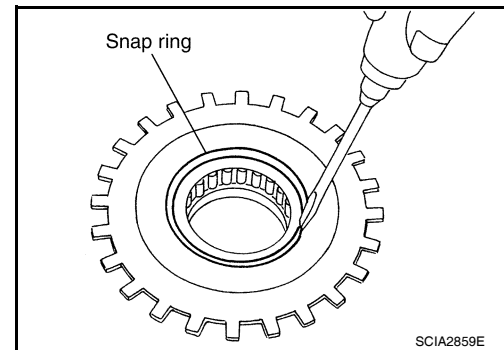
2. Install 1st one-way clutch to rear sun gear.

**CAUTION:**

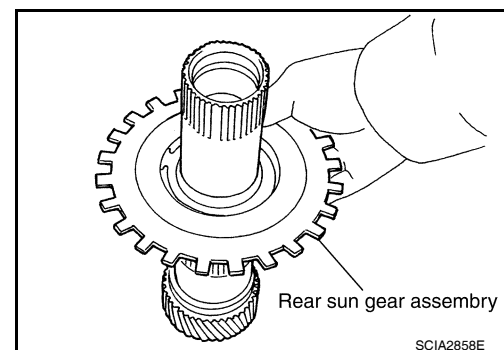
- Apply petroleum jelly to 1st one-way clutch.



3. Install snap ring to rear sun gear using suitable tool.



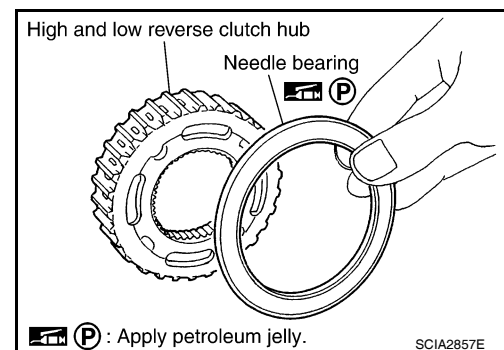
4. Install rear sun gear assembly to mid sun gear assembly.



5. Install needle bearing to high and low reverse clutch hub.

**CAUTION:**

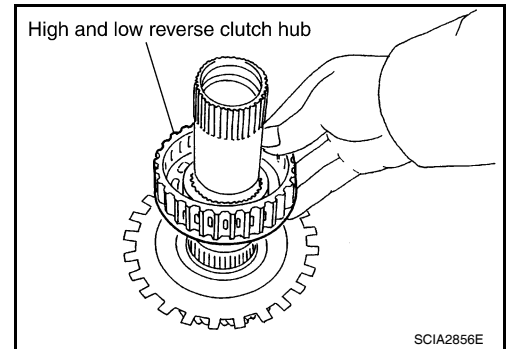
- Take care with the direction of needle bearing. Refer to [AT-237, "Location of Adjusting Shims, Needle Bearings, Thrust Washers and Snap Rings"](#).
- Apply petroleum jelly to needle bearing.



## REPAIR FOR COMPONENT PARTS

### < SERVICE INFORMATION >

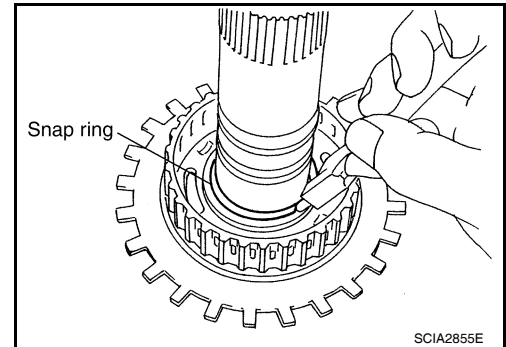
6. Install high and low reverse clutch hub to mid sun gear assembly.



7. Install snap ring to mid sun gear assembly using suitable tool.

**CAUTION:**

**Do not expand snap ring excessively.**

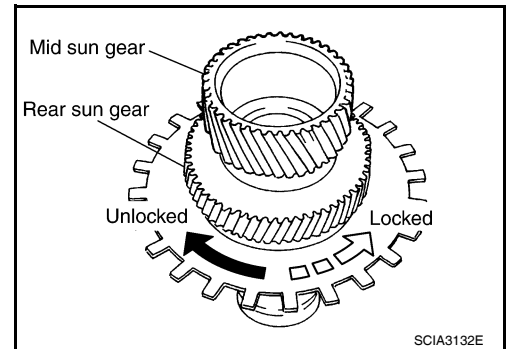


8. Check operation of 1st one-way clutch.

- a. Hold mid sun gear and turn rear sun gear.  
b. Check 1st one-way clutch for correct locking and unlocking directions.

**CAUTION:**

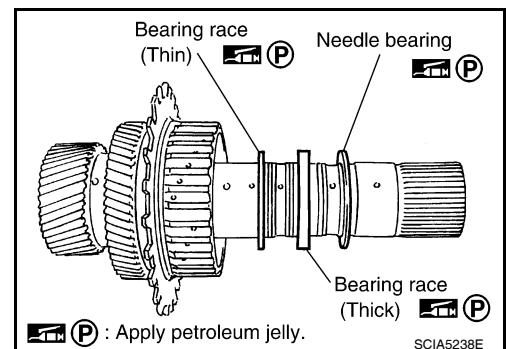
**If not as shown, check installation direction of 1st one-way clutch.**



9. Install needle bearing and bearing races to high and low reverse clutch hub.

**CAUTION:**

- Apply petroleum jelly to needle bearing and bearing races.
- Take care with order of bearing races.



### High and Low Reverse Clutch

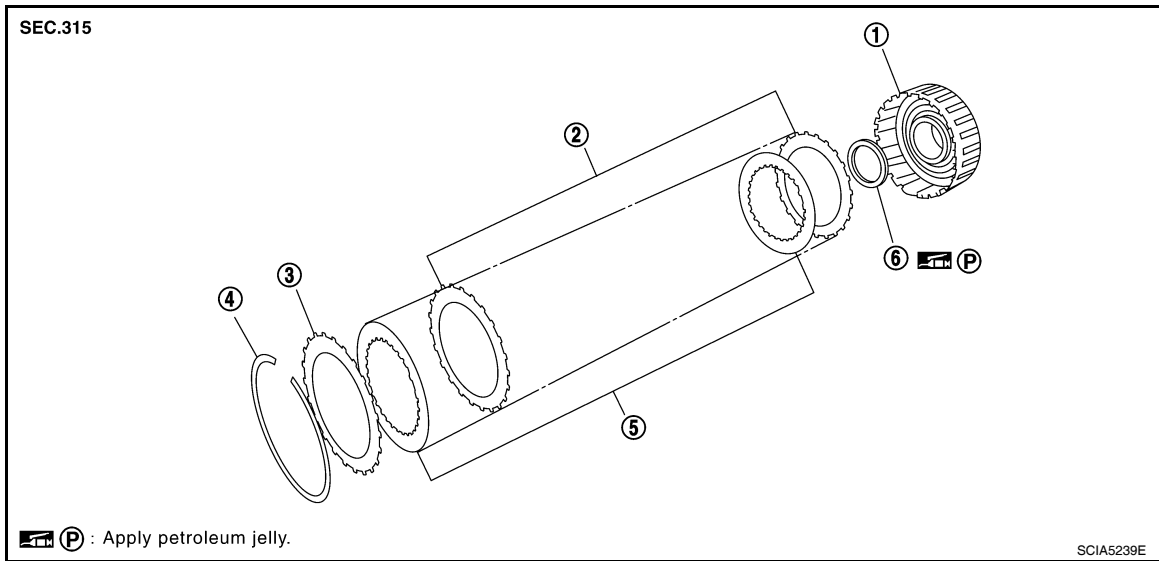
INFOID:000000003532491

### COMPONENTS



# REPAIR FOR COMPONENT PARTS

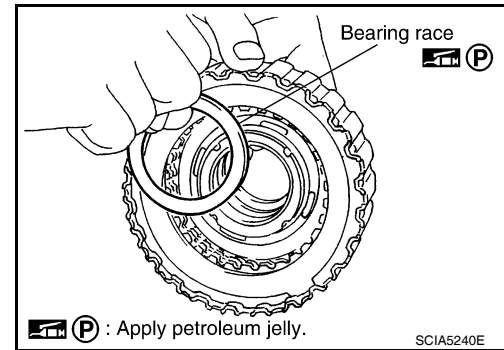
< SERVICE INFORMATION >



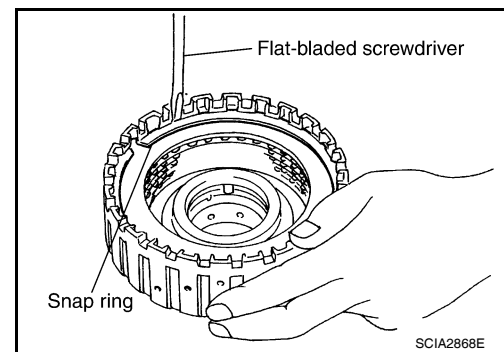
- |                                     |                 |                    |
|-------------------------------------|-----------------|--------------------|
| 1. High and low reverse clutch drum | 2. Driven plate | 3. Retaining plate |
| 4. Snap ring                        | 5. Drive plate  | 6. Bearing race    |

## DISASSEMBLY

1. Remove bearing race from high and low reverse clutch drum.



2. Remove snap ring from high and low reverse clutch drum using suitable tool.
3. Remove drive plates, driven plates and retaining plate from high and low reverse clutch drum.



## INSPECTION

- Check the following, and replace high and low reverse clutch assembly 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.

High and Low Reverse Clutch Retaining Plate and Driven Plates

- Check facing for burns, cracks or damage.

## ASSEMBLY

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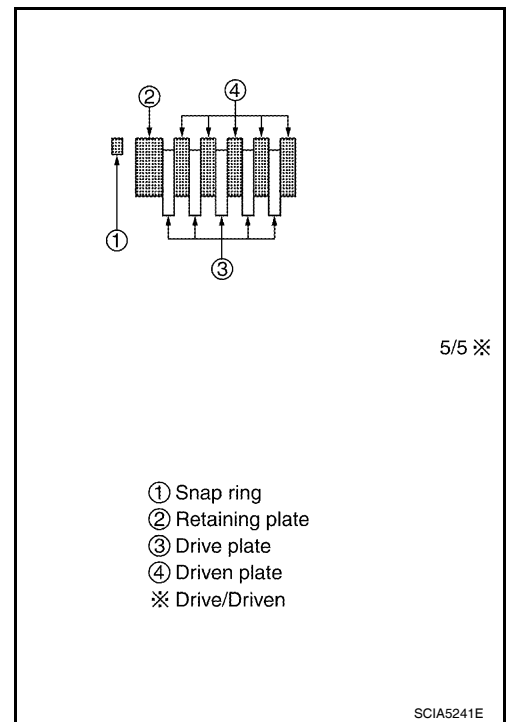
# REPAIR FOR COMPONENT PARTS

## < SERVICE INFORMATION >

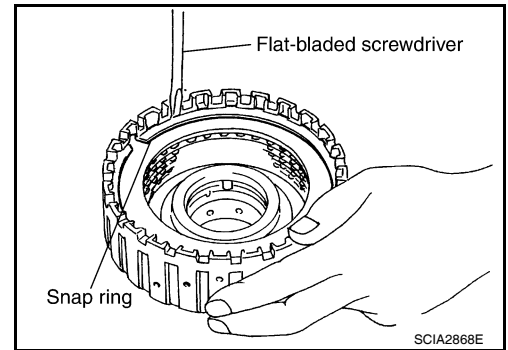
1. Install drive plates, driven plates and retaining plate in high and low reverse clutch drum.

**CAUTION:**

Take care with the order of plates.



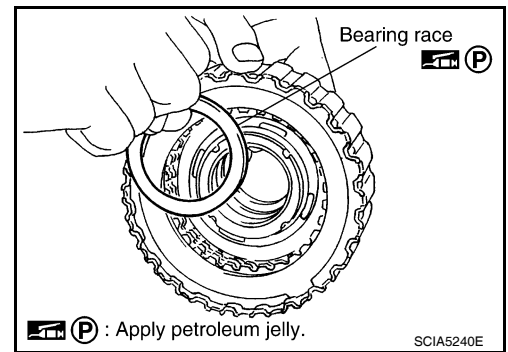
2. Install snap ring in high and low reverse clutch drum using suitable tool.



3. Install bearing race to high and low reverse clutch drum.

**CAUTION:**

Apply petroleum jelly to bearing race.



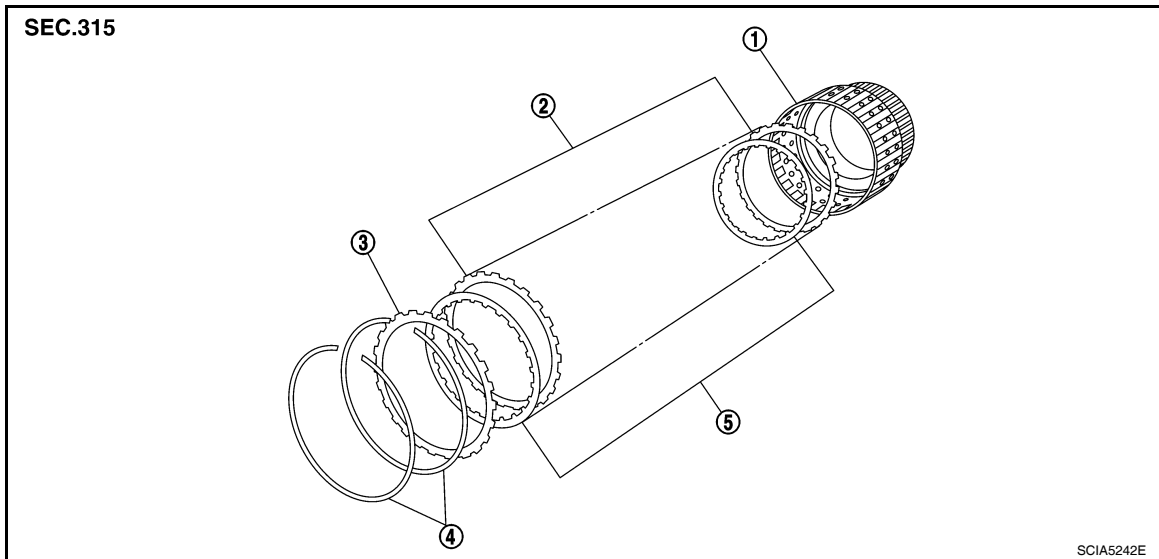
Direct Clutch

COMPONENTS

INFOID:000000003532492

# REPAIR FOR COMPONENT PARTS

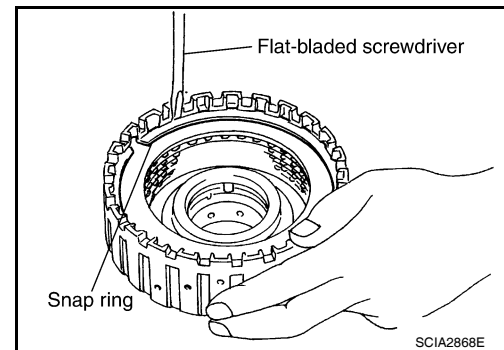
< SERVICE INFORMATION >



- |                       |                 |                    |
|-----------------------|-----------------|--------------------|
| 1. Direct clutch drum | 2. Driven plate | 3. Retaining plate |
| 4. Snap ring          | 5. Drive plate  |                    |

## DISASSEMBLY

1. Remove snap rings from direct clutch drum using suitable tool.
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 Rings

- Check for deformation, fatigue or damage.

### Direct Clutch Drive Plates

- Check facing for burns, cracks or damage.

### Direct Clutch Retaining Plate and Driven Plates

- Check facing for burns, cracks or damage.

## ASSEMBLY

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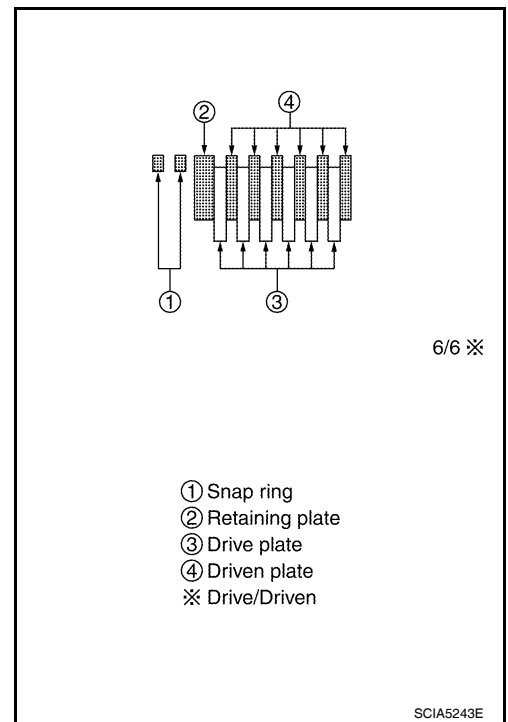
## REPAIR FOR COMPONENT PARTS

### < SERVICE INFORMATION >

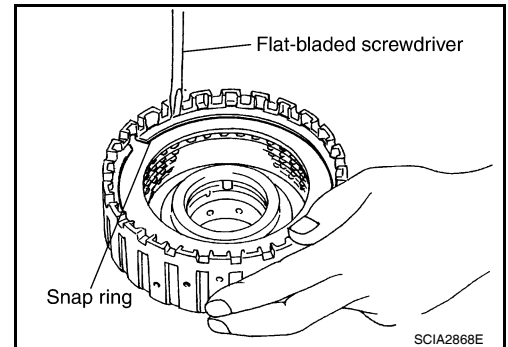
1. Install drive plates, driven plates and retaining plate in direct clutch drum.

**CAUTION:**

Take care with the order of plates.



2. Install snap rings in direct clutch drum using suitable tool.



# ASSEMBLY

< SERVICE INFORMATION >

## ASSEMBLY

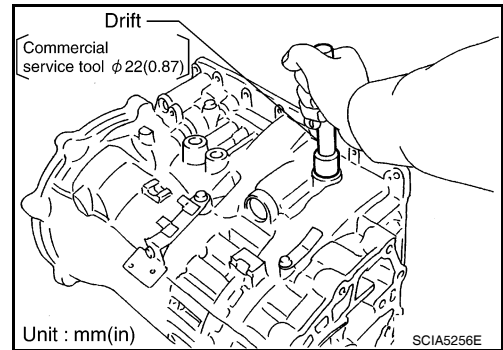
### Assembly (1)

INFOID:000000003532493

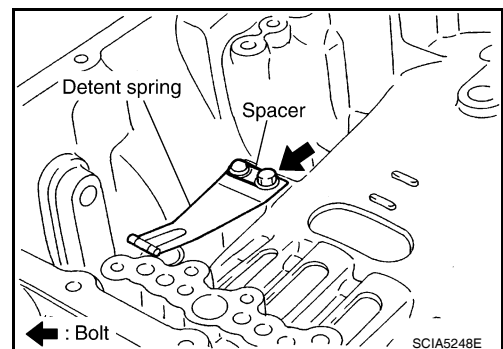
1. Drive new manual shaft oil seals into the transmission case until it is flush using suitable tool.

**CAUTION:**

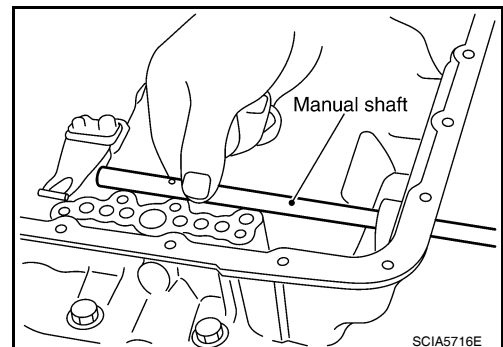
- Apply ATF to manual shaft oil seals.
- Do not reuse manual shaft oil seals.



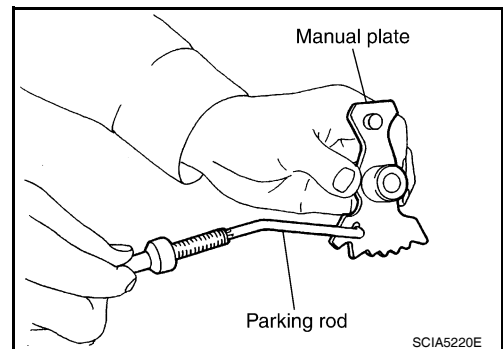
2. Install detent spring and spacer in transmission case. Tighten bolt to the specified torque. Refer to [AT-228, "Component"](#).



3. Install manual shaft to transmission case.



4. Install parking rod to manual plate.

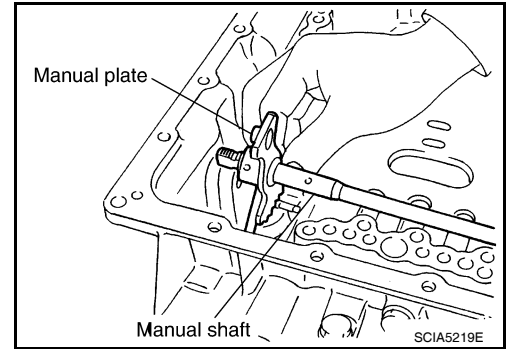


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# ASSEMBLY

## < SERVICE INFORMATION >

5. Install manual plate (with parking rod) to manual shaft.

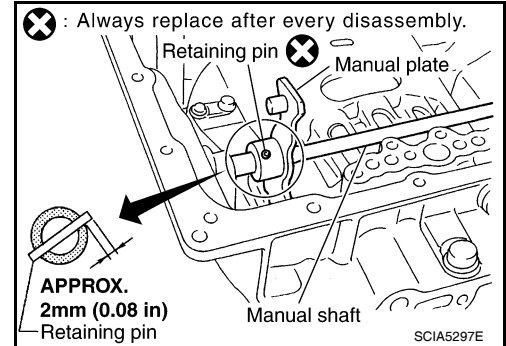


6. Install new retaining pin into the manual plate and manual shaft.

- Fit pinhole of the manual plate to pinhole of the manual shaft using suitable tool.
- Tap the new retaining pin into the manual plate using suitable tool.

**CAUTION:**

- Drive retaining pin to 2mm (0.8 in) over the manual plate.
- Do not reuse retaining pin.

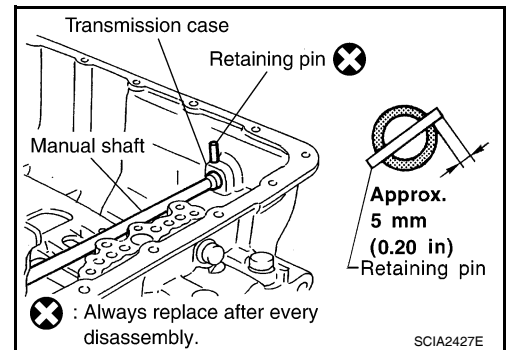


7. Install new retaining pin into the transmission case and manual shaft.

- Fit pinhole of the transmission case to pinhole of the manual shaft using suitable tool.
- Tap the new retaining pin into the transmission case, using suitable tool.

**CAUTION:**

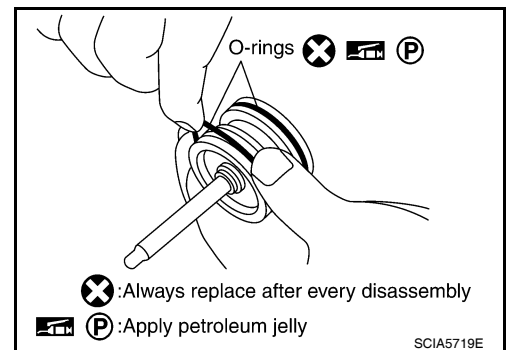
- Drive retaining pin to 5 mm (0.20 in) over the transmission case.
- Do not reuse retaining pin.



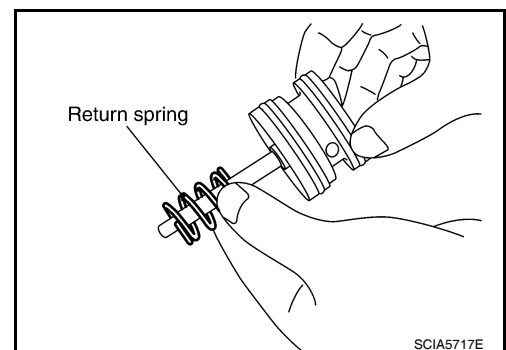
8. Install new O-rings to servo assembly.

**CAUTION:**

- Do not reuse O-rings.
- Apply petroleum jelly to O-rings.



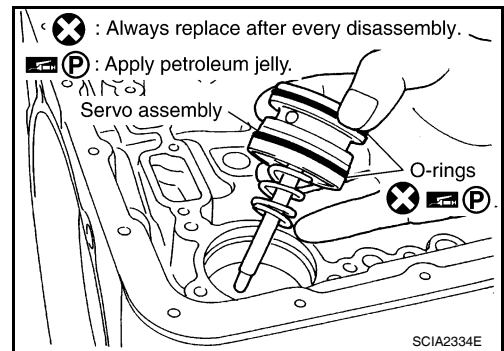
9. Install return spring to servo assembly.



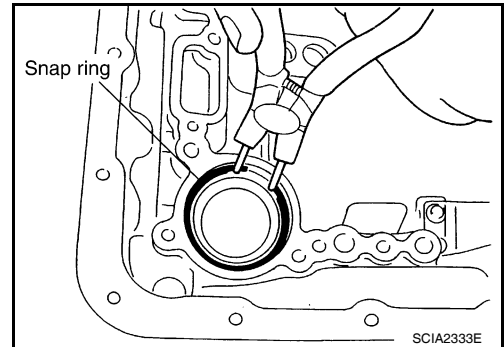
# ASSEMBLY

## < SERVICE INFORMATION >

10. Install servo assembly in transmission case.

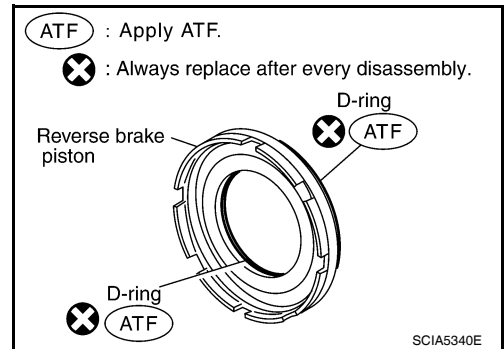


11. Install snap ring to transmission case using suitable tool.

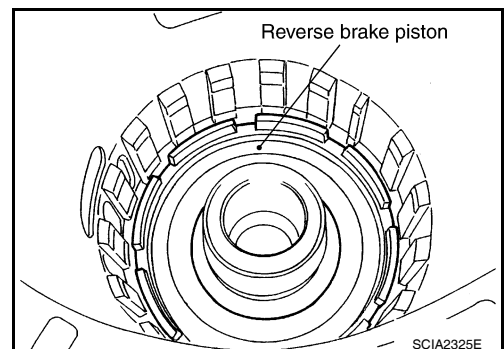


**CAUTION:**

- Do not reuse D-rings.
- Apply ATF to D-rings.

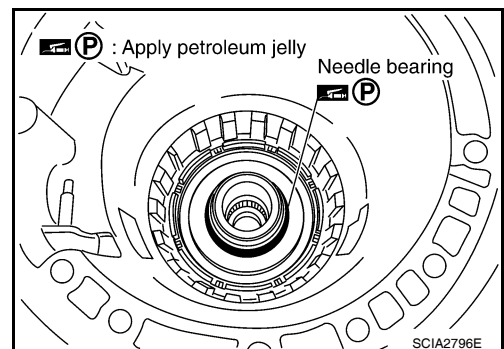


13. Install reverse brake piston in transmission case.



**CAUTION:**

- Apply petroleum jelly to needle bearing.



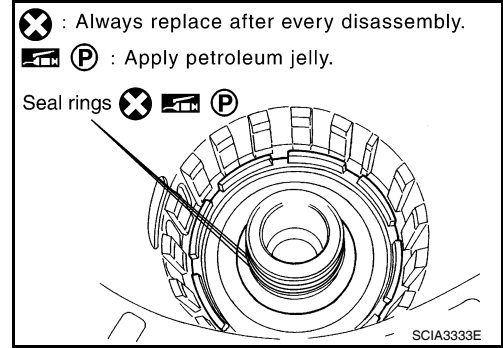
# ASSEMBLY

## < SERVICE INFORMATION >

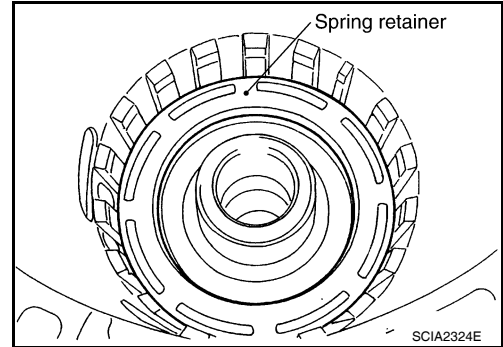
15. Install new seal rings to drum support.

**CAUTION:**

- Do not reuse seal rings.
- Apply petroleum jelly to seal rings.



16. Install spring retainer and return spring in transmission case.

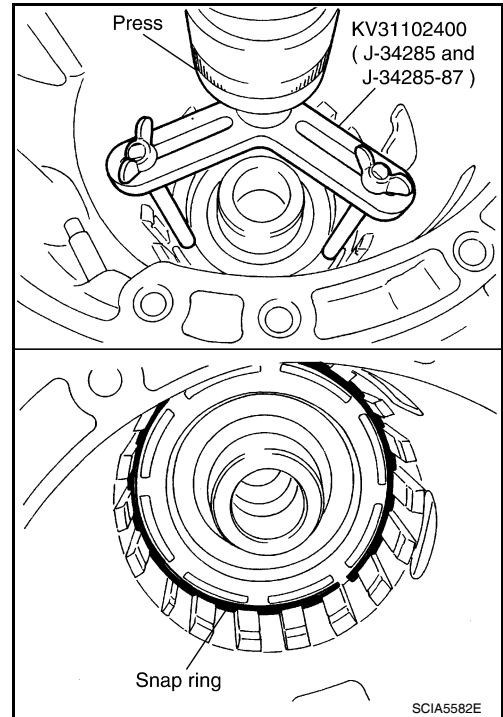


17. Install snap ring in transmission case while compressing return spring using Tool.

**Tool number** : KV31102400 (J-34285 and J-34285-87)

**CAUTION:**

Securely assemble them so that snap ring tension is slightly weak.

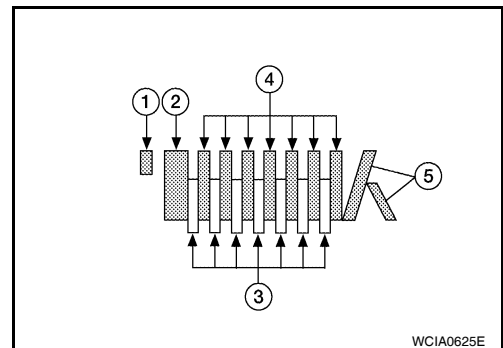


18. Install reverse brake drive plates (3), driven plates (4) and dish plate (5) in transmission case.

- Snap ring (1)
- Retaining plate (2)

**CAUTION:**

Take care with the order and direction of plates.

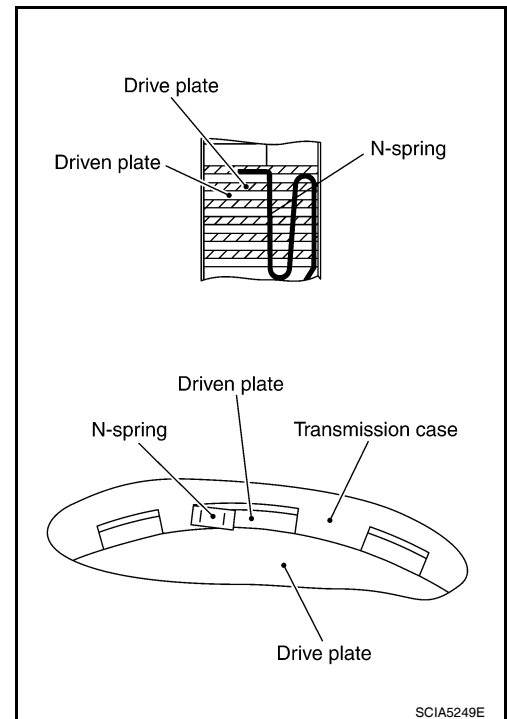




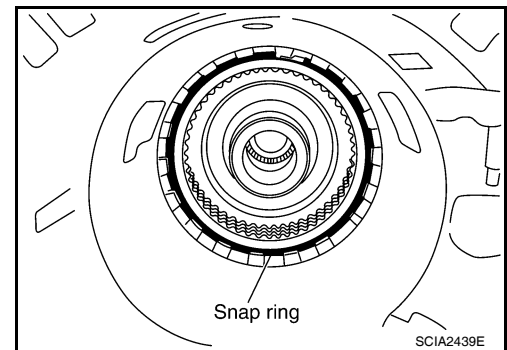
# ASSEMBLY

## < SERVICE INFORMATION >

19. Assemble N-spring.
20. Install reverse brake retaining plate in transmission case.



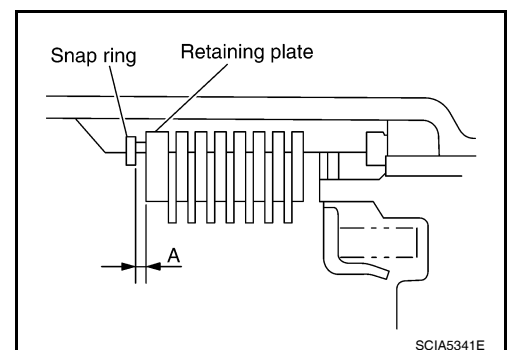
21. Install snap ring in transmission case.



22. 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)

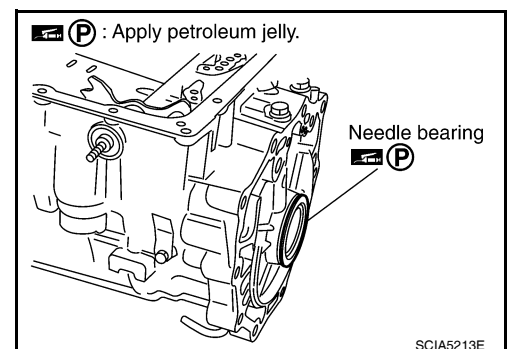
**Retaining plate** : Refer to [AT-300, "Reverse brake"](#).



23. Install needle bearing to transmission case.

### CAUTION:

- Take care with the direction of needle bearing. Refer to [AT-237, "Location of Adjusting Shims, Needle Bearings, Thrust Washers and Snap Rings"](#).
- Apply petroleum jelly to needle bearing.



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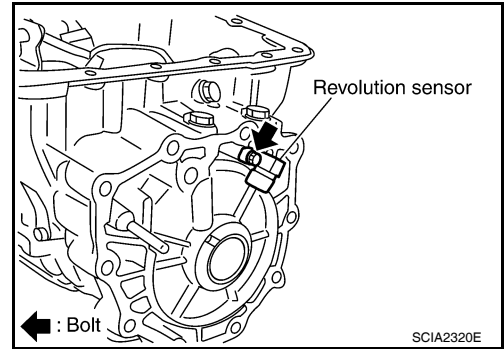
# ASSEMBLY

## < SERVICE INFORMATION >

24. Install revolution sensor to transmission case. Tighten revolution sensor bolt to the specified torque. Refer to [AT-228](#), "Component".

**CAUTION:**

- Do not subject it to impact by dropping or hitting it.
- Be careful not to damage harness with the edge of case.
- Do not allow metal filings or foreign material to get on the sensor front edge magnetic area.
- Do not place in an area affected by magnetism.

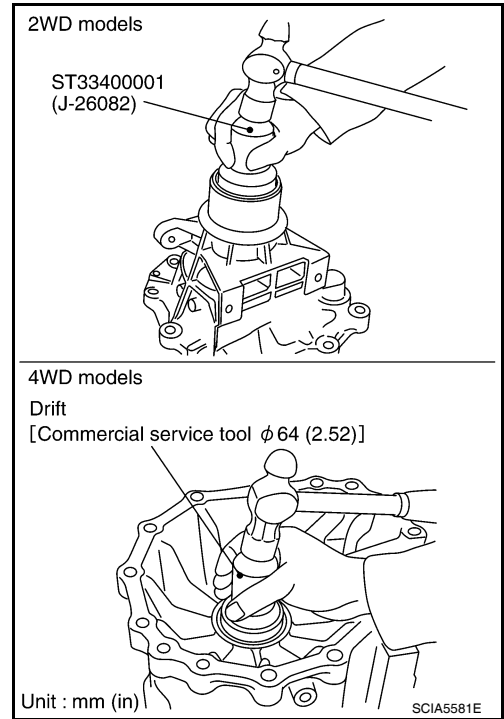


25. Install new rear oil seal until it is flush into the rear extension (2WD models) using Tool or adapter case (4WD models) using suitable tool.

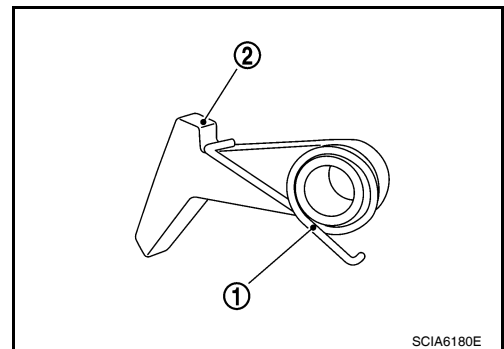
**Tool number : ST33400001 (J-26082)**

**CAUTION:**

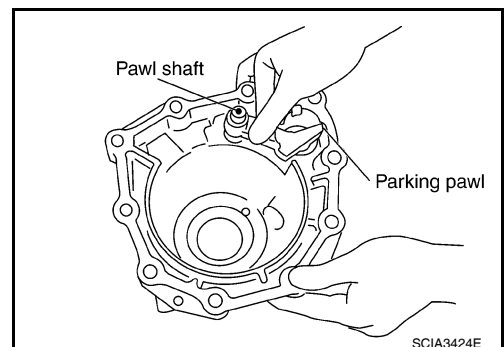
- Apply ATF to rear oil seal.
- Do not reuse rear oil seal.



26. Install return spring (1) to parking pawl (2).



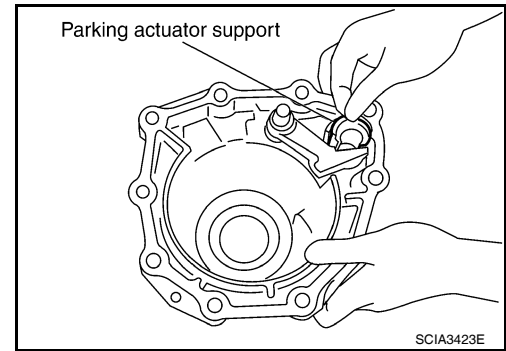
27. Install parking pawl (with return spring) and pawl shaft to rear extension (2WD models) or adapter case (4WD models).



# ASSEMBLY

## < SERVICE INFORMATION >

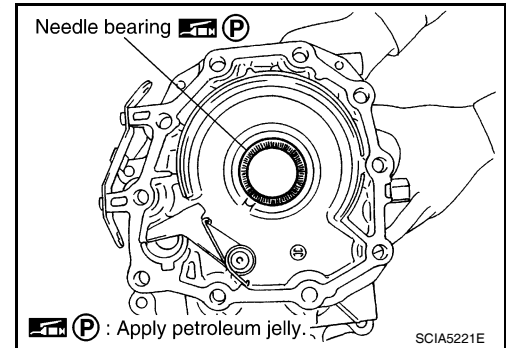
28. Install parking actuator support to rear extension (2WD models) or adapter case (4WD models).



29. Install needle bearing to rear extension (2WD models) or adapter case (4WD models).

**CAUTION:**

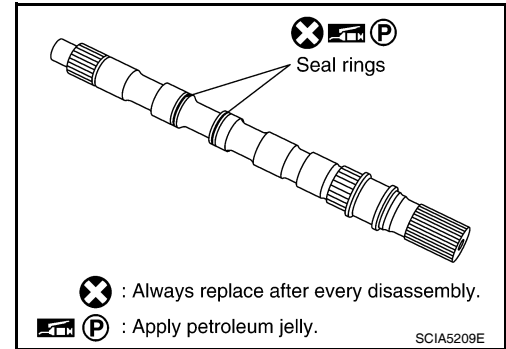
**Apply petroleum jelly to needle bearing.**



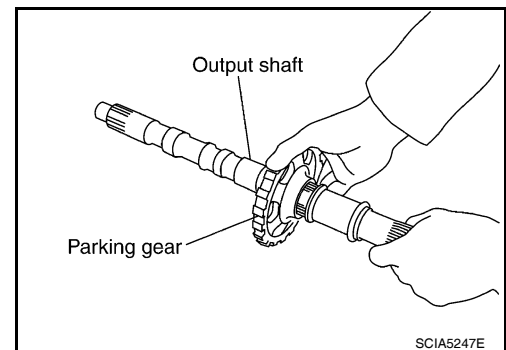
30. Install new seal rings to output shaft.

**CAUTION:**

- Do not reuse seal rings.
- Apply petroleum jelly to seal rings.



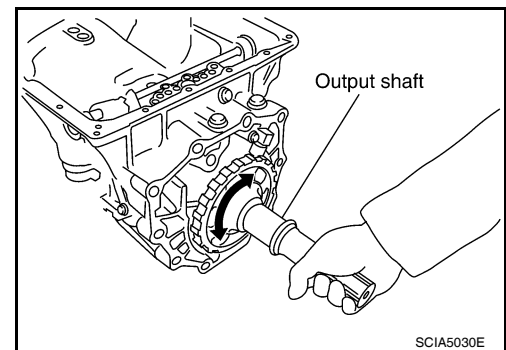
31. Install parking gear to output shaft.



32. Install output shaft in transmission case.

**CAUTION:**

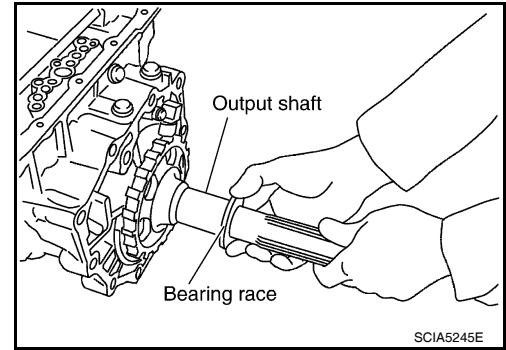
**Be careful not to mistake front for rear because both sides looks similar. (Thinner end is front side.)**



# ASSEMBLY

## < SERVICE INFORMATION >

33. Install bearing race in output shaft.



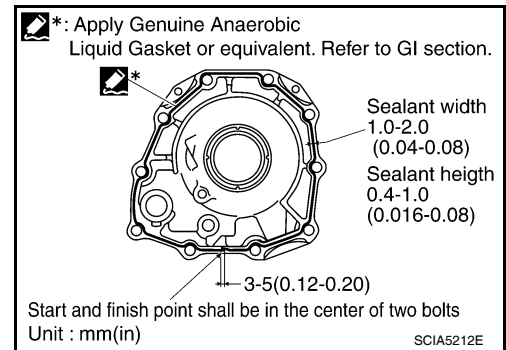
34. Install rear extension assembly (2WD models) or adapter case assembly (4WD models) according to the following procedures.

a. **2WD models**

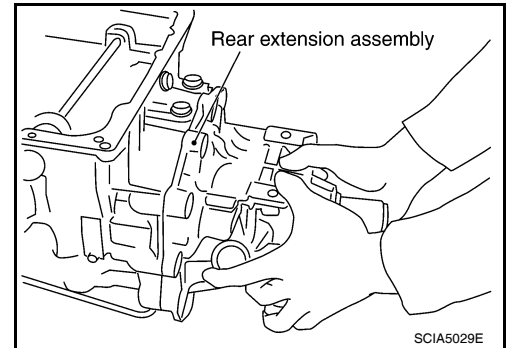
i. Apply recommended sealant (Genuine Anaerobic Liquid Gasket or equivalent) to rear extension assembly as shown. Refer to [GI-45. "Recommended Chemical Product and Sealant"](#).

**CAUTION:**

**Completely remove all moisture, oil and old sealant from the transmission case and rear extension assembly mating surfaces.**



ii. Install rear extension assembly to transmission case.



iii. Install brackets (1).

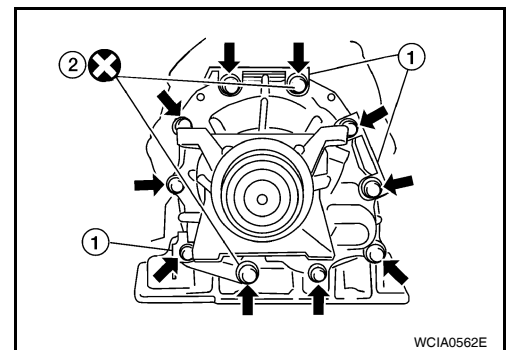
iv. Tighten rear extension assembly bolts to specified torque.

**CAUTION:**

**Do not reuse self-sealing bolts (2).**

**Rear extension assembly bolts : 52 N·m (5.3 kg-m, 38 ft-lb)**

**Self-sealing bolts : 61 N·m (6.2 kg-m, 45 ft-lb)**



# ASSEMBLY

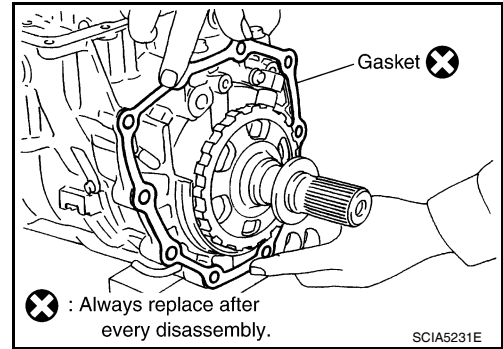
## < SERVICE INFORMATION >

### b. 4WD models

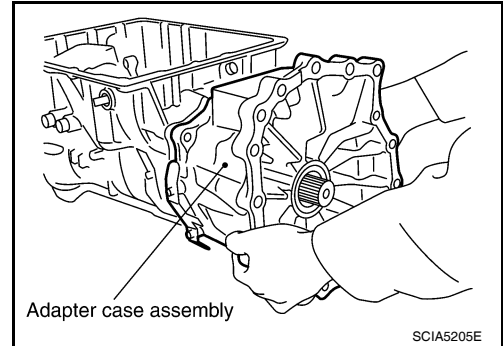
i. Install new gasket to transmission case.

**CAUTION:**

- Do not reuse gasket.
- Completely remove all moisture, oil and old gasket from the transmission case and adapter case assembly mating surfaces.



ii. Install adapter case assembly to transmission case.



iii. Install brackets (1).

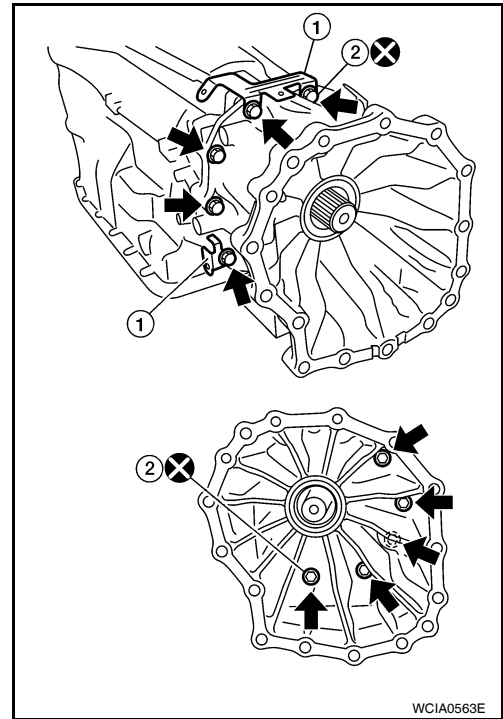
iv. Tighten adapter case assembly bolts to specified torque.

**CAUTION:**

Do not reuse self-sealing bolts (2).

**Adapter case assembly bolts** : 52 N·m (5.3 kg-m, 38 ft-lb)

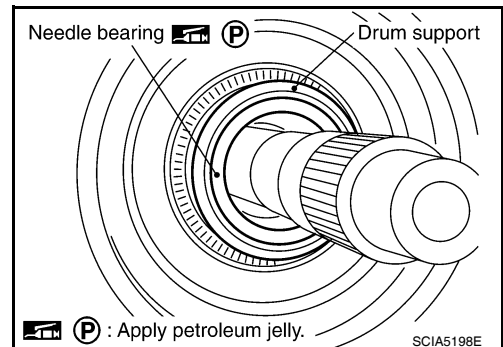
**Self-sealing bolt** : 61 N·m (6.2 kg-m, 45 ft-lb)



35. Install needle bearing in drum support edge surface.

**CAUTION:**

Apply petroleum jelly to needle bearing.

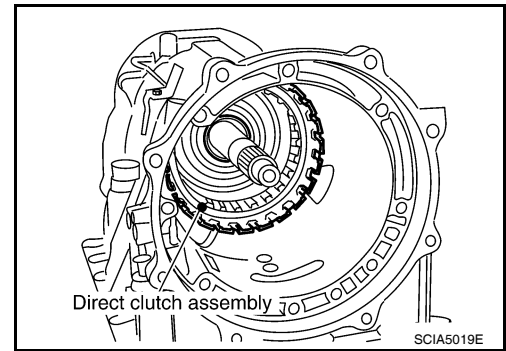


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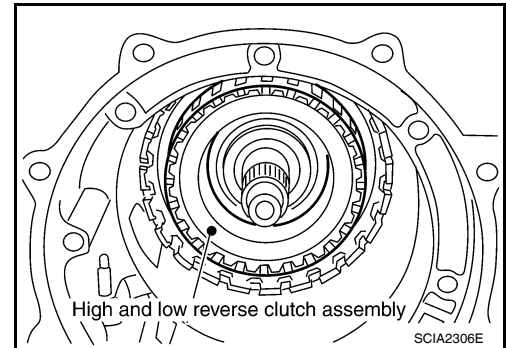
# ASSEMBLY

## < SERVICE INFORMATION >

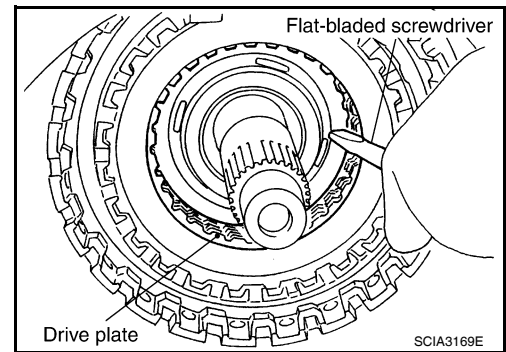
36. Install direct clutch assembly in reverse brake.



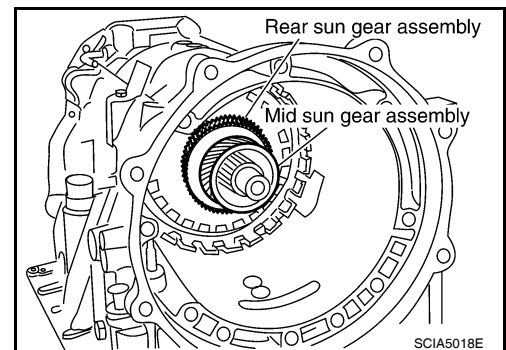
37. Install high and low reverse clutch assembly in direct clutch assembly.



38. Align the drive plate using suitable tool.



39. Install high and low reverse clutch hub, mid sun gear assembly and rear sun gear assembly as a unit.

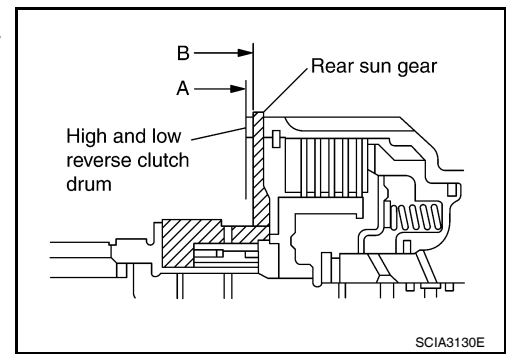


**CAUTION:**

# ASSEMBLY

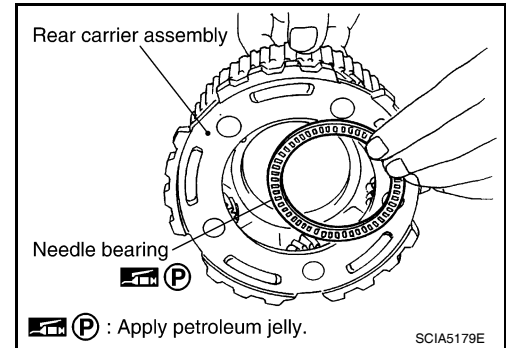
## < SERVICE INFORMATION >

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.



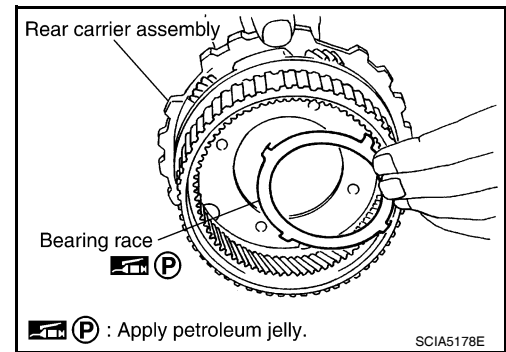
40. Install needle bearing in rear carrier assembly.

**CAUTION:**  
Apply petroleum jelly to needle bearing.

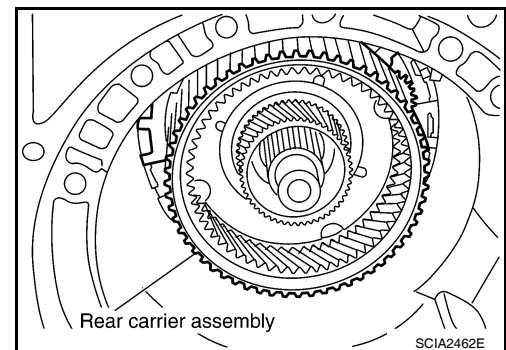


41. Install bearing race in rear carrier assembly.

**CAUTION:**  
Apply petroleum jelly to bearing race.

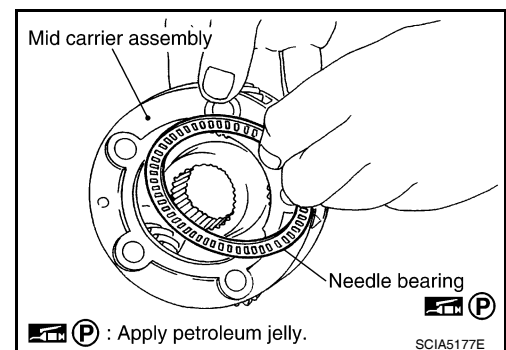


42. Install rear carrier assembly in direct clutch drum.



43. Install needle bearing (rear side) in mid carrier assembly.

**CAUTION:**  
Apply petroleum jelly to needle bearing.



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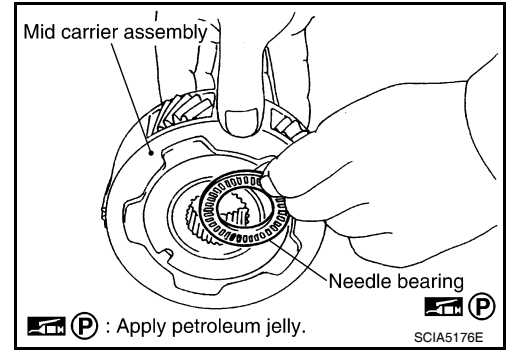
# ASSEMBLY

## < SERVICE INFORMATION >

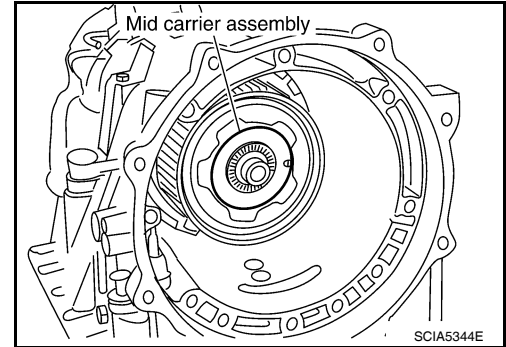
44. Install needle bearing (front side) in mid carrier assembly.

**CAUTION:**

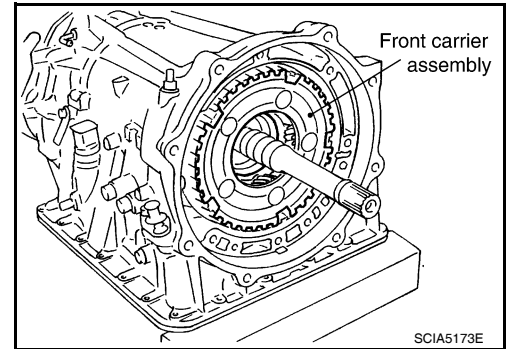
**Apply petroleum jelly to needle bearing.**



45. Install mid carrier assembly in rear carrier assembly.



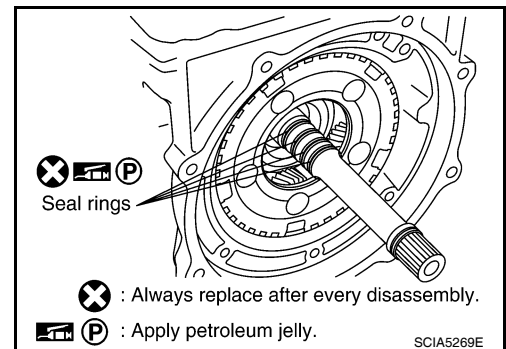
46. Install front carrier assembly, input clutch assembly and rear internal gear as a unit.



47. Install new seal rings in input clutch assembly.

**CAUTION:**

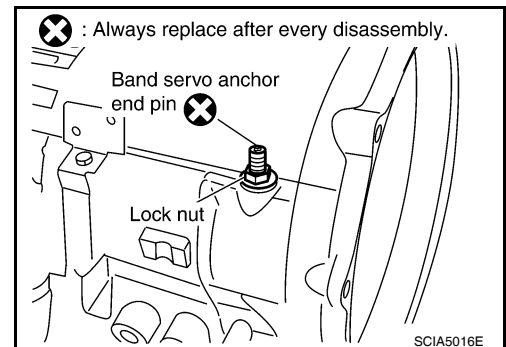
- Do not reuse seal rings.
- Apply petroleum jelly to seal rings.



48. Install new band servo anchor end pin and lock nut in transmission case.

**CAUTION:**

**Do not reuse band servo anchor end pin.**





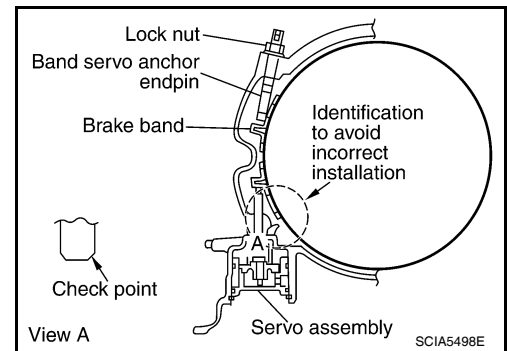
# ASSEMBLY

## < SERVICE INFORMATION >

49. Install brake band in transmission case.

**CAUTION:**

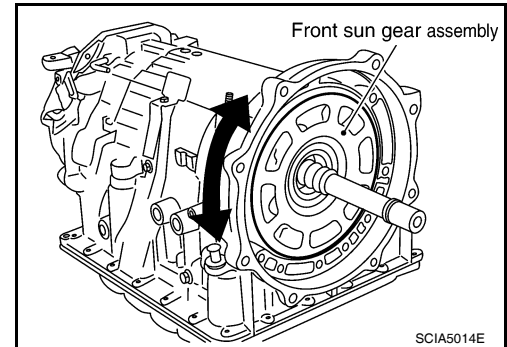
**Assemble it so that identification to avoid incorrect installation faces servo side.**



50. Install front sun gear assembly to front carrier assembly.

**CAUTION:**

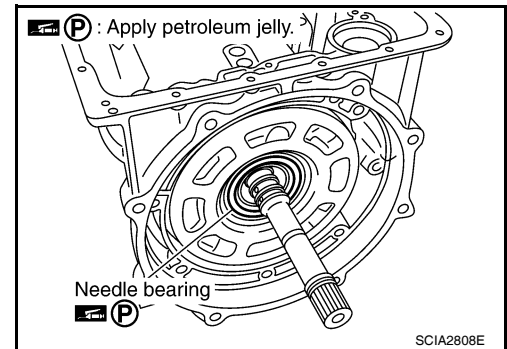
**Apply ATF to front sun gear radial bearing and 3rd one-way clutch end bearing.**



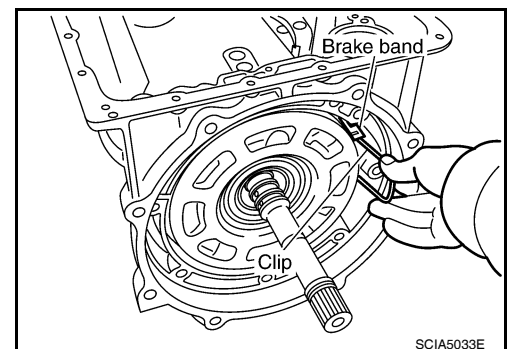
51. Install needle bearing in front sun gear assembly.

**CAUTION:**

**Apply petroleum jelly to needle bearing.**



52. Adjust brake band tilting using clips so that brake band contacts front sun gear drum evenly.

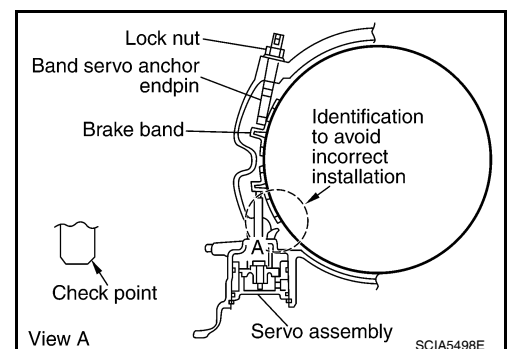


53. Adjust brake band.

- Loosen lock nut.
- Tighten band servo anchor end pin to specified torque.

**Band servo anchor end pin : 5.0 N·m (0.51 kg-m, 44 in-lb)**

- Back off band servo anchor end pin three turns.
- Holding band servo anchor end pin, tighten lock nut to specified torque. Refer to [AT-228. "Component"](#).



# ASSEMBLY

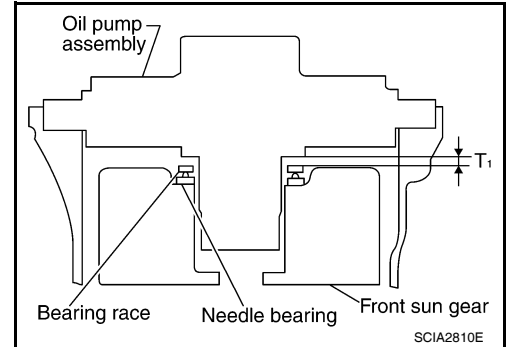
< SERVICE INFORMATION >

## Adjustment

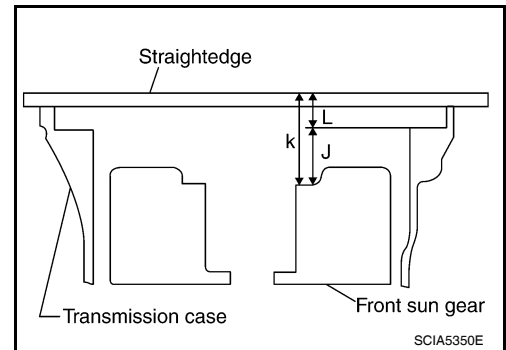
INFOID:000000003532494

### TOTAL END PLAY

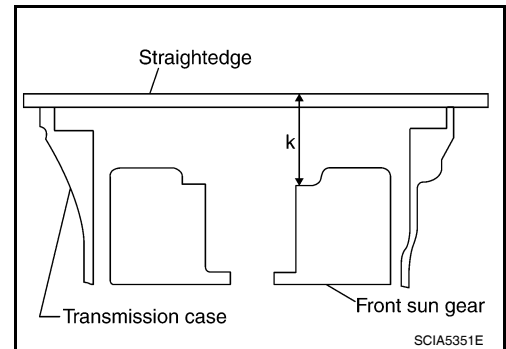
- Measure clearance between front sun gear and bearing race for oil pump cover.
- Select proper thickness of bearing race so that end play is within specifications.



1. Measure dimensions "K" and "L" and then calculate dimension "J".



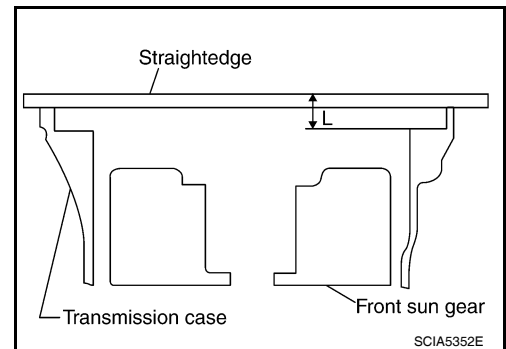
- a. Measure dimension "K".



- 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.**

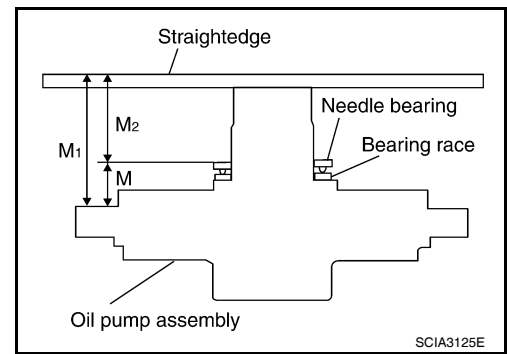
$$J = K - L$$



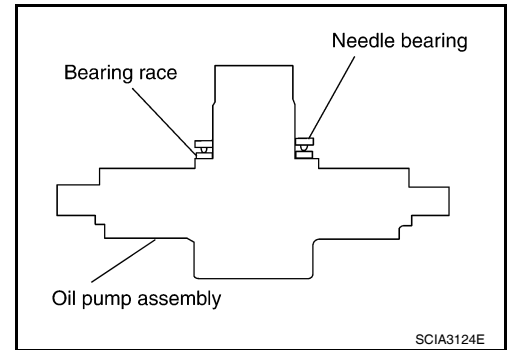
# ASSEMBLY

## < SERVICE INFORMATION >

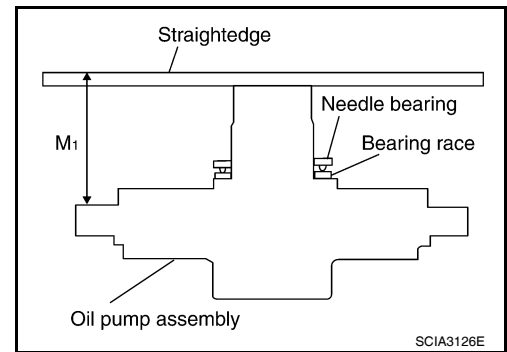
2. Measure dimensions "M1" and "M2" and then calculate dimension "M".



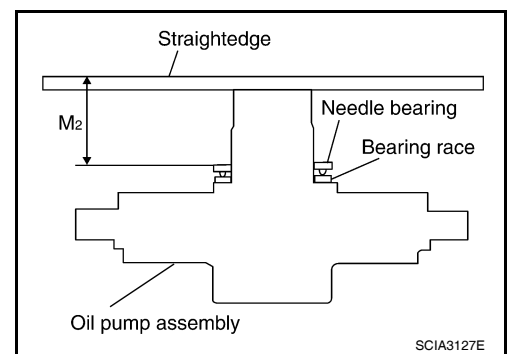
- a. Place bearing race and needle bearing on oil pump assembly.



- b. Measure dimension "M1".



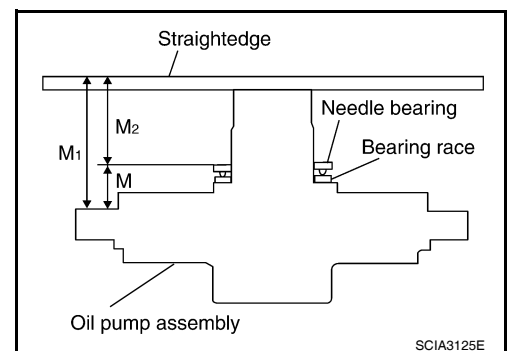
- c. Measure dimension "M2".



- d. Calculate dimension "M".

**"M": Distance between transmission case fitting surface of oil pump and needle bearing on oil pump.**

$$M = M_1 - M_2$$



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# ASSEMBLY

## < SERVICE INFORMATION >

- Adjust total end play "T<sub>1</sub>".

$$T_1 = J - M$$

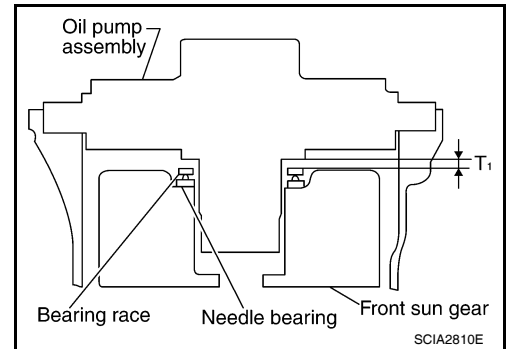
Total end play "T<sub>1</sub>":

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-300, "Total End Play"](#).



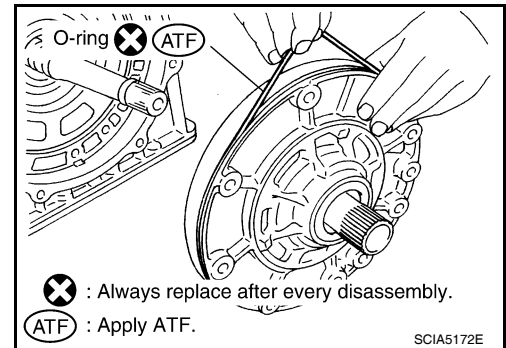
INFOID:000000003532495

## Assembly (2)

- Install new O-ring to oil pump assembly.

**CAUTION:**

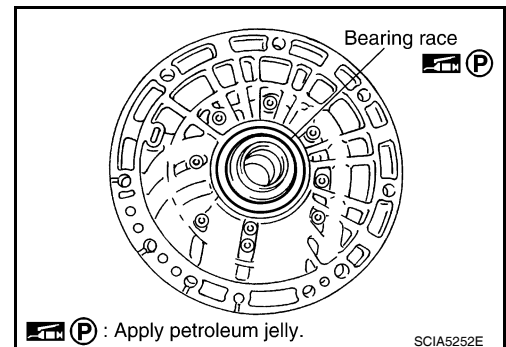
- Do not reuse O-ring.
- Apply ATF to O-ring.



- Install bearing race to oil pump assembly.

**CAUTION:**

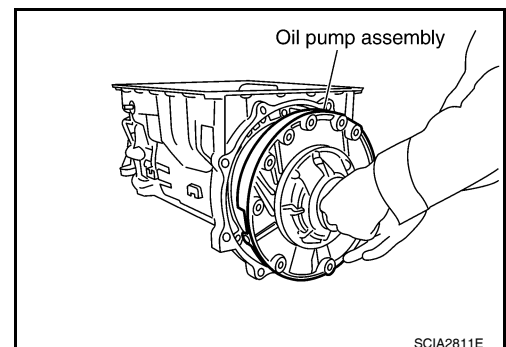
Apply petroleum jelly to bearing race.



- Install oil pump assembly in transmission case.

**CAUTION:**

Apply ATF to oil pump radial bearing.



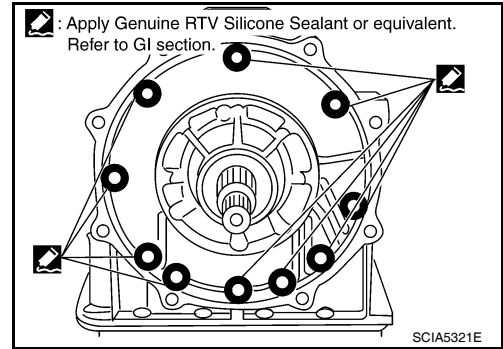
# ASSEMBLY

## < SERVICE INFORMATION >

4. Apply recommended sealant (Genuine RTV Silicone Sealant or equivalent) to oil pump assembly as shown. Refer to [GI-45](#), "[Recommended Chemical Product and Sealant](#)".

**CAUTION:**

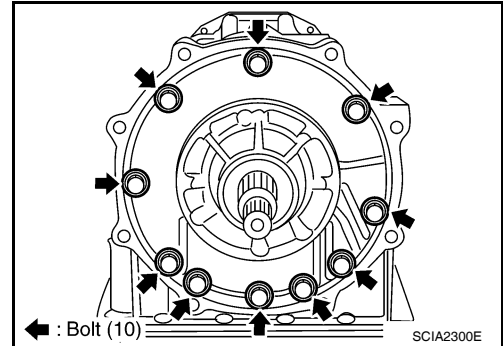
Completely remove all moisture, oil and old sealant from the oil pump bolts and oil pump bolt surfaces.



5. Tighten oil pump bolts to specified torque. Refer to [AT-228](#), "[Component](#)".

**CAUTION:**

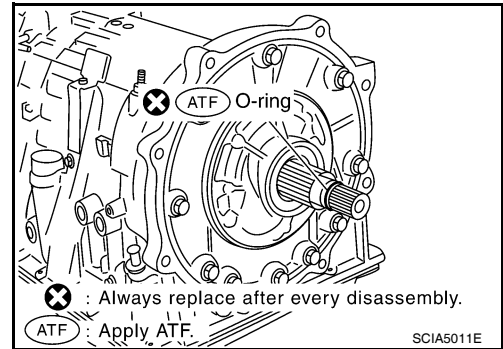
Apply ATF to oil pump bushing.



6. Install new O-ring to input clutch assembly.

**CAUTION:**

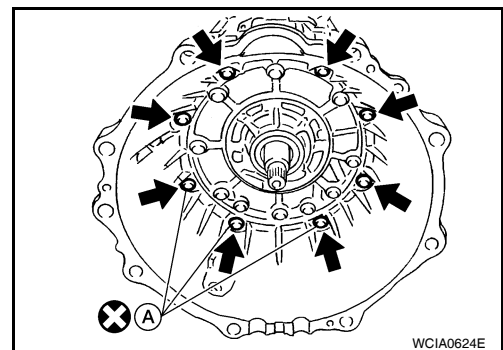
- Do not reuse O-ring.
- Apply ATF to O-ring.



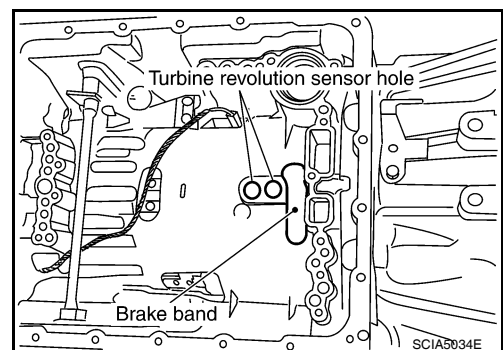
7. Install converter housing to transmission case.

**CAUTION:**

Do not reuse self-sealing bolt (A).



8. Make sure that brake band does not close turbine revolution sensor hole.

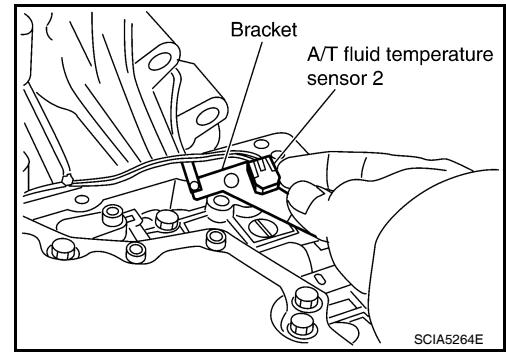


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# ASSEMBLY

## < SERVICE INFORMATION >

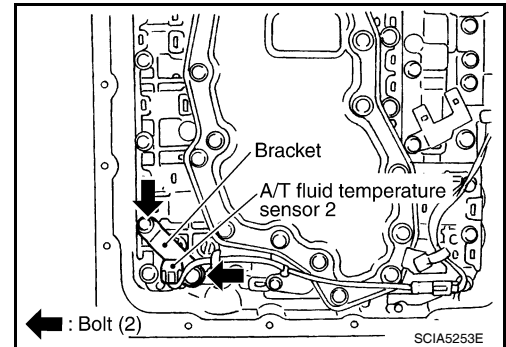
9. Install control valve with TCM.
- a. Install A/T fluid temperature sensor 2 to bracket.



- b. Install A/T fluid temperature sensor 2 (with bracket) in control valve with TCM. Tighten A/T fluid temperature sensor 2 bolts to the specified torque. Refer to [AT-228, "Component"](#).

**CAUTION:**

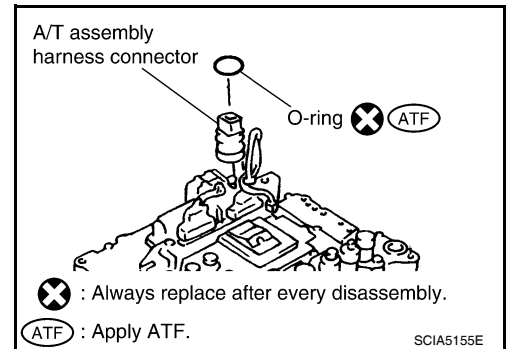
**Adjust bolt hole of bracket to bolt hole of control valve with TCM.**



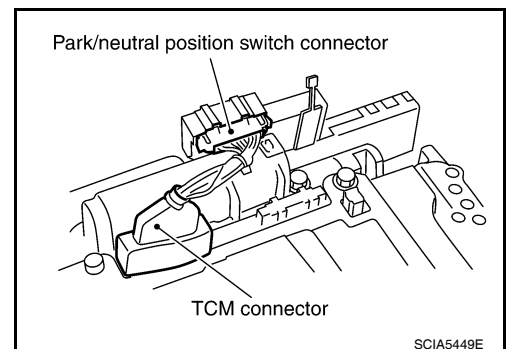
- c. Install new O-ring to A/T assembly harness connector.

**CAUTION:**

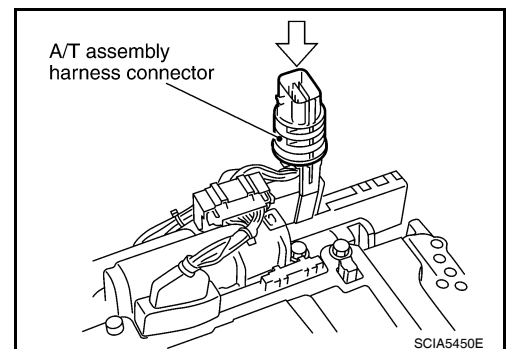
- Do not reuse O-ring.
- Apply ATF to O-ring.



- d. Connect TCM connector and park/neutral position (PNP) switch connector.



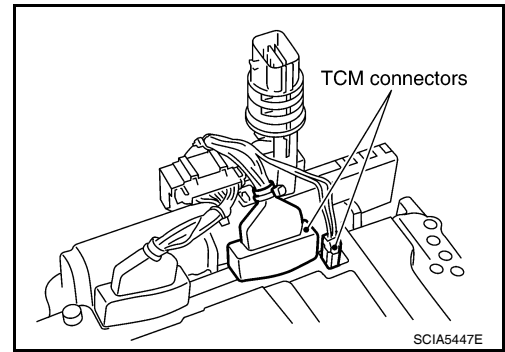
- e. Install A/T assembly harness connector to control valve with TCM.



# ASSEMBLY

## < SERVICE INFORMATION >

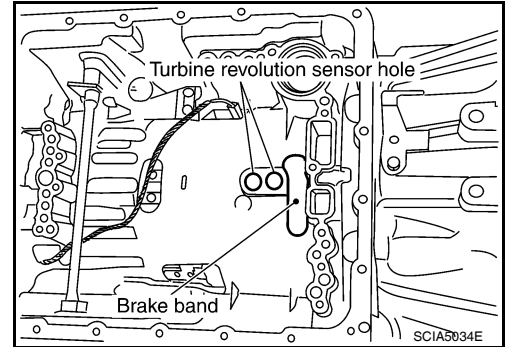
f. Connect TCM connectors.



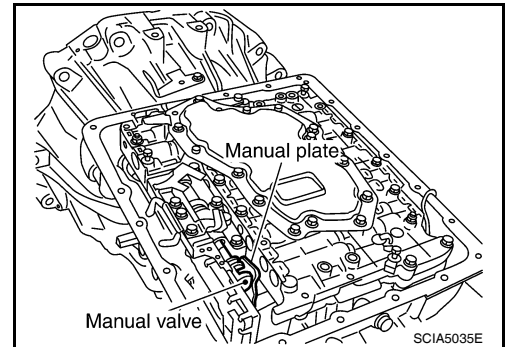
g. Install control valve with TCM in transmission case.

**CAUTION:**

- Make sure that turbine revolution sensor securely installs into turbine revolution sensor hole.
- Adjust A/T assembly harness connector of control valve with TCM to terminal hole of transmission case.
- Hang down revolution sensor harness toward outside so as not to disturb installation of control valve with TCM.



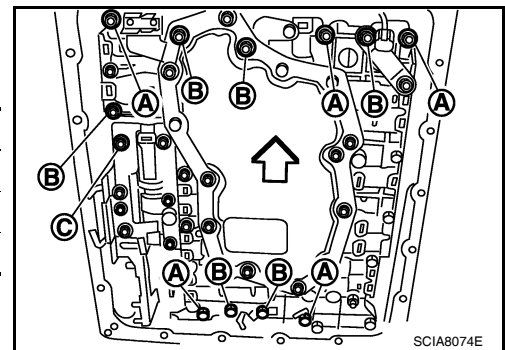
- Assemble it so that manual valve cutout is engaged with manual plate projection.



h. Install bolts (A), (B) and (C) to control valve with TCM.

- ↵ : Front

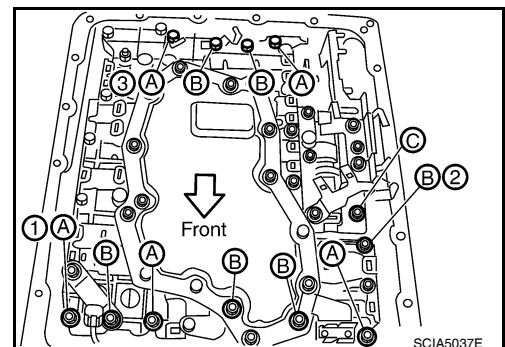
Bolt symbol	Length: mm (in)	Number of bolts
A	42 (1.65)	5
B	55 (2.17)	6
C	40 (1.57)	1



i. Tighten bolt (1), (2) and (3) temporarily to prevent dislocation. Then tighten them in order (1 → 2 → 3), and then tighten other bolts.

- ↵ : Front

j. Tighten control valve with TCM bolts to the specified torque. Refer to [AT-228. "Component"](#).

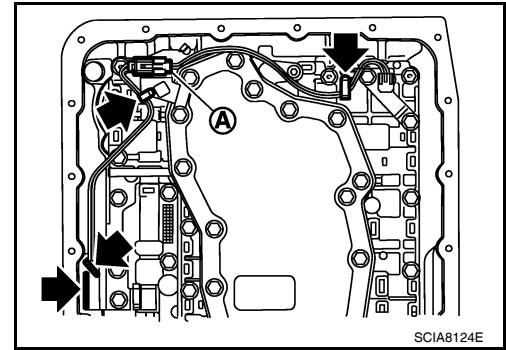


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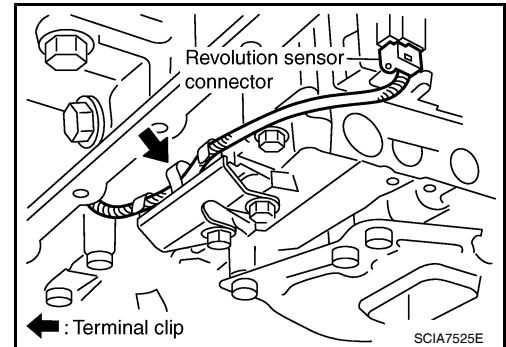
# ASSEMBLY

## < SERVICE INFORMATION >

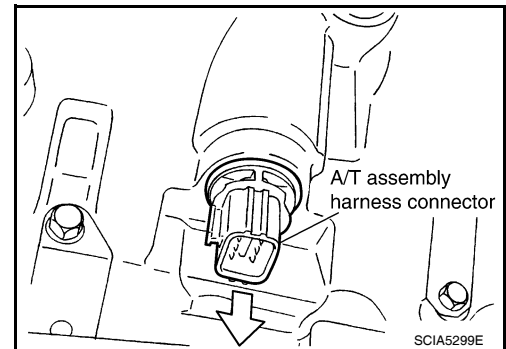
10. Connect A/T fluid temperature sensor 2 connector (A).
11. Securely fasten terminal cord assembly and A/T fluid temperature sensor 2 harness with terminal clips.
  - ◀ : Terminal clip



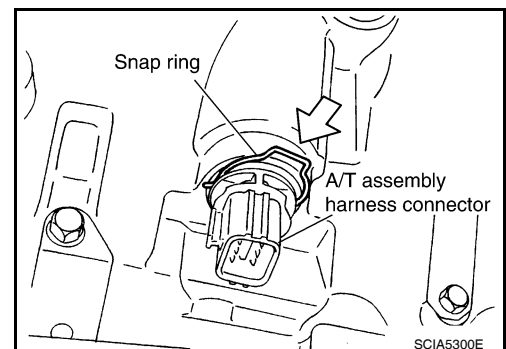
12. Securely fasten revolution sensor harness with terminal clip.
13. Connect revolution sensor connector.



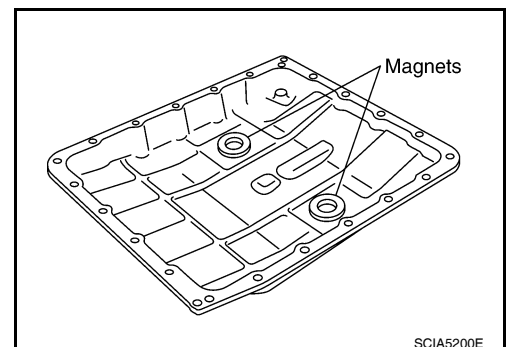
14. Pull down A/T assembly harness connector.  
**CAUTION:**  
**Be careful not to damage connector.**



15. Install snap ring to A/T assembly harness connector.



16. Install the oil pan magnets as shown.





# ASSEMBLY

## < SERVICE INFORMATION >

17. Install the oil pan and new oil pan gasket. Refer to [AT-209. "Oil Pan"](#).

**CAUTION:**

- Do not reuse the oil pan gasket.
- Completely remove all moisture, oil and old gasket from the oil pan gasket mating surfaces and holes.
- Always replace the oil pan bolts as they are self-sealing.
- Be sure the oil pan drain plug hole is located to the rear of the transmission assembly.
- Partially install the oil pan bolts in a criss-cross pattern to prevent dislocation of the gasket.
- Be careful not to pinch harnesses.

18. Install drain plug in oil pan with new gasket.

**CAUTION:**

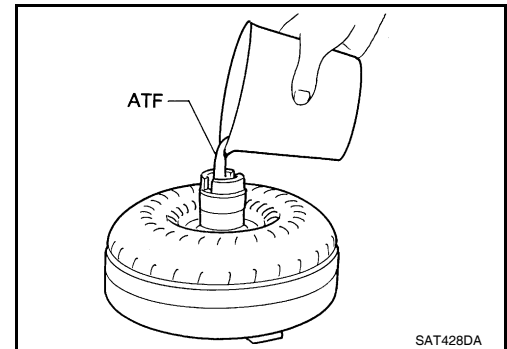
Do not reuse the drain plug gasket.

**Drain plug : 34 N·m (3.5 kg-m, 25 ft-lb)**

19. Install torque converter.

- a. Pour ATF into torque converter.

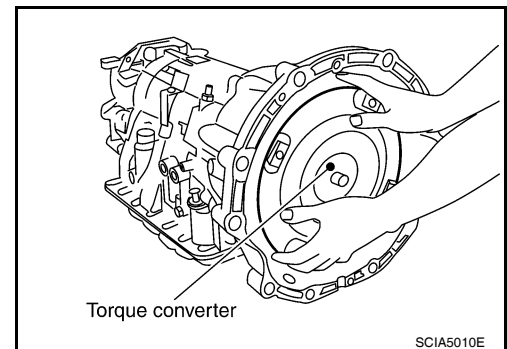
- Approximately 2 liter (2-1/8 US qt, 1-3/4 Imp qt) of fluid is required for a new torque converter.
- When reusing old torque converter, add the same amount of fluid as was drained.



- b. Install torque converter while aligning notches of torque converter with notches of oil pump.

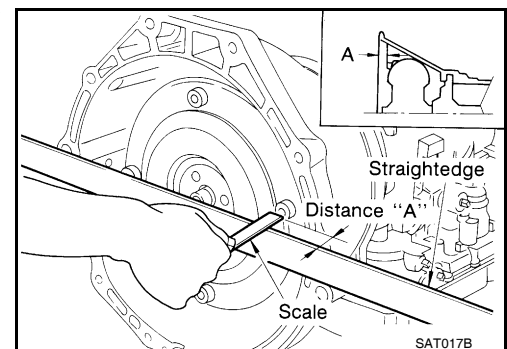
**CAUTION:**

Install torque converter while rotating it.



- c. Measure distance "A" to check that torque converter is in proper position.

**Distance "A" : 24.0 mm (0.94 in) or more**



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# SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE INFORMATION >

## SERVICE DATA AND SPECIFICATIONS (SDS)

### General Specification

INFOID:000000003532496

Applied model		2WD	4WD
Automatic transmission model		RE5R05A	
Transmission model code number		95X5B	95X5C
Stall torque ratio		2.0: 1	
Transmission gear ratio	1st	3.827	
	2nd	2.368	
	3rd	1.520	
	4th	1.000	
	5th	0.834	
	Reverse	2.613	
Recommended fluid		Genuine NISSAN Matic J ATF *1	
Fluid capacity		10.6 liter (11-1/4 US qt, 9-3/8 Imp qt)	

**CAUTION:**

- Use only Genuine NISSAN Matic J ATF. Do not mix with other fluid.
- Using automatic transmission fluid other than Genuine NISSAN Matic J ATF 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-10, "Fluids and Lubricants"](#).

### Vehicle Speed When Shifting Gears

INFOID:000000003532497

#### NORMAL MODE

Final gear ratio	Throttle position	Vehicle speed km/h (MPH)							
		D1 →D2	D2 →D3	D3 →D4	D4 →D5	D5 →D4	D4 →D3	D3 →D2	D2 →D1
2.937	Full throttle	70 - 74 (44 - 46)	112 - 120 (70 - 75)	176 - 186 (110 - 116)	249 - 259 (155 - 161)	245 - 255 (152 - 159)	166 - 176 (103 - 110)	100 - 108 (62 - 67)	43 - 47 (27 - 30)
	Half throttle	46 - 50 (28 - 31)	74 - 82 (46 - 51)	103 - 113 (64 - 70)	135 - 145 (84 - 90)	109 - 119 (68 - 74)	69 - 79 (43 - 49)	44 - 52 (27 - 32)	11 - 15 (7 - 10)
3.357	Full throttle	61 - 65 (38 - 41)	97 - 105 (61 - 66)	153 - 163 (95 - 102)	236 - 246 (147 - 153)	232 - 242 (144 - 151)	143 - 153 (89 - 95)	87 - 95 (54 - 59)	43 - 47 (27 - 29)
	Half throttle	41 - 45 (26 - 28)	66 - 74 (41 - 46)	89 - 99 (56 - 62)	117 - 127 (73 - 79)	95 - 105 (59 - 65)	59 - 69 (37 - 43)	38 - 46 (24 - 29)	11 - 15 (7 - 10)

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

#### TOW MODE

Final gear ratio	Throttle position	Vehicle speed km/h (MPH)							
		D1 →D2	D2 →D3	D3 →D4	D4 →D5	D5 →D4	D4 →D3	D3 →D2	D2 →D1
2.937	Full throttle	70 - 74 (44 - 46)	112 - 120 (70 - 75)	176 - 186 (110 - 116)	249 - 259 (155 - 161)	245 - 255 (152 - 159)	166 - 176 (103 - 110)	100 - 108 (62 - 67)	43 - 47 (27 - 30)
	Half throttle	50 - 54 (31 - 34)	81 - 89 (50 - 55)	113 - 123 (70 - 76)	135 - 145 (84 - 90)	109 - 119 (68 - 74)	68 - 78 (42 - 48)	44 - 52 (27 - 32)	11 - 15 (7 - 10)
3.357	Full throttle	61 - 65 (38 - 41)	97 - 105 (61 - 66)	153 - 163 (95 - 102)	236 - 246 (147 - 153)	232 - 242 (144 - 151)	143 - 153 (89 - 95)	87 - 95 (54 - 59)	43 - 47 (27 - 29)
	Half throttle	43 - 47 (27 - 29)	72 - 80 (45 - 50)	98 - 108 (61 - 67)	117 - 127 (73 - 79)	95 - 105 (59 - 65)	59 - 69 (37 - 43)	37 - 45 (23 - 28)	11 - 15 (7 - 10)

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

# SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE INFORMATION >

## Vehicle Speed When Performing and Releasing Complete Lock-up

INFOID:000000003532498

Final gear ratio	Throttle position	Vehicle speed km/h (MPH)	
		Lock-up "ON"	Lock-up "OFF"
2.937	Closed throttle	74 - 82 (46 - 51)	71 - 79 (45 - 49)
	Half throttle	188 - 196 (117 - 122)	136 - 144 (85 - 90)
3.357	Closed throttle	65 - 73 (41 - 46)	62 - 70 (39 - 44)
	Half throttle	168 - 176 (105 - 110)	118 - 126 (74 - 79)

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

## Stall Speed

INFOID:000000003532499

Stall speed	2,500 - 2,800 rpm
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## Line Pressure

INFOID:000000003532500

Engine speed	Line pressure [kPa (kg/cm <sup>2</sup> , psi)]	
	R position	D position
At idle speed	425 - 465 (4.3 - 4.7, 62 - 67)	379 - 428 (3.9 - 4.4, 55 - 62)
At stall speed	1,605 - 1,950 (16.4 - 19.9, 233 - 283)	1,310 - 1,500 (13.4 - 15.3, 190 - 218)

## A/T Fluid Temperature Sensor

INFOID:000000003532501

Name	Condition	CONSULT-II "DATA MONITOR" (Approx.) (V)	Resistance (Approx.) (kΩ)
ATF TEMP SE 1	0°C (32°F)	3.3	15
	20°C (68°F)	2.7	6.5
	80°C (176°F)	0.9	0.9
ATF TEMP SE 2	0°C (32°F)	3.3	10
	20°C (68°F)	2.5	4
	80°C (176°F)	0.7	0.5

## Turbine Revolution Sensor

INFOID:000000003532502

Name	Condition	Data (Approx.)
Turbine revolution sensor 1	When running at 50 km/h (31 MPH) in 4th speed with the closed throttle position switch "OFF".	1.3 (kHz)
Turbine revolution sensor 2	When moving at 20 km/h (12 MPH) in 1st speed with the closed throttle position switch "OFF".	

## Vehicle Speed Sensor A/T (Revolution Sensor)

INFOID:000000003532503

Name	Condition	Data (Approx.)
Revolution sensor	When moving at 20 km/h (12 MPH).	185 (Hz)

# SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE INFORMATION >

## Reverse brake

INFOID:000000003532504

	Thickness mm (in)	Part number*
Thickness of retaining plates	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
	5.2 (0.205)	31667 90X19

\*: Always check with the Parts Department for the latest parts information.

## Total End Play

INFOID:000000003532505

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*
0.8 (0.031)	31435 95X00
1.0 (0.039)	31435 95X01
1.2 (0.047)	31435 95X02
1.4 (0.055)	31435 95X03
1.6 (0.063)	31435 95X04
1.8 (0.071)	31435 95X05

\*: Always check with the Parts Department for the latest parts information.