SECTION AT
AUTOMATIC TRANSMISSION

CONTENTS

SERVICE INFORMATION

INDEX FOR DTC

Alphabetical Index

INFOID:0000000004656774

NOTE:
If DTC "U1000 CAN COMM CIRCUIT" is displayed with other DTCs, first perform the trouble diagnosis for "DTC U1000 CAN COMM CIRCUIT". Refer to AT-90.

Items (CONSULT-III screen terms)	DTC		Reference page
	OBD-II	Except OBD-II	
	MIL*1, "ENGINE" with CONSULT-III or GST*2	CONSULT-III only "TRANSMISSION"	
1ST E/BRAKING	—	P1731	AT-137
1GR INCORRECT RATIO	P0731	P0731	AT-110
2GR INCORRECT RATIO	P0732	P0732	AT-112
3GR INCORRECT RATIO	P0733	P0733	AT-114
4GR INCORRECT RATIO	P0734	P0734	AT-116
5GR INCORRECT RATIO	P0735	P0735	AT-118
INTERLOCK	P1730	P1730	AT-135
TORQUE CONVERTER	P0744*3	P0744	AT-122
TRANS FLUID TEMP SEN	P0710	P1710	AT-128
CAN COMM CIRCUIT	U1000	U1000	AT-90
DRCT CLUTCH SOL	P1762	P1762	AT-143
ENGINE SPEED	P0725	P0725	AT-108
FR BRAKE SOLENOID	P1757	P1757	AT-141
HLR CLUTCH SOLENOID	P1767	P1767	AT-145
INPUT CLUTCH SOL	P1752	P1752	AT-139
PC SOLENOID A	P0745	P0745	AT-124
L C BRAKE SOLENOID	P1772	P1772	AT-147
L C BRAKE SOLENOID	P1774*3	P1774	AT-149
M-MODE SWITCH	—	P1815	AT-151
T/M RANGE SWITCH A	P0705	P0705	AT-98
STARTER RELAY	—	P0615	AT-93
TORQUE CONVERTER	P0740	P0740	AT-120
TRANSMISSION CONT	P0700	P0700	AT-97
TP SENSOR	—	P1705	AT-126
INPUT SPEED SENSOR A	P0717	P0717	AT-101
VEHICLE SPEED SIGNAL	—	P1721	AT-133
OUTPUT SPEED SENSOR	P0720	P0720	AT-103

*1: Refer to AT-38, "Malfunction Indicator Lamp (MIL)".

*2: These numbers are prescribed by SAE J2012.

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

DTC No. Index

INFOID:0000000004656775

NOTE:

If DTC "U1000 CAN COMM CIRCUIT" is displayed with other DTCs, first perform the trouble diagnosis for "DTC U1000 CAN COMM CIRCUIT". Refer to AT-90.

DTC		Items (CONSULT-III screen terms)	Reference page
OBD-II	Except OBD-II		
MIL*1, "ENGINE" with CONSULT-III or GST*2	CONSULT-III only "TRANSMISSION"		
—	P0615	STARTER RELAY	AT-93
P0700	P0700	TRANSMISSION CONT	AT-97
P0705	P0705	T/M RANGE SWITCH A	AT-98
P0710	P1710	TRANS FLUID TEMP SEN	AT-128
P0717	P0717	INPUT SPEED SENSOR A	AT-101
P0720	P0720	OUTPUT SPEED SENSOR	AT-103
P0725	P0725	ENGINE SPEED	AT-108
P0731	P0731	1GR INCORRECT RATIO	AT-110
P0732	P0732	2GR INCORRECT RATIO	AT-112
P0733	P0733	3GR INCORRECT RATIO	AT-114
P0734	P0734	4GR INCORRECT RATIO	AT-116
P0735	P0735	5GR INCORRECT RATIO	AT-118
P0740	P0740	TORQUE CONVERTER	AT-120
P0744*2	P0744	TORUQE CONVERTER	AT-122
P0745	P0745	PC SOLENOID A	AT-124
—	P1705	TP SENSOR	AT-126
—	P1721	VEHICLE SPEED SIGNAL	AT-133
P1730	P1730	INTERLOCK	AT-135
—	P1731	1ST E/BRAKING	AT-137
P1752	P1752	INPUT CLUTCH SOL	AT-139
P1757	P1757	FR BRAKE SOLENOID	AT-141
P1762	P1762	DRCT CLUTCH SOL	AT-143
P1767	P1767	HLR CLUTCH SOLENOID	AT-145
P1772	P1772	L C BRAKE SOLENOID	AT-147
P1774*2	P1774	L C BRAKE SOLENOID	AT-149
—	P1815	M-MODE SWITCH	AT-151
U1000	U1000	CAN COMM CIRCUIT	AT-90

*1: Refer to AT-38, "Malfunction Indicator Lamp (MIL)".

*2: These numbers are prescribed by SAE J2012.

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

PRECAUTIONS

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

INFOID:0000000005874501

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 “SUPPLEMENTAL RESTRAINT SYSTEM” and “SEAT BELTS” 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 “SUPPLEMENTAL RESTRAINT SYSTEM”.**
- **Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.**

PRECAUTIONS WHEN USING POWER TOOLS (AIR OR ELECTRIC) AND HAMMERS

WARNING:

- **When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.**
- **When using air or electric power tools or hammers, always switch the ignition OFF, disconnect the battery, and wait at least 3 minutes before performing any service.**

Precaution for Battery Service

INFOID:0000000004656777

Before disconnecting the battery, lower both the driver and passenger windows. This will prevent any interference between the window edge and the vehicle when the door is opened/closed. During normal operation, the window slightly raises and lowers automatically to prevent any window to vehicle interference. The automatic window function will not work with the battery disconnected.

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

INFOID:0000000004656778

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.

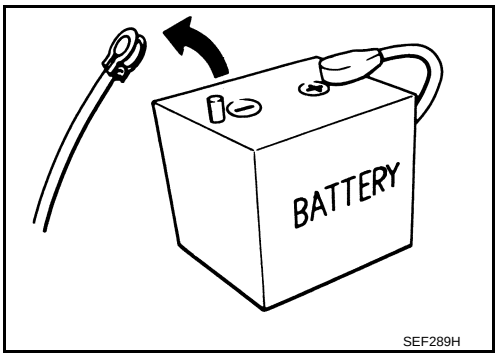
CAUTION:

- **Be sure to turn the ignition switch OFF and disconnect the battery cable from the negative terminal 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 EVAP 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.**

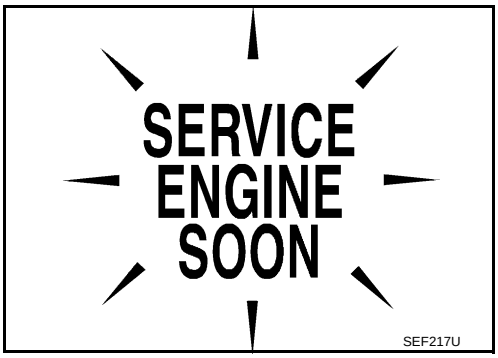
Precaution

INFOID:0000000004656779

- **Before connecting or disconnecting the A/T assembly harness connector, turn ignition switch OFF and disconnect the battery cable from the negative terminal. Because battery voltage is applied to TCM even if ignition switch is turned OFF.**



- **After performing each TROUBLE DIAGNOSIS, perform “DTC 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, "Fluids and Lubricants".
- Use lint-free paper 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 A/T. 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 paper or towels for wiping parts clean. Common shop rags can leave fibers that could interfere with the operation of the A/T.
- 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 A/T 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-8, "Service Notice or Precaution".
- After overhaul, refill the A/T with new ATF.
- When the A/T drain plug is removed, only some of the ATF is drained. Old ATF 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-12, "Changing A/T Fluid", AT-12, "Checking A/T Fluid".

Service Notice or Precaution

INFOID:0000000004656780

ATF COOLER SERVICE

If ATF 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-14, "A/T Fluid Cooler Cleaning". For radiator replacement, refer to CO-12.

OBD-II SELF-DIAGNOSIS

- A/T self-diagnosis is performed by the TCM in combination with the ECM. The results can be read through the blinking pattern of the A/T CHECK indicator or the malfunction indicator lamp (MIL). Refer to the table on AT-81, "CONSULT-III Function (TRANSMISSION)" for the indicator used to display each self-diagnostic result.
- The self-diagnostic results indicated by the MIL are automatically stored in both the ECM and TCM memories.
  Always perform the procedure on AT-37, "OBD-II Diagnostic Trouble Code (DTC)" to complete the repair and avoid unnecessary blinking of the MIL.

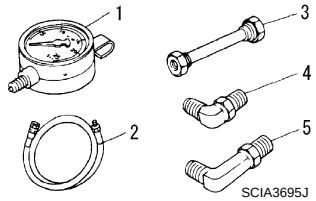
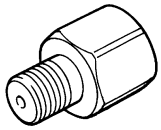
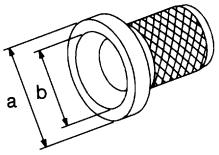
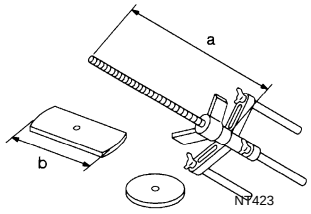
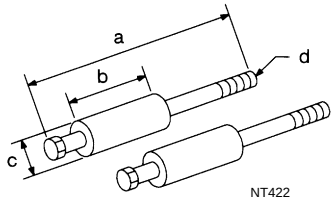
  For details of OBD-II, refer to EC-45.
- **Certain systems and components, especially those related to OBD, may use the new style slide-locking type harness connector. For description and how to disconnect, refer to PG-74.**

PREPARATION

Special Service Tool

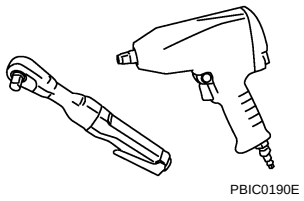
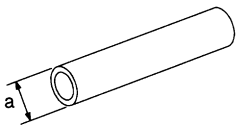
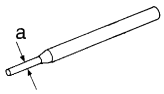
INFOID:0000000004656781

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

Tool number (Kent-Moore No.) Tool name	Description
ST2505S001 (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	 Measuring line pressure
KV31103600 (J-45674) Joint pipe adapter (With ST25054000)	 Measuring line pressure
ST33400001 (J-26082) Drift a: 60 mm (2.36 in) dia. b: 47 mm (1.85 in) dia.	 • Installing rear oil seal • Installing oil pump housing oil seal
KV31102400 (J-34285 and J-34285-87) Clutch spring compressor a: 320 mm (12.60 in) b: 174 mm (6.85 in)	 Installing reverse brake return spring retainer
ST25850000 (J-25721-A) Sliding hammer a: 179 mm (7.05 in) b: 70 mm (2.76 in) c: 40 mm (1.57 in) d: M12X1.75P	 Remove oil pump assembly

Commercial Service Tool

INFOID:0000000004656782

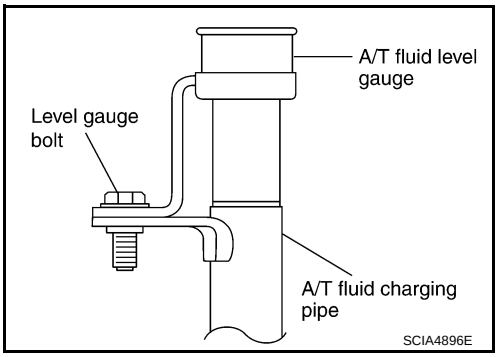
Tool name	Description
Power tool  PBIC0190E	Loosening bolts and nuts
Drift a: 22 mm (0.87 in) dia.  NT083	Installing manual shaft oil seals
Pin punch a: 4 mm (0.16 in) dia.  NT410	Removing retaining pin

A/T FLUID

Changing A/T Fluid

INFOID:0000000004656783

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



ATF: **Genuine NISSAN Matic J ATF**

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

CAUTION:
- **Use only Genuine NISSAN Matic J ATF. Do not mix with other ATF.**
- **Using ATF other than Genuine NISSAN Matic J ATF will cause deterioration in driveability and A/T durability, and may damage the A/T, which is not covered by the NISSAN new vehicle limited warranty.**
- **When filling ATF, take care not to splash heat generating parts such as exhaust with ATF.**
- **Do not reuse drain plug gasket.**

Drain plug:

: 34 N·m (3.5 kg-m, 25 ft-lb)

5. Run engine at idle speed for 5 minutes.
6. Check A/T fluid level and condition. Refer to AT-12, "Checking A/T Fluid". If ATF is still dirty, repeat step 2. through 5.
7. Install the removed A/T fluid level gauge in the A/T fluid charging pipe.
8. Tighten the level gauge bolt.

Level gauge bolt:

: 5.1 N·m (0.52 kg-m, 45 in-lb)

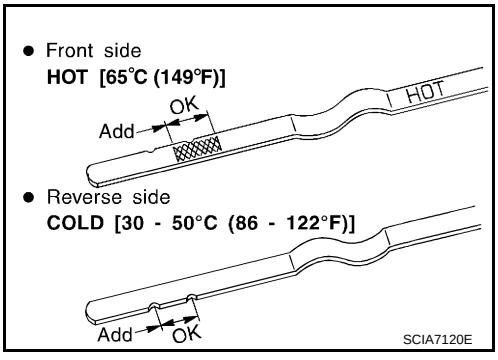
Checking A/T Fluid

INFOID:0000000004656784

1. Warm up engine.
2. Check for A/T fluid leakage.
3. Loosen the level gauge bolt.
4. Before driving, A/T fluid level can be checked at A/T fluid temperatures of 30 to 50°C (86 to 122°F) using “COLD” range on A/T fluid level gauge as follows.

a. Park vehicle on level surface and set parking brake.
b. Start the engine and move selector lever through each gear position. Leave selector lever in “P” position.
c. Check A/T fluid level with engine idling.
d. Remove A/T fluid level gauge and wipe clean with lint-free paper.

CAUTION:

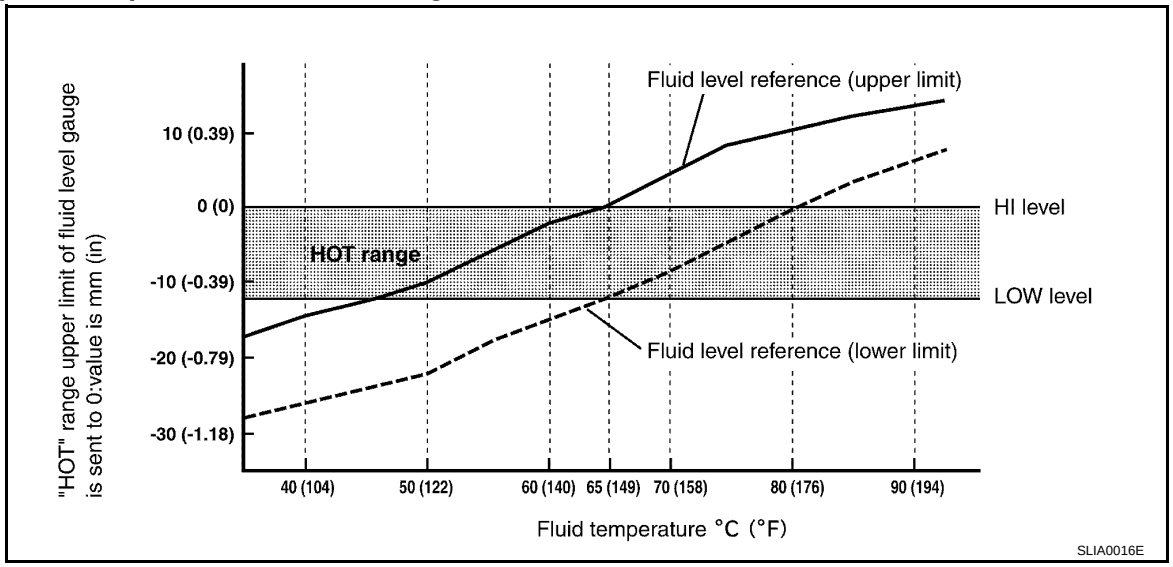


When wiping away the A/T fluid level gauge, always use lint-free paper, not a cloth one.

e. Re-insert A/T fluid level gauge into A/T fluid charging pipe as far as it will go.
CAUTION:
To check A/T fluid level, insert the A/T fluid level gauge until the cap contacts the end of the A/T fluid charging pipe, with the A/T fluid level gauge reversed from the normal attachment conditions.

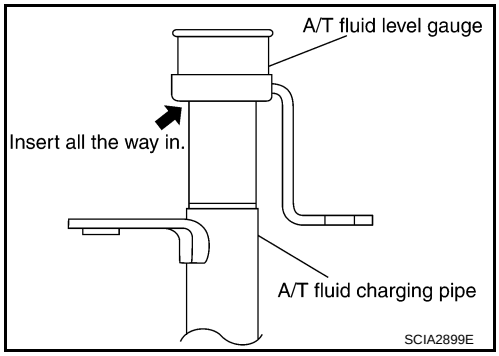
f. Remove A/T fluid level gauge and note reading. If reading is at low side of range, add ATF to the A/T fluid charging pipe.
CAUTION:
Do not overfill.

5. Drive vehicle for approximately 5 minutes in urban areas.
6. Make the A/T fluid temperature approximately 65°C (149°F).
NOTE:
A/T fluid level will be greatly affected by temperature as shown in the figure. Therefore, be certain to perform operation while checking data with CONSULT-III.



a. Select “DATA MONITOR”.
b. Read out the value of “ATF TEMP 1”.

7. Re-check A/T fluid level at A/T fluid temperatures of approximately 65°C (149°F) using “HOT” range on A/T fluid level gauge.
CAUTION:
- **When wiping away the A/T fluid level gauge, always use lint-free paper, not a cloth one.**
- **To check A/T fluid level, insert the A/T fluid level gauge until the cap contacts the end of the A/T fluid charging pipe, with the A/T fluid level gauge rotated from the normal attachment conditions as shown.**



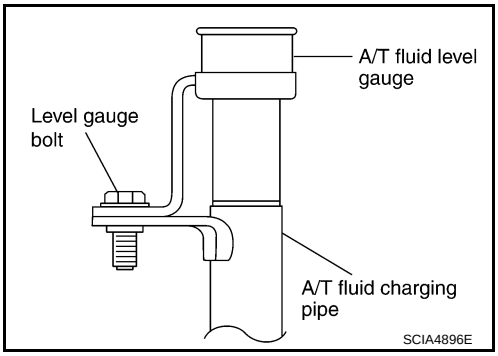
8. Check A/T fluid condition.
- If ATF is very dark or smells burned, check operation of A/T. Flush cooling system after repair of A/T.
- If ATF contains frictional material (clutches, bands, etc.), replace radiator and flush cooler line using cleaning solvent and compressed air after repair of A/T. Refer to CO-12 and AT-14, "A/T Fluid Cooler Cleaning".

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

10. Tighten level gauge bolt.

Level gauge bolt:

: 5.1 N·m (0.52 kg-m, 45 in-lb)



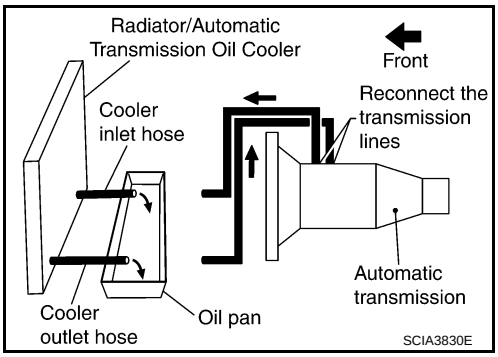
A/T Fluid Cooler Cleaning

INFOID:0000000004656785

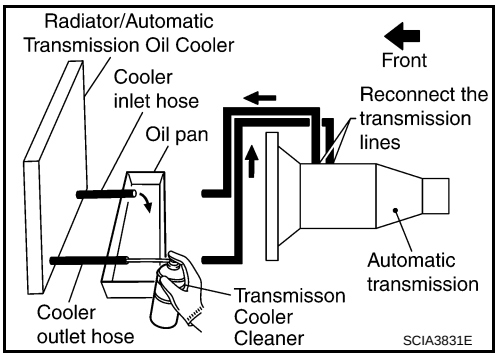
Whenever an A/T is replaced, the A/T fluid cooler mounted in the radiator must be inspected and cleaned. Metal debris and friction material, if present, can become trapped in the A/T fluid cooler. This debris can contaminate the newly serviced A/T or, in severe cases, can block or restrict the flow of ATF. In either case, malfunction of the newly serviced A/T may result.
Debris, if present, may build up as ATF 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

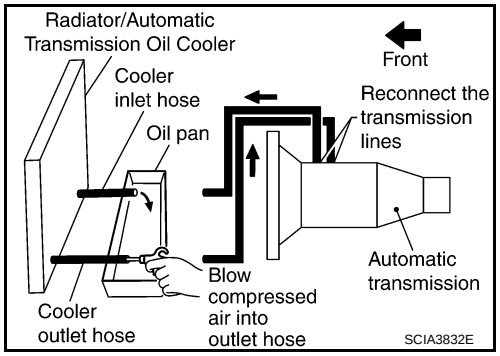
1. Position an oil pan under the A/T inlet and outlet cooler hoses.
2. Identify the inlet and outlet A/T fluid cooler hoses.
3. Disconnect the A/T fluid cooler inlet and outlet rubber hoses from the steel cooler tubes or bypass valve.
   NOTE:
   Replace the cooler hoses if rubber material from the hose remains on the tube fitting.
4. Allow any ATF 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 Transmission 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 ATF flows out of the cooler inlet hose for 5 seconds.



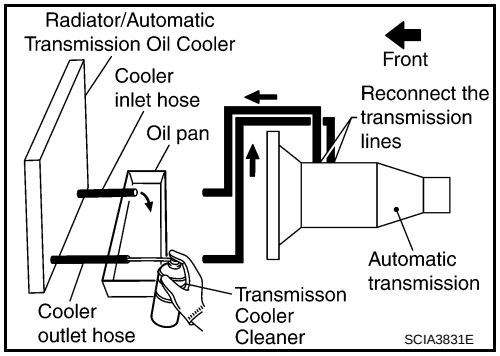
7. Insert the tip of an air gun into the end of the cooler outlet hose.
8. Wrap a shop rag around the air gun tip and of the cooler outlet hose.
9. Blow compressed air regulated to 5 to 9 kg/cm^2 (71 to 128 psi) through the cooler outlet hose for 10 seconds to force out any remaining ATF.
10. Repeat steps 5 through 9 three additional times.
11. Position an oil pan under the banjo bolts that connect the A/T fluid cooler steel lines to the A/T.
12. Remove the banjo bolts.
13. Flush each steel line from the cooler side back toward the A/T by spraying Transmission Cooler Cleaner in a continuous stream for 5 seconds.
14. Blow compressed air regulated to 5 to 9 kg/cm^2 (71 to 128 psi) through each steel line from the cooler side back toward the A/T for 10 seconds to force out any remaining ATF.
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 "A/T FLUID COOLER DIAGNOSIS PROCEDURE".

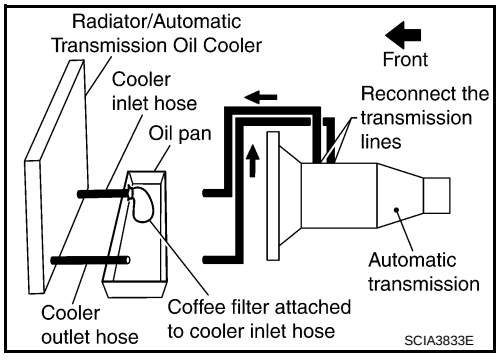


A/T FLUID COOLER DIAGNOSIS PROCEDURE

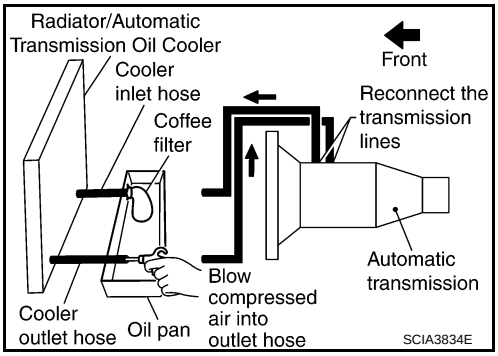
NOTE:
Insufficient cleaning of the cooler inlet hose exterior may lead to inaccurate debris identification.

1. Position an oil pan under the A/T inlet and outlet cooler hoses.
2. Clean the exterior and tip of the cooler inlet hose.
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 Transmission 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 ATF 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.





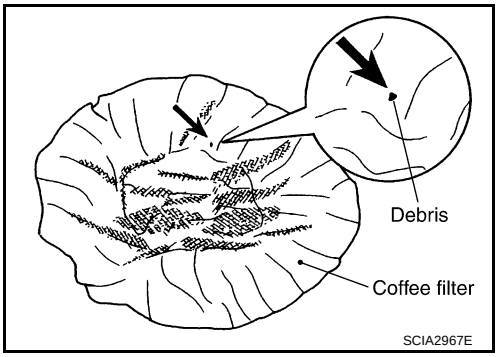
6. Insert the tip of an air gun into the end of the cooler outlet hose.
7. Wrap a shop rag around the air gun tip and end of cooler outlet hose.
8. Blow compressed air regulated to 5 to 9 kg/cm^2 (71 to 128 psi) through the cooler outlet hose to force any remaining ATF into the coffee filter.
9. Remove the coffee filter from the end of the cooler inlet hose.
10. Perform "A/T FLUID COOLER INSPECTION PROCEDURE".



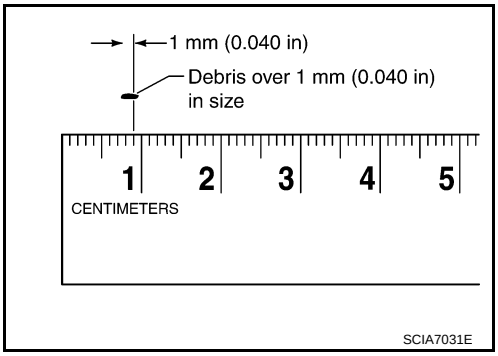
A/T FLUID COOLER INSPECTION PROCEDURE

1. Inspect the coffee filter for debris.

a. If small metal debris less than 1 mm (0.04 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.



b. If one or more pieces of debris are found that are over 1 mm (0.04 in) in size and/or peeled clutch facing material is found in the coffee filter, the A/T fluid cooler is not serviceable. The A/T fluid cooler/radiator must be replaced and the inspection procedure is ended. Refer to CO-12 and CO-16.



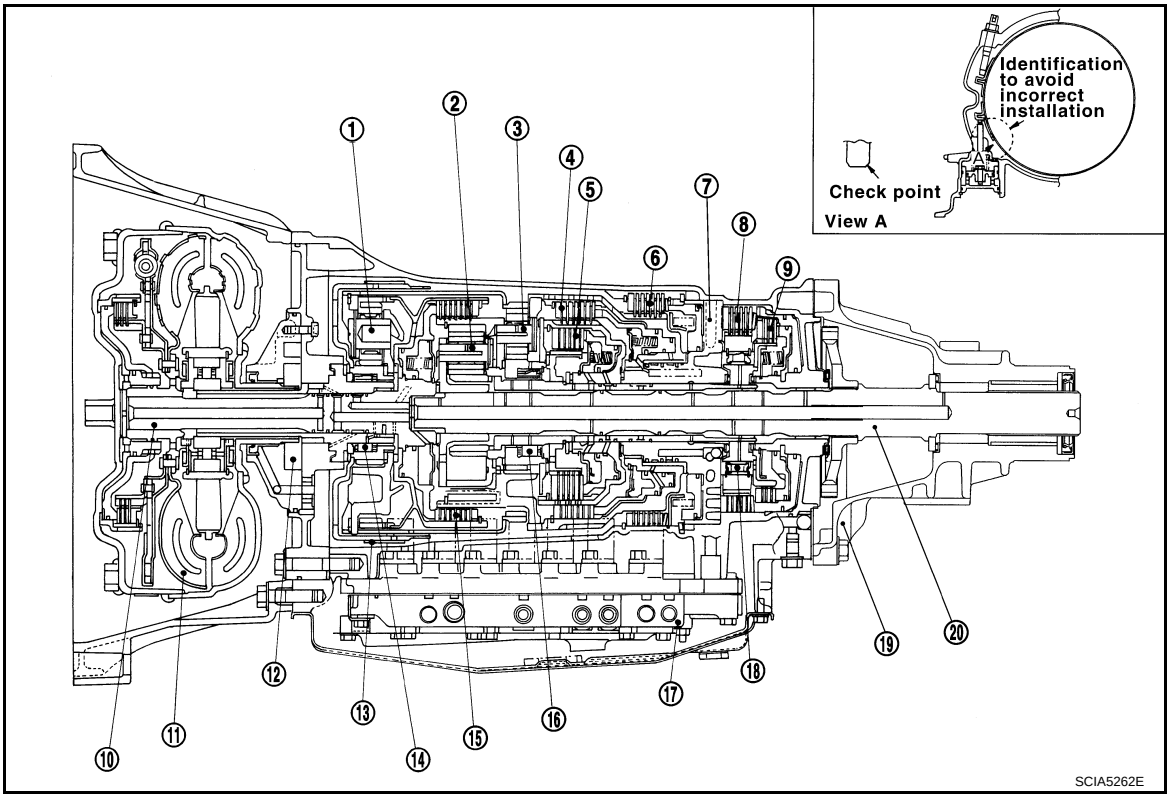
A/T FLUID COOLER FINAL INSPECTION

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

A/T CONTROL SYSTEM

Cross-Sectional View

INFOID:0000000004656786



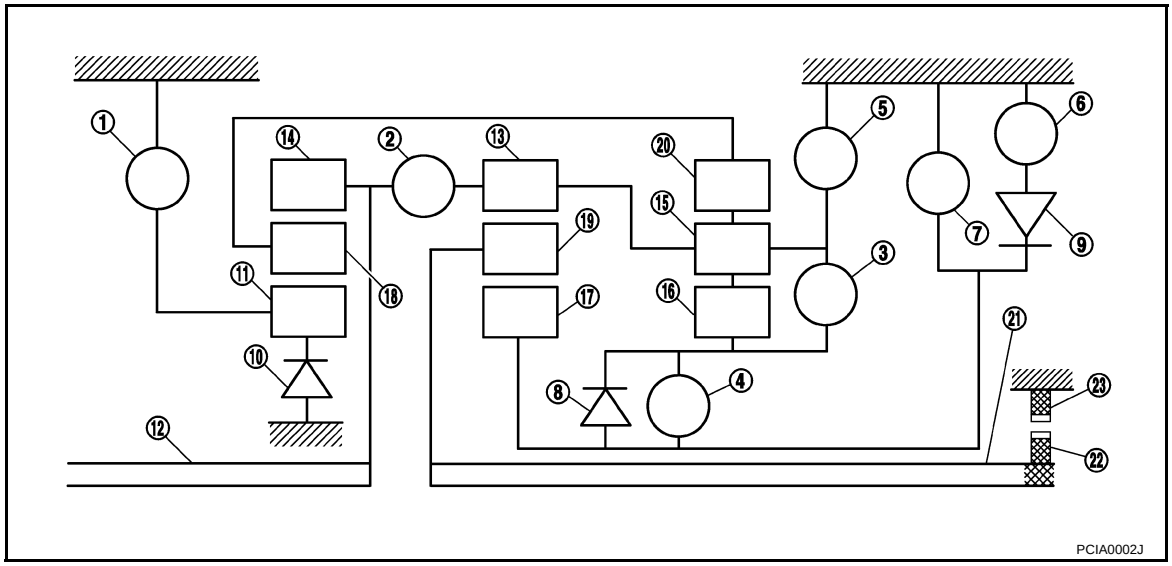
1. Front planetary gear
2. Mid planetary gear
3. Rear planetary gear
4. Direct clutch
5. High and low reverse clutch
6. Reverse brake
7. Drum support
8. Forward brake
9. Low coast brake
10. Input shaft
11. Torque converter
12. Oil pump
13. Front brake
14. 3rd one-way clutch
15. Input clutch
16. 1st one-way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

Shift Mechanism

INFOID:0000000004656787

The A/T 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



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

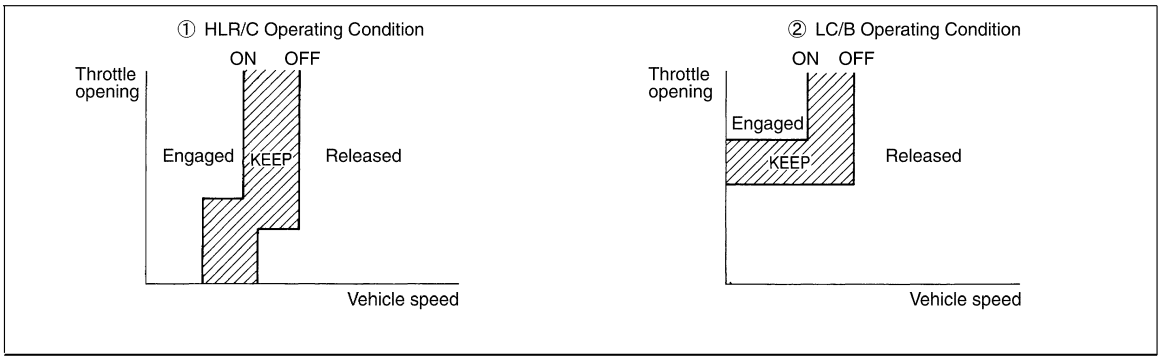
Name of the Part	Abbreviation	Function
Front brake (1)	FR/B	Fastens the front sun gear (11).
Input clutch (2)	I/C	Connects the input shaft (12), the front internal gear (14) and the mid internal gear (13).
Direct clutch (3)	D/C	Connects the rear carrier (15) and the rear sun gear (16).
High and low reverse 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
N			△			△						NEUTRAL POSITION
D	1st		△ *			△	△ **	○	◎	◎	◎	Automatic shift 1↔2↔3↔4↔5
	2nd			○		△		○		◎	◎	
	3rd		○	○		○		△	◇		◎	
	4th	○	○	○				△	◇			
	5th	○	○			○		△	◇		◇	
M5	5th	○	○			○		△	◇		◇	Locks* (held stationary) in 5th gear
M4	4th	○	○	○				△	◇			Locks* (held stationary) in 4th gear
M3	3rd		○	○		○		△	◇		◎	Locks* (held stationary) in 3rd gear
M2	2nd			○		○	○	○		◎	◎	Locks* (held stationary) in 2nd gear
M1	1st		○			○	○	○	◎	◎	◎	Locks* (held stationary) in 1st gear

*: Down shift automatically according to the vehicle speed.

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



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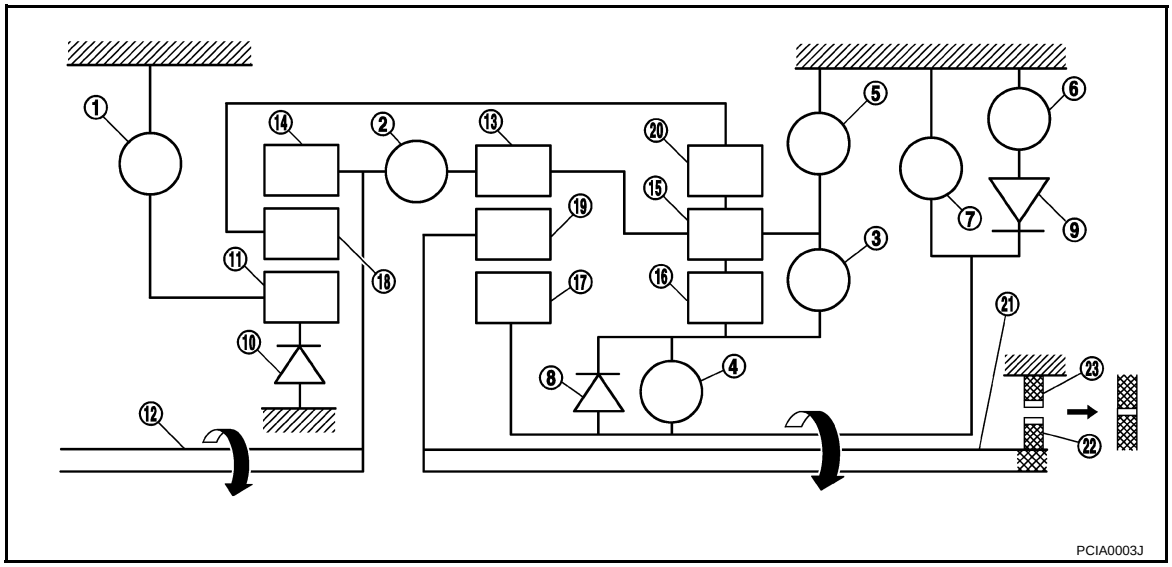
POWER TRANSMISSION

"N" Position

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

"P" Position

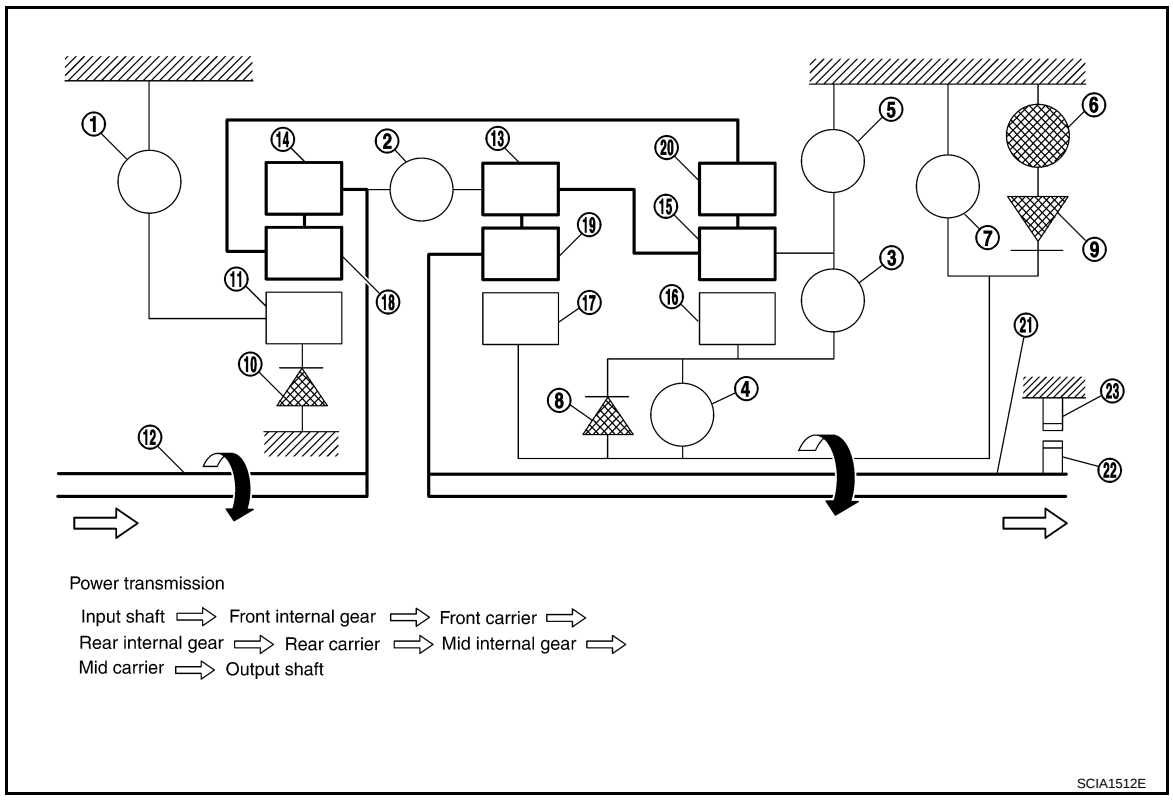
- The same as for the “N” position, both the forward brake and the reverse brake are released, so torque from the input shaft drive is not transmitted to the output shaft.
- The parking pawl linked with the selector lever meshes with the parking gear and fastens the output shaft mechanically.



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

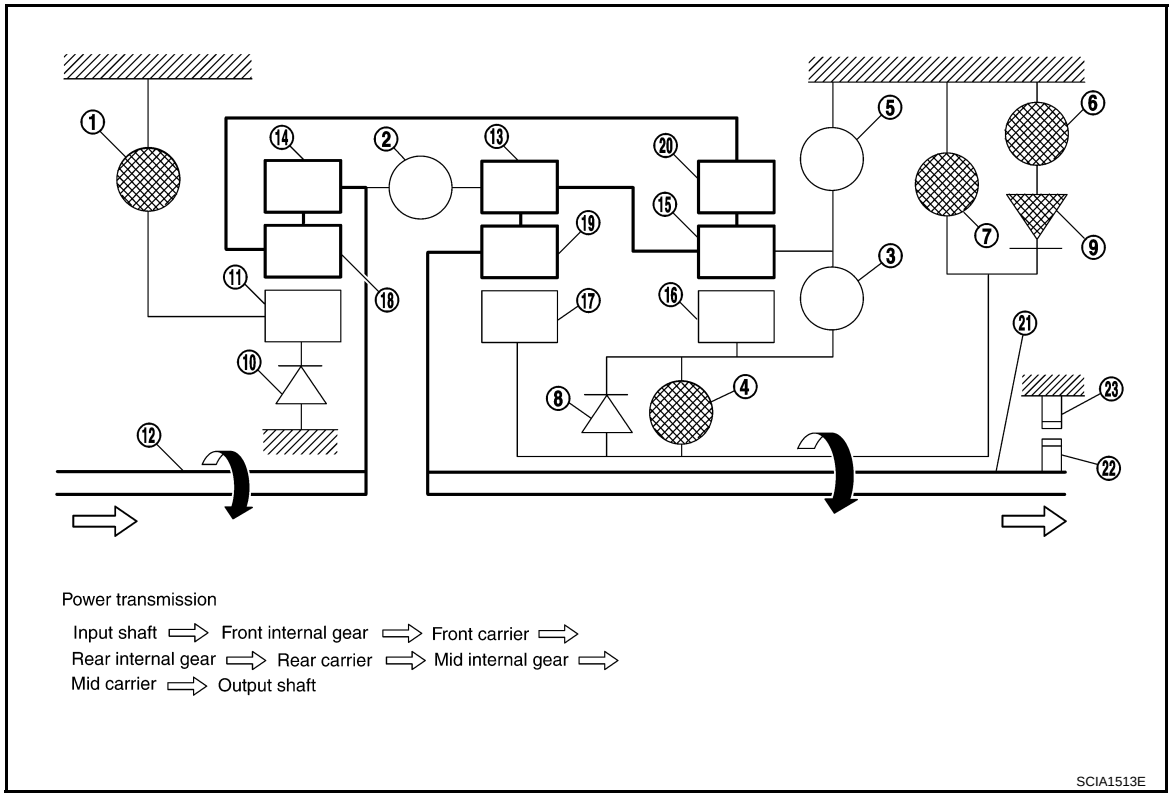
“D_1” Position

- 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.



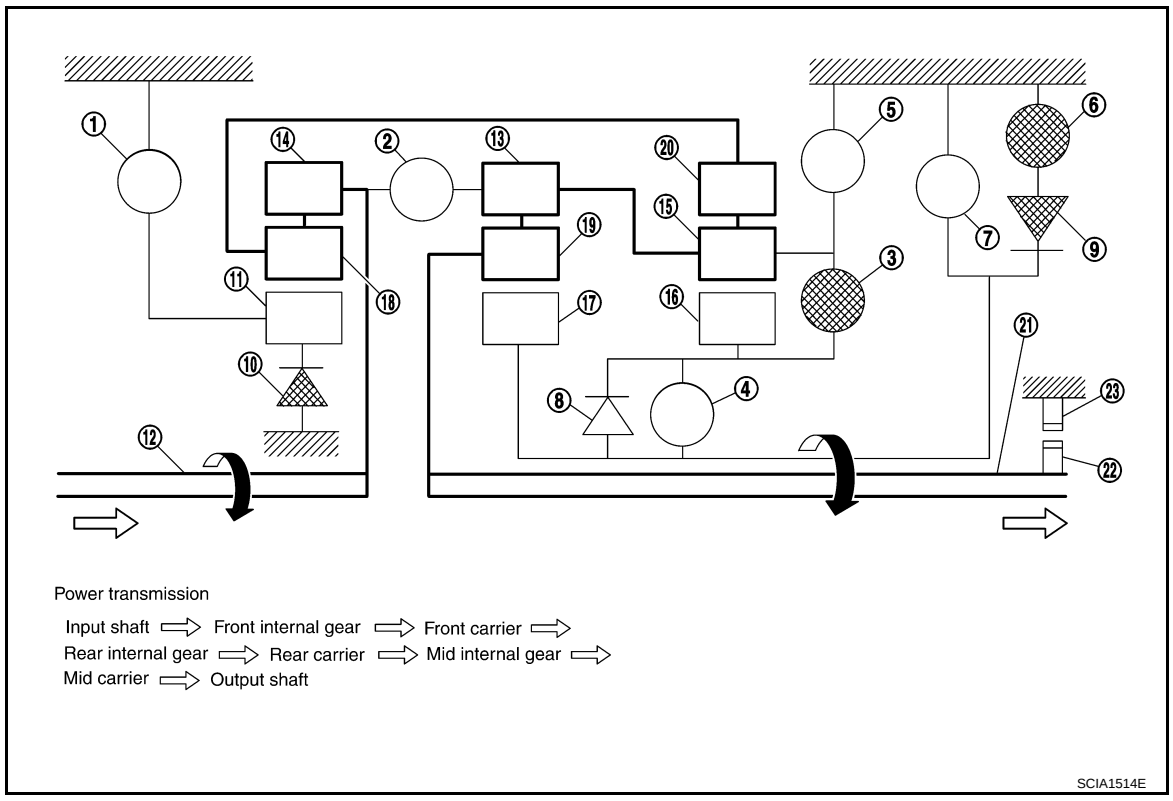
1. Front brake
2. Input clutch
3. Direct clutch
4. High and low reverse clutch
5. Reverse brake
6. Forward brake
7. Low coast brake
8. 1st one-way clutch
9. Forward one-way clutch
10. 3rd one-way clutch
11. Front sun gear
12. Input shaft
13. Mid internal gear
14. Front internal gear
15. Rear carrier
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

"M1" Position
- 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.



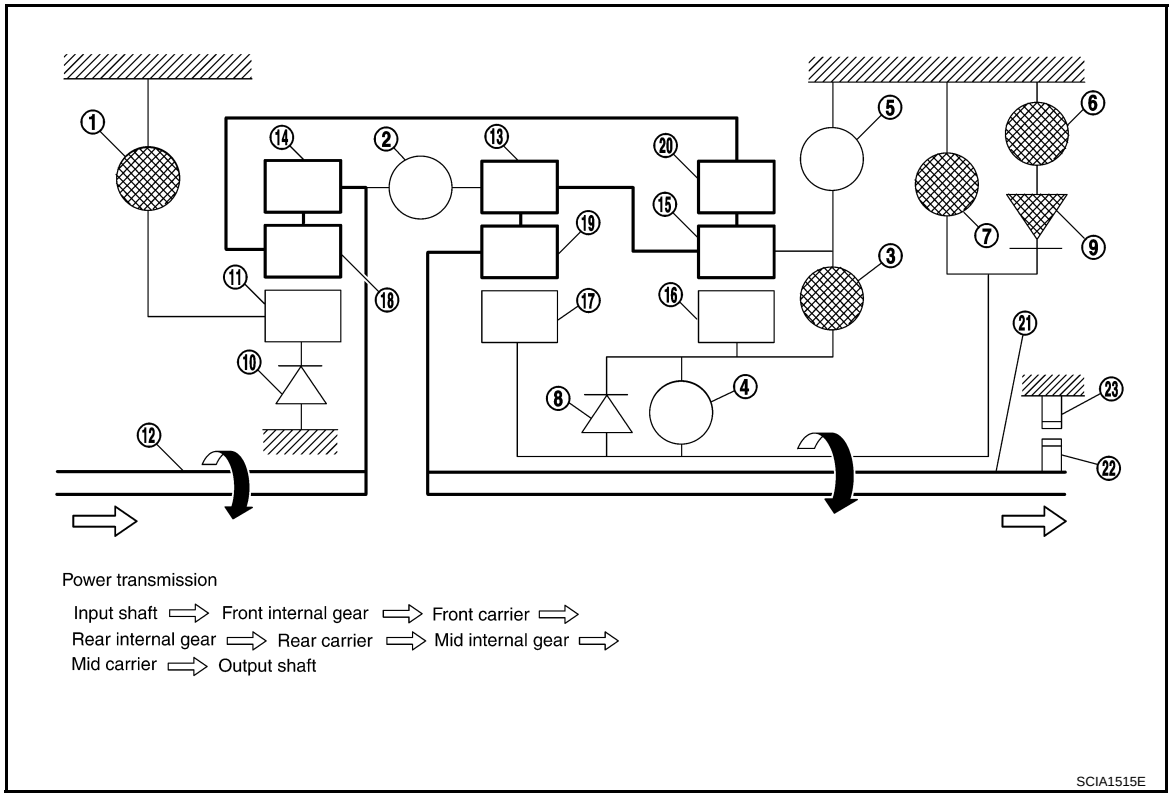
1. Front brake
2. Input clutch
3. Direct clutch
4. High and low reverse clutch
5. Reverse brake
6. Forward brake
7. Low coast brake
8. 1st one-way clutch
9. Forward one-way clutch
10. 3rd one-way clutch
11. Front sun gear
12. Input shaft
13. Mid internal gear
14. Front internal gear
15. Rear carrier
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_2" Position
- 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.



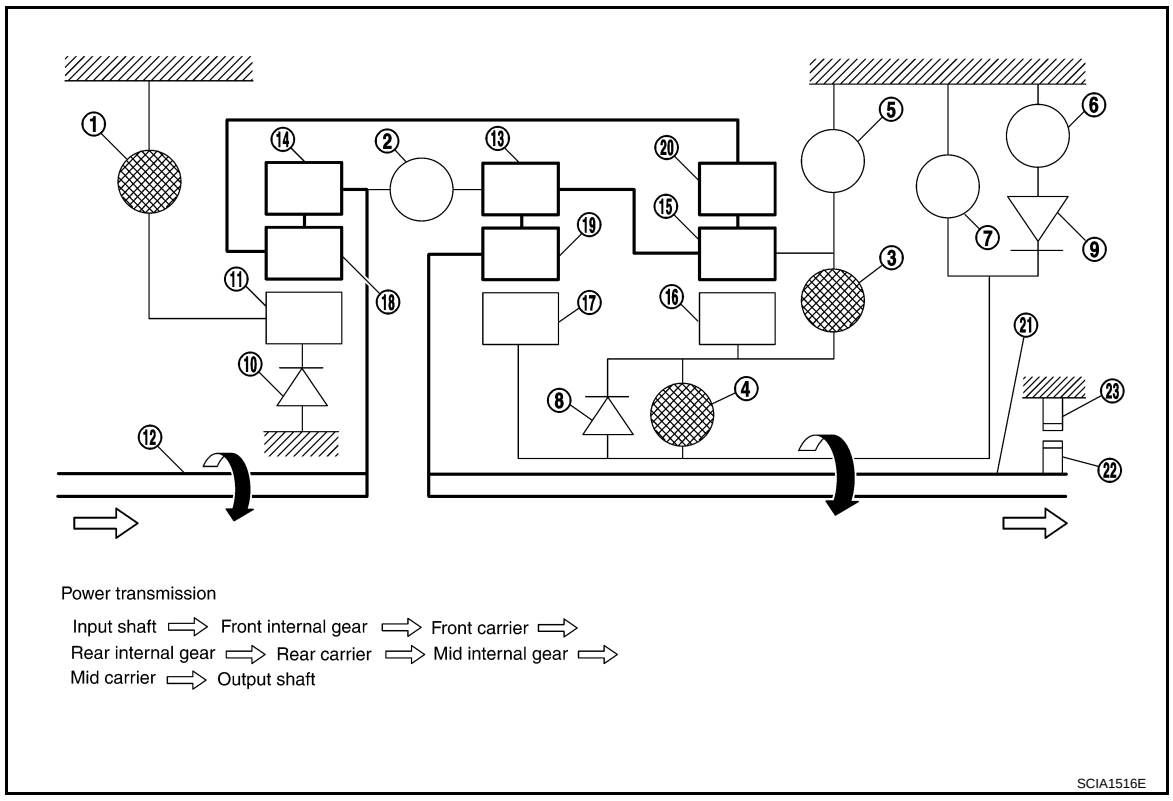
1. Front brake
2. Input clutch
3. Direct clutch
4. High and low reverse clutch
5. Reverse brake
6. Forward brake
7. Low coast brake
8. 1st one-way clutch
9. Forward one-way clutch
10. 3rd one-way clutch
11. Front sun gear
12. Input shaft
13. Mid internal gear
14. Front internal gear
15. Rear carrier
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

"M2" Position
- 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.



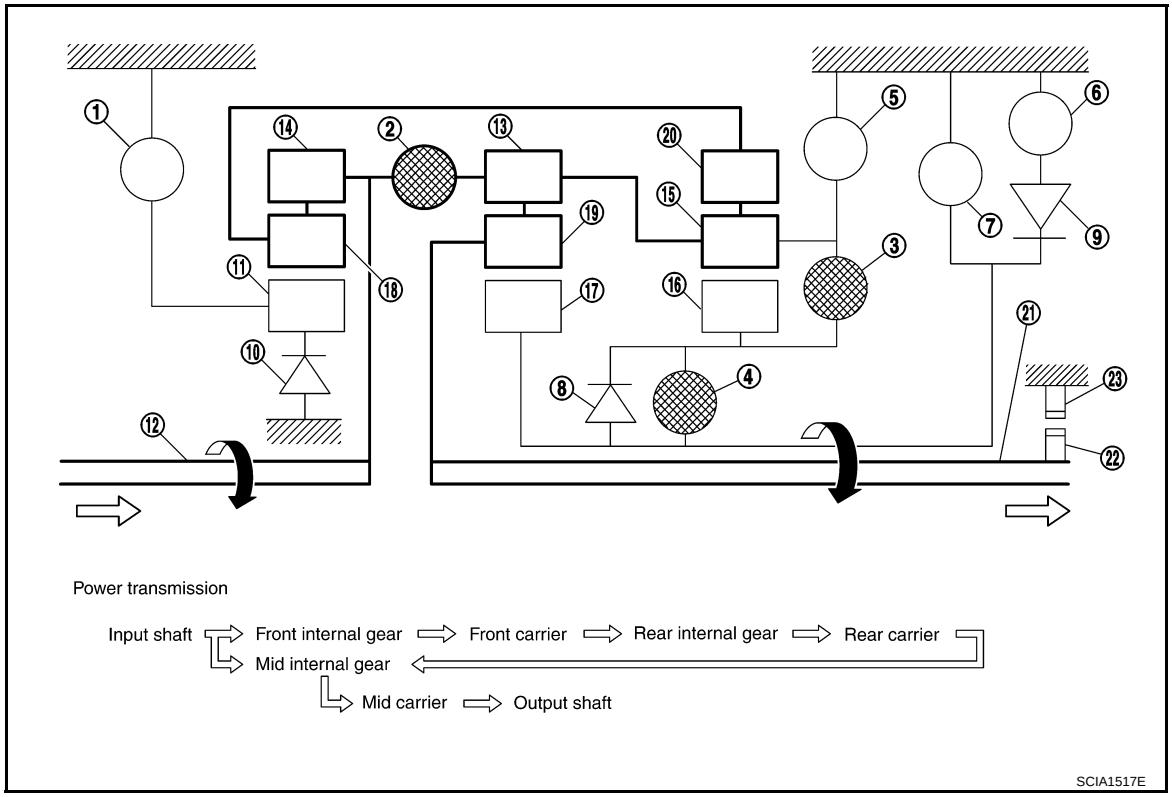
1. Front brake
2. Input clutch
3. Direct clutch
4. High and low reverse clutch
5. Reverse brake
6. Forward brake
7. Low coast brake
8. 1st one-way clutch
9. Forward one-way clutch
10. 3rd one-way clutch
11. Front sun gear
12. Input shaft
13. Mid internal gear
14. Front internal gear
15. Rear carrier
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

"D3" and "M3" Positions
- The front brake fastens the front sun gear.
- The direct clutch is coupled, and the rear carrier and rear sun gear are connected.
- The high and low reverse clutch is coupled, and the mid sun gear and rear sun gear are connected.



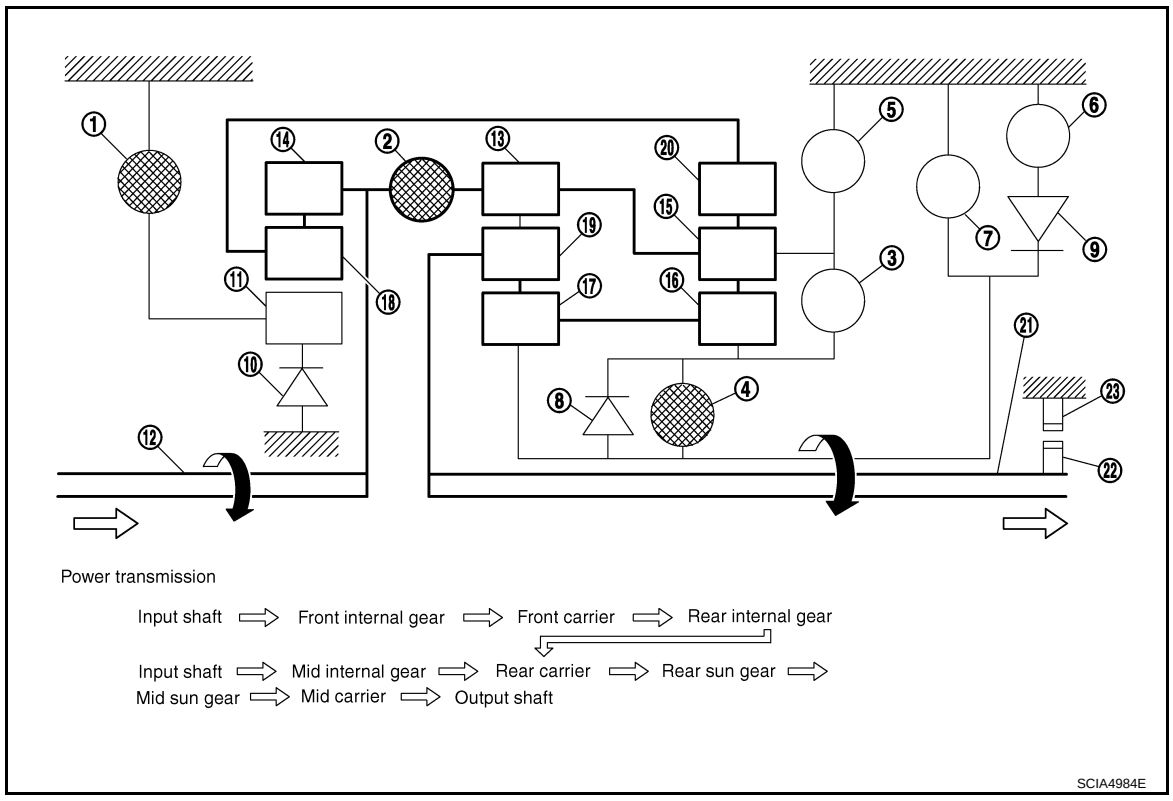
1. Front brake
2. Input clutch
3. Direct clutch
4. High and low reverse clutch
5. Reverse brake
6. Forward brake
7. Low coast brake
8. 1st one-way clutch
9. Forward one-way clutch
10. 3rd one-way clutch
11. Front sun gear
12. Input shaft
13. Mid internal gear
14. Front internal gear
15. Rear carrier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

"D4" and "M4" Positions
- The direct clutch is coupled, and the rear carrier and rear sun gear are connected.
- The high and low reverse clutch is coupled, and the mid sun gear and rear sun gear are connected.
- The input clutch is coupled, and the front internal gear and mid internal gear are connected.
- The drive power is conveyed to the front internal gear, mid internal gear, and rear carrier and the three planetary gears rotate forward as one unit.



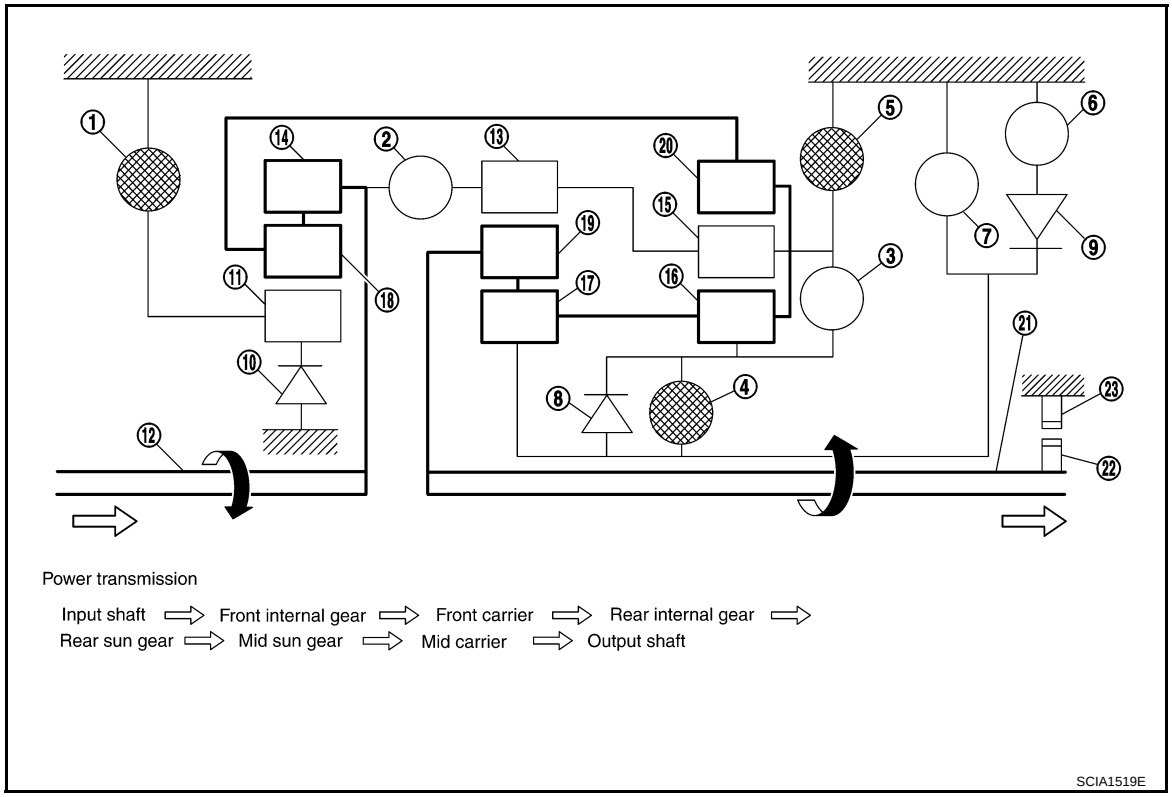
1. Front brake
2. Input clutch
3. Direct clutch
4. High and low reverse clutch
5. Reverse brake
6. Forward brake
7. Low coast brake
8. 1st one-way clutch
9. Forward one-way clutch
10. 3rd one-way clutch
11. Front sun gear
12. Input shaft
13. Mid internal gear
14. Front internal gear
15. Rear carrier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

"D5" and "M5" Positions
- 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.



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.



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:0000000004656788

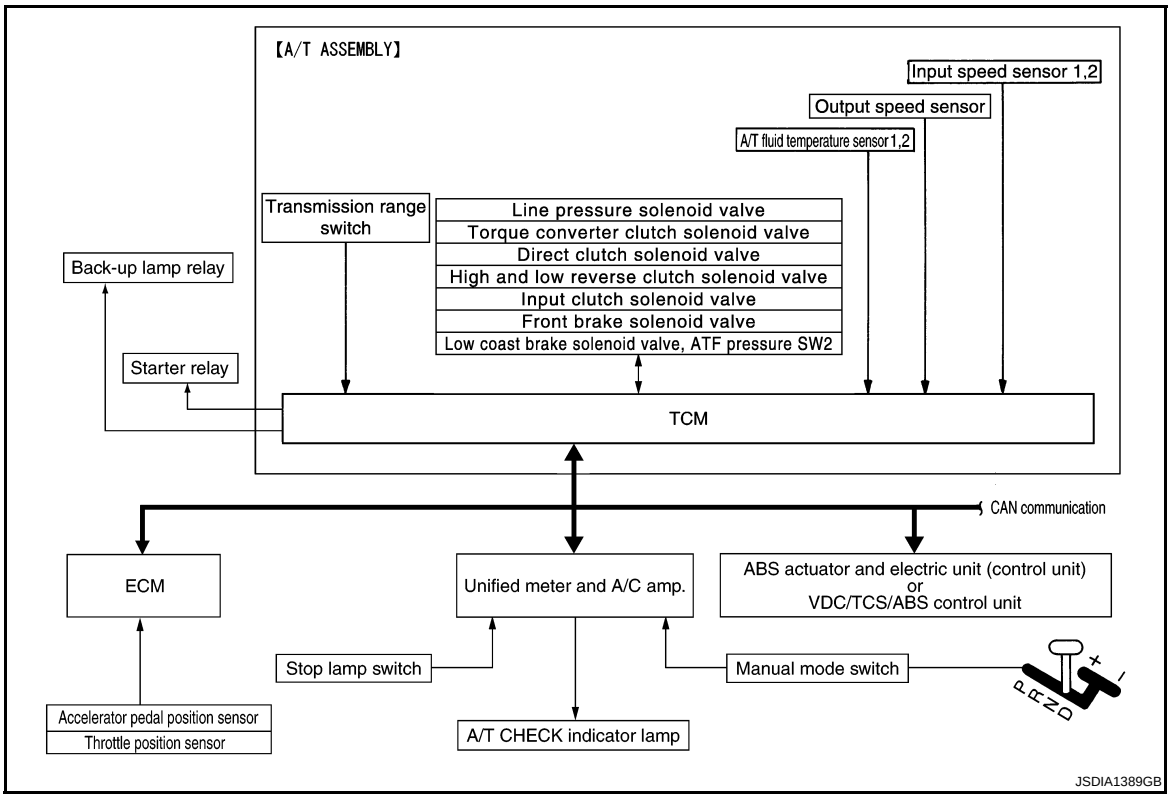
The function of the TCM is to:
- Receive input signals sent from various switches and sensors.
- Determine required line pressure, shifting point, lock-up operation, and engine brake operation.
- Send required output signals to the respective solenoids.

CONTROL SYSTEM OUTLINE

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

SENSORS (or SIGNALS)		TCM		ACTUATORS
Transmission range switch Accelerator pedal position signal Closed throttle position signal Wide open throttle position signal Engine speed signal A/T fluid temperature sensor Output speed sensor Vehicle speed signal Manual mode switch signal Stop lamp switch signal Input speed sensor ATF pressure switch	⇒	Shift control Line pressure control Lock-up control Engine brake control Timing control Fail-safe control Self-diagnosis CONSULT-III 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:0000000004656789

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-41, "CAN System Specification Chart".

Input/Output Signal of TCM

INFOID:0000000004656790

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(*5)		X	X	X	X	X	X	X
	Vehicle speed sensor A/T (revolution sensor)		X	X	X	X	X	X	X
	Vehicle speed sensor MTR(*1)(*5)							X	
	Closed throttle position signal(*5)			X(*2)	X	X		X	X(*4)
	Wide open throttle position signal(*5)							X	X(*4)
	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(*5)		X	X	X	X	X	X	X
	Stop lamp switch signal(*5)			X	X	X			X(*4)
	A/T fluid temperature sensors 1, 2		X	X	X	X		X	X
	ASCD	Operation signal(*5)		X	X	X			
		Overdrive cancel signal(*5)		X					
Output	Direct clutch solenoid			X	X			X	X
	Input clutch solenoid			X	X			X	X
	High and low reverse clutch solenoid			X	X			X	X
	Front brake solenoid			X	X			X	X
	Low coast brake solenoid (ATF pressure switch 2)			X	X		X	X	X
	Line pressure solenoid		X	X	X	X	X	X	X
	TCC solenoid					X		X	X
	Self-diagnostics table(*6)								X
	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: Used as a condition for starting self-diagnostics; if self-diagnostics are not started, it is judged that there is some kind of error.

*5: Input by CAN communications

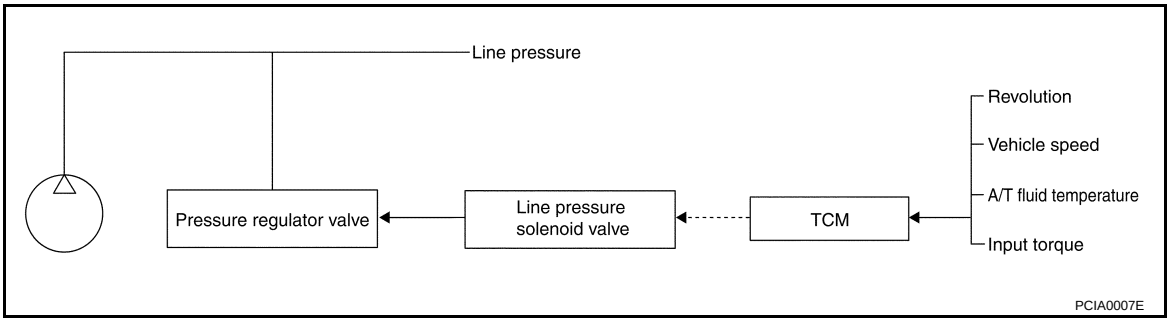
*6: Output by CAN communications

Line Pressure Control

INFOID:0000000004656791

- When an input torque signal equivalent to the engine drive force is sent from the ECM to the TCM, the TCM controls the line pressure solenoid.

- This line pressure solenoid controls the pressure regulator valve as the signal pressure and adjusts the pressure of the operating oil discharged from the oil pump to the line pressure most appropriate to the driving state.

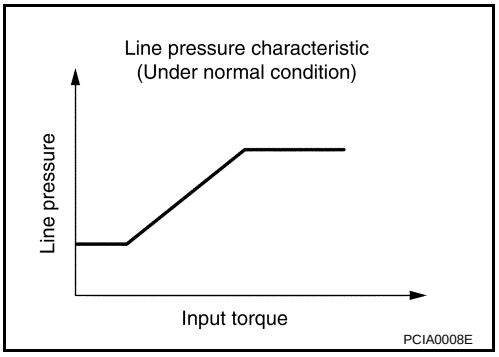


LINE PRESSURE CONTROL IS BASED ON THE TCM LINE PRESSURE CHARACTERISTIC PATTERN

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

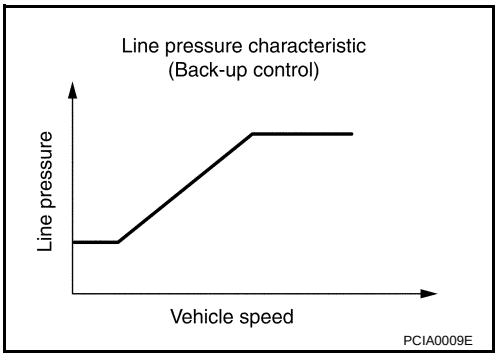
Normal Control

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



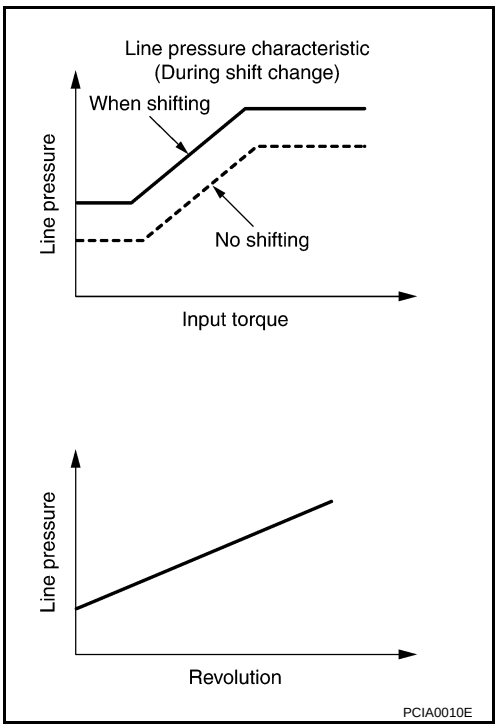
Back-up Control (Engine Brake)

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



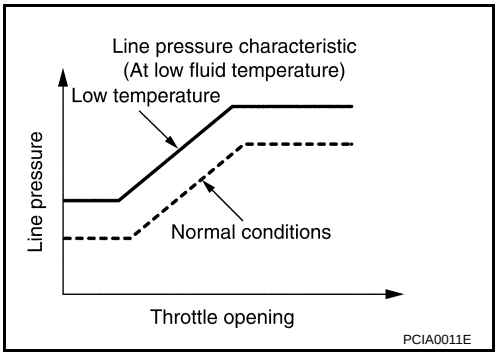
During Shift Change

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



At Low Fluid Temperature

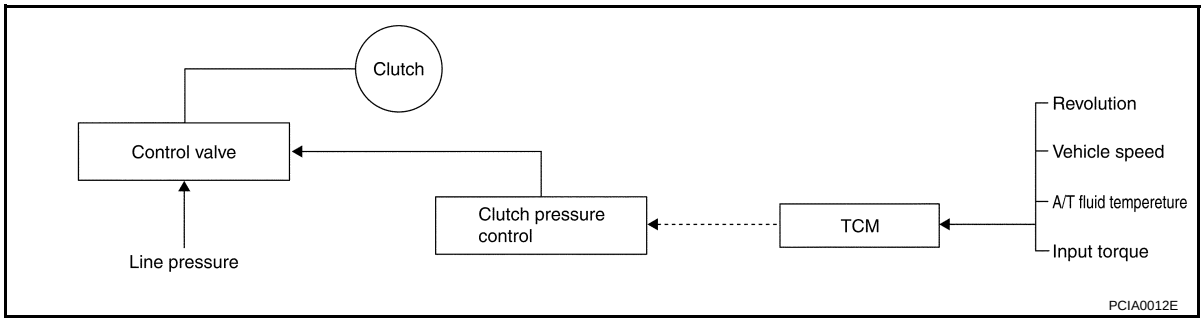
When the A/T fluid temperature drops below the prescribed temperature, in order to speed up the action of each friction element, the line pressure is set higher than the normal line pressure characteristic.



Shift Control

INFOID:0000000004656792

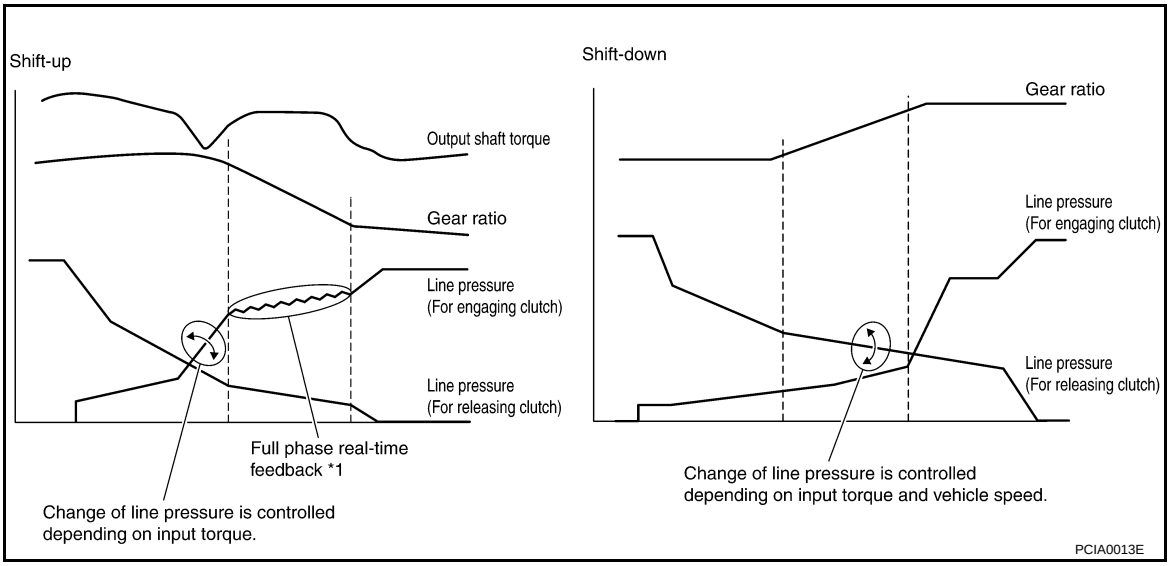
The clutch pressure control solenoid is controlled by the signals from the switches and sensors. Thus, the clutch pressure is adjusted to be appropriate to the engine load state and vehicle driving state. It becomes possible to finely control the clutch hydraulic pressure with high precision and a smoother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



NORMAL SHIFT CONTROL

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

Shift Change System Diagram



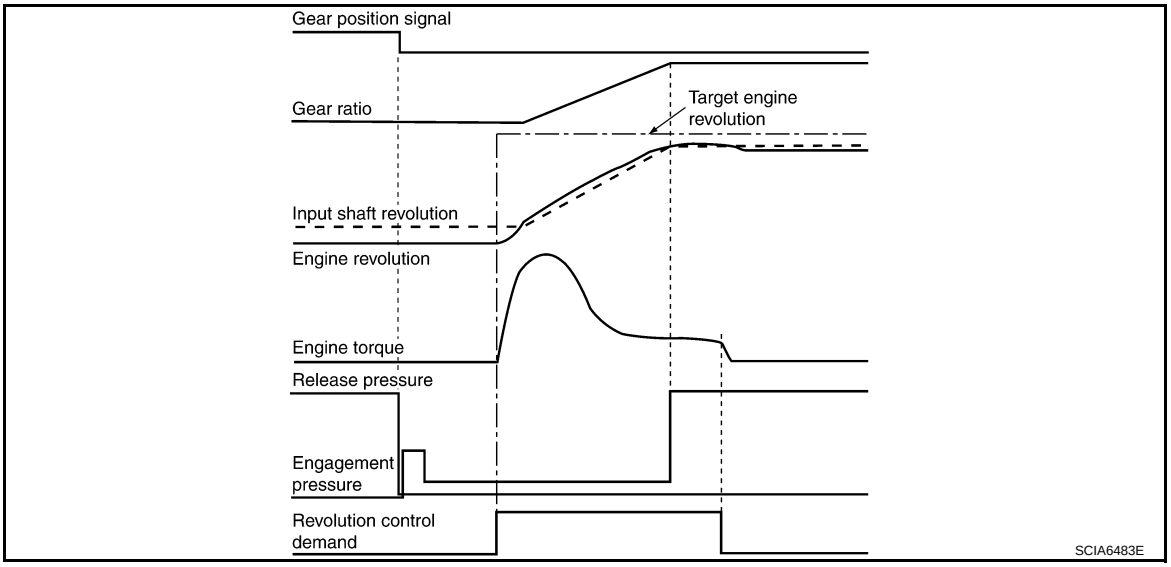
*1: Full phase real-time feedback control monitors movement of gear ratio at gear change, and controls oil pressure at real-time to achieve the best gear ratio.

BLIPPING CONTROL

This system makes transmission clutch engage readily by controlling (synchronizing) engine revolution according to the (calculation of) engine revolution after shifting down.

- "BLIPPING CONTROL" functions.
  - When downshifting by accelerator pedal depression at "D" position.
  - When downshifting under the manual mode.
- TCM selects "BLIPPING CONTROL" or "NORMAL SHIFT CONTROL" according to the gear position, the select lever position, the engine torque and the speed when accelerating by pedal depression.
- Revolution control demand signal is transmitted from TCM to ECM under "BLIPPING CONTROL".
- TCM synchronizes engine revolution according to the revolution control demand signal.

Shift Change System Diagram



Lock-up Control

INFOID:0000000004656793

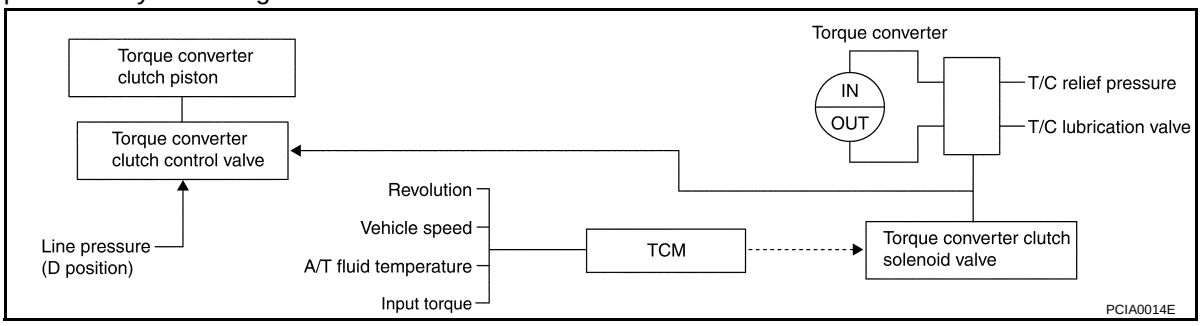
The torque converter clutch piston in the torque converter is engaged to eliminate torque converter slip to increase power transmission efficiency.
The torque converter clutch control valve operation is controlled by the torque converter clutch solenoid valve, which is controlled by a signal from TCM, and the torque converter clutch control valve engages or releases the torque converter clutch piston.

Lock-up operation condition table

selector lever	"D" position		"M" position			
Gear position	5	4	5	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

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

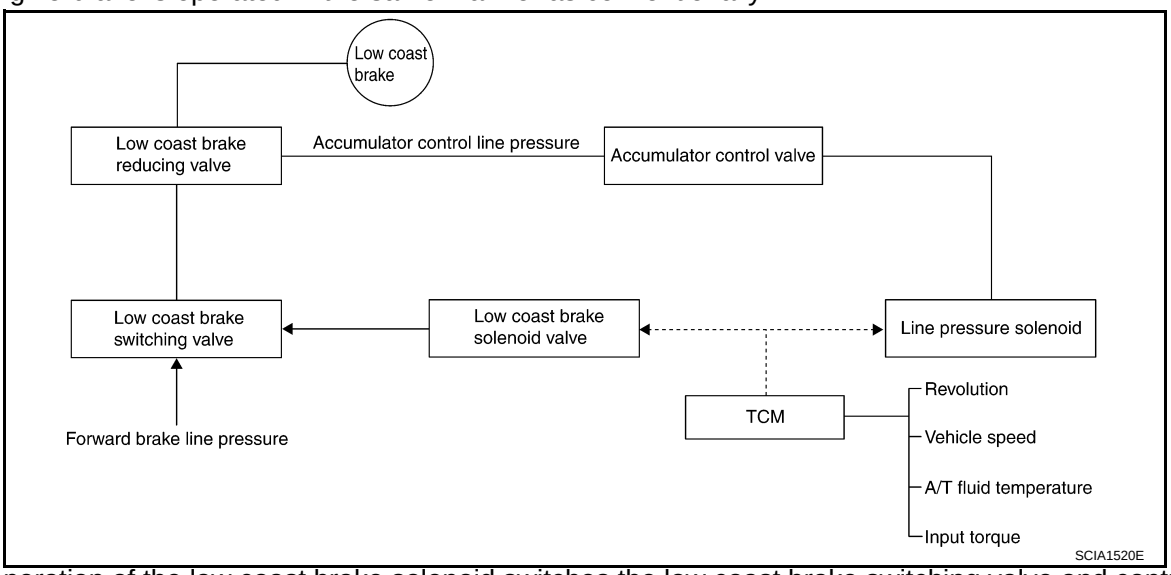
In the slip region, the torque converter clutch solenoid current is controlled with the TCM to put it into the half-clutched state. This absorbs the engine torque fluctuation and lock-up operates from low speed.
This raises the fuel efficiency for 4GR and 5GR at both low speed and when the accelerator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

Engine Brake Control

INFOID:0000000004656794

- 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:0000000004656795

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 1GR, 2GR, 3GR, and 5GR gears, adjusts the clutch pressure.)
Accumulator control valve	Adjusts the pressure (accumulator control pressure) acting on the accumulator piston and low coast reducing valve to the pressure appropriate to the driving state.
Pilot valve A	Adjusts the line pressure and produces the constant pressure (pilot pressure) required for line pressure control, shift change control, and lock-up control.
Pilot valve B	Adjusts the line pressure and produces the constant pressure (pilot pressure) required for shift change control.
Low coast brake switching valve	During engine braking, supplies the line pressure to the low coast brake reducing valve.
Low coast brake reducing valve	When the low coast brake is coupled, adjusts the line pressure to the optimum pressure (low coast brake pressure) and supplies it to the low coast brake.
N-R accumulator	Produces the stabilizing pressure for when N-R is selected.
Direct clutch piston switching valve	Operates in 4GR 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 1GR, 3GR, 4GR and 5GR, 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 4GR and 5GR, 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 2GR, 3GR, and 4GR, adjusts the clutch pressure.)

Name	Function
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 passage.
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 ATF PRESSURE SWITCH

Name	Function
ATF 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.

ON BOARD DIAGNOSTIC (OBD) SYSTEM

Introduction

INFOID:0000000004656796

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-81, "CONSULT-III Function (TRANSMISSION)".

OBD-II Function for A/T System

INFOID:0000000004656797

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:0000000004656798

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:0000000004656799

HOW TO READ DTC AND 1ST TRIP DTC

DTC and 1st trip DTC can be read by the following methods.
(with CONSULT-III or GST) CONSULT-III or GST (Generic Scan Tool) Examples: P0705, P0720 etc.
These DTC are prescribed by SAE J2012.
(CONSULT-III 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-III can identify them as shown below, therefore, CONSULT-III (if available) is recommended.

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-III or GST. The 1st trip freeze frame data can only be displayed on the CONSULT-III screen, not on the GST. For detail, refer to EC-111, "CONSULT-III Function (ENGINE)".
Only one set of freeze frame data (either 1st trip freeze frame data of 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-III, 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-III 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-46, "Emission-related Diagnostic Information".

- **Diagnostic trouble codes (DTC)**
- **1st trip diagnostic trouble codes (1st trip DTC)**
- **Freeze frame data**
- **1st trip freeze frame data**
- **System readiness test (SRT) codes**
- **Test values**

HOW TO ERASE DTC (WITH CONSULT-III)

1. The emission related diagnostic information in the TCM and ECM can be erased by selecting “All Erase” in the “Description” of “FINAL CHECK” mode with CONSULT-III.

HOW TO ERASE DTC (WITH GST)

1. If the ignition switch stays ON after repair work, be sure to turn ignition switch OFF once. Wait at least 10 seconds and then turn it ON (engine stopped) again.
2. Perform “Erase Self-diagnosis”. Refer to AT-88, "Diagnosis Procedure without CONSULT-III".
3. Select Mode 4 with GST (Generic Scan Tool). For details, refer to EC-120, "Generic Scan Tool (GST) Function".

HOW TO ERASE DTC (NO TOOLS)

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

1. If the ignition switch stays ON after repair work, be sure to turn ignition switch OFF once. Wait at least 10 seconds and then turn it ON (engine stopped) again.
2. Perform “Erase Self-diagnosis”. Refer to AT-88, "Diagnosis Procedure without CONSULT-III".
3. Perform “OBD-II SELF-DIAGNOSTIC PROCEDURE (No tools)”. Refer to EC-46, "Emission-related Diagnostic Information".

Malfunction Indicator Lamp (MIL)

INFOID:0000000004656800

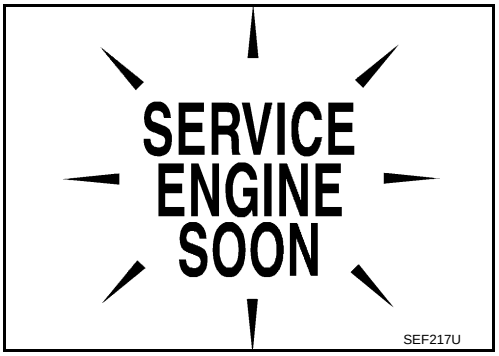
DESCRIPTION

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-53, or see EC-662.

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

DTC Inspection Priority Chart

INFOID:0000000004656801

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

NOTE:

If DTC "U1000 CAN COMM CIRCUIT" is displayed with other DTCs, first perform the trouble diagnosis for "DTC U1000 CAN COMM CIRCUIT". Refer to AT-90.

Priority	Detected items (DTC)
1	U1000 CAN COMM CIRCUIT
2	Except above

Fail-Safe

INFOID:0000000004656802

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, even if the selector lever is "D" or "M" mode, the A/T 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 A/T 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 "WORK FLOW" (Refer to AT-41).

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 A/T

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

Accelerator Pedal Position Sensor

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

Throttle Position Sensor

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

Transmission Range 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" position to make driving possible.

Starter Relay

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

Interlock

- If there is an interlock judgment malfunction, the transmission is fixed in 2GR to make driving possible.
  NOTE:
  When the vehicle is driven fixed in 2GR a turbine revolution sensor malfunction is displayed, but this is not a turbine revolution sensor malfunction.
- When interlock is detected at the 3GR or more, it is locked at the 2GR.

A/T 1st Engine Braking

When there is an 1st 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 malfunction (electrical or functional) occurs, in order to make driving possible, if the solenoid is ON, the A/T is held in 2GR; if the solenoid is OFF, the A/T is held in 4GR. (Engine brake is not applied in 1GR and 2GR.)

Input Clutch Solenoid
If a malfunction (electrical or functional) occurs with the solenoid either ON or OFF, the A/T is held in 4GR to make driving possible.

Direct Clutch Solenoid
If a malfunction (electrical or functional) occurs with the solenoid either ON or OFF, the A/T is held in 4GR to make driving possible.

Front Brake Solenoid
If a malfunction (electrical or functional) occurs with the solenoid ON, in order to make driving possible, the A/T is held in 5GR; if the solenoid is OFF, 4GR.

High and Low Reverse Clutch Solenoid
If a malfunction (electrical or functional) occurs with the solenoid either ON or OFF, the A/T is held in 4GR to make driving possible.

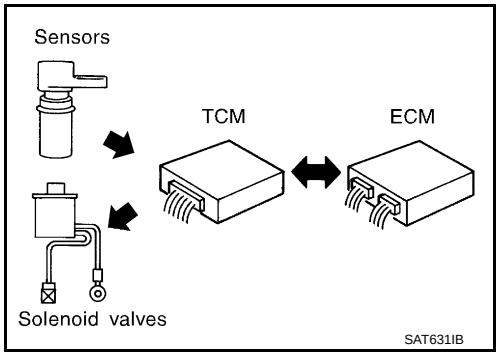
Input Speed Sensor 1 or 2
The control is the same as if there were no turbine revolution sensors, 5GR and manual mode are prohibited.

How to Perform Trouble Diagnosis for Quick and Accurate Repair

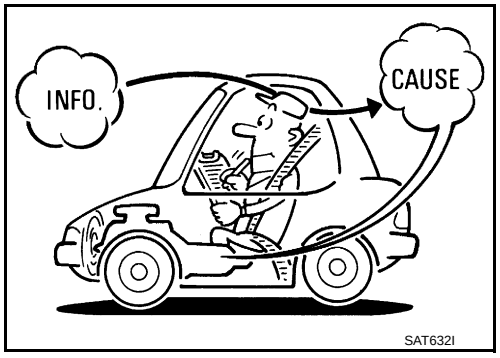
INFOID:0000000004656803

INTRODUCTION

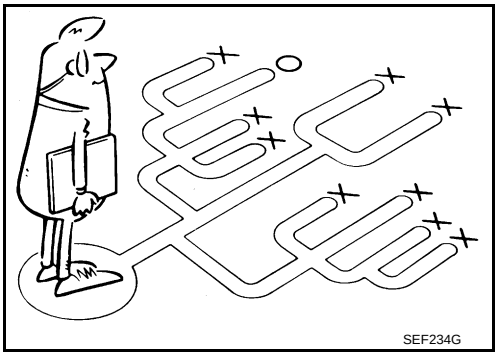
The TCM receives a signal from the output speed sensor, accelerator pedal position sensor (throttle position sensor) or transmission range switch and provides shift control or lock-up control via A/T solenoid valves.
The TCM also communicates with the ECM by means of a signal sent from sensing elements used with the OBD-related parts of the A/T system for malfunction-diagnostic purposes. The TCM is capable of diagnosing malfunctioning parts while the ECM can store malfunctions in its memory.
Input and output signals must always be correct and stable in the operation of the A/T system. The A/T system must be in good operating condition and be free of valve seizure, solenoid valve malfunction, etc.



It is much more difficult to diagnose an error that occurs intermittently rather than continuously. Most intermittent errors are caused by poor electric connections or improper wiring. In this case, careful checking of suspected circuits may help prevent the replacement of good parts.
A visual check only may not find the cause of the errors. A road test with CONSULT-III (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.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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" and "Diagnostic Worksheet Chart", to perform the best troubleshooting possible.

Work Flow Chart

SCIA8466E

*1. "Information From Customer"	*2. "Diagnostic Worksheet Chart"	*3. AT-40
*4. AT-47	*5. AT-47	*6. AT-47
*7. AT-81	*8. AT-37	*9. AT-40
*10. AT-90	*11. AT-151	*12. AT-163
*13. AT-56	*14. AT-37	*15. AT-90
*16. AT-151	*17. EC-46	

DIAGNOSTIC WORKSHEET

Information from Customer

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

Customer name MR/MS	Model & Year	VIN
Trans. Model	Engine	Mileage
Incident Date	Manuf. Date	In Service Date
Frequency	☐ Continuous ☐ Intermittent (times a day)	
Symptoms	☐ Vehicle does not move. (☐ Any position ☐ Particular position)	
	☐ No up-shift (☐ 1st → 2nd ☐ 2nd → 3rd ☐ 3rd → 4th ☐ 4th → 5th)	
	☐ No down-shift (☐ 5th → 4th ☐ 4th → 3rd ☐ 3rd → 2nd ☐ 2nd → 1st)	
	☐ Lock-up malfunction	
	☐ Shift point too high or too low.	
	☐ Shift shock or slip (☐ N → D ☐ Lock-up ☐ Any drive position)	
	☐ Noise or vibration	
	☐ No kick down	
	☐ No pattern select	
	☐ Others ( )	
A/T CHECK indicator lamp	☐ Continuously lit	☐ Not lit
Malfunction indicator lamp (MIL)	☐ Continuously lit	☐ Not lit

Diagnostic Worksheet Chart

1	☐ Read the item on cautions concerning fail-safe and understand the customer's complaint.			AT-40
2	☐ A/T fluid inspection			AT-47
		☐ Leak (Repair leak location.) ☐ State ☐ Amount		
3	☐ Stall test and line pressure test			AT-47
		☐ Stall test		
			☐ Torque converter one-way clutch ☐ Front brake ☐ High and low reverse clutch ☐ Low coast brake ☐ Forward brake ☐ Reverse brake ☐ Forward one-way clutch	☐ 1st one-way clutch ☐ 3rd one-way clutch ☐ Engine ☐ Line pressure low ☐ Except for input clutch and direct clutch, clutches and brakes OK
		☐ Line pressure inspection - Suspected part:		

4	☐ Perform all road tests and enter checks in required inspection items.			AT-51
	4-1.	Check before engine is started		AT-51
		☐ AT-166, "A/T Check Indicator Lamp Does Not Come On" ☐ Perform self-diagnostics. Enter checks for detected items. AT-81, AT-88		
			☐ DTC U1000 CAN COMM CIRCUIT AT-90 ☐ DTC P0615 STARTER RELAY AT-93 ☐ DTC P0700 TRANSMISSION CONTROL AT-97 ☐ DTC P0705 TRANSMISSION RANGE SWITCH A AT-98 ☐ DTC P0717 INPUT SPEED SENSOR A AT-101 ☐ DTC P0720 OUTPUT SPEED SENSOR AT-103 ☐ DTC P0725 ENGINE SPEED AT-108 ☐ DTC P0731 1GR INCORRECT RATIO AT-110 ☐ DTC P0732 2GR INCORRECT RATIO AT-112 ☐ DTC P0733 3GR INCORRECT RATIO AT-114 ☐ DTC P0734 4GR INCORRECT RATIO AT-116 ☐ DTC P0735 5GR INCORRECT RATIO AT-118 ☐ DTC P0740 TORQUE CONVERTER AT-120 ☐ DTC P0744 TORQUE CONVERTER AT-122 ☐ DTC P0745 PRESSURE CONTROL SOLONOIDAT-124 ☐ DTC P1705 TP SENSOR AT-126 ☐ DTC P1710 TRANSMISSION FLUIDTEMPERATURE SENSOR AT-128 ☐ DTC P1721 VEHICLE SPEED SIGNAL AT-133 ☐ DTC P1730 INTERLOCK AT-135 ☐ DTC P1731 1ST ENGINE BRAKING AT-137 ☐ DTC P1752 INPUT CLUTCH SOLENOID AT-139 ☐ DTC P1757 FRONT BRAKE SOLENOID AT-141 ☐ DTC P1762 DIRECT CLUTCH SOLENOID AT-143 ☐ DTC P1767 HIGH AND LOW REVERSE CLUTCH SOLENOID AT-145 ☐ DTC P1772 LOW COAST BRAKE SOLENOID AT-147 ☐ DTC P1774 LOW COAST BRAKE SOLENOID AT-149 ☐ DTC P1815 M-MODE SWITCH AT-151	
	4-2.	Check at Idle		AT-51
		☐ AT-166, "Engine Cannot Be Started in "P" or "N" Position" ☐ AT-167, "In "P" Position, Vehicle Moves When Pushed" ☐ AT-167, "In "N" Position, Vehicle Moves" ☐ AT-168, "Large Shock ("N" to "D" Position)" ☐ AT-169, "Vehicle Does Not Creep Backward in "R" Position" ☐ AT-171, "Vehicle Does Not Creep Forward in "D" Position"		
	4-3.	Cruise test		AT-51
		Part 1		
		☐ AT-173, "Vehicle Cannot Be Started from D_1" ☐ AT-175, "A/T Does Not Shift: $D_1 \rightarrow D_2$" ☐ AT-176, "A/T Does Not Shift: $D_2 \rightarrow D_3$" ☐ AT-178, "A/T Does Not Shift: $D_3 \rightarrow D_4$" ☐ AT-180, "A/T Does Not Shift: $D_4 \rightarrow D_5$" ☐ AT-181, "A/T Does Not Lock-up" ☐ AT-183, "A/T Does Not Hold Lock-up Condition" ☐ AT-184, "Lock-up Is Not Released" ☐ AT-184, "Engine Speed Does Not Return to Idle"		

		Part 2		AT-51
		☐ AT-173, "Vehicle Cannot Be Started from D1" ☐ AT-175, "A/T Does Not Shift: D1→ D2" ☐ AT-176, "A/T Does Not Shift: D2→ D3" ☐ AT-178, "A/T Does Not Shift: D3→ D4"		
		Part 3		AT-51
		☐ AT-185, "Cannot Be Changed to Manual Mode" ☐ AT-186, "A/T Does Not Shift: 5GR → 4GR" ☐ AT-187, "A/T Does Not Shift: 4GR → 3GR" ☐ AT-188, "A/T Does Not Shift: 3GR → 2GR" ☐ AT-189, "A/T Does Not Shift: 2GR → 1GR" ☐ AT-191, "Vehicle Does Not Decelerate by Engine Brake" ☐ Perform self-diagnostics. Enter checks for detected items. AT-81, AT-88		
4	4-3.		☐ DTC U1000 CAN COMM CIRCUIT AT-90 ☐ DTC P0615 STARTER RELAY AT-93 ☐ DTC P0700 TRANSMISSION CONTROL AT-97 ☐ DTC P0705 TRANSMISSION RANGE SWITCH A AT-98 ☐ DTC P0717 INPUT SPEED SENSOR A AT-101 ☐ DTC P0720 OUTPUT SPEED SENSOR AT-103 ☐ DTC P0725 ENGINE SPEED AT-108 ☐ DTC P0731 1GR INCORRECT RATIO AT-110 ☐ DTC P0732 2GR INCORRECT RATIO AT-112 ☐ DTC P0733 3GR INCORRECT RATIO AT-114 ☐ DTC P0734 4GR INCORRECT RATIO AT-116 ☐ DTC P0735 5GR INCORRECT RATIO AT-118 ☐ DTC P0740 TORQUE CONVERTER AT-120 ☐ DTC P0744 TORQUE CONVERTER AT-122 ☐ DTC P0745 PRESSURE CONTROL SOLENOIDAT-124 ☐ DTC P1705 TP SENSOR AT-126 ☐ DTC P1710 TRANSMISSION FLUIDTEMPERATURE SENSOR AT-128 ☐ DTC P1721 VEHICLE SPEED SIGNAL AT-133 ☐ DTC P1730 INTERLOCK AT-135 ☐ DTC P1731 1ST ENGINE BRAKING AT-137 ☐ DTC P1752 INPUT CLUTCH SOLENOID AT-139 ☐ DTC P1757 FRONT BRAKE SOLENOID AT-141 ☐ DTC P1762 DIRECT CLUTCH SOLENOID AT-143 ☐ DTC P1767 HIGH AND LOW REVERSE CLUTCH SOLENOID AT-145 ☐ DTC P1772 LOW COAST BRAKE SOLENOID AT-147 ☐ DTC P1774 LOW COAST BRAKE SOLENOID AT-149 ☐ DTC P1815 M-MODE SWITCH AT-151	
5	☐ Inspect each system for items found to be NG in the self-diagnostics and repair or replace the malfunctioning parts.			
6	☐ Perform all road tests and enter the checks again for the required items.			AT-47
7	☐ For any remaining NG items, perform the “diagnostics procedure” and repair or replace the malfunctioning parts. See the chart for diagnostics by symptoms. (This chart also contains other symptoms and inspection procedures.)			AT-56
8	☐ Erase the results of the self-diagnostics from TCM and ECM.			AT-88, AT-37

A/T Electrical Parts Location

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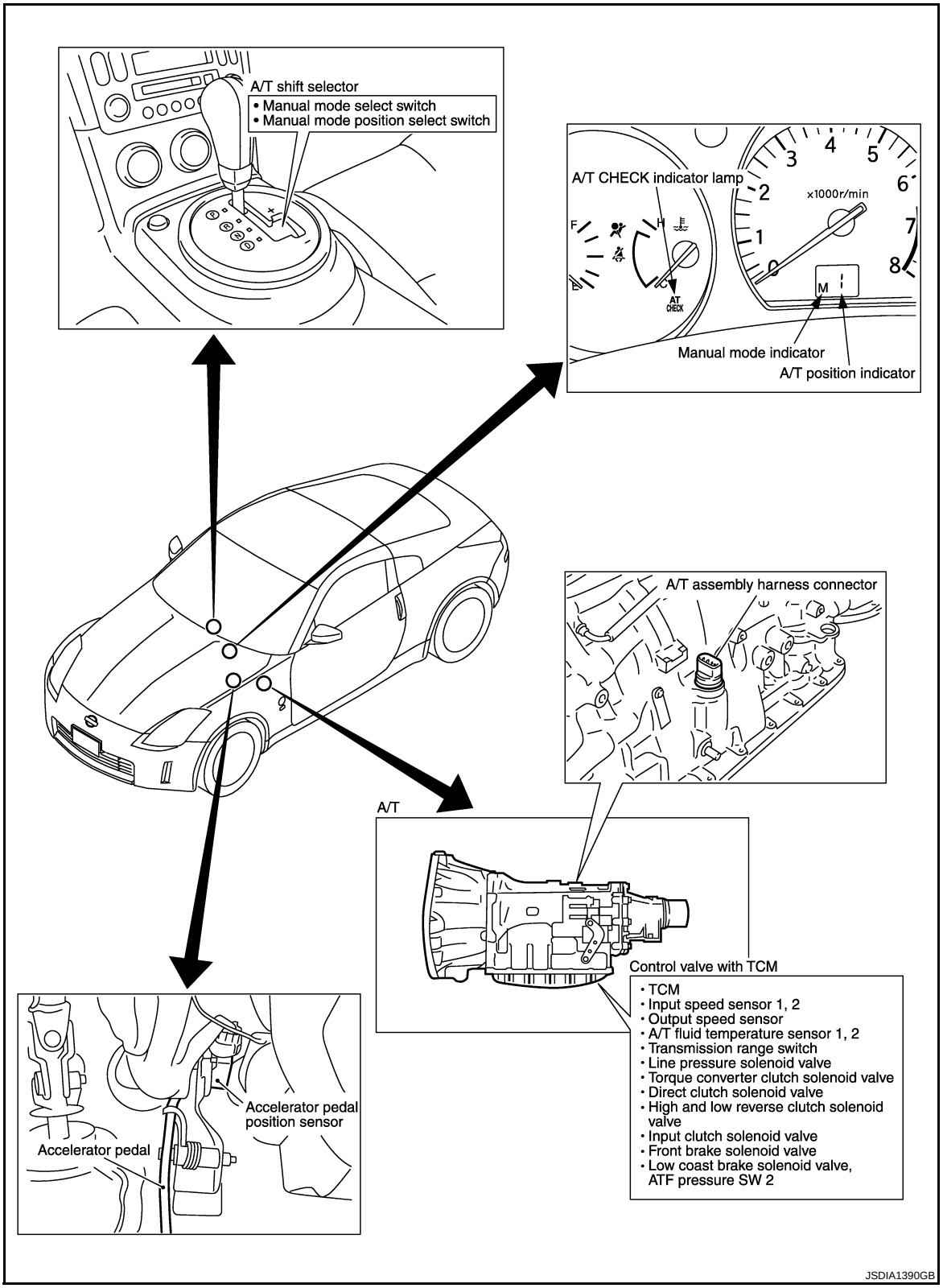

Circuit Diagram

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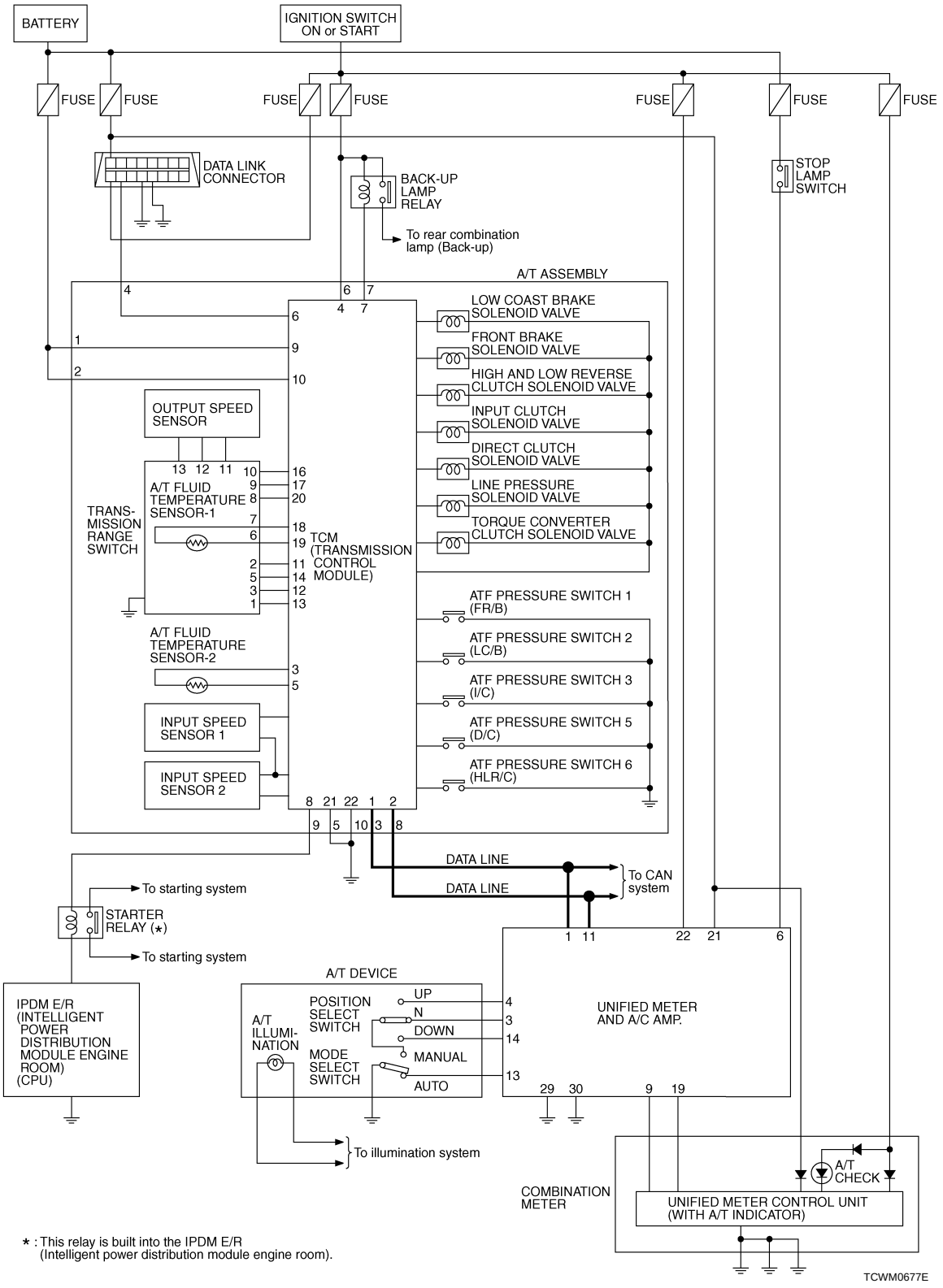


Inspections Before Trouble Diagnosis

INFOID:0000000004656806

A/T FLUID CHECK

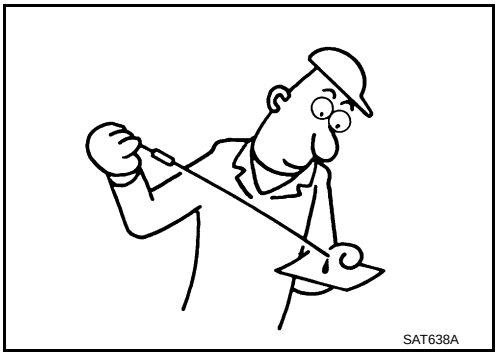
A/T Fluid Leakage and A/T Fluid Level Check

Inspect for A/T fluid leakage and check the A/T fluid level. Refer to AT-12, "Checking A/T Fluid".

A/T Fluid Condition Check

Inspect the A/T fluid condition.

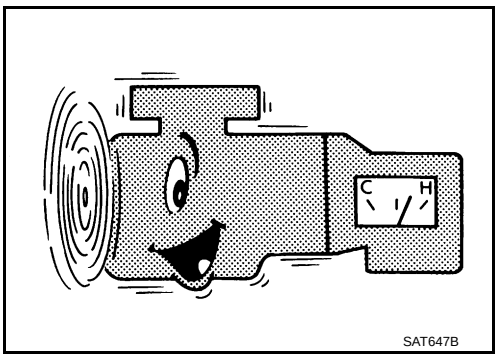
Fluid condition	Conceivable Cause	Required Operation
Varnished (viscous varnish state)	Clutch, brake scorched	Replace the ATF and check the A/T main unit and the vehicle for malfunctions (wire harnesses, cooler pipes, etc.)
Milky white or cloudy	Water in the fluid	Replace the ATF and check for places 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.


SAT638A

STALL TEST

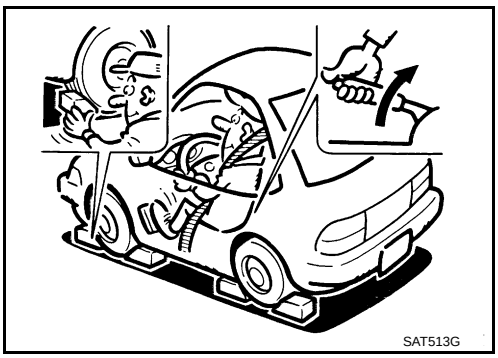
Stall Test Procedure

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.



SAT647B

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.

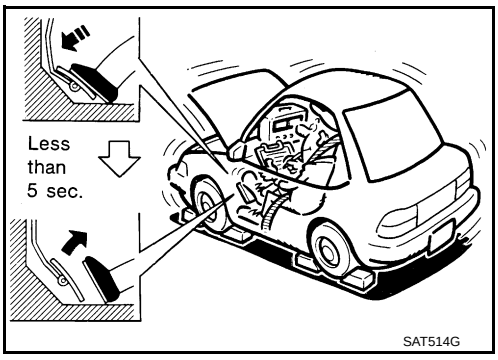

SAT513G

5. While holding down the foot brake, gradually press down accelerator pedal.
6. Quickly read off the stall speed, then quickly remove your foot from accelerator pedal.

CAUTION:

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

Stall speed: 2,700 – 3,000 rpm



SAT514G

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

CAUTION:

Run the engine at idle for at least one minute.

9. Repeat steps 5 through 8 with selector lever in “R” position.

Judgment Stall Test

	Selector lever position		Expected problem location
	“D” and “M”	“R”	
Stall speed	H	O	• Forward brake • Forward one-way clutch • 1st one-way clutch • 3rd one-way clutch
	O	H	• Reverse brake
	L	L	• Engine and torque converter one-way clutch
	H	H	• Line pressure low

O: Stall speed within standard value position

H: Stall speed higher than standard value

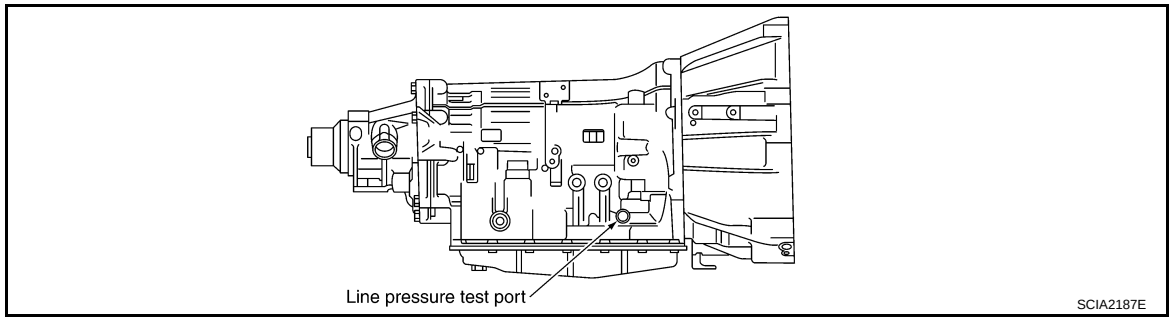
L: Stall speed lower than standard value

Stall Test Standard Value Position

Does not shift-up “D” or “M” position 1 → 2	Slipping in 2GR, 3GR or 4GR	Direct clutch slippage
Does not shift-up “D” or “M” position 2 → 3	Slipping in 3GR, 4GR or 5GR	High and low reverse clutch slippage
Does not shift-up “D” or “M” position 3 → 4	Slipping in 4GR or 5GR	Input clutch slippage
Does not shift-up “D” or “M” position 4 → 5	Slipping in 5GR	Front brake slippage

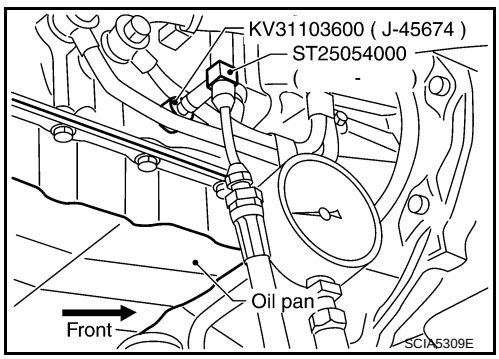
LINE PRESSURE TEST

Line Pressure Test Port

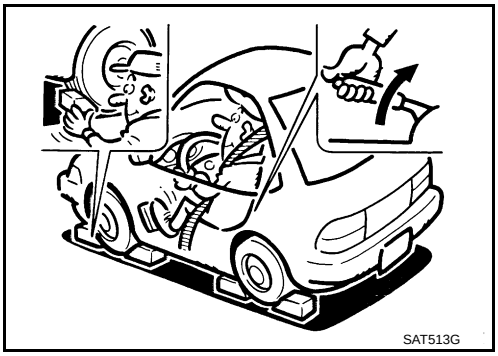


Line Pressure Test Procedure

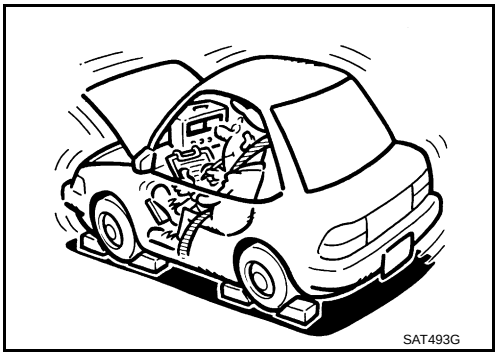
1. Inspect the amount of engine oil and replenish if necessary.
2. Drive the car for about 10 minutes to warm it up so that the ATF reaches in range of 50 to 80°C (122 to 176°F), then inspect the amount of ATF and replenish if necessary.
   NOTE:
   The A/T fluid temperature rises in range of 50 to 80°C (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 O- ring attached to the oil pressure detection plug.



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



5. Start the engine, then measure the line pressure at both idle and the stall speed.
   CAUTION:
   - **Keep 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 specified torque. Refer to AT-232, "Component".
   CAUTION:
   - **Do not reuse O-ring.**
   - **Apply ATF to O-ring.**



Line Pressure

Engine speed	Line pressure kPa (kg/cm^2, psi)	
	"R" position	"D" and "M" positions
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)

Judgment of Line Pressure Test

Judgment		Possible cause
Idle speed	Low for all positions ("P", "R", "N", "D", "M")	Possible causes include malfunctions in the pressure supply system and low oil pump output. For example • Oil pump wear • Pressure regulator valve or plug sticking or spring fatigue • Oil strainer ⇒ oil pump ⇒ pressure regulator valve passage oil leak • Engine idle speed too low
	Only low for a specific position	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 • Accelerator pedal position signal malfunction • A/T fluid temperature sensor malfunction • Line pressure solenoid malfunction (sticking in OFF state, filter clog, cut line) • Pressure regulator valve or plug sticking

Judgment		Possible cause
Stall speed	Line pressure does not rise higher than the line pressure for idle.	Possible causes include a sensor malfunction or malfunction in the pressure adjustment function. For example • Accelerator pedal position signal malfunction • TCM breakdown • Line pressure solenoid malfunction (shorting, sticking in ON state) • Pressure regulator valve or plug sticking • Pilot valve sticking or pilot filter clogged
	The pressure rises, but does not enter the standard position.	Possible causes include malfunctions in the pressure supply system and malfunction in the pressure adjustment function. For example • Accelerator pedal position signal malfunction • Line pressure solenoid malfunction (sticking, filter clog) • Pressure regulator valve or plug sticking • Pilot valve sticking or pilot filter clogged
	Only low for a specific position	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

INFOID:0000000004656807

ROAD TEST

DESCRIPTION

- The road test inspects overall performance of A/T and analyzes possible malfunction causes.
- The road test is performed in the following three stages.

1. Check before engine is started.
2. Check at idle.
3. Cruise test

- Inspect all the items from Part 1 to Part 3.

- Before beginning the road test, check the test procedure and inspection items.
- Test all inspection items until the symptom is uncovered. Include NG items in “Diagnostic Worksheet Chart” (Refer to AT-41). Perform a diagnosis of the NG items after the completion of all the road tests.

CHECK BEFORE ENGINE IS STARTED

1.CHECK A/T CHECK INDICATOR LAMP

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

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

YES-1 >> With CONSULT-III
1. Turn ignition switch OFF.
2. Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III and record all NG items on “Diagnostic Worksheet Chart”.
3. Go to “CHECK AT IDLE”.

YES-2 >> Without CONSULT-III
1. Turn ignition switch OFF.
2. Perform the self-diagnosis and record all NG items on the “Diagnostic Worksheet Chart”. Refer to AT-88, "Diagnosis Procedure without CONSULT-III".
3. Go to “CHECK AT IDLE”.

NO >> Stop the road test and go to AT-166, "A/T Check Indicator Lamp Does Not Come On".

CHECK AT IDLE

1.CHECK STARTING THE ENGINE

1. Park vehicle on level surface.
2. Shift selector lever to “P” or “N” position.
3. Turn ignition switch OFF.
4. Start the engine.

Does the engine start?

YES >> GO TO 2.
NO >> Stop the road test and go to AT-166, "Engine Cannot Be Started in "P" or "N" Position".

2. CHECK STARTING THE ENGINE

1. Turn ignition switch ON. (Do not start engine.)
2. Shift selector lever in “D”, “M” or “R” position.
3. Start the engine.

Does the engine start in each position?

YES >> Stop the road test and go to AT-166, "Engine Cannot Be Started in "P" or "N" Position".
NO >> GO TO 3.

3. CHECK “P” POSITION FUNCTIONS

1. Shift selector lever to “P” position.
2. Turn ignition switch OFF.
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 AT-167, "In "P" Position, Vehicle Moves When Pushed" on the “Diagnostic Worksheet Chart”, GO TO 4.
NO >> GO TO 4.

4. CHECK “N” POSITION FUNCTIONS

1. Start the engine.
2. Shift selector lever to “N” position.
3. Release the parking brake.

Does vehicle move forward or backward?

YES >> Enter a check mark at AT-167, "In "N" Position, Vehicle Moves" on the “Diagnostic Worksheet Chart”, GO TO 5.
NO >> GO TO 5.

5. CHECK SHIFT SHOCK

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

When the A/T is shifted from “N” to “D”, is there an excessive shock?

YES >> Enter a check mark at AT-168, "Large Shock ("N" to "D" Position)" on the “Diagnostic Worksheet Chart”, GO TO 6.
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 AT-169, "Vehicle Does Not Creep Backward in "R" Position" on the “Diagnostic Worksheet Chart”, GO TO 7.

7. CHECK “D” POSITION FUNCTIONS

Inspect whether the vehicle creep forward when the A/T is put into the “D” position.

Does the vehicle creep forward in the “D” position?

YES >> Go to “CRUISE TEST-PART 1”.
NO >> Enter a check mark at AT-171, "Vehicle Does Not Creep Forward in "D" Position" on the “Diagnostic Worksheet Chart”, then continue the road test. Go to “CRUISE TEST-PART 1”.

CRUISE TEST-PART 1

1. CHECK STARTING OUT FROM D1

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

With CONSULT-III

Read the value of “GEAR” with “DATA MONITOR” mode.

Starts from D1?

YES >> GO TO 2.
NO >> Enter a check mark at AT-173, "Vehicle Cannot Be Started from D1" on the “Diagnostic Worksheet Chart”, GO TO 2.

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-56, "Vehicle Speed at When Gears Shifting Occurs".

With CONSULT-III

Read the value of “GEAR”, “ACCELE POSI” and “VEHICLE SPEED” with “DATA MONITOR” mode.

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

YES >> GO TO 3.
NO >> Enter a check mark at AT-175, "A/T Does Not Shift: D1→ D2" on the “Diagnostic Worksheet Chart”, GO TO 3.

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-56, "Vehicle Speed at When Gears Shifting Occurs".

With CONSULT-III

Read the value of “GEAR”, “ACCELE POSI” and “VEHICLE SPEED” with “DATA MONITOR” mode.

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

YES >> GO TO 4.
NO >> Enter a check mark at AT-176, "A/T Does Not Shift: D2→ D3" on the “Diagnostic Worksheet Chart”, GO TO 4.

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-56, "Vehicle Speed at When Gears Shifting Occurs".

With CONSULT-III

Read the value of “GEAR”, “ACCELE POSI” and “VEHICLE SPEED” with “DATA MONITOR” mode.

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

YES >> GO TO 5.
NO >> Enter a check mark at AT-178, "A/T Does Not Shift: D3→ D4" on the “Diagnostic Worksheet Chart”, GO TO 5.

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-56, "Vehicle Speed at When Gears Shifting Occurs".

With CONSULT-III

Read the value of “GEAR”, “ACCELE POSI” and “VEHICLE SPEED” with “DATA MONITOR” mode.

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

YES >> GO TO 6.
NO >> Enter a check mark at AT-180, "A/T Does Not Shift: D4→ D5" on the “Diagnostic Worksheet Chart”, GO TO 6.

6. CHECK LOCK-UP

When releasing accelerator pedal (closed throttle position signal: OFF) from D5, check lock-up from D5 to L/U. Refer to AT-56, "Vehicle Speed at When Gears Shifting Occurs".

With CONSULT-III

Read the value of “TCC SOLENOID” with “DATA MONITOR” mode. Refer to AT-81, "CONSULT-III Function (TRANSMISSION)".

Does it lock-up?

YES >> GO TO 7.
NO >> Enter a check mark at AT-181, "A/T Does Not Lock-up" on the “Diagnostic Worksheet Chart”, GO TO 7.

7. CHECK LOCK-UP HOLD

Check hold lock-up.

With CONSULT-III

Read the value of “TCC SOLENOID” with “DATA MONITOR” mode. Refer to AT-81, "CONSULT-III Function (TRANSMISSION)".

Does it maintain lock-up status?

YES >> GO TO 8.
NO >> Enter a check mark at AT-183, "A/T Does Not Hold Lock-up Condition" on the “Diagnostic Worksheet Chart”, GO TO 8.

8. CHECK LOCK-UP RELEASE

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

With CONSULT-III

Read the value of “TCC SOLENOID” with “DATA MONITOR” mode. Refer to AT-81, "CONSULT-III Function (TRANSMISSION)".

Does lock-up cancel?

YES >> GO TO 9.
NO >> Enter a check mark at AT-184, "Lock-up Is Not Released" on the “Diagnostic Worksheet Chart”, GO TO 9

9. CHECK SHIFT-DOWN D5 → D4

Decelerate by pressing lightly on the brake pedal.

With CONSULT-III

Read the value of “GEAR” and “ENGINE SPEED” with “DATA MONITOR” mode.

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.
NO >> Enter a check mark at AT-184, "Engine Speed Does Not Return to Idle" on the “Diagnostic Worksheet Chart”, then continue the road test. Go to CRUISE TEST-PART 2.

CRUISE TEST-PART 2

1. CHECK STARTING FROM D1

1. Shift selector lever into “D” position.
2. Accelerate at half throttle.

With CONSULT-III

Read the value of “GEAR” with “DATA MONITOR” mode.

Does it start from D1?

YES >> GO TO 2.
NO >> Enter a check mark at AT-173, "Vehicle Cannot Be Started from D1" on the “Diagnostic Worksheet Chart”, GO TO 2.

2. CHECK SHIFT-UP D1 → D2

Press the accelerator pedal down all the way and inspect whether or not the A/T shifts up (D1 → D2) at the correct speed. Refer to AT-56, "Vehicle Speed at When Gears Shifting Occurs".

With CONSULT-III

Read the value of “GEAR”, “ACCELE POSI” and “VEHICLE SPEED” with “DATA MONITOR” mode.

Does the A/T shift-up $D_1 \rightarrow D_2$ at the correct speed?

YES >> GO TO 3.
NO >> Enter a check mark at AT-175, "A/T Does Not Shift: $D_1 \rightarrow D_2$" on the “Diagnostic Worksheet Chart”, GO TO 3.

3. CHECK SHIFT UP $D_2 \rightarrow D_3$

Press the accelerator pedal down all the way and inspect whether or not the A/T shifts up ($D_2 \rightarrow D_3$) at the correct speed. Refer to AT-56, "Vehicle Speed at When Gears Shifting Occurs".

With CONSULT-III

Read the value of “GEAR”, “ACCELE POSI” and “VEHICLE SPEED” with “DATA MONITOR” mode.

Does the A/T shift-up $D_2 \rightarrow D_3$ at the correct speed?

YES >> GO TO 4.
NO >> Enter a check mark at AT-176, "A/T Does Not Shift: $D_2 \rightarrow D_3$" on the “Diagnostic Worksheet Chart”, GO TO 4.

4. CHECK SHIFT-UP $D_3 \rightarrow D_4$ AND ENGINE BRAKE

When the A/T changes speed $D_3 \rightarrow D_4$, return the accelerator pedal.

With CONSULT-III

Read the value of “GEAR” with “DATA MONITOR” mode.

Does the A/T shift-up $D_3 \rightarrow D_4$ and apply the engine brake?

YES >> 1. Stop the vehicle.
2. Go to “CRUISE TEST-PART 3”.
NO >> Enter a check mark at AT-178, "A/T Does Not Shift: $D_3 \rightarrow D_4$" on the “Diagnostic Worksheet Chart”, then continue the road test. Go to “CRUISE TEST-PART 3”.

CRUISE TEST-PART 3

1. MANUAL MODE FUNCTION

Move to manual mode from “D” position.

Does it switch to manual mode?

YES >> GO TO 2.
NO >> Enter a check mark at AT-185, "Cannot Be Changed to Manual Mode" on the “Diagnostic Worksheet Chart”, GO TO 2.

2. CHECK SHIFT-DOWN

During manual mode driving, is downshift from $M_5 \rightarrow M_4 \rightarrow M_3 \rightarrow M_2 \rightarrow M_1$ performed?

With CONSULT-III

Read the value of “GEAR” with “DATA MONITOR” mode.

Is downshifting correctly performed?

YES >> GO TO 3.
NO >> Enter a check mark at “A/T Does Not Shift” at the corresponding position (5th → 4th, 4th → 3rd, 3rd → 2nd, 2nd → 1st) on the “Diagnostic Worksheet Chart”, GO TO 3.

3. CHECK ENGINE BRAKE

Check engine brake.

Does engine braking effectively reduce speed in M_1 position?

YES-1 >> With CONSULT-III
1. Turn ignition switch OFF.
2. Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III and record all NG items on “Diagnostic Worksheet Chart”.

YES-2 >> Without CONSULT-III
1. Turn ignition switch OFF.
2. Perform the self-diagnosis and record all NG items on the “Diagnostic Worksheet Chart”. Refer to AT-88, "Diagnosis Procedure without CONSULT-III".

NO >> Enter a check mark at AT-191, "Vehicle Does Not Decelerate by Engine Brake" on the “Diagnostic Worksheet Chart”, then continue trouble diagnosis.

Vehicle Speed at When Gears Shifting Occurs

INFOID:0000000004656808

Throttle position	Vehicle speed km/h (MPH)							
	D1→D2	D2→D3	D3→D4	D4→D5	D5→D4	D4→D3	D3→D2	D2→D1
Full throttle	64 – 68 (40 – 42)	103 – 111 (64 – 69)	156 – 166 (97 – 103)	224 – 234 (139 – 145)	220 – 230 (137 – 143)	146 – 156 (91 – 97)	86 – 94 (53 – 58)	40 – 44 (25 – 27)
Half throttle	47 – 51 (29 – 32)	76 – 82 (47 – 51)	108 – 116 (67 – 72)	136 – 144 (85 – 89)	88 – 96 (55 – 60)	64 – 72 (40 – 45)	28 – 34 (17 – 21)	8 – 12 (5 – 7)

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

Vehicle Speed at Which Lock-up Occurs/Releases

INFOID:0000000004656809

Throttle position	Vehicle speed km/h (MPH)	
	Lock-up ON	Lock-up OFF
Closed throttle	62 – 70 (39 – 44)	59 – 67 (37 – 42)
Half throttle	136 – 144 (85 – 89)	88 – 96 (55 – 60)

- At closed throttle, the accelerator opening is less than 1/8 condition. (Closed throttle position signal: OFF)
- At half throttle, the accelerator opening is 4/8 of the full opening.

Symptom Chart

INFOID:0000000004656810

- **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-47, "Inspections Before Trouble Diagnosis"**.**

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
1	Shift Shock	Large shock. (“N” → “D” position) Refer to AT-168, "Large Shock ("N" to "D" Position)".	ON vehicle	1. Engine idle speed	EC-75
				2. Engine speed signal	AT-108
				3. Accelerator pedal position sensor	AT-126
				4. A/T position	AT-195
				5. A/T fluid temperature sensor	AT-128
				6. Front brake solenoid valve	AT-141
				7. CAN communication line	AT-90
				8. A/T fluid level and state	AT-47
				9. Line pressure test	AT-47
				10. Control valve with TCM	AT-204
			OFF vehicle	11. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17, "Cross-Sectional View".)	AT-239
2		Shock is too large when changing $D_1 \rightarrow D_2$ or $M_1 \rightarrow M_2$.	ON vehicle	1. Accelerator pedal position sensor	AT-126
				2. A/T position	AT-195
				3. Direct clutch solenoid valve	AT-143
				4. CAN communication line	AT-90
				5. Engine speed signal	AT-108
				6. Input speed sensor	AT-101
				7. Output speed sensor and vehicle speed signal	AT-103, AT-133
				8. A/T fluid level and state	AT-47
				9. Control valve with TCM	AT-204
			OFF vehicle	10. Direct clutch	AT-270
3		Shock is too large when changing $D_2 \rightarrow D_3$ or $M_2 \rightarrow M_3$.	ON vehicle	1. Accelerator pedal position sensor	AT-126
				2. A/T position	AT-195
				3. High and low reverse clutch solenoid valve	AT-145
				4. CAN communication line	AT-90
				5. Engine speed signal	AT-108
				6. Input speed sensor	AT-101
				7. Output speed sensor and vehicle speed signal	AT-103, AT-133
				8. A/T fluid level and state	AT-47
				9. Control valve with TCM	AT-204
			OFF vehicle	10. High and low reverse clutch	AT-269

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
4	Shift Shock	Shock is too large when changing D3 → D4 or M3 → M4.	ON vehicle	1. Accelerator pedal position sensor	AT-126
				2. A/T position	AT-195
				3. Input clutch solenoid valve	AT-139
				4. CAN communication line	AT-90
				5. Engine speed signal	AT-108
				6. Input speed sensor	AT-101
				7. Output speed sensor and vehicle speed signal	AT-103, AT-133
				8. A/T fluid level and state	AT-47
				9. Control valve with TCM	AT-204
			OFF vehicle	10. Input clutch	AT-259
5		Shock is too large when changing D4 → D5 or M4 → M5.	ON vehicle	1. Accelerator pedal position sensor	AT-126
				2. A/T position	AT-195
				3. Front brake solenoid valve	AT-141
				4. CAN communication line	AT-90
				5. Engine speed signal	AT-108
				6. Input speed sensor	AT-101
				7. Output speed sensor and vehicle speed signal	AT-103, AT-133
				8. A/T fluid level and state	AT-47
				9. Control valve with TCM	AT-204
			OFF vehicle	10. Front brake (brake band)	AT-239
				11. Input clutch	AT-259
6		Shock is too large for downshift when accelerator pedal is pressed.	ON vehicle	1. Accelerator pedal position sensor	AT-126
				2. A/T position	AT-195
				3. CAN communication line	AT-90
				4. Engine speed signal	AT-108
				5. Input speed sensor	AT-101
				6. Output speed sensor and vehicle speed signal	AT-103, AT-133
				7. A/T fluid level and state	AT-47
				8. Control valve with TCM	AT-204
			OFF vehicle	9. Front brake (brake band)	AT-239
				10. Input clutch	AT-259
				11. High and low reverse clutch	AT-269
				12. Direct clutch	AT-270

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
7	Shift Shock	Shock is too large for upshift when accelerator pedal is released.	ON vehicle	1. Accelerator pedal position sensor	AT-126
				2. A/T position	AT-195
				3. Engine speed signal	AT-108
				4. CAN communication line	AT-90
				5. Input speed sensor	AT-101
				6. Output speed sensor and vehicle speed signal	AT-103, AT-133
				7. A/T fluid level and state	AT-47
				8. Control valve with TCM	AT-204
			OFF vehicle	9. Front brake (brake band)	AT-239
				10. Input clutch	AT-259
				11. High and low reverse clutch	AT-269
				12. Direct clutch	AT-270
8		Shock is too large for lock-up.	ON vehicle	1. Accelerator pedal position sensor	AT-126
				2. A/T position	AT-195
				3. Engine speed signal	AT-108
				4. CAN communication line	AT-90
				5. Input speed sensor	AT-101
				6. Output speed sensor and vehicle speed signal	AT-103, AT-133
				7. Torque converter clutch solenoid valve	AT-120
				8. A/T fluid level and state	AT-47
				9. Control valve with TCM	AT-204
			OFF vehicle	10. Torque converter	AT-239
9		Shock is too large during engine brake.	ON vehicle	1. Accelerator pedal position sensor	AT-126
				2. A/T position	AT-195
				3. CAN communication line	AT-90
				4. A/T fluid level and state	AT-47
				5. Control valve with TCM	AT-204
			OFF vehicle	6. Front brake (brake band)	AT-239
				7. Input clutch	AT-259
				8. High and low reverse clutch	AT-269
				9. Direct clutch	AT-270

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
10	No Up Shift	Gear does not change from $D_1 \rightarrow D_2$ or from $M_1 \rightarrow M_2$. Refer to AT-175, "A/T Does Not Shift: $D_1 \rightarrow D_2$".	ON vehicle	1. A/T fluid level and state	AT-47
				2. Output speed sensor and vehicle speed signal	AT-103, AT-133
				3. Direct clutch solenoid valve	AT-143
				4. Line pressure test	AT-47
				5. CAN communication line	AT-90
				6. Control valve with TCM	AT-204
			OFF vehicle	7. Direct clutch	AT-270
11		Gear does not change from $D_2 \rightarrow D_3$ or from $M_2 \rightarrow M_3$. Refer to AT-176, "A/T Does Not Shift: $D_2 \rightarrow D_3$".	ON vehicle	1. A/T fluid level and state	AT-47
				2. Output speed sensor and vehicle speed signal	AT-103, AT-133
				3. High and low reverse clutch solenoid valve	AT-145
				4. Line pressure test	AT-47
				5. CAN communication line	AT-90
				6. Control valve with TCM	AT-204
			OFF vehicle	7. High and low reverse clutch	AT-269
12		Gear does not change from $D_3 \rightarrow D_4$ or from $M_3 \rightarrow M_4$. Refer to AT-178, "A/T Does Not Shift: $D_3 \rightarrow D_4$".	ON vehicle	1. A/T fluid level and state	AT-47
				2. Output speed sensor and vehicle speed signal	AT-103, AT-133
				3. Input clutch solenoid valve	AT-139
				4. Front brake solenoid valve	AT-141
				5. Line pressure test	AT-47
				6. CAN communication line	AT-90
				7. Control valve with TCM	AT-204
			OFF vehicle	8. Input clutch	AT-259
13		Gear does not change from $D_4 \rightarrow D_5$ or from $M_4 \rightarrow M_5$. Refer to AT-180, "A/T Does Not Shift: $D_4 \rightarrow D_5$".	ON vehicle	1. A/T fluid level and state	AT-47
				2. Output speed sensor and vehicle speed signal	AT-103, AT-133
				3. Front brake solenoid valve	AT-141
				4. Direct clutch solenoid valve	AT-143
				5. Input speed sensor	AT-101
				6. Line pressure test	AT-47
				7. CAN communication line	AT-90
				8. Control valve with TCM	AT-204
			OFF vehicle	9. Front brake (brake band)	AT-239
				10. Input clutch	AT-259

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
14	No Down Shift	In “D” or “M” position, does not downshift to 4GR.	ON vehicle	1. A/T fluid level and state	AT-47
				2. Output speed sensor and vehicle speed signal	AT-103, AT-133
				3. Front brake solenoid valve	AT-141
				4. Direct clutch solenoid valve	AT-143
				5. CAN communication line	AT-90
				6. Line pressure test	AT-47
				7. Control valve with TCM	AT-204
			OFF vehicle	8. Front brake (brake band)	AT-239
				9. Input clutch	AT-259
15		In “D” or “M” position, does not downshift to 3GR.	ON vehicle	1. A/T fluid level and state	AT-47
				2. Output speed sensor and vehicle speed signal	AT-103, AT-133
				3. Input clutch solenoid valve	AT-139
				4. Front brake solenoid valve	AT-141
				5. CAN communication line	AT-90
				6. Line pressure test	AT-47
				7. Control valve with TCM	AT-204
			OFF vehicle	8. Input clutch	AT-259
16		In “D” or “M” position, does not downshift to 2GR.	ON vehicle	1. A/T fluid level and state	AT-47
				2. Output speed sensor and vehicle speed signal	AT-103, AT-133
				3. High and low reverse clutch solenoid valve	AT-145
				4. CAN communication line	AT-90
				5. Line pressure test	AT-47
				6. Control valve with TCM	AT-204
			OFF vehicle	7. High and low reverse clutch	AT-269
17		In “D” or “M” position, does not downshift to 1GR.	ON vehicle	1. A/T fluid level and state	AT-47
				2. Output speed sensor and vehicle speed signal	AT-103, AT-133
				3. Direct clutch solenoid valve	AT-143
				4. CAN communication line	AT-90
				5. Line pressure test	AT-47
				6. Control valve with TCM	AT-204
			OFF vehicle	7. Direct clutch	AT-270

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
18	Slips/Will Not Engage	When “D” or “M” position, remains in 1GR.	ON vehicle	1. A/T fluid level and state	AT-47
				2. Output speed sensor and vehicle speed signal	AT-103, AT-133
				3. Direct clutch solenoid valve	AT-143
				4. Line pressure test	AT-47
				5. CAN communication line	AT-90
				6. Control valve with TCM	AT-204
			OFF vehicle	7. 3rd one-way clutch	AT-257
				8. 1st one-way clutch	AT-264
				9. Gear system	AT-232
				10. Reverse brake	AT-239
				11. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17, "Cross-Sectional View".)	AT-239
				12. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17, "Cross-Sectional View".)	AT-239
19		When “D” or “M” position, remains in 2GR.	ON vehicle	1. A/T fluid level and state	AT-47
				2. Output speed sensor and vehicle speed signal	AT-103, AT-133
				3. Low coast brake solenoid valve	AT-147
				4. Line pressure test	AT-47
				5. CAN communication line	AT-90
				6. Control valve with TCM	AT-204
			OFF vehicle	7. 3rd one-way clutch	AT-257
				8. Gear system	AT-232
				9. Direct clutch	AT-270
				10. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17, "Cross-Sectional View".)	AT-239
20		When “D” or “M” position, remains in 3GR.	ON vehicle	1. A/T fluid level and state	AT-47
				2. Output speed sensor and vehicle speed signal	AT-103, AT-133
				3. Line pressure test	AT-47
				4. CAN communication line	AT-90
				5. Control valve with TCM	AT-204
			OFF vehicle	6. 3rd one-way clutch	AT-257
				7. Gear system	AT-232
				8. High and low reverse clutch	AT-269
				9. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17, "Cross-Sectional View".)	AT-239
				10. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17, "Cross-Sectional View".)	AT-239

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
21	Slips/Will Not Engage	When “D” or “M” position, remains in 4GR.	ON vehicle	1. A/T fluid level and state	AT-47
				2. Output speed sensor and vehicle speed signal	AT-103, AT-133
				3. Input clutch solenoid valve	AT-139
				4. Direct clutch solenoid valve	AT-143
				5. High and low reverse clutch solenoid valve	AT-145
				6. Low coast brake solenoid valve	AT-147
				7. Front brake solenoid valve	AT-141
				8. Line pressure test	AT-47
				9. CAN communication line	AT-90
				10. Control valve with TCM	AT-204
			OFF vehicle	11. Input clutch	AT-259
				12. Gear system	AT-232
				13. High and low reverse clutch	AT-269
				14. Direct clutch	AT-270
22		When “D” or “M” position, remains in 5GR.	ON vehicle	1. A/T fluid level and state	AT-47
				2. Output speed sensor and vehicle speed signal	AT-103, AT-133
				3. Front brake solenoid valve	AT-141
				4. Line pressure test	AT-47
				5. CAN communication line	AT-90
				6. Control valve with TCM	AT-204
			OFF vehicle	7. Front brake (brake band)	AT-239
				8. Input clutch	AT-259
				9. Gear system	AT-232
				10. High and low reverse clutch	AT-269

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
23	Slips/Will Not Engage	Vehicle cannot be started from D1. Refer to AT-173, "Vehicle Cannot Be Started from D1".	ON vehicle	1. A/T fluid level and state	AT-47
				2. Accelerator pedal position sensor	AT-126
				3. Line pressure test	AT-47
				4. CAN communication line	AT-90
				5. Control valve with TCM	AT-204
			OFF vehicle	6. Torque converter	AT-239
				7. Oil pump assembly	AT-255
				8. 3rd one-way clutch	AT-257
				9. 1st one-way clutch	AT-264
				10. Gear system	AT-232
				11. Reverse brake	AT-239
				12. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17, "Cross-Sectional View".)	AT-239
				13. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17, "Cross-Sectional View".)	AT-239
24		Does not lock-up. Refer to AT-181, "A/T Does Not Lock-up".	ON vehicle	1. A/T fluid level and state	AT-47
				2. Line pressure test	AT-47
				3. Engine speed signal	AT-108
				4. Input speed sensor	AT-101
				5. Torque converter clutch solenoid valve	AT-120
				6. CAN communication line	AT-90
				7. Control valve with TCM	AT-204
			OFF vehicle	8. Torque converter	AT-239
				9. Oil pump assembly	AT-255
25		Does not hold lock-up condition. Refer to AT-183, "A/T Does Not Hold Lock-up Condition".	ON vehicle	1. A/T fluid level and state	AT-47
				2. Line pressure test	AT-47
				3. Engine speed signal	AT-108
				4. Input speed sensor	AT-101
				5. Torque converter clutch solenoid valve	AT-120
				6. CAN communication line	AT-90
				7. Control valve with TCM	AT-204
			OFF vehicle	8. Torque converter	AT-239
				9. Oil pump assembly	AT-255

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
26	Slips/Will Not Engage	Lock-up is not released. Refer to AT-184, "Lock-up Is Not Released".	ON vehicle	1. A/T fluid level and state	AT-47
				2. Line pressure test	AT-47
				3. Engine speed signal	AT-108
				4. Input speed sensor	AT-101
				5. Torque converter clutch solenoid valve	AT-120
				6. CAN communication line	AT-90
				7. Control valve with TCM	AT-204
			OFF vehicle	8. Torque converter	AT-239
				9. Oil pump assembly	AT-255
27		No shock at all or the clutch slips when vehicle changes speed $D_1 \rightarrow D_2$ or $M_1 \rightarrow M_2$.	ON vehicle	1. A/T fluid level and state	AT-47
				2. Output speed sensor and vehicle speed signal	AT-103, AT-133
				3. Direct clutch solenoid valve	AT-143
				4. CAN communication line	AT-90
				5. Line pressure test	AT-47
				6. Control valve with TCM	AT-204
			OFF vehicle	7. Torque converter	AT-239
				8. Oil pump assembly	AT-255
				9. 3rd one-way clutch	AT-257
				10. Gear system	AT-232
				11. Direct clutch	AT-270
				12. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17, "Cross-Sectional View".)	AT-239

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 $D_2 \rightarrow D_3$ or $M_2 \rightarrow M_3$.	ON vehicle	1. A/T fluid level and state	AT-47
				2. Output speed sensor and vehicle speed signal	AT-103, AT-133
				3. High and low reverse clutch solenoid valve	AT-145
				4. CAN communication line	AT-90
				5. Line pressure test	AT-47
				6. Control valve with TCM	AT-204
			OFF vehicle	7. Torque converter	AT-239
				8. Oil pump assembly	AT-255
				9. 3rd one-way clutch	AT-257
				10. Gear system	AT-232
				11. High and low reverse clutch	AT-269
				12. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17, "Cross-Sectional View".)	AT-239
				13. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17, "Cross-Sectional View".)	AT-239
29		No shock at all or the clutch slips when vehicle changes speed $D_3 \rightarrow D_4$ or $M_3 \rightarrow M_4$.	ON vehicle	1. A/T fluid level and state	AT-47
				2. Output speed sensor and vehicle speed signal	AT-103, AT-133
				3. Input clutch solenoid valve	AT-139
				4. Front brake solenoid valve	AT-141
				5. CAN communication line	AT-90
				6. Line pressure test	AT-47
				7. Control valve with TCM	AT-204
			OFF vehicle	8. Torque converter	AT-239
				9. Oil pump assembly	AT-255
				10. Input clutch	AT-259
				11. Gear system	AT-232
				12. High and low reverse clutch	AT-269
				13. Direct clutch	AT-270

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 or M4 → M5.	ON vehicle	1. A/T fluid level and state	AT-47
				2. Output speed sensor and vehicle speed signal	AT-103, AT-133
				3. Front brake solenoid valve	AT-141
				4. Direct clutch solenoid valve	AT-143
				5. CAN communication line	AT-90
				6. Line pressure test	AT-47
				7. Control valve with TCM	AT-204
			OFF vehicle	8. Torque converter	AT-239
				9. Oil pump assembly	AT-255
				10. Front brake (brake band)	AT-239
				11. Input clutch	AT-259
				12. Gear system	AT-232
				13. High and low reverse clutch	AT-269
31		When you press the accelerator pedal and shift speed D5 → D4 or M5 → M4 the engine idles or the A/T slips.	ON vehicle	1. A/T fluid level and state	AT-47
				2. Output speed sensor and vehicle speed signal	AT-103, AT-133
				3. Front brake solenoid valve	AT-141
				4. Direct clutch solenoid valve	AT-143
				5. CAN communication line	AT-90
				6. Line pressure test	AT-47
				7. Control valve with TCM	AT-204
			OFF vehicle	8. Torque converter	AT-239
				9. Oil pump assembly	AT-255
				10. Input clutch	AT-259
				11. Gear system	AT-232
				12. High and low reverse clutch	AT-269
				13. Direct clutch	AT-270

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
32	Slips/Will Not Engage	When you press the accelerator pedal and shift speed $D_4 \rightarrow D_3$ or $M_4 \rightarrow M_3$ the engine idles or the A/T slips.	ON vehicle	1. A/T fluid level and state	AT-47
				2. Output speed sensor and vehicle speed signal	AT-103, AT-133
				3. Input clutch solenoid valve	AT-139
				4. Front brake solenoid valve	AT-141
				5. CAN communication line	AT-90
				6. Line pressure test	AT-47
				7. Control valve with TCM	AT-204
			OFF vehicle	8. Torque converter	AT-239
				9. Oil pump assembly	AT-255
				10. 3rd one-way clutch	AT-257
				11. Gear system	AT-232
				12. High and low reverse clutch	AT-269
				13. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17, "Cross-Sectional View".)	AT-239
				14. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17, "Cross-Sectional View".)	AT-239
33		When you press the accelerator pedal and shift speed $D_3 \rightarrow D_2$ or $M_3 \rightarrow M_2$ the engine idles or the A/T slips.	ON vehicle	1. A/T fluid level and state	AT-47
				2. Output speed sensor and vehicle speed signal	AT-103, AT-133
				3. High and low reverse clutch solenoid valve	AT-145
				4. Direct clutch solenoid valve	AT-143
				5. CAN communication line	AT-90
				6. Line pressure test	AT-47
				7. Control valve with TCM	AT-204
			OFF vehicle	8. Torque converter	AT-239
				9. Oil pump assembly	AT-255
				10. 3rd one-way clutch	AT-257
				11. Gear system	AT-232
				12. Direct clutch	AT-270
				13. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17, "Cross-Sectional View".)	AT-239

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
34	Slips/Will Not Engage	When you press the accelerator pedal and shift speed $D_2 \rightarrow D_1$ or $M_2 \rightarrow M_1$ the engine idles or the A/T slips.	ON vehicle	1. A/T fluid level and state	AT-47
				2. Output speed sensor and vehicle speed signal	AT-103, AT-133
				3. Direct clutch solenoid valve	AT-143
				4. CAN communication line	AT-90
				5. Line pressure test	AT-47
				6. Control valve with TCM	AT-204
			OFF vehicle	7. Torque converter	AT-239
				8. Oil pump assembly	AT-255
				9. 3rd one-way clutch	AT-257
				10. 1st one-way clutch	AT-264
				11. Gear system	AT-232
				12. Reverse brake	AT-239
				13. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17, "Cross-Sectional View".)	AT-239
				14. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17, "Cross-Sectional View".)	AT-239
35		With selector lever in “D” position, acceleration is extremely poor.	ON vehicle	1. A/T fluid level and state	AT-47
				2. Line pressure test	AT-47
				3. Accelerator pedal position sensor	AT-126
				4. CAN communication line	AT-90
				5. Transmission range switch	AT-98
				6. A/T position	AT-195
				7. Control valve with TCM	AT-204
			OFF vehicle	8. Torque converter	AT-239
				9. Oil pump assembly	AT-255
				10. 1st one-way clutch	AT-264
				11. Gear system	AT-232
				12. Reverse brake	AT-239
				13. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17, "Cross-Sectional View".)	AT-239
				14. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17, "Cross-Sectional View".)	AT-239

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
36	Slips/Will Not Engage	With selector lever in “R” position, acceleration is extremely poor.	ON vehicle	1. A/T fluid level and state	AT-47
				2. Line pressure test	AT-47
				3. Accelerator pedal position sensor	AT-126
				4. High and low reverse clutch solenoid valve	AT-145
				5. CAN communication line	AT-90
				6. Transmission range switch	AT-98
				7. A/T position	AT-195
				8. Control valve with TCM	AT-204
			OFF vehicle	9. Gear system	AT-232
				10. Output shaft	AT-239
				11. Reverse brake	AT-239
37		While starting off by accelerating in 1st, engine races or slippage occurs.	ON vehicle	1. A/T fluid level and state	AT-47
				2. Line pressure test	AT-47
				3. Accelerator pedal position sensor	AT-126
				4. CAN communication line	AT-90
				5. Control valve with TCM	AT-204
			OFF vehicle	6. Torque converter	AT-239
				7. Oil pump assembly	AT-255
				8. 3rd one-way clutch	AT-257
				9. 1st one-way clutch	AT-264
				10. Gear system	AT-232
				11. Reverse brake	AT-239
				12. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17, "Cross-Sectional View".)	AT-239
				13. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17, "Cross-Sectional View".)	AT-239

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
38	Slips/Will Not Engage	While accelerating in 2GR, engine races or slippage occurs.	ON vehicle	1. A/T fluid level and state	AT-47
				2. Line pressure test	AT-47
				3. Accelerator pedal position sensor	AT-126
				4. CAN communication line	AT-90
				5. Direct clutch solenoid valve	AT-143
				6. Control valve with TCM	AT-204
			OFF vehicle	7. Torque converter	AT-239
				8. Oil pump assembly	AT-255
				9. 3rd one-way clutch	AT-257
				10. Gear system	AT-232
				11. Direct clutch	AT-270
				12. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17, "Cross-Sectional View".)	AT-239
39		While accelerating in 3GR, engine races or slippage occurs.	ON vehicle	1. A/T fluid level and state	AT-47
				2. Line pressure test	AT-47
				3. Accelerator pedal position sensor	AT-126
				4. CAN communication line	AT-90
				5. High and low reverse clutch solenoid valve	AT-145
				6. Control valve with TCM	AT-204
			OFF vehicle	7. Torque converter	AT-239
				8. Oil pump assembly	AT-255
				9. 3rd one-way clutch	AT-257
				10. Gear system	AT-232
				11. High and low reverse clutch	AT-269
				12. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17, "Cross-Sectional View".)	AT-239
				13. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17, "Cross-Sectional View".)	AT-239

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
40	Slips/Will Not Engage	While accelerating in 4th, engine races or slippage occurs.	ON vehicle	1. A/T fluid level and state	AT-47
				2. Line pressure test	AT-47
				3. Accelerator pedal position sensor	AT-126
				4. CAN communication line	AT-90
				5. Input clutch solenoid valve	AT-139
				6. Control valve with TCM	AT-204
			OFF vehicle	7. Torque converter	AT-239
				8. Oil pump assembly	AT-255
				9. Input clutch	AT-259
				10. Gear system	AT-232
				11. High and low reverse clutch	AT-269
				12. Direct clutch	AT-270
41		While accelerating in 5th, engine races or slippage occurs.	ON vehicle	1. A/T fluid level and state	AT-47
				2. Line pressure test	AT-47
				3. Accelerator pedal position sensor	AT-126
				4. CAN communication line	AT-90
				5. Front brake solenoid valve	AT-141
				6. Control valve with TCM	AT-204
			OFF vehicle	7. Torque converter	AT-239
				8. Oil pump assembly	AT-255
				9. Front brake (brake band)	AT-239
				10. Input clutch	AT-259
				11. Gear system	AT-232
				12. High and low reverse clutch	AT-269
42		Slips at lock-up.	ON vehicle	1. A/T fluid level and state	AT-47
				2. Line pressure test	AT-47
				3. Engine speed signal	AT-108
				4. Input speed sensor	AT-101
				5. Torque converter clutch solenoid valve	AT-120
				6. CAN communication line	AT-90
				7. Control valve with TCM	AT-204
			OFF vehicle	8. Torque converter	AT-239
				9. Oil pump assembly	AT-255

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
43	Slips/Will Not Engage	No creep at all. Refer to AT-169, "Vehicle Does Not Creep Backward in "R" Position", AT-171, "Vehicle Does Not Creep Forward in "D" Position".	ON vehicle	1. A/T fluid level and state	AT-47
				2. Line pressure test	AT-47
				3. Accelerator pedal position sensor	AT-126
				4. Direct clutch solenoid valve	AT-143
				5. Transmission range switch	AT-98
				6. CAN communication line	AT-90
				7. A/T position	AT-195
				8. Control valve with TCM	AT-204
			OFF vehicle	9. Torque converter	AT-239
				10. Oil pump assembly	AT-255
				11. 1st one-way clutch	AT-264
				12. Gear system	AT-232
				13. Reverse brake	AT-239
				14. Direct clutch	AT-270
				15. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17, "Cross-Sectional View".)	AT-239
				16. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17, "Cross-Sectional View".)	AT-239
44		Vehicle cannot run in all positions.	ON vehicle	1. A/T fluid level and state	AT-47
				2. Line pressure test	AT-47
				3. Transmission range switch	AT-98
				4. A/T position	AT-195
				5. Control valve with TCM	AT-204
			OFF vehicle	6. Oil pump assembly	AT-255
				7. Gear system	AT-232
				8. Output shaft	AT-239

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
45	Slips/Will Not Engage	With selector lever in “D” position, driving is not possible.	ON vehicle	1. A/T fluid level and state	AT-47
				2. Line pressure test	AT-47
				3. Transmission range switch	AT-98
				4. A/T position	AT-195
				5. Control valve with TCM	AT-204
			OFF vehicle	6. Torque converter	AT-239
				7. Oil pump assembly	AT-255
				8. 1st one-way clutch	AT-264
				9. Gear system	AT-232
				10. Reverse brake	AT-239
				11. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17, "Cross-Sectional View".)	AT-239
				12. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17, "Cross-Sectional View".)	AT-239
46		With selector lever in “R” position, driving is not possible.	ON vehicle	1. A/T fluid level and state	AT-47
				2. Line pressure test	AT-47
				3. Transmission range switch	AT-98
				4. A/T position	AT-195
				5. Control valve with TCM	AT-204
			OFF vehicle	6. Gear system	AT-232
				7. Output shaft	AT-239
				8. Reverse brake	AT-239
47	Does Not Change	Does not change M_5 → M_4. Refer to AT-186, "A/T Does Not Shift: 5GR → 4GR".	ON vehicle	1. Transmission range switch	AT-98
				2. A/T fluid level and state	AT-47
				3. A/T position	AT-195
				4. Manual mode switch	AT-151
				5. CAN communication line	AT-90
				6. Control valve with TCM	AT-204
			OFF vehicle	7. Front brake (brake band)	AT-239
48		Does not change M_4 → M_3. Refer to AT-187, "A/T Does Not Shift: 4GR → 3GR".	ON vehicle	1. Transmission range switch	AT-98
				2. A/T fluid level and state	AT-47
				3. A/T position	AT-195
				4. Manual mode switch	AT-151
				5. CAN communication line	AT-90
				6. Control valve with TCM	AT-204
			OFF vehicle	7. Front brake (brake band)	AT-239
				8. Input clutch	AT-259

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
49	Does Not Change	Does not change M_3 → M_2. Refer to AT-188, "A/T Does Not Shift: 3GR → 2GR".	ON vehicle	1. Transmission range switch	AT-98
				2. A/T fluid level and state	AT-47
				3. A/T position	AT-195
				4. Manual mode switch	AT-151
				5. CAN communication line	AT-90
				6. Control valve with TCM	AT-204
			OFF vehicle	7. Front brake (brake band)	AT-239
				8. Input clutch	AT-259
				9. High and low reverse clutch	AT-269
50		Does not change M_2 → M_1. Refer to AT-189, "A/T Does Not Shift: 2GR → 1GR".	ON vehicle	1. Transmission range switch	AT-98
				2. A/T fluid level and state	AT-47
				3. A/T position	AT-195
				4. Manual mode switch	AT-151
				5. CAN communication line	AT-90
				6. Control valve with TCM	AT-204
			OFF vehicle	7. Input clutch	AT-259
				8. High and low reverse clutch	AT-269
				9. Direct clutch	AT-270
51		Cannot be changed to manual mode. Refer to AT-185, "Cannot Be Changed to Manual Mode".	ON vehicle	1. Manual mode switch	AT-151
				2. Input speed sensor	AT-101
				3. CAN communication line	AT-90
52	Others	Shift point is high in “D” position.	ON vehicle	1. Output speed sensor and vehicle speed signal	AT-103, AT-133
				2. Accelerator pedal position sensor	AT-126
				3. CAN communication line	AT-90
				4. A/T fluid temperature sensor	AT-128
				5. Control valve with TCM	AT-204
53		Shift point is low in “D” position.	ON vehicle	1. Output speed sensor and vehicle speed signal	AT-103, AT-133
				2. Accelerator pedal position sensor	AT-126
				3. CAN communication line	AT-90
				4. Control valve with TCM	AT-204

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
54	Others	Judder occurs during lock-up.	ON vehicle	1. A/T fluid level and state	AT-47
				2. Engine speed signal	AT-108
				3. Input speed sensor	AT-101
				4. Output speed sensor and vehicle speed signal	AT-103, AT-133
				5. Accelerator pedal position sensor	AT-126
				6. CAN communication line	AT-90
				7. Torque converter clutch solenoid valve	AT-120
				8. Control valve with TCM	AT-204
			OFF vehicle	9. Torque converter	AT-239
55		Strange noise in “R” position.	ON vehicle	1. A/T fluid level and state	AT-47
				2. Engine speed signal	AT-108
				3. CAN communication line	AT-90
				4. Control valve with TCM	AT-204
			OFF vehicle	5. Torque converter	AT-239
				6. Oil pump assembly	AT-255
				7. Gear system	AT-232
				8. High and low reverse clutch	AT-269
				9. Reverse brake	AT-239
56		Strange noise in “N” position.	ON vehicle	1. A/T fluid level and state	AT-47
				2. Engine speed signal	AT-108
				3. CAN communication line	AT-90
				4. Control valve with TCM	AT-204
			OFF vehicle	5. Torque converter	AT-239
				6. Oil pump assembly	AT-255
				7. Gear system	AT-232
57		Strange noise in “D” position.	ON vehicle	1. A/T fluid level and state	AT-47
				2. Engine speed signal	AT-108
				3. CAN communication line	AT-90
				4. Control valve with TCM	AT-204
			OFF vehicle	5. Torque converter	AT-239
				6. Oil pump assembly	AT-255
				7. Gear system	AT-232
				8. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17, "Cross-Sectional View".)	AT-239

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
58	Others	Vehicle does not decelerate by engine brake. Refer to AT-191, "Vehicle Does Not Decelerate by Engine Brake".	ON vehicle	1. Transmission range switch	AT-98
				2. A/T fluid level and state	AT-47
				3. A/T position	AT-195
				4. Manual mode switch	AT-151
				5. CAN communication line	AT-90
				6. Control valve with TCM	AT-204
			OFF vehicle	7. Input clutch	AT-259
				8. High and low reverse clutch	AT-269
				9. Direct clutch	AT-270
59		Engine brake does not work $M_5 \rightarrow M_4$.	ON vehicle	1. Transmission range switch	AT-98
				2. A/T fluid level and state	AT-47
				3. A/T position	AT-195
				4. Manual mode switch	AT-151
				5. CAN communication line	AT-90
				6. Control valve with TCM	AT-204
			OFF vehicle	7. Front brake (brake band)	AT-239
60		Engine brake does not work $M_4 \rightarrow M_3$.	ON vehicle	1. Transmission range switch	AT-98
				2. A/T fluid level and state	AT-47
				3. A/T position	AT-195
				4. Manual mode switch	AT-151
				5. CAN communication line	AT-90
				6. Control valve with TCM	AT-204
			OFF vehicle	7. Front brake (brake band)	AT-239
				8. Input clutch	AT-259
61		Engine brake does not work $M_3 \rightarrow M_2$.	ON vehicle	1. Transmission range switch	AT-98
				2. A/T fluid level and state	AT-47
				3. A/T position	AT-195
				4. Manual mode switch	AT-151
				5. CAN communication line	AT-90
				6. Control valve with TCM	AT-204
			OFF vehicle	7. Front brake (brake band)	AT-239
				8. Input clutch	AT-259
				9. High and low reverse clutch	AT-269

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
62	Others	Engine brake does not work $M_2 \rightarrow M_1$.	ON vehicle	1. Transmission range switch	AT-98
				2. A/T fluid level and state	AT-47
				3. A/T position	AT-195
				4. Manual mode switch	AT-151
				5. CAN communication line	AT-90
				6. Control valve with TCM	AT-204
			OFF vehicle	7. Input clutch	AT-259
				8. High and low reverse clutch	AT-269
				9. Direct clutch	AT-270
63		Maximum speed low.	ON vehicle	1. A/T fluid level and state	AT-47
				2. Line pressure test	AT-47
				3. Accelerator pedal position sensor	AT-126
				4. CAN communication line	AT-90
				5. Direct clutch solenoid valve	AT-143
				6. Control valve with TCM	AT-204
			OFF vehicle	7. Torque converter	AT-239
				8. Oil pump assembly	AT-255
				9. Input clutch	AT-259
				10. Gear system	AT-232
				11. High and low reverse clutch	AT-269
				12. Direct clutch	AT-270
				13. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17, "Cross-Sectional View".)	AT-239
				14 Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17, "Cross-Sectional View".)	AT-239
64		Extremely large creep.	ON vehicle	1. Engine idle speed	EC-75
				2. CAN communication line	AT-90
			OFF vehicle	3. Torque converter	AT-239
65		With selector lever in “P” position, vehicle does not enter parking condition or, with selector lever in another position, parking condition is not cancelled.	ON vehicle	1. Transmission range switch	AT-98
				2. A/T position	AT-195
				3. Parking pawl components	AT-232
66		Vehicle runs with A/T in “P” position.	ON vehicle	1. Transmission range switch	AT-98
				2. A/T fluid level and state	AT-47
				3. A/T position	AT-195
				4. Control valve with TCM	AT-204
				5. Parking pawl components	AT-232
			OFF vehicle	6. Gear system	AT-232

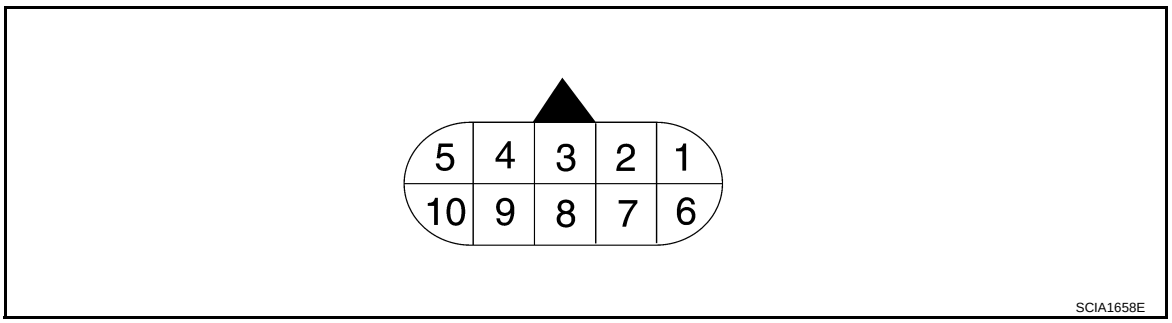
No.	Items	Symptom	Condition	Diagnostic Item	Reference page
67	Others	Vehicle runs with A/T in “N” position. Refer to AT-167, "In "N" Position, Vehicle Moves".	ON vehicle	1. Transmission range switch	AT-98
				2. A/T fluid level and state	AT-47
				3. A/T position	AT-195
				4. Control valve with TCM	AT-204
			OFF vehicle	5. Input clutch	AT-259
				6. Gear system	AT-232
				7. Direct clutch	AT-270
				8. Reverse brake	AT-239
				9. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17, "Cross-Sectional View".)	AT-239
				10. Low coast brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17, "Cross-Sectional View".)	AT-239
68		Engine does not start in “N” or “P” position. Refer to AT-166, "Engine Cannot Be Started in "P" or "N" Position".	ON vehicle	1. Ignition switch and starter	PG-4, SC-8
				2. A/T position	AT-195
				3. Transmission range switch	AT-98
69		Engine starts in positions other than “N” or “P”.	ON vehicle	1. Ignition switch and starter	PG-4, SC-8
				2. A/T position	AT-195
				3. Transmission range switch	AT-98
70		Engine stall.	ON vehicle	1. A/T fluid level and state	AT-47
				2. Engine speed signal	AT-108
				3. Input speed sensor	AT-101
				4. Torque converter clutch solenoid valve	AT-120
				5. CAN communication line	AT-90
				6. Control valve with TCM	AT-204
			OFF vehicle	7. Torque converter	AT-239
71		Engine stalls when selector lever shifted “N” → “D”, “R”.	ON vehicle	1. A/T fluid level and state	AT-47
				2. Engine speed signal	AT-108
				3. Input speed sensor	AT-101
				4. Torque converter clutch solenoid valve	AT-120
				5. CAN communication line	AT-90
				6. Control valve with TCM	AT-204
			OFF vehicle	7. Torque converter	AT-239

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
72	Others	Engine speed does not return to idle. Refer to AT-184, "Engine Speed Does Not Return to Idle".	ON vehicle	1. A/T fluid level and state	AT-47
				2. Direct clutch solenoid valve	AT-143
				3. Front brake solenoid valve	AT-141
				4. Accelerator pedal position sensor	AT-126
				5. Output speed sensor and vehicle speed signal	AT-103, AT-133
				6. CAN communication line	AT-90
				7. Control valve with TCM	AT-204
			OFF vehicle	8. Front brake (brake band)	AT-239
				9. Direct clutch	AT-270

TCM Input/Output Signal Reference Value

INFOID:0000000004656811

A/T ASSEMBLY HARNESS CONNECTOR TERMINAL LAYOUT



TCM INSPECTION TABLE

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

Terminal	Wire color	Item	Condition		Data (Approx.)
1	G	Power supply (Memory back-up)	Always		Battery voltage
2	G	Power supply (Memory back-up)	Always		Battery voltage
3	L	CAN-H	—		—
4	PU/W	K-line (CONSULT-III signal)	The terminal is connected to the data link connector for CONSULT-III.		—
5	B	Ground	Always		0 V
6	Y/R	Power supply		—	Battery voltage
				—	0 V
7	Y	Back-up lamp relay		Selector lever in “R” position.	0 V
				Selector lever in other positions.	Battery voltage
8	P	CAN-L	—		—
9	GY/R	Starter relay		Selector lever in “N” and “P” positions.	Battery voltage
				Selector lever in other positions.	0 V
10	B	Ground	Always		0 V

CONSULT-III Function (TRANSMISSION)

INFOID:0000000004656812

CONSULT-III can display each diagnostic item using the diagnostic test mode shown following.

FUNCTION

Diagnostic test mode	Function
Self Diagnostic Results	Retrieve DTC from ECU and display diagnostic items.
Data Monitor	Monitor the input/output signal of the control unit in real time.
CAN Diagnosis	This mode displays a network diagnosis result about CAN by a diagram.
CAN Diagnostic Support Monitor	It monitors the starts of CAN communication.
DTC & SRT confirmation	The status of system monitoring tests and the self-diagnosis status/result can be confirmed.
ECU Identification	Display the ECU identification number (part number etc.) of the selected system.
Function Test*	This mode can show results of self-diagnosis of ECU with either “OK” or “NG”. For engine, more practical tests regarding sensors/switches and/or actuators are available.

*: Although “Function Test” is selectable, do not use its.

CONSULT-III REFERENCE VALUE

NOTICE:

1. The CONSULT-III 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-III display. If the difference is noticeable, mechanical parts (except solenoids, sensors, etc.) may be malfunctioning. Check mechanical parts using applicable diagnostic procedures.
2. Shift schedule (which implies gear position) displayed on CONSULT-III 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-III indicates the point where shifts are completed.

3. Display of solenoid valves on CONSULT-III 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
ATF TEMP 1	Ignition switch ON	Temperature of ATF in the oil pan is indicated.
TCC SOLENOID	Lock-up is active	0.4 – 0.6 A
SLCT LVR POSI	Selector lever in “N” and “P” positions.	N/P
	Selector lever in “R” position.	R
	Selector lever in “D” position.	D
VHCL/S SE-A/T	During driving	Approximately matches the speedometer reading.
VEHICLE SPEED	During driving	Approximately matches the speedometer reading.
ENGINE SPEED	Engine running	Closely matches the tachometer reading.
LINE PRES SOL	During driving	0.2 – 0.6 A
INPUT SPEED	During driving (lock-up ON)	Approximately matches the engine speed.
VHCL/S SE-MTR	During driving	Approximately matches the speedometer reading.

Item name	Condition	Display value (Approx.)
ATF PRES SW 2	Low coast brake engaged. Refer to AT-17.	ON
	Low coast brake disengaged. Refer to AT-17.	OFF
I/C SOLENOID	Input clutch disengaged. Refer to AT-17.	0.6 – 0.8 A
	Input clutch engaged. Refer to AT-17.	0 – 0.05 A
FR/B SOLENOID	Front brake engaged. Refer to AT-17.	0.6 – 0.8 A
	Front brake disengaged. Refer to AT-17.	0 – 0.05 A
D/C SOLENOID	Direct clutch disengaged. Refer to AT-17.	0.6 – 0.8 A
	Direct clutch engaged. Refer to AT-17.	0 – 0.05 A
HLR/C SOL	High and low reverse clutch disengaged. Refer to AT-17.	0.6 – 0.8 A
	High and low reverse clutch engaged. Refer to AT-17.	0 – 0.05 A
ON OFF SOL	Low coast brake engaged. Refer to AT-17.	ON
	Low coast brake disengaged. Refer to AT-17.	OFF
MANU MODE SW	Manual shift gate position (neutral)	ON
	Other than the above	OFF
NON M-MODE SW	Manual shift gate position	OFF
	Other than the above	ON
UP SW LEVER	Selector lever: + side	ON
	Other than the above	OFF
DOWN SW LEVER	Selector lever: - side	ON
	Other than the above	OFF
STARTER RELAY	Selector lever in “N” and “P” positions.	ON
	Selector lever in other positions.	OFF
ACCELE POSI	Released accelerator pedal.	0.0/8
	Fully depressed accelerator pedal.	8.0/8
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
GEAR	During driving	1, 2, 3, 4, 5

SELF-DIAGNOSTIC RESULT MODE

Display Items List

X: Applicable, —: Not applicable

Items (CONSULT-III screen terms)	Malfunction is detected when...	TCM self-diagnosis	OBD-II (DTC)	Reference page
		“TRANSMISSION” with CONSULT-III	MIL[*1], “ENGINE” with CONSULT-III or GST[*2]	
CAN COMM CIRCUIT	When TCM is not transmitting or receiving CAN communication signal for 2 seconds or more.	U1000	U1000	AT-90
STARTER RELAY	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.)	P0615	—	AT-93

Items (CONSULT-III screen terms)	Malfunction is detected when...	TCM self-diagnosis	OBD-II (DTC)	Reference page
		"TRANSMISSION" with CONSULT-III	MIL[*1], "ENGINE" with CONSULT-III or GST[*2]	
TRANSMISSION CONT	TCM is malfunctioning	P0700	P0700	AT-97
T/M RANGE SWITCH A	• Transmission range switch 1–4 signals input with impossible pattern. • "P" position is detected from "N" position without any other position being detected in between.	P0705	P0705	AT-98
INPUT SPEED SENSOR A	• TCM does not receive the proper voltage signal from the sensor. • TCM detects an irregularity only at position of 4GR for input speed sensor 2.	P0717	P0717	AT-101
OUTPUT SPEED SENSOR	• Signal from vehicle speed sensor A/T (Revolution sensor) not input due to cut line or the like. • Unexpected signal input during running. • After ignition switch is turned ON, unexpected signal input from vehicle speed signal before the vehicle starts moving.	P0720	P0720	AT-103
ENGINE SPEED	TCM does not receive the CAN communication signal from the ECM.	P0725	P0725	AT-108
1GR INCORRECT RATIO	A/T cannot shift to 1GR	P0731	P0731	AT-110
2GR INCORRECT RATIO	A/T cannot shift to 2GR	P0732	P0732	AT-112
3GR INCORRECT RATIO	A/T cannot shift to 3GR	P0733	P0733	AT-114
4GR INCORRECT RATIO	A/T cannot shift to 4GR	P0734	P0734	AT-116
5GR INCORRECT RATIO	A/T cannot shift to 5GR	P0735	P0735	AT-118
TORQUE CONVERTER	Normal voltage not applied to solenoid due to cut line, short, or the like.	P0740	P0740	AT-120
TORQUE CONVERTER	• A/T cannot perform lock-up even if electrical circuit is good. • TCM detects as irregular by comparing difference value with slip rotation.	P0744	P0744[*3]	AT-122
PC SOLENOID A	• Normal voltage not applied to solenoid due to cut line, short, or the like. • TCM detects as irregular by comparing target value with monitor value.	P0745	P0745	AT-124
TP SENSOR	TCM does not receive the proper accelerator pedal position signals (input by CAN communication) from ECM.	P1705	—	AT-126
TRANS FLUID TEMP SEN	During running, the A/T fluid temperature sensor signal voltage is excessively high or low.	P1710	P0710	AT-128
VEHICLE SPEED SIGNAL	• Signal (CAN communication) from vehicle speed signal not input due to cut line or the like. • Unexpected signal input during running.	P1721	—	AT-133
INTERLOCK	Except during shift change, the gear position and ATF pressure switch states are monitored and comparative judgment made.	P1730	P1730	AT-135
1ST E/BRAKING	Each ATF pressure switch and solenoid current is monitored and if a pattern is detected having engine braking 1GR other than in the M1 position, a malfunction is detected.	P1731	—	AT-137

Items (CONSULT-III screen terms)	Malfunction is detected when...	TCM self-diagnosis	OBD-II (DTC)	Reference page
		"TRANSMISSION" with CONSULT-III	MIL*1, "ENGINE" with CONSULT-III or GST*2	
INPUT CLUTCH SOL	• Normal voltage not applied to solenoid due to functional malfunction, cut line, short, or the like. • TCM detects as irregular by comparing target value with monitor value.	P1752	P1752	AT-139
FR BRAKE SOLENOID	• Normal voltage not applied to solenoid due to functional malfunction, cut line, short, or the like. • TCM detects as irregular by comparing target value with monitor value.	P1757	P1757	AT-141
DRCT CLUTCH SOL	• Normal voltage not applied to solenoid due to cut line, short, or the like. • TCM detects as irregular by comparing target value with monitor value.	P1762	P1762	AT-143
HLR CLUTCH SOLENOID	• Normal voltage not applied to solenoid due to functional malfunction, cut line, short, or the like. • TCM detects as irregular by comparing target value with monitor value.	P1767	P1767	AT-145
L C BRAKE SOLENOID	Normal voltage not applied to solenoid due to functional malfunction, cut line, short, or the like.	P1772	P1772	AT-147
L C BRAKE SOLENOID	• TCM detects an improper voltage drop when it tries to operate the solenoid valve. • Condition of ATF pressure switch 2 is different from monitor value, and relation between gear position and actual gear ratio is irregular.	P1774	P1774*3	AT-149
M-MODE SWITCH	When an impossible pattern of switch signals is detected, a malfunction is detected.	P1815	—	AT-151
NO DTC IS DETECTED FURTHER TESTING MAY BE REQUIRED	No NG item has been detected.	X	X	—

*1: Refer to AT-38, "Malfunction Indicator Lamp (MIL)".

*2: These numbers are prescribed by SAE J2012.

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

DATA MONITOR MODE

Display Items List

X: Standard, —: Not applicable, ▼: Option

Monitored item (Unit)	Monitor Item Selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
VHCL/S SE-A/T (km/h)	X	X	▼	Output speed sensor
VHCL/S SE-MTR (km/h)	X	—	▼	
ACCELE POSI (0.0/8)	X	—	▼	Accelerator pedal position signal
THROTTLE POSI (0.0/8)	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)	X	—	▼	Signal input with CAN communications.
W/O THL POS (ON/OFF)	X	—	▼	

Monitored item (Unit)	Monitor Item Selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
BRAKE SW (ON/OFF)	X	—	▼	Stop lamp switch
GEAR	—	X	▼	Gear position recognized by the TCM updated after gear-shifting.
ENGINE SPEED (rpm)	X	X	▼	
INPUT SPEED (rpm)	X	X	▼	
OUTPUT REV (rpm)	X	X	▼	
GEAR RATIO	—	X	▼	
TC SLIP SPEED (rpm)	—	X	▼	Difference between engine speed and torque converter input shaft speed.
F SUN GR REV (rpm)	—	—	▼	
F CARR GR REV (rpm)	—	—	▼	
ATF TEMP SE 1 (V)	X	—	▼	
ATF TEMP SE 2 (V)	X	—	▼	
ATF TEMP 1 (°C)	—	X	▼	Temperature of ATF in the oil pan.
ATF TEMP 2 (°C)	—	X	▼	Temperature of ATF at the exit of torque converter.
BATTERY VOLT (V)	X	—	▼	
ATF PRES SW 1 (ON/OFF)	X	X	▼	(for FR/B solenoid)
ATF PRES SW 2 (ON/OFF)	X	X	▼	(for LC/B solenoid)
ATF PRES SW 3 (ON/OFF)	X	X	▼	(for I/C solenoid)
ATF PRES SW 5 (ON/OFF)	X	X	▼	(for D/C solenoid)
ATF PRES SW 6 (ON/OFF)	X	X	▼	(for HLR/C solenoid)
RANGE SW 1 (ON/OFF)	X	—	▼	
RANGE SW 2 (ON/OFF)	X	—	▼	
RANGE SW 3 (ON/OFF)	X	—	▼	
RANGE SW 4 (ON/OFF)	X	—	▼	
1 POSITION SW (ON/OFF)	X	—	▼	
SLCT LVR POSI	—	X	▼	Selector lever position is recognized by the TCM. For fail-safe operation, the specific value used for control is displayed.
OD CONT SW (ON/OFF)	X	—	▼	Not mounted but displayed.
POWERSHIFT SW (ON/OFF)	X	—	▼	
HOLD SW (ON/OFF)	X	—	▼	
MANU MODE SW (ON/OFF)	X	—	▼	
NON M-MODE SW (ON/OFF)	X	—	▼	
UP SW LEVER (ON/OFF)	X	—	▼	
DOWN SW LEVER (ON/OFF)	X	—	▼	
SFT UP ST SW (ON/OFF)	—	—	▼	Not mounted but displayed.
SFT DWN ST SW (ON/OFF)	—	—	▼	

Monitored item (Unit)	Monitor Item Selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
ASCD-OD CUT (ON/OFF)	—	—	▼	
ASCD-CRUISE (ON/OFF)	—	—	▼	
ABS SIGNAL (ON/OFF)	—	—	▼	
ACC OD CUT (ON/OFF)	—	—	▼	Not mounted but displayed
ACC SIGNAL (ON/OFF)	—	—	▼	
TCS GR/P KEEP (ON/OFF)	—	—	▼	
TCS SIGNAL 2 (ON/OFF)	—	—	▼	
TCS SIGNAL 1 (ON/OFF)	—	—	▼	
TCC SOLENOID (A)	—	X	▼	
LINE PRES SOL (A)	—	X	▼	
I/C SOLENOID (A)	—	X	▼	
FR/B SOLENOID (A)	—	X	▼	
D/C SOLENOID (A)	—	X	▼	
HLR/C SOL (A)	—	X	▼	
ON OFF SOL (ON/OFF)	—	—	▼	LC/B solenoid
TCC SOL MON (A)	—	—	▼	
L/P SOL MON (A)	—	—	▼	
I/C SL MON (A)	—	—	▼	
FR/B SOL MON (A)	—	—	▼	
D/C SOL MON (A)	—	—	▼	
HLR/C SOL MON (A)	—	—	▼	
ON OFF SOL MON (ON/OFF)	—	—	▼	LC/B solenoid
P POSI IND (ON/OFF)	—	—	▼	
R POSI IND (ON/OFF)	—	—	▼	
N POSI IND (ON/OFF)	—	—	▼	
D POSI IND (ON/OFF)	—	—	▼	
4TH POSI IND (ON/OFF)	—	—	▼	
3RD POSI IND (ON/OFF)	—	—	▼	
2ND POSI IND (ON/OFF)	—	—	▼	
1ST POSI IND (ON/OFF)	—	—	▼	
MANU MODE IND (ON/OFF)	—	—	▼	
POWER M LAMP (ON/OFF)	—	—	▼	
F-SAFE IND/L (ON/OFF)	—	—	▼	
ATF WARN LAMP (ON/OFF)	—	—	▼	Not mounted but displayed.
BACK-UP LAMP (ON/OFF)	—	—	▼	

Monitored item (Unit)	Monitor Item Selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
STARTER RELAY (ON/OFF)	—	—	▼	
RANGE SW 3M (ON/OFF)	—	—	▼	
C/V CLB ID1	—	—	▼	
C/V CLB ID2	—	—	▼	
C/V CLB ID3	—	—	▼	
UNIT CLB ID1	—	—	▼	
UNIT CLB ID2	—	—	▼	
UNIT CLB ID3	—	—	▼	
TRGT GR RATIO	—	—	▼	
TRGT PRES TCC (kPa)	—	—	▼	
TRGT PRES L/P (kPa)	—	—	▼	
TRGT PRES I/C (kPa)	—	—	▼	
TRGT PRE FR/B (kPa)	—	—	▼	
TRGT PRES D/C (kPa)	—	—	▼	
TRG PRE HLR/C (kPa)	—	—	▼	
SHIFT PATTERN	—	—	▼	
DRV CST JUDGE	—	—	▼	
START RLY MON	—	—	▼	
NEXT GR POSI	—	—	▼	
SHIFT MODE	—	—	▼	
MANU GR POSI	—	—	▼	
VEHICLE SPEED (km/h)	—	X	▼	Vehicle speed recognized by the TCM.

DTC WORK SUPPORT MODE

Display Items List

DTC work support item	Description	Check item
1ST GR FNCTN P0731	Following items for “1GR function ratio” can be confirmed. • Self-diagnosis status (whether the diagnosis is being performed or not) • Self-diagnostic results (OK or NG)	• Input clutch solenoid valve • Front brake solenoid valve • Direct clutch solenoid valve • High and low reverse clutch solenoid valve • Each clutch • Hydraulic control circuit
2ND GR FNCTN P0732	Following items for “2GR function ratio” can be confirmed. • Self-diagnosis status (whether the diagnosis is being performed or not) • Self-diagnostic results (OK or NG)	
3RD GR FNCTN P0733	Following items for “3GR function ratio” can be confirmed. • Self-diagnosis status (whether the diagnosis is being performed or not) • Self-diagnostic results (OK or NG)	
4TH GR FNCTN P0734	Following items for “4GR function ratio” can be confirmed. • Self-diagnosis status (whether the diagnosis is being performed or not) • Self-diagnostic results (OK or NG)	
5TH GR FNCTN P0735	Following items for “5GR function ratio” can be confirmed. • Self-diagnosis status (whether the diagnosis is being performed or not) • Self-diagnostic results (OK or NG)	

Diagnosis Procedure without CONSULT-III

INFOID:0000000004656813

OBD-II SELF-DIAGNOSTIC PROCEDURE (WITH GST)

Refer to EC-120, "Generic Scan Tool (GST) Function".

OBD-II SELF-DIAGNOSTIC PROCEDURE (NO TOOLS)

Refer to EC-62, "Malfunction Indicator Lamp (MIL)".

TCM SELF-DIAGNOSTIC PROCEDURE (NO TOOLS)

Description

When the ignition switch is turned ON, the indicator lamp lights up 2 seconds. As a method for locating the suspect circuit, when the self-diagnostics start signal is input, the memory for the malfunction location is output and A/T CHECK indicator lamp flashes to display the corresponding DTC.

Diagnostic Procedure

1.CHECK A/T CHECK INDICATOR LAMP

1. Start the engine with selector lever in “P” position. Warm engine to normal operating temperature.
2. Turn ignition switch ON and OFF at least twice, then leave it in the OFF position.
3. Wait 10 seconds.
4. Turn ignition switch ON. (Do not start engine.)

Does A/T CHECK indicator lamp come on for about 2 seconds?

YES >> GO TO 2.
NO >> Go to AT-166, "A/T Check Indicator Lamp Does Not Come On".

2.JUDGMENT PROCEDURE

1. Turn ignition switch OFF.
2. Keep pressing shift lock release button.
3. Move selector lever from “P” to “D” position.
4. Release accelerator pedal. (Set the closed throttle position signal ON.)
5. Depress brake pedal. (Stop lamp switch signal ON.)
6. Turn ignition switch ON. (Do not start engine.)
7. Wait 3 seconds.
8. Move the selector lever to the manual shift gate side. (Manual mode switch ON.)
9. Release brake pedal. (Stop lamp switch signal OFF.)
10. Move the selector lever to “D” position. (Manual mode switch OFF.)
11. Depress brake pedal. (Stop lamp switch signal ON.)
12. Release brake pedal. (Stop lamp switch signal OFF.)
13. Depress accelerator pedal fully and release it.

>> GO TO 3.

3.CHECK SELF-DIAGNOSIS CODE

Check A/T CHECK indicator lamp. Refer to "Judgment Self-diagnosis Code".
If the system does not go into self-diagnostics. Refer to AT-98, AT-151, AT-160, AT-161.

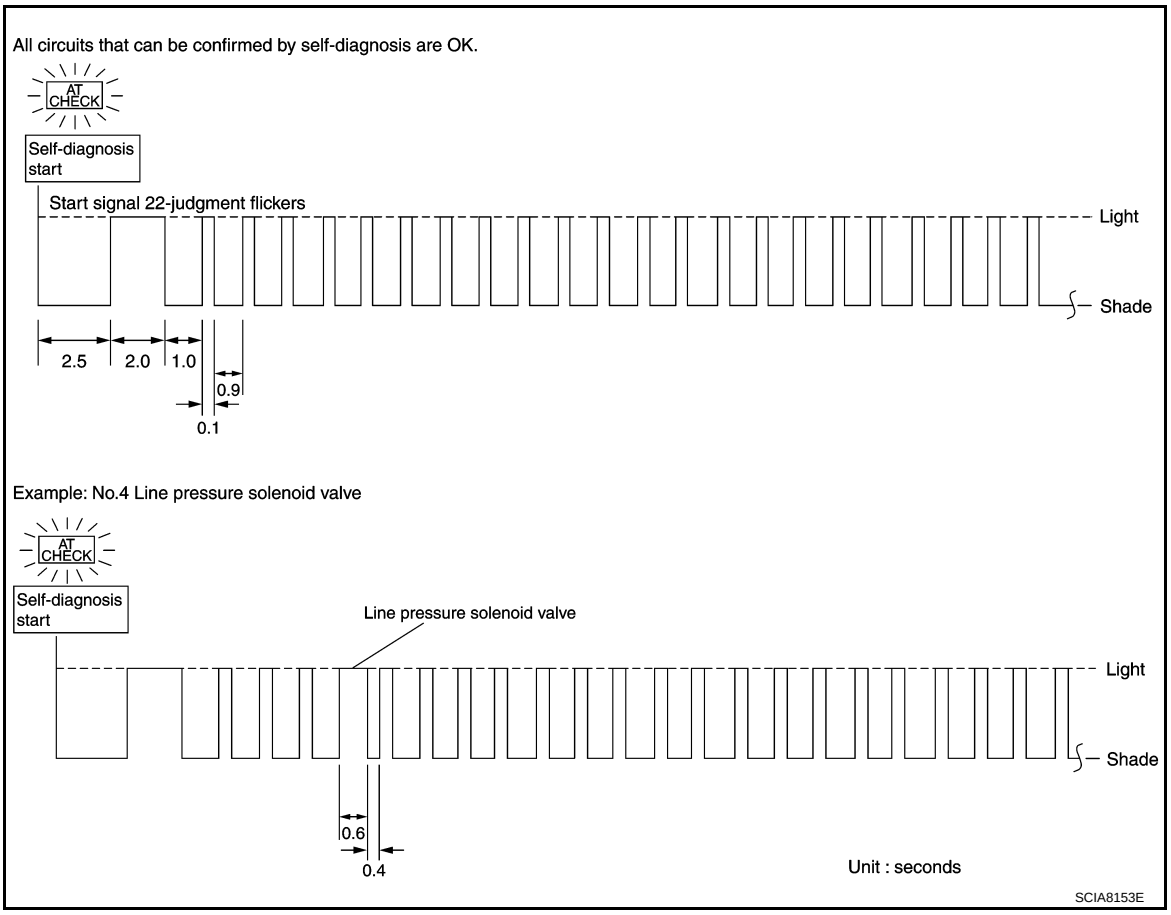
>> **DIAGNOSIS END**

Judgment Self-diagnosis Code

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

No.	Malfunctioning item	No.	Malfunctioning item
1	Output speed sensor AT-103	12	Interlock AT-135
2	Direct clutch solenoid AT-143	13	1st engine braking AT-137
3	Torque converter AT-120	14	Starter relay AT-93
4	Line pressure solenoid AT-124	15	Accelerator pedal position sensor AT-126
5	Input clutch solenoid AT-139	16	Engine speed AT-108

No.	Malfunctioning item	No.	Malfunctioning item
6	Front brake solenoid AT-141	17	CAN communication line AT-90
7	Low coast brake solenoid AT-147, AT-149	18	1GR incorrect ratioAT-110
8	High and low reverse clutch solenoid AT-145	19	2GR incorrect ratioAT-112
9	Transmission range switch AT-98	20	3GR incorrect ratioAT-114
10	A/T fluid temperature sensor AT-128	21	4GR incorrect ratioAT-116
11	Input speed sensor AT-101	22	5GR incorrect ratioAT-118



Erase Self-diagnosis

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

U1000 CAN COMM CIRCUIT

Description

INFOID:0000000004656814

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:0000000004656815

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “U1000” with CONSULT-III or 17th judgment flicker without CONSULT-III is detected when TCM cannot communicate to other control units.

Possible Cause

INFOID:0000000004656816

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

DTC Confirmation Procedure

INFOID:0000000004656817

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-III

1. Start the engine and wait for at least 6 seconds.
2. Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III.
3. If DTC is detected, go to AT-92, "Diagnosis Procedure".

WITH GST

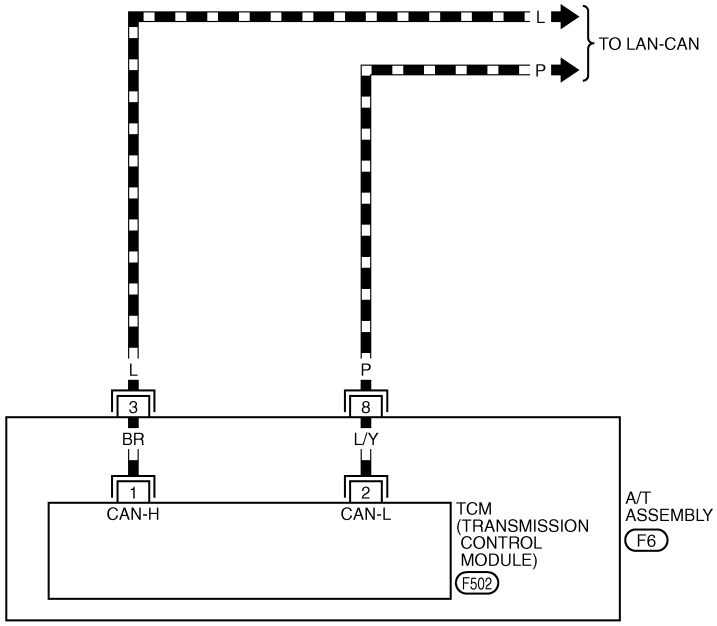
Follow the procedure “WITH CONSULT-III”.

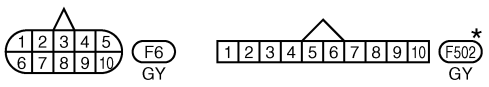
Wiring Diagram - AT - CAN

INFOID:0000000004656818

AT-CAN-01

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





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

TCWM0259E

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

Terminal	Wire color	Item	Condition	Data (Approx.)
3	L	CAN-H	—	—
8	P	CAN-L	—	—

Diagnosis Procedure

INFOID:0000000004656819

1. CHECK CAN COMMUNICATION CIRCUIT

With CONSULT-III

1. Start the engine.
2. Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III.

Is the “U1000” indicated?

YES >> Go to LAN section. Refer to LAN-41, "CAN System Specification Chart".
NO >> **INSPECTION END**

P0615 STARTER RELAY

Description

INFOID:0000000004656820

Prohibits cranking other at “P” or “N” position.

CONSULT-III Reference Value

INFOID:0000000004656821

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

On Board Diagnosis Logic

INFOID:0000000004656822

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0615” with CONSULT-III or 14th judgment flicker without CONSULT-III is detected when starter relay is switched ON other than at “P” or “N” position. (Or when switched OFF at “P” or “N” position.)

Possible Cause

INFOID:0000000004656823

- Harness or connectors
  (Starter relay and TCM circuit is open or shorted.)
- Starter relay circuit

DTC Confirmation Procedure

INFOID:0000000004656824

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.

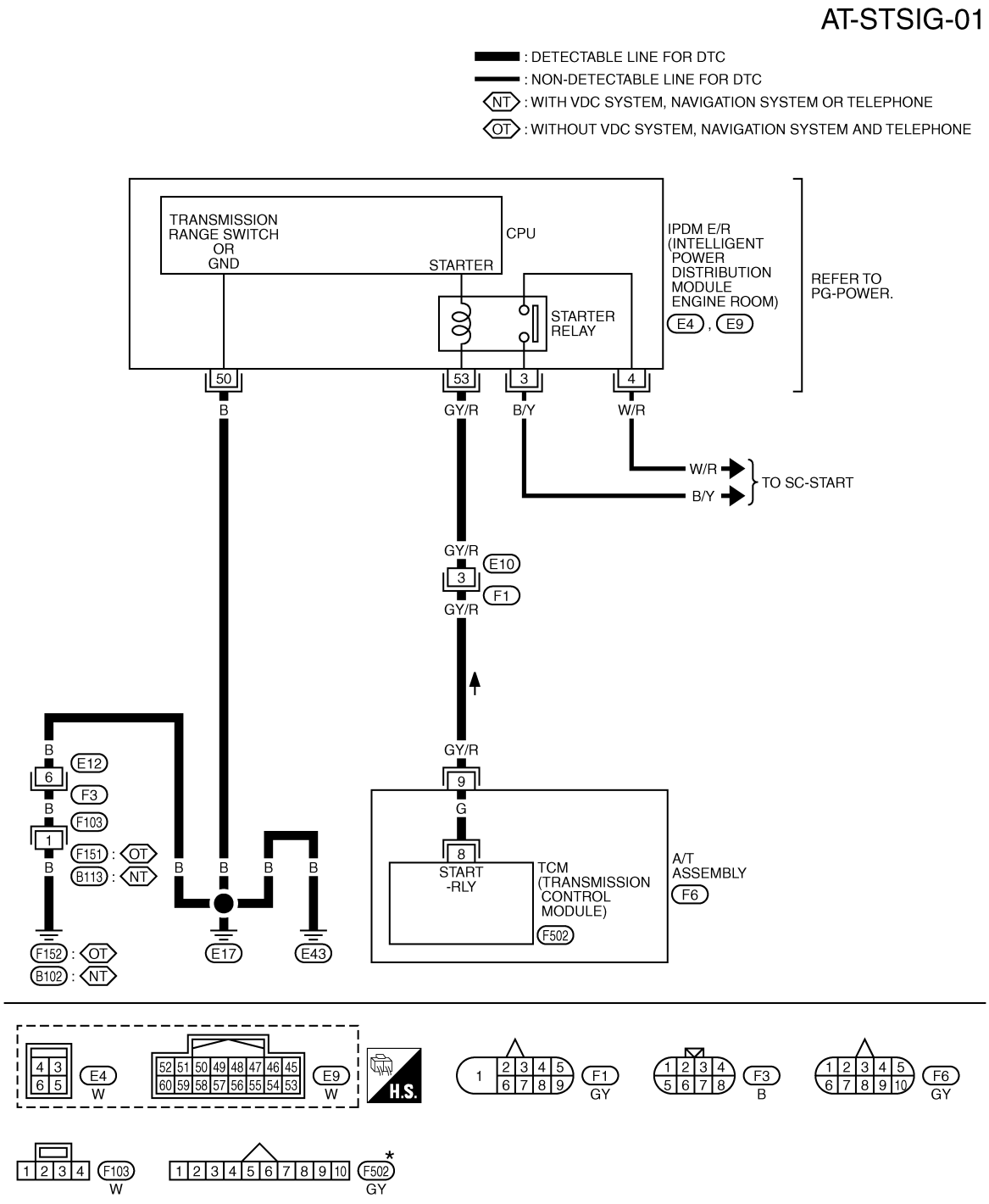
WITH CONSULT-III

1. Shift selector lever to “P” or “N” position.
2. Turn ignition switch ON and wait for at least 2 consecutive seconds.
3. Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III.
4. If DTC is detected, go to AT-95, "Diagnosis Procedure".

Wiring Diagram - AT - STSIG

INFOID:0000000004656825

AT-STSIG-01



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

TCWM0678E

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

Terminal	Wire color	Item	Condition		Data (Approx.)
9	GY/R	Starter relay	ON	Selector lever in “N” and “P” positions.	Battery voltage
				Selector lever in other positions.	0 V

Diagnosis Procedure

INFOID:0000000004656826

1. CHECK STARTER RELAY

With CONSULT-III

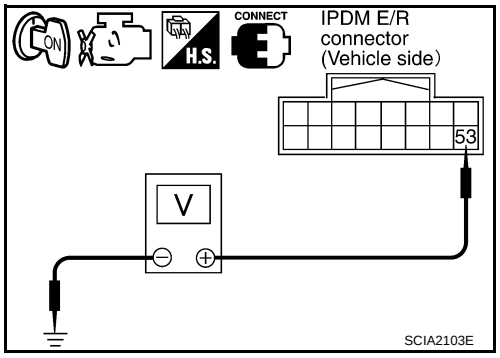
1. Turn ignition switch ON.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III and check monitor item “STARTER RELAY” ON/OFF.

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

Without CONSULT-III

1. Turn ignition switch ON.
2. Check voltage between the IPDM E/R connector and ground.

Item	Connector	Terminal	Shift position	Voltage (Approx.)
Starter relay	E9	53 – Ground	“N”, “P”	Battery voltage
			Other positions	0 V

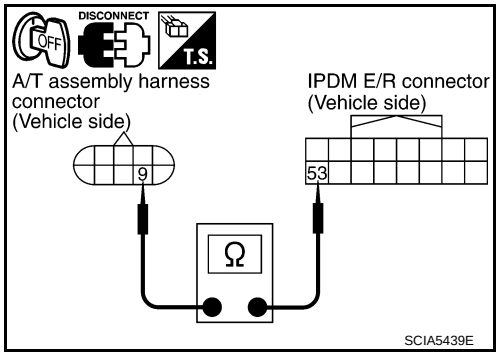


OK or NG

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

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

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



Item	Connector	Terminal	Continuity
A/T assembly harness connector	F6	9	Yes
IPDM E/R connector	E9	53	

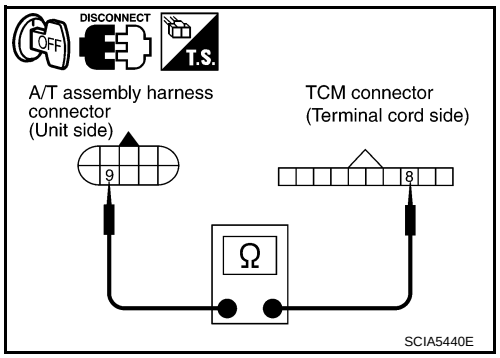
4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

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-204, "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	F6	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

OK >> GO TO 4.
NG >> Replace open circuit or short to ground and short to power in harness or connectors.

4. DETECT MALFUNCTIONING ITEM

Check the following.
- Starter relay, Refer to SC-8.
- IPDM E/R, Refer to PG-16.

OK or NG

OK >> Replace control valve with TCM. Refer to AT-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
NG >> Repair or replace damaged parts.

5. CHECK DTC

Perform AT-93, "DTC Confirmation Procedure".

OK or NG

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

P0700 TRANSMISSION CONTROL

Description

INFOID:0000000004656827

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

On Board Diagnosis Logic

INFOID:0000000004656828

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

Possible Cause

INFOID:0000000004656829

TCM.

DTC Confirmation Procedure

INFOID:0000000004656830

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-III

1. Start the engine and wait for at least 2 consecutive seconds at idle speed.
2. Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III.
3. If DTC is detected, go to AT-97, "Diagnosis Procedure".

WITH GST

Follow the procedure “WITH CONSULT-III”.

Diagnosis Procedure

INFOID:0000000004656831

1.CHECK DTC

With CONSULT-III

1. Turn ignition switch ON.
2. Select “SELF DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III.
3. Touch “ERASE”.
4. Turn ignition switch OFF and wait at least 10 seconds.
5. Perform AT-97, "DTC Confirmation Procedure".

Is the “P7000” displayed again?

YES >> Replace control valve with TCM. Refer to AT-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".

NO >> **INSPECTION END**

P0705 TRANSMISSION RANGE SWITCH A

Description

INFOID:0000000004656832

The transmission range switch detects the selector lever position and sends a signal to the TCM.

CONSULT-III Reference Value

INFOID:0000000004656833

Item name	Condition	Display value
SLCT LVR POSI	Selector lever in “N” and “P” positions.	N/P
	Selector lever in “R” position.	R
	Selector lever in “D” position.	D

On Board Diagnosis Logic

INFOID:0000000004656834

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0705” with CONSULT-III or 9th judgment flicker without CONSULT-III is detected under the following conditions.

- When TCM does not receive the correct voltage signal from transmission range switch 1, 2, 3 and 4 based on the gear position.
- When no other position but “P” position is detected from “N” position.

Possible Cause

INFOID:0000000004656835

- Harness or connectors
  Transmission range switch 1, 2, 3, 4 and TCM circuit is open or shorted.
- Transmission range switch 1, 2, 3 and 4

DTC Confirmation Procedure

INFOID:0000000004656836

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-III

1. Start the engine.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III.
3. Drive vehicle and maintain the following conditions for at least 2 consecutive seconds.

   ACCELE POSI : More than 1.0/8

4. If DTC is detected, go to AT-99, "Diagnosis Procedure".

WITH GST

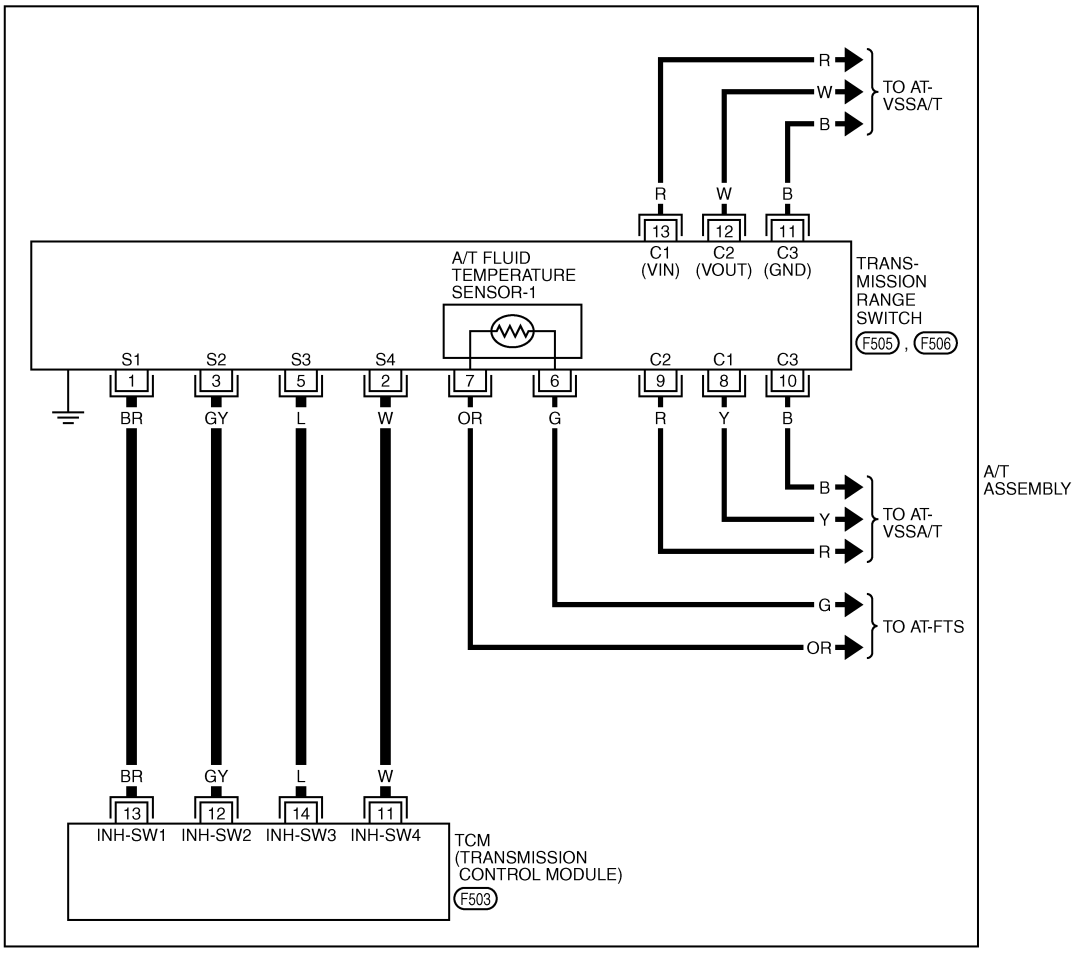
Follow the procedure “WITH CONSULT-III”.

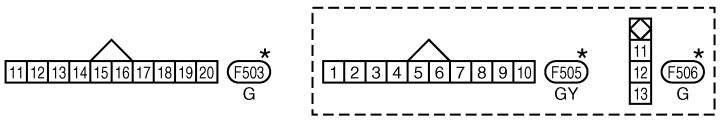
Wiring Diagram - AT - TR/SW

INFOID:0000000004656837

AT-PNP/SW-01

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





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

TCWM0679E

Diagnosis Procedure

INFOID:0000000004656838

1. CHECK TRANSMISSION RANGE SWITCH CIRCUIT

With CONSULT-III

1. Turn ignition switch ON.

2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III.
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
SLCT LVR POSI	Selector lever in “N” and “P” positions.	N/P
	Selector lever in “R” position.	R
	Selector lever in “D” position.	D

OK or NG

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

2.CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit. Refer to AT-156.

OK or NG

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

3.DETECT MALFUNCTIONING ITEM

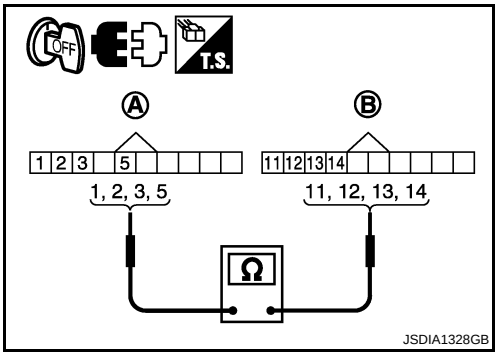
Check A/T assembly harness connector pin terminals for damage or loose connection with harness connector.

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-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
2. Disconnect transmission range switch connector and TCM connector.
3. Check continuity between transmission range switch connector (A) terminals and TCM connector (B) terminals.



Item	Connector	Terminal	Continuity
Transmission range switch connector	F505	1	Yes
TCM connector	F503	13	
Transmission range switch connector	F505	2	Yes
TCM connector	F503	11	
Transmission range switch connector	F505	3	Yes
TCM connector	F503	12	
Transmission range 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.

OK or NG

OK >> Replace control valve with TCM. Refer to AT-204, "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 AT-98, "DTC Confirmation Procedure".

OK or NG

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

P0717 INPUT SPEED SENSOR A

Description

INFOID:0000000004656839

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

CONSULT-III Reference Value

INFOID:0000000004656840

Item name	Condition	Display value
INPUT SPEED	During driving (lock-up ON)	Approximately matches the engine speed.

On Board Diagnosis Logic

INFOID:0000000004656841

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0717” with CONSULT-III or 11th judgment flicker without CONSULT-III 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 4GR for input speed sensor 2.

Possible Cause

INFOID:0000000004656842

- Harness or connectors
  (Sensor circuit is open or shorted.)
- Input speed sensor 1 and/or 2

DTC Confirmation Procedure

INFOID:0000000004656843

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-III

1. Start the engine.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III.
3. Drive vehicle and maintain the following conditions for at least 5 consecutive seconds.

VHCL/S SE-A/T	: 40 km/h (25 MPH) or more
ACCELE POSI	: More than 0.5/8
ENGINE SPEED	: 1,500 rpm or more
SLCT LVR POSI	: “D” position
GEAR (Input speed sensor 1)	: “4” or “5” position
GEAR (Input speed sensor 2)	: All positions
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-101, "Diagnosis Procedure".

WITH GST

Follow the procedure “WITH CONSULT-III”.

Diagnosis Procedure

INFOID:0000000004656844

1.CHECK INPUT SIGNAL

With CONSULT-III
1. Start the engine.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III.

3. Vehicle start and read out the value of “INPUT SPEED”.

Item name	Condition	Display value
INPUT SPEED	During driving (lock-up ON)	Approximately matches the engine speed.

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-156.

OK or NG

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

3.DETECT MALFUNCTIONING ITEM

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

OK or NG

OK >> Replace control valve with TCM. Refer to AT-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
NG >> Repair or replace damaged parts.

4.CHECK DTC

Perform AT-101, "DTC Confirmation Procedure".

OK or NG

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

P0720 OUTPUT SPEED SENSOR

Description

INFOID:0000000004656845

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

CONSULT-III Reference Value

INFOID:0000000004656846

Item name	Condition	Display value
VHCL/S SE-A/T	During driving	Approximately matches the speedometer reading.

On Board Diagnosis Logic

INFOID:0000000004656847

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0720” with CONSULT-III or 1st judgment flicker without CONSULT-III 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 signal before the vehicle starts moving.

Possible Cause

INFOID:0000000004656848

- Harness or connectors
  (Sensor circuit is open or shorted.)
- Output speed sensor
- Vehicle speed signal

DTC Confirmation Procedure

INFOID:0000000004656849

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-III

1. Start the engine.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III.
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-105, "Diagnosis Procedure".
   If the check result is OK, go to following step.
4. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III.
5. Drive vehicle and maintain the following conditions for at least 5 consecutive seconds.

VHCL/S SE-A/T	: 30 km/h (19 MPH) or more
ACCELE POSI	: More than 1.0/8
SLCT LVR POSI	: “D” position
Driving location	: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.

   If DTC is detected, go to AT-105, "Diagnosis Procedure".
   If the check result is OK, go to following step.
6. Drive vehicle and maintain the following conditions for at least 5 consecutive seconds.

ENGINE SPEED	: 3,500 rpm or more
ACCELE POSI	: More than 1.0/8

SLCT LVR POSI	: “D” position
Driving location	: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.

7. If DTC is detected, go to AT-105, "Diagnosis Procedure".

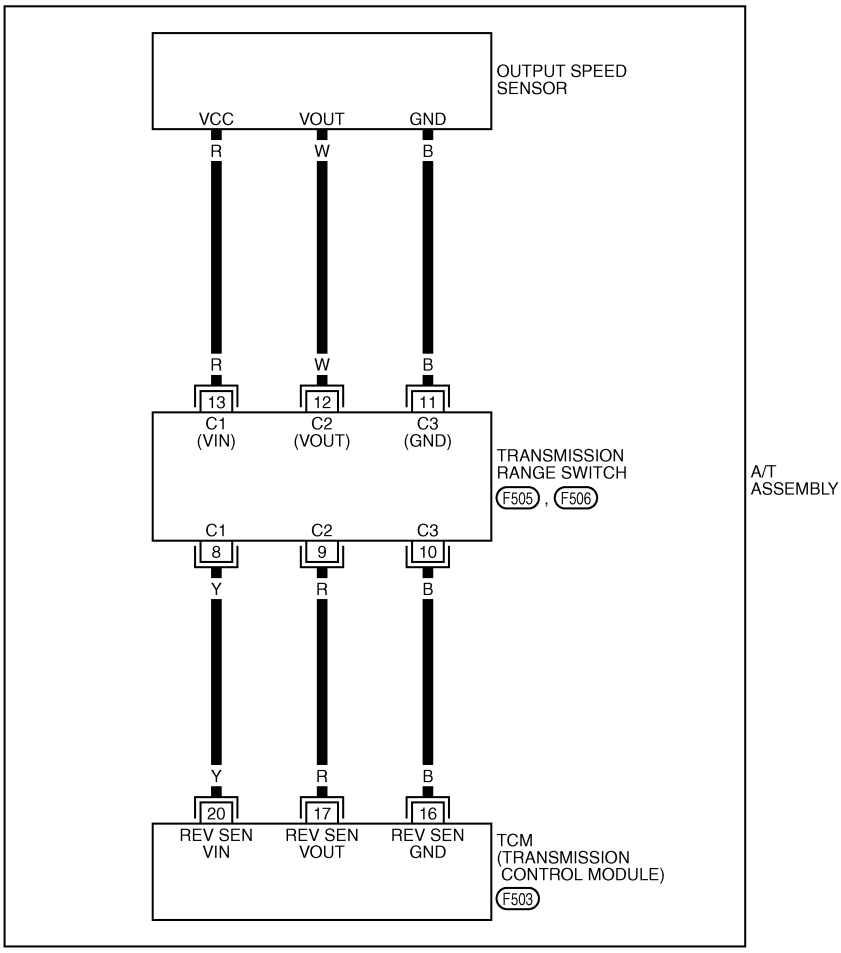
WITH GST
Follow the procedure “WITH CONSULT-III”.

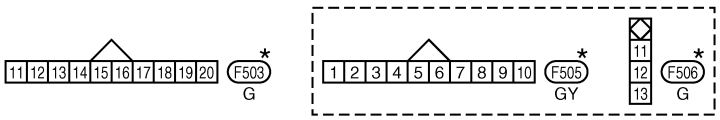
Wiring Diagram - AT - VSSA/T

INFOID:0000000004656850

AT-VSSA/T-01

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





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

TCWM0680E

Diagnosis Procedure

INFOID:0000000004656851

1. CHECK INPUT SIGNAL

With CONSULT-III

1. Start the engine.

2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III.
3. Read out the value of “VHCL/S SE-A/T” while driving. Check the value changes according to driving speed.

Item name	Condition	Display value
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-156.

OK or NG

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

3.DETECT MALFUNCTIONING ITEM

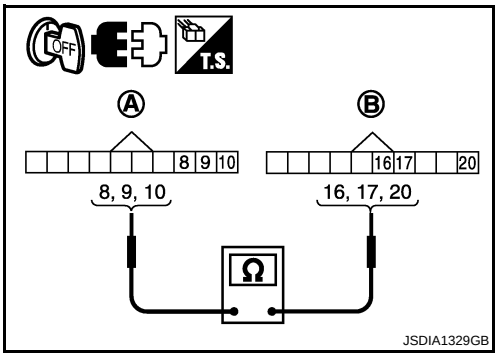
Check A/T assembly harness connector pin terminals for damage or loose connection with harness connector.

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-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
2. Disconnect transmission range switch connector and TCM connector.
3. Check continuity between transmission range switch connector (A) terminals and TCM connector (B) terminals.



Item	Connector	Terminal	Continuity
Transmission range switch connector	F505	8	Yes
TCM connector	F503	20	
Transmission range switch connector	F505	9	Yes
TCM connector	F503	17	
Transmission range switch connector	F505	10	Yes
TCM connector	F503	16	

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

OK or NG

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

5.REPLACE THE OUTPUT SPEED SENSOR AND CHECK DTC

1. Replace output speed sensor. Refer to AT-222, "Output Speed Sensor".
2. Perform AT-103, "DTC Confirmation Procedure".

OK or NG

OK >> **INSPECTION END**
NG >> Replace control valve with TCM. Refer to AT-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".

6.CHECK DTC

Perform AT-103, "DTC Confirmation Procedure".

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 2.

P0725 ENGINE SPEED

Description

INFOID:0000000004656852

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

CONSULT-III Reference Value

INFOID:0000000004656853

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

On Board Diagnosis Logic

INFOID:0000000004656854

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0725” with CONSULT-III or 16th judgment flicker without CONSULT-III is detected when TCM does not receive the ignition signal from ECM during engine cranking or running.

Possible Cause

INFOID:0000000004656855

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

DTC Confirmation Procedure

INFOID:0000000004656856

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-III

1. Start the engine.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III.
3. Drive vehicle and maintain the following conditions for at least 10 consecutive seconds.

VHCL/S SE-A/T	: 10 km/h (6 MPH) or more
ACCELE POSI	: More than 1.0/8
SLCT LVR POSI	: “D” position

4. If DTC is detected, go to AT-108, "Diagnosis Procedure".

WITH GST

Follow the procedure “WITH CONSULT-III”.

Diagnosis Procedure

INFOID:0000000004656857

1.CHECK CAN COMMUNICATION LINE

With CONSULT-III
- Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III.

Without CONSULT-III
- Perform the self-diagnosis. Refer to AT-88, "Diagnosis Procedure without CONSULT-III".

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

YES >> Check CAN communication line. Refer to AT-90.
NO >> GO TO 2.

2.CHECK DTC WITH TCM

With CONSULT-III

1. Start the engine.

2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III.
3. While monitoring engine speed, check for engine speed change corresponding to wide-open throttle position signal.

Item name	Condition	Display value
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-645.

3. CHECK DTC

Perform AT-108, "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-156.

OK or NG

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

5. DETECT MALFUNCTIONING ITEM

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

OK or NG

OK >> Replace control valve with TCM. Refer to AT-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
NG >> Repair or replace damaged parts.

P0731 1GR INCORRECT RATIO

Description

INFOID:0000000004656858

This malfunction is detected when the A/T does not shift into 1GR position as instructed by TCM. This is not only caused by electrical malfunction (circuits open or shorted) but by mechanical malfunction such as control valve sticking, improper solenoid valve operation, etc.

On Board Diagnosis Logic

INFOID:0000000004656859

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0731” with CONSULT-III or 18th judgment flicker without CONSULT-III is detected when TCM detects any inconsistency in the actual gear ratio.

Possible Cause

INFOID:0000000004656860

- Input clutch solenoid valve
- Front brake solenoid valve
- Direct clutch solenoid valve
- High and low reverse clutch solenoid valve
- Each clutch
- Hydraulic control circuit

DTC Confirmation Procedure

INFOID:0000000004656861

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-III

1. Start the engine and select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III.
2. Make sure that “ATF TEMP 1” is within the following range.

ATF TEMP 1	: 20°C – 140°C

   If out of range, drive vehicle to warm ATF or stop engine to cool ATF.
3. Select “1ST GR FNCTN P0731” of “DTC WORK SUPPORT” mode for “TRANSMISSION” with CONSULT-III.
4. Drive vehicle and maintain the following conditions.

MANU MODE SW	: ON
GEAR	: “1” position
ACCELE POSI	: 0.6/8 or more
VEHICLE SPEED	: 10 km/h (6 MPH) or more
ENGINE SPEED	: INPUT SPEED – 50 rpm or more
INPUT SPEED	: 300 rpm or more

5. Keep the current driving status for at least 5 consecutive seconds if CONSULT-III screen changes from “OUT OF CONDITION” to “TESTING”.
   CAUTION:
   If “TESTING” does not appear on CONSULT-III for a long time, select “SELF-DIAG RESULTS”. In case a 1st trip DTC other than “P0731” is shown, refer to “AT-81, "CONSULT-III Function (TRANSMISSION)"”.
   If “COMPLETED RESULT NG” is detected, go to AT-111, "Diagnosis Procedure".
   If “STOP VEHICLE” is detected, go to the following step.
6. Stop vehicle.
7. Drive vehicle in “D” position allowing it to shift from 1GR to 5GR and check shift timing and shift shock.

- Touch “OK” to complete the inspection when normally shifted from the 1GR to 5GR.

- Touch “NG” when an unusual shift shock, etc. occurs in spite of shifting from the 1GR to 5GR. Go to AT-47, "Inspections Before Trouble Diagnosis".
- Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III when not shifted from the 1GR to 5GR. (Neither “OK” nor “NG” are indicated.)

WITH GST

1. Start the engine.
2. Drive vehicle for approximately 5 minutes in urban areas.
3. Drive vehicle and maintain the following conditions for at least 5 consecutive seconds.

Manual mode switch	: ON
Gear position	: “1” position
Accelerator opening	: 0.6/8 or more
Vehicle speed	: 10 km/h (6 MPH) or more

4. Check DTC. If DTC is detected, go to AT-111, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000004656862

1.CHECK CAN COMMUNICATION LINE

With CONSULT-III

• Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III.

Without CONSULT-III

• Perform the self-diagnosis. Refer to AT-88, "Diagnosis Procedure without CONSULT-III".

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

YES >> Check CAN communication line. Refer to AT-90.
NO >> GO TO 2.

2.CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit. Refer to AT-156.

OK or NG

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

3.DETECT MALFUNCTION ITEM

Check 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.REPLACE CONTROL VALVE WITH TCM

1. Replace control valve with TCM. Refer to AT-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
2. Perform AT-110, "DTC Confirmation Procedure".

OK or NG

OK >> **INSPECTION END**
NG >> Confirm malfunction phenomena by “ROAD TEST” to repair malfunctioning part. Refer to AT-47, "Inspections Before Trouble Diagnosis".

P0732 2GR INCORRECT RATIO

Description

INFOID:0000000004656863

This malfunction is detected when the A/T does not shift into 2GR position as instructed by TCM. This is not only caused by electrical malfunction (circuits open or shorted) but by mechanical malfunction such as control valve sticking, improper solenoid valve operation, etc.

On Board Diagnosis Logic

INFOID:0000000004656864

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0732” with CONSULT-III or 19th judgment flicker without CONSULT-III is detected when TCM detects any inconsistency in the actual gear ratio.

Possible Cause

INFOID:0000000004656865

- Input clutch solenoid valve
- Front brake solenoid valve
- Direct clutch solenoid valve
- High and low reverse clutch solenoid valve
- Each clutch
- Hydraulic control circuit

DTC Confirmation Procedure

INFOID:0000000004656866

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-III

1. Start the engine and select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III.
2. Make sure that “ATF TEMP 1” is within the following range.

ATF TEMP 1	: 20°C – 140°C

   If out of range, drive vehicle to warm ATF or stop engine to cool ATF.
3. Select “2ND GR FNCTN P0732” of “DTC WORK SUPPORT” mode for “TRANSMISSION” with CONSULT-III.
4. Drive vehicle and maintain the following conditions.

MANU MODE SW	: ON
GEAR	: “2” position
ACCELE POSI	: 0.6/8 or more
VEHICLE SPEED	: 10 km/h (6 MPH) or more
ENGINE SPEED	: INPUT SPEED – 50 rpm or more
INPUT SPEED	: 300 rpm or more

5. Keep the current driving status for at least 5 consecutive seconds if CONSULT-III screen changes from “OUT OF CONDITION” to “TESTING”.
   CAUTION:
   If “TESTING” does not appear on CONSULT-III for a long time, select “SELF-DIAG RESULTS”. In case a 1st trip DTC other than “P0732” is shown, refer to “AT-81, "CONSULT-III Function (TRANSMISSION)"”.
   If “COMPLETED RESULT NG” is detected, go to AT-113, "Diagnosis Procedure".
   If “STOP VEHICLE” is detected, go to the following step.
6. Stop vehicle.
7. Drive vehicle in “D” position allowing it to shift from 1GR to 5GR and check shift timing and shift shock.

- Touch “OK” to complete the inspection when normally shifted from the 1GR to 5GR.

- Touch “NG” when an unusual shift shock, etc. occurs in spite of shifting from the 1GR to 5GR. Go to AT-47, "Inspections Before Trouble Diagnosis".
- Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III when not shifted from the 1GR to 5GR. (Neither “OK” nor “NG” are indicated.)

WITH GST

1. Start the engine.
2. Drive vehicle for approximately 5 minutes in urban areas.
3. Drive vehicle and maintain the following conditions for at least 5 consecutive seconds.

Manual mode switch	: ON
Gear position	: “2” position
Accelerator opening	: 0.6/8 or more
Vehicle speed	: 10 km/h (6 MPH) or more

4. Check DTC. If DTC is detected, go to AT-113, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000004656867

1.CHECK CAN COMMUNICATION LINE

With CONSULT-III
• Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III.
Without CONSULT-III
• Perform the self-diagnosis. Refer to AT-88, "Diagnosis Procedure without CONSULT-III".

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

YES >> Check CAN communication line. Refer to AT-90.
NO >> GO TO 2.

2.CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit. Refer to AT-156.

OK or NG

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

3.DETECT MALFUNCTION ITEM

Check 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.REPLACE CONTROL VALVE WITH TCM

1. Replace control valve with TCM. Refer to AT-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
2. Perform AT-112, "DTC Confirmation Procedure".

OK or NG

OK >> **INSPECTION END**
NG >> Confirm malfunction phenomena by “ROAD TEST” to repair malfunctioning part. Refer to AT-47, "Inspections Before Trouble Diagnosis".

P0733 3GR INCORRECT RATIO

Description

INFOID:0000000004656868

This malfunction is detected when the A/T does not shift into 3GR position as instructed by TCM. This is not only caused by electrical malfunction (circuits open or shorted) but by mechanical malfunction such as control valve sticking, improper solenoid valve operation, etc.

On Board Diagnosis Logic

INFOID:0000000004656869

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0733” with CONSULT-III or 20th judgment flicker without CONSULT-III is detected when TCM detects any inconsistency in the actual gear ratio.

Possible Cause

INFOID:0000000004656870

- Input clutch solenoid valve
- Front brake solenoid valve
- Direct clutch solenoid valve
- High and low reverse clutch solenoid valve
- Each clutch
- Hydraulic control circuit

DTC Confirmation Procedure

INFOID:0000000004656871

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-III

1. Start the engine and select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III.
2. Make sure that “ATF TEMP 1” is within the following range.

ATF TEMP 1	: 20°C – 140°C

   If out of range, drive vehicle to warm ATF or stop engine to cool ATF.
3. Select “3RD GR FNCTN P0733” of “DTC WORK SUPPORT” mode for “TRANSMISSION” with CONSULT-III.
4. Drive vehicle and maintain the following conditions.

MANU MODE SW	: ON
GEAR	: “3” position
ACCELE POSI	: 0.6/8 or more
VEHICLE SPEED	: 10 km/h (6 MPH) or more
ENGINE SPEED	: INPUT SPEED – 50 rpm or more
INPUT SPEED	: 300 rpm or more

5. Keep the current driving status for at least 5 consecutive seconds if CONSULT-III screen changes from “OUT OF CONDITION” to “TESTING”.
   CAUTION:
   If “TESTING” does not appear on CONSULT-III for a long time, select “SELF-DIAG RESULTS”. In case a 1st trip DTC other than “P0733” is shown, refer to “AT-81, "CONSULT-III Function (TRANSMISSION)"”.
   If “COMPLETED RESULT NG” is detected, go to AT-115, "Diagnosis Procedure".
   If “STOP VEHICLE” is detected, go to the following step.
6. Stop vehicle.
7. Drive vehicle in “D” position allowing it to shift from 1GRt to 5GR and check shift timing and shift shock.

- Touch “OK” to complete the inspection when normally shifted from the 1GR to 5GR.

- Touch “NG” when an unusual shift shock, etc. occurs in spite of shifting from the 1GR to 5GR. Go to AT-47, "Inspections Before Trouble Diagnosis".
- Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III when not shifted from the 1GR to 5GR. (Neither “OK” nor “NG” are indicated.)

WITH GST

1. Start the engine.
2. Drive vehicle for approximately 5 minutes in urban areas.
3. Drive vehicle and maintain the following conditions for at least 5 consecutive seconds.

Manual mode switch	: ON
Gear position	: “3” position
Accelerator opening	: 0.6/8 or more
Vehicle speed	: 10 km/h (6 MPH) or more

4. Check DTC. If DTC is detected, go to AT-115, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000004656872

1.CHECK CAN COMMUNICATION LINE

With CONSULT-III
• Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III.
Without CONSULT-III
• Perform the self-diagnosis. Refer to AT-88, "Diagnosis Procedure without CONSULT-III".

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

YES >> Check CAN communication line. Refer to AT-90.
NO >> GO TO 2.

2.CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit. Refer to AT-156.

OK or NG

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

3.DETECT MALFUNCTION ITEM

Check 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.REPLACE CONTROL VALVE WITH TCM

1. Replace control valve with TCM. Refer to AT-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
2. Perform AT-114, "DTC Confirmation Procedure".

OK or NG

OK >> **INSPECTION END**
NG >> Confirm malfunction phenomena by “ROAD TEST” to repair malfunctioning part. Refer to AT-47, "Inspections Before Trouble Diagnosis".

P0734 4GR INCORRECT RATIO

Description

INFOID:0000000004656873

This malfunction is detected when the A/T does not shift into 4GR position as instructed by TCM. This is not only caused by electrical malfunction (circuits open or shorted) but by mechanical malfunction such as control valve sticking, improper solenoid valve operation, etc.

On Board Diagnosis Logic

INFOID:0000000004656874

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0734” with CONSULT-III or 21st judgment flicker without CONSULT-III is detected when TCM detects any inconsistency in the actual gear ratio.

Possible Cause

INFOID:0000000004656875

- Input clutch solenoid valve
- Front brake solenoid valve
- Direct clutch solenoid valve
- High and low reverse clutch solenoid valve
- Each clutch
- Hydraulic control circuit

DTC Confirmation Procedure

INFOID:0000000004656876

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-III

1. Start the engine and select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III.
2. Make sure that “ATF TEMP 1” is within the following range.

ATF TEMP 1	: 20°C – 140°C

   If out of range, drive vehicle to warm ATF or stop engine to cool ATF.
3. Select “4TH GR FNCTN P0734” of “DTC WORK SUPPORT” mode for “TRANSMISSION” with CONSULT-III.
4. Drive vehicle and maintain the following conditions.

MANU MODE SW	: ON
GEAR	: “4” position
ACCELE POSI	: 0.6/8 or more
VEHICLE SPEED	: 10 km/h (6 MPH) or more
ENGINE SPEED	: INPUT SPEED – 50 rpm or more
INPUT SPEED	: 300 rpm or more

5. Keep the current driving status for at least 5 consecutive seconds if CONSULT-III screen changes from “OUT OF CONDITION” to “TESTING”.
   CAUTION:
   If “TESTING” does not appear on CONSULT-III for a long time, select “SELF-DIAG RESULTS”. In case a 1st trip DTC other than “P0734” is shown, refer to “AT-81, "CONSULT-III Function (TRANSMISSION)"”.
   If “COMPLETED RESULT NG” is detected, go to AT-117, "Diagnosis Procedure".
   If “STOP VEHICLE” is detected, go to the following step.
6. Stop vehicle.
7. Drive vehicle in “D” position allowing it to shift from 1GR to 5GR and check shift timing and shift shock.

- Touch “OK” to complete the inspection when normally shifted from the 1GR to 5GR.

- Touch “NG” when an unusual shift shock, etc. occurs in spite of shifting from the 1GR to 5GR. Go to AT-47, "Inspections Before Trouble Diagnosis".
- Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III when not shifted from the 1GR to 5GR. (Neither “OK” nor “NG” are indicated.)

WITH GST

1. Start the engine.
2. Drive vehicle for approximately 5 minutes in urban areas.
3. Drive vehicle and maintain the following conditions for at least 5 consecutive seconds.

Manual mode switch	: ON
Gear position	: “4” position
Accelerator opening	: 0.6/8 or more
Vehicle speed	: 10 km/h (6 MPH) or more

4. Check DTC. If DTC is detected, go to AT-117, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000004656877

1.CHECK CAN COMMUNICATION LINE

With CONSULT-III
• Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III.
Without CONSULT-III
• Perform the self-diagnosis. Refer to AT-88, "Diagnosis Procedure without CONSULT-III".

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

YES >> Check CAN communication line. Refer to AT-90.
NO >> GO TO 2.

2.CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit. Refer to AT-156.

OK or NG

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

3.DETECT MALFUNCTION ITEM

Check 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.REPLACE CONTROL VALVE WITH TCM

1. Replace control valve with TCM. Refer to AT-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
2. Perform AT-116, "DTC Confirmation Procedure".

OK or NG

OK >> **INSPECTION END**
NG >> Confirm malfunction phenomena by “ROAD TEST” to repair malfunctioning part. Refer to AT-47, "Inspections Before Trouble Diagnosis".

P0735 5GR INCORRECT RATIO

Description

INFOID:0000000004656878

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

On Board Diagnosis Logic

INFOID:0000000004656879

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0735” with CONSULT-III or 22nd judgment flicker without CONSULT-III is detected when TCM detects any inconsistency in the actual gear ratio.

Possible Cause

INFOID:0000000004656880

- Input clutch solenoid valve
- Front brake solenoid valve
- Direct clutch solenoid valve
- High and low reverse clutch solenoid valve
- Each clutch
- Hydraulic control circuit

DTC Confirmation Procedure

INFOID:0000000004656881

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-III

1. Start the engine and select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III.
2. Make sure that “ATF TEMP 1” is within the following range.

ATF TEMP 1	: 20°C – 140°C

   If out of range, drive vehicle to warm ATF or stop engine to cool ATF.
3. Select “5TH GR FNCTN P0735” of “DTC WORK SUPPORT” mode for “TRANSMISSION” with CONSULT-III.
4. Drive vehicle and maintain the following conditions.

MANU MODE SW	: ON
GEAR	: “5” position
ACCELE POSI	: 0.6/8 or more
VEHICLE SPEED	: 10 km/h (6 MPH) or more
ENGINE SPEED	: INPUT SPEED – 50 rpm or more
INPUT SPEED	: 300 rpm or more

5. Keep the current driving status for at least 5 consecutive seconds if CONSULT-III screen changes from “OUT OF CONDITION” to “TESTING”.
   CAUTION:
   If “TESTING” does not appear on CONSULT-III for a long time, select “SELF-DIAG RESULTS”. In case a 1st trip DTC other than “P0735” is shown, refer to “AT-81, "CONSULT-III Function (TRANSMISSION)"”.
   If “COMPLETED RESULT NG” is detected, go to AT-119, "Diagnosis Procedure".
   If “STOP VEHICLE” is detected, go to the following step.
6. Stop vehicle.
7. Drive vehicle in “D” position allowing it to shift from 1GR to 5GR and check shift timing and shift shock.

- Touch “OK” to complete the inspection when normally shifted from the 1GR to 5GR.

- Touch “NG” when an unusual shift shock, etc. occurs in spite of shifting from the 1GR to 5GR. Go to AT-47, "Inspections Before Trouble Diagnosis".
- Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III when not shifted from the 1GR to 5GR. (Neither “OK” nor “NG” are indicated.)

WITH GST

1. Start the engine.
2. Drive vehicle for approximately 5 minutes in urban areas.
3. Drive vehicle and maintain the following conditions for at least 5 consecutive seconds.

Manual mode switch	: ON
Gear position	: “5” position
Accelerator opening	: 0.6/8 or more
Vehicle speed	: 10 km/h (6 MPH) or more

4. Check DTC. If DTC is detected, go to AT-119, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000004656882

1.CHECK CAN COMMUNICATION LINE

With CONSULT-III

• Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III.

Without CONSULT-III

• Perform the self-diagnosis. Refer to AT-88, "Diagnosis Procedure without CONSULT-III".

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

YES >> Check CAN communication line. Refer to AT-90.
NO >> GO TO 2.

2.CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit. Refer to AT-156.

OK or NG

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

3.DETECT MALFUNCTION ITEM

Check 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.REPLACE CONTROL VALVE WITH TCM

1. Replace control valve with TCM. Refer to AT-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
2. Perform AT-118, "DTC Confirmation Procedure".

OK or NG

OK >> **INSPECTION END**
NG >> Confirm malfunction phenomena by “ROAD TEST” to repair malfunctioning part. Refer to AT-47, "Inspections Before Trouble Diagnosis".

P0740 TORQUE CONVERTER

Description

INFOID:0000000004656883

- Torque converter clutch solenoid valve is activated, with the gear in D_4, D_5, M_2, M_3, M_4 and M_5 by the TCM in response to signals sent from the output 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 1.0/8) 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-III Reference Value

INFOID:0000000004656884

Item name	Condition	Display value (Approx.)
TCC SOLENOID	Lock-up is active	0.4 – 0.6 A

On Board Diagnosis Logic

INFOID:0000000004656885

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0740” with CONSULT-III or 3rd judgment flicker without CONSULT-III 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:0000000004656886

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

DTC Confirmation Procedure

INFOID:0000000004656887

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-III

1. Start the engine.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III.
3. Drive vehicle and maintain the following conditions for at least 5 consecutive seconds.

VHCL/S SE-A/T	: 80 km/h (50 MPH) or more
ACCELE POSI	: 0.5/8 – 1.0/8
SLCT LVR POSI	: “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-120, "Diagnosis Procedure".

WITH GST

Follow the procedure “WITH CONSULT-III”.

Diagnosis Procedure

INFOID:0000000004656888

1.CHECK INPUT SIGNAL

With CONSULT-III
1. Start the engine.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III.

3. Read out the value of “TCC SOLENOID” while driving.

Item name	Condition	Display value (Approx.)
TCC SOLENOID	Lock-up is active	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-156.

OK or NG

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

3.DETECT MALFUNCTIONING ITEM

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

OK or NG

OK >> Replace control valve with TCM. Refer to AT-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
NG >> Repair or replace damaged parts.

4.CHECK DTC

Perform AT-120, "DTC Confirmation Procedure".

OK or NG

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

P0744 TORQUE CONVERTER

Description

INFOID:0000000004656889

This malfunction is detected when the A/T does not shift into 5GR 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-III Reference Value

INFOID:0000000004656890

Item name	Condition	Display value (Approx.)
TCC SOLENOID	Lock-up is active	0.4 – 0.6 A

On Board Diagnosis Logic

INFOID:0000000004656891

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0744” with CONSULT-III or 3rd judgment flicker without CONSULT-III 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:0000000004656892

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

DTC Confirmation Procedure

INFOID:0000000004656893

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-III

1. Start the engine.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III.
3. Drive vehicle and maintain the following conditions for at least 30 consecutive seconds.

ACCELE POSI	: More than 1.0/8
SLCT LVR POSI	: “D” position
TCC SOLENOID	: 0.4 – 0.6 A
VEHICLE SPEED	: 80 km/h (50 MPH) or more
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-122, "Diagnosis Procedure".

WITH GST

Follow the procedure “WITH CONSULT-III”.

Diagnosis Procedure

INFOID:0000000004656894

1.CHECK INPUT SIGNAL

With CONSULT-III
1. Start the engine.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III.

3. Read out the value of “TCC SOLENOID” while driving.

Item name	Condition	Display value (Approx.)
TCC SOLENOID	Lock-up is active	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-156.

OK or NG

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

3.DETECT MALFUNCTIONING ITEM

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

OK or NG

OK >> Replace control valve with TCM. Refer to AT-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
NG >> Repair or replace damaged parts.

4.CHECK DTC

Perform AT-122, "DTC Confirmation Procedure".

OK or NG

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

P0745 PRESSURE CONTROL SOLENOID A

Description

INFOID:0000000004656895

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

CONSULT-III Reference Value

INFOID:0000000004656896

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

On Board Diagnosis Logic

INFOID:0000000004656897

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0745” with CONSULT-III or 4th judgment flicker without CONSULT-III 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:0000000004656898

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

DTC Confirmation Procedure

INFOID:0000000004656899

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-III

1. Start the engine and wait for at least 5 seconds.
2. Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III.
3. If DTC is detected, go to “AT-124, "Diagnosis Procedure"”.

WITH GST

Follow the procedure “WITH CONSULT-III”.

Diagnosis Procedure

INFOID:0000000004656900

1.CHECK INPUT SIGNAL

With CONSULT-III

1. Start the engine.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III.
3. 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

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-156.

OK or NG

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

3. DETECT MALFUNCTIONING ITEM

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

OK or NG

OK >> Replace control valve with TCM. Refer to AT-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
NG >> Repair or replace damaged parts.

4. CHECK DTC

Perform AT-124, "DTC Confirmation Procedure".

OK or NG

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

P1705 TP SENSOR

Description

INFOID:0000000004656901

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-III Reference Value

INFOID:0000000004656902

Item name	Condition	Display value (Approx.)
ACCELE POSI	Released accelerator pedal.	0.0/8
	Fully depressed accelerator pedal.	8.0/8

On Board Diagnosis Logic

INFOID:0000000004656903

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P1705” with CONSULT-III or 15th judgment flicker without CONSULT-III is detected when TCM does not receive the proper accelerator pedal position signals (input by CAN communication) from ECM.

Possible Cause

INFOID:0000000004656904

Harness or connectors
(Sensor circuit is open or shorted.)

DTC Confirmation Procedure

INFOID:0000000004656905

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-III

1. Start the engine and let it idle for 1 second.
2. Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III.
3. If DTC is detected, go to AT-126, "Diagnosis Procedure".

WITH GST

Follow the procedure “WITH CONSULT-III”.

Diagnosis Procedure

INFOID:0000000004656906

1.CHECK CAN COMMUNICATION LINE

With CONSULT-III

- Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III.

Without CONSULT-III

- Perform the self-diagnosis. Refer to AT-88, "Diagnosis Procedure without CONSULT-III".

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

YES >> Check CAN communication line. Refer to AT-90.
NO >> GO TO 2.

2.CHECK DTC WITH TCM

With CONSULT-III

1. Turn ignition switch ON.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III.
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.	8.0/8

4. Select “SELF-DIAG RESULTS” mode for “A/T” with CONSULT-III. Refer to AT-81, "CONSULT-III Function (TRANSMISSION)"

OK or NG

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

3. CHECK DTC WITH ECM

With CONSULT-III

1. Turn ignition switch ON.
2. Select “SELF-DIAG RESULTS” mode for “ENGINE” with CONSULT-III. Refer to EC-111, "CONSULT-III Function (ENGINE)".

OK or NG

OK >> GO TO 4.
NG >> Check the DTC detected item. Refer to EC-111, "CONSULT-III Function (ENGINE)".
- If CAN communication line is detected, go to AT-90.

4. CHECK DTC

Perform AT-126, "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-156.

OK or NG

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

6. DETECT MALFUNCTIONING ITEM

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

OK or NG

OK >> Replace control valve with TCM. Refer to AT-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
NG >> Repair or replace damaged parts.

P1710 TRANSMISSION FLUID TEMPERATURE SENSOR

Description

INFOID:0000000004656907

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

CONSULT-III Reference Value

INFOID:0000000004656908

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:0000000004656909

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P1710 (A/T), P0710 (ENGINE)” with CONSULT-III or 10th judgment flicker without CONSULT-III is detected when TCM receives an excessively low or high voltage from the sensor.

Possible Cause

INFOID:0000000004656910

- Harness or connectors
  (Sensor circuit is open or shorted.)
- A/T fluid temperature sensors 1 and/or 2

DTC Confirmation Procedure

INFOID:0000000004656911

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-III

1. Start the engine.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III.
3. Drive vehicle and maintain the following conditions for at least 10 minutes (Total). (It is not necessary to maintain continuously.)

VHCL/S SE-A/T	: 10 km/h (6 MPH) or more
ACCELE POSI	: More than 1.0/8
SLCT LVR POSI	: “D” position

4. If DTC is detected, go to AT-129, "Diagnosis Procedure".

WITH GST

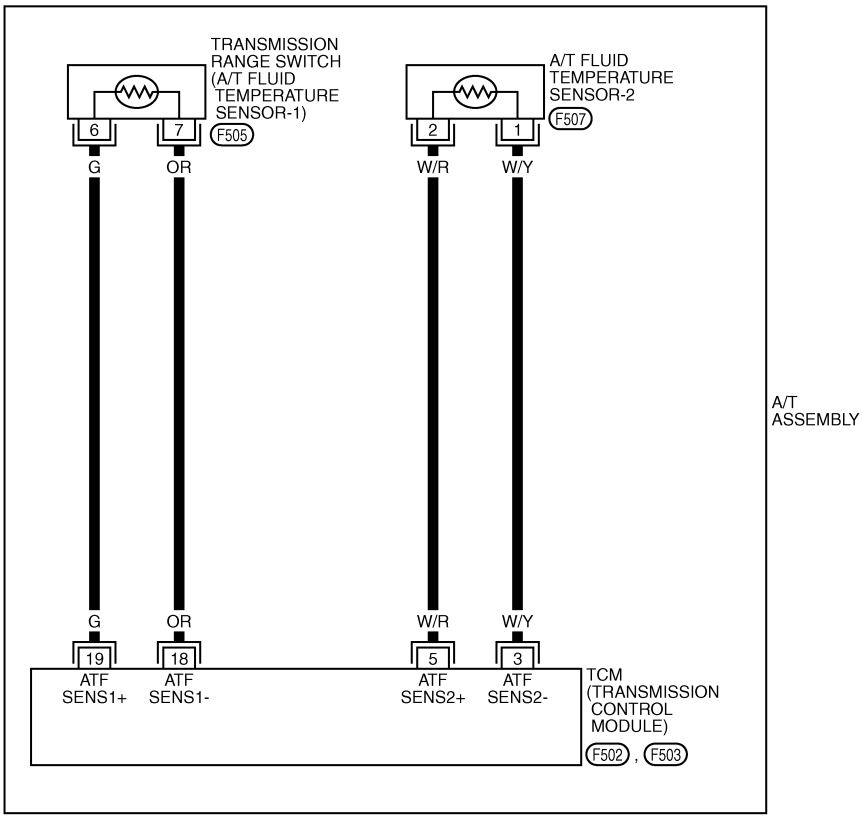
Follow the procedure “WITH CONSULT-III”.

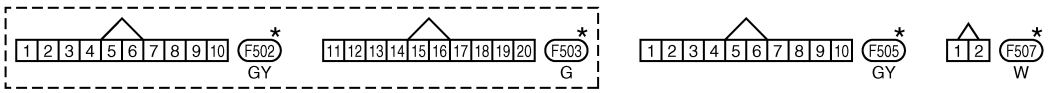
Wiring Diagram - AT - FTS

INFOID:0000000004656912

AT-FTS-01

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





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

TCWM0681E

Diagnosis Procedure

INFOID:0000000004656913

1. CHECK A/T FLUID TEMPERATURE SENSOR 1 SIGNAL

With CONSULT-III

1. Start the engine.

2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III.
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 – 0.9 V

OK or NG

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

2.CHECK A/T FLUID TEMPERATURE SENSOR 2 SIGNAL

With CONSULT-III

1. Start the engine.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III.
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.

3.CHECK A/T FLUID TEMPERATURE SENSOR 1

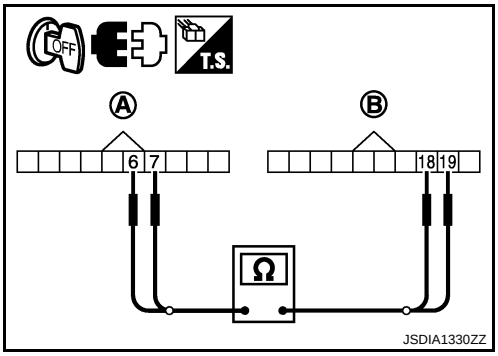
Check A/T fluid temperature sensor 1. Refer to AT-131, "Component Inspection".

OK or NG

OK >> GO TO 4.
NG >> Replace control valve with TCM. Refer to AT-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".

4.CHECK SUB-HARNESS

1. Disconnect transmission range switch connector and TCM connector.
2. Check continuity between transmission range switch connector terminals (A) and TCM connector (B) terminals.



Item	Connector	Terminal	Continuity
Transmission range switch connector	F505	6	Yes
TCM connector	F503	19	
Transmission range 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-131, "Component Inspection".

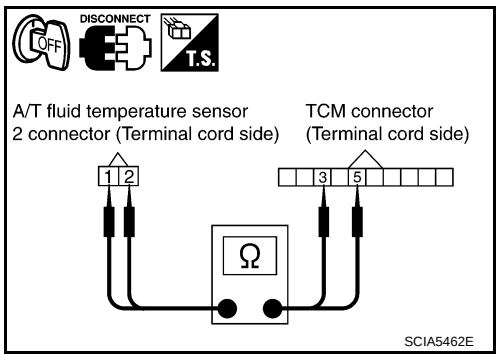
OK or NG

OK >> GO TO 6.
NG >> Replace A/T fluid temperature sensor 2. Refer to AT-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".

6.CHECK TERMINAL CORD ASSEMBLY

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-156.
2. Reinstall any part removed.

OK or NG

OK >> Replace control valve with TCM. Refer to AT-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
NG >> Repair or replace damaged parts.

8. CHECK DTC

Perform AT-128, "DTC Confirmation Procedure".

OK or NG

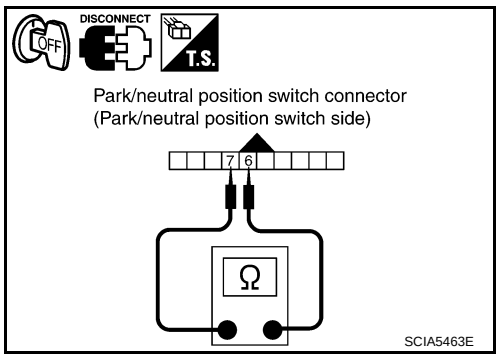
OK >> **INSPECTION END**
NG >> GO TO 1.

Component Inspection

INFOID:0000000004656914

A/T FLUID TEMPERATURE SENSOR 1

1. Remove control valve with TCM. Refer to AT-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
2. Check resistance between transmission range switch connector (A) terminals.



Name	Connector	Terminal	Temperature °C (°F)	Resistance (Approx.)
A/T fluid temperature sensor 1	F505	6 – 7	0 (32)	15 kΩ
			20 (68)	6.5 kΩ
			80 (176)	0.9 kΩ

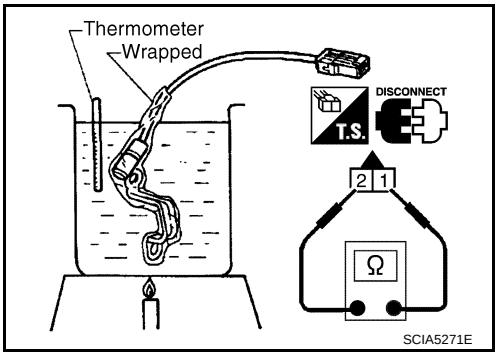
3. If NG, replace control valve with TCM. Refer to AT-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".

A/T FLUID TEMPERATURE SENSOR 2

1. Remove A/T fluid temperature sensor 2. Refer to AT-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".

2. Check resistance between terminals.

Name	Connector	Terminal	Temperature °C (°F)	Resistance (Approx.)
A/T fluid temperature sensor 2	F507	1 – 2	0 (32)	10 kΩ
			20 (68)	4 kΩ
			80 (176)	0.5 kΩ



3. If NG, replace A/T fluid temperature sensor 2. Refer to AT-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".

P1721 VEHICLE SPEED SIGNAL

Description

INFOID:0000000004656915

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

CONSULT-III Reference Value

INFOID:0000000004656916

Item name	Condition	Display value
VHCL/S SE-MTR	During driving	Approximately matches the speedometer reading.

On Board Diagnosis Logic

INFOID:0000000004656917

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code “P1721” with CONSULT-III is detected when TCM does not receive the proper vehicle speed signal (input by CAN communication) from unified meter and A/C amp.

Possible Cause

INFOID:0000000004656918

Harness or connectors
(Sensor circuit is open or shorted.)

DTC Confirmation Procedure

INFOID:0000000004656919

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-III

1. Start the engine.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III.
3. Drive vehicle and maintain the following conditions for at least 5 consecutive seconds.

VHCL/S SE-MTR	: 30 km/h (19 MPH) or more
ACCELE POSI	: 1.0/8 or less

4. If DTC is detected, go to AT-133, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000004656920

1.CHECK CAN COMMUNICATION LINE

With CONSULT-III
- Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III.

Without CONSULT-III
- Perform the self-diagnosis. Refer to AT-88, "Diagnosis Procedure without CONSULT-III".

Is malfunction in the CAN communication indicated in the result?

YES >> Check CAN communication line. Refer to AT-90.
NO >> GO TO 2.

2.CHECK INPUT SIGNAL

With CONSULT-III
1. Start the engine.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III.
3. Drive vehicle and read out the value of “VHCL/S SE-MTR”.

Item name	Condition	Display value
VHCL/S SE-MTR	During driving	Approximately matches the speedometer reading.

OK or NG

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

3. CHECK UNIFIED METER AND A/C AMP.

Check unified meter and A/C amp. Refer to DI-42.

OK or NG

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

4. CHECK DTC

Perform AT-133, "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-156.

OK or NG

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

6. DETECT MALFUNCTIONING ITEM

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

OK or NG

OK >> Replace control valve with TCM. Refer to AT-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
NG >> Repair or replace damaged parts.

P1730 INTERLOCK

Description

INFOID:0000000004656921

Fail-safe function to detect interlock conditions.

On Board Diagnosis Logic

INFOID:0000000004656922

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P1730” with CONSULT-III or 12th judgment flicker without CONSULT-III 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:0000000004656923

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

DTC Confirmation Procedure

INFOID:0000000004656924

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-III

1. Start the engine.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III.
3. Drive vehicle and maintain the following conditions for at least 2 consecutive seconds.

SLCT LVR POSI	: “D” position

4. If DTC is detected, go to AT-135, "Diagnosis Procedure".

WITH GST

Follow the procedure “WITH CONSULT-III”.

Judgment of Interlock

INFOID:0000000004656925

- When Interlock is judged to be malfunctioning, the vehicle should be fixed in 2GR, and should be set in a condition in which it can travel.
  NOTE:
  When the vehicle is driven fixed in 2GR, a input speed sensor malfunction is displayed, but this is not a input speed sensor malfunction.
- When interlock is detected at the 3GR or more, it is locked at the 2GR.

Diagnosis Procedure

INFOID:0000000004656926

1. SELF-DIAGNOSIS

With CONSULT-III
1. Drive vehicle.
2. Stop vehicle and turn ignition switch OFF.
3. Turn ignition switch ON.
4. Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III.

Without CONSULT-III
1. Drive vehicle.
2. Stop vehicle and turn ignition switch OFF.
3. Turn ignition switch ON.
4. Perform self-diagnosis. Refer to AT-88, "Diagnosis Procedure without CONSULT-III".

OK or NG

OK >> GO TO 2.
NG >> Check low coast brake solenoid valve circuit and function. Refer to AT-147, AT-149.

2.CHECK DTC

Perform AT-135, "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-156.

OK or NG

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

4.DETECT MALFUNCTIONING ITEM

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

OK or NG

OK >> Replace control valve with TCM. Refer to AT-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
NG >> Repair or replace damaged parts.

P1731 1ST ENGINE BRAKING

Description

INFOID:0000000004656927

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

CONSULT-III Reference Value

INFOID:0000000004656928

Item name	Condition	Display value
ON OFF SOL	Low coast brake engaged. Refer to AT-17.	ON
	Low coast brake disengaged. Refer to AT-17.	OFF
ATF PRES SW 2	Low coast brake engaged. Refer to AT-17.	ON
	Low coast brake disengaged. Refer to AT-17.	OFF

On Board Diagnosis Logic

INFOID:0000000004656929

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code “P1731” with CONSULT-III or 13th judgment flicker without CONSULT-III 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 1GR acts other than at M1 position.

Possible Cause

INFOID:0000000004656930

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

DTC Confirmation Procedure

INFOID:0000000004656931

CAUTION:
Always drive vehicle at a safe speed.
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.

WITH CONSULT-III

1. Start the engine.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III.
3. Drive vehicle and maintain the following conditions for at least 2 consecutive seconds.

ENGINE SPEED	: 1,200 rpm
MANU MODE SW	: ON
GEAR	: “1” position

4. If DTC is detected, go to AT-137, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000004656932

1.CHECK INPUT SIGNALS

With CONSULT-III

1. Start the engine.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III.
3. Drive vehicle in the “M” position (1GR), 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 AT-17.	ON
	Low coast brake disengaged. Refer to AT-17.	OFF
ATF PRES SW 2	Low coast brake engaged. Refer to AT-17.	ON
	Low coast brake disengaged. Refer to AT-17.	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-156.

OK or NG

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

3.DETECT MALFUNCTIONING ITEM

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

OK or NG

OK >> Replace control valve with TCM. Refer to AT-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
NG >> Repair or replace damaged parts.

4.CHECK DTC

Perform AT-137, "DTC Confirmation Procedure".

OK or NG

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

P1752 INPUT CLUTCH SOLENOID

Description

INFOID:0000000004656933

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

CONSULT-III Reference Value

INFOID:0000000004656934

Item name	Condition	Display value (Approx.)
I/C SOLENOID	Input clutch disengaged. Refer to AT-17.	0.6 – 0.8 A
	Input clutch engaged. Refer to AT-17.	0 – 0.05 A

On Board Diagnosis Logic

INFOID:0000000004656935

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P1752” with CONSULT-III or 5th judgment flicker CONSULT-III 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:0000000004656936

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

DTC Confirmation Procedure

INFOID:0000000004656937

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-III

1. Start the engine.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III.
3. Drive vehicle and maintain the following conditions for at least 5 consecutive seconds.

ACCELE POSI	: 1.5/8 – 2.0/8
SLCT LVR POSI	: “D” position
GEAR	: “3” ⇒ “4” (I/C ON/OFF)
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-139, "Diagnosis Procedure"”.

WITH GST

Follow the procedure “WITH CONSULT-III”.

Diagnosis Procedure

INFOID:0000000004656938

1.CHECK INPUT SIGNAL

With CONSULT-III

1. Start the engine.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III.
3. Read out the value of “I/C SOLENOID” while driving.

Item name	Condition	Display value (Approx.)
I/C SOLENOID	Input clutch disengaged. Refer to AT-17.	0.6 – 0.8 A
	Input clutch engaged. Refer to AT-17.	0 – 0.05 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-156.

OK or NG

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

3.DETECT MALFUNCTIONING ITEM

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

OK or NG

OK >> Replace control valve with TCM. Refer to AT-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
NG >> Repair or replace damaged parts.

4.CHECK DTC

Perform AT-139, "DTC Confirmation Procedure".

OK or NG

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

P1757 FRONT BRAKE SOLENOID

Description

INFOID:0000000004656939

Front brake solenoid valve is controlled by the TCM in response to signals sent from the transmission range switch, output speed sensor and accelerator pedal position sensor (throttle position sensor). Gears will then be shifted to the optimum position.

CONSULT-III Reference Value

INFOID:0000000004656940

Item name	Condition	Display value (Approx.)
FR/B SOLENOID	Front brake engaged. Refer to AT-17.	0.6 – 0.8 A
	Front brake disengaged. Refer to AT-17.	0 – 0.05 A

On Board Diagnosis Logic

INFOID:0000000004656941

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P1757” with CONSULT-III or 6th judgment flicker without CONSULT-III 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:0000000004656942

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

DTC Confirmation Procedure

INFOID:0000000004656943

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-III

1. Start the engine.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III.
3. Drive vehicle and maintain the following conditions for at least 5 consecutive seconds.

ACCELE POSI	: 1.5/8 – 2.0/8
SLCT LVR POSI	: “D” position
GEAR	: “3” ⇒ “4” (FR/B ON/OFF)
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-141, "Diagnosis Procedure".

WITH GST

Follow the procedure “WITH CONSULT-III”.

Diagnosis Procedure

INFOID:0000000004656944

1.CHECK INPUT SIGNAL

With CONSULT-III

1. Start the engine.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III.
3. Read out the value of “FR/B SOLENOID” while driving.

Item name	Condition	Display value (Approx.)
FR/B SOLENOID	Front brake engaged. Refer to AT-17.	0.6 – 0.8 A
	Front brake disengaged. Refer to AT-17.	0 – 0.05 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-156.

OK or NG

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

3.DETECT MALFUNCTIONING ITEM

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

OK or NG

OK >> Replace control valve with TCM. Refer to AT-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
NG >> Repair or replace damaged parts.

4.CHECK DTC

Perform AT-141, "DTC Confirmation Procedure".

OK or NG

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

P1762 DIRECT CLUTCH SOLENOID

Description

INFOID:0000000004656945

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

CONSULT-III Reference Value

INFOID:0000000004656946

Item name	Condition	Display value (Approx.)
D/C SOLENOID	Direct clutch disengaged. Refer to AT-17.	0.6 – 0.8 A
	Direct clutch engaged. Refer to AT-17.	0 – 0.05 A

On Board Diagnosis Logic

INFOID:0000000004656947

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P1762” with CONSULT-III or 2nd judgment flicker without CONSULT-III 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:0000000004656948

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

DTC Confirmation Procedure

INFOID:0000000004656949

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-III

1. Start the engine.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III.
3. Drive vehicle and maintain the following conditions for at least 5 consecutive seconds.

ACCELE POSI	: 1.5/8 – 2.0/8
SLCT LVR POSI	: “D” position
GEAR	: “1” ⇒ “2” (D/C ON/OFF)
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-143, "Diagnosis Procedure".

WITH GST

Follow the procedure “WITH CONSULT-III”.

Diagnosis Procedure

INFOID:0000000004656950

1.CHECK INPUT SIGNAL

With CONSULT-III

1. Start the engine.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III.
3. Read out the value of “D/C SOLENOID” while driving.

Item name	Condition	Display value (Approx.)
D/C SOLENOID	Direct clutch disengaged. Refer to AT-17.	0.6 – 0.8 A
	Direct clutch engaged. Refer to AT-17.	0 – 0.05 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-156.

OK or NG

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

3.DETECT MALFUNCTIONING ITEM

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

OK or NG

OK >> Replace control valve with TCM. Refer to AT-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
NG >> Repair or replace damaged parts.

4.CHECK DTC

Perform AT-143, "DTC Confirmation Procedure".

OK or NG

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

P1767 HIGH AND LOW REVERSE CLUTCH SOLENOID

Description

INFOID:0000000004656951

High and low reverse clutch solenoid valve is controlled by the TCM in response to signals sent from the transmission range switch, output speed sensor and accelerator pedal position sensor (throttle position sensor). Gears will then be shifted to the optimum position.

CONSULT-III Reference Value

INFOID:0000000004656952

Item name	Condition	Display value (Approx.)
HLR/C SOL	High and low reverse clutch disengaged. Refer to AT-17.	0.6 – 0.8 A
	High and low reverse clutch engaged. Refer to AT-17.	0 – 0.05 A

On Board Diagnosis Logic

INFOID:0000000004656953

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P1767” with CONSULT-III or 8th judgment flicker without CONSULT-III 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:0000000004656954

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

DTC Confirmation Procedure

INFOID:0000000004656955

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-III

1. Start the engine.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III.
3. Drive vehicle and maintain the following conditions for at least 5 consecutive seconds.

ACCELE POSI	: 1.5/8 – 2.0/8
SLCT LVR POSI	: “D” position
GEAR	: “2” ⇒ “3” (HLR/C ON/OFF)
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-145, "Diagnosis Procedure".

WITH GST

Follow the procedure “WITH CONSULT-III”.

Diagnosis Procedure

INFOID:0000000004656956

1.CHECK INPUT SIGNAL

With CONSULT-III

1. Start the engine.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III.
3. Read out the value of “HLR/C SOL” while driving.

Item name	Condition	Display value (Approx.)
HLR/C SOL	High and low reverse clutch disengaged. Refer to AT-17.	0.6 – 0.8 A
	High and low reverse clutch engaged. Refer to AT-17.	0 – 0.05 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-156.

OK or NG

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

3.DETECT MALFUNCTIONING ITEM

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

OK or NG

OK >> Replace control valve with TCM. Refer to AT-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
NG >> Repair or replace damaged parts.

4.CHECK TCM

Perform AT-145, "DTC Confirmation Procedure".

OK or NG

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

P1772 LOW COAST BRAKE SOLENOID

Description

INFOID:0000000004656957

Low coast brake solenoid valve is turned ON or OFF by the TCM in response to signals sent from the transmission range switch, output speed sensor and accelerator pedal position sensor (throttle position sensor). Gears will then be shifted to the optimum position.

CONSULT-III Reference Value

INFOID:0000000004656958

Item name	Condition	Display value
ON OFF SOL	Low coast brake engaged. Refer to AT-17.	ON
	Low coast brake disengaged. Refer to AT-17.	OFF

On Board Diagnosis Logic

INFOID:0000000004656959

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P1772” with CONSULT-III or 7th judgment flicker without CONSULT-III is detected when TCM detects an improper voltage drop when it tries to operate the solenoid valve.

Possible Cause

INFOID:0000000004656960

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

DTC Confirmation Procedure

INFOID:0000000004656961

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-III

1. Start the engine.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III.
3. Drive vehicle and maintain the following conditions for at least 5 consecutive seconds.

MANU MODE SW	: ON
GEAR	: “1” or “2” (LC/B ON/OFF)

4. If DTC is detected, go to AT-147, "Diagnosis Procedure".

WITH GST

Follow the procedure “WITH CONSULT-III”.

Diagnosis Procedure

INFOID:0000000004656962

1.CHECK INPUT SIGNAL

With CONSULT-III
1. Start the engine.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III.
3. Read out the value of “ON OFF SOL” while driving.

Item name	Condition	Display value
ON OFF SOL	Low coast brake engaged. Refer to AT-17.	ON
	Low coast brake disengaged. Refer to AT-17.	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-156.

OK or NG

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

3.DETECT MALFUNCTIONING ITEM

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

OK or NG

OK >> Replace control valve with TCM. Refer to AT-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
NG >> Repair or replace damaged parts.

4.CHECK DTC

Perform AT-147, "DTC Confirmation Procedure".

OK or NG

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

P1774 LOW COAST BRAKE SOLENOID

Description

INFOID:0000000004656963

- Low coast brake solenoid valve is turned ON or OFF by the TCM in response to signals sent from the transmission range switch, output 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-III Reference Value

INFOID:0000000004656964

Item name	Condition	Display value
ON OFF SOL	Low coast brake engaged. Refer to AT-17.	ON
	Low coast brake disengaged. Refer to AT-17.	OFF
ATF PRES SW 2	Low coast brake engaged. Refer to AT-17.	ON
	Low coast brake disengaged. Refer to AT-17.	OFF

On Board Diagnosis Logic

INFOID:0000000004656965

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P1774” with CONSULT-III or 7th judgment flicker without CONSULT-III 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:0000000004656966

- 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:0000000004656967

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-III

1. Start the engine.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III.
3. Accelerate vehicle to maintain the following conditions.

MANU MODE SW	: ON
GEAR	: “1” or “2” (LC/B ON/OFF)

4. Perform step 3 again.
5. Turn ignition switch OFF, then perform step 1 to 4 again.
6. Check “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III.
   If DTC (P1774) is detected, refer to AT-150, "Diagnosis Procedure".
   If DTC (P1772) is detected, go to AT-147, "Diagnosis Procedure".

WITH GST

Follow the procedure “WITH CONSULT-III”.

Diagnosis Procedure

INFOID:0000000004656968

1.CHECK INPUT SIGNALS

With CONSULT-III

1. Start the engine.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III.
3. Drive vehicle in the manual mode (1GR or 2GR), 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 AT-17.	ON
	Low coast brake disengaged. Refer to AT-17.	OFF
ATF PRES SW 2	Low coast brake engaged. Refer to AT-17.	ON
	Low coast brake disengaged. Refer to AT-17.	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-156.

OK or NG

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

3.DETECT MALFUNCTIONING ITEM

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

OK or NG

OK >> Replace control valve with TCM. Refer to AT-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
NG >> Repair or replace damaged parts.

4.CHECK DTC

Perform AT-149, "DTC Confirmation Procedure".

OK or NG

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

P1815 M-MODE SWITCH

Description

INFOID:0000000004656969

Manual mode switch is installed in A/T shift selector. It sends manual mode switch, shift up and shift down switch signals to TCM.
TCM sends the switch signals to unified meter and A/C amp. by CAN communication line. Then manual mode switch position is indicated on the A/T position indicator. For inspection, refer to AT-162.

CONSULT-III Reference Value in Data Monitor Mode

INFOID:0000000004656970

Item name	Condition	Display Value
MANU MODE SW	Manual shift gate position (neutral)	ON
	Other than the above	OFF
NON M-MODE SW	Manual shift gate position	OFF
	Other than the above	ON
UP SW LEVER	Selector lever: + side	ON
	Other than the above	OFF
DOWN SW LEVER	Selector lever: - side	ON
	Other than the above	OFF

On Board Diagnosis Logic

INFOID:0000000004656971

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code “P1815” with CONSULT-III is detected when TCM monitors Manual mode, Non manual mode, Up or Down switch signal, and detects as irregular when impossible input pattern occurs 1 second or more.

Possible Cause

INFOID:0000000004656972

- Harness or connectors
  (These switches circuit is open or shorted.)
- Manual mode select switch (Into A/T shift selector)
- Manual mode position select switch (Into A/T shift selector)

DTC Confirmation Procedure

INFOID:0000000004656973

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-III

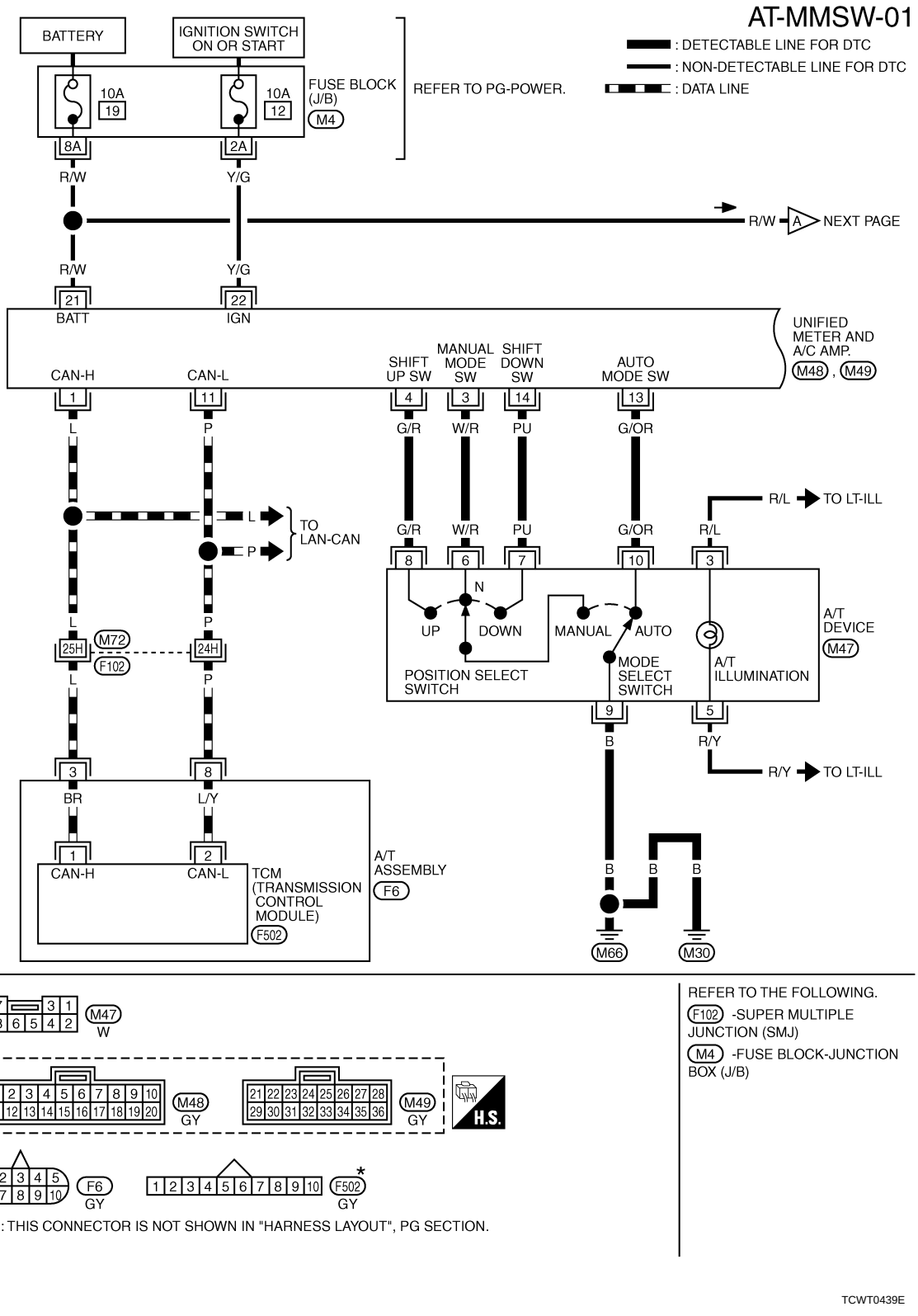
1. Start the engine.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III.
3. Move selector lever to “M” position.
4. Drive vehicle and maintain the following conditions for at least 2 consecutive seconds.

   MANU MODE SW : ON

5. If DTC is detected, go to AT-154, "Diagnosis Procedure".

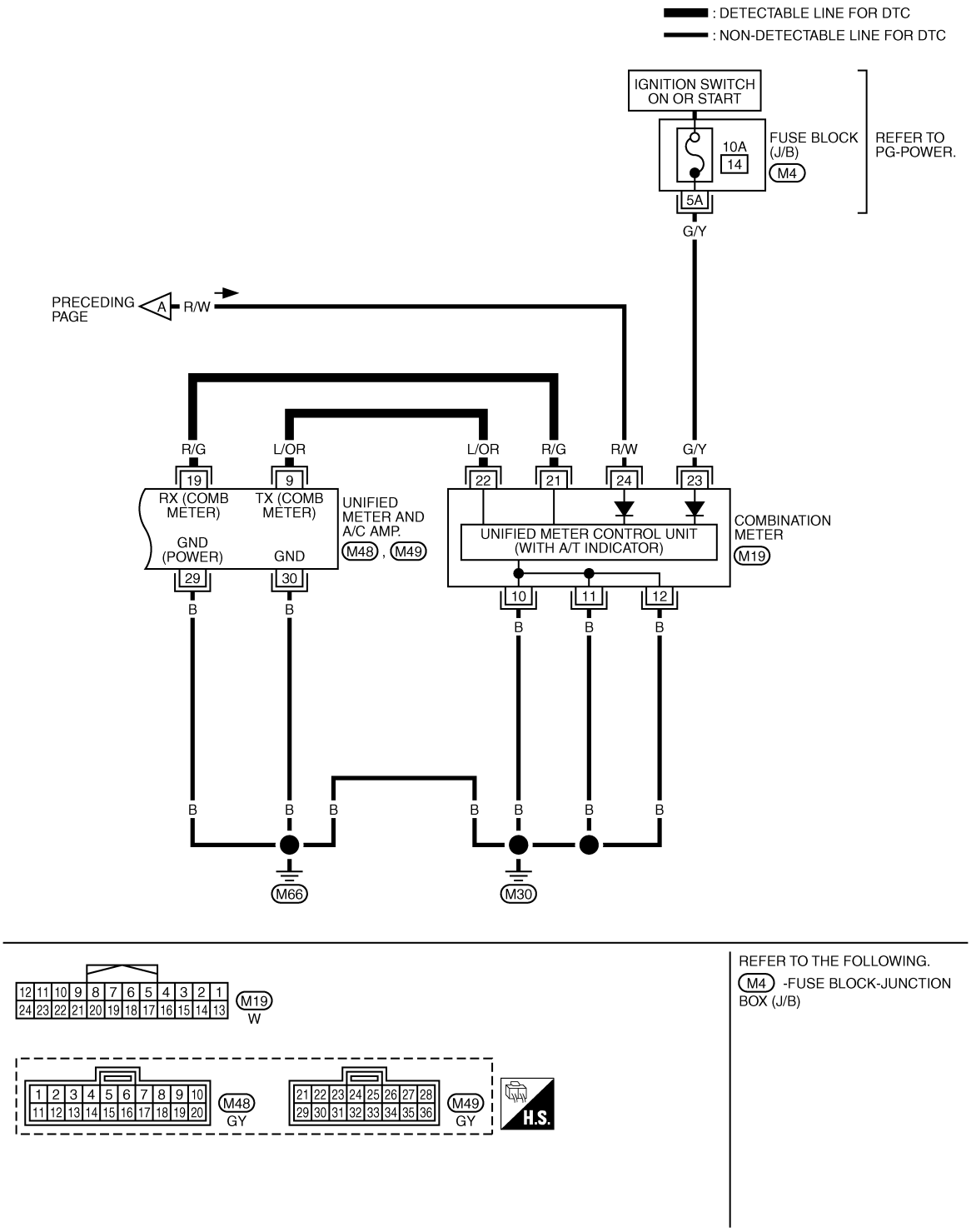
Wiring Diagram - AT - MMSW

INFOID:0000000004656974



TCWT0439E

AT-MMSW-02



TCWM0263E

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

Terminal	Wire color	Item	Condition	Data (Approx.)
3	L	CAN-H	—	—
8	P	CAN-L	—	—

Diagnosis Procedure

INFOID:0000000004656975

1. CHECK CAN COMMUNICATION LINE

With CONSULT-III
- Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III.

Without CONSULT-III
- Perform the self-diagnosis. Refer to AT-88, "Diagnosis Procedure without CONSULT-III".

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

YES >> Check CAN communication line. Refer to AT-90.
NO >> GO TO 2.

2. CHECK MANUAL MODE SWITCH CIRCUIT

With CONSULT-III
1. Turn ignition switch ON.
2. Select “ECU INPUT SIGNALS” in “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III.
3. Read out ON/OFF switching action of “MANU MODE SW”, “NON M-MODE SW”, “UP SW LEVER”, “DOWN SW LEVER”.

Item name	Condition	Display Value
MANU MODE SW	Manual shift gate position (neutral)	ON
	Other than the above	OFF
NON M-MODE SW	Manual shift gate position	OFF
	Other than the above	ON
UP SW LEVER	selector lever: +side	ON
	Other than the above	OFF
DOWN SW LEVER	selector lever: -side	ON
	Other than the above	OFF

Without CONSULT-III
Drive vehicle in the manual mode, and confirm that the actual gear position and the meter's indication of the position mutually coincide when the selector lever is shifted to the “+ (up)” or “- (down)” side (1GR ⇔ 5GR).

OK or NG

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

3. DETECT MALFUNCTIONING ITEM

Check the following.
- Manual mode switch. Refer to AT-155, "Component Inspection".
- Pin terminals for damage or loose connection with harness connector.
- Open circuit or short to ground or short to power in harness or connector for A/T shift selector (manual mode switch).
- Unified meter and A/C amp. Refer to DI-42.

OK or NG

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

4. CHECK DTC

Perform AT-151, "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-156.

OK or NG

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

6. DETECT MALFUNCTIONING ITEM

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

OK or NG

OK >> Replace control valve with TCM. Refer to AT-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
NG >> Repair or replace damaged parts.

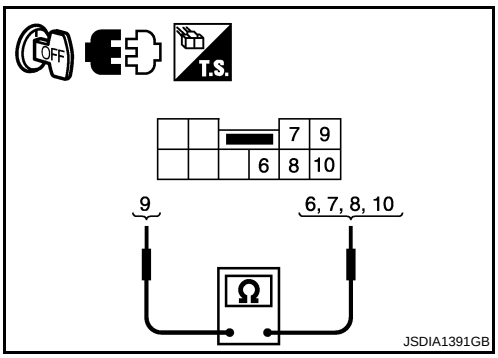
Component Inspection

INFOID:0000000004656976

MANUAL MODE SWITCH

Check continuity between A/Tshift selector connector terminals.

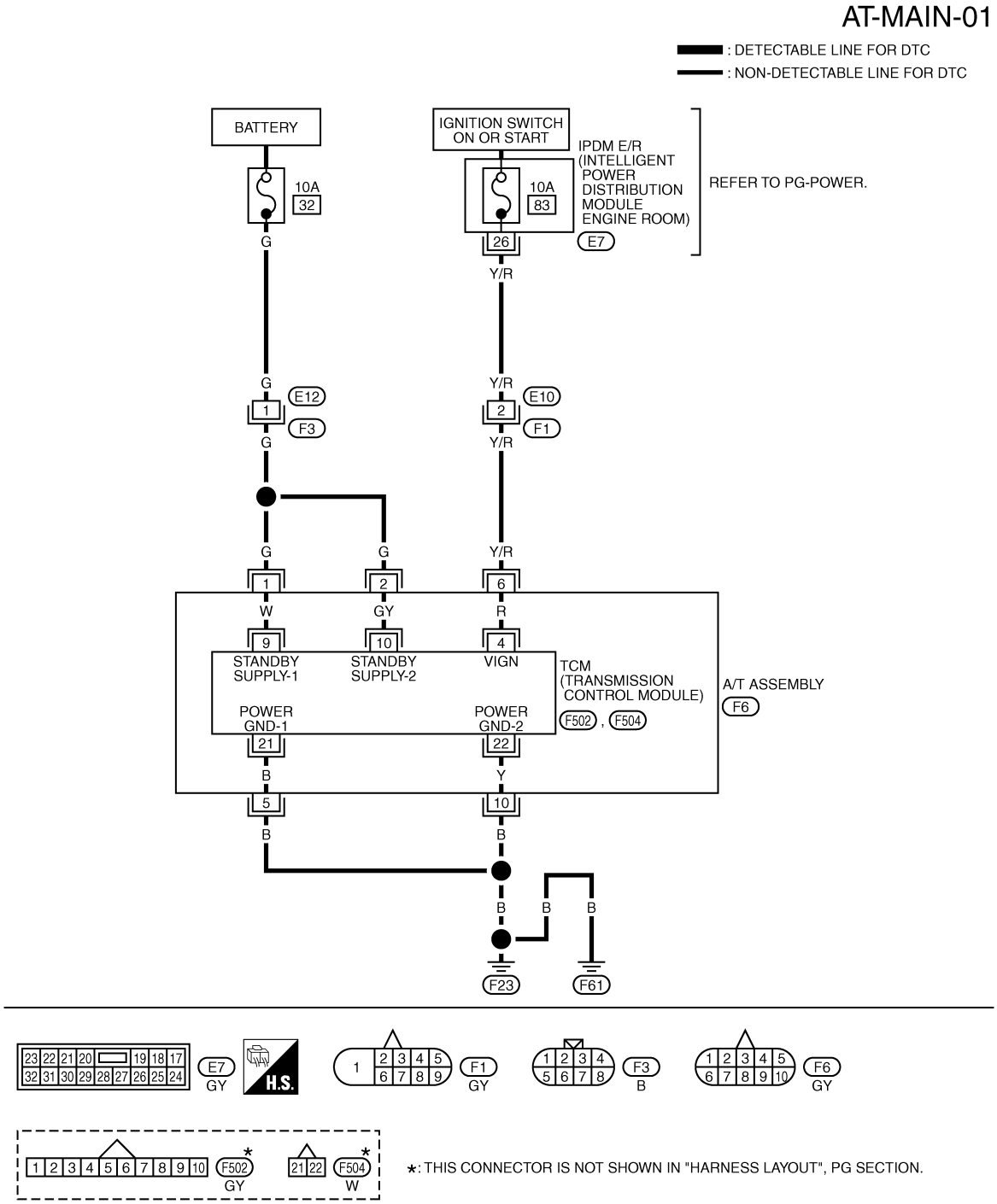
Item	Position	Connector	Terminal	Continuity
Manual mode select switch	Auto	M47	9 – 10	Yes
	Manual		6 – 9	
Manual mode position select switch	UP		8 – 9	
	DOWN		7 – 9	



MAIN POWER SUPPLY AND GROUND CIRCUIT

Wiring Diagram - AT - MAIN

INFOID:0000000004656977



TCWT0440E

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

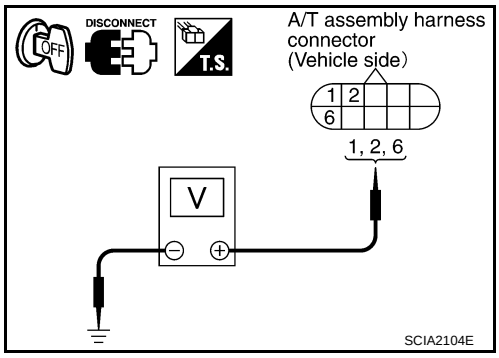
Terminal	Wire color	Item	Condition		Data (Approx.)
1	G	Power supply (Memory back-up)	Always		Battery voltage
2	G	Power supply (Memory back-up)	Always		Battery voltage
5	B	Ground	Always		0 V
6	Y/R	Power supply		—	Battery voltage
				—	0 V
10	B	Ground	Always		0 V

Diagnosis Procedure

INFOID:0000000004656978

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 and ground.



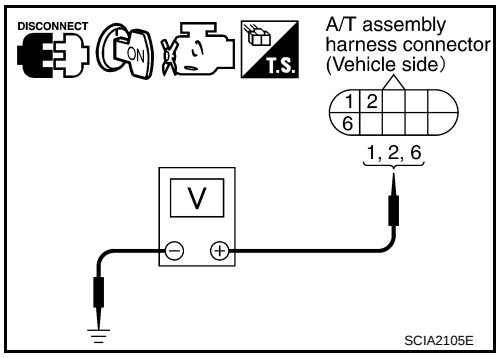
Item	Connector	Terminal	Voltage (Approx.)
TCM	F6	1 – Ground	Battery voltage
		2 – Ground	
		6 – Ground	0 V

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.
3. Check voltage between A/T assembly harness connector and ground.



Item	Connector	Terminal	Voltage (Approx.)
TCM	F6	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.
- 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
- 10 A fuse (No. 32, located in the fuse and fusible link block) and 10 A fuse (No. 83, located in the IPDM E/R)
- Ignition switch, Refer to PG-4.

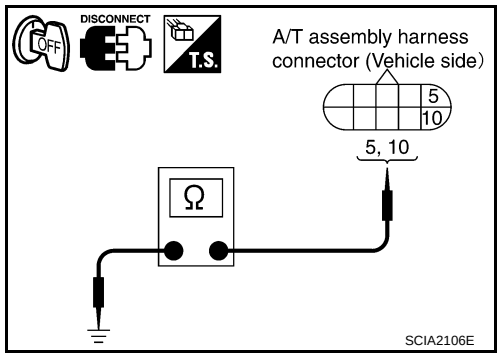
OK or NG

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 terminals and ground.



Item	Connector	Terminal	Continuity
TCM	F6	5, 10 – Ground	Yes

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

Check A/T assembly harness connector pin 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

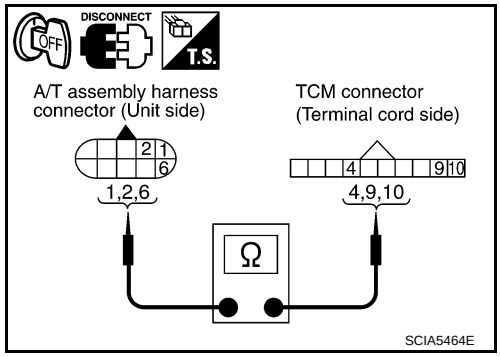
With CONSULT-III
Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III.

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-81, "CONSULT-III Function (TRANSMISSION)".

7. CHECK TERMINAL CORD ASSEMBLY

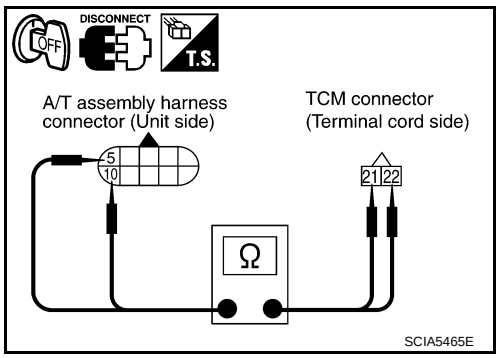
1. Remove control valve with TCM. Refer to AT-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
2. Disconnect A/T assembly harness connector and TCM connector.
3. Check continuity between A/T assembly harness connector terminals and TCM connector terminals.



Item	Connector	Terminal	Continuity
A/T assembly harness connector	F6	1	Yes
TCM connector	F502	9	
A/T assembly harness connector	F6	2	Yes
TCM connector	F502	10	
A/T assembly harness connector	F6	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	F6	5	Yes
TCM connector	F504	21	
A/T assembly harness connector	F6	10	Yes
TCM connector	F504	22	



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

OK or NG

OK >> Replace control valve with TCM. Refer to AT-204, "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

CONSULT-III Reference Value

INFOID:0000000004656979

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:0000000004656980

1.CHECK CAN COMMUNICATION LINE

With CONSULT-III
- Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III.

Without CONSULT-III
- Perform the self-diagnosis. Refer to AT-88, "Diagnosis Procedure without CONSULT-III".

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

YES >> Check CAN communication line. Refer to AT-90.
NO >> GO TO 2.

2.CHECK THROTTLE POSITION SIGNAL CIRCUIT

With CONSULT-III
1. Turn ignition switch ON.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III.
3. Depress accelerator pedal and read out the value of “CLSD THL POS” and “W/O THL POS”.

Accelerator Pedal Operation	Monitor Item	
	CLSD THL POS	W/O THL POS
Released	ON	OFF
Fully depressed	OFF	ON

OK or NG

OK >> **INSPECTION END**
NG >> Check the following. If NG, repair or replace damaged parts.
- Select “SELF-DIAG RESULTS” mode for “ENGINE” with CONSULT-III. Refer to EC-111, "CONSULT-III Function (ENGINE)".
- 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

CONSULT-III Reference Value

INFOID:0000000004656981

Item name	Condition	Display value
BRAKE SW	Depressed brake pedal.	ON
	Released brake pedal.	OFF

Diagnosis Procedure

INFOID:0000000004656982

1.CHECK CAN COMMUNICATION LINE

With CONSULT-III
- Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III.

Without CONSULT-III
- Perform the self-diagnosis. Refer to AT-88, "Diagnosis Procedure without CONSULT-III".

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

YES >> Check CAN communication line. Refer to AT-90.
NO >> GO TO 2.

2.CHECK STOP LAMP SWITCH CIRCUIT

With CONSULT-III
1. Turn ignition switch ON.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III.
3. Read out ON/OFF switching action of the “BRAKE SW”.

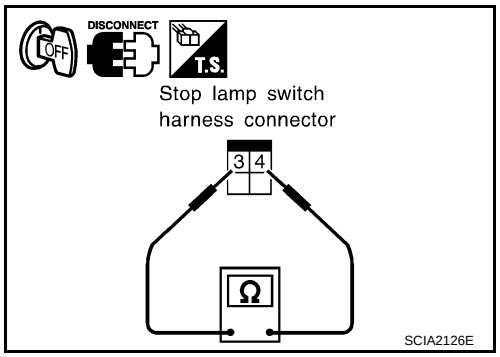
Item name	Condition	Display value
BRAKE SW	Depressed brake pedal.	ON
	Released brake pedal.	OFF

OK or NG

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

3.CHECK STOP LAMP SWITCH

Check continuity between stop lamp switch harness connector E111 terminals 3 and 4. Refer to AT-163, "Wiring Diagram - AT - NON-DTC".



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-7.

OK or NG

OK >> Check the following. If NG, repair or replace damaged parts.
- Harness for short or open between battery and stop lamp switch.
- Harness for short or open between stop lamp switch and unified meter and A/C amp.
- 10 A fuse (No. 20, located in fuse block).

NG >> Repair or replace the stop lamp switch.

A/T INDICATOR CIRCUIT

Description

INFOID:0000000004656983

The TCM sends the switch signals to unified meter and A/C amp. by CAN communication line. Then manual mode switch position is indicated on the A/T position indicator.

CONSULT-III Reference Value

INFOID:0000000004656984

Item name	Condition	Display value
GEAR	During driving	1, 2, 3, 4, 5

Diagnosis Procedure

INFOID:0000000004656985

1.CHECK INPUT SIGNALS

With CONSULT-III

1. Start the engine.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III and read out the value of “GEAR”.
3. Drive vehicle in the manual mode, and confirm that the actual gear position and the meter's indication of the position mutually coincide when the selector lever is shifted to the “+ (up)” or “- (down)” side (1GR ⇔ 5GR).

OK or NG

OK >> **INSPECTION END**
NG >> Check the following.

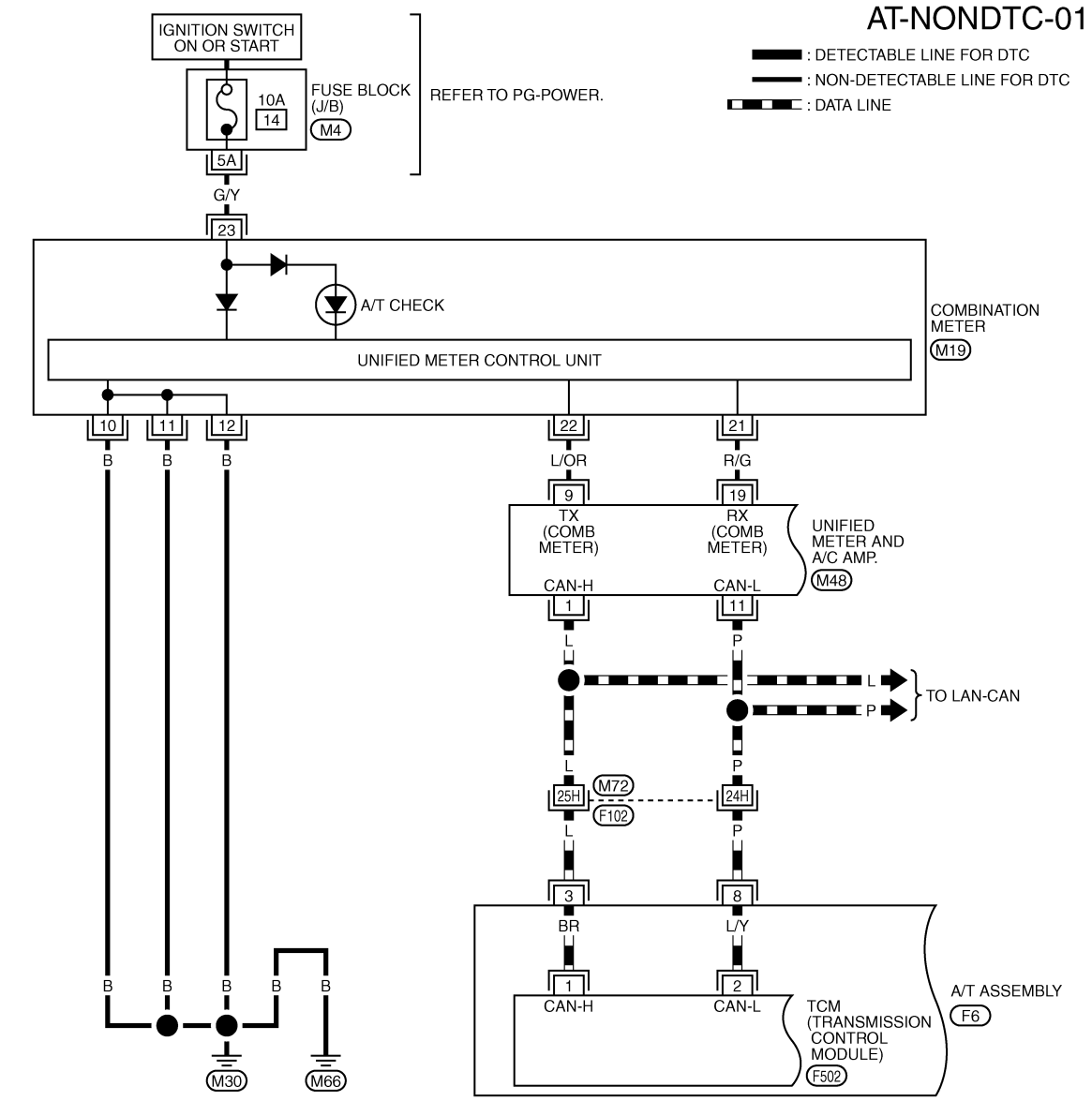
A/T INDICATOR SYMPTOM CHART

Items	Presumed Location of Trouble
The actual gear position does not change, or shifting into the manual mode is not possible (no gear shifting in the manual mode possible). The A/T position indicator is not indicated.	Manual mode switch Refer to AT-151. A/T main system (Fail-safe function actuated) • Refer to AT-81, "CONSULT-III Function (TRANSMISSION)".
The actual gear position changes, but the A/T position indicator is not indicated.	Perform the self-diagnosis function. • Refer to AT-81, "CONSULT-III Function (TRANSMISSION)".
The actual gear position and the indication on the A/T position indicator do not coincide.	Perform the self-diagnosis function. • Refer to AT-81, "CONSULT-III Function (TRANSMISSION)".
Only a specific position or positions is/are not indicated on the A/T position indicator.	Check the unified meter and A/C amp. • Refer to DI-5.

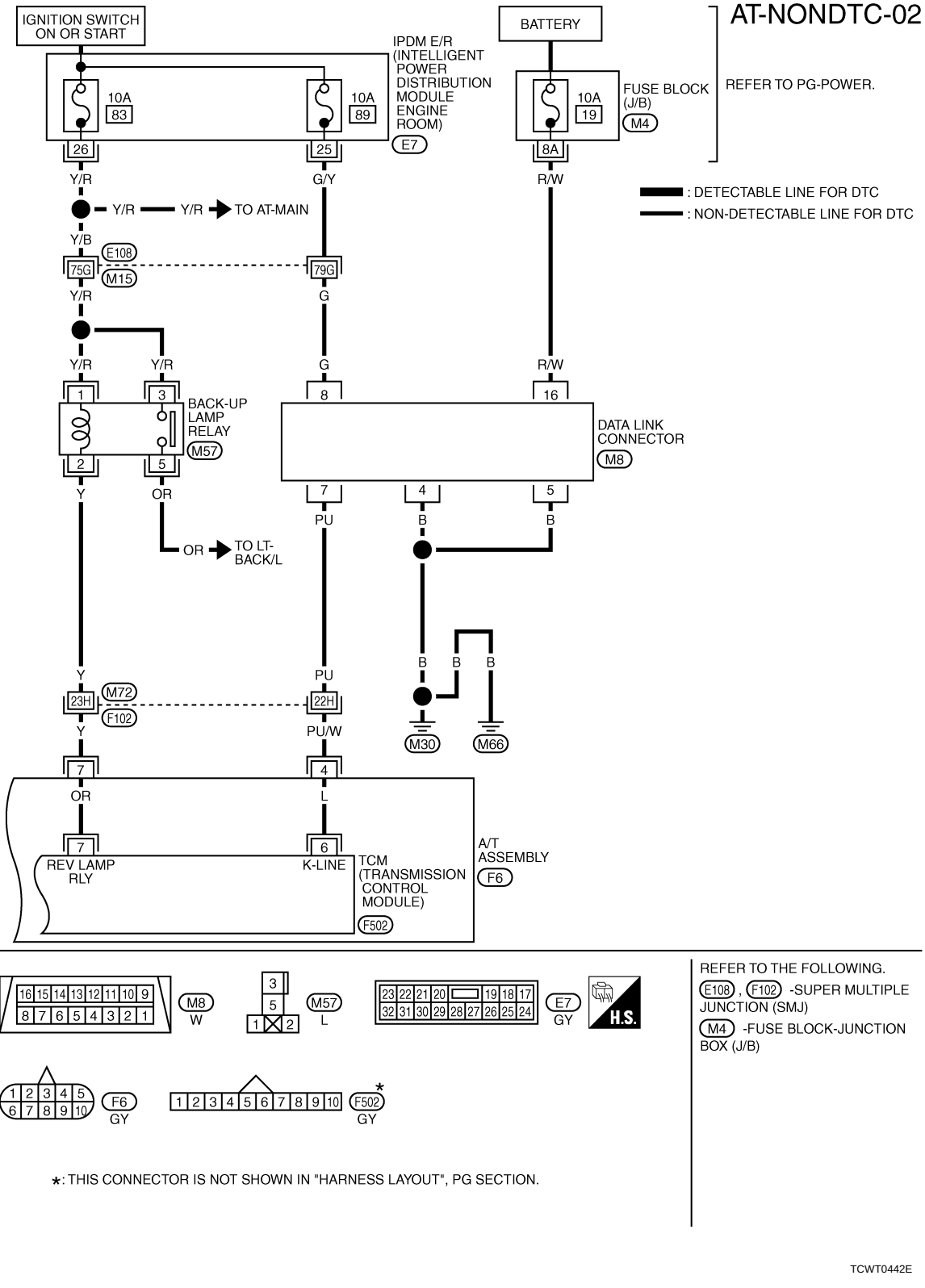
TROUBLE DIAGNOSIS FOR SYMPTOMS

Wiring Diagram - AT - NONDTC

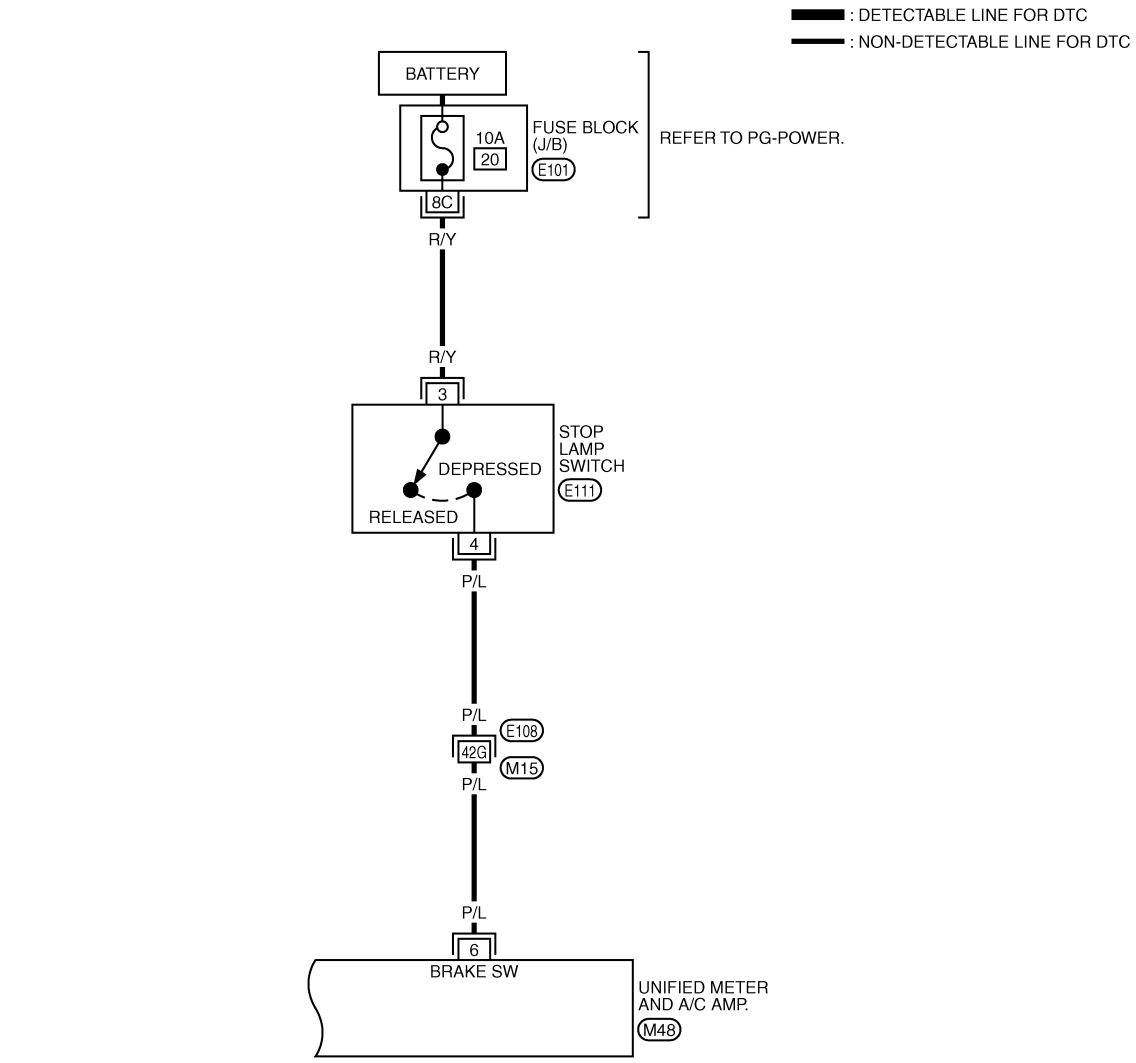
INFOID:0000000004656986



TCWT0441E


AT-NONDTC-02
IGNITION SWITCH ON OR START
BATTERY
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
E7
10A 83
10A 89
10A 19
FUSE BLOCK (J/B)
M4
REFER TO PG-POWER.
26
25
8A
Y/R
G/Y
R/W
: DETECTABLE LINE FOR DTC
: NON-DETECTABLE LINE FOR DTC
Y/R
TO AT-MAIN
Y/B
E108
75G
M15
79G
G
BACK-UP LAMP RELAY
M57
DATA LINK CONNECTOR
M8
1
3
8
16
2
5
7
4
5
Y
OR
PU
B
TO LT-BACK/L
M72
23H
F102
22H
PU/W
M30
M66
7
4
OR
L
6
REV LAMP RLY
K-LINE
TCM (TRANSMISSION CONTROL MODULE)
F502
A/T ASSEMBLY
F6
M8
W
M57
L
E7
GY
H.S.
F6
GY
F502
GY
*: THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT", PG SECTION.
REFER TO THE FOLLOWING.
E108 , F102 -SUPER MULTIPLE JUNCTION (SMJ)
M4 -FUSE BLOCK-JUNCTION BOX (J/B)
TCWT0442E

AT-NONDTC-03



TCWT0378E

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

Terminal	Wire color	Item	Condition	Data (Approx.)
3	L	CAN-H	—	—
4	PU/W	K-line (CONSULT-III signal)	The terminal is connected to the data link connector for CONSULT-III.	—

Terminal	Wire color	Item	Condition		Data (Approx.)
7	Y	Back-up lamp relay		Selector lever in “R” position.	0 V
				Selector lever in other positions.	Battery voltage
8	P	CAN-L	—		—

A/T Check Indicator Lamp Does Not Come On

INFOID:0000000004656987

SYMPTOM:

A/T CHECK indicator lamp does not come on for about 2 seconds when turning ignition switch to ON.

DIAGNOSTIC PROCEDURE

1.CHECK CAN COMMUNICATION LINE

With CONSULT-III
- Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III.

Without CONSULT-III
- Perform the self-diagnosis. Refer to AT-88, "Diagnosis Procedure without CONSULT-III".

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

YES >> Check CAN communication line. Refer to AT-90.
NO >> GO TO 2.

2.CHECK A/T CHECK INDICATOR LAMP CIRCUIT

Check 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-156.

OK or NG

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

Engine Cannot Be Started in "P" or "N" Position

INFOID:0000000004656988

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 TRANSMISSION RANGE SWITCH CIRCUIT

With CONSULT-III
- Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III.

Without CONSULT-III
- Perform the self-diagnosis. Refer to AT-88, "Diagnosis Procedure without CONSULT-III".

Do the self-diagnostic results indicate transmission range switch?

YES >> Check the malfunctioning system. Refer to AT-98.
NO >> GO TO 2.

2.CHECK A/T POSITION

Check A/T position. Refer to AT-195, "Checking of A/T Position".

OK or NG

OK >> GO TO 3.
NG >> Adjust A/T position. Refer to AT-195, "Adjustment of A/T Position".

3.CHECK STARTING SYSTEM

Check starting system. Refer to SC-8.

OK or NG

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

In "P" Position, Vehicle Moves When Pushed

INFOID:0000000004656989

SYMPTOM:

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 A/T POSITION

Check A/T position. Refer to AT-195, "Checking of A/T Position".

OK or NG

OK >> GO TO 2.
NG >> Adjust A/T position. Refer to AT-195, "Adjustment of A/T Position".

2.CHECK PARKING COMPONENTS

Check parking components. Refer to AT-215, "Parking Component".

OK or NG

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

In "N" Position, Vehicle Moves

INFOID:0000000004656990

SYMPTOM:

Vehicle moves forward or backward when selecting “N” position.

DIAGNOSTIC PROCEDURE

1.CHECK PNP SWITCH CIRCUIT

With CONSULT-III
- Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III.

Without CONSULT-III
- Perform the self-diagnosis. Refer to AT-88, "Diagnosis Procedure without CONSULT-III".

Do the self-diagnostic results indicate PNP switch?

YES >> Check the malfunctioning system. Refer to AT-98.
NO >> GO TO 2.

2.CHECK A/T POSITION

Check A/T position. Refer to AT-195, "Checking of A/T Position".

OK or NG

OK >> GO TO 3.
NG >> Adjust A/T position. Refer to AT-195, "Adjustment of A/T Position".

3.CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to AT-12, "Checking A/T Fluid".

OK or NG

OK >> GO TO 4.
NG >> Refill ATF.

4.CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to AT-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
2. Check A/T fluid condition. Refer to AT-47, "Inspections Before Trouble Diagnosis".

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-56, "Symptom Chart" (Symptom No. 67).

5.CHECK SYMPTOM

Check again. Refer to AT-51, "Road Test".

OK or NG

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

6.CHECK TCM

1. Check TCM input/output signals. Refer to AT-80, "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:0000000004656991

SYMPTOM:

A noticeable shock occurs when the selector lever is shifted from the “N” to “D” position.

DIAGNOSTIC PROCEDURE

1.CHECK SELF-DIAGNOSTIC RESULTS

With CONSULT-III
- Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III.

Without CONSULT-III
- Perform the self-diagnosis. Refer to AT-88, "Diagnosis Procedure without CONSULT-III".

Is any malfunction detected by self-diagnostic results?

YES >> Check the malfunctioning system. Refer to AT-81, "CONSULT-III Function (TRANSMISSION)", AT-88, "Diagnosis Procedure without CONSULT-III".
NO >> GO TO 2.

2.ENGINE IDLE SPEED

Check engine idle speed. Refer to EC-75, "Idle Speed and Ignition Timing Check".

OK or NG

OK >> GO TO 3.
NG >> Adjust engine idle speed. Refer to EC-75, "Idle Speed and Ignition Timing Check".

3.CHECK A/T POSITION

Check A/T position. Refer to AT-195, "Checking of A/T Position".

OK or NG

OK >> GO TO 4.
NG >> Adjust A/T position. Refer to AT-195, "Adjustment of A/T Position".

4.CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to AT-12, "Checking A/T Fluid".

OK or NG

OK >> GO TO 5.
NG >> Refill ATF.

5.CHECK LINE PRESSURE

Check line pressure at idle with selector lever in “D” position. Refer to AT-47, "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-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
2. Disassemble A/T. Refer to AT-239.
3. Check the following.

- Oil pump assembly. Refer to AT-255, "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-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
2. Disassemble A/T. Refer to AT-239.
3. Check the following.

- Oil pump assembly. Refer to AT-255, "Oil Pump".
- Power train system. Refer to AT-239.
- Transmission case. Refer to AT-239.

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-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
2. Check A/T fluid condition. Refer to AT-47, "Inspections Before Trouble Diagnosis".

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-56, "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-51, "Road Test".

OK or NG

OK >> **INSPECTION END**
NG >> GO TO 11.

11. CHECK TCM

1. Check TCM input/output signals. Refer to AT-80, "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:0000000004656992

SYMPTOM:

The vehicle does not creep in the “R” position. Or an extreme lack of acceleration is observed.

DIAGNOSTIC PROCEDURE

1.CHECK SELF-DIAGNOSTIC RESULTS

With CONSULT-III
• Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III.
Without CONSULT-III
• Perform the self-diagnosis. Refer to AT-88, "Diagnosis Procedure without CONSULT-III".

Is any malfunction detected by self-diagnostic results?

YES >> Check the malfunctioning system. Refer to AT-81, "CONSULT-III Function (TRANSMISSION)", AT-88, "Diagnosis Procedure without CONSULT-III".
NO >> GO TO 2.

2.CHECK A/T POSITION

Check A/T position. Refer to AT-195, "Checking of A/T Position".

OK or NG

OK >> GO TO 3.
NG >> Adjust A/T position. Refer to AT-195, "Adjustment of A/T Position".

3.CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to AT-12, "Checking A/T Fluid".

OK or NG

OK >> GO TO 4.
NG >> Refill ATF.

4.CHECK STALL TEST

Check stall revolution with selector lever in “M” and “R” positions.
Refer to AT-47, "Inspections Before Trouble Diagnosis".

OK or NG

OK >> GO TO 6.
OK in “M” position, NG in “R” position>>GO TO 5.
NG in both “M” and “R” positions>>GO TO 8.

5.DETECT MALFUNCTIONING ITEM

1. Disassemble A/T. Refer to AT-239.
2. Check the following.
- Reverse brake. Refer to AT-239, "Disassembly".

OK or NG

OK >> GO TO 9.
NG >> Repair or replace damaged parts.

6.CHECK LINE PRESSURE

Check line pressure with the engine idling. Refer to AT-47, "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-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
2. Disassemble A/T. Refer to AT-239.
3. Check the following.
- Oil pump assembly. Refer to AT-255, "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-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
2. Disassemble A/T. Refer to AT-239.
3. Check the following.

- Oil pump assembly. Refer to AT-255, "Oil Pump".
- Power train system. Refer to AT-239.
- Transmission case. Refer to AT-239.

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-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
2. Check A/T fluid condition. Refer to AT-47, "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-56, "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-51, "Road Test".

OK or NG

OK >> **INSPECTION END**
NG >> GO TO 12.

12. CHECK TCM

1. Check TCM input/output signals. Refer to AT-80, "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-56, "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:0000000004656993

SYMPTOM:

Vehicle does not creep forward when selecting “D” position.

DIAGNOSTIC PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

With CONSULT-III

- Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III.

⊗ Without CONSULT-III
• Perform the self-diagnosis. Refer to AT-88, "Diagnosis Procedure without CONSULT-III".

Is any malfunction detected by self-diagnostic results?

YES >> Check the malfunctioning system. Refer to AT-81, "CONSULT-III Function (TRANSMISSION)", AT-88, "Diagnosis Procedure without CONSULT-III".
NO >> GO TO 2.

2. CHECK A/T POSITION

Check A/T position. Refer to AT-195, "Checking of A/T Position".

OK or NG

OK >> GO TO 3.
NG >> Adjust A/T position. Refer to AT-195, "Adjustment of A/T Position".

3. CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to AT-12, "Checking A/T Fluid".

OK or NG

OK >> GO TO 4.
NG >> Refill ATF.

4. CHECK STALL TEST

Check stall revolution with selector lever in “D” position. Refer to AT-47, "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-47, "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-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
2. Disassemble A/T. Refer to AT-239.
3. Check the following.

- Oil pump assembly. Refer to AT-255, "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-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
2. Disassemble A/T. Refer to AT-239.
3. Check the following.

- Oil pump assembly. Refer to AT-255, "Oil Pump".
- Power train system. Refer to AT-239.
- Transmission case. Refer to AT-239.

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-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".

2. Check A/T fluid condition. Refer to AT-47, "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-56, "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-51, "Road Test".

OK or NG

OK >> **INSPECTION END**
NG >> GO TO 11.

11. CHECK TCM

1. Check TCM input/output signals. Refer to AT-80, "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-56, "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:0000000004656994

SYMPTOM:

Vehicle cannot be started from D1 on cruise test - Part 1.

DIAGNOSTIC PROCEDURE

1. CHECK SYMPTOM

Check if vehicle creeps in “R” position.

OK or NG

OK >> GO TO 2.
NG >> Refer to AT-169, "Vehicle Does Not Creep Backward in "R" Position".

2. CHECK SELF-DIAGNOSTIC RESULTS

With CONSULT-III
- Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III.

Without CONSULT-III
- Perform the self-diagnosis. Refer to AT-88, "Diagnosis Procedure without CONSULT-III".

Is any malfunction detected by self-diagnostic results?

YES >> Check the malfunctioning system. Refer to AT-81, "CONSULT-III Function (TRANSMISSION)", AT-88, "Diagnosis Procedure without CONSULT-III".
NO >> GO TO 3.

3. CHECK ACCELERATOR POSITION SENSOR

Check accelerator pedal position sensor. Refer to AT-126

OK or NG

OK >> GO TO 4.
NG >> Repair or replace accelerator pedal position sensor.

4. CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to AT-12, "Checking A/T Fluid".

OK or NG

OK >> GO TO 5.
NG >> Refill ATF.

5. CHECK LINE PRESSURE

Check line pressure at the engine stall point. Refer to AT-47, "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-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
2. Disassemble A/T. Refer to AT-239.
3. Check the following.

- Oil pump assembly. Refer to AT-255, "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-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
2. Disassemble A/T. Refer to AT-239.
3. Check the following.

- Oil pump assembly. Refer to AT-255, "Oil Pump".
- Power train system. Refer to AT-239.
- Transmission case. Refer to AT-239.

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-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
2. Check A/T fluid condition. Refer to AT-47, "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-56, "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-51, "Road Test".

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 11.

11. CHECK TCM

1. Check TCM input/output signals. Refer to AT-80, "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-56, "Symptom Chart" (Symptom No. 23).

OK or NG

OK >> GO TO 10.
NG >> Repair or replace damaged parts.

A/T Does Not Shift: $D_1 \rightarrow D_2$

INFOID:0000000004656995

SYMPTOM:

The vehicle does not shift-up from the D_1 to D_2 gear at the specified speed.

DIAGNOSTIC PROCEDURE

1. CHECK SYMPTOM

Check if vehicle creeps forward in “D” position and vehicle can be started from D_1.

OK or NG

OK >> GO TO 2.
NG >> Refer to AT-171, "Vehicle Does Not Creep Forward in "D" Position", AT-173, "Vehicle Cannot Be Started from D_1".

2. CHECK SELF-DIAGNOSTIC RESULTS

With CONSULT-III
- Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III.

Without CONSULT-III
- Perform the self-diagnosis. Refer to AT-88, "Diagnosis Procedure without CONSULT-III".

Is any malfunction detected by self-diagnostic results?

YES >> Check the malfunctioning system. Refer to AT-81, "CONSULT-III Function (TRANSMISSION)", AT-88, "Diagnosis Procedure without CONSULT-III".
NO >> GO TO 3.

3. CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to AT-12, "Checking A/T Fluid".

OK or NG

OK >> GO TO 4.
NG >> Refill ATF.

4. CHECK LINE PRESSURE

Check line pressure at the engine stall point. Refer to AT-47, "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-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
2. Disassemble A/T. Refer to AT-239.

3. Check the following items:
- Oil pump assembly. Refer to AT-255, "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-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
2. Disassemble A/T. Refer to AT-239.
3. Check the following.
- Oil pump assembly. Refer to AT-255, "Oil Pump".
- Power train system. Refer to AT-239.
- Transmission case. Refer to AT-239.

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-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
2. Check A/T fluid condition. Refer to AT-47, "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-56, "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-51, "Road Test".

OK or NG

OK >> **INSPECTION END**
NG >> GO TO 10.

10. CHECK TCM

1. Check TCM input/output signals. Refer to AT-80, "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-56, "Symptom Chart" (Symptom No. 10).

OK or NG

OK >> GO TO 9.
NG >> Repair or replace damaged parts.

A/T Does Not Shift: $D_2 \rightarrow D_3$

INFOID:0000000004656996

SYMPTOM:

The vehicle does not shift-up from D_2 to D_3 gear at the specified speed.

DIAGNOSTIC PROCEDURE

1.CHECK SYMPTOM

Check if vehicle creeps forward in “D” position and vehicle can be started from D_1.

OK or NG

OK >> GO TO 2.
NG >> Refer to AT-171, "Vehicle Does Not Creep Forward in "D" Position", AT-173, "Vehicle Cannot Be Started from D_1".

2.CHECK SELF-DIAGNOSTIC RESULTS

With CONSULT-III
- Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III.

Without CONSULT-III
- Perform the self-diagnosis. Refer to AT-88, "Diagnosis Procedure without CONSULT-III".

Is any malfunction detected by self-diagnostic results?

YES >> Check the malfunctioning system. Refer to AT-81, "CONSULT-III Function (TRANSMISSION)", AT-88, "Diagnosis Procedure without CONSULT-III".
NO >> GO TO 3.

3.CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to AT-12, "Checking A/T Fluid".

OK or NG

OK >> GO TO 4.
NG >> Refill ATF.

4.CHECK LINE PRESSURE

Check line pressure at the engine stall point. Refer to AT-47, "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-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
2. Disassemble A/T. Refer to AT-239.
3. Check the following.

- Oil pump assembly. Refer to AT-255, "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-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
2. Disassemble A/T. Refer to AT-239.
3. Check the following.

- Oil pump assembly. Refer to AT-255, "Oil Pump".
- Power train system. Refer to AT-239.
- Transmission case. Refer to AT-239.

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-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
2. Check A/T fluid condition. Refer to AT-47, "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-56, "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-51, "Road Test".

OK or NG

OK >> **INSPECTION END**
NG >> GO TO 10.

10. CHECK TCM

1. Check TCM input/output signals. Refer to AT-80, "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-56, "Symptom Chart" (Symptom No. 11).

OK or NG

OK >> GO TO 9.
NG >> Repair or replace damaged parts.

A/T Does Not Shift: $D_3 \rightarrow D_4$

INFOID:0000000004656997

SYMPTOM:

The vehicle does not shift-up from the D_3 to D_4 gear at the specified speed.

DIAGNOSTIC PROCEDURE

1. CHECK SYMPTOM

Check if vehicle creeps forward in “D” position and vehicle can be started from D_1.

OK or NG

OK >> GO TO 2.
NG >> Refer to AT-171, "Vehicle Does Not Creep Forward in "D" Position", AT-173, "Vehicle Cannot Be Started from D_1".

2. CHECK SELF-DIAGNOSTIC RESULTS

With CONSULT-III
- Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III.

Without CONSULT-III
- Perform the self-diagnosis. Refer to AT-88, "Diagnosis Procedure without CONSULT-III".

Is any malfunction detected by self-diagnostic results?

YES >> Check the malfunctioning system. Refer to AT-81, "CONSULT-III Function (TRANSMISSION)", AT-88, "Diagnosis Procedure without CONSULT-III".
NO >> GO TO 3.

3. CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to AT-12, "Checking A/T Fluid".

OK or NG

OK >> GO TO 4.
NG >> Refill ATF.

4. CHECK LINE PRESSURE

Check line pressure at the engine stall point. Refer to AT-47, "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-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
2. Disassemble A/T. Refer to AT-239.
3. Check the following.

- Oil pump assembly. Refer to AT-255, "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-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
2. Disassemble A/T. Refer to AT-239.
3. Check the following.

- Oil pump assembly. Refer to AT-255, "Oil Pump".
- Power train system. Refer to AT-239.
- Transmission case. Refer to AT-239.

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-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
2. Check A/T fluid condition. Refer to AT-47, "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-56, "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-51, "Road Test".

OK or NG

OK >> **INSPECTION END**
NG >> GO TO 10.

10. CHECK TCM

1. Check TCM input/output signals. Refer to AT-80, "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-56, "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:0000000004656998

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. CHECK 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-171, "Vehicle Does Not Creep Forward in "D" Position", AT-173, "Vehicle Cannot Be Started from D1".

2. CHECK SELF-DIAGNOSTIC RESULTS

With CONSULT-III
- Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III.

Without CONSULT-III
- Perform the self-diagnosis. Refer to AT-88, "Diagnosis Procedure without CONSULT-III".

Is any malfunction detected by self-diagnostic results?

YES >> Check the malfunctioning system. Refer to AT-81, "CONSULT-III Function (TRANSMISSION)", AT-88, "Diagnosis Procedure without CONSULT-III".
NO >> GO TO 3.

3. CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to AT-12, "Checking A/T Fluid".

OK or NG

OK >> GO TO 4.
NG >> Refill ATF.

4. CHECK LINE PRESSURE

Check line pressure at the engine stall point. Refer to AT-47, "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-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
2. Disassemble A/T. Refer to AT-239.
3. Check the following.

- Oil pump assembly. Refer to AT-255, "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-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
2. Disassemble A/T. Refer to AT-239.
3. Check the following.

- Oil pump assembly. Refer to AT-255, "Oil Pump".
- Power train system. Refer to AT-239.
- Transmission case. Refer to AT-239.

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-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
2. Check A/T fluid condition. Refer to AT-47, "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-56, "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-51, "Road Test".

OK or NG

OK >> **INSPECTION END**
NG >> GO TO 10.

10.CHECK TCM

1. Check TCM input/output signals. Refer to AT-80, "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-56, "Symptom Chart" (Symptom No. 13).

OK or NG

OK >> GO TO 9.
NG >> Repair or replace damaged parts.

A/T Does Not Lock-up

INFOID:0000000004656999

SYMPTOM:
A/T does not lock-up at the specified speed.

DIAGNOSTIC PROCEDURE

1.CHECK SELF-DIAGNOSTIC RESULTS

With CONSULT-III
- Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III.

⊗ Without CONSULT-III
• Perform the self-diagnosis. Refer to AT-88, "Diagnosis Procedure without CONSULT-III".

Is any malfunction detected by self-diagnostic results?

YES >> Check the malfunctioning system. Refer to AT-81, "CONSULT-III Function (TRANSMISSION)", AT-88, "Diagnosis Procedure without CONSULT-III".
NO >> GO TO 2.

2. CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to AT-12, "Checking A/T Fluid".

OK or NG

OK >> GO TO 3.
NG >> Refill ATF.

3. CHECK LINE PRESSURE

Check line pressure at the engine stall point. Refer to AT-47, "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-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
2. Disassemble A/T. Refer to AT-239.
3. Check the following.

- Oil pump assembly. Refer to AT-255, "Oil Pump".

OK or NG

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

5. DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to AT-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
2. Disassemble A/T. Refer to AT-239.
3. Check the following.

- Oil pump assembly. Refer to AT-255, "Oil Pump".
- Power train system. Refer to AT-239.
- Transmission case. Refer to AT-239.

OK or NG

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

6. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to AT-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
2. Check A/T fluid condition. Refer to AT-47, "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-56, "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-51, "Road Test".

OK or NG

OK >> **INSPECTION END**
NG >> GO TO 9.

9. CHECK TCM

1. Check TCM input/output signals. Refer to AT-80, "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-56, "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:0000000004657000

SYMPTOM:

The lock-up condition cannot be maintained for more than 30 seconds.

DIAGNOSTIC PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

With CONSULT-III
- Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III.

Without CONSULT-III
- Perform the self-diagnosis. Refer to AT-88, "Diagnosis Procedure without CONSULT-III".

Is any malfunction detected by self-diagnostic results?

YES >> Check the malfunctioning system. Refer to AT-81, "CONSULT-III Function (TRANSMISSION)", AT-88, "Diagnosis Procedure without CONSULT-III".
NO >> GO TO 2.

2. CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to AT-12, "Checking A/T Fluid".

OK or NG

OK >> GO TO 3.
NG >> Refill ATF.

3. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to AT-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
2. Check A/T fluid condition. Refer to AT-47, "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-56, "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-51, "Road Test".

OK or NG

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

6.CHECK TCM

1. Check TCM input/output signals. Refer to AT-80, "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-56, "Symptom Chart" (Symptom No. 25).

OK or NG

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

Lock-up Is Not Released

INFOID:0000000004657001

SYMPTOM:

The lock-up condition cannot be cancelled even after releasing the accelerator pedal.

DIAGNOSTIC PROCEDURE

1.CHECK SELF-DIAGNOSTIC RESULTS

With CONSULT-III
- Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III.

Without CONSULT-III
- Perform the self-diagnosis. Refer to AT-88, "Diagnosis Procedure without CONSULT-III".

Is any malfunction detected by self-diagnostic results?

YES >> Check the malfunctioning system. Refer to AT-81, "CONSULT-III Function (TRANSMISSION)", AT-88, "Diagnosis Procedure without CONSULT-III".
NO >> GO TO 2.

2.CHECK SYMPTOM

Check again. Refer to AT-51, "Road Test".

OK or NG

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

3.CHECK TCM

1. Check TCM input/output signals. Refer to AT-80, "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:0000000004657002

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-12, "Checking A/T Fluid".

OK or NG

OK >> GO TO 2.
NG >> Refill ATF.

2. CHECK SELF-DIAGNOSTIC RESULTS

With CONSULT-III
- Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III.

Without CONSULT-III
- Perform the self-diagnosis. Refer to AT-88, "Diagnosis Procedure without CONSULT-III".

Is any malfunction detected by self-diagnostic results?

YES >> Check the malfunctioning system. Refer to AT-81, "CONSULT-III Function (TRANSMISSION)", AT-88, "Diagnosis Procedure without CONSULT-III".
NO >> GO TO 3.

3. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to AT-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
2. Check A/T fluid condition. Refer to AT-47, "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-56, "Symptom Chart" (Symptom No. 72).

OK or NG

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

5. CHECK SYMPTOM

Check again. Refer to AT-51, "Road Test".

OK or NG

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

6. CHECK TCM

1. Check TCM input/output signals. Refer to AT-80, "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-56, "Symptom Chart" (Symptom No. 72).

OK or NG

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

Cannot Be Changed to Manual Mode

INFOID:0000000004657003

SYMPTOM:

Does not change to manual mode when manual shift gate is used.

DIAGNOSTIC PROCEDURE

1. MANUAL MODE SWITCH

Check manual mode switch. Refer to AT-151.

OK or NG

OK >> GO TO 2.
NG >> Repair or replace damaged parts.

2.CHECK SELF-DIAGNOSIS RESULTS

With CONSULT-III
• Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III.
Without CONSULT-III
• Perform the self-diagnosis. Refer to AT-88, "Diagnosis Procedure without CONSULT-III".

Is any malfunction detected by self-diagnostic results?

YES >> Check the malfunctioning system. Refer to AT-81, "CONSULT-III Function (TRANSMISSION)", AT-88, "Diagnosis Procedure without CONSULT-III".
NO >> **INSPECTION END**

A/T Does Not Shift: 5GR → 4GR

INFOID:0000000004657004

SYMPTOM:
When shifted from M5 to M4 position in manual mode, does not downshift from 5GR to 4GR.

DIAGNOSTIC PROCEDURE

1.CHECK SELF-DIAGNOSTIC RESULTS

With CONSULT-III
• Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III.
Without CONSULT-III
• Perform the self-diagnosis. Refer to AT-88, "Diagnosis Procedure without CONSULT-III".

Is any malfunction detected by self-diagnostic results?

YES >> Check the malfunctioning system. Refer to AT-81, "CONSULT-III Function (TRANSMISSION)", AT-88, "Diagnosis Procedure without CONSULT-III".
NO >> GO TO 2.

2.CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to AT-12, "Checking A/T Fluid".

OK or NG

OK >> GO TO 3.
NG >> Refill ATF.

3.CHECK A/T POSITION

Check A/T position. Refer to AT-195, "Checking of A/T Position".

OK or NG

OK >> GO TO 4.
NG >> Adjust A/T position. Refer to AT-195, "Adjustment of A/T Position".

4.MANUAL MODE SWITCH

Check manual mode switch. Refer to AT-151.

OK or NG

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

5.CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to AT-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
2. Check A/T fluid condition. Refer to AT-47, "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-56, "Symptom Chart" (Symptom No. 47).

OK or NG

OK >> GO TO 7.
NG >> Repair or replace damaged parts.

7.CHECK SYMPTOM

Check again. Refer to AT-51, "Road Test".

OK or NG

OK >> **INSPECTION END**
NG >> GO TO 8.

8.CHECK TCM

1. Check TCM input/output signals. Refer to AT-80, "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-56, "Symptom Chart" (Symptom No. 47).

OK or NG

OK >> GO TO 7.
NG >> Repair or replace damaged parts.

A/T Does Not Shift: 4GR → 3GR

INFOID:0000000004657005

SYMPTOM:

When shifted from M4 to M3 position in manual mode, does not downshift from 4GR to 3GR.

DIAGNOSTIC PROCEDURE

1.CHECK SELF-DIAGNOSTIC RESULTS

With CONSULT-III
- Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III.

Without CONSULT-III
- Perform the self-diagnosis. Refer to AT-88, "Diagnosis Procedure without CONSULT-III".

Is any malfunction detected by self-diagnostic results?

YES >> Check the malfunctioning system. Refer to AT-81, "CONSULT-III Function (TRANSMISSION)", AT-88, "Diagnosis Procedure without CONSULT-III".
NO >> GO TO 2.

2.CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to AT-12, "Checking A/T Fluid".

OK or NG

OK >> GO TO 3.
NG >> Refill ATF.

3.CHECK A/T POSITION

Check A/T position. Refer to AT-195, "Checking of A/T Position".

OK or NG

OK >> GO TO 4.
NG >> Adjust A/T position. Refer to AT-195, "Adjustment of A/T Position".

4.MANUAL MODE SWITCH

Check manual mode switch. Refer to AT-151.

OK or NG

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

5. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to AT-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
2. Check A/T fluid condition. Refer to AT-47, "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-56, "Symptom Chart" (Symptom No. 48).

OK or NG

OK >> GO TO 7.
NG >> Repair or replace damaged parts.

7. CHECK SYMPTOM

Check again. Refer to AT-51, "Road Test".

OK or NG

OK >> **INSPECTION END**
NG >> GO TO 8.

8. CHECK TCM

1. Check TCM input/output signals. Refer to AT-80, "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-56, "Symptom Chart" (Symptom No. 48).

OK or NG

OK >> GO TO 7.
NG >> Repair or replace damaged parts.

A/T Does Not Shift: 3GR → 2GR

INFOID:0000000004657006

SYMPTOM:

When shifted from M3 to M2 position in manual mode, does not downshift from 3GR to 2GR.

DIAGNOSTIC PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

With CONSULT-III
- Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III.

Without CONSULT-III
- Perform the self-diagnosis. Refer to AT-88, "Diagnosis Procedure without CONSULT-III".

Is any malfunction detected by self-diagnostic results?

YES >> Check the malfunctioning system. Refer to AT-81, "CONSULT-III Function (TRANSMISSION)", AT-88, "Diagnosis Procedure without CONSULT-III".
NO >> GO TO 2.

2. CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to AT-12, "Checking A/T Fluid".

OK or NG

OK >> GO TO 3.
NG >> Refill ATF.

3. CHECK A/T POSITION

Check A/T position. Refer to AT-195, "Checking of A/T Position".

OK or NG

OK >> GO TO 4.
NG >> Adjust A/T position. Refer to AT-195, "Adjustment of A/T Position".

4. MANUAL MODE SWITCH

Check manual mode switch. Refer to AT-151.

OK or NG

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

5. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to AT-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
2. Check A/T fluid condition. Refer to AT-47, "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-56, "Symptom Chart" (Symptom No. 49).

OK or NG

OK >> GO TO 7.
NG >> Repair or replace damaged parts.

7. CHECK SYMPTOM

Check again. Refer to AT-51, "Road Test".

OK or NG

OK >> **INSPECTION END**
NG >> GO TO 8.

8. CHECK TCM

1. Check TCM input/output signals. Refer to AT-80, "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-56, "Symptom Chart" (Symptom No. 49).

OK or NG

OK >> GO TO 7.
NG >> Repair or replace damaged parts.

A/T Does Not Shift: 2GR → 1GR

INFOID:0000000004657007

SYMPTOM:

When shifted from M_2 to M_1 position in manual mode, does not downshift from 2GR to 1GR.

DIAGNOSTIC PROCEDURE

1.CHECK SELF-DIAGNOSTIC RESULTS

With CONSULT-III
- Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III.

Without CONSULT-III
- Perform the self-diagnosis. Refer to AT-88, "Diagnosis Procedure without CONSULT-III".

Is any malfunction detected by self-diagnostic results?

YES >> Check the malfunctioning system. Refer to AT-81, "CONSULT-III Function (TRANSMISSION)", AT-88, "Diagnosis Procedure without CONSULT-III".
NO >> GO TO 2.

2.CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to AT-12, "Checking A/T Fluid".

OK or NG

OK >> GO TO 3.
NG >> Refill ATF.

3.CHECK A/T POSITION

Check A/T position. Refer to AT-195, "Checking of A/T Position".

OK or NG

OK >> GO TO 4.
NG >> Adjust A/T position. Refer to AT-195, "Adjustment of A/T Position".

4.MANUAL MODE SWITCH

Check manual mode switch. Refer to AT-151.

OK or NG

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

5.CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to AT-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
2. Check A/T fluid condition. Refer to AT-47, "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-56, "Symptom Chart" (Symptom No. 50).

OK or NG

OK >> GO TO 7.
NG >> Repair or replace damaged parts.

7.CHECK SYMPTOM

Check again. Refer to AT-51, "Road Test".

OK or NG

OK >> **INSPECTION END**
NG >> GO TO 8.

8.CHECK TCM

1. Check TCM input/output signals. Refer to AT-80, "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-56, "Symptom Chart" (Symptom No. 50).

OK or NG

OK >> GO TO 7.
NG >> Repair or replace damaged parts.

Vehicle Does Not Decelerate by Engine Brake

INFOID:0000000004657008

SYMPTOM:

No engine brake is applied when the gear is shifted from the 2GR to 1GR.

DIAGNOSTIC PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

With CONSULT-III
- Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-III.

Without CONSULT-III
- Perform the self-diagnosis. Refer to AT-88, "Diagnosis Procedure without CONSULT-III".

Is any malfunction detected by self-diagnostic results?

YES >> Check the malfunctioning system. Refer to AT-81, "CONSULT-III Function (TRANSMISSION)", AT-88, "Diagnosis Procedure without CONSULT-III".
NO >> GO TO 2.

2. CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to AT-12, "Checking A/T Fluid".

OK or NG

OK >> GO TO 3.
NG >> Refill ATF.

3. CHECK A/T POSITION

Check A/T position. Refer to AT-195, "Checking of A/T Position".

OK or NG

OK >> GO TO 4.
NG >> Adjust A/T position. Refer to AT-195, "Adjustment of A/T Position".

4. MANUAL MODE SWITCH

Check manual mode switch. Refer to AT-151.

OK or NG

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

5. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to AT-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
2. Check A/T fluid condition. Refer to AT-47, "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-56, "Symptom Chart" (Symptom No. 58).

OK or NG

OK >> GO TO 7.
NG >> Repair or replace damaged parts.

7. CHECK SYMPTOM

Check again. Refer to AT-51, "Road Test".

OK or NG

OK >> **INSPECTION END**
NG >> GO TO 8.

8. CHECK TCM

1. Check TCM input/output signals. Refer to AT-80, "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-56, "Symptom Chart" (Symptom No. 58).

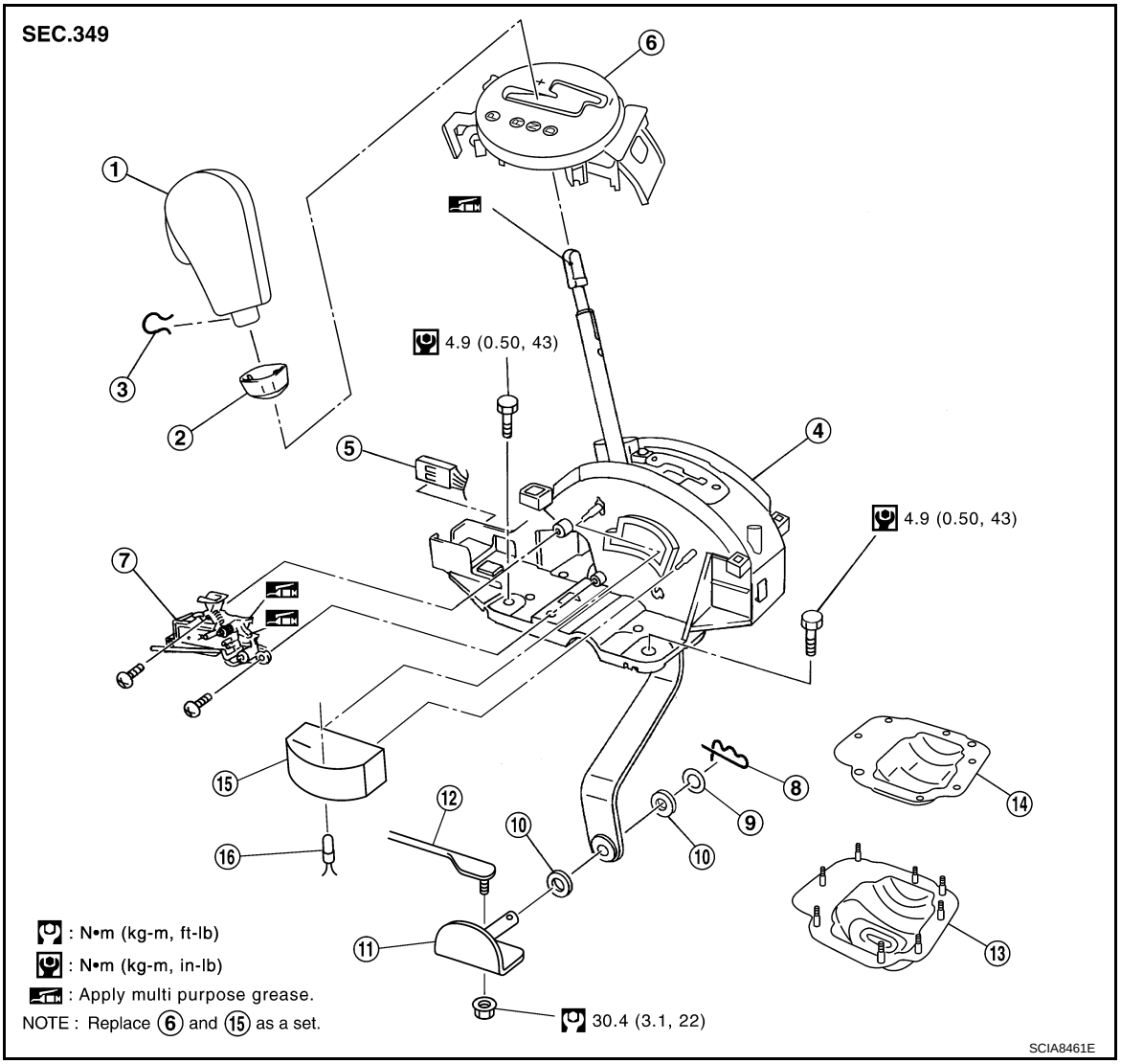
OK or NG

OK >> GO TO 7.
NG >> Repair or replace damaged parts.

SHIFT CONTROL SYSTEM

A/T Shift Selector Removal and Installation

INFOID:0000000004657009



1. Selector lever knob	2. Knob cover	3. Lock pin
4. A/T shift selector assembly	5. A/T shift selector harness connector	6. Position indicator plate
7. Shift lock solenoid and park position switch assembly	8. Snap pin	9. Conical washer
10. Plain washer	11. Bracket	12. Control rod
13. Dust cover	14. Dust cover plate	15. Bulb case
16. Position lamp		

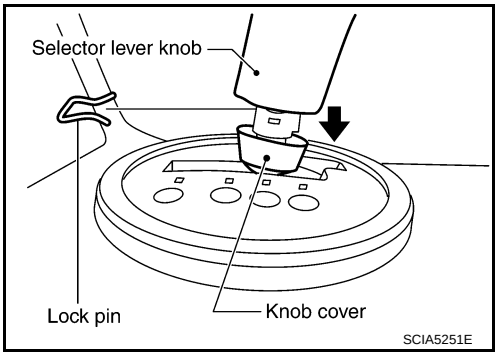
REMOVAL

CAUTION:

Make sure that parking brake is applied before removal/installation.

1. Disconnect lower lever of A/T shift selector and control rod.

2. Remove knob cover below selector lever downward.
3. Pull lock pin out of selector lever knob.
4. Remove selector lever knob.
5. Remove console finisher (A/T ring) and console finisher (A/T). Refer to IP-12, "Component Parts Drawing".
6. Remove center console. Refer to IP-12, "Component Parts Drawing".
7. Remove key interlock cable from A/T shift selector. Refer to AT-201, "Removal and Installation".
8. Disconnect A/T shift selector harness connector.
9. Remove A/T shift selector assembly.
   CAUTION:
   Do not impact, or damage propeller shaft tube.



INSTALLATION

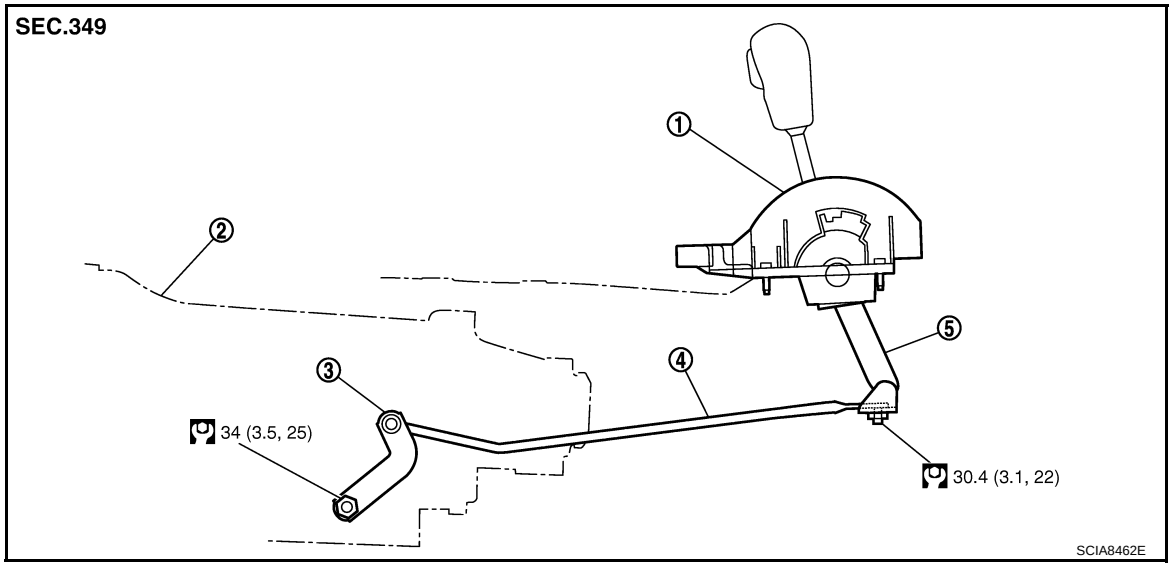
Note the following, and install in the reverse order of removal.

- After installation is completed, adjust and check A/T position. Refer to AT-195, "Adjustment of A/T Position", AT-195, "Checking of A/T Position".

Control Rod Removal and Installation

INFOID:0000000004657010

CONTROL ROD COMPONENTS

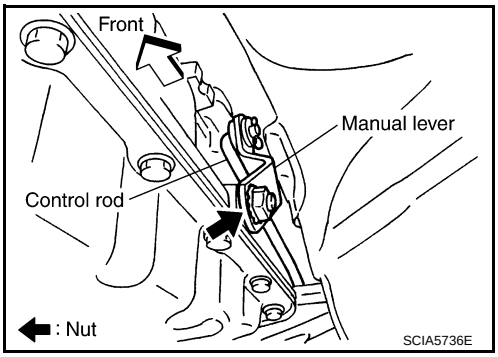


1. A/T shift selector assembly
2. A/T
3. Manual lever
4. Control rod
5. Lower lever

Refer to GI section to make sure icons (symbol marks) in the figure. Refer to GI-8, "Component".

REMOVAL

1. Disconnect lower lever of A/T shift selector and control rod.
2. Remove manual lever from A/T.
3. Remove control rod from vehicle.



INSTALLATION

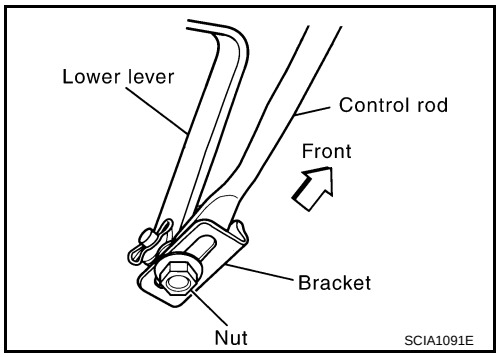
Note the following, and install in the reverse order of removal.

- After installation is completed, adjust and check A/T position. Refer to AT-195, "Adjustment of A/T Position" and AT-195, "Checking of A/T Position".

Adjustment of A/T Position

INFOID:0000000004657011

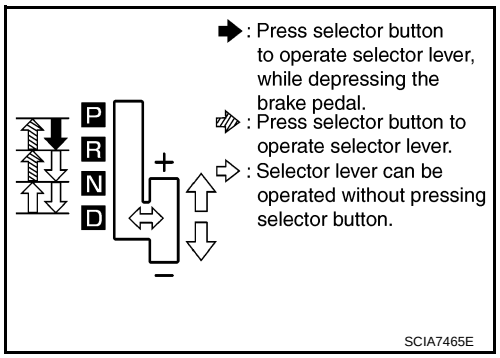
1. Loosen nut of control rod.
2. Place transmission range switch and selector lever in “P” position.
3. While pressing lower lever toward rear of vehicle (in “P” position direction), tighten nut to the specified torque. Refer toAT-194, "Control Rod Removal and Installation"



Checking of A/T Position

INFOID:0000000004657012

1. Place selector lever in “P” position, and turn ignition switch ON.
2. Make sure that selector lever can be shifted to other than “P” position when brake pedal is depressed. Also make sure that selector lever can be shifted from “P” position only when brake pedal is depressed.
3. Move the selector lever and check for excessive effort, sticking, noise or rattle.
4. Confirm the selector lever stops at each position with the feel of engagement when it is moved through all the positions. Check whether or not the actual position the selector lever is in matches the position shown by the shift position indicator and the transmission body.
5. The method of operating the lever to individual positions correctly should be as shown in the figure.
6. When selector button is pressed in “P”, “R”, or “N” position without applying forward/backward force to selector lever, check button operation for sticking.
7. 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.
8. Confirm the engine can only be started with the selector lever in the “P” and “N” positions. (With selector lever in the “P” position, engine can be started even when selector lever is moved forward and backward.)
9. Make sure that transmission is locked completely in “P” position.
10. When selector lever is set to manual shift gate, make sure that manual mode is displayed on combination meter.
    Shift selector lever to “+” and “-” sides, and check that set shift position changes.



A/T SHIFT LOCK SYSTEM

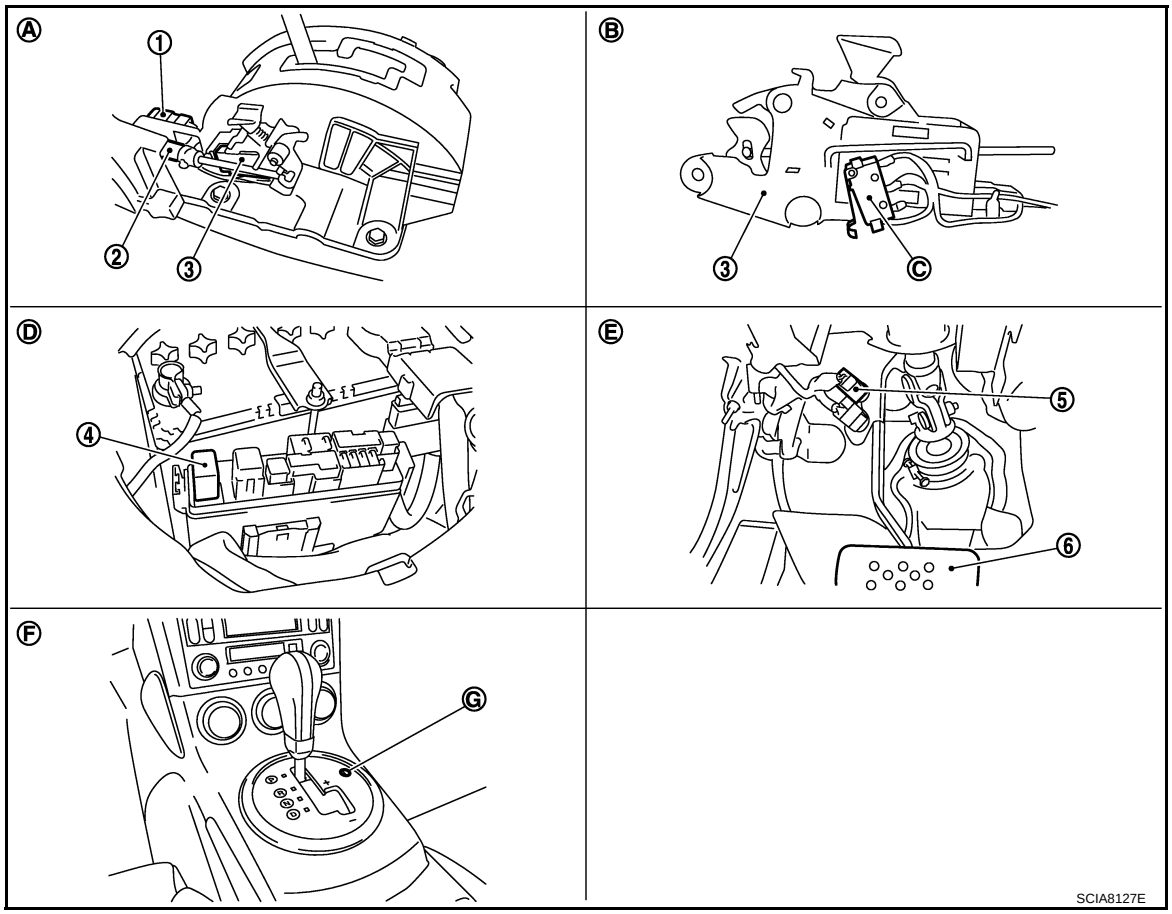
Description

INFOID:0000000004657013

- The mechanical key interlock mechanism also operates as a shift lock:
  With the ignition switch turned to ON, the selector lever cannot be shifted from “P” position to any other position unless the brake pedal is depressed.
  With the key removed, the selector lever cannot be shifted from “P” position to any other position.
  The key cannot be removed unless the selector lever is placed in “P” position.
- 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.

Shift Lock System Electrical Parts Location

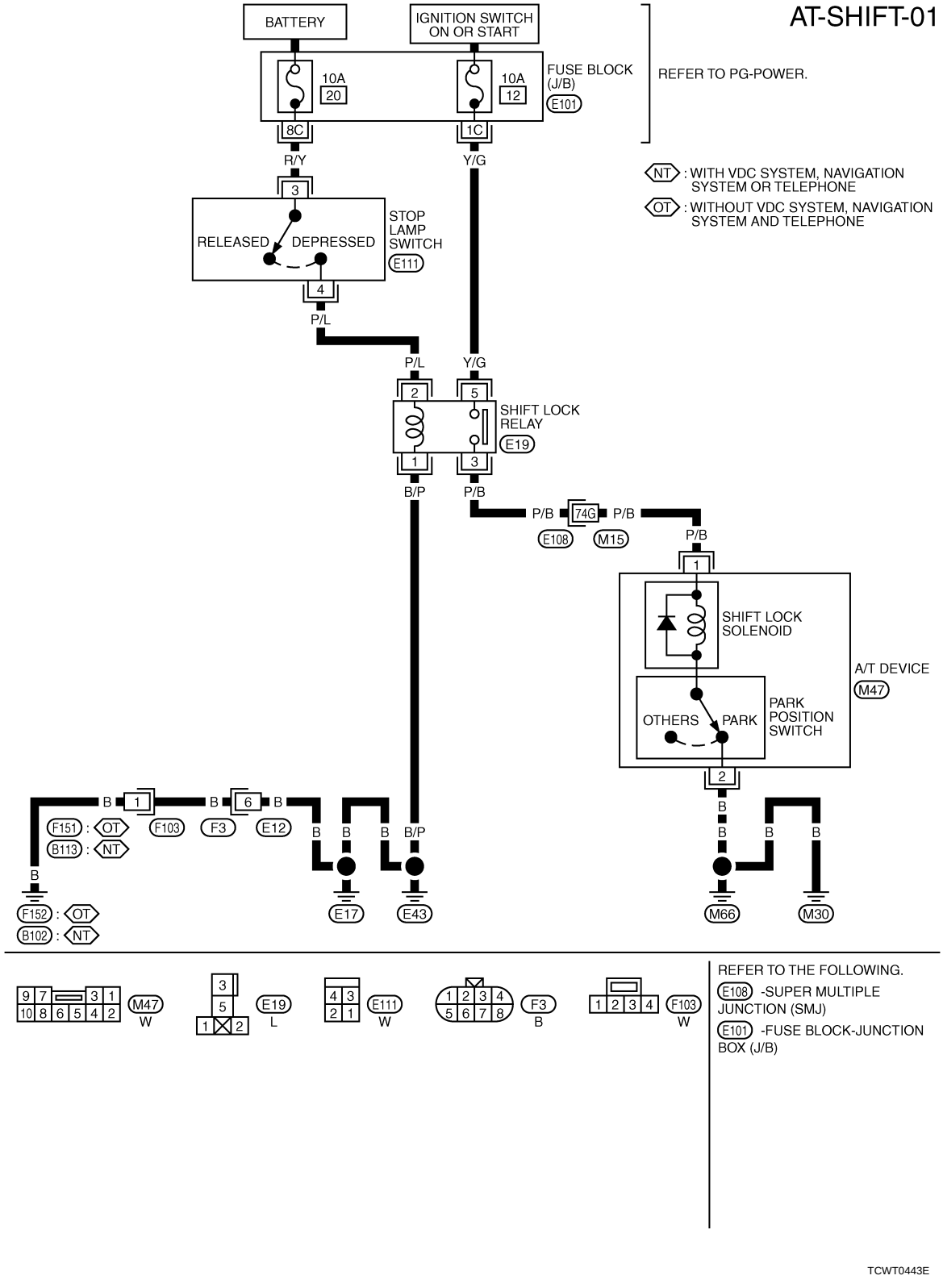
INFOID:0000000004657014



1. A/T shift selector harness connector
2. Key inter lock cable
3. Shift lock solenoid
4. Shift lock relay
5. Stop lamp switch
6. Brake pedal
A. A/T shift selector assembly
B. Shift lock solenoid, reverse side
C. Park position switch
D. Fuse, fusible link and relay box
E. Brake pedal, upper
F. A/T console finisher
G. Shift lock release button

Wiring Diagram - AT - SHIFT

INFOID:0000000004657015



Diagnosis Procedure

INFOID:0000000004657016

SYMPTOM 1:

- **Selector lever cannot be moved from “P” position with key in ON position and brake pedal applied.**
- **Selector lever can be moved from “P” position with key in ON position and brake pedal released.**
- **Selector lever can be moved from “P” position when key is removed from key cylinder.**

SYMPTOM 2:

- **Ignition key cannot be removed when selector lever is set to “P” position.**
- **Ignition key can be removed when selector lever is set to any position except “P” position.**

1.CHECK KEY INTERLOCK CABLE

Check the key interlock cable for damage.

OK or NG

OK >> GO TO 2.
NG >> Replace key interlock cable. Refer to AT-201.

2.CHECK SELECTOR LEVER POSITION

Check the selector lever position for damage. Refer to AT-195, "Checking of A/T Position".

OK or NG

OK >> GO TO 3.
NG >> Check selector lever. Refer to AT-195, "Adjustment of A/T Position".

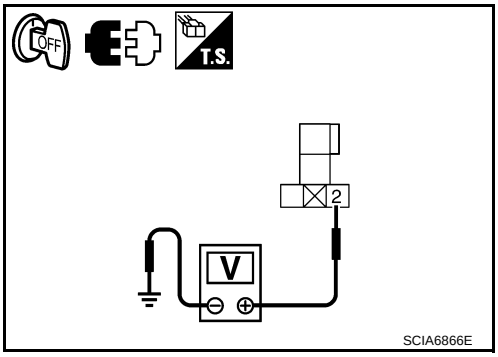
3.CHECK POWER SOURCE

1. Turn ignition switch OFF.
2. Disconnect shift lock relay.
3. Check voltage between shift lock relay E19 terminal 2 and ground.

Voltage

Brake pedal depressed: Battery voltage

Brake pedal released: 0 V



OK or NG

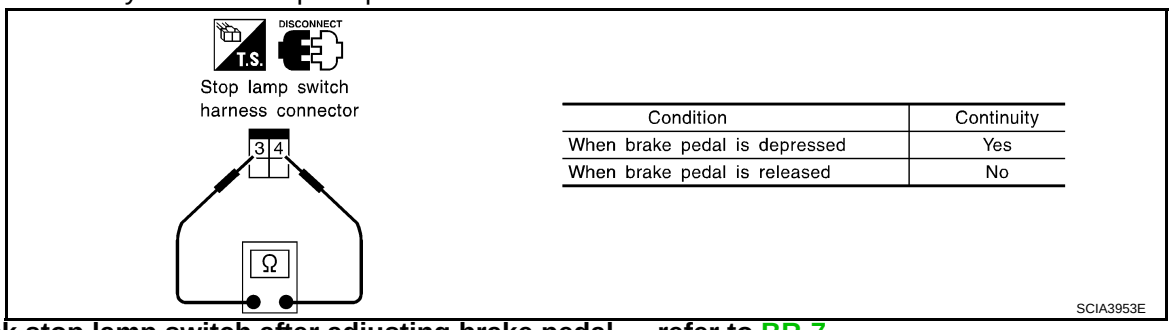
OK >> GO TO 5.
NG >> GO TO 4.

4.DETECT MALFUNCTIONING ITEM

Check the following.

- Harness for short or open between battery and stop lamp switch harness connector E111 terminal 3.
- Harness for short or open between stop lamp switch harness connector E111 terminal 4 and shift lock relay E19 terminal 2.
- 10 A fuse [No. 20, located in the fuse block (J/B)].
- Stop lamp switch.

- Check continuity between stop lamp switch harness connector E111 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-7.

OK or NG

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

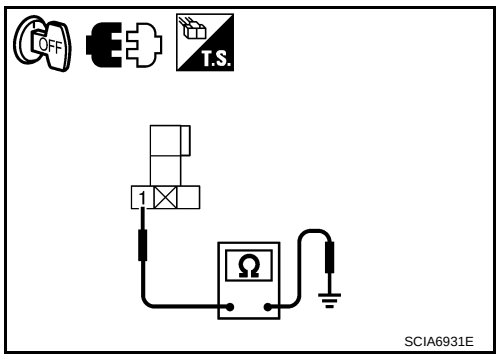
5.CHECK GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect shift lock relay.
3. Check continuity between shift lock relay E19 terminal 1 and ground.

CAUTION:
Connect test probe (BLACK) to shift lock relay, and test probe (RED) to ground.

Continuity should exist.

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



OK or NG

OK >> GO TO 6.
NG >> Repair open circuit or short to ground or short to power in harness or connectors.

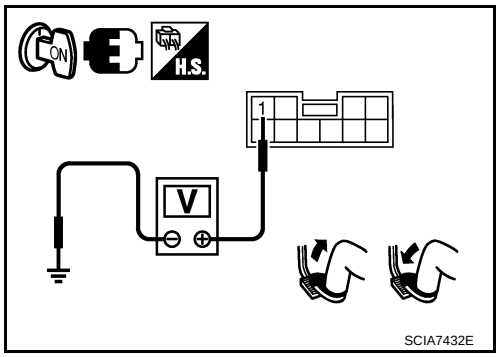
6. CHECK INPUT SIGNAL A/T SHIFT SELECTOR

1. Turn ignition switch ON.
2. A/T shift selector is set in “P” position.
3. Check voltage between A/T shift selector harness connector M47 terminal 1 and ground.

Voltage

Brake pedal depressed: Battery voltage

Brake pedal released: 0 V



OK or NG

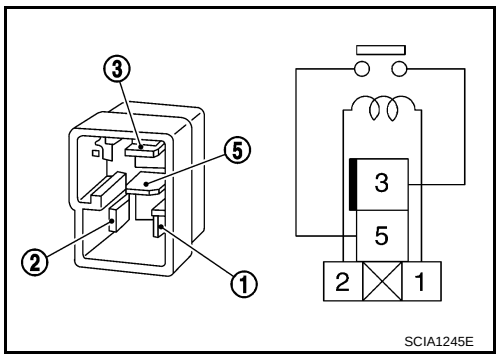
OK >> GO TO 8.
NG >> GO TO 7.

7. DETECT MALFUNCTIONING ITEM

Check the following.
- Harness for short or open between ignition switch and shift lock relay E19 terminal 5.
- Harness for short or open between shift lock relay E19 terminal 3 and A/T shift selector harness connector M47 terminal 1.
- 10 A fuse [No. 12, located in the fuse block (J/B)].
- Ignition switch (Refer to PG-4).
- Shift lock relay.

- Check continuity between shift lock relay E19 terminal 3 and 5.

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

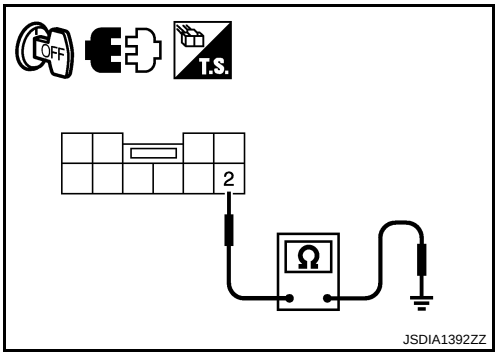


OK or NG

OK >> GO TO 8.
NG >> Repair or replace damaged parts.

8. CHECK GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect A/T shift selector harness connector.
3. Check continuity between A/T shift selector harness connector M47 terminal 2 and ground.



Continuity should exist.

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

OK or NG

OK >> GO TO 9.
NG >> Repair open circuit or short to ground or short to power in harness or connectors.

9. CHECK SHIFT LOCK SOLENOID AND PARK POSITION SWITCH

1. Connect A/T shift selector harness connector.
2. Turn ignition switch ON.
3. Selector lever is set in “P” position.
4. Check operation.

Condition	Brake pedal	Operation
When ignition switch is turned to “ON” position and selector lever is set in “P” position.	Depressed	Yes
	Released	No

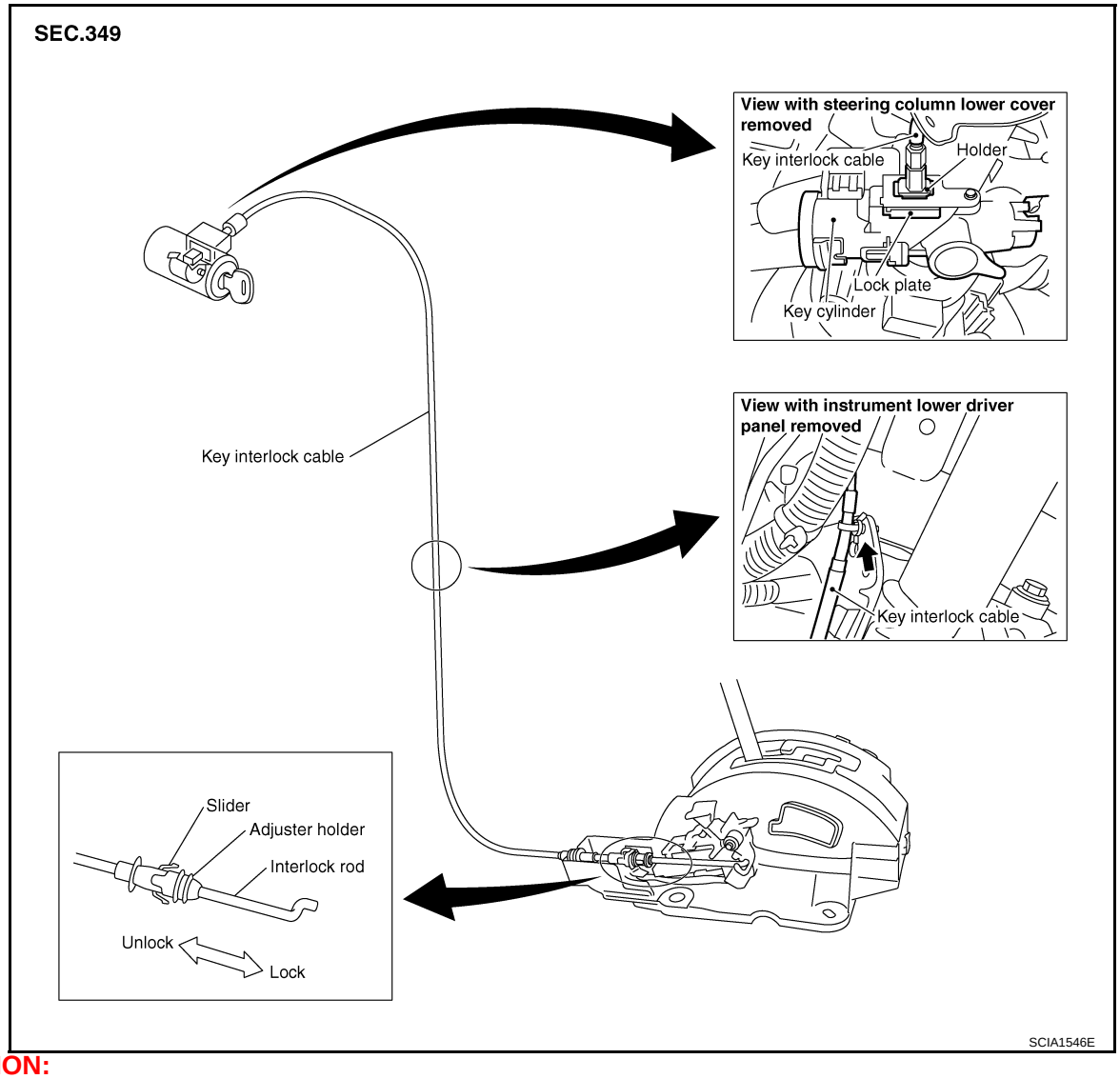
OK or NG

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

KEY INTERLOCK CABLE

Component

INFOID:0000000004657017



CAUTION:

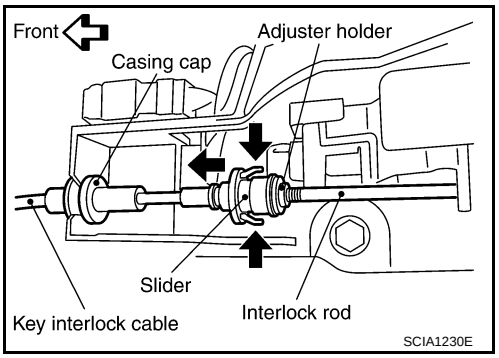
- **Install key interlock cable in such a way that it will not be damaged by sharp bends, twists or interference with adjacent parts.**
- **After installing key interlock cable to control device, make sure that casing cap and bracket are firmly secured in their positions. If casing cap be removed with an external load of less than 39.2 N (4.0 kg, 8.8 lb), replace key interlock cable with new one.**

Removal and Installation

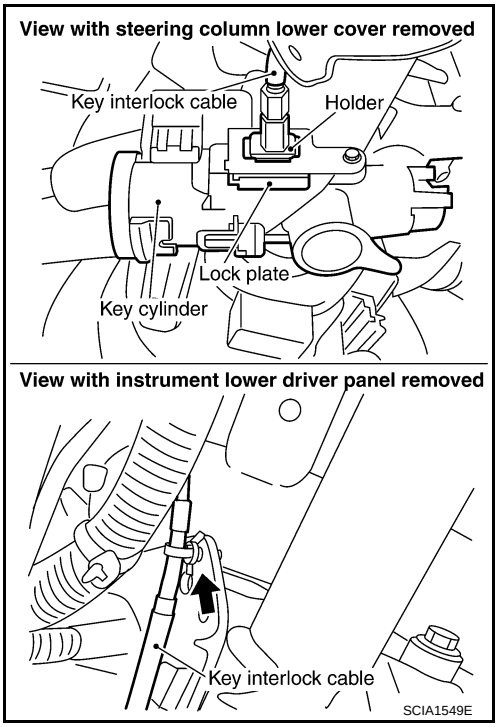
INFOID:0000000004657018

REMOVAL

1. Unlock slider by squeezing lock tabs on slider from adjuster holder.
2. Remove casing cap from bracket of A/T shift selector assembly and remove interlock rod from adjuster holder.

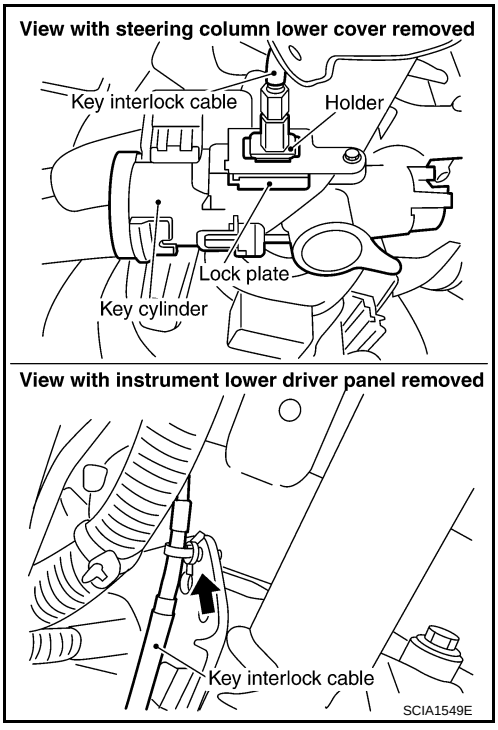


3. Remove lock plate from key cylinder.
4. Remove holder from key cylinder and remove key interlock cable.

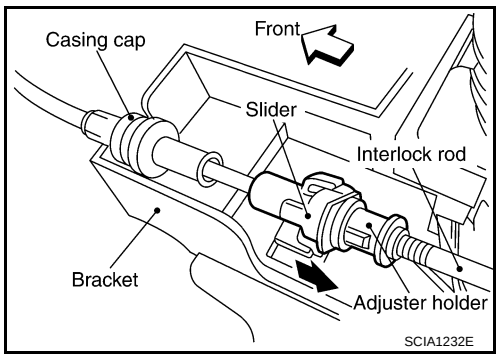


INSTALLATION

1. Set holder of key interlock cable to key cylinder and install lock plate.
   CAUTION:
   Do not reuse the lock plate
2. Clamp key interlock cable and fix to key interlock cable with band.
3. Turn ignition key to lock position.
4. Set selector lever to “P” position.



5. Insert interlock rod into adjuster holder.
6. Install casing cap to bracket.
7. Move slider in order to fix adjuster holder to interlock rod.
   CAUTION:
   Do not touch any parts except slider. Do not add any force to slider except force toward slider.

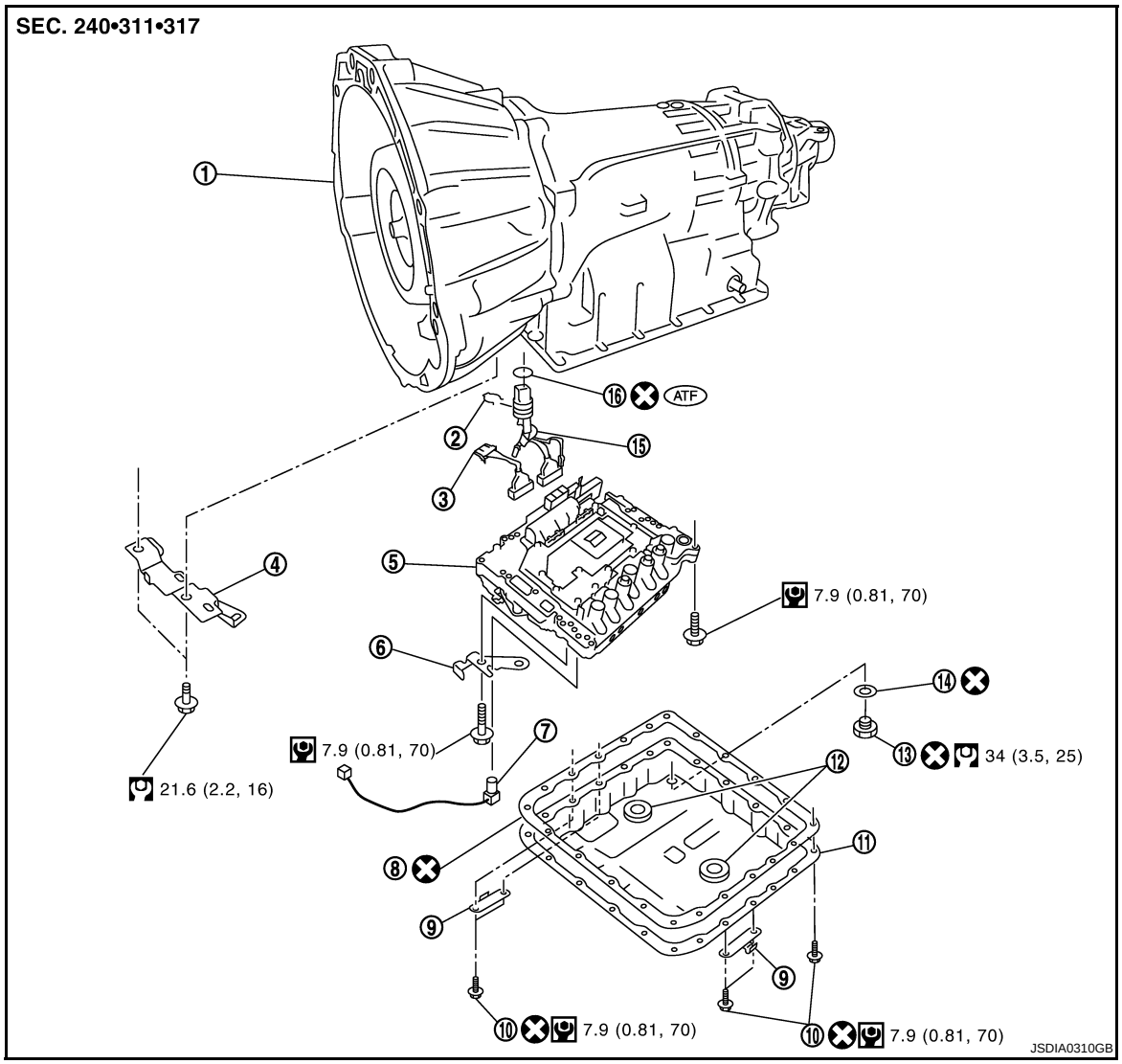


ON-VEHICLE SERVICE

Control Valve with TCM and A/T Fluid Temperature Sensor 2

INFOID:0000000004657019

COMPONENTS



1. A/T
2. Snap ring
3. Sub-harness
4. Bracket
5. Control valve with TCM
6. Bracket
7. A/T fluid temperature sensor 2
8. Oil pan gasket
9. Clip
10. Oil pan mounting bolt
11. Oil pan
12. Magnet
13. Drain plug
14. Drain plug gasket
15. Terminal cord assembly
16. O-ring

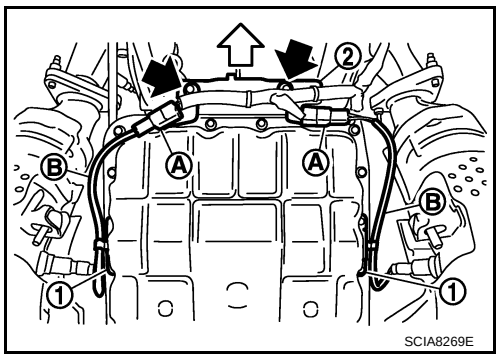
Refer to GI section to make sure icons (symbol marks) in the figure. Refer to GI-8, "Component".

CONTROL VALVE WITH TCM ASSEMBLY REMOVAL AND INSTALLATION

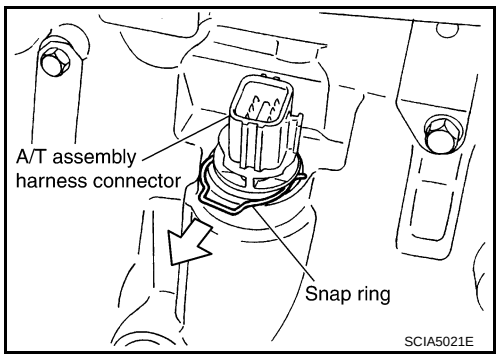
Removal

1. Disconnect the battery cable from the negative terminal.
2. Drain ATF through drain hole.
3. Remove exhaust mounting bracket. Refer to EX-3, "Removal and Installation".

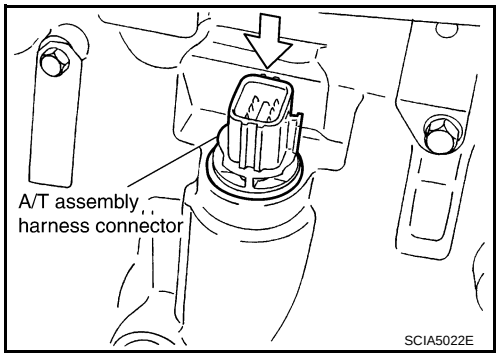
4. Disconnect heated oxygen sensor 2 harness connectors (A).
   - ⇦: Vehicle front
   - ⬅: Bolt
5. Remove heated oxygen sensor 2 harness (B) from clips (1).
6. Remove bracket (2) from transmission assembly.
7. Disconnect A/T assembly harness connector.



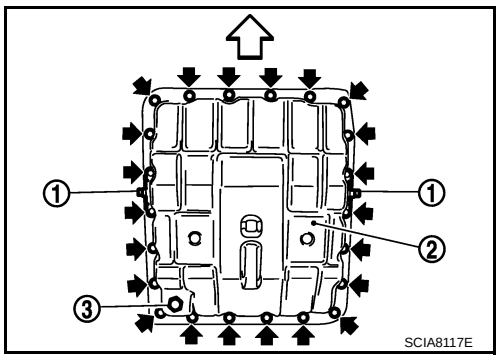
8. Remove snap ring from A/T assembly harness connector.



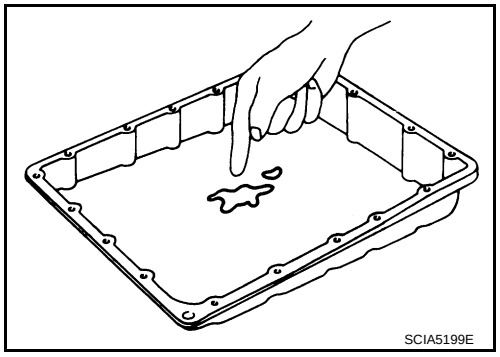
9. Push A/T assembly harness connector.
   CAUTION:
   Be careful not to damage connector.



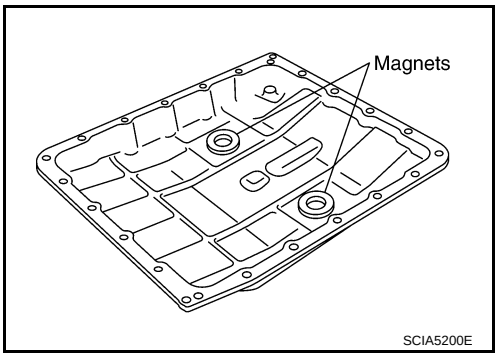
10. Remove clips (1), oil pan (2) and oil pan gasket.
    - ⇦: Vehicle front
    - ⬅: Oil pan mounting bolt
    - Drain bolt (3)



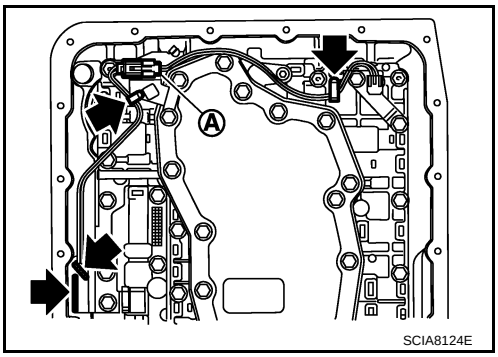
11. Check foreign materials in oil pan to help determine causes of malfunction. If the ATF is very dark, smells burned, or contains foreign particles, the frictional material (clutches, band) may need replacement. A tacky film that will not wipe clean indicates varnish build up. Varnish can cause valves, servo, and clutches to stick and can inhibit pump pressure.
    - **If frictional material is detected, perform A/T fluid cooler cleaning. Refer to AT-14, "A/T Fluid Cooler Cleaning".**



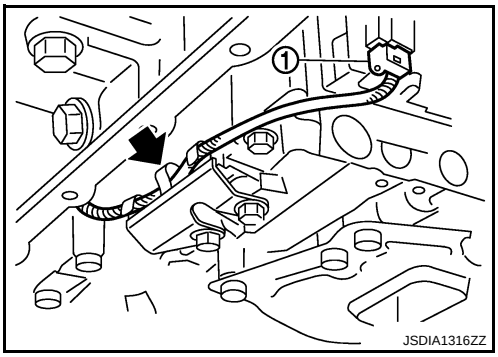
12. Remove magnets from oil pan.



13. Disconnect A/T fluid temperature sensor 2 connector (A).
CAUTION:
Be careful not to damage connector.
14. Straighten terminal clips (⬅) to free terminal cord assembly and A/T fluid temperature sensor 2 harness.

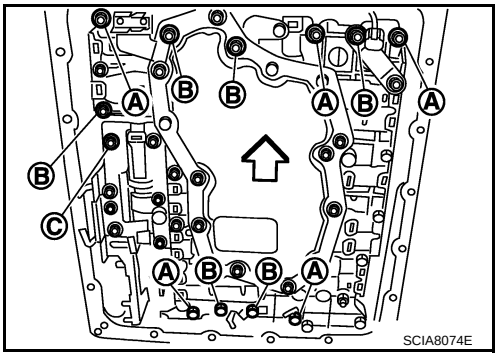


15. Straighten terminal clip (⬅) to free output speed sensor harness.
16. Disconnect output speed sensor connector (1).
CAUTION:
Be careful not to damage connector.

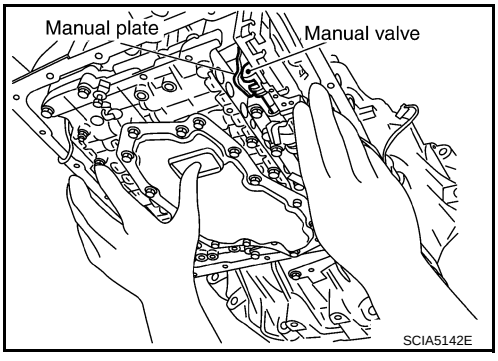


17. Remove bolts (A), (B) and (C) from control valve with TCM.
• ⇦: Vehicle front

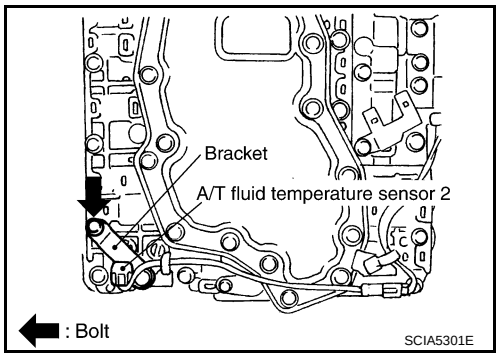
Bolt symbol	Length (in)	Number of bolts
A	42 (1.65)	5
B	55 (2.17)	6
C	40 (1.57)	1



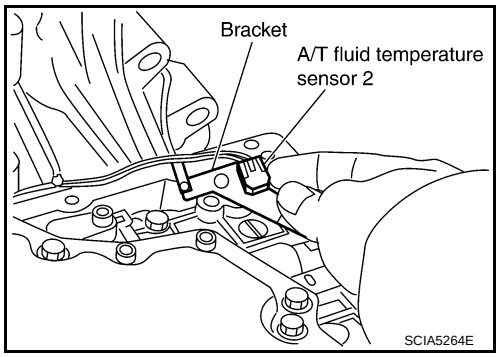
18. Remove control valve with TCM from transmission case.
CAUTION:
When removing, be careful with the manual valve notch and manual plate height. Remove it vertically.



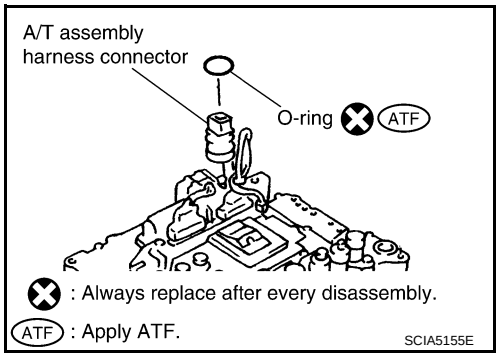
19. Remove A/T fluid temperature sensor 2 with bracket from control valve with TCM.



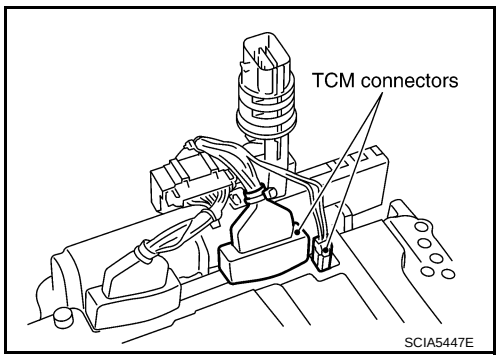
20. Remove bracket from A/T fluid temperature sensor 2.



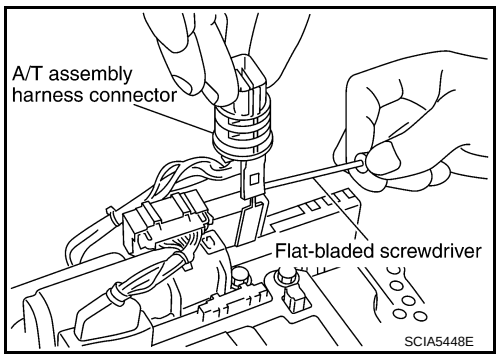
21. Remove O-ring from A/T assembly harness connector.



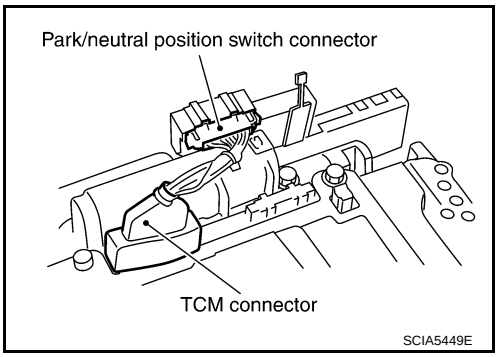
22. Disconnect TCM connectors.
CAUTION:
Be careful not to damage connectors.



23. Remove A/T assembly harness connector from control valve with TCM using a flat-bladed screwdriver.

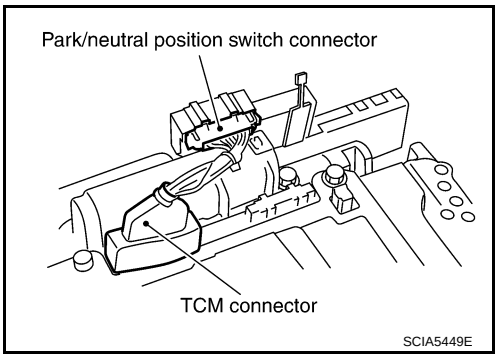


24. Disconnect TCM connector (1) and transmission range switch connector (2).
CAUTION:
Be careful not to damage connectors.

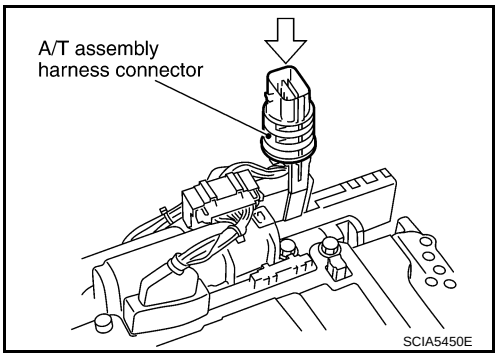


Installation
CAUTION:
After completing installation, check A/T fluid leakage and A/T fluid level. Refer to AT-12, "Checking A/T Fluid".

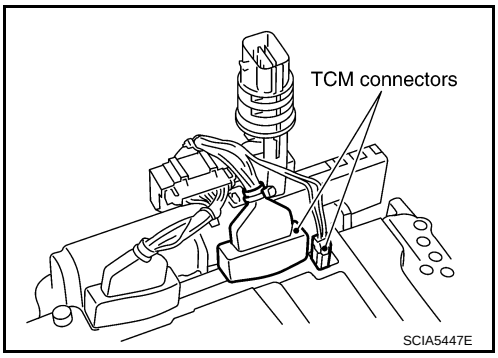
1. Connect TCM connector (1) and transmission range switch connector (2).



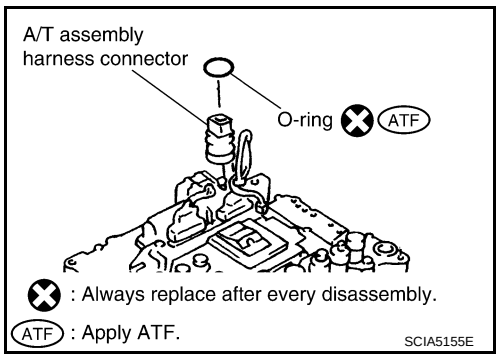
2. Install A/T assembly harness connector from control valve with TCM.



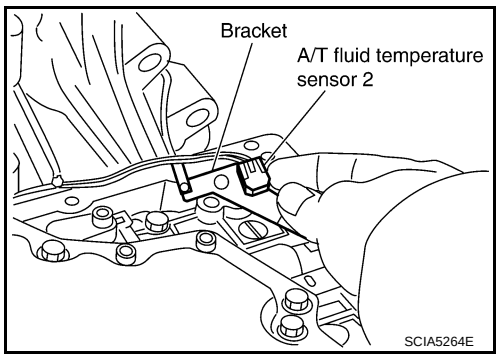
3. Connect TCM connectors.



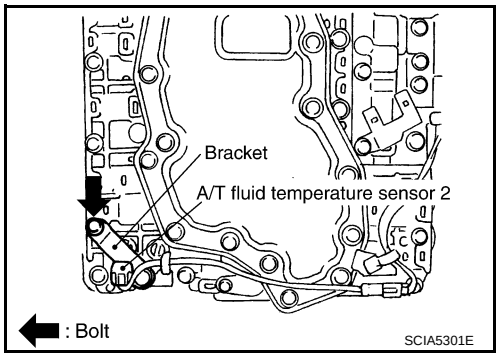
4. Install O-ring in A/T assembly harness connector.
CAUTION:
- **Do not reuse O-ring.**
- **Apply ATF to O-ring.**



5. Install A/T fluid temperature sensor 2 to bracket.



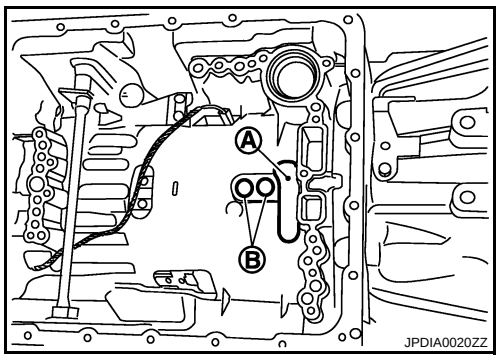
6. Install A/T fluid temperature sensor 2 (with bracket) in control valve with TCM, and then tighten A/T fluid temperature sensor 2 bolt to the specified torque. Refer to "COMPONENTS".
CAUTION:
Adjust bolt hole of bracket to bolt hole of control valve with TCM.



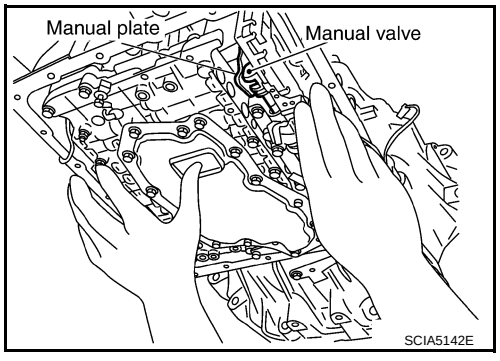
7. Install control valve with TCM in transmission case.
CAUTION:
- **Make sure that input speed sensor securely installs input speed sensor hole (B).**

  A : Brake band

- **Hang down output speed 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.**

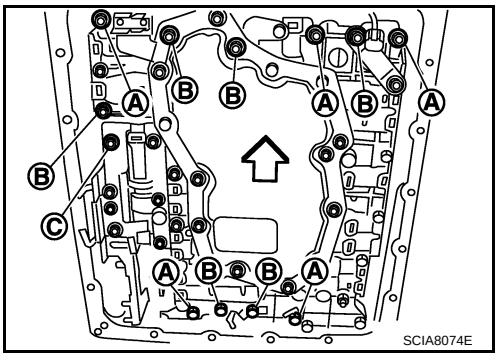


- **Assemble it so that manual valve cutout is engaged with manual plate projection.**

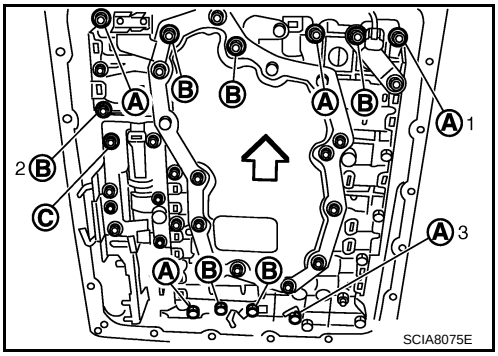


8. Install bolts (A), (B) and (C) in control valve with TCM.
   • ⇦: Vehicle front

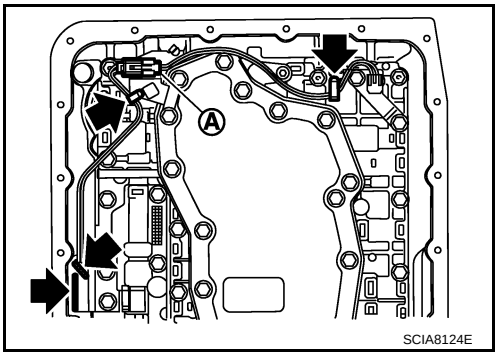
Bolt symbol	Length mm (in)	Number of bolts
A	42 (1.65)	5
B	55 (2.17)	6
C	40 (1.57)	1



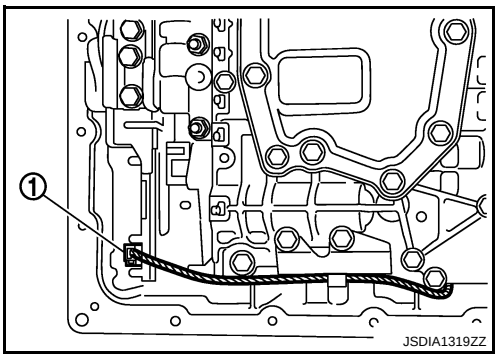
9. Tighten bolt 1, 2 and 3 temporarily to prevent dislocation. After that tighten them in order (1 → 2 → 3), and then tighten other bolts, and then tighten control valve with TCM mounting bolts to the specified torque. Refer to "COMPONENTS".
   • ⇦: Vehicle front



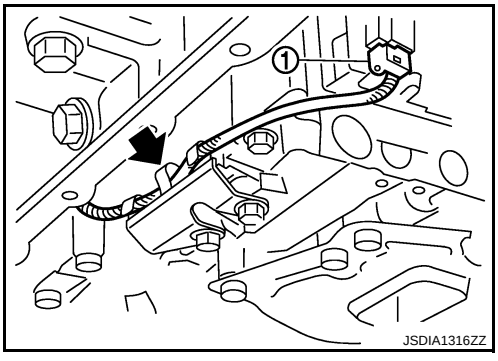
10. Connect A/T fluid temperature sensor 2 connector (A).
11. Securely fasten terminal cord assembly and A/T fluid temperature sensor 2 harness with terminal clips (⬅).



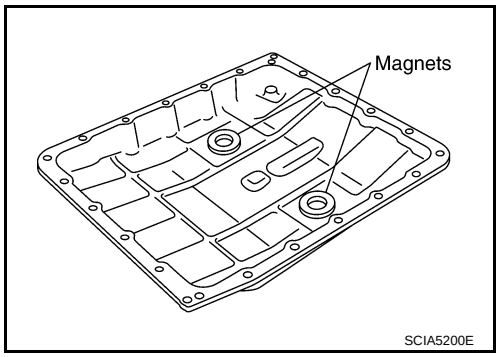
12. Connect output speed sensor connector (1).



13. Securely fasten output speed sensor (1) harness with terminal clip.



14. Install magnets in oil pan.



15. Install oil pan to transmission case.

a. Install oil pan gasket to oil pan.

CAUTION:

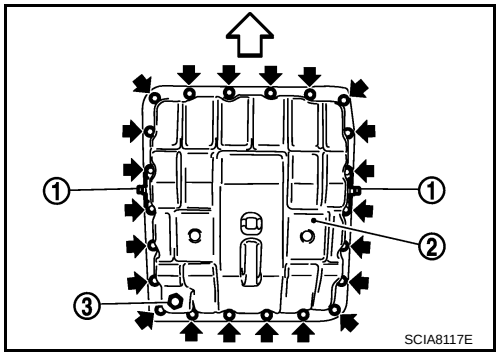
- **Do not reuse oil pan gasket.**
- **Install it in the direction to align hole positions.**
- **Complete remove all moisture, oil and old gasket, etc. from oil pan gasket mounting surface.**

b. Install oil pan (2) (with oil pan gasket) and clips (1) to transmission case.

- ⇦: Vehicle front
- ⬅: Oil pan mounting bolt

CAUTION:

- **Install it so that drain plug (3) comes to the position as shown in the figure.**
- **Be careful not to pinch harness.**
- **Complete remove all moisture, oil and old gasket, etc. from oil pan mounting surface.**



c. Tighten oil pan mounting bolts to the specified torque in numerical order shown in the figure after temporarily tightening them. Refer to "COMPONENTS".

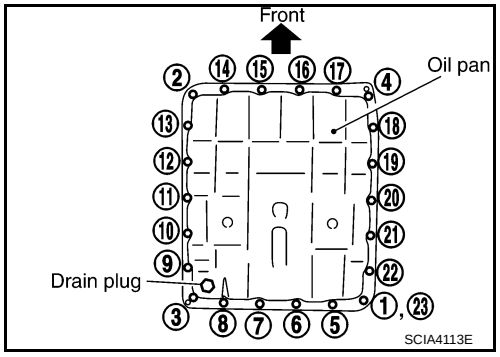
CAUTION:

Do not reuse oil pan mounting bolts.

16. Install drain plug gasket and drain plug to oil pan, and then tighten drain plug to the specified torque. Refer to "COMPONENTS".

CAUTION:

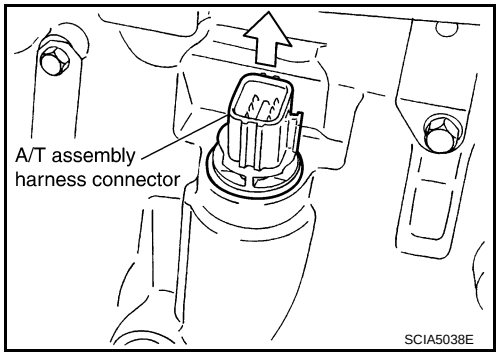
Do not reuse drain plug gasket.



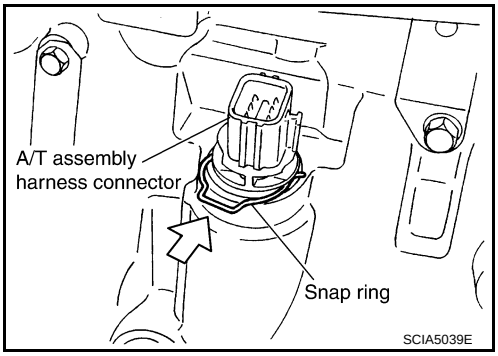
17. Pull up A/T assembly harness connector.

CAUTION:

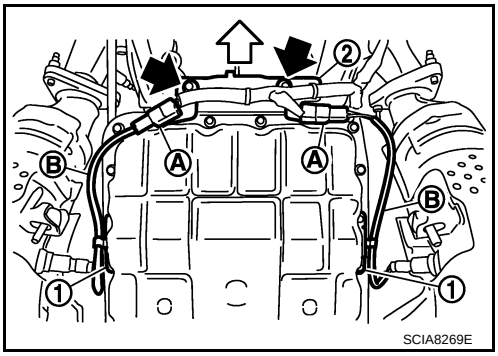
Be careful not to damage connector.



18. Install snap ring to A/T assembly harness connector.
19. Connect A/T assembly harness connector.



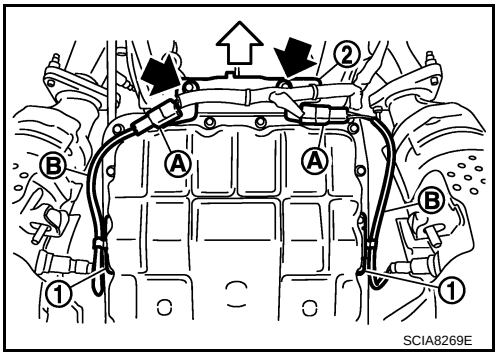
20. Install bracket (2) from transmission assembly. Refer to "COMPONENTS".
    - ⇦: Vehicle front
    - ⬅: Bolt
21. Install heated oxygen sensor 2 harness (B) from clips (1).
22. Connect heated oxygen sensor 2 harness connectors (A).
23. Install exhaust mounting bracket. Refer to EX-3, "Removal and Installation".
24. Pour ATF into A/T assembly. Refer to AT-12, "Changing A/T Fluid".
25. Connect the battery cable to the negative terminal.



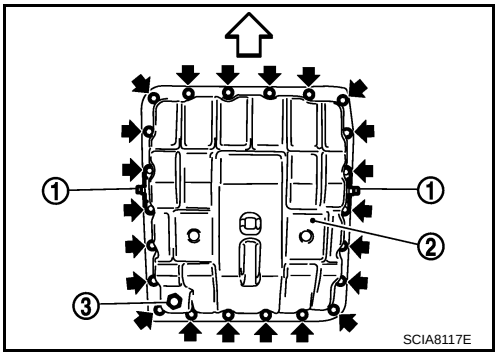
A/T FLUID TEMPERATURE SENSOR 2 REMOVAL AND INSTALLATION

Removal

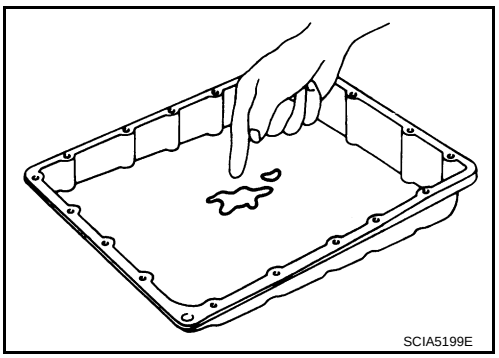
1. Disconnect the battery cable from the negative terminal.
2. Drain ATF through drain hole.
3. Remove exhaust mounting bracket. Refer to EX-3, "Removal and Installation".
4. Disconnect heated oxygen sensor 2 harness connectors (A).
    - ⇦: Vehicle front
    - ⬅: Bolt
5. Remove heated oxygen sensor 2 harness (B) from clips (1).
6. Remove bracket (2) from transmission assembly.



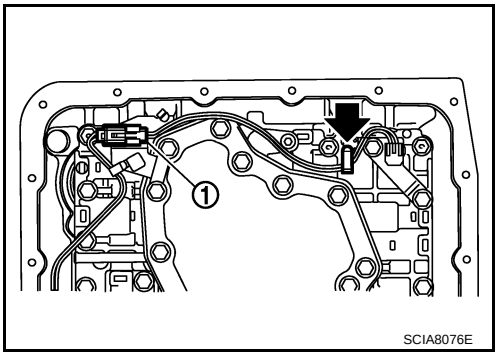
7. Remove clips (1), oil pan (2) and oil pan gasket.
    - ⇦: Vehicle front
    - ⬅: Oil pan mounting bolt
    - Drain plug (3)



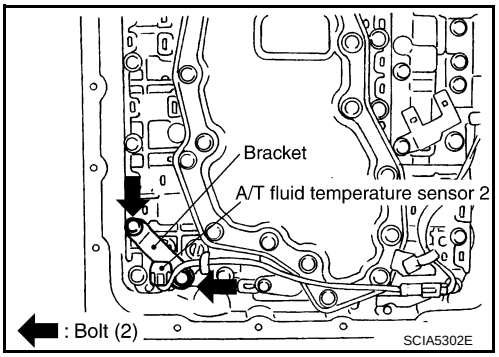
8. Check foreign materials in oil pan to help determine causes of malfunction. If the ATF is very dark, smells burned, or contains foreign particles, the frictional material (clutches, band) may need replacement. A tacky film that will not wipe clean indicates varnish build up. Varnish can cause valves, servo, and clutches to stick and can inhibit pump pressure.
   - **If frictional material is detected, perform A/T fluid cooler cleaning. Refer to AT-14, "A/T Fluid Cooler Cleaning".**



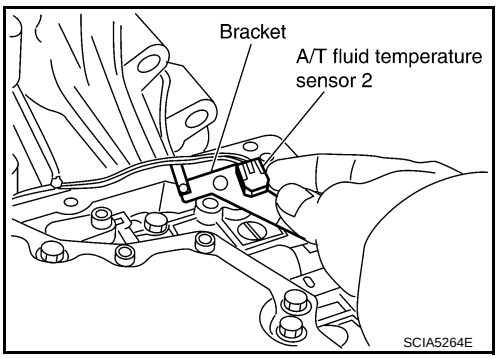
9. Disconnect A/T fluid temperature sensor 2 connector (1).
   CAUTION:
   Be careful not to damage connector.
10. Straighten terminal clip (⬅) to free A/T fluid temperature sensor 2 harness.



11. Remove A/T fluid temperature sensor 2 with bracket from control valve with TCM.



12. Remove bracket from A/T fluid temperature sensor 2.

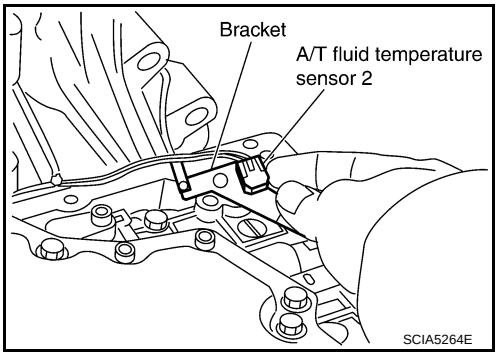


Installation

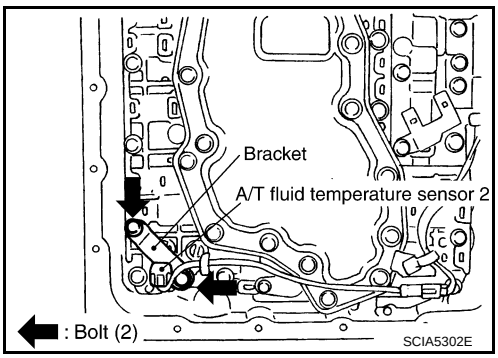
CAUTION:

After completing installation, check A/T fluid leakage and A/T fluid level. Refer to AT-12, "Checking A/T Fluid".

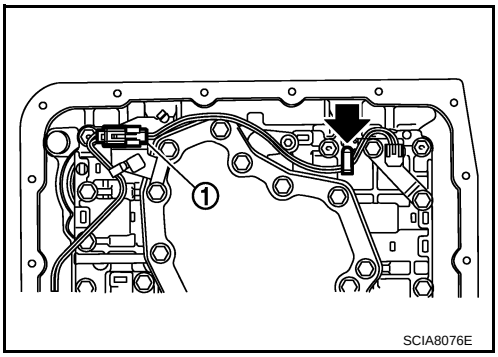
1. Install A/T fluid temperature sensor 2 to bracket.



2. Install A/T fluid temperature sensor 2 (with bracket) in control valve with TCM, and then tighten A/T fluid temperature sensor 2 bolt to the specified torque. Refer to "COMPONENTS".



3. Connect A/T fluid temperature sensor 2 connector (1).
4. Securely fasten A/T fluid temperature sensor 2 harness with terminal clip (⬅).



5. Install oil pan to transmission case.

a. Install oil pan gasket to oil pan.

CAUTION:

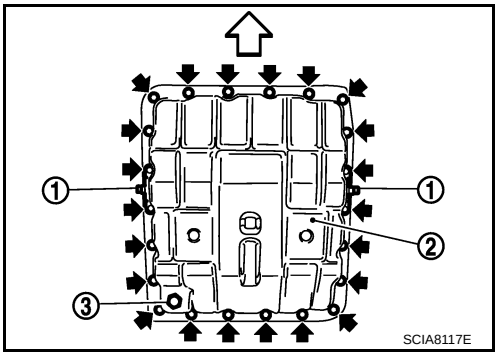
- **Do not reuse oil pan gasket.**
- **Install it in the direction to align hole positions.**
- **Complete remove all moisture, oil and old gasket, etc. from oil pan gasket mounting surface.**

b. Install oil pan (2) (with oil pan gasket) and clips (1) to transmission case.

- ⇦: Vehicle front
- ⬅: Oil pan mounting bolt

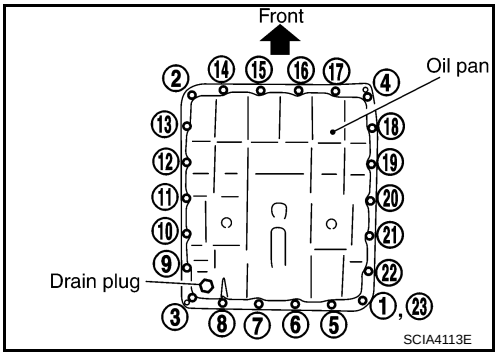
CAUTION:

- **Install it so that drain plug (3) comes to the position as shown in the figure.**
- **Be careful not to pinch harness.**
- **Complete remove all moisture, oil and old gasket, etc. from oil pan mounting surface.**

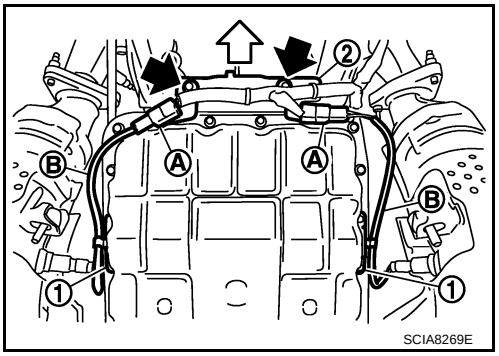


c. Tighten oil pan mounting bolts to the specified torque in numerical order shown in the figure after temporarily tightening them. Refer to "COMPONENTS".
CAUTION:
Do not reuse oil pan mounting bolts.

6. Install drain plug gasket and drain plug to oil pan, and then tighten drain plug to the specified torque. Refer to "COMPONENTS".
CAUTION:
Do not reuse drain plug gasket.



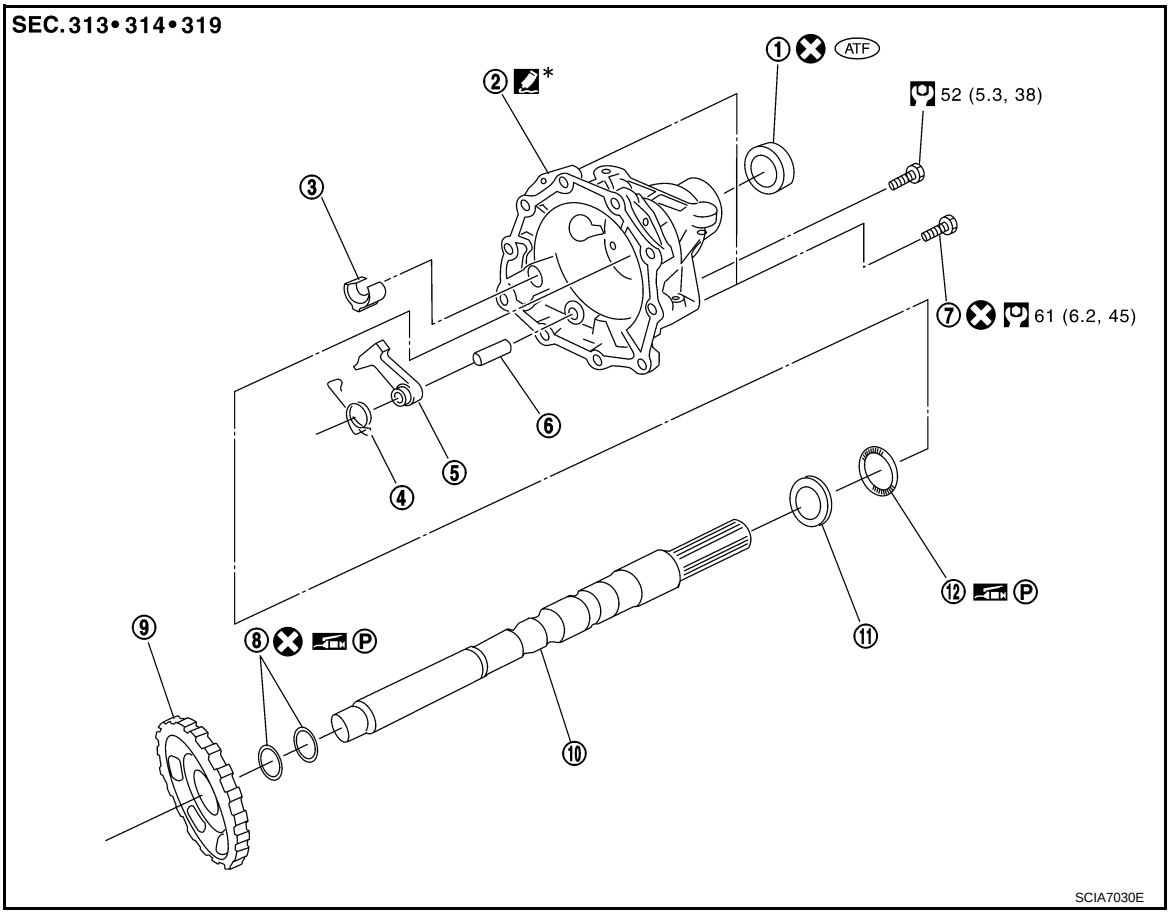
7. Install bracket (2) from transmission assembly. Refer to "COMPONENTS".
   - ⇦: Vehicle front
   - ⬅: Bolt
8. Install heated oxygen sensor 2 harness (B) from clips (1).
9. Connect heated oxygen sensor 2 harness connectors (A).
10. Install exhaust mounting bracket. Refer to EX-3, "Removal and Installation".
11. Pour ATF into A/T assembly. Refer to AT-12, "Changing A/T Fluid".
12. Connect the battery cable to the negative terminal.



Parking Component

INFOID:0000000004657020

COMPONENTS



1. Rear oil seal	2. Rear extension	3. Parking actuator support
4. Return spring	5. Parking pawl	6. Pawl shaft
7. Self-sealing bolt	8. Seal ring	9. Parking gear
10. Output shaft	11. Bearing race	12. Needle bearing

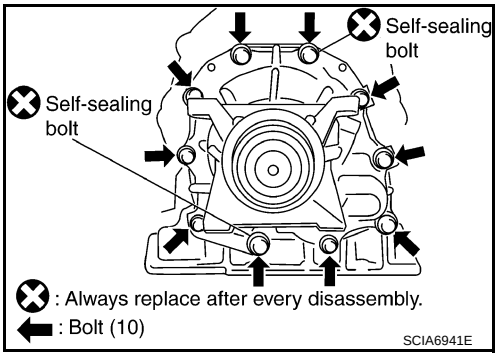
Refer to GI section to make sure icons (symbol marks) in the figure. Refer to GI-8, "Component".

However, refer to the following for others.

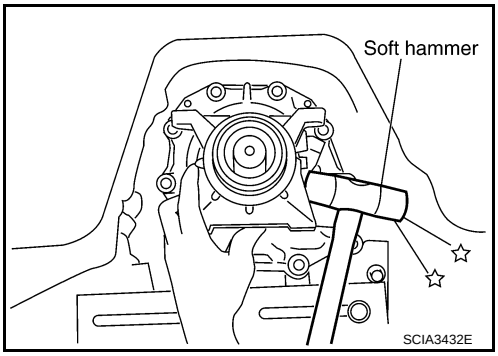
: Apply Genuine Anaerobic Liquid Gasket or equivalent. Refer to GI-42, "Recommended Chemical Product and Sealant".

REMOVAL

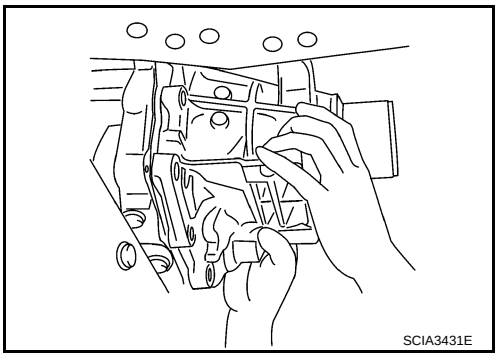
1. Drain ATF through drain hole.
2. Remove exhaust front tube and center muffler with power tool. Refer to EX-3, "Removal and Installation".
3. Remove rear propeller shaft. Refer to PR-6, "Removal and Installation".
   CAUTION:
   Do not impact or damage propeller shaft tube.
4. Remove control rod. Refer to AT-194, "Control Rod Removal and Installation".
5. Support A/T assembly with a transmission jack.
   CAUTION:
   When setting transmission jack, be careful not to allow it to collide against drain plug.
6. Remove rear engine mounting member with power tool. Refer to AT-229, "Removal and Installation".
7. Remove tightening bolts for rear extension assembly and transmission case.



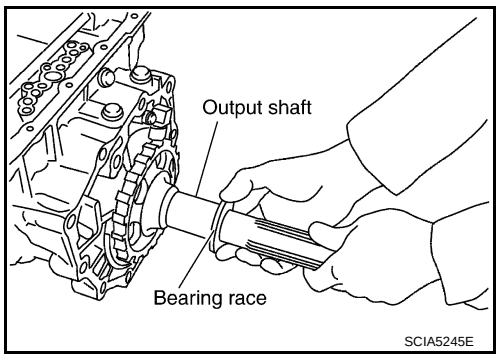
8. Tap rear extension assembly with soft hammer.



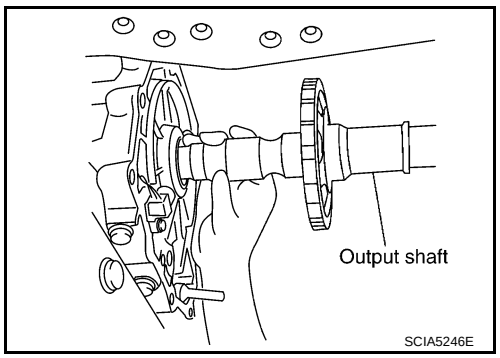
9. Remove rear extension assembly from transmission case. (With needle bearing.)



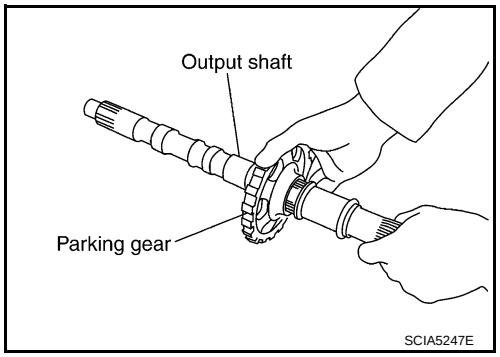
10. Remove bearing race from output shaft.



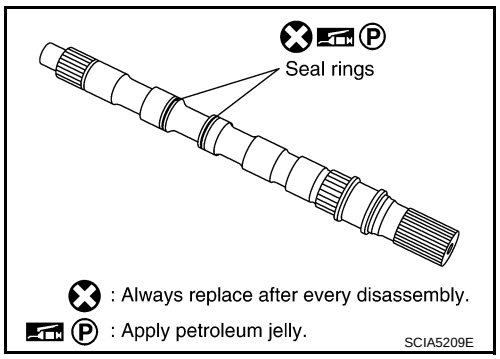
11. Remove output shaft from transmission case by rotating left/ right.



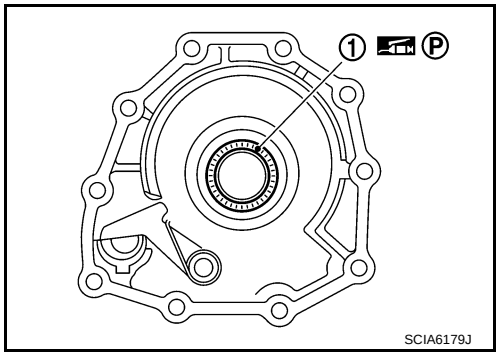
12. Remove parking gear from output shaft.



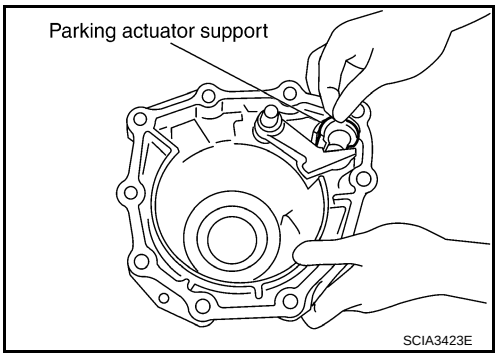
13. Remove seal rings from output shaft.



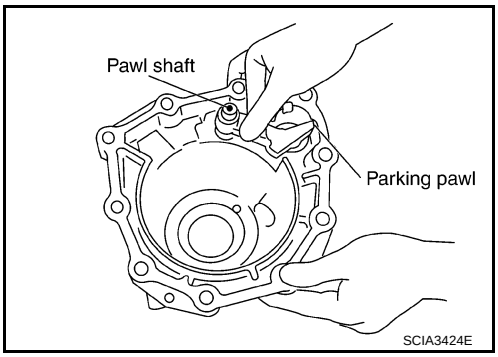
14. Remove needle bearing (1) from rear extension.



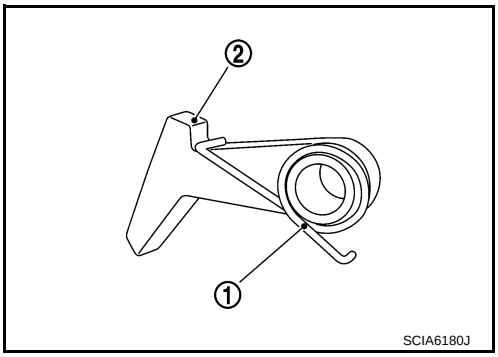
15. Remove parking actuator support from rear extension.



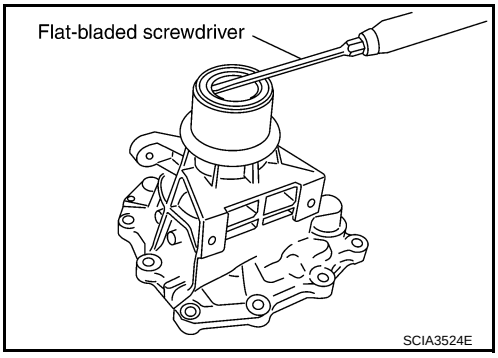
16. Remove parking pawl (with return spring) and pawl shaft from rear extension.



17. Remove return spring (1) from parking pawl (2).

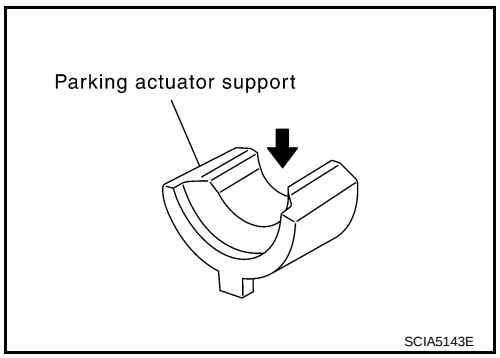


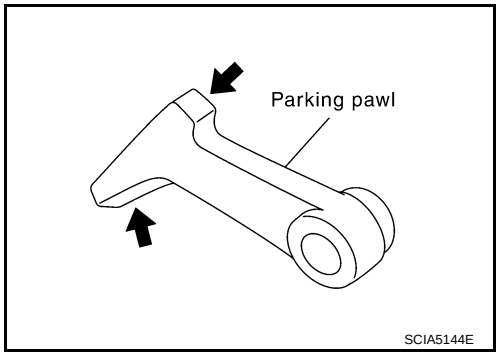
18. Remove rear oil seal from rear extension.
CAUTION:
Be careful not to scratch rear extension.



INSPECTION

- If the contact surface on parking actuator support, parking pawl, etc. has excessive wear, abrasion, bend, or any other damage, replace the components.





INSTALLATION

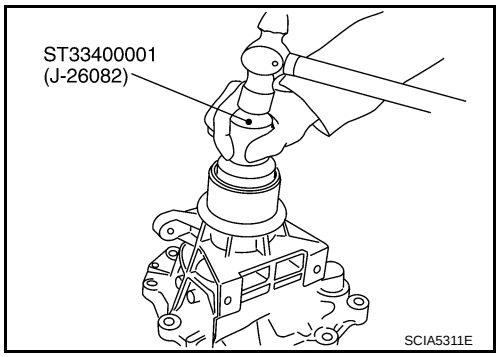
CAUTION:

After completing installation, check A/T position, A/T fluid leakage and A/T fluid level. Refer to AT-195, "Checking of A/T Position", AT-12, "Checking A/T Fluid".

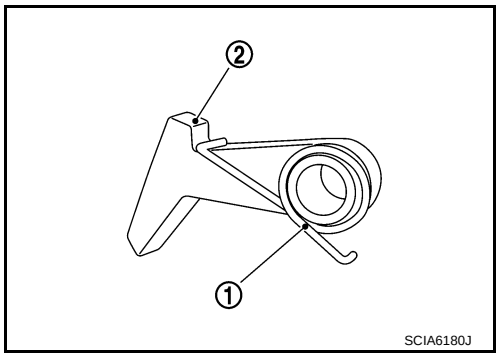
1. As shown in the figure, use a drift to drive rear oil seal into the rear extension until it is flush.

   CAUTION:

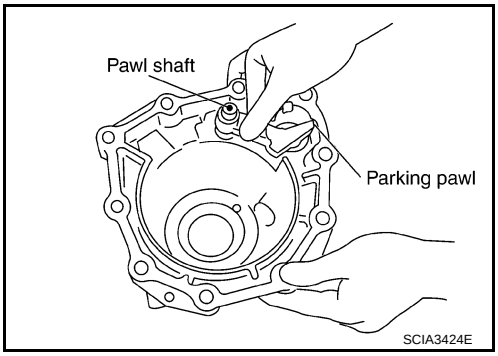
   - **Do not reuse rear oil seal.**
   - **Apply ATF to rear oil seal.**



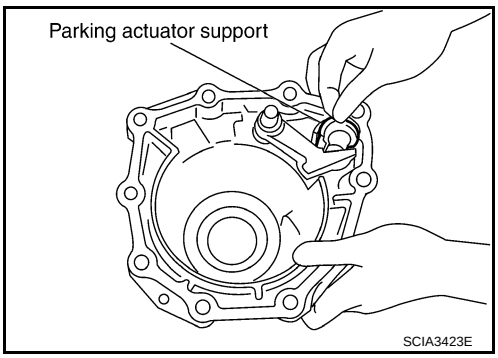
2. Install return spring (1) to parking pawl (2).



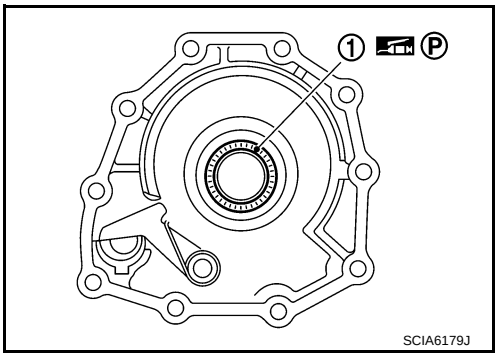
3. Install parking pawl (with return spring) and pawl shaft to rear extension.



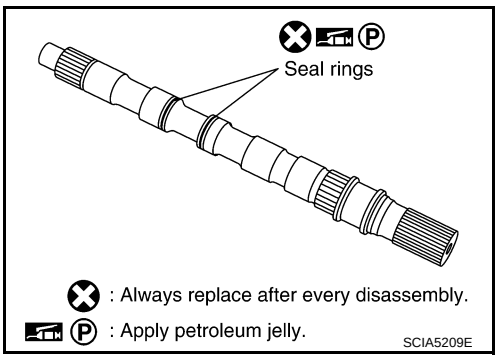
4. Install parking actuator support to rear extension.



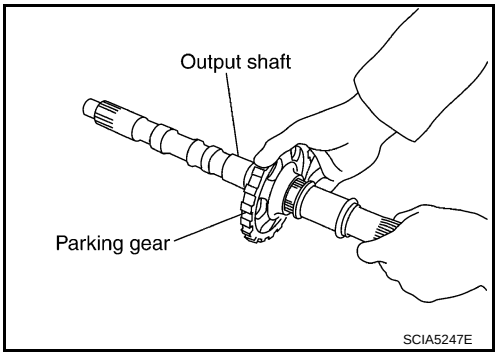
5. Install needle bearing (1) to rear extension.
CAUTION:
- **Take care with the direction of needle bearing. Refer to AT-238, "Location of Adjusting Shims, Needle Bearings, Thrust Washers and Snap Rings".**
- **Apply petroleum jelly to needle bearing.**



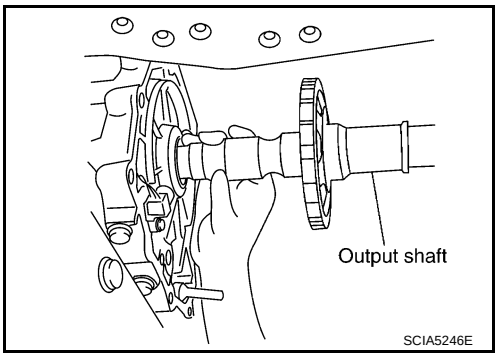
6. Install seal rings in output shaft.
CAUTION:
- **Do not reuse seal rings.**
- **Apply petroleum jelly to seal rings.**



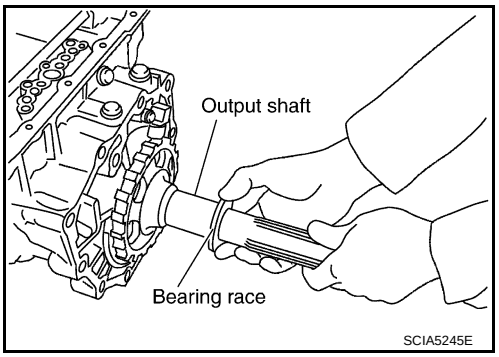
7. Install parking gear to output shaft.



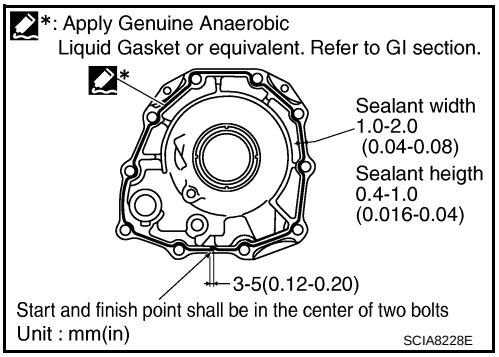
8. Install output shaft to transmission case.



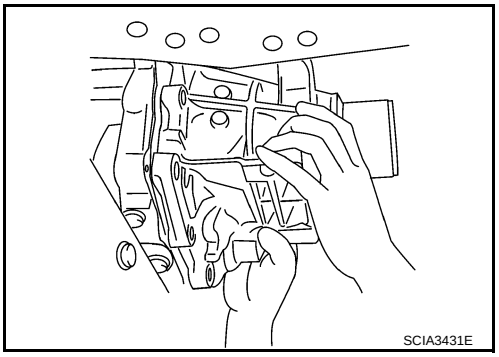
9. Install bearing race to output shaft.



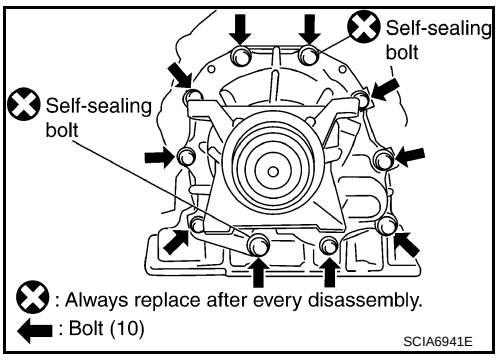
10. Apply recommended sealant (Genuine Anaerobic Liquid Gasket or equivalent. Refer to GI-42, "Recommended Chemical Product and Sealant".) to rear extension assembly as shown in the figure.
CAUTION:
Completely remove all moisture, oil and old sealant, etc. from transmission case and rear extension assembly mounting surfaces.



11. Install rear extension assembly to transmission case. (With needle bearing.)
CAUTION:
Insert the tip of parking rod between parking pawl and parking actuator support when assembling rear extension assembly.



12. Tighten rear extension assembly mounting bolts to the specified torque. Refer to "COMPONENTS".
CAUTION:
Do not reuse self-sealing bolts.



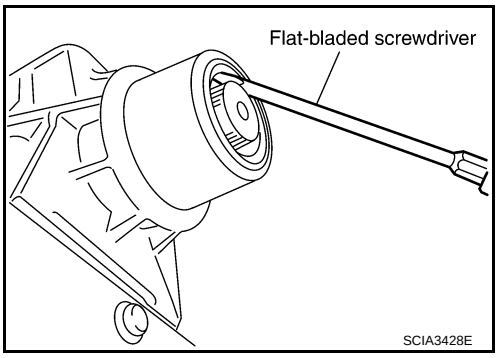
13. Install rear engine mounting member. Refer to AT-229, "Removal and Installation".
14. Install control rod. Refer to AT-194, "Control Rod Removal and Installation".
15. Install rear propeller shaft. Refer to PR-6, "Removal and Installation".
    CAUTION:
    Do not impact or damage propeller shaft tube.
16. Install exhaust front tube and center muffler. Refer to EX-3, "Removal and Installation".
17. Install drain plug gasket and drain plug to oil pan, and then tighten drain plug to the specified torque. Refer to AT-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
    CAUTION:
    Do not reuse drain plug gasket.
18. Pour ATF into A/T assembly. Refer to AT-12, "Changing A/T Fluid".

Rear Oil Seal

INFOID:0000000004657021

REMOVAL

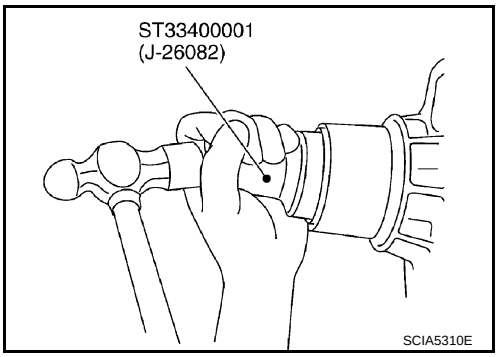
1. Remove exhaust front tube and center muffler with power tool. Refer to EX-3, "Removal and Installation".
2. Remove rear propeller shaft. Refer to PR-6, "Removal and Installation".
   CAUTION:
   Do not impact or damage propeller shaft tube.
3. Remove rear oil seal using a flat-bladed screwdriver.
   CAUTION:
   Be careful not to scratch rear extension assembly.



INSTALLATION

CAUTION:
After completing installation, check A/T fluid leakage and A/T fluid level. Refer to AT-12, "Checking A/T Fluid".

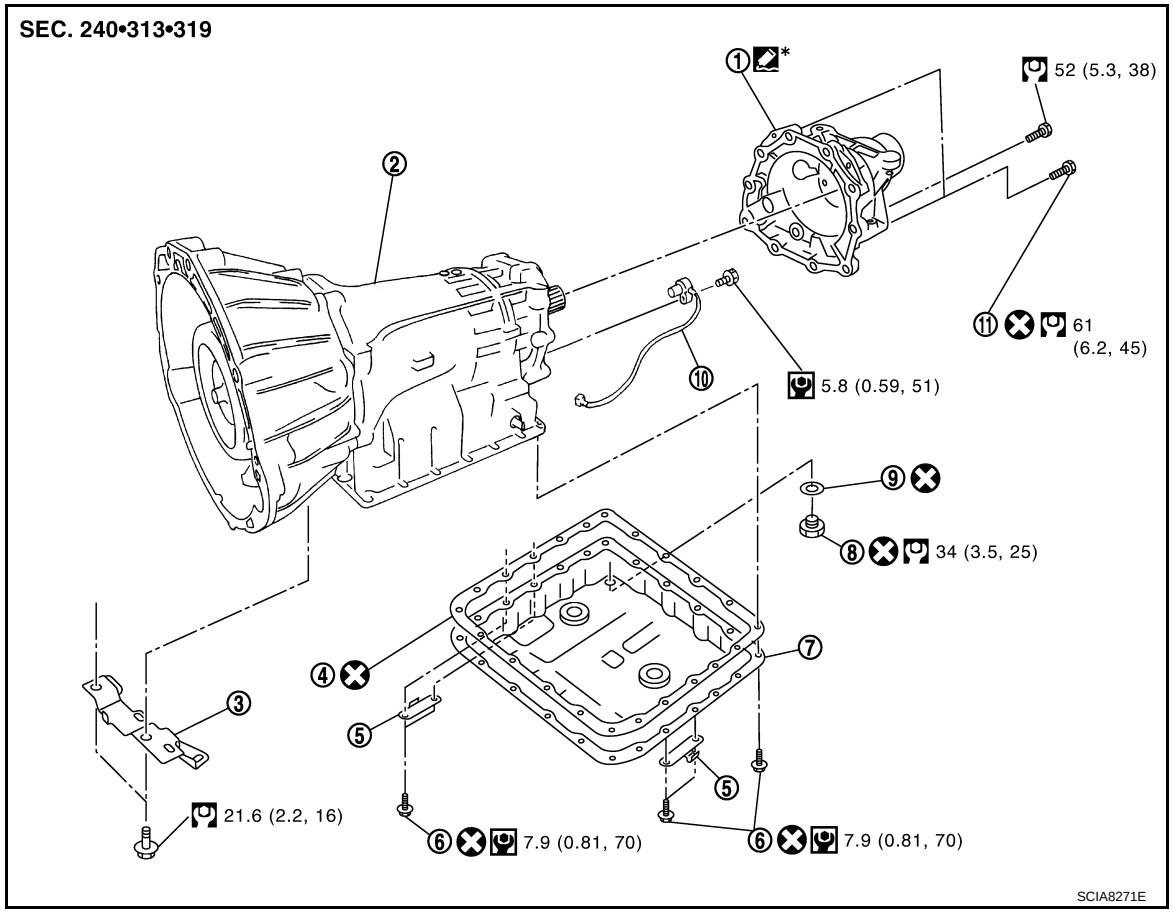
1. As shown in the figure, use the drift to drive rear oil seal into rear extension assembly until it is flush.
   CAUTION:
   - **Do not reuse rear oil seal.**
   - **Apply ATF to rear oil seal.**
2. Install rear propeller shaft. Refer to PR-6, "Removal and Installation".
   CAUTION:
   Do not impact or damage propeller shaft tube.
3. Install exhaust front tube and center muffler. Refer to EX-3, "Removal and Installation".



Output Speed Sensor

INFOID:0000000004657022

COMPONENTS



1.	Rear extension	2.	A/T	3.	Bracket
4.	Oil pan gasket	5.	Clip	6.	Oil pan mounting bolt
7.	Oil pan	8.	Drain plug	9.	Drain plug gasket
10.	Output speed sensor	11.	Self-sealing bolt		

Refer to GI section to make sure icons (symbol marks) in the figure. Refer to GI-8, "Component".

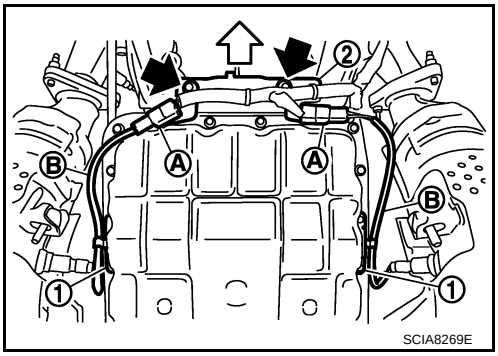
However, refer to the following for others.

: Apply Genuine Anaerobic Liquid Gasket or equivalent. Refer to GI-42, "Recommended Chemical Product and Sealant".

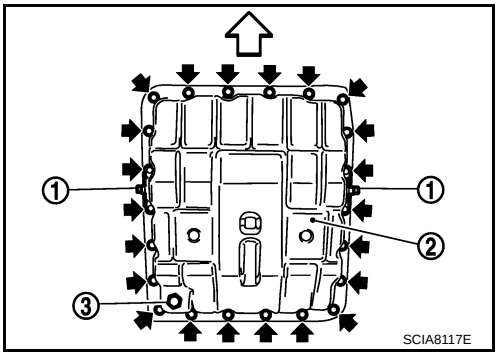
REMOVAL

1. Disconnect the battery cable from the negative terminal.
2. Drain ATF through drain hole.
3. Remove exhaust front tube and center muffler with power tool. Refer to EX-3, "Removal and Installation".
4. Remove rear propeller shaft. Refer to PR-6, "Removal and Installation".
   CAUTION:
   Do not impact or damage propeller shaft tube.
5. Remove control rod. Refer to AT-194, "Control Rod Removal and Installation".
6. Remove exhaust mounting bracket. Refer to EX-3, "Removal and Installation".

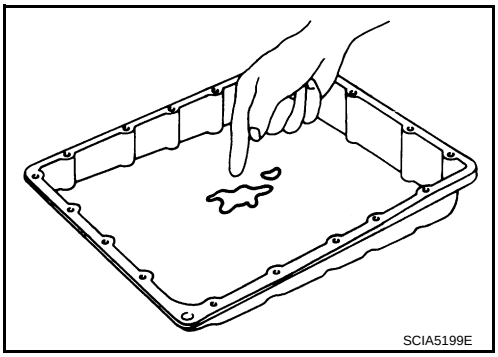
7. Disconnect heated oxygen sensor 2 harness connectors (A).
   - ⇦: Vehicle front
   - ⬅: Bolt
8. Remove heated oxygen sensor 2 harness (B) from clips (1).
9. Remove bracket (2) from transmission assembly.



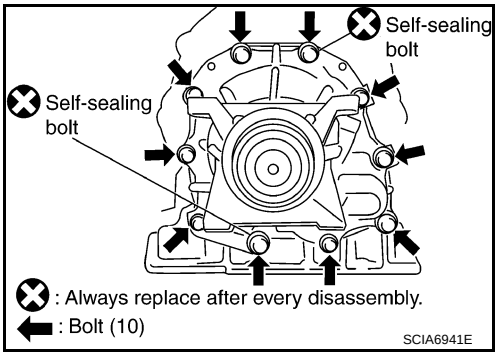
10. Remove clip (1), oil pan (2) and oil pan gasket.
    - ⇦: Vehicle front
    - ⬅: Oil pan mounting bolt
    - Drain plug (3)



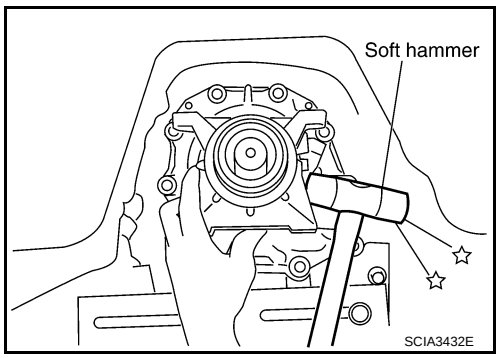
11. Check foreign materials in oil pan to help determine causes of malfunction. If the ATF is very dark, smells burned, or contains foreign particles, the frictional material (clutches, band) may need replacement. A tacky film that will not wipe clean indicates varnish build up. Varnish can cause valves, servo, and clutches to stick and can inhibit pump pressure.
    - **If frictional material is detected, perform A/T fluid cooler cleaning. Refer to AT-14, "A/T Fluid Cooler Cleaning".**
12. Support transmission assembly with a transmission jack.
    CAUTION:
    When setting transmission jack, place wooden blocks to prevent from damaging control valve with TCM and transmission case.



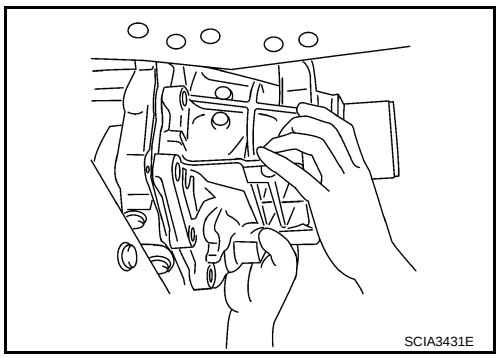
13. Remove rear engine mounting member with power tool. Refer to AT-229, "Removal and Installation".
14. Remove tightening bolts for rear extension assembly and transmission case.



15. Tap rear extension assembly with soft hammer.

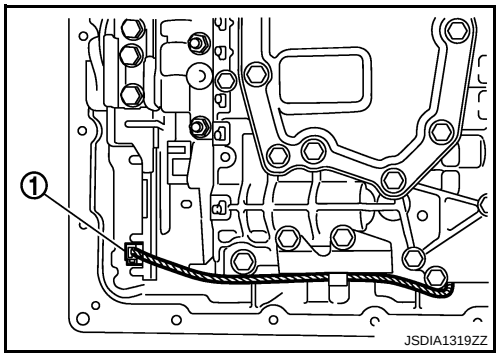


16. Remove rear extension assembly from transmission case. (With needle bearing.)



17. Straighten terminal clip (⬅) to free output speed sensor harness,
18. Disconnect output speed sensor connector (1).

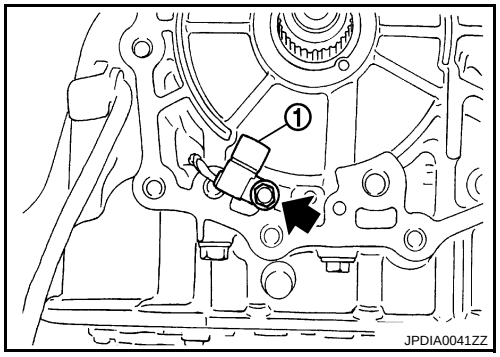
CAUTION:
Be careful not to damage connector.



19. Remove output speed sensor (1) from transmission case.

⬅ :Bolt

CAUTION:
- **Do not subject it to impact by dropping or hitting it.**
- **Do not disassemble.**
- **Do not allow metal filings, etc. to get on the sensor's front edge magnetic area.**
- **Do not place in an area affected by magnetism.**

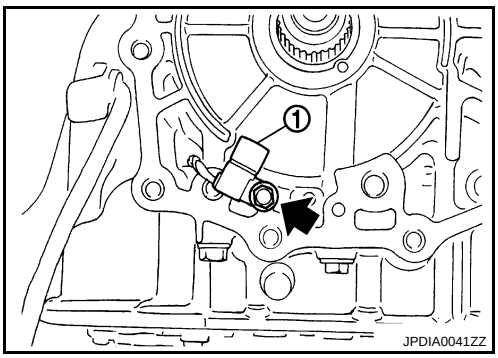


INSTALLATION

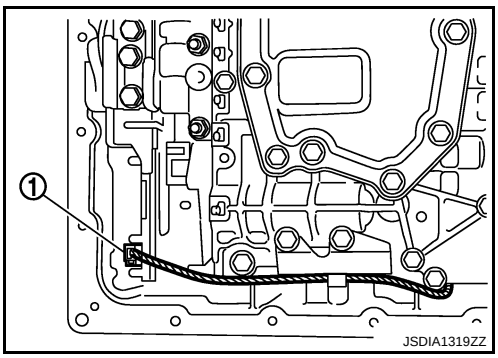
CAUTION:
After completing installation, check A/T position, A/T fluid leakage and A/T fluid level. Refer to AT-195, "Checking of A/T Position", AT-12, "Checking A/T Fluid".

1. Install output speed sensor (1) in transmission case, Tighten a necessary bolt (⬅) for output speed sensor with specified torque. Refer to "COMPONENTS".

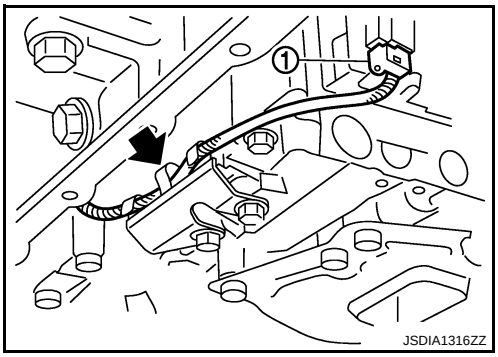
CAUTION:
- **Do not subject it to impact by dropping or hitting it.**
- **Do not disassemble.**
- **Do not allow metal filings, etc. to get on the sensor's front edge magnetic area.**
- **Do not place in an area affected by magnetism.**



2. Connect output speed sensor connector (1).

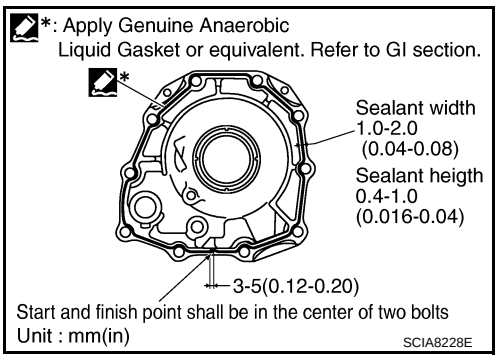


3. Securely fasten output speed sensor (1) harness with clip (⬅).



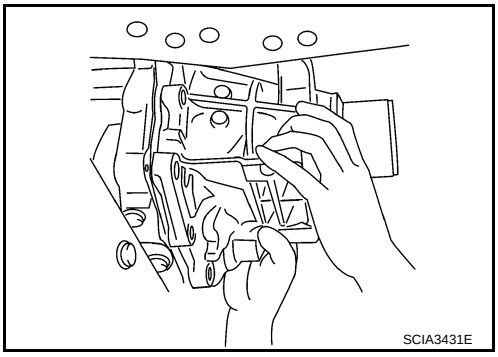
4. Apply recommended sealant (Genuine Anaerobic Liquid Gasket or equivalent. Refer to GI-42, "Recommended Chemical Product and Sealant".) to rear extension assembly as shown in illustration.

CAUTION:
Completely remove all moisture, oil and old sealant, etc. from transmission case and rear extension assembly mounting surfaces.

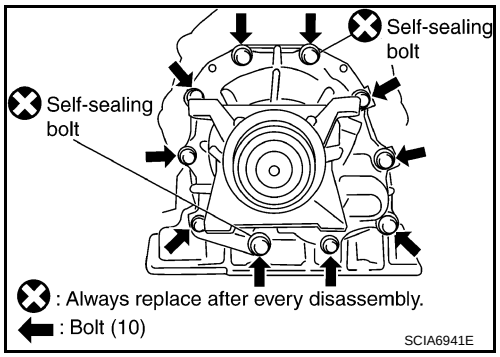


5. Install rear extension assembly to transmission case. (With needle bearing.)

CAUTION:
Insert the tip of parking rod between parking pawl and parking actuator support when assembling rear extension assembly.



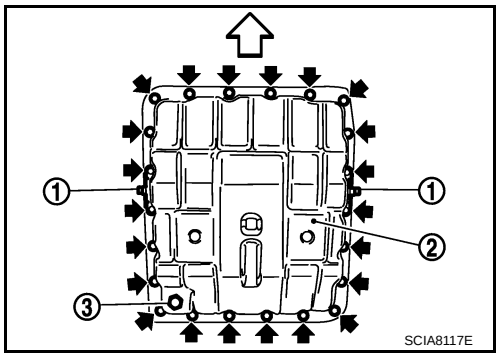
6. Tighten rear extension assembly mounting bolts to the specified torque. Refer to "COMPONENTS".
CAUTION:
Do not reuse self-sealing bolts.



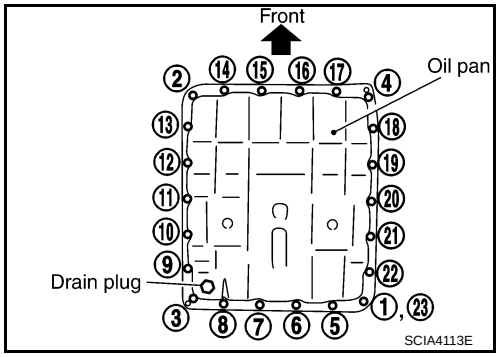
7. Install rear engine mounting member. Refer to AT-229, "Removal and Installation".
8. Install oil pan to transmission case.
a. Install oil pan gasket to oil pan.
CAUTION:
- **Do not reuse oil pan gasket.**
- **Install it in the direction to align hole positions.**
- **Completely remove all moisture, oil and old gasket, etc. from oil pan gasket mounting surface.**

b. Install oil pan (2) (with oil pan gasket) and clips (1) to transmission case.
- ⇦: Vehicle front
- ⬅: Oil pan mounting bolt

CAUTION:
- **Install it so that drain plug (3) comes to the position as shown in the figure.**
- **Be careful not to pinch harness.**
- **Completely remove all moisture, oil and old gasket, etc. from oil pan mounting surface.**



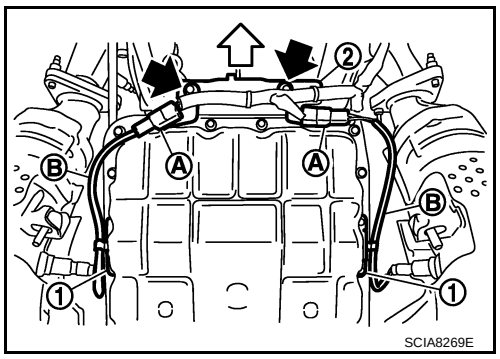
c. Tighten oil pan mounting bolts to the specified torque in numerical order shown in the figure after temporarily tightening them. Refer to "COMPONENTS".
CAUTION:
Do not reuse oil pan mounting bolts.



9. Install drain plug gasket and drain plug to oil pan, and then tighten drain plug to the specified torque. Refer to "COMPONENTS".
CAUTION:
Do not reuse drain plug gasket.

10. Install bracket (2) from transmission assembly. Refer to AT-204, "Control Valve with TCM and A/T Fluid Temperature Sensor 2".
- ⇦: Vehicle front
- ⬅: Bolt

11. Install heated oxygen sensor 2 harness (B) from clips (1).
12. Connect heated oxygen sensor 2 harness connectors (A).
13. Install exhaust mounting bracket. Refer to EX-3, "Removal and Installation".
14. Install control rod. Refer to AT-194, "Control Rod Removal and Installation".
15. Install rear propeller shaft. Refer to PR-6, "Removal and Installation".
CAUTION:
Do not impact or damage propeller shaft tube.



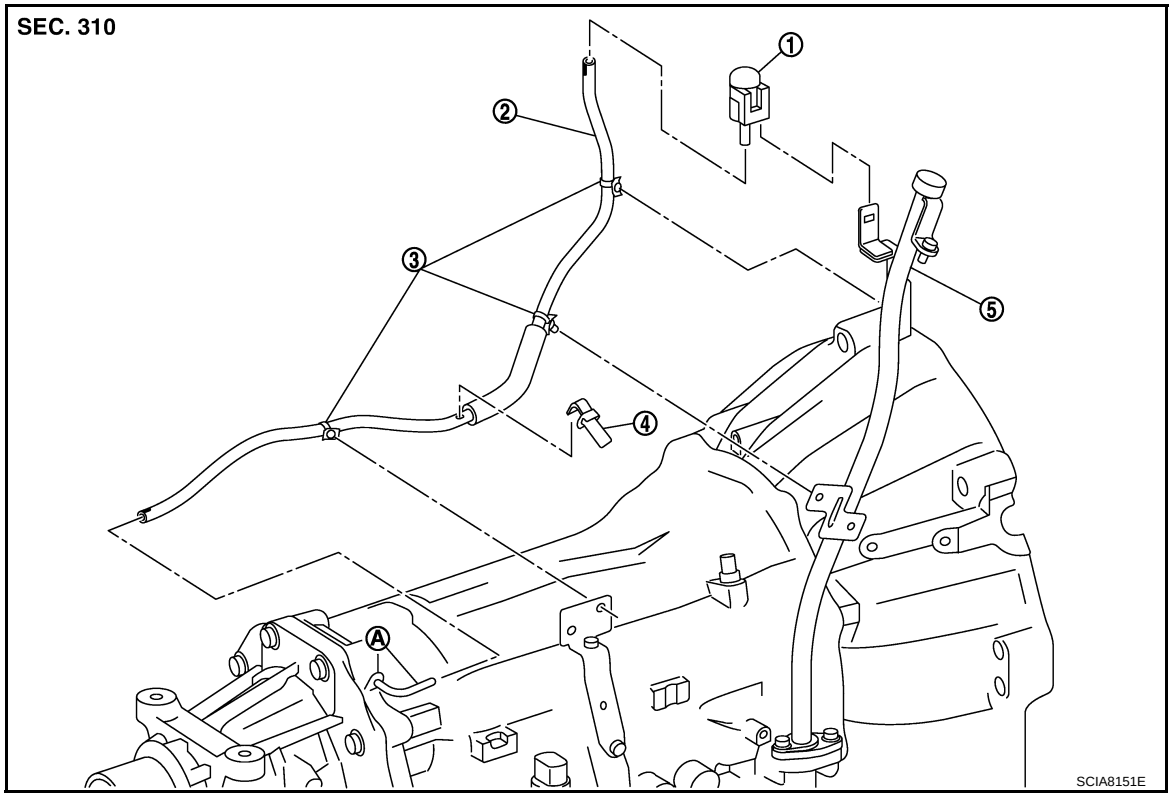
16. Install exhaust front tube and center muffler. Refer to EX-3, "Removal and Installation".
17. Pour ATF into A/T assembly. Refer to AT-12, "Changing A/T Fluid".
18. Connect the battery cable to the negative terminal.

AIR BREATHER HOSE

Removal and Installation

INFOID:0000000004657023

Refer to the figure below for air breather hose removal and installation procedure.

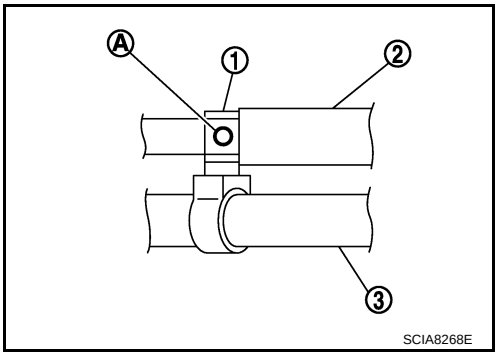


1. Air breather box
2. Air breather hose
3. Clip
4. Clip
5. A/T fluid charging pipe
A. Air breather tube

CAUTION:

- **When installing an air breather hose, do not to crush or block by folding or bending the hose.**
- **When inserting air breather hose to air breather tube, be sure to insert it fully until its end reaches the tube bend R portion.**
- **Install A/T air breather hose to air breather tube so that the paint mark is facing upward.**
- **Ensure clips are securely installed to brackets when installing A/T breather hose to brackets.**
- **When inserting air breather hose to air breather box, be sure to insert it fully until its end reaches the stop.**
- **Install A/T air breather hose to air breather box so that the paint mark is facing backward.**
- **Install clip (1) at the paint mark (A).**

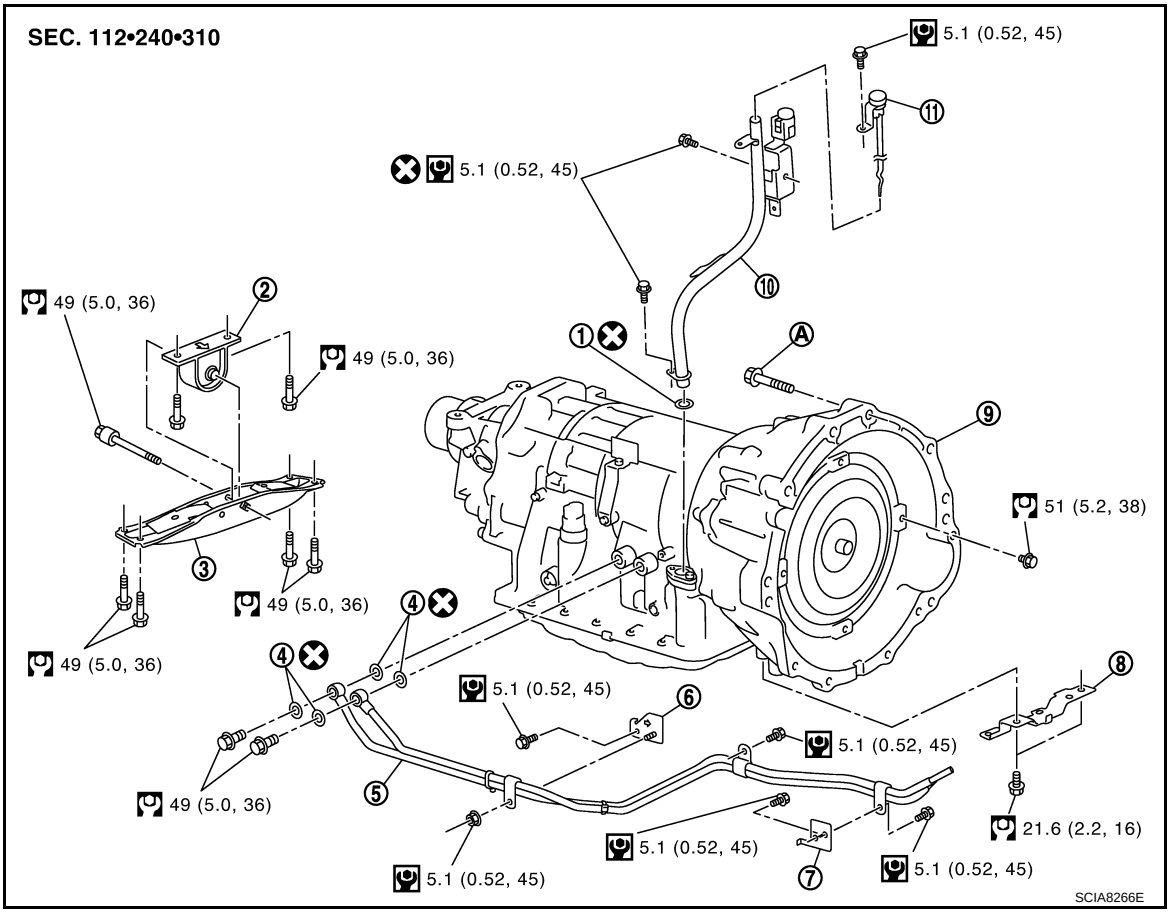
- **Air breather hose (2)**
- **Harness (3)**



TRANSMISSION ASSEMBLY

Removal and Installation

INFOID:0000000004657024



1. O-ring	2. Engine mounting insulator (rear)	3. Rear engine mounting member
4. Copper washer	5. Fluid cooler tube	6. Bracket
7. Bracket	8. Bracket	9. A/T assembly
10. A/T fluid charging pipe	11. A/T fluid level gauge	

A. For tightening torque, refer to "INSTALLATION".

Refer to GI section to make sure icons (symbol marks) in the figure. Refer to GI-8, "Component".

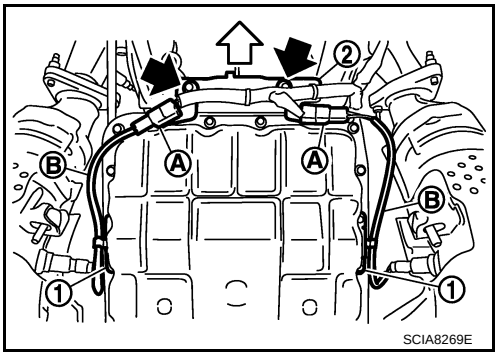
REMOVAL

CAUTION:

- **When removing A/T assembly from engine assembly, first remove crankshaft position sensor (POS) from A/T assembly.**
- **Be careful not to damage sensor edge.**

1. Disconnect the battery cable from the negative terminal.
2. Remove tower bar with power tool. Refer to FSU-18, "Removal and Installation".
3. Remove engine under covers with power tool.
4. Remove exhaust mounting bracket. Refer to EX-3, "Removal and Installation".

5. Disconnect heated oxygen sensor 2 harness connectors (A).
   - ⇦: Vehicle front
   - ⬅: Bolt
6. Remove heated oxygen sensor 2 harness (B) from clips (1).
7. Remove bracket (2) from transmission assembly.
8. Remove front cross bar with power tool. Refer to FSU-7, "Component".
9. Remove exhaust front tube and center muffler with power tool. Refer to EX-3, "Removal and Installation".
10. Remove three way catalyst (right bank) and three way catalyst (left bank). Refer to EM-23, "Removal and Installation".



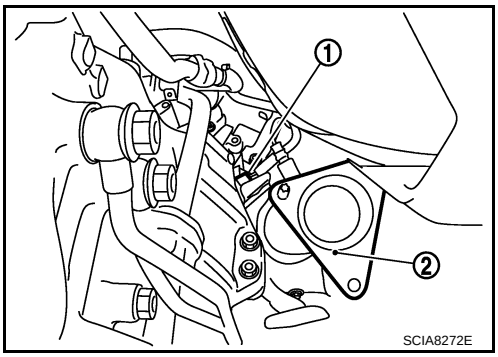
SCIA8269E

11. Remove crankshaft position sensor (POS) (1). Refer to EM-27, "Removal and Installation".
    - Three way catalyst (right bank) (2)

    CAUTION:
    - **Do not subject it to impact by dropping or hitting it.**
    - **Do not disassemble.**
    - **Do not allow metal filings, etc. to get on the sensor's front edge magnetic area.**
    - **Do not place in an area affected by magnetism.**
12. Remove rear propeller shaft. Refer to PR-6, "Removal and Installation".

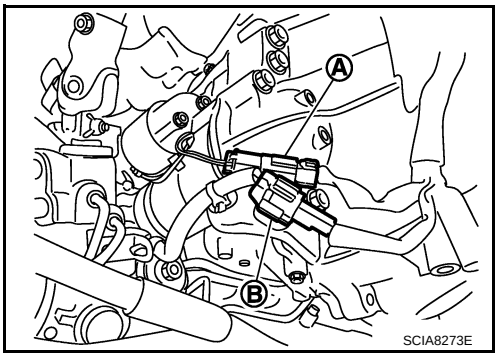
    CAUTION:

    Do not impact, or damage propeller shaft tube.



SCIA8272E

13. Remove control rod. Refer to AT-194, "Control Rod Removal and Installation".
14. Disconnect the following:
    - A/T assembly harness connector
    - S terminal connector (A)
    - EPS solenoid valve harness connector (B)
15. Remove starter motor with power tool. Refer to SC-14, "Removal and Installation".
16. Remove A/T fluid level gauge.
17. Remove A/T fluid charging pipe
18. Remove O-ring from A/T fluid charging pipe.
19. Remove fluid cooler tube according to the following procedure.



SCIA8273E

a. Remove mounting nuts of the engine mounting insulator (LH) and engine mounting insulator (RH) on the undersurface of the vehicle. Refer to EM-101, "Removal and Installation".
b. Push engine assembly upward from the vehicle with transmission jack to create clearance for removing fluid cooler tube.

   CAUTION:

   Be careful with hoses and harness when pushing up the engine assembly.
c. Remove fluid cooler tube.

20. Plug up openings such as A/T fluid charging pipe hole, etc.
21. Remove rear plate cover from converter housing. Refer to EM-27, "Removal and Installation".
22. Turn crankshaft, and remove the four tightening bolts for drive plate and torque converter.

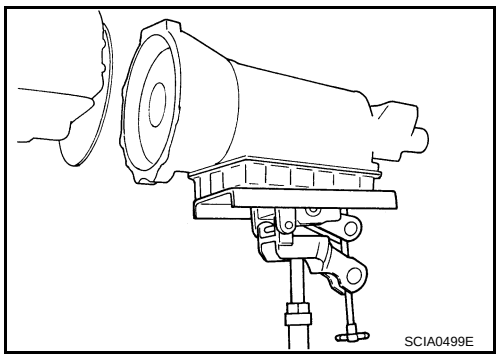
    CAUTION:

    When turning crankshaft, turn it clockwise as viewed from the front of the engine.
23. 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.
24. Remove rear engine mounting member with power tool. Refer to "Removal and Installation".
25. Remove engine mounting insulator (rear) with power tool. Refer to "Removal and Installation".
26. Remove bolts fixing A/T assembly to engine assembly with power tool.

27. Remove A/T assembly from vehicle with a transmission jack.
    - **Secure torque converter to prevent it from dropping.**
    - **Secure A/T assembly to a transmission jack.**
28. Remove air breather hose. Refer to AT-228, "Removal and Installation".

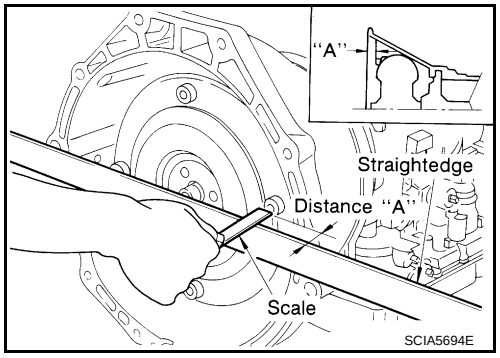


INSPECTION

Installation and Inspection of Torque Converter

- After inserting a torque converter to a A/T, be sure to check distance “A” to ensure it is within the reference value limit.

Distance “A”: 25.0 mm (0.98 in) or more

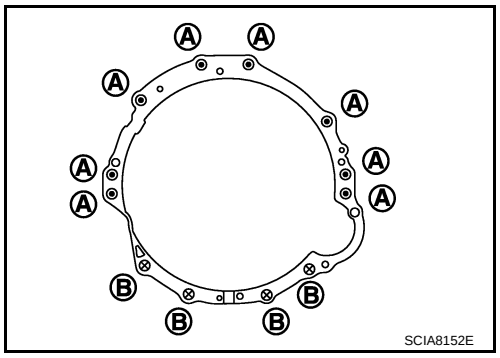


INSTALLATION

Install the removed parts in the reverse order of the removal, while paying attention to the following work.

- When installing A/T assembly to the engine assembly, attach the fixing bolts in accordance with the following standard.

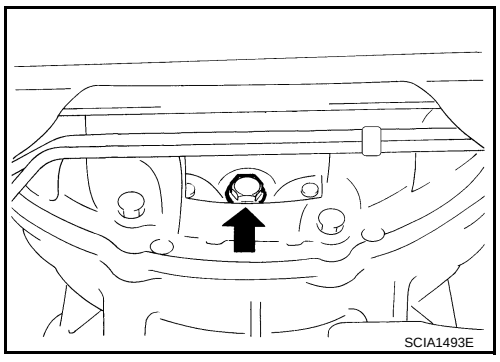
- ⊗: Engine to transmission
- ⦿: Transmission to engine



Bolt symbol	A	B
Number of bolts	8	4
Bolt length mm (in)	65 (2.56)	35 (1.38)
Tightening torque N·m (kg-m, ft-lb)	75 (7.7, 55)	46.6 (4.8, 34)

- Align the positions of tightening bolts for drive plate with those of the torque converter, and temporarily tighten the bolts. Then tighten the bolts with the specified torque.

: 51 N·m (5.2 kg-m, 38 ft-lb)



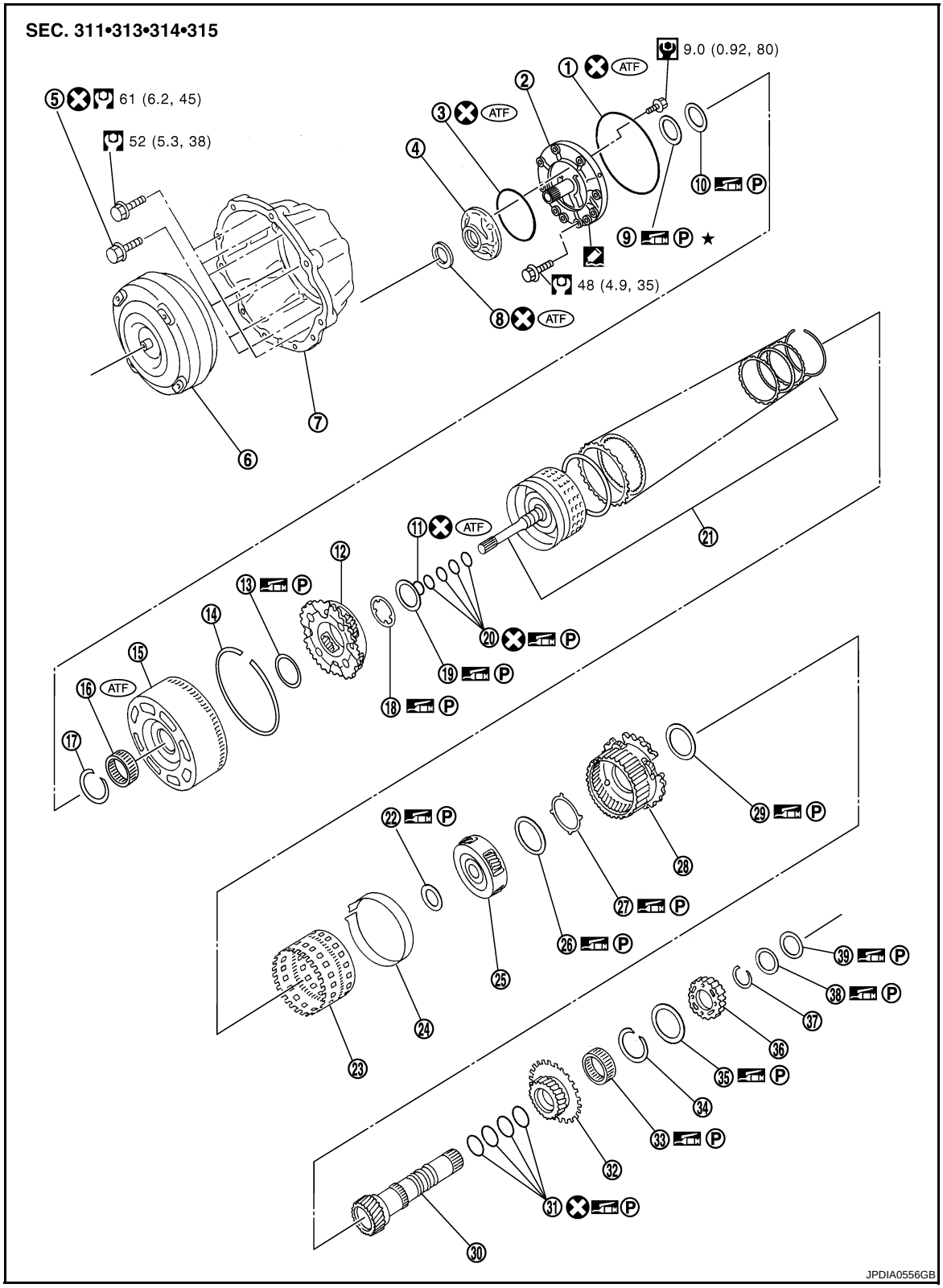
CAUTION:

- **When turning crankshaft, turn it clockwise as viewed from the front of the engine.**
- **When tightening the tightening bolts for torque converter after fixing crankshaft pulley bolts, be sure to confirm the tightening torque of crankshaft pulley mounting bolts. Refer to EM-53.**
- **After converter is installed to drive plate, rotate crankshaft several turns and check to be sure that transmission rotates freely without binding.**
- Install crankshaft position sensor (POS). Refer to EM-27, "Removal and Installation".
- After completing installation, check A/T fluid leakage, A/T fluid level and A/T position. Refer to AT-12, "Checking A/T Fluid", AT-195, "Checking of A/T Position".

OVERHAUL

Component

INFOID:0000000004657025



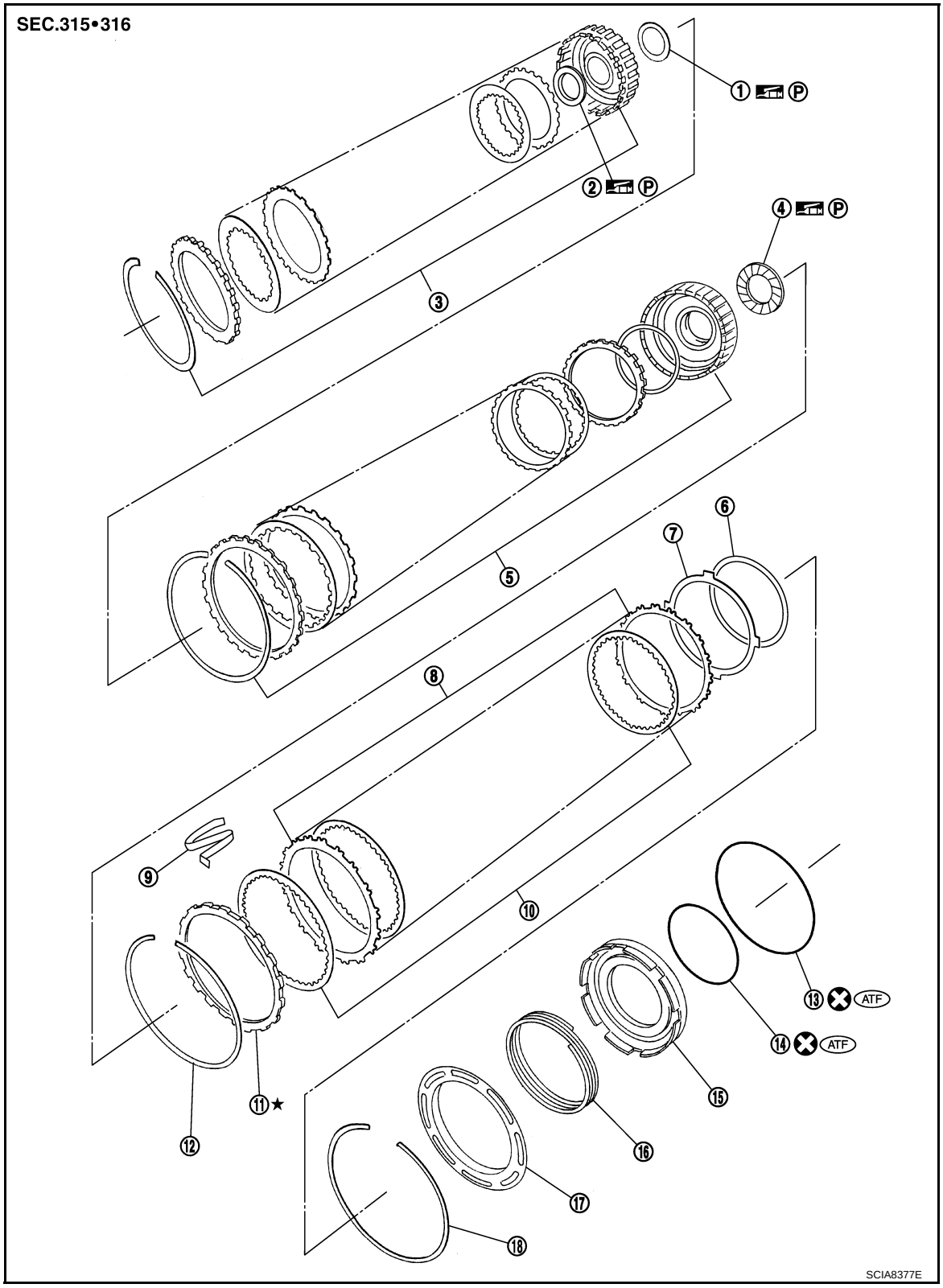
1. O-ring
2. Oil pump cover
3. O-ring
4. Oil pump housing
5. Self-sealing bolt
6. Torque converter
7. Converter housing
8. Oil pump housing oil seal
9. Bearing race

10. Needle bearing
11. O-ring
12. Front carrier assembly
13. Needle bearing
14. Snap ring
15. Front sun gear
16. 3rd one-way clutch
17. Snap ring
18. Bearing race
19. Needle bearing
20. Seal ring
21. Input clutch assembly
22. Needle bearing
23. Rear internal gear
24. Brake band
25. Mid carrier assembly
26. Needle bearing
27. Bearing race
28. Rear carrier assembly
29. Needle bearing
30. Mid sun gear
31. Seal ring
32. Rear sun gear
33. 1st one-way clutch
34. Snap ring
35. Needle bearing
36. High and low reverse clutch hub
37. Snap ring
38. Bearing race
39. Needle bearing

Refer to GI section to make sure icons (symbol marks) in the figure. Refer to GI-8, "Component".

However, refer to the following for others.

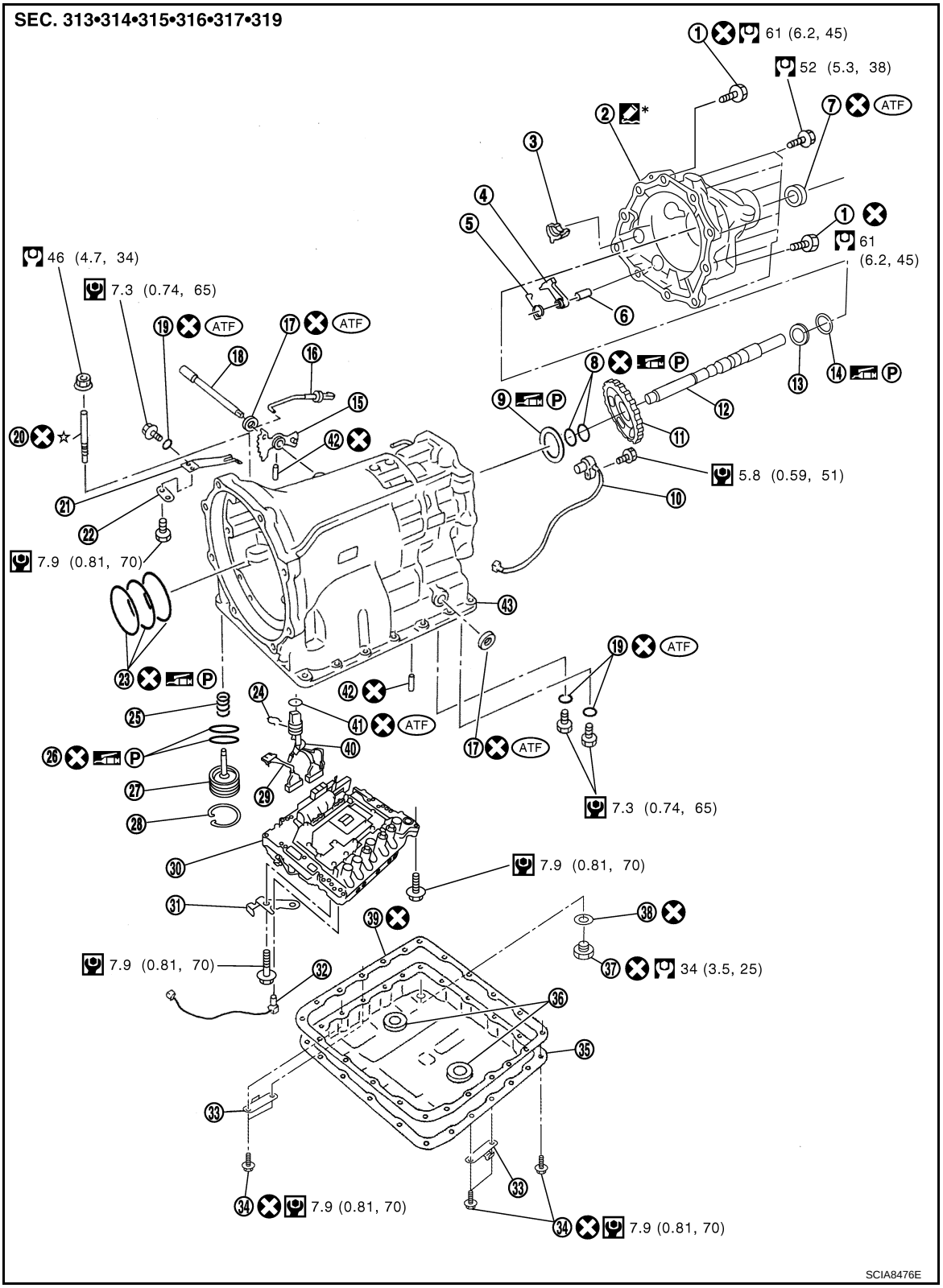
: Apply Genuine RTV silicone sealant or equivalent. Refer to GI-42, "Recommended Chemical Product and Sealant".



1. Needle bearing
2. Bearing race
3. High and low reverse clutch assembly
4. Needle bearing
5. Direct clutch assembly
6. Reverse brake dish plate
7. Reverse brake dish plate
8. Reverse brake driven plate
9. N-spring
10. Reverse brake drive plate
11. Reverse brake retaining plate
12. Snap ring
13. D-ring
14. D-ring
15. Reverse brake piston

16. Return spring
17. Spring retainer
18. Snap ring

Refer to GI section to make sure icons (symbol marks) in the figure. Refer to GI-8, "Component".



1. Self-sealing bolt
2. Rear extension
3. Parking actuator support
4. Parking pawl
5. Return spring
6. Pawl shaft
7. Rear oil seal
8. Seal ring
9. Needle bearing
10. Output speed sensor
11. Parking gear
12. Output shaft

13. Bearing race
14. Needle bearing
15. Manual plate
16. Parking rod
17. Manual shaft oil seal
18. Manual shaft
19. O-ring
20. Band servo anchor end pin
21. Detent spring
22. Spacer
23. Seal ring
24. Snap ring
25. Return spring
26. O-ring
27. Servo assembly
28. Snap ring
29. Sub-harness
30. Control valve with TCM
31. Bracket
32. A/T fluid temperature sensor 2
33. Clip
34. Oil pan mounting bolt
35. Oil pan
36. Magnet
37. Drain plug
38. Drain plug gasket
39. Oil pan gasket
40. Terminal cord assembly
41. O-ring
42. Retaining pin
43. Transmission case

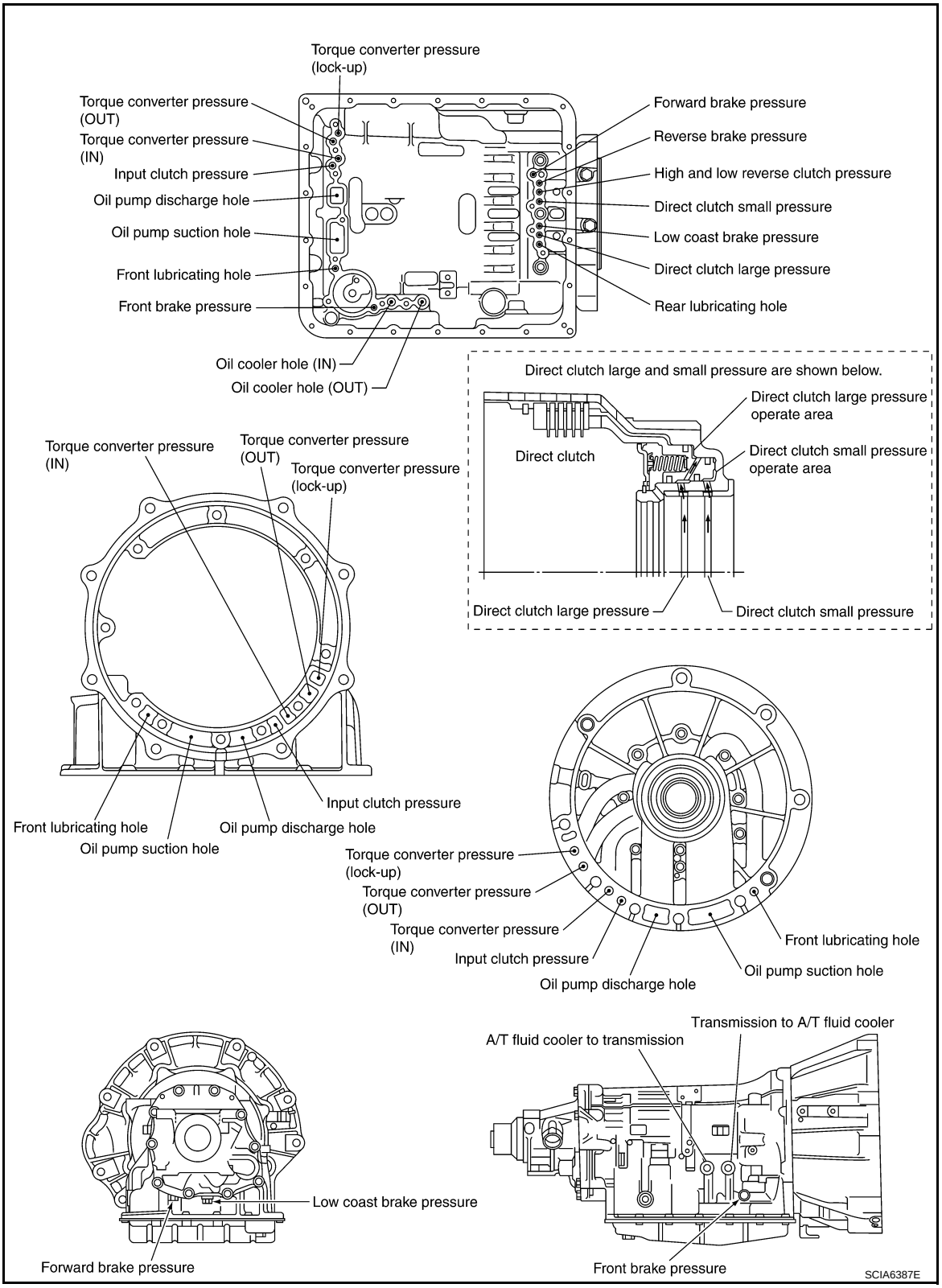
Refer to GI section to make sure icons (symbol marks) in the figure. Refer to GI-8, "Component".

However, refer to the following for others.

: Apply Genuine Anaerobic Liquid Gasket or equivalent. Refer to GI-42, "Recommended Chemical Product and Sealant".

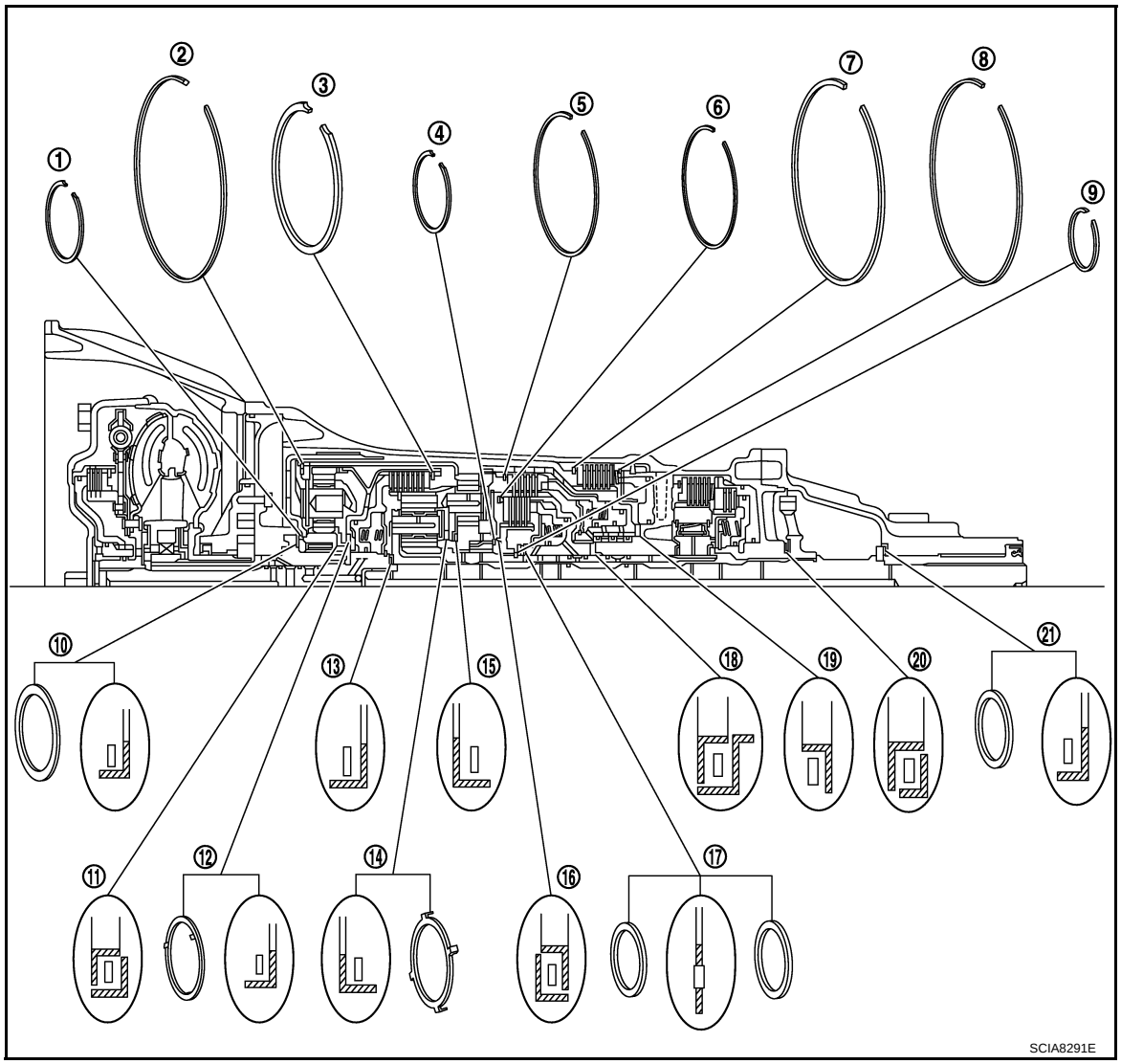
Oil Channel

INFOID:0000000004657026



Location of Adjusting Shims, Needle Bearings, Thrust Washers and Snap Rings

INFOID:0000000004657027



Snap ring		Needle bearing	
Item number	Outer diameter mm (in)	Item number	Outer diameter mm (in)
1	67.5 (2.657)	10	80 (3.15)
2	182.4 (7.181)	11	77 (3.03)
3	171.5 (6.751)	12	77 (3.03)
4	70.5 (2.775)	13	47 (1.85)
5	169 (6.653)	14	84 (3.31)
6	134.3 (5.287)	15	84 (3.31)
7	180.5 (7.106)	16	92 (3.62)
8	181 (7.125)	17	60 (2.36)
9	48.4 (1.905)	18	63 (2.48)
—	—	19	92 (3.62)
—	—	20	65 (2.56)
—	—	21	60 (2.36)

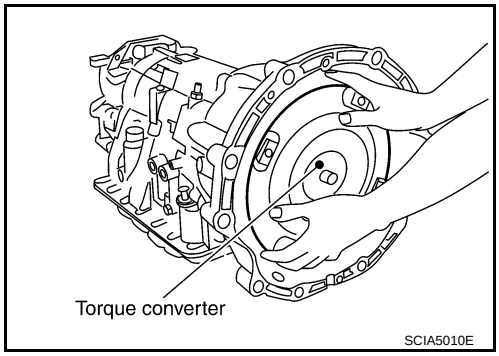
DISASSEMBLY

Disassembly

INFOID:0000000004657028

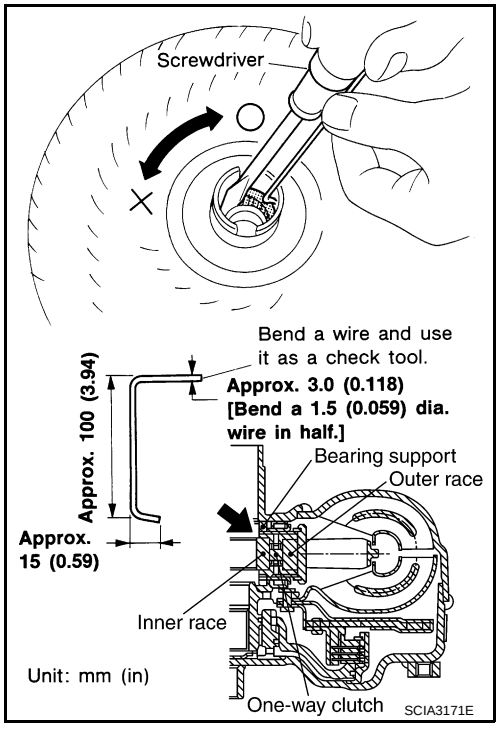
CAUTION:
Do not disassemble parts behind Drum Support. Refer to AT-17, "Cross-Sectional View".

1. Drain ATF through drain hole.
2. Remove torque converter by holding it firmly and turning while pulling straight out.

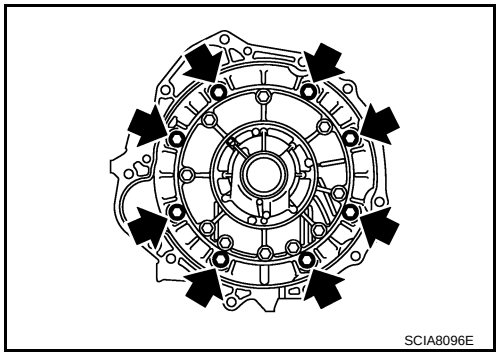


3. Check torque converter one-way clutch using check tool as shown at figure.

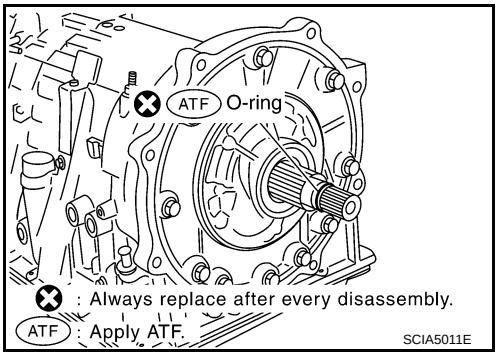
a. Insert check tool into the groove of bearing support built into one-way clutch outer race.
b. When fixing bearing support with check tool, rotate one- way clutch spline using screwdriver.
c. Check that inner race rotates clockwise only. If not, replace torque converter assembly.



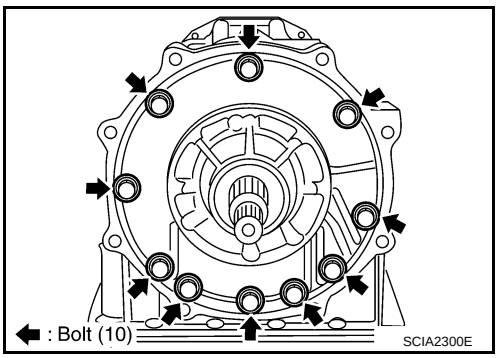
4. Remove tightening bolts (⬅) for converter housing and transmission case.
5. Remove converter housing from transmission case.
   CAUTION:
   Be careful not to scratch converter housing.



6. Remove O-ring from input clutch assembly.



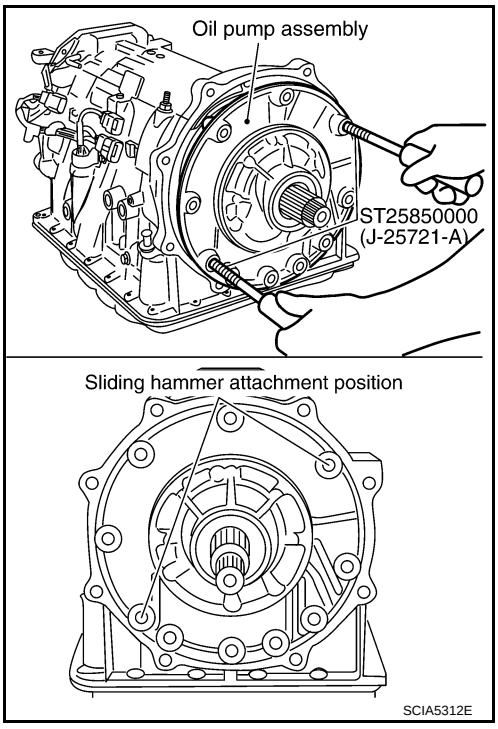
7. Remove tightening bolts for oil pump assembly and transmission case.



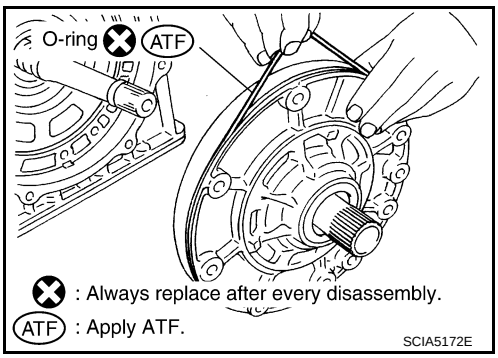
8. Attach the sliding hammers to oil pump assembly and extract it evenly from transmission case.

CAUTION:

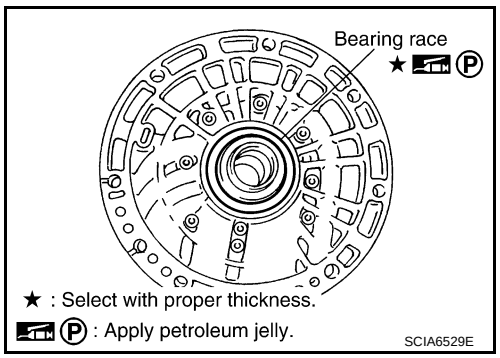
- **Fully tighten sliding hammer screw.**
- **Make sure that bearing race is installed to the oil pump assembly edge surface.**



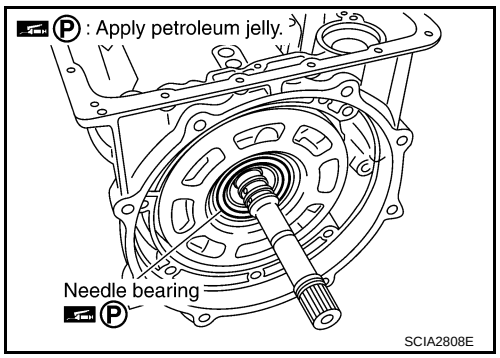
9. Remove O-ring from oil pump assembly.



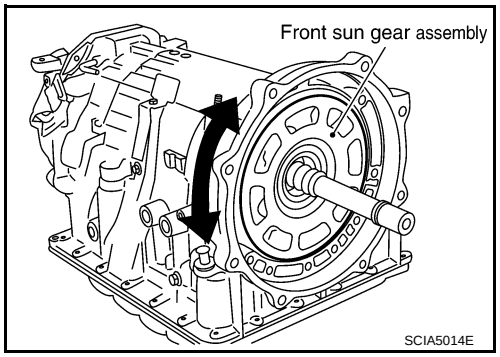
10. Remove bearing race from oil pump assembly.



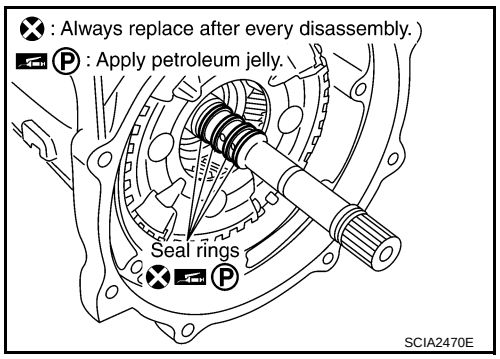
11. Remove needle bearing from front sun gear.



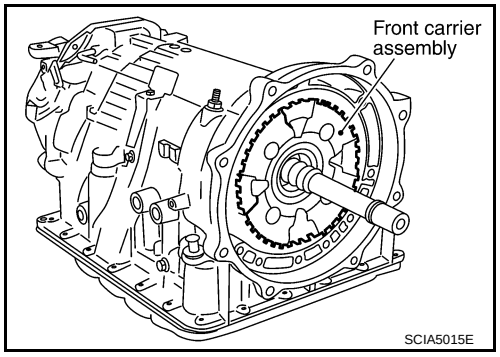
12. Remove front sun gear assembly from front carrier assembly.
NOTE:
Remove front sun gear by rotating left/right.



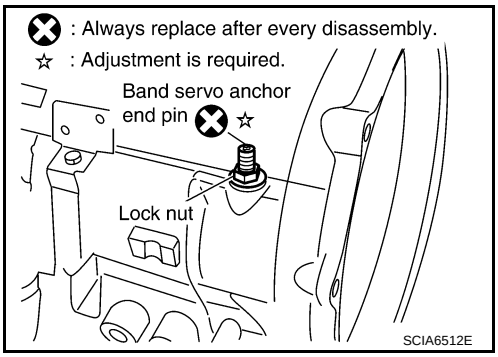
13. Remove seal rings from input clutch assembly.



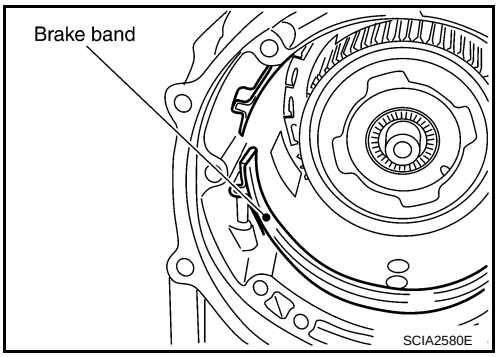
14. Remove front carrier assembly from rear carrier assembly. (With input clutch assembly and rear internal gear.)
CAUTION:
Be careful to remove it with needle bearing.



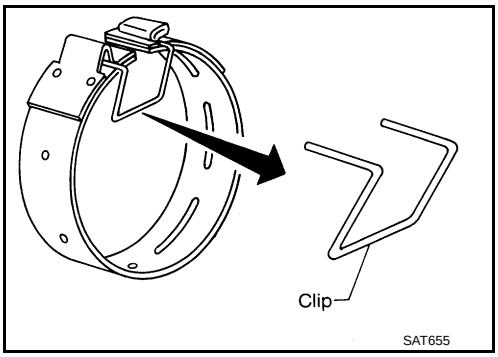
15. Loosen lock nut and remove band servo anchor end pin from transmission case.



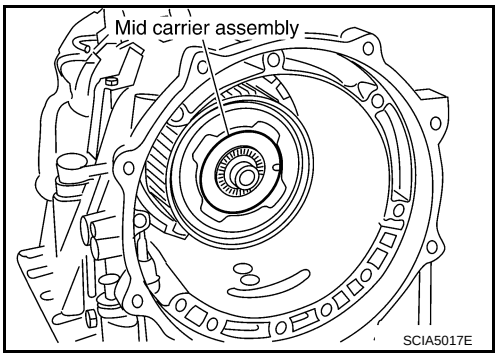
16. Remove brake band from transmission case.



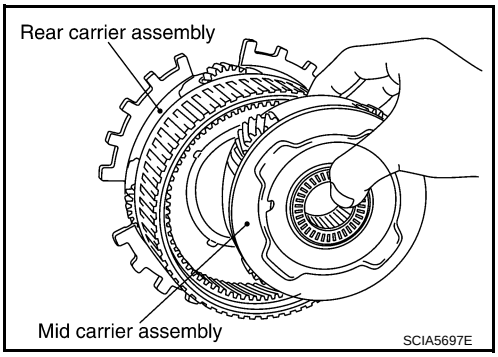
- **To prevent brake linings from cracking or peeling, do not stretch the flexible band unnecessarily. When removing the brake band, always secure it with a clip as shown in the figure at right.**
  Leave the clip in position after removing the brake band.
- **Check brake band facing for damage, cracks, wear or burns.**



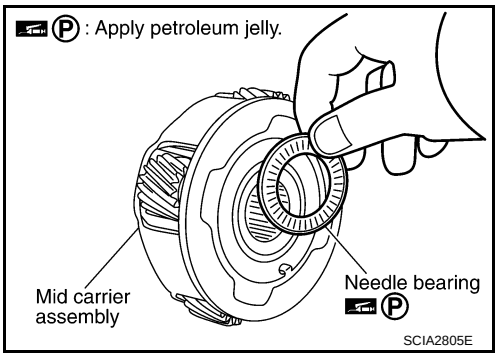
17. Remove mid carrier assembly and rear carrier assembly as a unit.



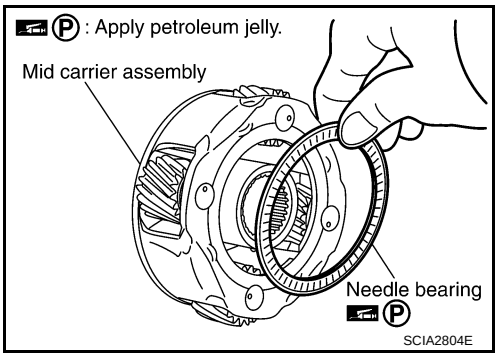
18. Remove mid carrier assembly from rear carrier assembly.



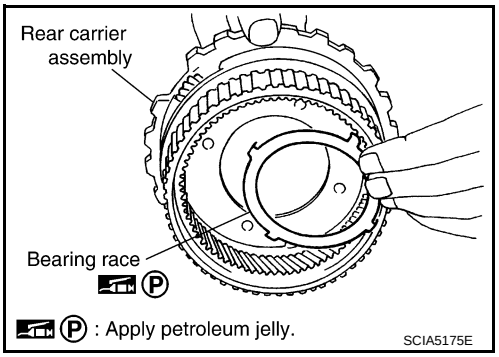
19. Remove needle bearing (front side) from mid carrier assembly.



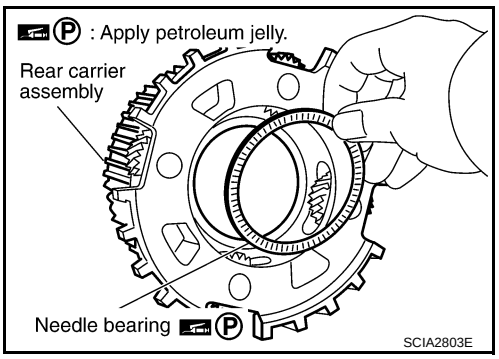
20. Remove needle bearing (rear side) from mid carrier assembly.



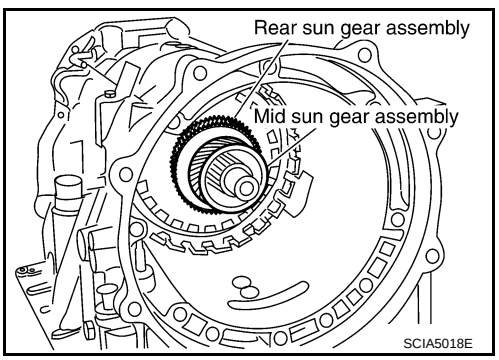
21. Remove bearing race from rear carrier assembly.



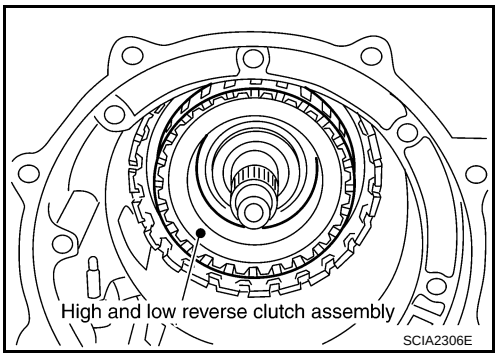
22. Remove needle bearing from rear carrier assembly.



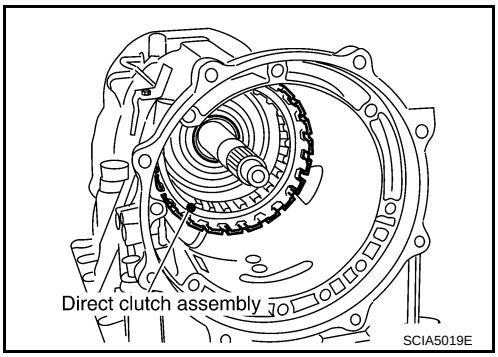
23. Remove mid sun gear assembly, rear sun gear assembly and high and low reverse clutch hub as a unit.
CAUTION:
Be careful to remove then with bearing race and needle bearing.



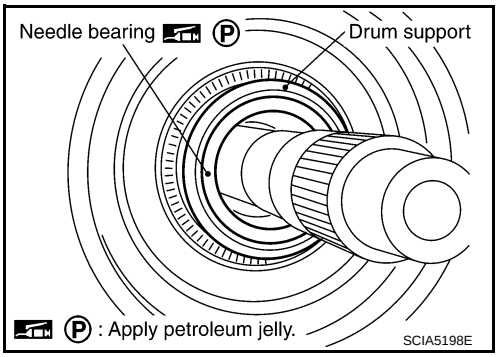
24. Remove high and low reverse clutch assembly from direct clutch assembly.
CAUTION:
Make sure that needle bearing is installed to high and low reverse clutch assembly edge surface.



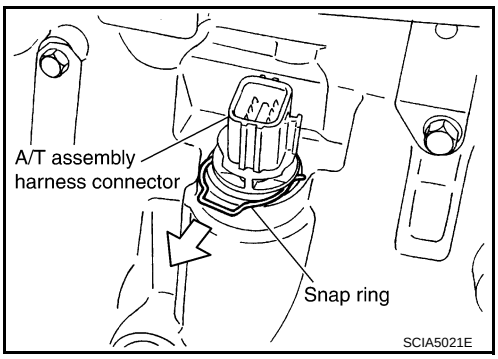
25. Remove direct clutch assembly from reverse brake.



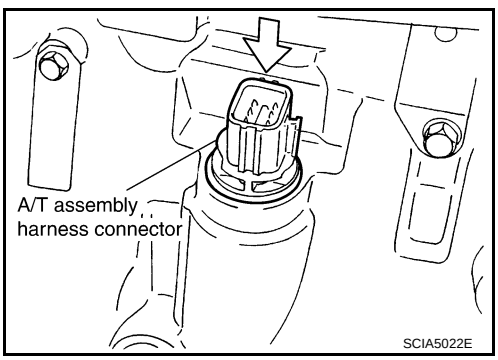
26. Remove needle bearing from drum support.



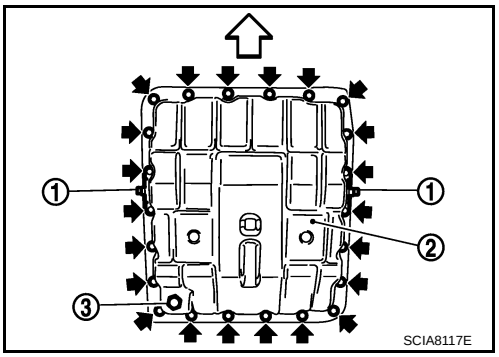
27. Remove snap ring from A/T assembly harness connector.



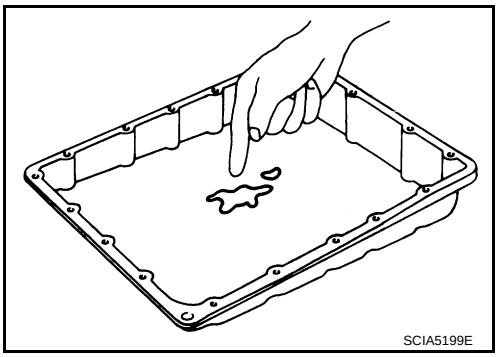
28. Push A/T assembly harness connector.
CAUTION:
Be careful not to damage connector.



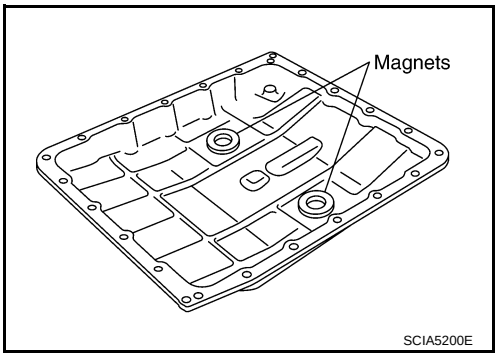
29. Remove clips (1), oil pan (2) and oil pan gasket.
    - ⇦: Front
    - ⬅: Oil pan mounting bolt
    - Drain bolt (3)



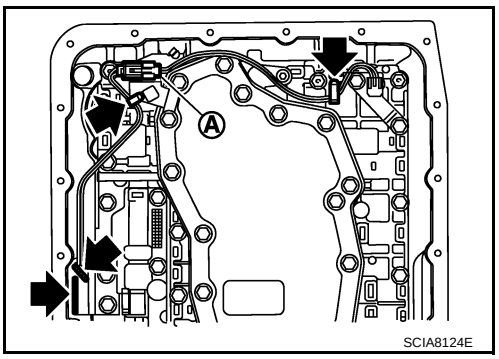
30. Check foreign materials in oil pan to help determine causes of malfunction. If the ATF is very dark, smells burned, or contains foreign particles, the frictional material (clutches, band) may need replacement. A tacky film that will not wipe clean indicates varnish build up. Varnish can cause valves, servo, and clutches to stick and can inhibit pump pressure.
    - **If frictional material is detected, perform A/T fluid cooler cleaning. Refer to AT-14, "A/T Fluid Cooler Cleaning".**



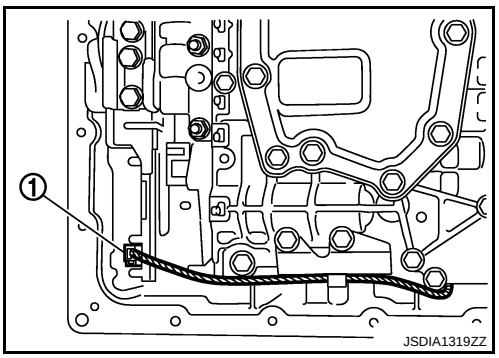
31. Remove magnets from oil pan.



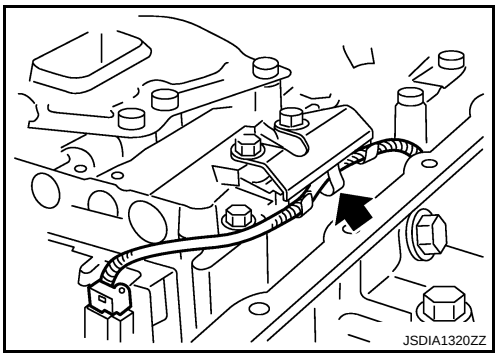
32. Disconnect A/T fluid temperature sensor 2 connector (A).
    CAUTION:
    Be careful not to damage connector.
33. Straighten terminal clips (⬅) to free terminal cord assembly and A/T fluid temperature sensor 2 harness.



34. Disconnect output speed sensor connector (1).
    CAUTION:
    Be careful not to damage connector.

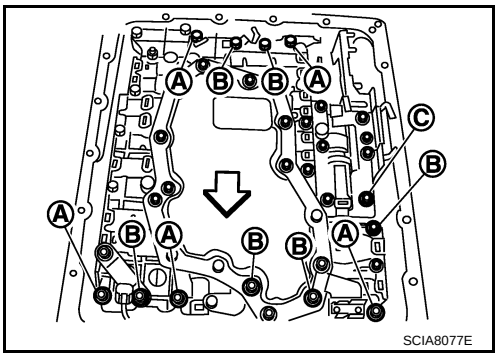


35. Straighten terminal clip (⬅) to free output speed sensor harness.

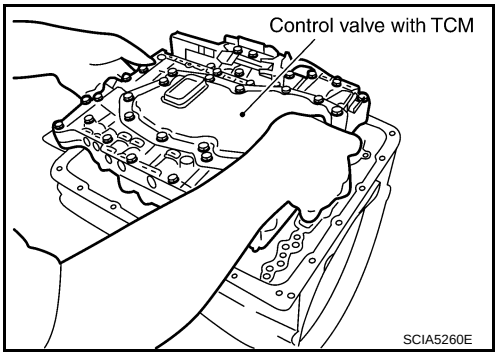


36. Remove bolts (A), (B) and (C) from control valve with TCM.
    - ⇦: Front

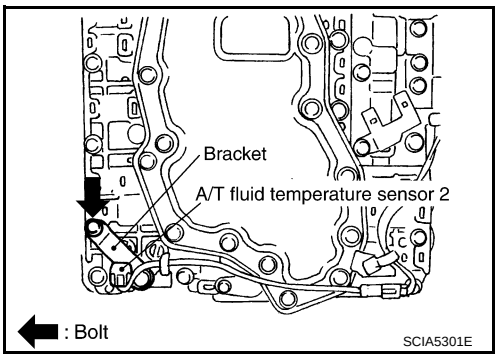
Bolt symbol	Length mm (in)	Number of bolts
A	42 (1.65)	5
B	55 (2.17)	6
C	40 (1.57)	1



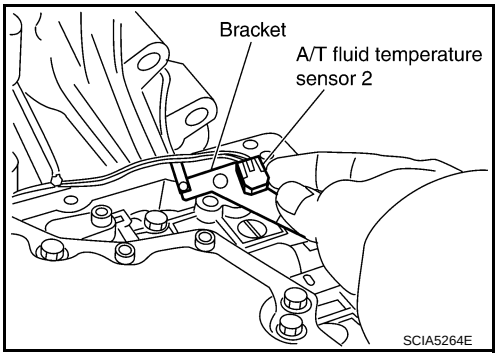
37. Remove control valve with TCM from transmission case.
    CAUTION:
    When removing, be careful with the manual valve notch and manual plate height. Remove it vertically.



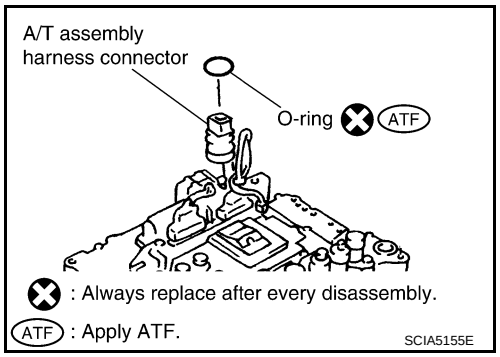
38. Remove A/T fluid temperature sensor 2 with bracket from control valve with TCM.



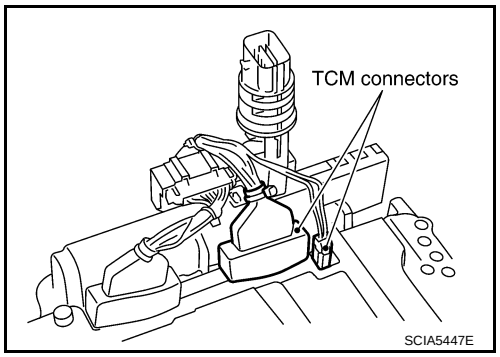
39. Remove bracket from A/T fluid temperature sensor 2.



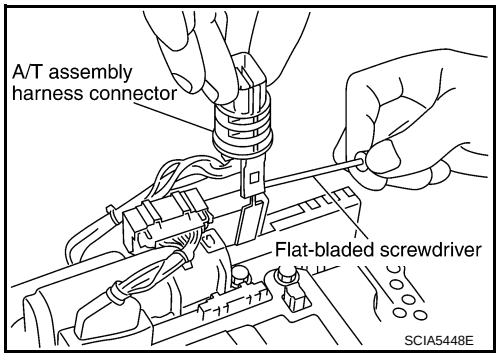
40. Remove O-ring from A/T assembly harness connector.



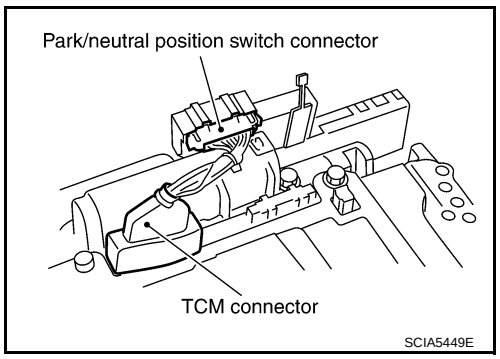
41. Disconnect TCM connectors.
CAUTION:
Be careful not to damage connectors.



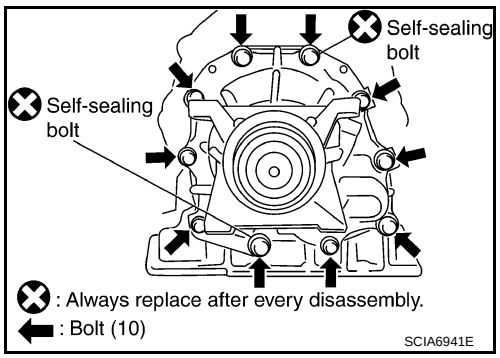
42. Remove A/T assembly harness connector from control valve with TCM using a flat-bladed screwdriver.



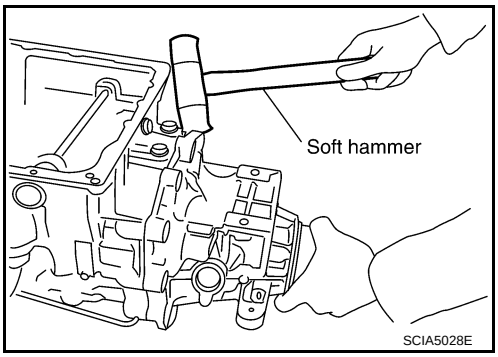
43. Disconnect TCM connector (1) and transmission range switch connector (2).
CAUTION:
Be careful not to damage connectors.



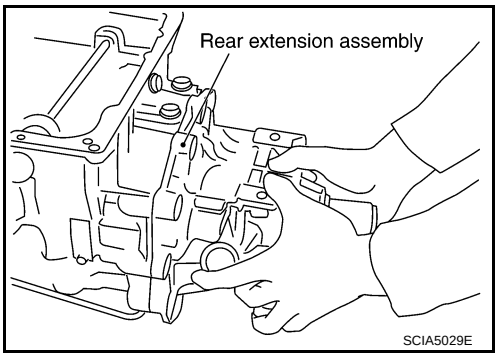
44. Remove tightening bolts for rear extension assembly and transmission case.



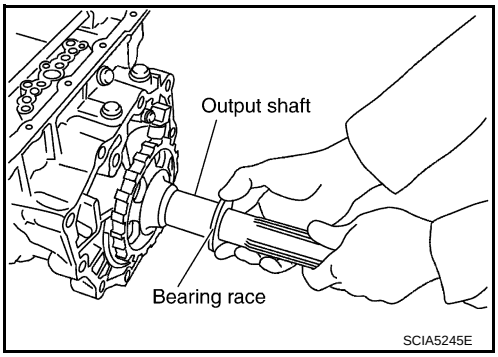
45. Tap rear extension assembly with soft hammer.



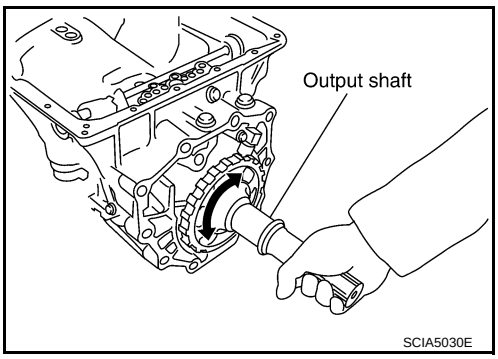
46. Remove rear extension assembly from transmission case. (With needle bearing)



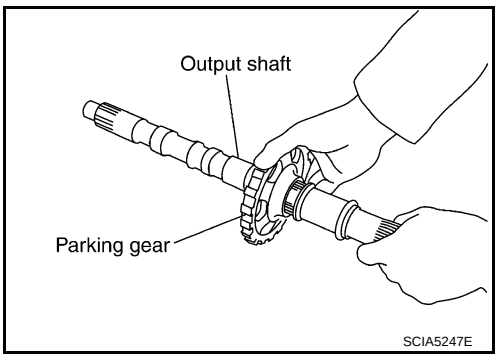
47. Remove bearing race from output shaft.



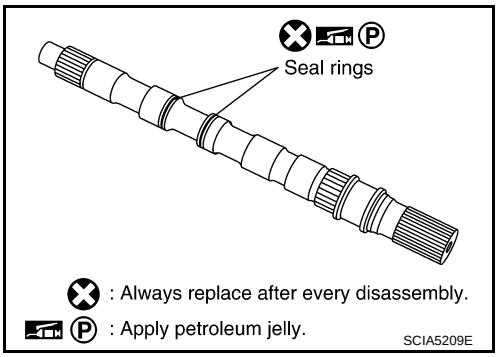
48. Remove output shaft from transmission case by rotating left/ right.



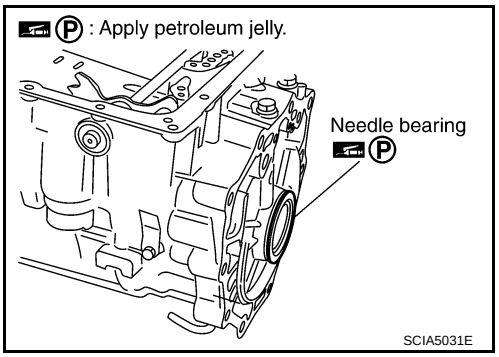
49. Remove parking gear from output shaft.



50. Remove seal rings from output shaft.



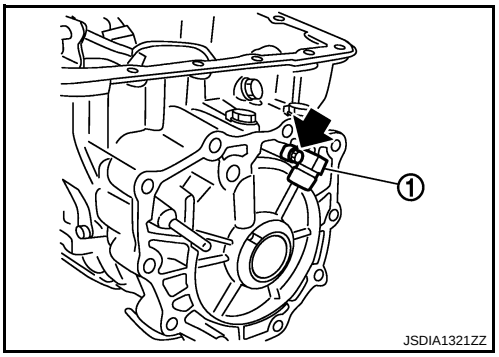
51. Remove needle bearing from transmission case.



52. Remove output speed sensor (1) from transmission case.

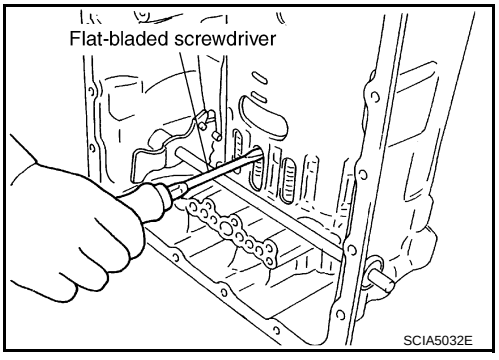
⬅ :Bolt

CAUTION:
- **Do not subject it to impact by dropping or hitting it.**
- **Do not disassemble.**
- **Do not allow metal filings, etc. to get on the sensor's front edge magnetic area.**
- **Do not place in an area affected by magnetism.**

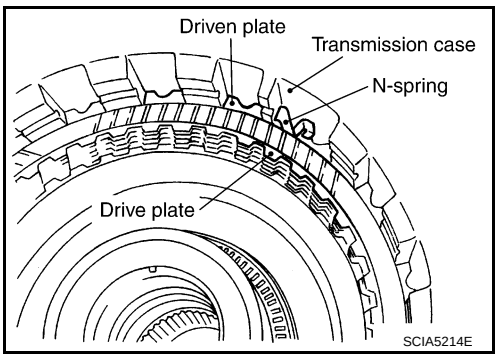


53. Remove reverse brake snap ring (fixing plate) using 2 flat-bladed screwdrivers.
NOTE:
Press out snap ring from transmission case oil pan side gap using a flat-bladed screwdriver, and remove it using another screwdriver.

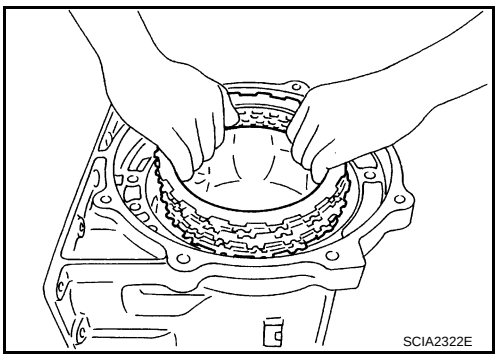
54. Remove reverse brake retaining plate from transmission case.
- Check facing for burns, cracks or damage. If necessary, replace the plate.



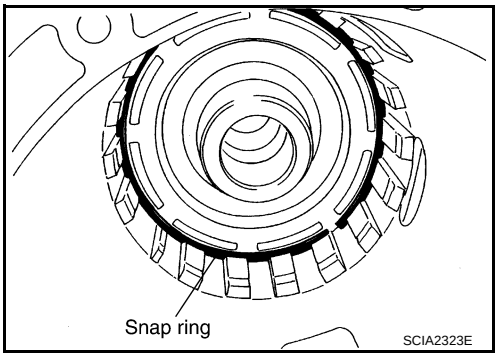
55. Remove N-spring from transmission case.



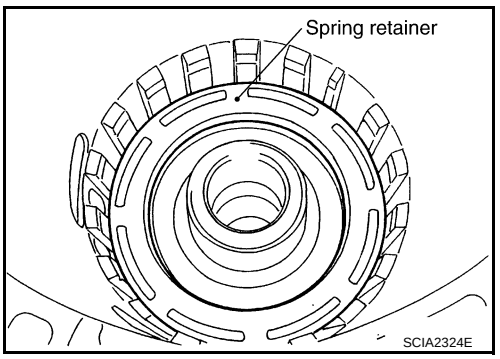
56. Remove reverse brake drive plates, driven plates and dish plates from transmission case.
CAUTION:
Be careful to remove it with N-spring.



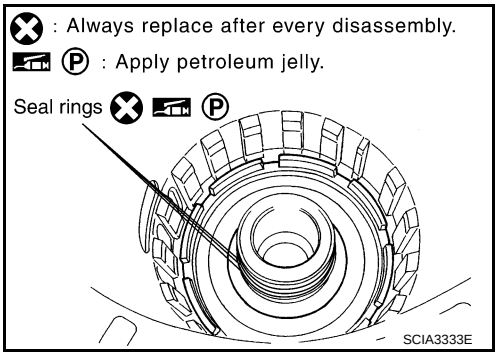
57. Remove snap ring (fixing spring retainer) using a flat-bladed screwdriver.



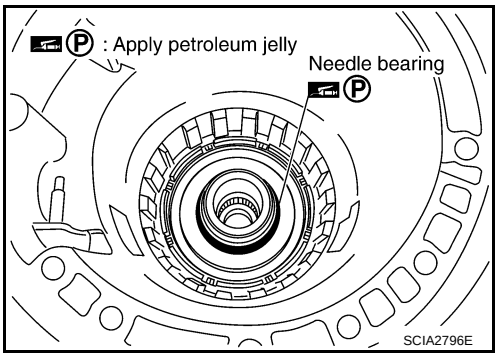
58. Remove spring retainer and return spring from transmission case.



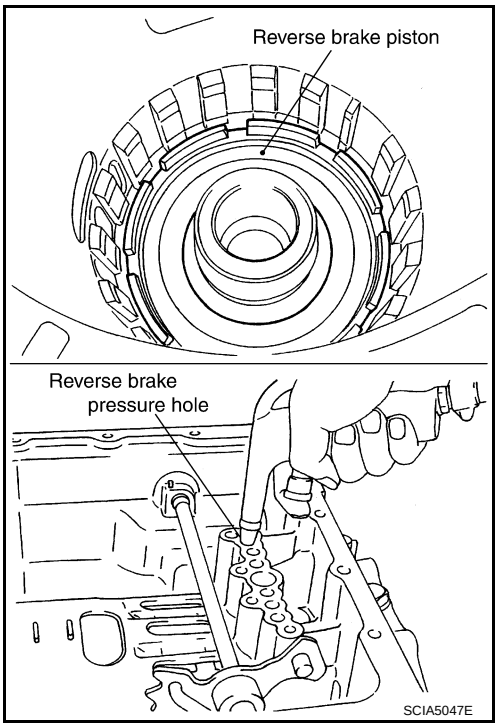
59. Remove seal rings from drum support.



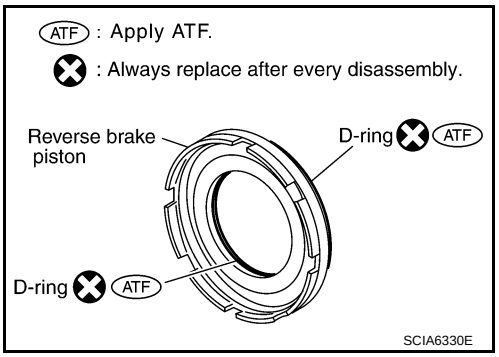
60. Remove needle bearing from drum support edge surface.



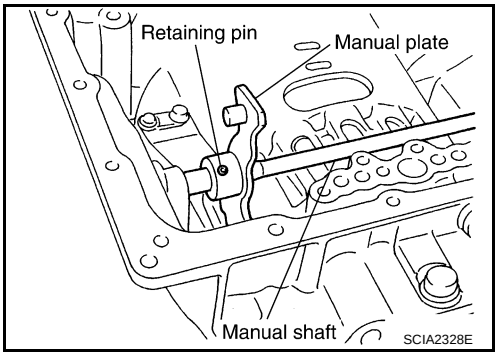
61. Remove reverse brake piston from transmission case with compressed air. Refer to AT-237, "Oil Channel".
CAUTION:
Care should be taken not to abruptly blow air. It makes pistons incline, as the result, it becomes hard to disassemble the pistons.



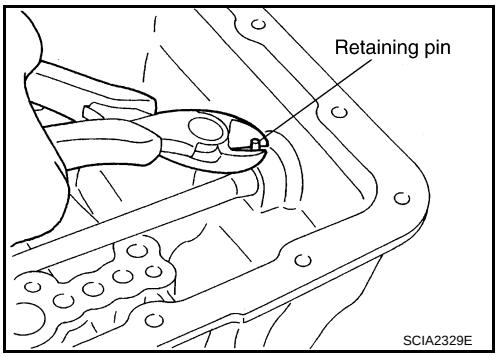
62. Remove D-rings from reverse brake piston.



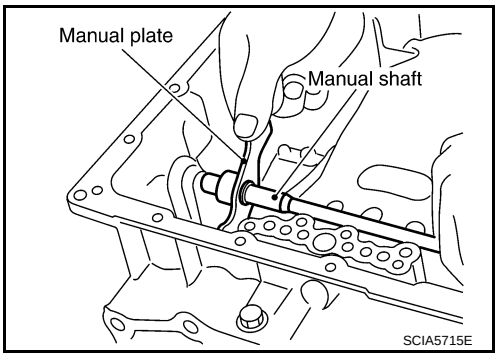
63. Use a pin punch [4 mm (0.16 in) dia. commercial service tool] to knock out retaining pin.



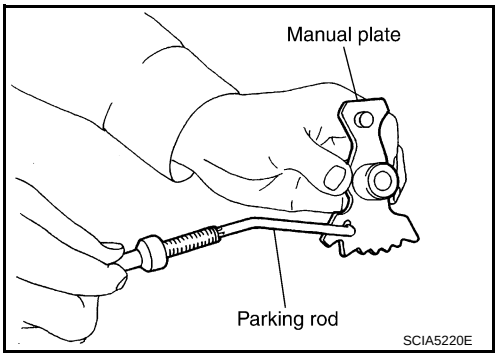
64. Remove manual shaft retaining pin using pair of nippers.



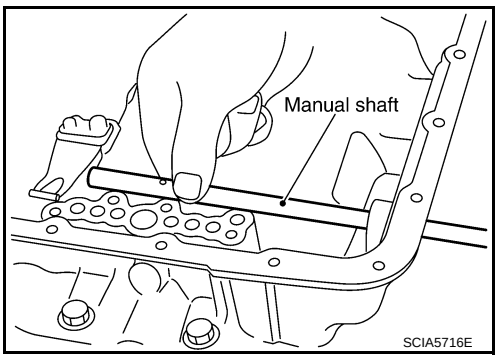
65. Remove manual plate (with parking rod) from manual shaft.



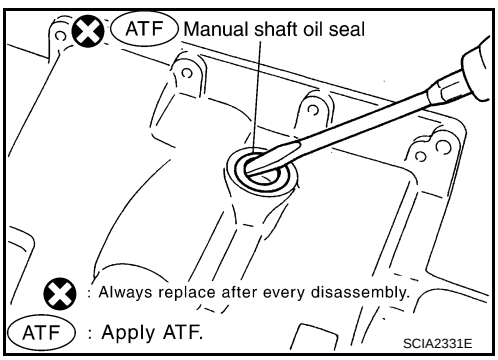
66. Remove parking rod from manual plate.



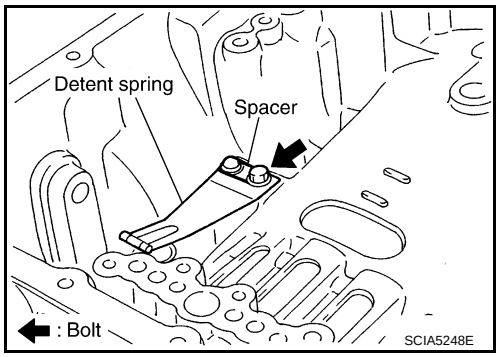
67. Remove manual shaft from transmission case.



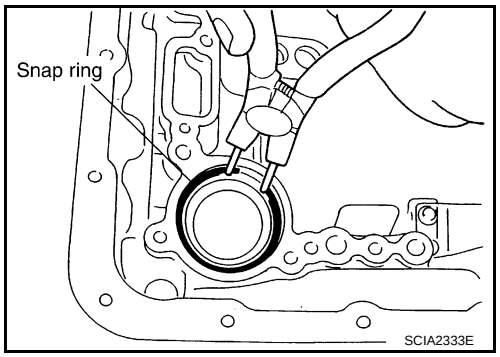
68. Remove manual shaft oil seals using a flat-bladed screwdriver.
CAUTION:
Be careful not to scratch transmission case.



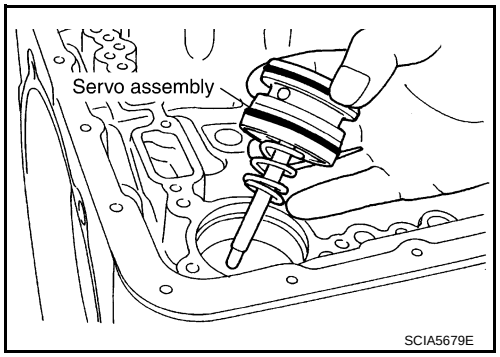
69. Remove detent spring and spacer from transmission case.



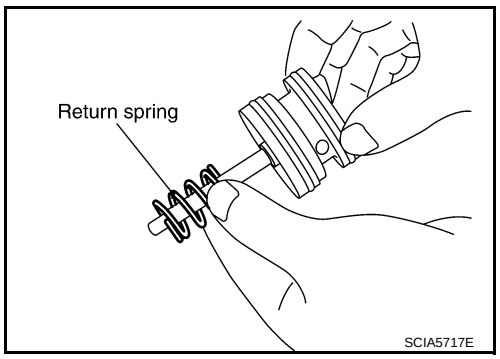
70. Remove snap ring from transmission case using pair of snap ring pliers.



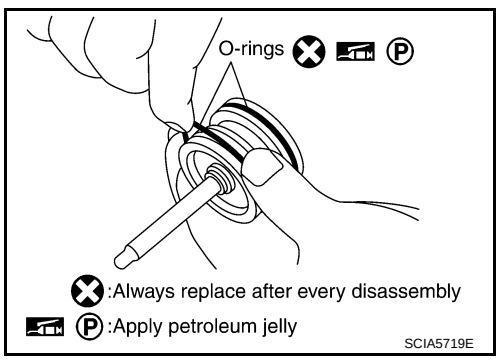
71. Remove servo assembly (with return spring) from transmission case.



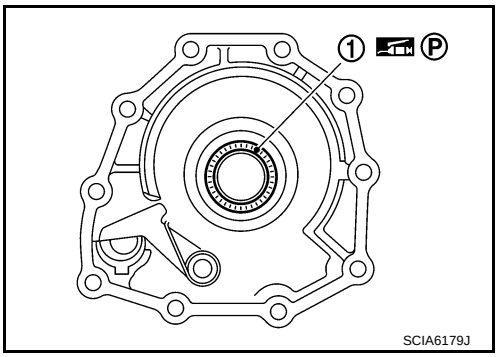
72. Remove return spring from servo assembly.



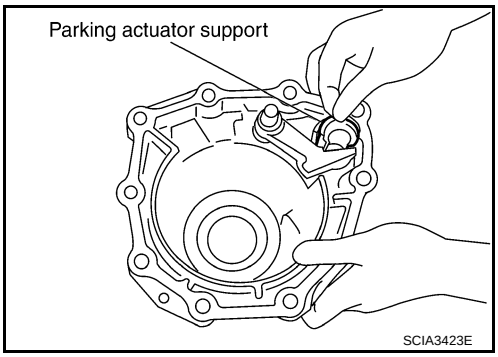
73. Remove O-rings from servo assembly.



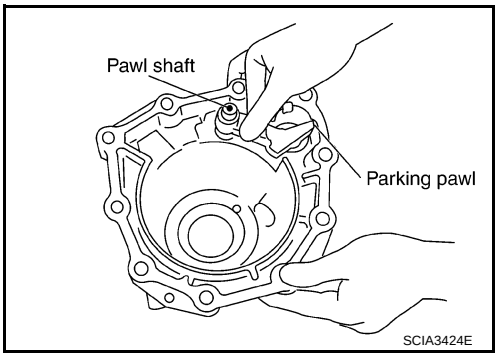
74. Remove needle bearing (1) from rear extension.



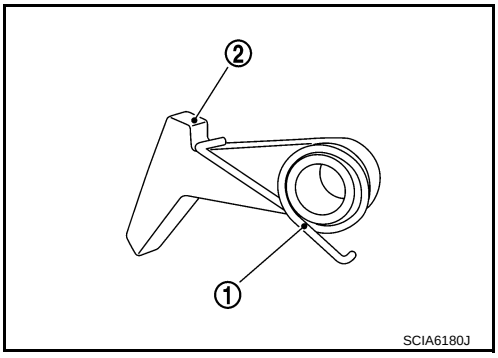
75. Remove parking actuator support from rear extension.



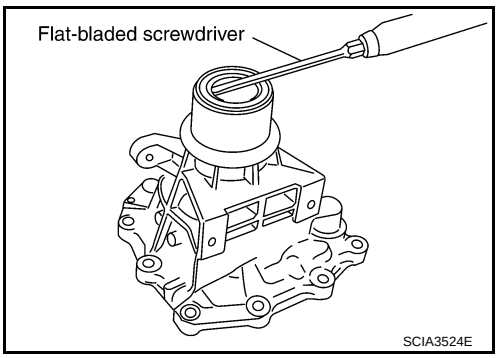
76. Remove parking pawl (with return spring) and pawl shaft from rear extension.



77. Remove return spring (1) from parking pawl (2).



78. Remove rear oil seal from rear extension.
CAUTION:
Be careful not to scratch rear extension.

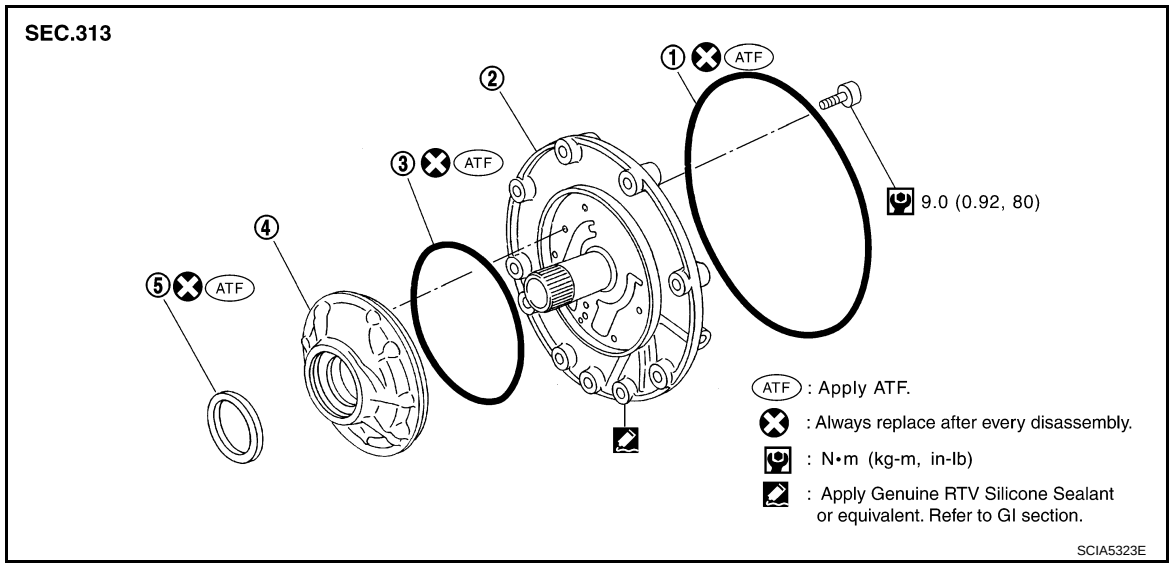


REPAIR FOR COMPONENT PARTS

Oil Pump

INFOID:0000000004657029

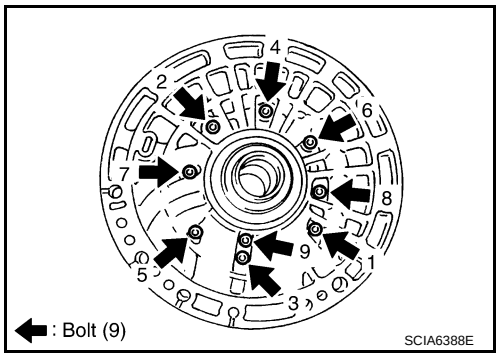
COMPONENTS



1. O-ring
2. Oil pump cover
3. O-ring
4. Oil pump housing
5. Oil pump housing oil seal

DISASSEMBLY

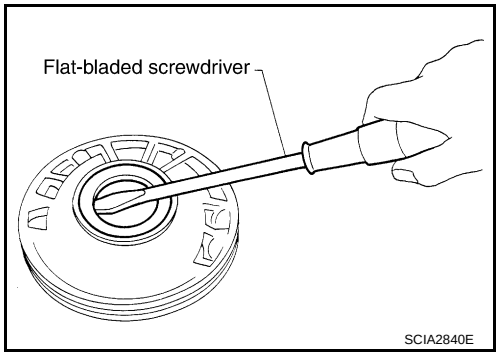
1. Remove oil pump housing from oil pump cover.



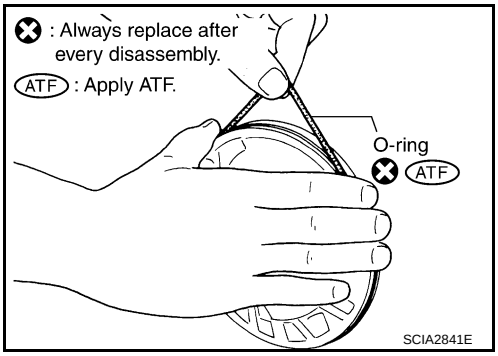
2. Remove oil pump housing oil seal using a flat-bladed screwdriver.

CAUTION:

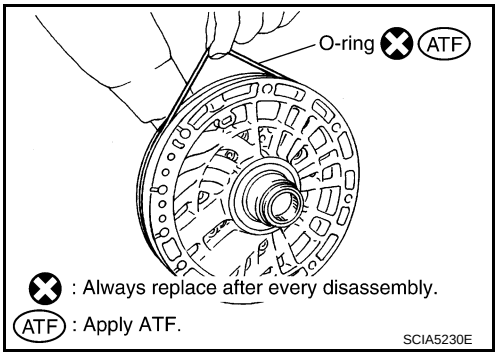
Be careful not to scratch oil pump housing.



3. Remove O-ring from oil pump housing.

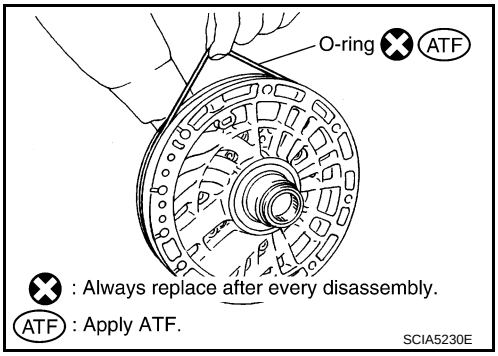


4. Remove O-ring from oil pump cover.

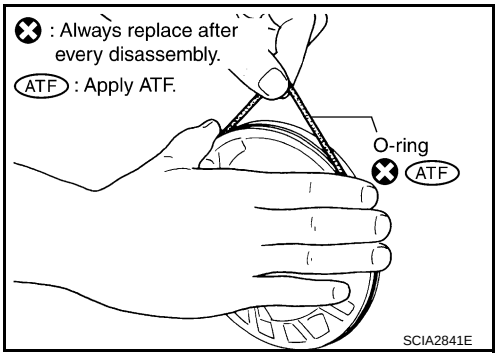


ASSEMBLY

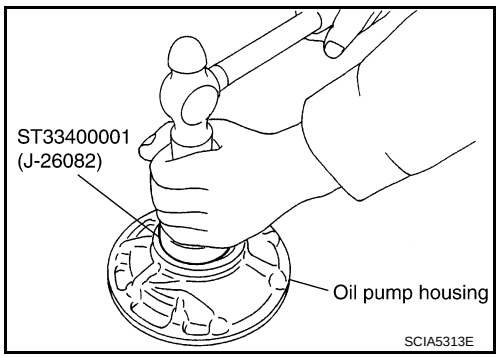
1. Install O-ring to oil pump cover.
   CAUTION:
   - **Do not reuse O-ring.**
   - **Apply ATF to O-ring.**



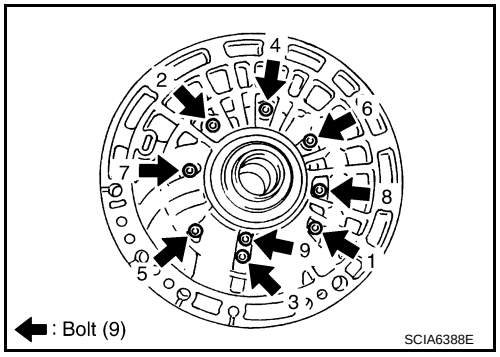
2. Install O-ring to oil pump housing.
   CAUTION:
   - **Do not reuse O-ring.**
   - **Apply ATF to O-ring.**



3. Install oil pump housing oil seal to the oil pump housing until it is flush using the drift.
CAUTION:
- **Do not reuse oil seal.**
- **Apply ATF to oil seal.**



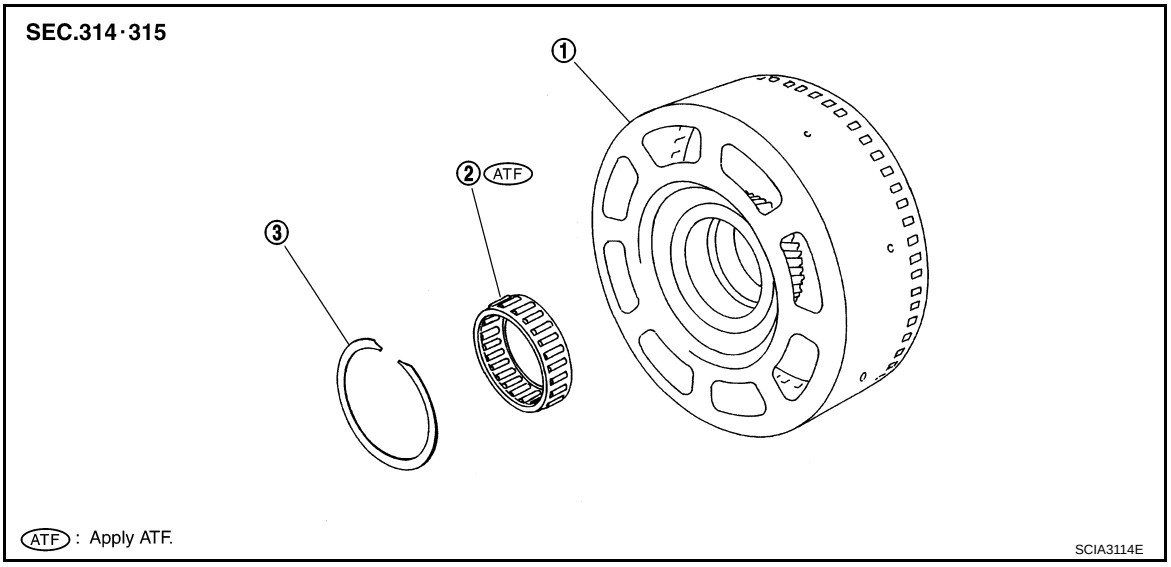
4. Install oil pump housing to oil pump cover.
5. Tighten bolts to the specified torque in numerical order shown in the figure after temporarily tightening them. Refer to "COMPONENTS".



Front Sun Gear, 3rd One-Way Clutch

INFOID:0000000004657030

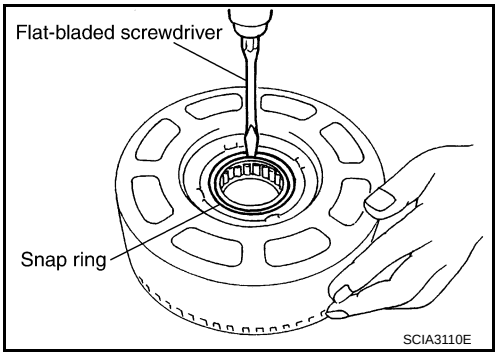
COMPONENTS



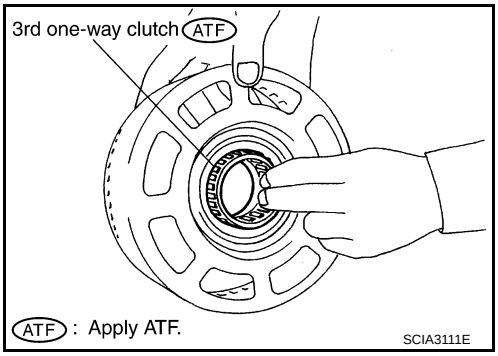
1. Front sun gear
2. 3rd one-way clutch
3. Snap ring

DISASSEMBLY

1. Remove snap ring from front sun gear using a flat-bladed screwdriver.



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 3rd one-way clutch.

Front Sun Gear Snap Ring

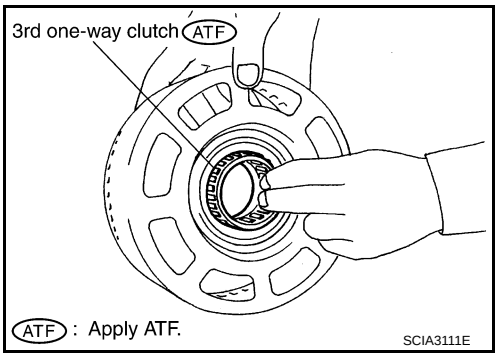
- Check for deformation, fatigue or damage.
  CAUTION:
  If necessary, replace snap ring.

Front Sun Gear

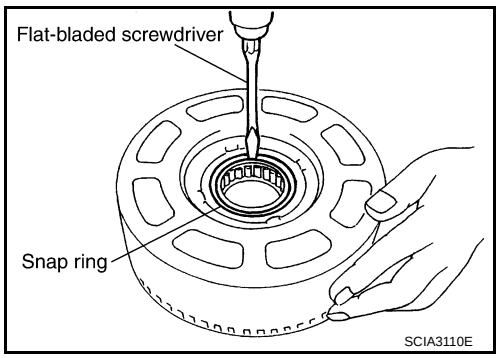
- Check for deformation, fatigue or damage.
  CAUTION:
  If necessary, replace front sun gear.

ASSEMBLY

1. Install 3rd one-way clutch in front sun gear.
   CAUTION:
   Apply ATF to 3rd one-way clutch.



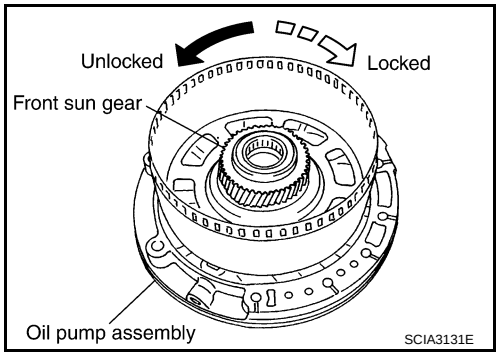
2. Install snap ring in front sun gear using a flat-bladed screwdriver.



3. Check operation of 3rd one-way clutch.

a. Hold oil pump assembly and turn front sun gear.

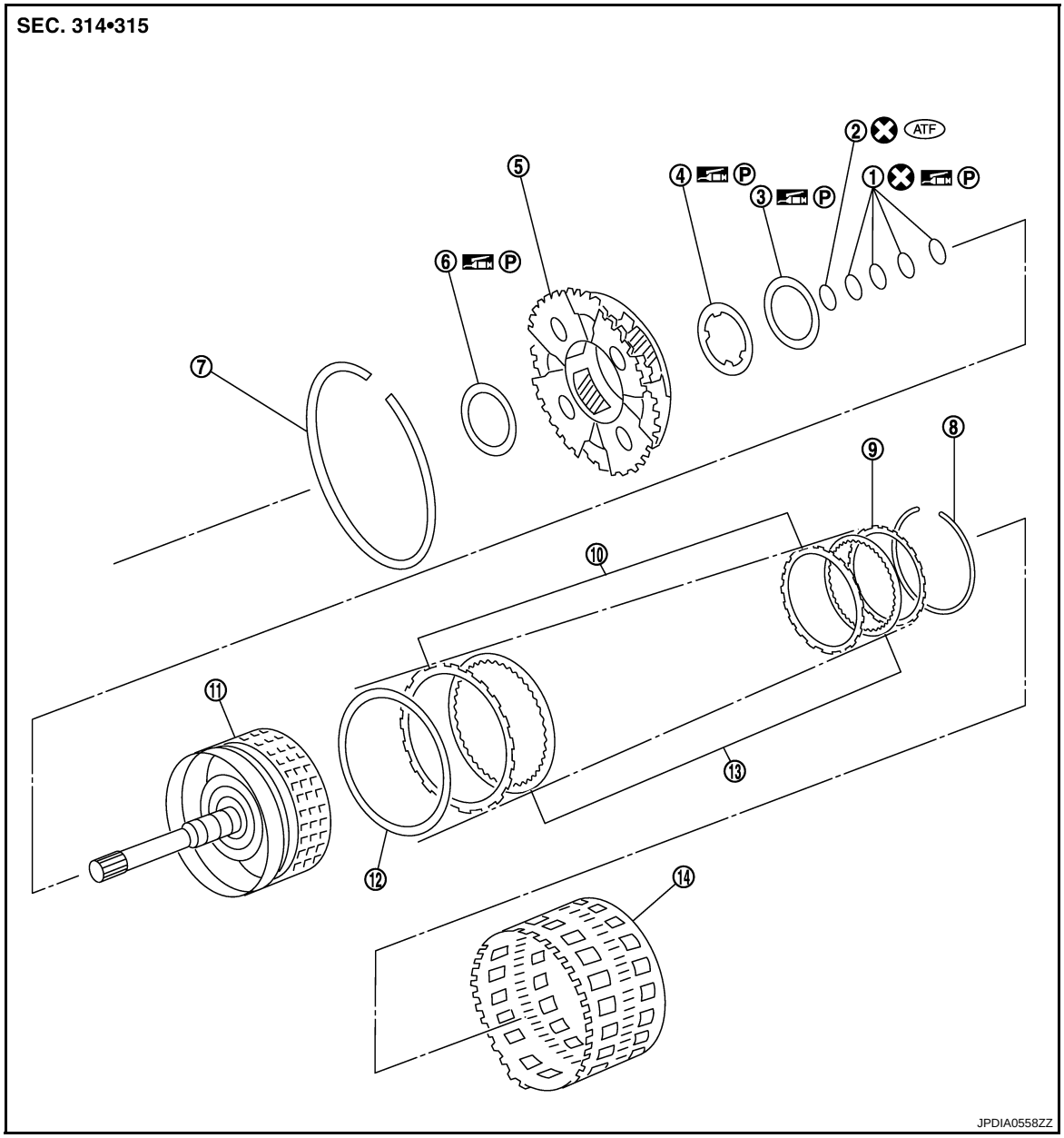
b. Check 3rd one-way clutch for correct locking and unlocking directions.
CAUTION:
If not as shown in the figure, check installation direction of 3rd one-way clutch.



Front Carrier, Input Clutch, Rear Internal Gear

INFOID:0000000004657031

COMPONENTS

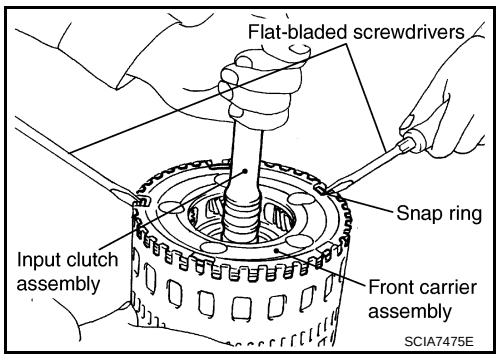


1. Seal ring
2. O-ring
3. Needle bearing
4. Bearing race
5. Front carrier assembly
6. Needle bearing
7. Snap ring
8. Snap ring
9. Retaining plate
10. Driven plate
11. Input clutch drum
12. Dish plate
13. Drive plate
14. Rear internal gear

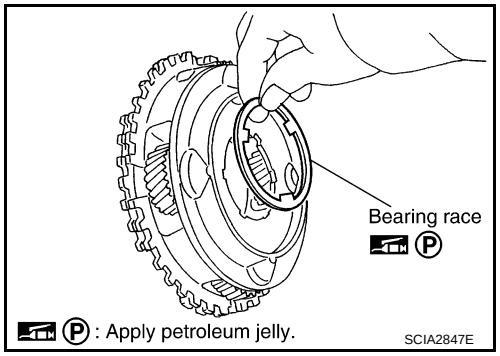
Refer to GI section to make sure icons (symbol marks) in the figure. Refer to GI-8, "Component".

DISASSEMBLY

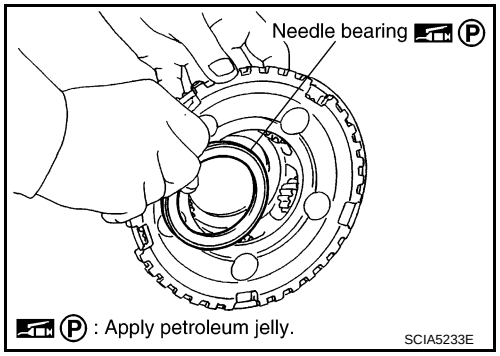
1. Compress snap ring using 2 flat-bladed screwdrivers.
2. Remove front carrier assembly and input clutch assembly from rear internal gear.
3. Remove front carrier assembly from input clutch assembly.



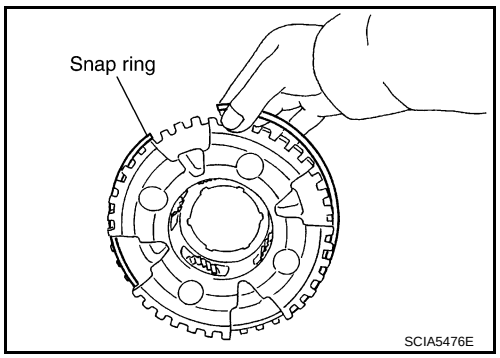
a. Remove bearing race from front carrier assembly.



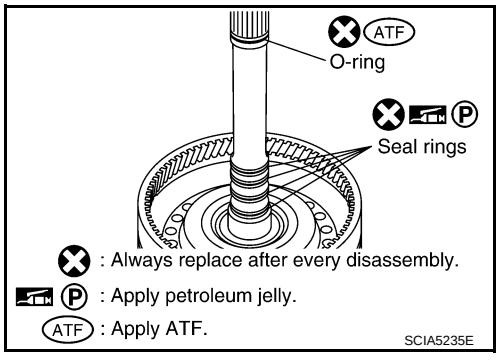
b. Remove needle bearing from front carrier assembly.



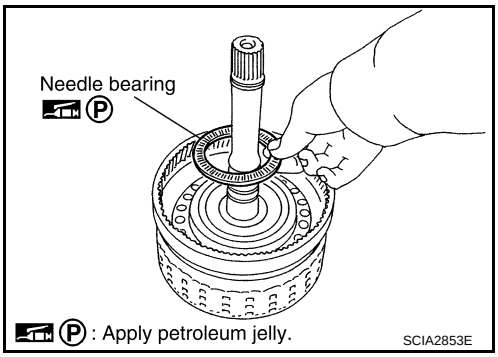
c. Remove snap ring from front carrier assembly.
CAUTION:
Do not expand snap ring excessively.



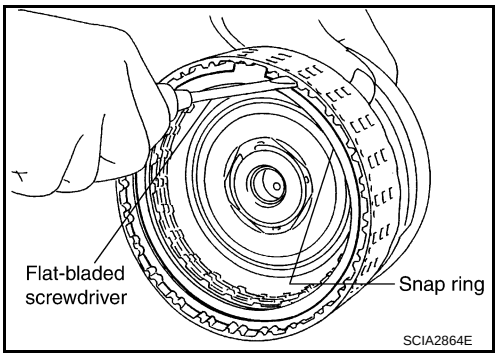
4. Disassemble input clutch assembly.
a. Remove O-ring and seal rings from input clutch assembly.



b. Remove needle bearing from input clutch assembly.



c. Remove snap ring from input clutch drum using a flat-bladed screwdriver.
d. Remove retaining plate, drive plates and driven plates from input clutch drum.



INSPECTION

Front Carrier Snap Ring
- Check for deformation, fatigue or damage.

CAUTION:
If necessary, replace snap ring.

Input Clutch Snap Ring
- Check for deformation, fatigue or damage.

CAUTION:
If necessary, replace input clutch assembly.

Input Clutch Drum
- Check for deformation, fatigue or damage or burns.

CAUTION:
If necessary, replace input clutch assembly.

Input Clutch Drive Plates
- Check facing for burns, cracks or damage.

CAUTION:
If necessary, replace input clutch assembly.

Input Clutch Retaining Plate and Driven Plates
- Check facing for burns, cracks or damage.

CAUTION:
If necessary, replace input clutch assembly.

Front Carrier
- Check for deformation, fatigue or damage.

CAUTION:
If necessary, replace front carrier assembly.

Rear Internal Gear
- Check for deformation, fatigue or damage.

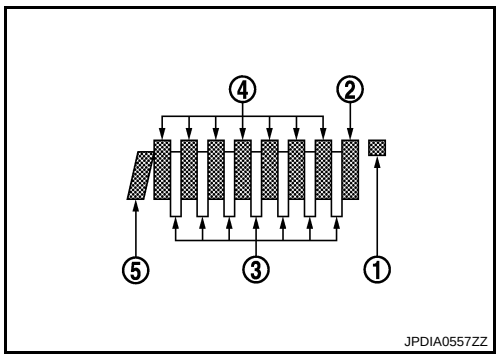
CAUTION:
If necessary, replace rear internal gear.

ASSEMBLY

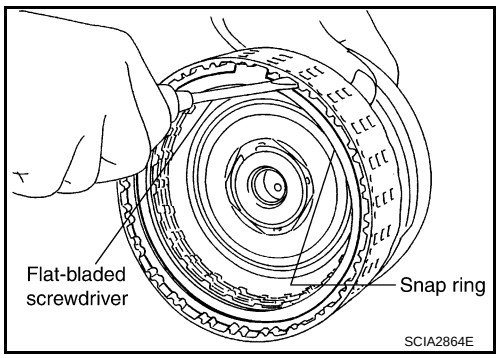
1. Install input clutch.

a. Install driven plates, drive plates and retaining plate in input clutch drum.
- Snap ring (1)
- Retaining plate (2)
- Drive plate (3)
- Driven plate (4)
- Dish plate (5)
- Drive plate/Driven plate: 7/7

CAUTION:
Take care with order of plates.

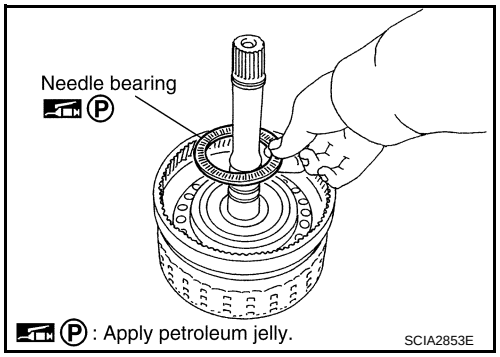


b. Install snap ring in input clutch drum using a flat-bladed screwdriver.



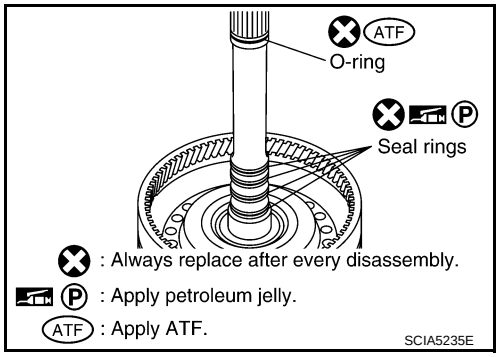
c. Install needle bearing in input clutch assembly.

CAUTION:
- **Take care with the direction of needle bearing. Refer to AT-238, "Location of Adjusting Shims, Needle Bearings, Thrust Washers and Snap Rings".**
- **Apply petroleum jelly to needle bearing.**



d. Install O-ring and seal rings in input clutch assembly.

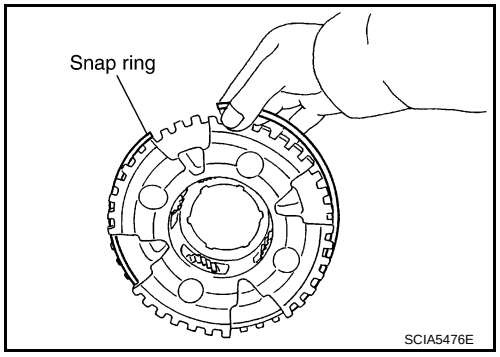
CAUTION:
- **Do not reuse O-ring and seal rings.**
- **Apply ATF to O-ring.**
- **Apply petroleum jelly to seal rings.**



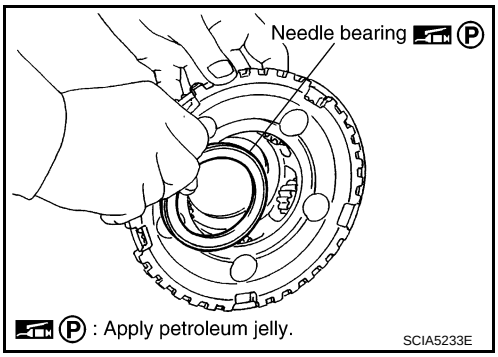
2. Install front carrier assembly.

a. Install snap ring to front carrier assembly.

CAUTION:
Do not expand snap ring excessively.

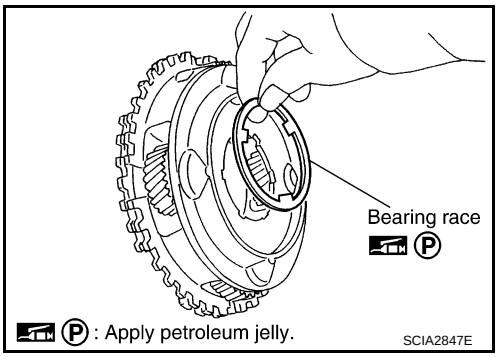


b. Install needle bearing in front carrier assembly.
CAUTION:
- **Take care with the direction of needle bearing. Refer to AT-238, "Location of Adjusting Shims, Needle Bearings, Thrust Washers and Snap Rings".**
- **Apply petroleum jelly to needle bearing.**

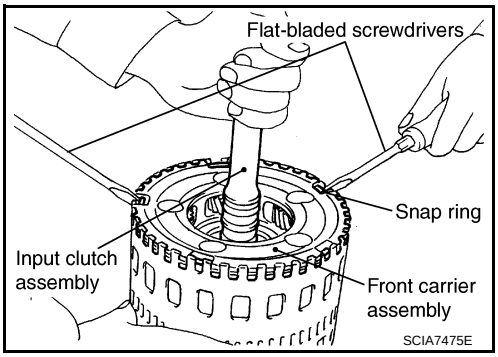


c. Install bearing race in front carrier assembly.
CAUTION:
Apply petroleum jelly to bearing race.

d. Install front carrier assembly to input clutch assembly.



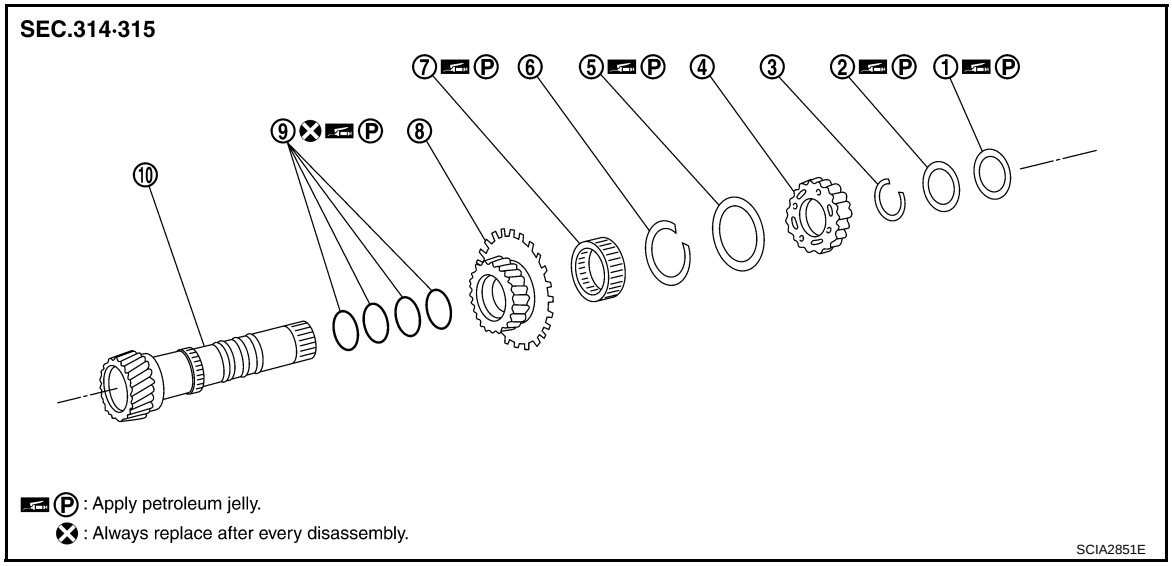
3. Compress snap ring using 2 flat-bladed screwdrivers.
4. Install front carrier assembly and input clutch assembly to rear internal gear.



Mid Sun Gear, Rear Sun Gear, High and Low Reverse Clutch Hub

INFOID:0000000004657032

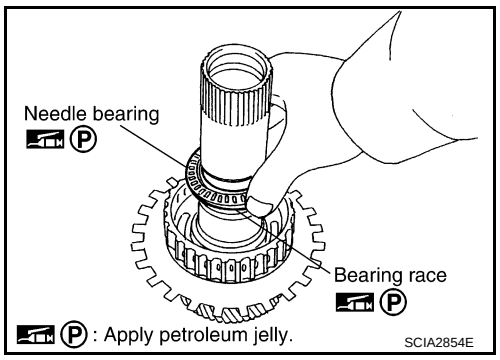
COMPONENTS



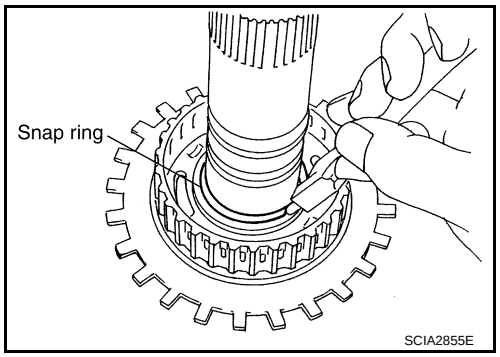
1. Needle bearing
2. Bearing race
3. Snap ring
4. High and low reverse clutch hub
5. Needle bearing
6. Snap ring
7. 1st one-way clutch
8. Rear sun gear
9. Seal ring
10. Mid sun gear

DISASSEMBLY

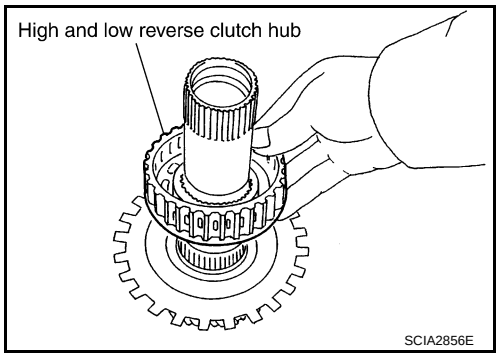
1. Remove needle bearing and bearing race from high and low reverse clutch hub.



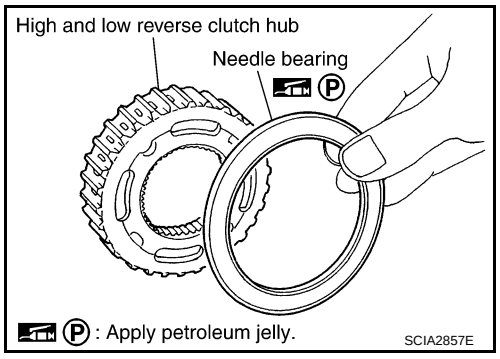
2. Remove snap ring from mid sun gear assembly using pair of snap ring pliers.
CAUTION:
Do not expand snap ring excessively.



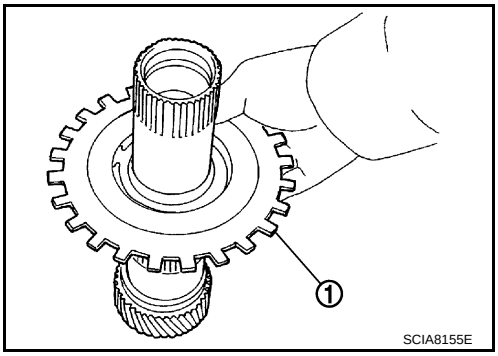
3. Remove high and low reverse clutch hub from mid sun gear assembly.



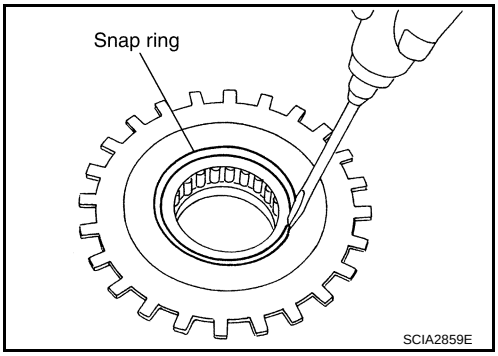
a. Remove needle bearing from high and low reverse clutch hub.



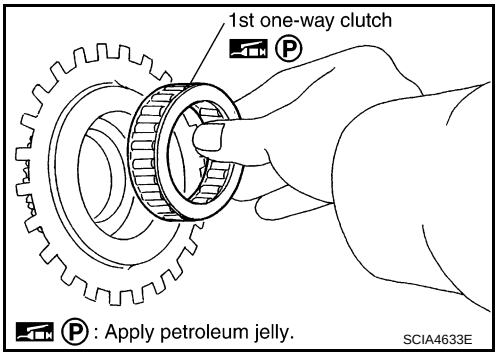
4. Remove rear sun gear assembly (1) from mid sun gear assembly.



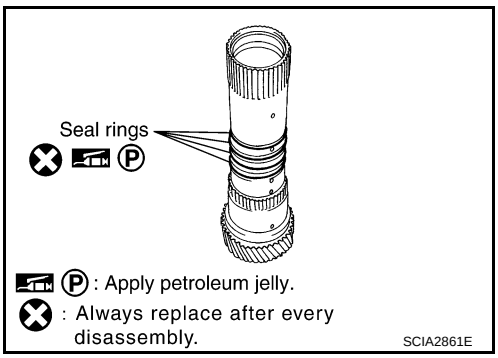
a. Remove snap ring from rear sun gear using a flat-bladed screwdriver.



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 snap ring.

1st One-way Clutch

- Check frictional surface for wear or damage.

CAUTION:
If necessary, replace 1st one-way clutch.

Mid Sun Gear

- Check for deformation, fatigue or damage.

CAUTION:
If necessary, replace mid sun gear.

Rear Sun Gear

- Check for deformation, fatigue or damage.

CAUTION:
If necessary, replace rear sun gear.

High and Low Reverse Clutch Hub

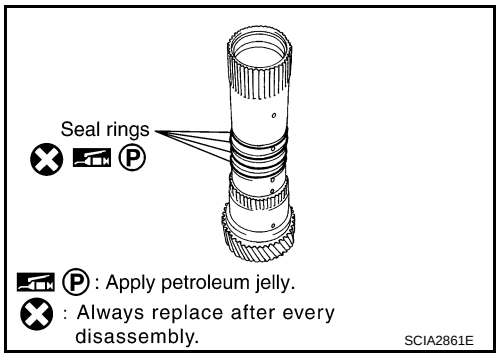
- Check for deformation, fatigue or damage.

CAUTION:
If necessary, replace high and low reverse clutch hub.

ASSEMBLY

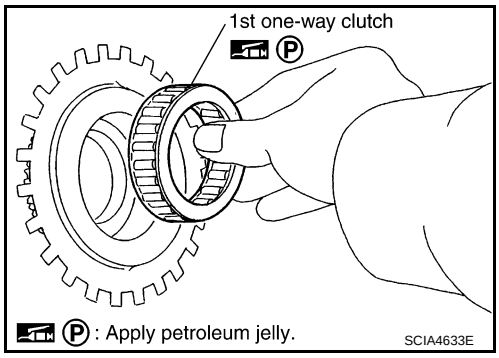
1. Install seal rings to mid sun gear.

CAUTION:
- **Do not reuse seal rings.**
- **Apply petroleum jelly to seal rings.**

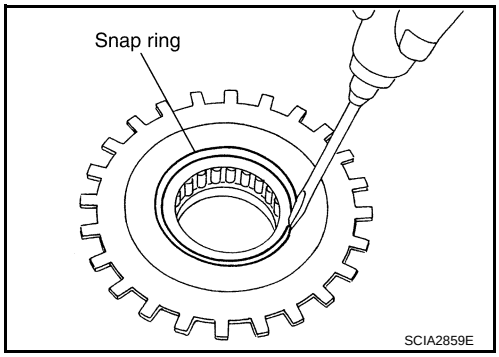


2. Install 1st one-way clutch to rear sun gear.

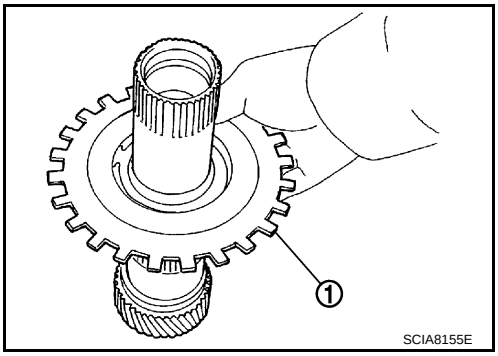
CAUTION:
Apply petroleum jelly to 1st one-way clutch.



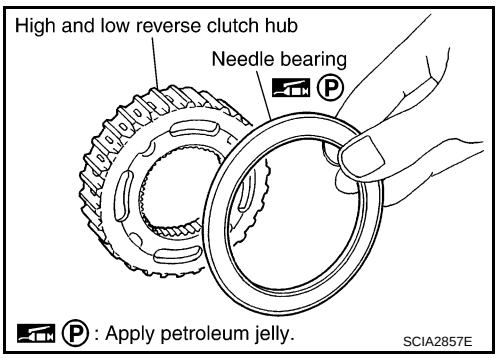
3. Install snap ring to rear sun gear using a flat-bladed screwdriver.



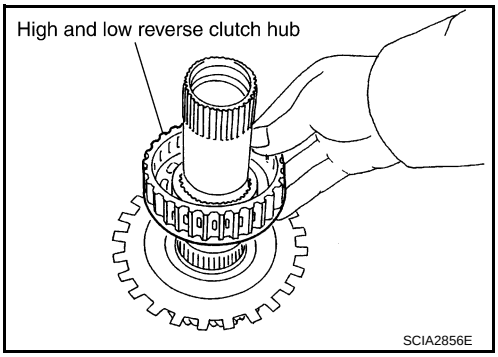
4. Install rear sun gear assembly (1) to mid sun gear assembly.



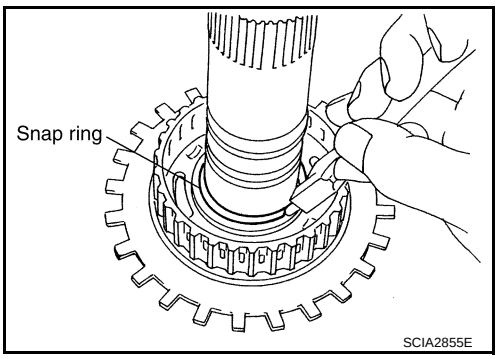
5. Install needle bearing to high and low reverse clutch hub.
CAUTION:
- **Take care with the direction of needle bearing. Refer to AT-238, "Location of Adjusting Shims, Needle Bearings, Thrust Washers and Snap Rings".**
- **Apply petroleum jelly to needle bearing.**



6. Install high and low reverse clutch hub to mid sun gear assembly.



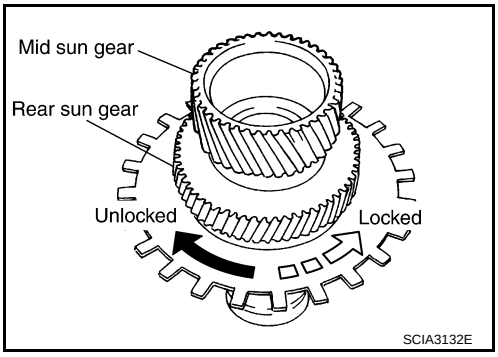
7. Install snap ring to mid sun gear assembly using pair of snap ring pliers.
CAUTION:
Do not expand snap ring excessively.



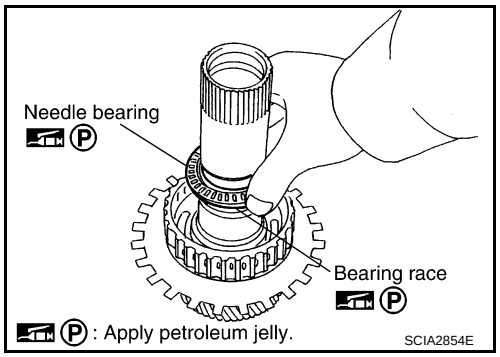
8. Check operation of 1st one-way clutch.

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 in illustration, check installation direction of 1st one-way clutch.



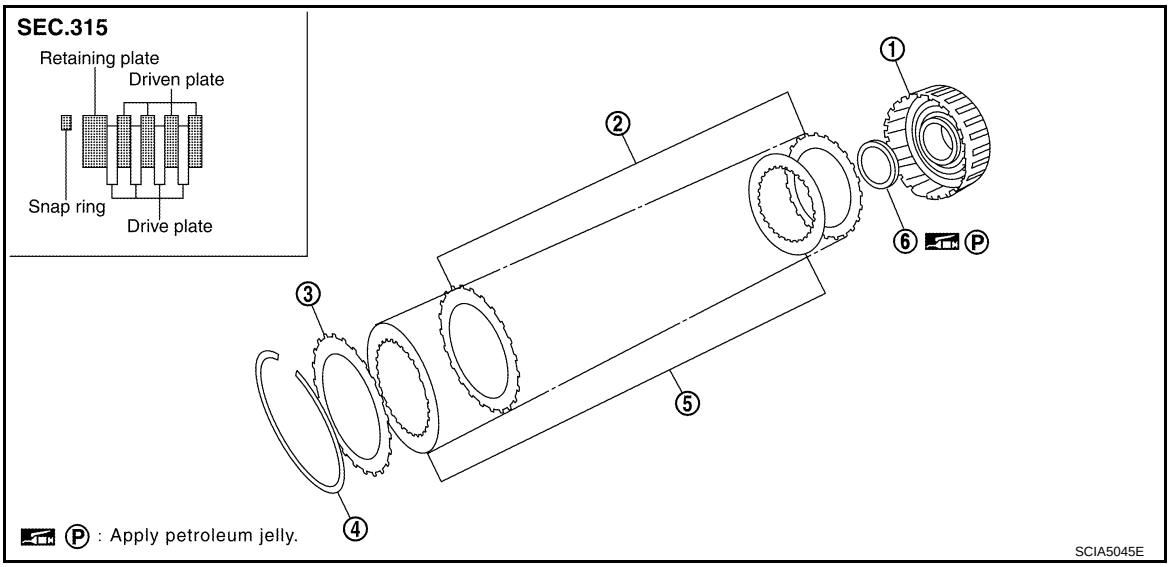
9. Install bearing race and needle bearing to high and low reverse clutch hub.
   CAUTION:
   - **Take care with the direction of needle bearing. Refer to AT-238, "Location of Adjusting Shims, Needle Bearings, Thrust Washers and Snap Rings".**
   - **Apply petroleum jelly to needle bearing.**



High and Low Reverse Clutch

INFOID:0000000004657033

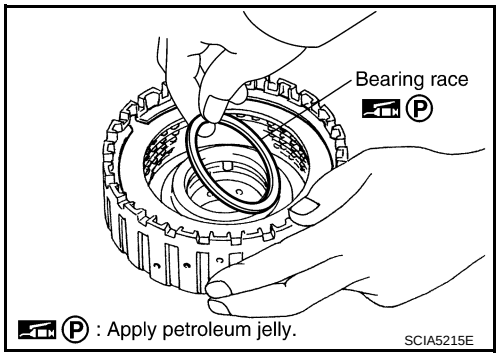
COMPONENTS



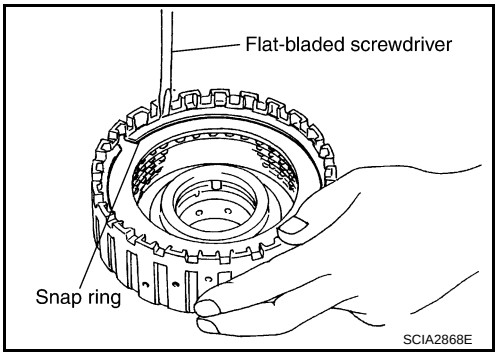
1. High and low reverse clutch drum
2. Driven plate
3. Retaining plate
4. Snap ring
5. Drive plate
6. Bearing race

DISASSEMBLY

1. Remove bearing race from high and low reverse clutch drum.



2. Remove snap ring from high and low reverse clutch drum using a flat-bladed screwdriver.
3. Remove retaining plate, drive plates and driven plates from high and low reverse clutch drum.



INSPECTION

Check the following, and replace high and low reverse clutch assembly if necessary.

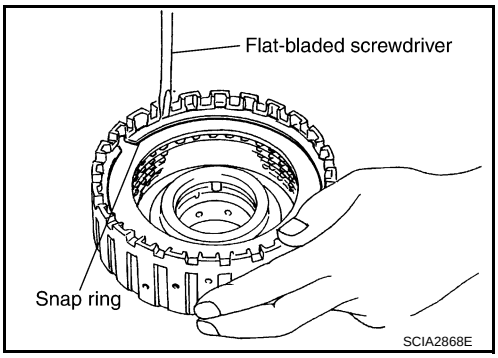
High and Low Reverse Clutch Snap Ring
- Check for deformation, fatigue or damage.

High and Low Reverse Clutch Drive Plates
- Check facing for burns, cracks or damage.

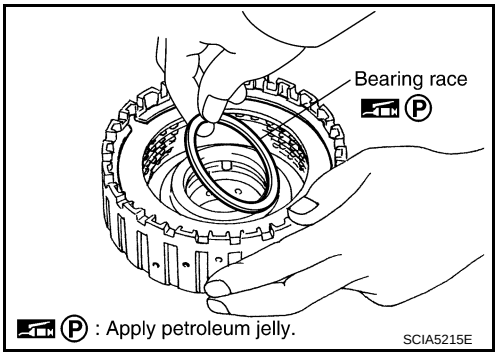
High and Low Reverse Clutch Retaining Plate and Driven Plates
- Check facing for burns, cracks or damage.

ASSEMBLY

1. Install driven plates, drive plates and retaining plate in high and low reverse clutch drum.
   CAUTION:
   Take care with order of plates.
2. Install snap ring in high and low reverse clutch drum using a flat-bladed screwdriver.



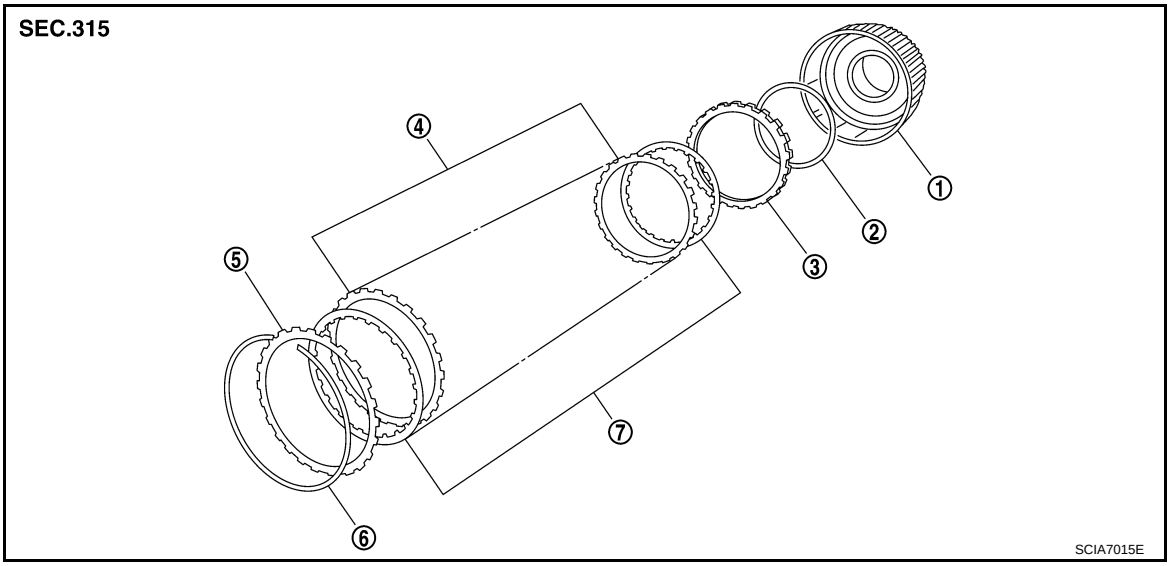
3. Install bearing race to high and low reverse clutch drum.
   CAUTION:
   Apply petroleum jelly to bearing race.



Direct Clutch

INFOID:0000000004657034

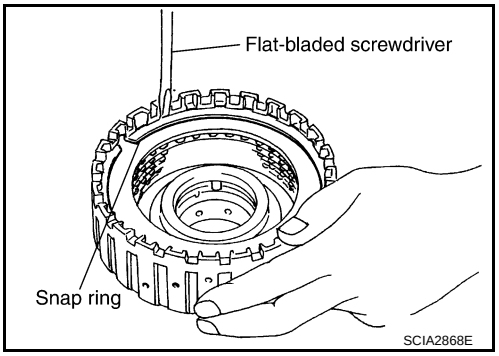
COMPONENTS



1. Direct clutch drum
2. Dish plate
3. Retaining plate
4. Driven plate
5. Retaining plate
6. Snap ring
7. Drive plate

DISASSEMBLY

1. Remove snap ring from direct clutch drum using a flat-bladed screwdriver.
2. Remove retaining plates, drive plates, driven plates and dish plate from direct clutch drum.



INSPECTION

Check the following, and replace direct clutch assembly if necessary.

Direct Clutch Snap Ring
- Check for deformation, fatigue or damage.

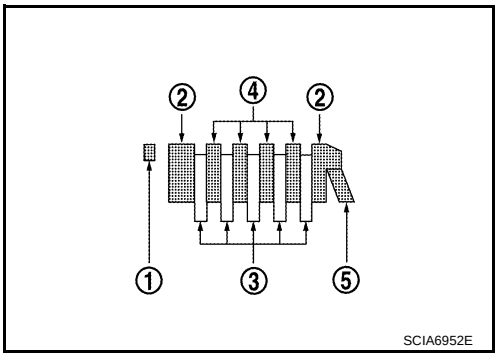
Direct Clutch Drive Plates
- Check facing for burns, cracks or damage.

Direct Clutch Retaining Plate, Driven Plates and Dish Plate
- Check facing for burns, cracks or damage.

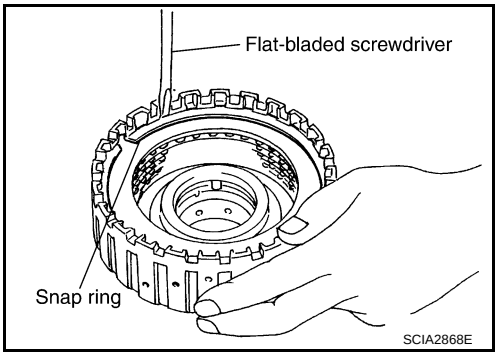
ASSEMBLY

1. Install dish plate, retaining plates, driven plates and drive plates in direct clutch drum.
   - Snap ring (1)
   - Retaining plate (2)
   - Drive plate (3)
   - Driven plate (4)
   - Dish plate (5)
   - Drive plate/Driven plate: 5/4

   CAUTION:
   Take care with order of plates.



2. Install snap ring in direct clutch drum using a flat-bladed screwdriver.

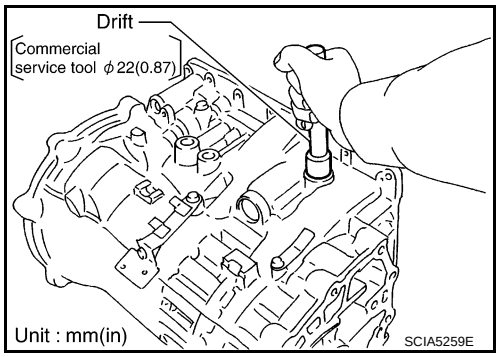


ASSEMBLY

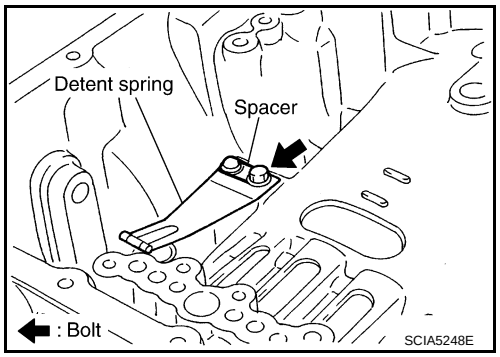
Assembly (1)

INFOID:0000000004657035

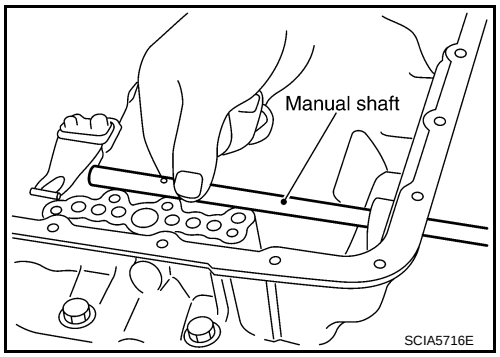
1. As shown in the right figure, use a drift [commercial service tool: 22 mm (0.87 in) dia.] to drive manual shaft oil seals into transmission case until it is flush.
   CAUTION:
   - **Do not reuse manual shaft oil seals.**
   - **Apply ATF to manual shaft oil seals.**



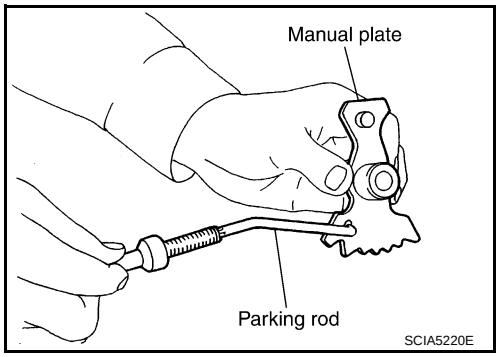
2. Install detent spring and spacer to transmission case, and then tighten mounting bolt to the specified torque. Refer to AT-232, "Component".



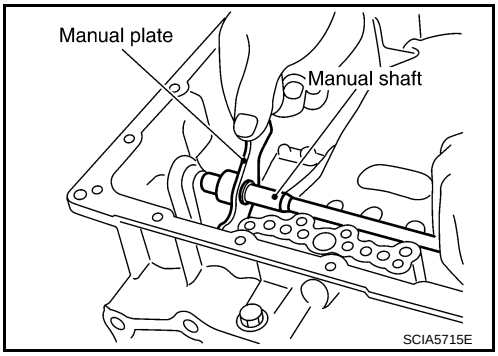
3. Install manual shaft to transmission case.



4. Install parking rod to manual plate.



5. Install manual plate (with parking rod) to manual shaft.



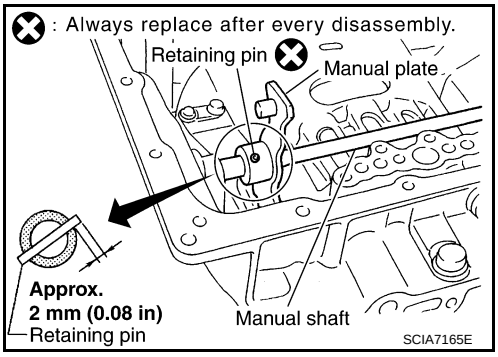
6. Install retaining pin into manual plate and manual shaft.

a. Fit pinhole of manual plate to pinhole of manual shaft with a pin punch.

b. Tap retaining pin into manual plate using a hammer.

CAUTION:

- **Do not reuse retaining pin.**
- **Drive retaining pin to 2±0.5 mm (0.08±0.020 in) over manual plate.**



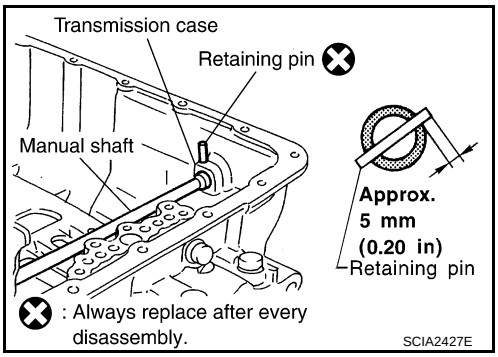
7. Install retaining pin into transmission case and manual shaft.

a. Fit pinhole of transmission case to pinhole of manual shaft with a pin punch.

b. Tap the retaining pin into transmission case using a hammer.

CAUTION:

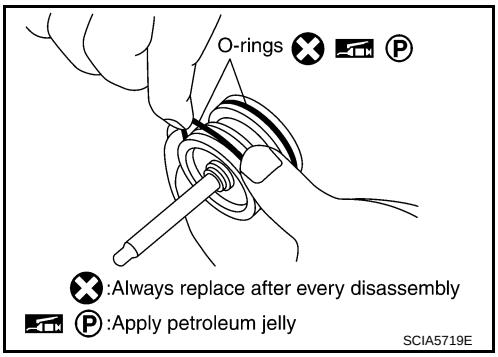
- **Do not reuse retaining pin.**
- **Drive retaining pin to 5±1 mm (0.20±0.04 in) over transmission case.**



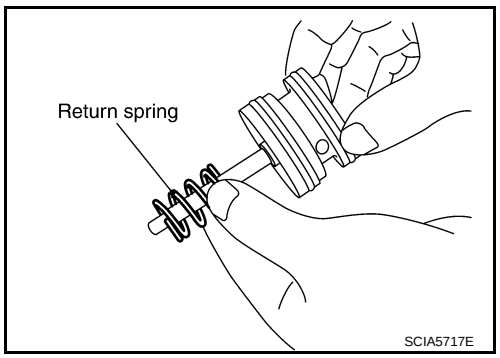
8. Install O-rings to servo assembly.

CAUTION:

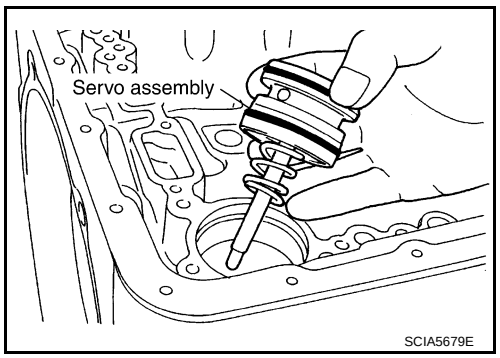
- **Do not reuse O-rings.**
- **Apply petroleum jelly to O-rings.**



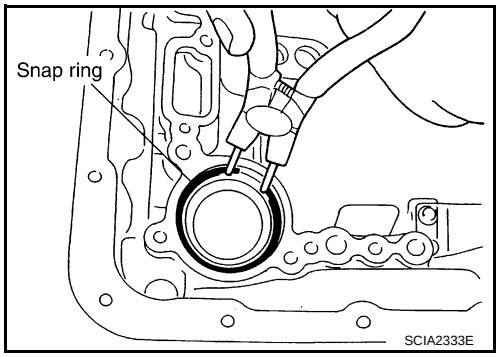
9. Install return spring to servo assembly.



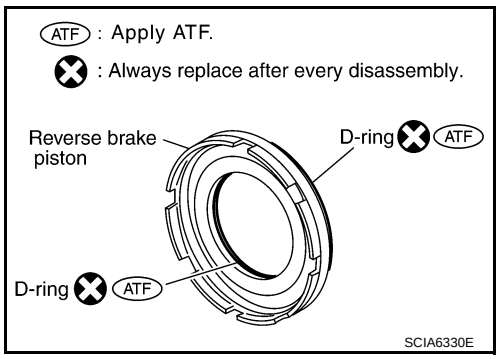
10. Install servo assembly in transmission case.



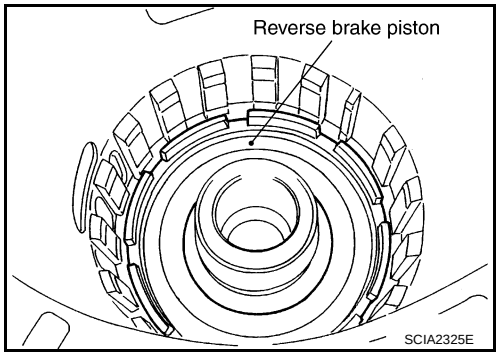
11. Install snap ring to transmission case using pair of snap ring pliers.



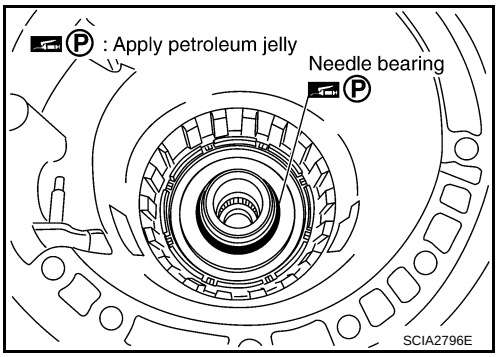
12. Install D-rings in reverse brake piston.
CAUTION:
- **Do not reuse D-rings.**
- **Apply ATF to D-rings.**



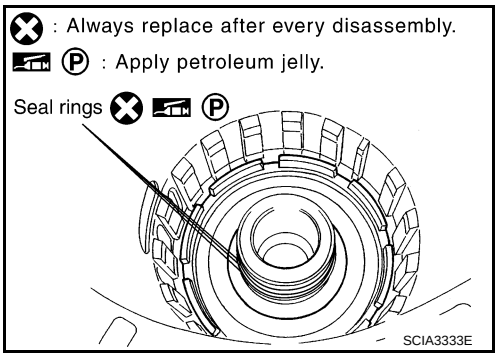
13. Install reverse brake piston in transmission case.



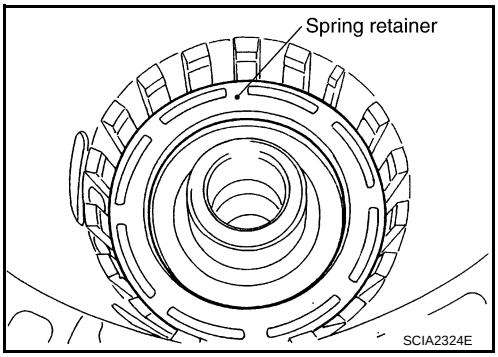
14. Install needle bearing to drum support edge surface.
CAUTION:
- **Take care with the direction of needle bearing. Refer to AT-238, "Location of Adjusting Shims, Needle Bearings, Thrust Washers and Snap Rings".**
- **Apply petroleum jelly to needle bearing.**



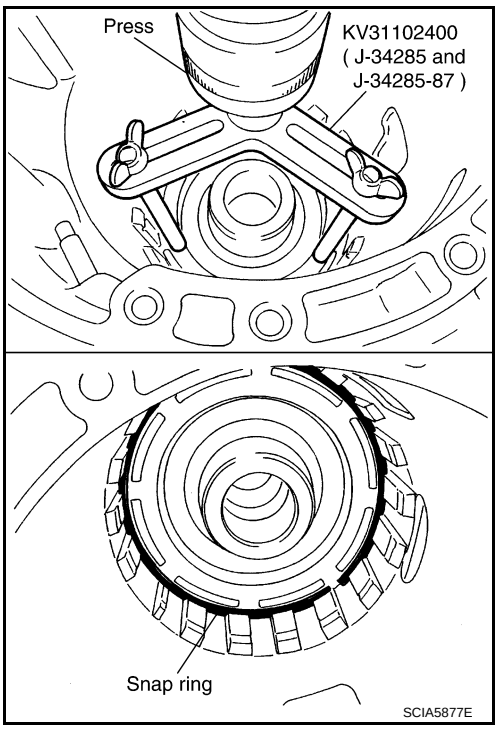
15. Install seal rings to drum support.
CAUTION:
- **Do not reuse seal rings.**
- **Apply petroleum jelly to seal rings.**



16. Install return spring and spring retainer in transmission case.

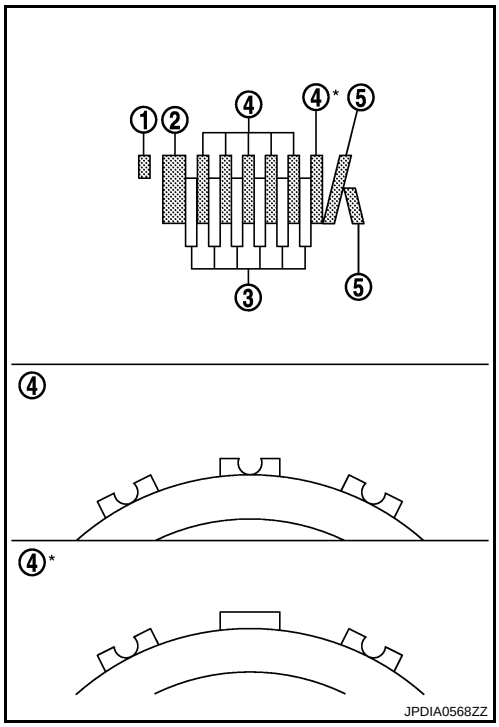


17. Set the SST on spring retainer and install snap ring (fixing spring retainer) in transmission case while compressing return spring.
CAUTION:
Securely assemble them using a flat-bladed screwdriver so that snap ring tension is slightly weak.

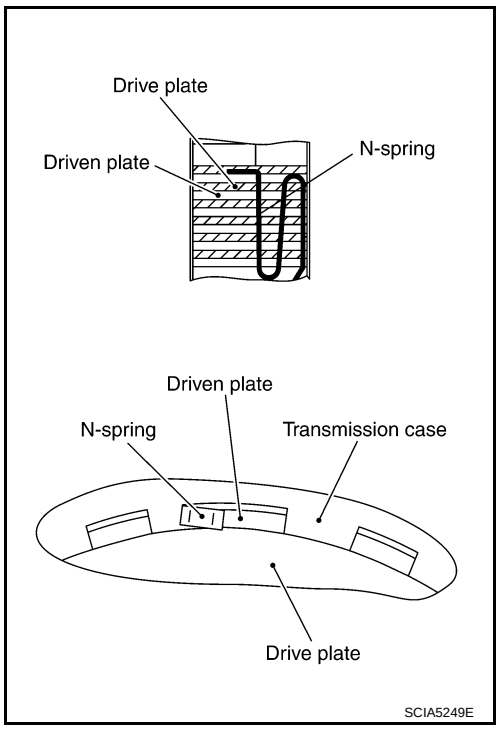


18. Install reverse brake retaining plate, drive plates, driven plates and dish plates in transmission case.
    - Snap ring (1)
    - Retaining plate (2)
    - Drive plate (3)
    - Driven plate (4)
    - Dish plate (5)
    - Drive plate/Driven plate: 6/6

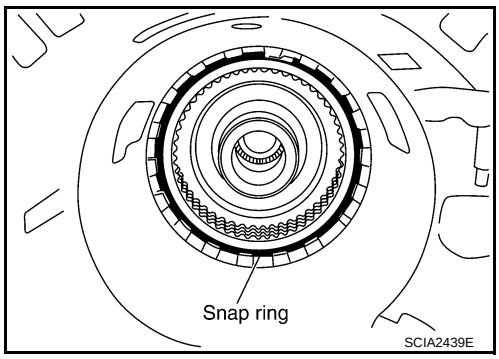
    CAUTION:
    Take care with order of plates.



19. Assemble N-spring.
20. Install reverse brake retaining plate in transmission case.



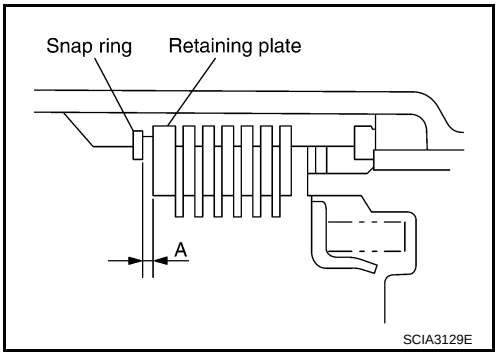
21. Install snap ring in transmission case.



22. Measure clearance between retaining plate and snap ring. If not within specified clearance, select proper retaining plate. Refer to “Parts Information” for retaining plate selection.

Specified clearance “A”:

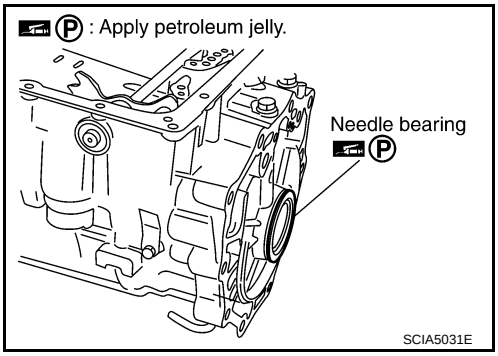
Refer to AT-295, "Reverse Brake".



23. Install needle bearing to transmission case.

CAUTION:

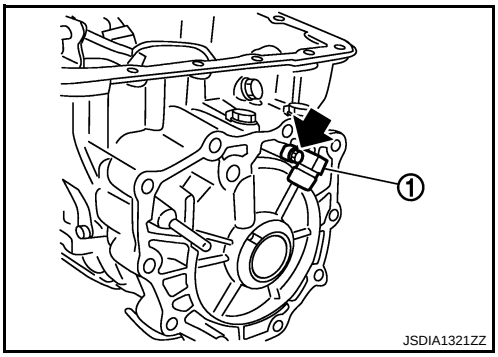
- **Take care with the direction of needle bearing. Refer to AT-238, "Location of Adjusting Shims, Needle Bearings, Thrust Washers and Snap Rings".**
- **Apply petroleum jelly to needle bearing.**



24. Install output speed sensor (1) to transmission case, Tighten bolt (⬅) to the specified torque. Refer to AT-232, "Component".

CAUTION:

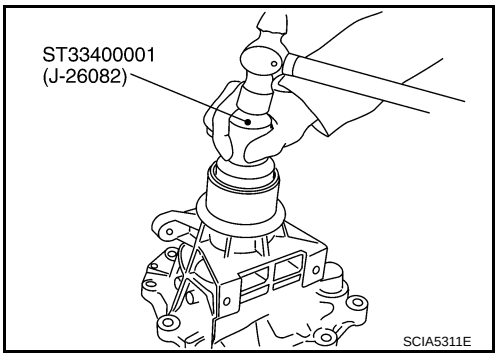
- **Do not subject it to impact by dropping or hitting it.**
- **Do not disassemble.**
- **Do not allow metal filings, etc. to get on the sensor's front edge magnetic area.**
- **Do not place in an area affected by magnetism.**



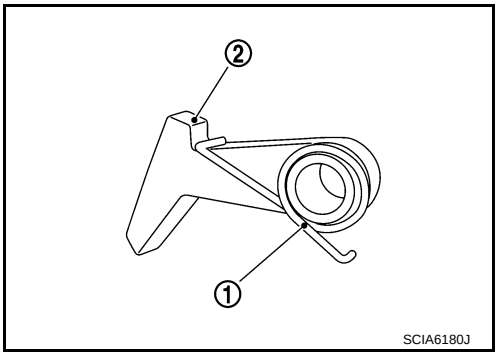
25. As shown in the figure, drive rear oil seal into rear extension until it is flush using a drift.

CAUTION:

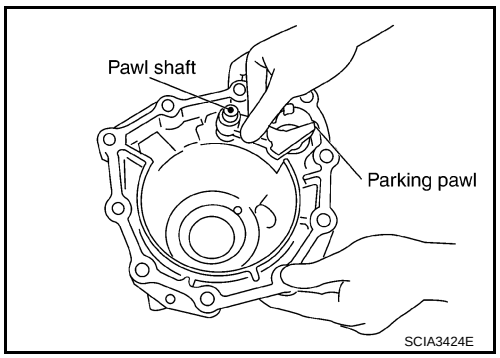
- **Do not reuse rear oil seal.**
- **Apply ATF to rear oil seal.**



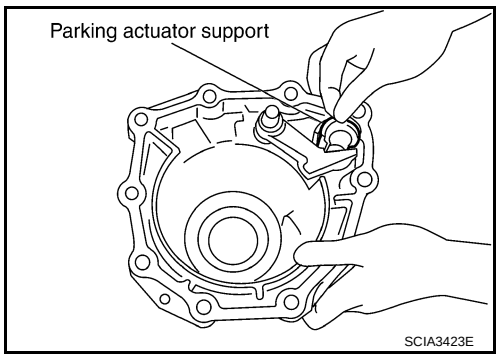
26. Install return spring (1) to parking pawl (2).



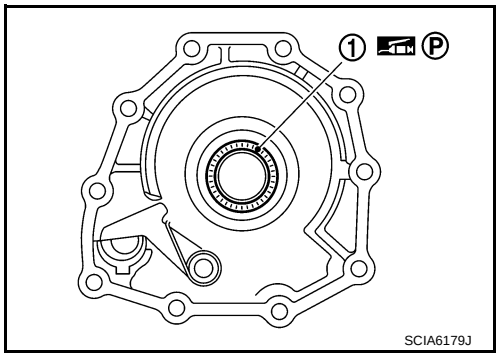
27. Install parking pawl (with return spring) and pawl shaft to rear extension.



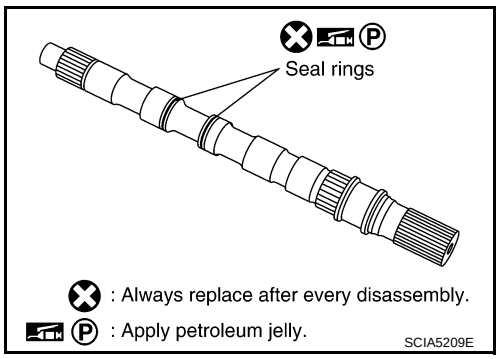
28. Install parking actuator support to rear extension.



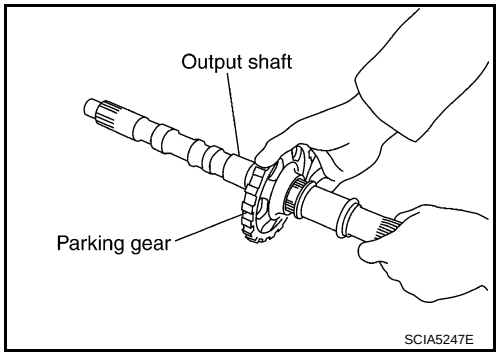
29. Install needle bearing (1) to rear extension.
CAUTION:
- **Take care with the direction of needle bearing. Refer to AT-238, "Location of Adjusting Shims, Needle Bearings, Thrust Washers and Snap Rings".**
- **Apply petroleum jelly to needle bearing.**



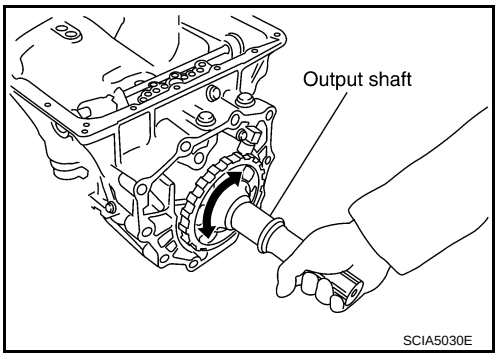
30. Install seal rings to output shaft.
CAUTION:
- **Do not reuse seal rings.**
- **Apply petroleum jelly to seal rings.**



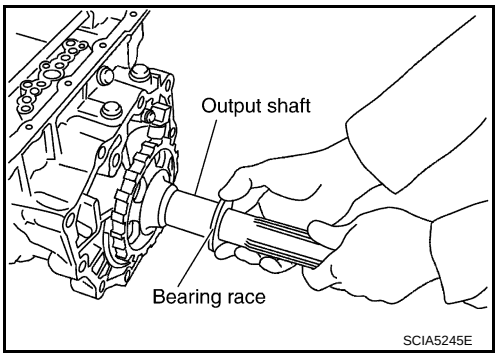
31. Install parking gear to output shaft.



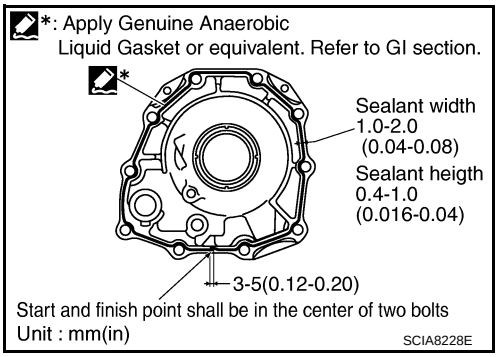
32. Install output shaft in transmission case.
CAUTION:
Be careful not to mistake front for rear because both sides looks similar. (Thinner end is front side.)



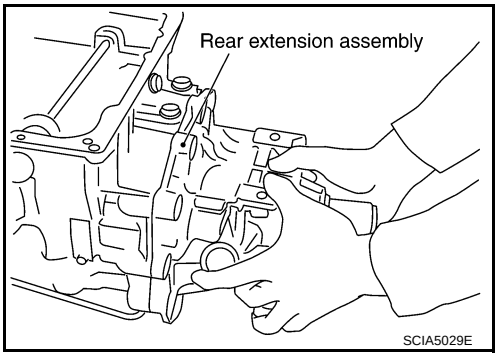
33. Install bearing race to output shaft.



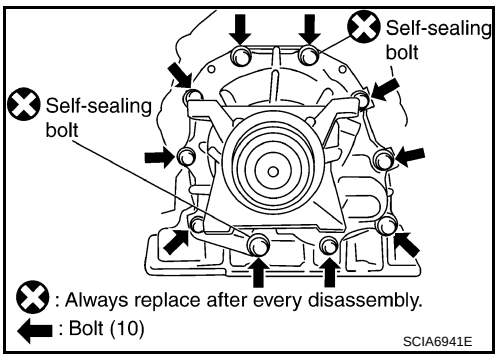
34. Apply recommended sealant (Genuine Anaerobic Liquid Gasket or equivalent. Refer to GI-42, "Recommended Chemical Product and Sealant".) to rear extension assembly as shown in the figure.
CAUTION:
Completely remove all moisture, oil and old sealant, etc. from transmission case and rear extension assembly mounting surfaces.



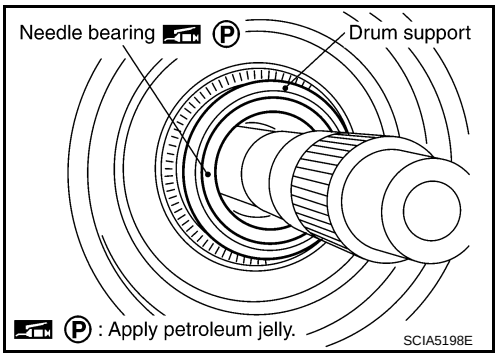
35. Install rear extension assembly to transmission case.
CAUTION:
Insert the tip of parking rod between parking pawl and the parking actuator support when assembling rear extension assembly.



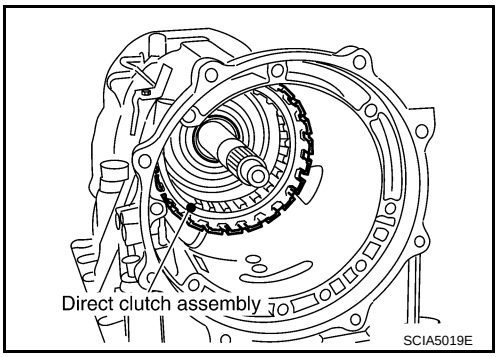
36. Tighten rear extension assembly mounting bolts to the specified torque. Refer to AT-232, "Component".
CAUTION:
Do not reuse self-sealing bolts.



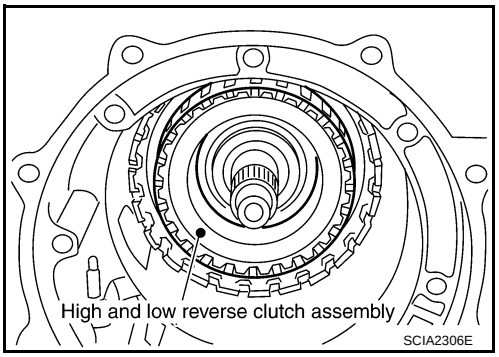
37. Install needle bearing in drum support.
CAUTION:
- **Take care with the direction of needle bearing. Refer to AT-238, "Location of Adjusting Shims, Needle Bearings, Thrust Washers and Snap Rings".**
- **Apply petroleum jelly to needle bearing.**



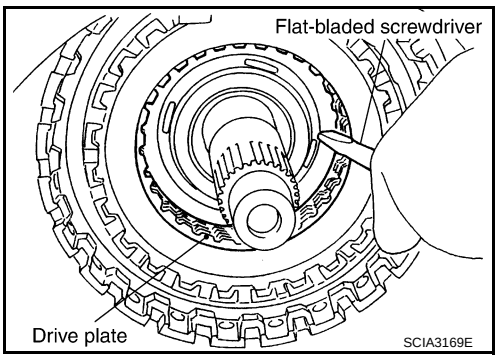
38. Install direct clutch assembly in reverse brake.
CAUTION:
Make sure that drum support edge surface and direct clutch inner boss edge surface come to almost same place.



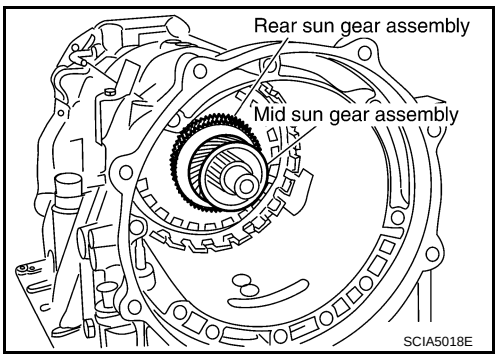
39. Install high and low reverse clutch assembly in direct clutch.



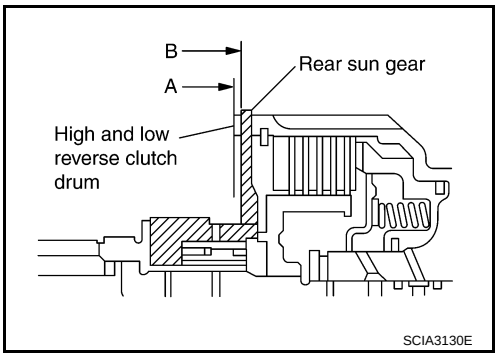
40. Align drive plate using a flat-bladed screwdriver.



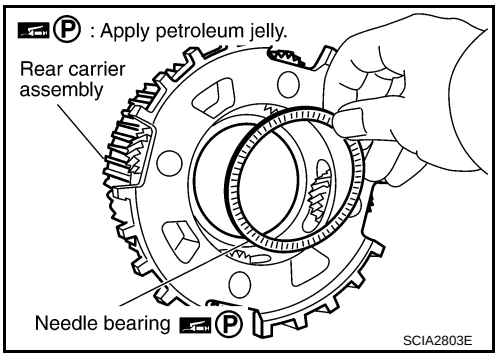
41. Install high and low reverse clutch hub, mid sun gear assembly and rear sun gear assembly as a unit.



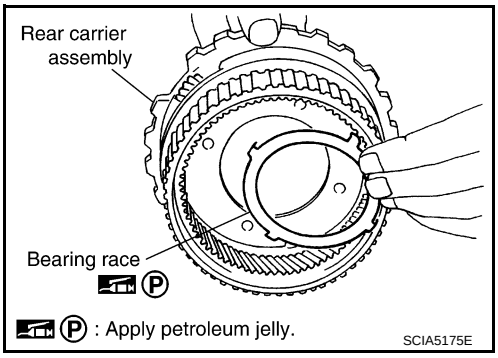
CAUTION:
Make sure that portion “A” of high and low reverse clutch drum protrudes approximately 2 mm (0.08 in) beyond portion “B” of rear sun gear.



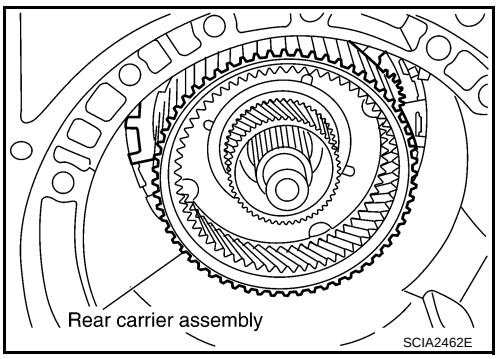
42. Install needle bearing in rear carrier assembly.
CAUTION:
- **Take care with the direction of needle bearing. Refer to AT-238, "Location of Adjusting Shims, Needle Bearings, Thrust Washers and Snap Rings".**
- **Apply petroleum jelly to needle bearing.**



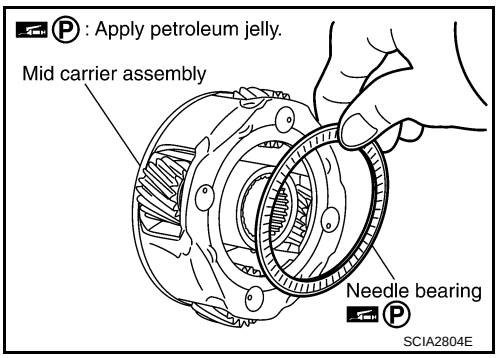
43. Install bearing race in rear carrier assembly.
CAUTION:
Apply petroleum jelly to bearing race.



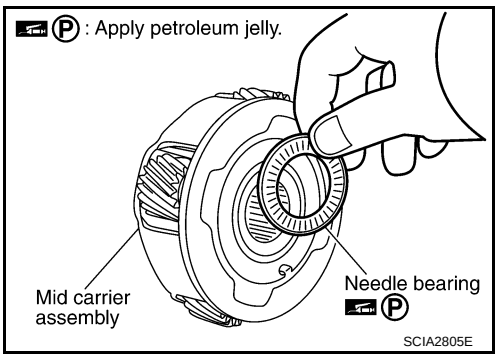
44. Install rear carrier assembly in direct clutch drum.



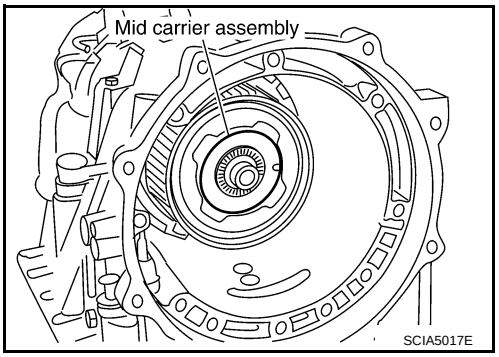
45. Install needle bearing (rear side) to mid carrier assembly.
CAUTION:
- **Take care with the direction of needle bearing. Refer to AT-238, "Location of Adjusting Shims, Needle Bearings, Thrust Washers and Snap Rings".**
- **Apply petroleum jelly to needle bearing.**



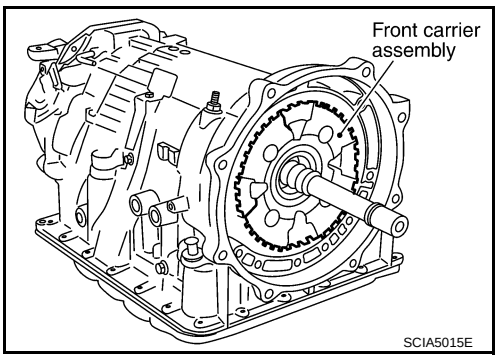
46. Install needle bearing (front side) to mid carrier assembly.
CAUTION:
- **Take care with the direction of needle bearing. Refer to AT-238, "Location of Adjusting Shims, Needle Bearings, Thrust Washers and Snap Rings".**
- **Apply petroleum jelly to needle bearing.**



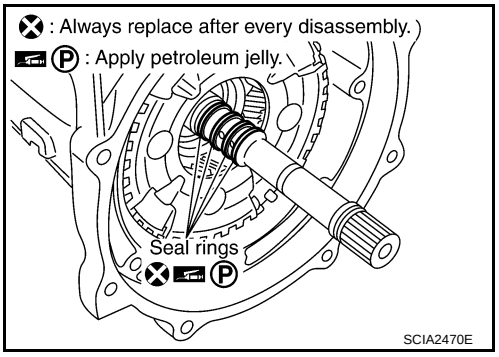
47. Install mid carrier assembly in rear carrier assembly.



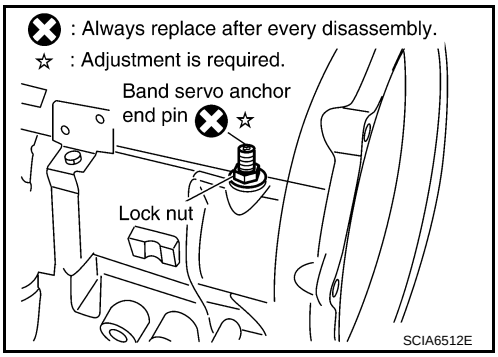
48. Install front carrier assembly, input clutch assembly and rear internal gear as a unit.



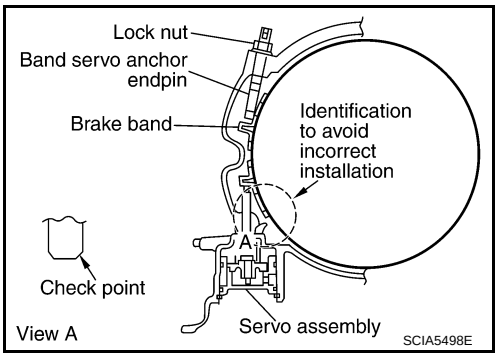
49. Install seal rings in input clutch assembly.
CAUTION:
- **Do not reuse seal rings.**
- **Apply petroleum jelly to seal rings.**



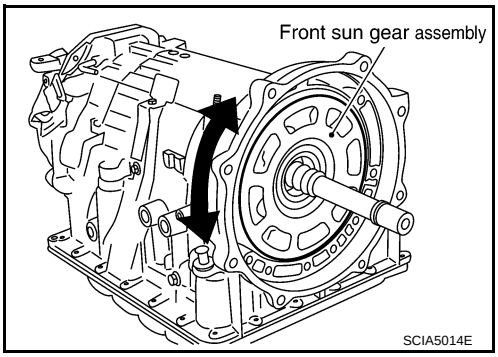
50. Install band servo anchor end pin and lock nut in transmission case.
CAUTION:
Do not reuse band servo anchor end pin.



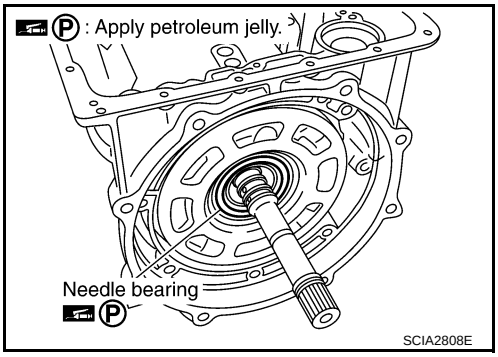
51. Install brake band in transmission case.
CAUTION:
Assemble it so that identification to avoid incorrect installation faces servo side.



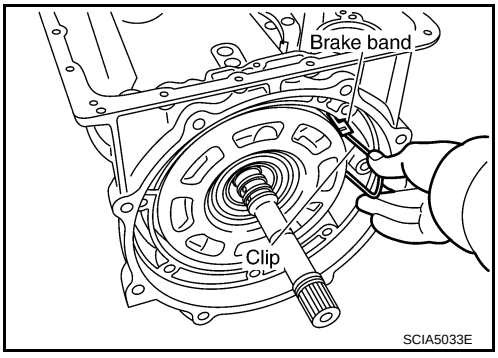
52. Install front sun gear to front carrier assembly.
CAUTION:
Apply ATF to front sun gear bearing and 3rd one-way clutch end bearing.



53. Install needle bearing to front sun gear.
CAUTION:
- **Take care with the direction of needle bearing. Refer to AT-238, "Location of Adjusting Shims, Needle Bearings, Thrust Washers and Snap Rings".**
- **Apply petroleum jelly to needle bearing.**



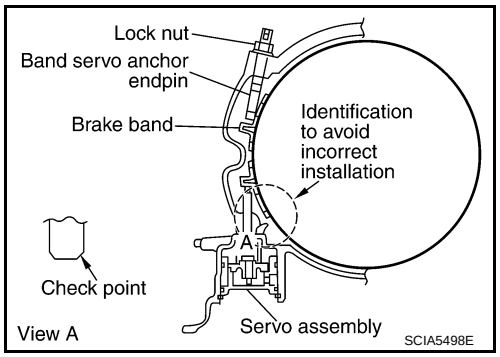
54. Adjust brake band tilting using a clip so that brake band contacts front sun gear drum evenly.



55. Adjust brake band.
a. Loosen lock nut.
b. Tighten band servo anchor end pin to the specified torque.

: 5.0 N·m (0.51 kg-m, 44 in-lb)

c. Back of band servo anchor end pin three turns.
d. Holding band servo anchor end pin, tighten lock nut to the specified torque. Refer to AT-232, "Component".

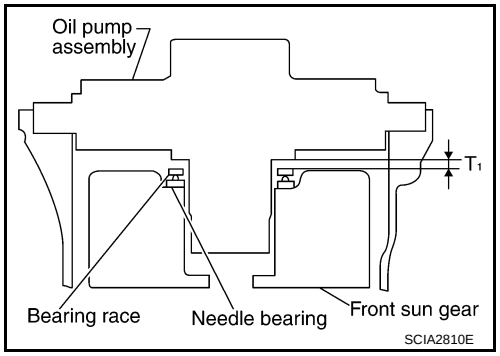


Adjustment

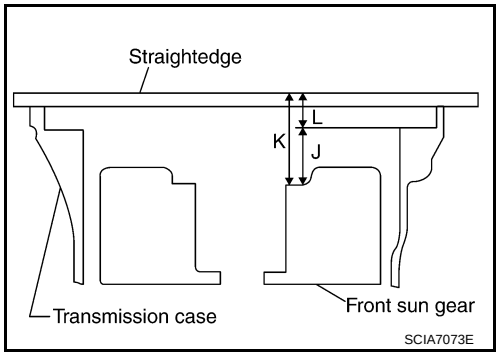
INFOID:0000000004657036

TOTAL END PLAY

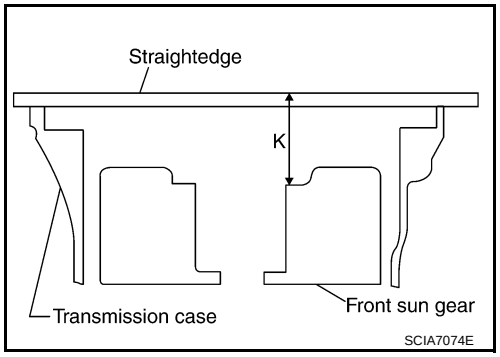
- Measure clearance between front sun gear and bearing race for oil pump cover.
- Select proper thickness of bearing race so that end play is within specifications.



1. Measure dimensions “K” and “L” and then calculate dimension “J”.



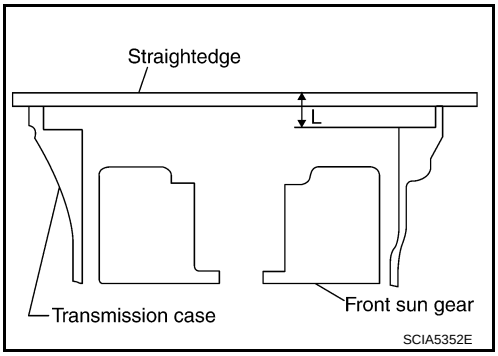
a. Measure dimension “K”.



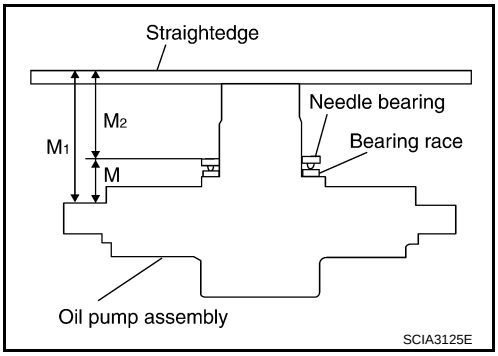
b. Measure dimension “L”.
c. Calculate dimension “J”.

“J”: Distance between oil pump fitting surface of transmission case and needle bearing mating surface of front sun gear.

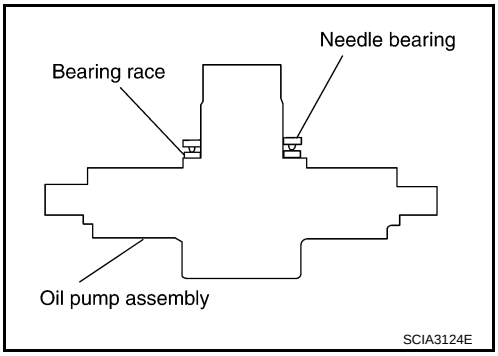
J = K – L



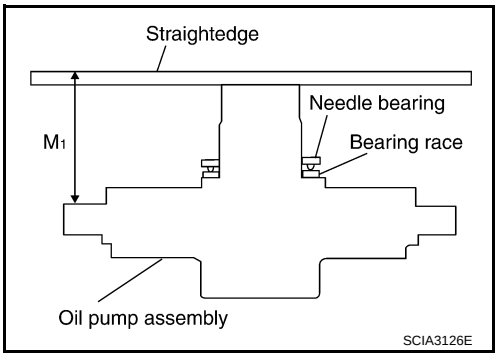
2. Measure dimensions “M_1” and “M_2” and then calculate dimension “M”.



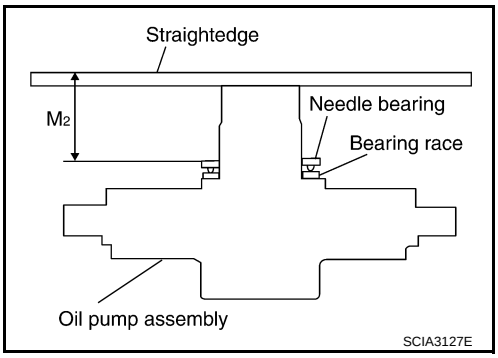
a. Place bearing race and needle bearing on oil pump assembly.



b. Measure dimension “M_1”.



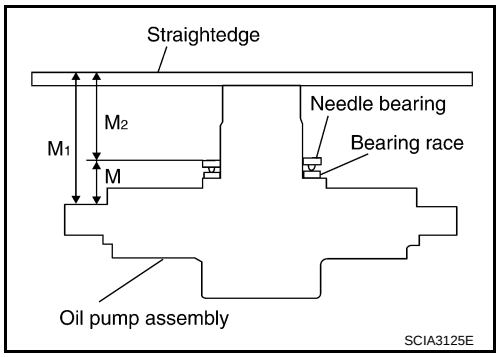
c. Measure dimension “M_2”.



d. Calculate dimension “M”.

“M”: Distance between transmission case fitting surface of oil pump and needle bearing on oil pump.

$M = M_1 – M_2$



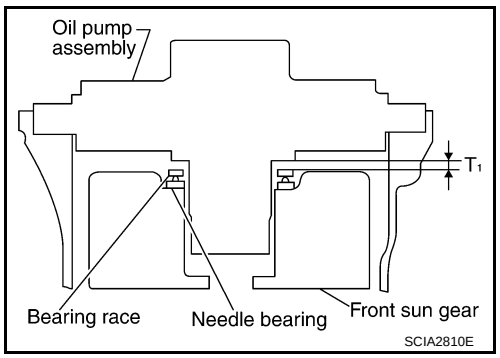
3. Adjust total end play “T_1”.

$T_1 = J – M$

Total end play “T_1”:

Refer to AT-295, "Total End Play".

- Select proper thickness of bearing race so that total end play is within specifications. Refer to “Parts Information” for bearing race selection.



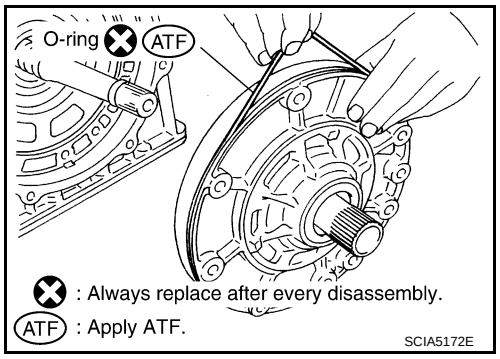
Assembly (2)

INFOID:0000000004657037

1. Install O-ring to oil pump assembly.

CAUTION:

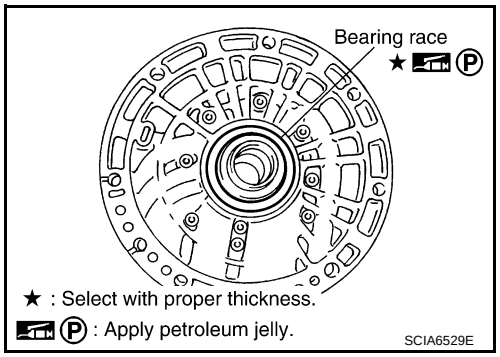
- **Do not reuse O-ring.**
- **Apply ATF to O-ring.**



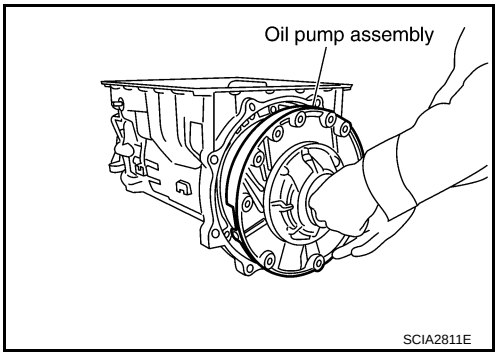
2. Install bearing race to oil pump assembly.

CAUTION:

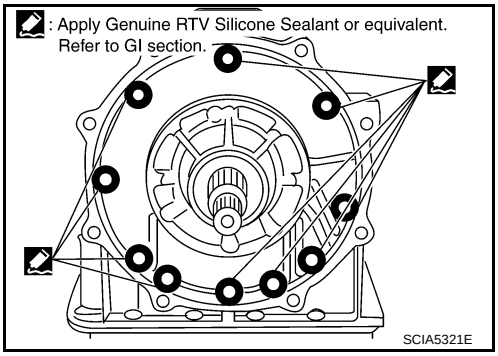
Apply petroleum jelly to bearing race.



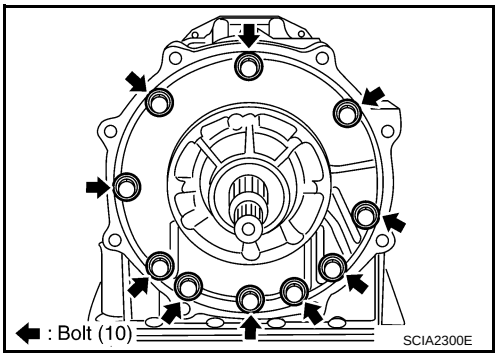
3. Install oil pump assembly in transmission case.
CAUTION:
Apply ATF to oil pump bearing.



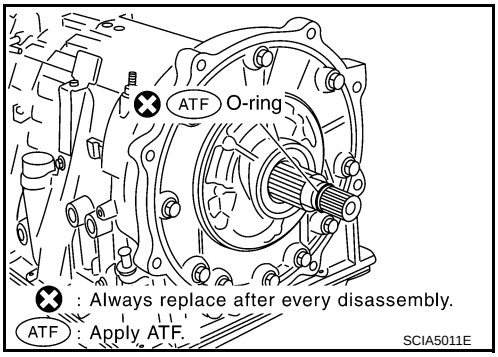
4. Apply recommended sealant (Genuine RTV Silicone Sealant or equivalent. Refer to GI-42, "Recommended Chemical Product and Sealant".) to oil pump assembly as shown in the figure.
CAUTION:
Completely remove all moisture, oil and old sealant, etc. from the oil pump mounting bolts and oil pump mounting bolt mounting surfaces.



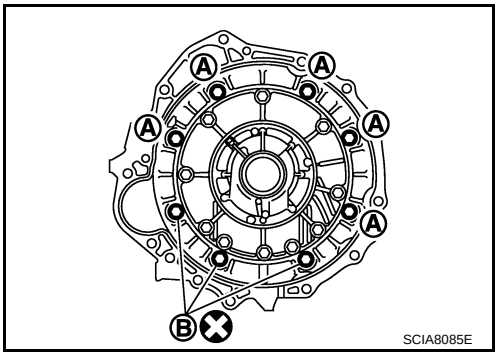
5. Tighten oil pump mounting bolts to the specified torque. Refer to AT-232, "Component".
CAUTION:
Apply ATF to oil pump bushing.



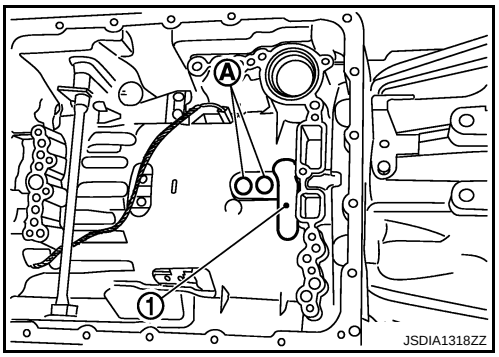
6. Install O-ring to input clutch assembly.
CAUTION:
- **Do not reuse O-ring.**
- **Apply ATF to O-ring.**



7. Install converter housing to transmission case, and then tighten converter housing bolts (A) and self-sealing bolts (B) to the specified torque. Refer to AT-232, "Component".
CAUTION:
Do not reuse self-sealing bolts (B).

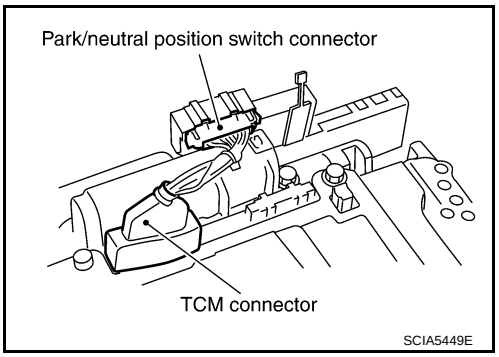


8. Make sure that brake band (1) does not close input speed sensor hole (A).

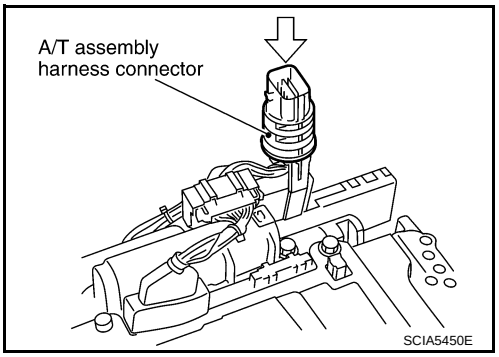


9. Install control valve with TCM.

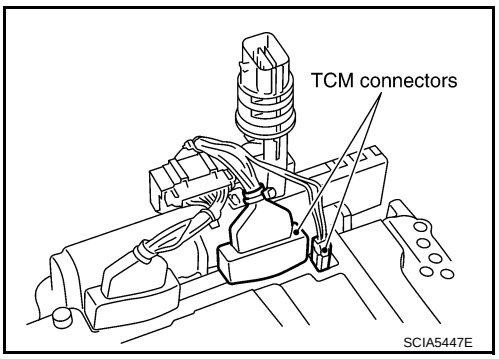
a. Connect TCM connector (1) and transmission range switch connector (2).



b. Install A/T assembly harness connector from control valve with TCM.



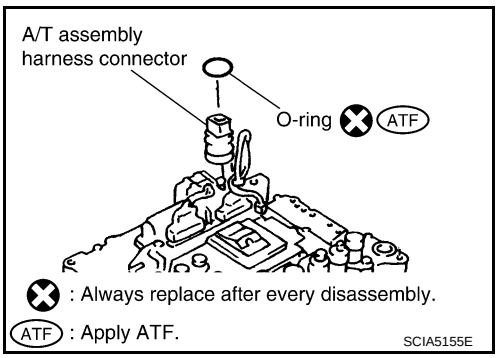
c. Connect TCM connectors.



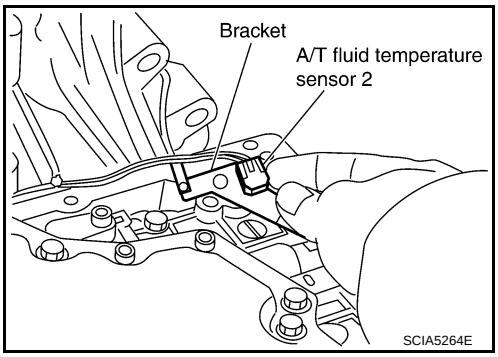
d. Install O-ring to A/T assembly harness connector.

CAUTION:

- **Do not reuse O-ring.**
- **Apply ATF to O-ring.**



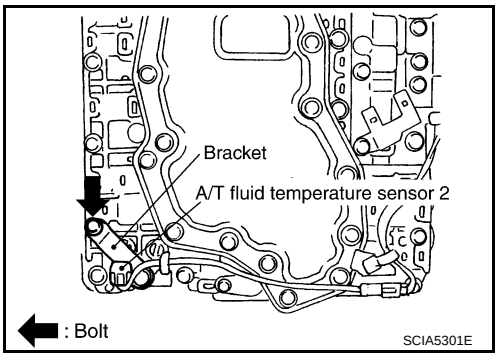
e. Install A/T fluid temperature sensor 2 to bracket.



f. Install A/T fluid temperature sensor 2 (with bracket) in control valve with TCM, and then tighten mounting bolt to the specified torque. Refer to AT-232, "Component".

CAUTION:

Adjust bolt hole of bracket to bolt hole of control valve with TCM.

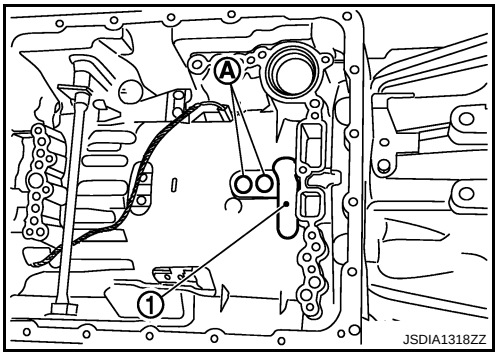


g. Install control valve with TCM in transmission case.

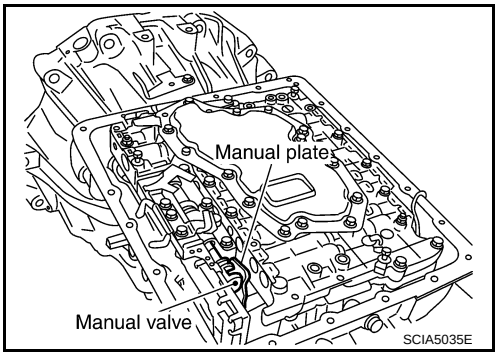
⬅ :Brake band

CAUTION:

- **Make sure that input speed sensor securely installs input speed sensor hole (A).**
- **Hang down output speed 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.**

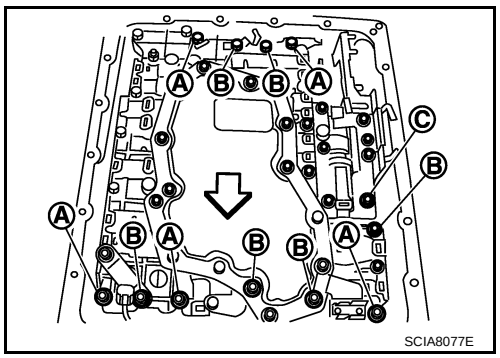


- **Assemble it so that manual valve cutout is engaged with manual plate projection.**

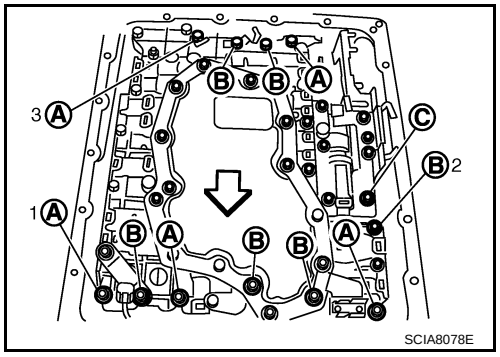


h. Install bolts (A), (B) and (C) to control valve with TCM.
- ⇦: Front

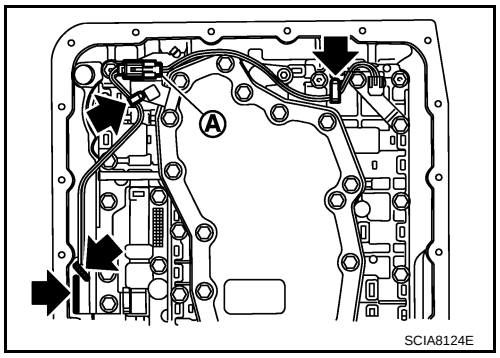
Bolt symbol	Length mm (in)	Number of bolts
A	42 (1.65)	5
B	55 (2.17)	6
C	40 (1.57)	1



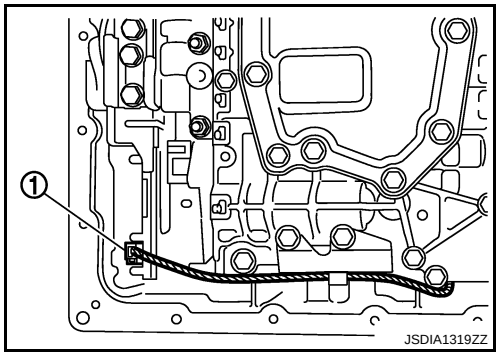
i. Tighten bolt 1, 2 and 3 temporarily to prevent dislocation. After that tighten them in order (1 → 2 → 3), and then tighten other bolts to the specified torque. Refer to AT-232, "Component".
- ⇦: Front



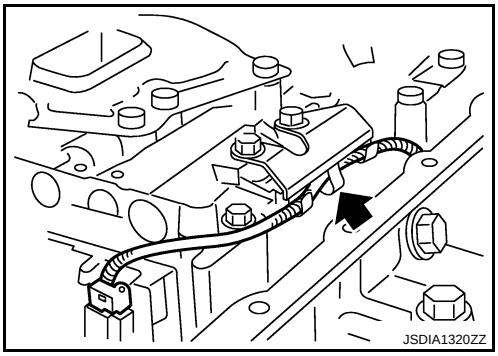
10. Connect A/T fluid temperature sensor 2 connector (A).
11. Securely fasten terminal cord assembly and A/T fluid temperature sensor 2 harness with terminal clips (⬅).



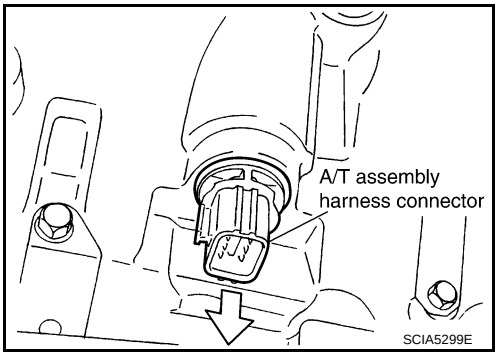
12. Connect output speed sensor connector (1).



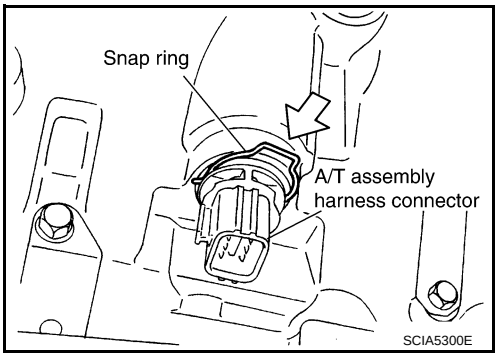
13. Securely fasten output speed sensor harness with terminal clip (⬅).



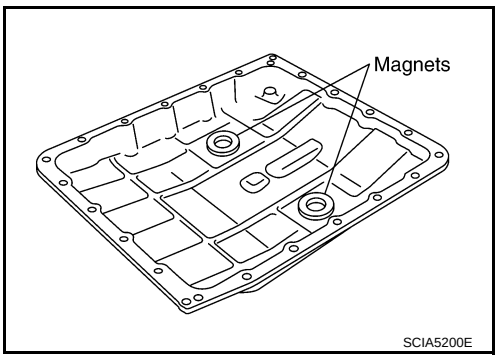
14. Pull down A/T assembly harness connector.
CAUTION:
Be careful not to damage connector.



15. Install snap ring to A/T assembly harness connector.



16. Install magnets in oil pan.

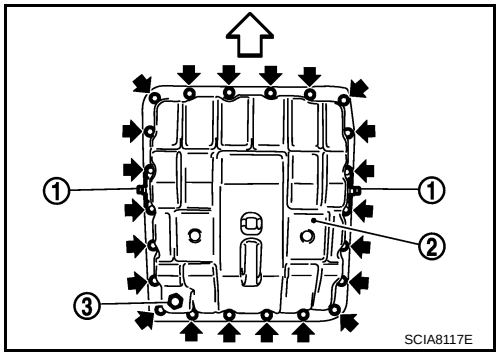


17. Install oil pan to transmission case.

a. Install oil pan gasket to oil pan.
CAUTION:
- **Do not reuse oil pan gasket.**
- **Install it in the direction to align hole positions.**
- **Completely remove all moisture, oil and old gasket, etc. from oil pan gasket mounting surface.**

b. Install oil pan (2) (with oil pan gasket) and clips (1) to transmission case.
- ⇦: Front
- ⬅: Oil pan mounting bolt

CAUTION:
- **Install it so that drain plug (3) comes to the position as shown in the figure.**
- **Be careful not to pinch harnesses.**
- **Completely remove all moisture, oil and old gasket, etc. from oil pan mounting surface.**

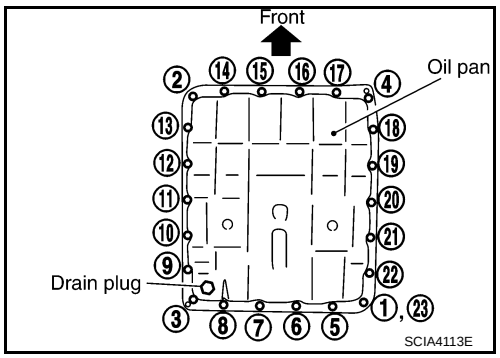


c. Tighten oil pan mounting bolts to the specified torque in numerical order shown in the figure after temporarily tightening them. Refer to AT-232, "Component".

CAUTION:
Do not reuse oil pan mounting bolts.

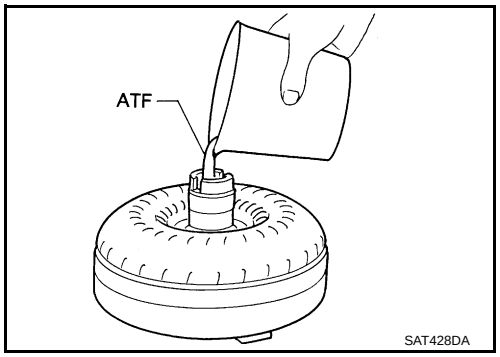
18. Install drain plug to oil pan, and then tighten drain plug to the specified torque. Refer to AT-232, "Component".

CAUTION:
Do not reuse drain plug gasket.



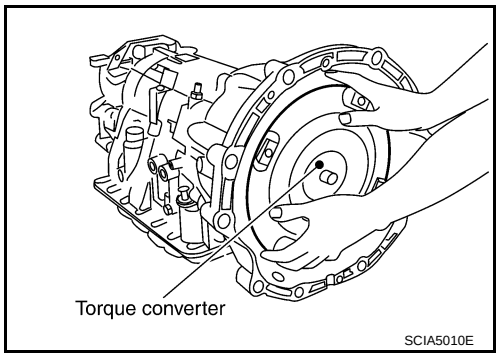
19. Install torque converter.

a. Pour ATF into torque converter.
- **Approximately 2 liter (2-1/8 US qt, 1-3/4 Imp qt) of ATF is required for a new torque converter.**
- **When reusing old torque converter, add the same amount of ATF as was drained.**



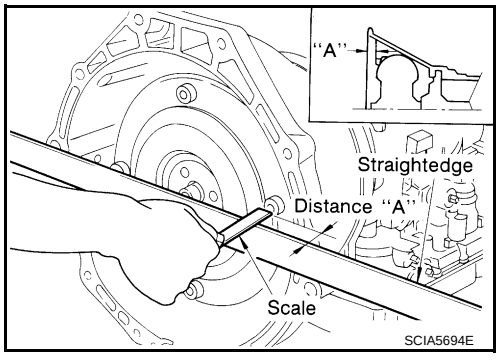
b. Install torque converter while aligning notches of torque converter with notches of oil pump.

CAUTION:
Install torque converter while rotating it.



c. Measure distance “A” to check that torque converter is in proper position.

Distance “A”: 25.0 mm (0.98 in) or more



SERVICE DATA AND SPECIFICATIONS (SDS)

General Specification

INFOID:0000000004657038

Applied model		VQ35HR engine
Automatic transmission model		RE5R05A
Transmission model code number		99X5B
Stall torque ratio		1.74 : 1
Transmission gear ratio	1st	3.842
	2nd	2.353
	3rd	1.529
	4th	1.000
	5th	0.839
	Reverse	2.765
Recommended fluid		Genuine NISSAN Matic J ATF*1
Fluid capacity		10.3 liter (10-7/8 US qt, 9-1/8 Imp qt)*2

CAUTION:

- **Use only Genuine NISSAN Matic J ATF. Do not mix with other fluid.**
- **Using A/T fluid other than Genuine NISSAN Matic J ATF will cause deterioration driveability and automatic transmission durability, and may damage the automatic transmission, which is not covered by the NISSAN new vehicle limited warranty.**

- *1: Refer to MA-10, "Fluids and Lubricants".
- *2: The fluid capacity is the reference value. Check the fluid level with A/T fluid level gauge.

Vehicle Speed at Which Gear Shifting Occurs

INFOID:0000000004657039

Throttle position	Vehicle speed km/h (MPH)							
	$D_1 \rightarrow D_2$	$D_2 \rightarrow D_3$	$D_3 \rightarrow D_4$	$D_4 \rightarrow D_5$	$D_5 \rightarrow D_4$	$D_4 \rightarrow D_3$	$D_3 \rightarrow D_2$	$D_2 \rightarrow D_1$
Full throttle	64 – 68 (40 – 42)	103 – 111 (64 – 69)	156 – 166 (97 – 103)	224 – 234 (139 – 145)	220 – 230 (137 – 143)	146 – 156 (91 – 97)	86 – 94 (53 – 58)	40 – 44 (25 – 27)
Half throttle	47 – 51 (29 – 32)	76 – 82 (47 – 51)	108 – 116 (67 – 72)	136 – 144 (85 – 89)	88 – 96 (55 – 60)	64 – 72 (40 – 45)	28 – 34 (17 – 21)	8 – 12 (5 – 7)

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

Vehicle Speed at Which Lock-up Occurs/Releases

INFOID:0000000004657040

Throttle position	Vehicle speed km/h (MPH)	
	Lock-up ON	Lock-up OFF
Closed throttle	62 – 70 (39 – 44)	59 – 67 (37 – 42)
Half throttle	136 – 144 (85 – 89)	88 – 96 (55 – 60)

- At closed throttle, the accelerator opening is less than 1/8 condition. (Closed throttle position signal: OFF)
- At half throttle, the accelerator opening is 4/8 of the full opening.

Stall Speed

INFOID:0000000004657041

Stall speed	2,700 – 3,000 rpm

Line Pressure

INFOID:0000000004657042

Engine speed	Line pressure kPa (kg/cm^2, psi)	
	"R" position	"D" and "M" positions
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:0000000004657043

Name	Condition	CONSULT-III "DATA MONITOR" (Approx.)	Resistance (Approx.)
A/T fluid temperature sensor 1	0°C (32°F)	3.3 V	15 kΩ
	20°C (68°F)	2.7 V	6.5 kΩ
	80°C (176°F)	0.9 V	0.9 kΩ
A/T fluid temperature sensor 2	0°C (32°F)	3.3 V	10 kΩ
	20°C (68°F)	2.5 V	4 kΩ
	80°C (176°F)	0.7 V	0.5 kΩ

Input Speed Sensor

INFOID:0000000004657044

Name	Condition	Data (Approx.)
Input speed sensor 1	When running at 50 km/h (31 MPH) in 4th speed with the closed throttle position signal OFF.	1.3 kHz
Input speed sensor 2	When moving at 20 km/h (12 MPH) in 1st speed with the closed throttle position signal OFF.	

Output Speed Sensor

INFOID:0000000004657045

Name	Condition	Data (Approx.)
Output speed sensor	When moving at 20 km/h (12 MPH).	185 Hz

Reverse Brake

INFOID:0000000004657046

Model code number		99X5B
Number of drive plates		6
Number of driven plates		6
Clearance mm (in)	Standard	0.7 – 1.1 (0.028 – 0.043)

Total End Play

INFOID:0000000004657047

Total end play mm (in)	0.25 – 0.55 (0.0098 – 0.0217)