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SECTION **AT**

AUTOMATIC TRANSMISSION

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SERVICE INFORMATION

INDEX FOR DTC

Alphabetical Index

INFOID:000000002955371

NOTE:

If DTC “U1000” is displayed with other DTC, first perform the trouble diagnosis for “DTC U1000 CAN COMM CIRCUIT”. Refer to [AT-95](#).

Items (CONSULT-III screen terms)	DTC		Reference page
	OBD-II	Except OBD-II	
	CONSULT-III GST (*1)	CONSULT-III only “TRANSMISSION”	
1ST E/BRAKING	—	P1731	AT-142
1GR INCORRECT RATIO	P0731	P0731	AT-115
2GR INCORRECT RATIO	P0732	P0732	AT-117
3GR INCORRECT RATIO	P0733	P0733	AT-119
4GR INCORRECT RATIO	P0734	P0734	AT-121
5GR INCORRECT RATIO	P0735	P0735	AT-123
INTERLOCK	P1730	P1730	AT-140
TORQUE CONVERTER	P0744	P0744	AT-127
TRANS FLUID TEMP SEN	P0710	P1710	AT-133
CAN COMM CIRCUIT	U1000	U1000	AT-95
DRCT CLUTCH SOLENOID	P1762	P1762	AT-148
ENGINE SPEED	—	P0725	AT-113
FR BRAKE SOLENOID	P1757	P1757	AT-146
HLR CLUTCH SOLENOID	P1767	P1767	AT-150
INPUT CLUTCH SOLENOID	P1752	P1752	AT-144
PC SOLENOID A	P0745	P0745	AT-129
L C BRAKE SOLENOID	P1772	P1772	AT-152
L C BRAKE SOLENOID	P1774	P1774	AT-154
M-MODE SWITCH	—	P1815	AT-156
T/M RANGE SWITCH A	P0705	P0705	AT-103
STARTER RELAY	—	P0615	AT-98
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TP SENSOR	—	P1705	AT-131
INPUT SPEED SENSOR A	P0717	P0717	AT-106
VEHICLE SPEED SIGNAL	—	P1721	AT-138
OUTPUT SPEED SENSOR	P0720	P0720	AT-108

*1: These numbers are prescribed by SAE J2012.

DTC No. Index

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NOTE:

If DTC “U1000” is displayed with other DTC, first perform the trouble diagnosis for “DTC U1000 CAN COMM CIRCUIT”. Refer to [AT-95](#).

INDEX FOR DTC

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DTC		Items (CONSULT-III screen terms)	Reference page
OBD-II	Except OBD-II		
CONSULT-III GST (*1)	CONSULT-III only "TRANSMIS- SION"		
—	P0615	STARTER RELAY	AT-98
P0700	P0700	TRANSMISSION CONT	AT-102
P0705	P0705	T/M RANGE SWITCH A	AT-103
P0710	P1710	TRANS FLUID TEMP SEN	AT-133
P0717	P0717	INPUT SPEED SENSOR A	AT-106
P0720	P0720	OUTPUT SPEED SENSOR	AT-108
—	P0725	ENGINE SPEED	AT-113
P0731	P0731	1GR INCORRECT RATIO	AT-115
P0732	P0732	2GR INCORRECT RATIO	AT-117
P0733	P0733	3GR INCORRECT RATIO	AT-119
P0734	P0734	4GR INCORRECT RATIO	AT-121
P0735	P0735	5GR INCORRECT RATIO	AT-123
P0740	P0740	TORQUE CONVERTER	AT-125
P0744	P0744	TORQUE CONVERTER	AT-127
P0745	P0745	PC SOLENOID A	AT-129
—	P1705	TP SENSOR	AT-131
—	P1721	VEHICLE SPEED SIGNAL	AT-138
P1730	P1730	INTERLOCK	AT-140
—	P1731	1ST E/BRAKING	AT-142
P1752	P1752	INPUT CLUTCH SOLENOID	AT-144
P1757	P1757	FR BRAKE SOLENOID	AT-146
P1762	P1762	DRCT CLUTCH SOLENOID	AT-148
P1767	P1767	HLR CLUTCH SOLENOID	AT-150
P1772	P1772	L C BRAKE SOLENOID	AT-152
P1774	P1774	L C BRAKE SOLENOID	AT-154
—	P1815	M-MODE SWITCH	AT-156
U1000	U1000	CAN COMM CIRCUIT	AT-95

*1: These numbers are prescribed by SAE J2012.

PRECAUTIONS

< SERVICE INFORMATION >

PRECAUTIONS

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

INFOID:000000005154039

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

INFOID:000000002955374

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 EGR system or fuel injection system, etc.
- Be sure to erase the unnecessary malfunction information (repairs completed) from the TCM and ECM before returning the vehicle to the customer.

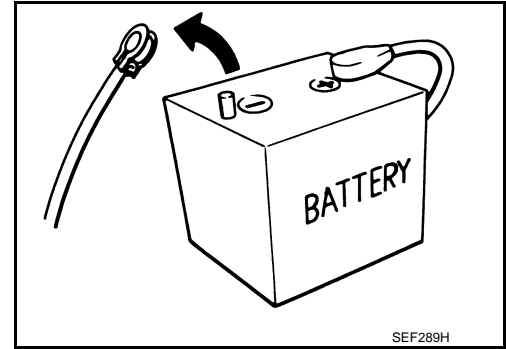
PRECAUTIONS

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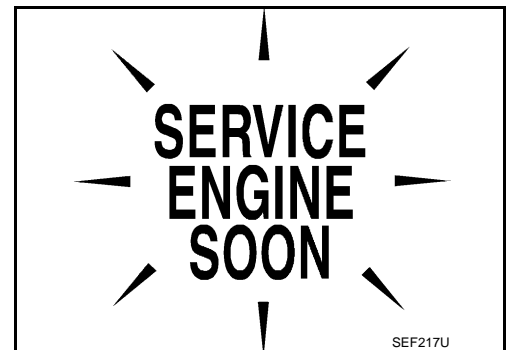
Precaution

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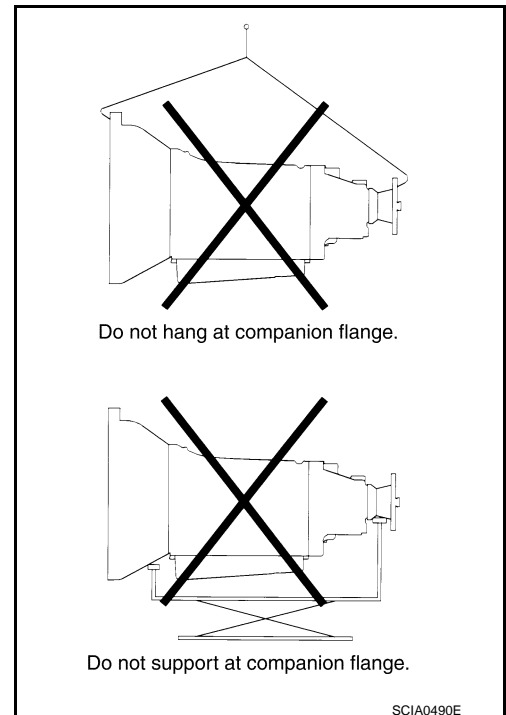
- Before connecting or disconnecting the A/T assembly harness connector, turn ignition switch OFF and disconnect the battery cable from the negative terminal. Because battery voltage is applied to TCM even if ignition switch is turned OFF.



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



- When removing the transmission from a vehicle, do not use the companion flange section at the rear end of the transmission as a support point. (VK45DE models only)
- Always use the specified brand of ATF. Refer to [MA-9, "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 transmission. It is important to prevent the internal parts from becoming contaminated by dirt or other foreign matter.
- Disassembly should be done in a clean work area.
- Use lint-free paper or towels for wiping parts clean. Common shop rags can leave fibers that could interfere with the operation of the transmission.
- Place disassembled parts in order for easier and proper assembly.
- All parts should be carefully cleaned with a general purpose, non-flammable solvent before inspection or reassembly.
- Gaskets, seals and O-rings should be replaced any time the transmission is disassembled.
- It is very important to perform functional tests whenever they are indicated.
- The valve body contains precision parts and requires extreme care when parts are removed and serviced. Place disassembled valve body parts in order for easier and proper assembly. Care will also prevent springs and small parts from becoming scattered or lost.
- Properly installed valves, sleeves, plugs, etc. will slide along bores in valve body under their own weight.
- Before assembly, apply a coat of recommended ATF to all parts. Apply petroleum jelly to protect O-rings and seals, or hold bearings and washers in place during assembly. Do not use grease.
- Extreme care should be taken to avoid damage to O-rings, seals and gaskets when assembling.
- Clean or replace ATF cooler if excessive foreign material is found in oil pan or clogging strainer. Refer to [AT-9, "Service Notice or Precaution"](#).
- After overhaul, refill the transmission with new ATF.



PRECAUTIONS

< SERVICE INFORMATION >

- 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:000000002955376

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-13](#) (for VQ35DE engine), [CO-41](#) (for VK45DE engine).

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-85. "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-40. "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-54](#) (for VQ35DE engine), [EC-676](#) (for VK45DE engine).
- **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-75](#).**

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PREPARATION

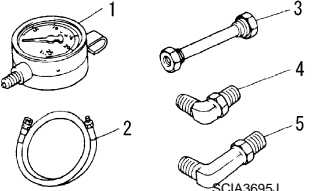
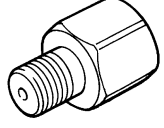
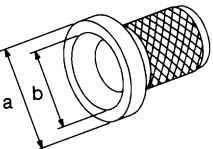
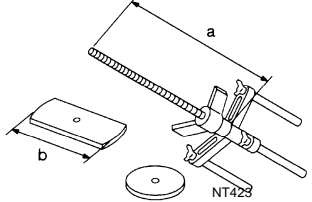
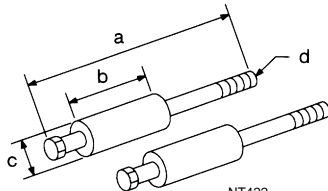
< SERVICE INFORMATION >

PREPARATION

Special Service Tool

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

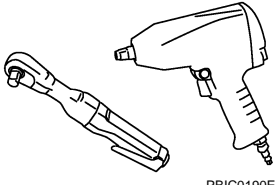
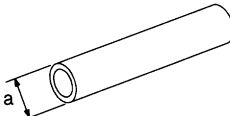
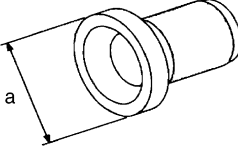
Tool number (Kent-Moore No.) Tool name	Description
ST2505S001 (J-34301-C) Oil pressure gauge set 1. ST25051001 (—) Oil pressure gauge 2. ST25052000 (—) Hose 3. ST25053000 (—) Joint pipe 4. ST25054000 (—) Adapter 5. ST25055000 (—) Adapter	 <p>Measuring line pressure</p>
KV31103600 (J-45674) Joint pipe adapter (With ST25054000)	 <p>Measuring line pressure</p>
ST33400001 (J-26082) Drift a: 60 mm (2.36 in) dia. b: 47 mm (1.85 in) dia.	 <ul style="list-style-type: none"> • Installing rear oil seal (VQ35DE models for 2WD) • 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)	 <p>Installing reverse brake return spring retainer</p>
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	 <p>Remove oil pump assembly</p>

PREPARATION

< SERVICE INFORMATION >

Commercial Service Tool

INFOID:000000002955378

Tool name	Description
<p>Power tool</p>  <p>PBI0190E</p>	<p>Loosening bolts and nuts</p>
<p>Drift a: 22 mm (0.87 in) dia.</p>  <p>NT083</p>	<p>Installing manual shaft oil seals</p>
<p>Drift a: 64 mm (2.52 in) dia.</p>  <p>SCIA5338E</p>	<p>Installing rear oil seal (AWD models)</p>

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A/T FLUID

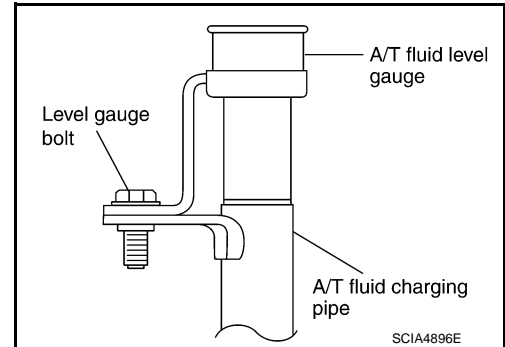
< SERVICE INFORMATION >

A/T FLUID

Changing A/T Fluid

INFOID:000000002955379

1. Warm up ATF.
2. Stop 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 S ATF

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

CAUTION:

- If Genuine NISSAN Matic S ATF is not available, Genuine NISSAN Matic J ATF may also be used.
- Using ATF other than Genuine NISSAN Matic S ATF or Matic J ATF will cause deterioration in driveability and A/T durability, and may damage the A/T, which is not covered by the (INFINITI new vehicle limited) warranty.
- When filling ATF, take care not to scatter heat generating parts such as exhaust.
- 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 into A/T fluid charging pipe.
8. Tighten the level gauge bolt.

Level gauge bolt

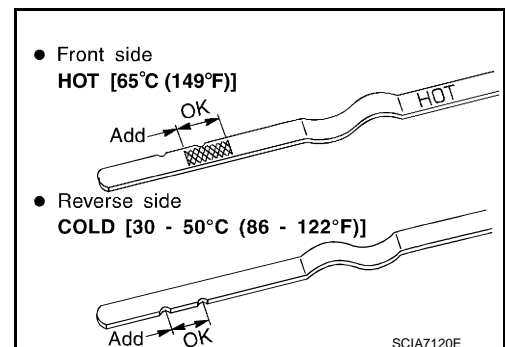
 : 5.1 N·m (0.52 kg·m, 45 in·lb)

Checking A/T Fluid

INFOID:000000002955380

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 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:



A/T FLUID

< SERVICE INFORMATION >

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.

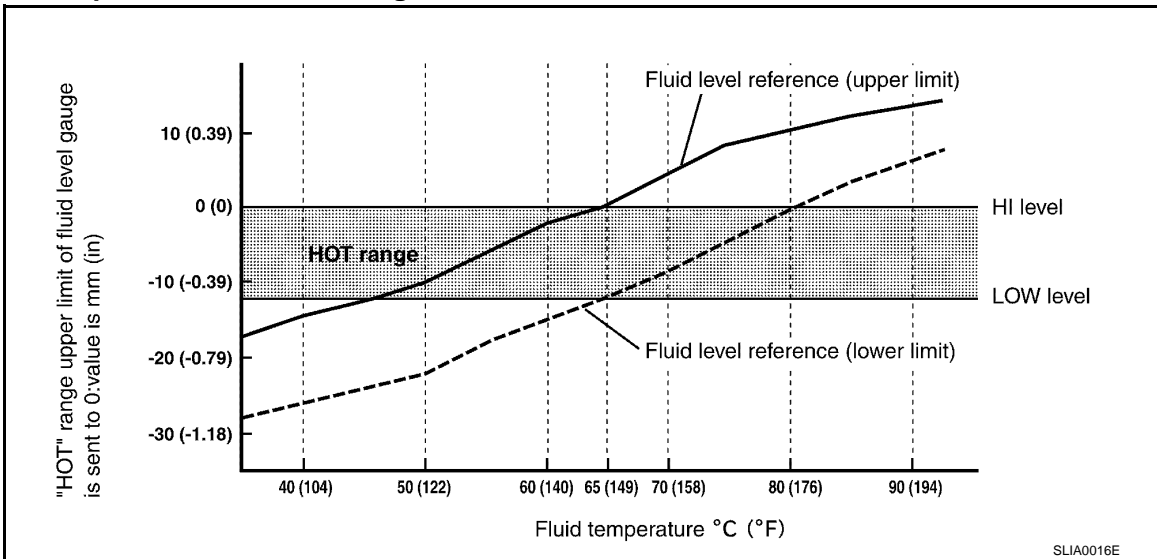
CAUTION:

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 figure. Therefore, be certain to perform operation while checking data with CONSULT-III.

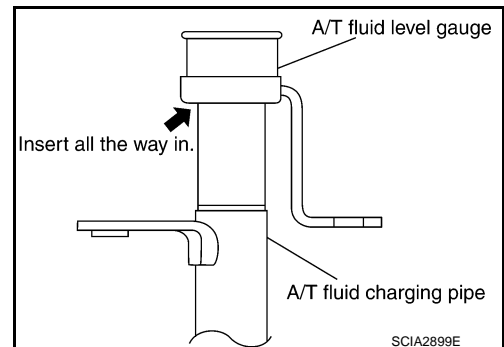


- a. Select "DATA MONITOR".
- b. Read out the value of "ATF TEMP 1".
7. Re-check A/T fluid level at A/T fluid temperatures of approximately 65°C (149°F) using "HOT" range on A/T fluid level gauge.

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 reversed 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 A/T fluid contains frictional material (clutches, bands, etc.), replace radiator and flush cooler line using cleaning solvent and compressed air after repair of A/T. Refer to [CO-13](#) (for VQ35DE engine), [CO-41](#) (for VK45DE engine) and [AT-14, "A/T Fluid Cooler Cleaning"](#).



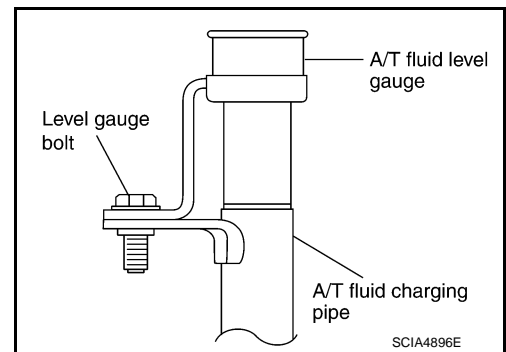
A/T FLUID

< SERVICE INFORMATION >

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:000000002955381

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.

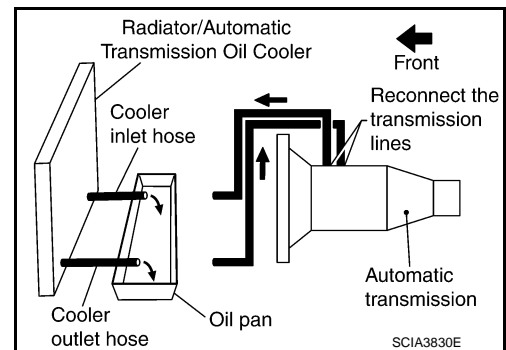
A/T FLUID COOLER CLEANING PROCEDURE

1. Position an oil pan under the A/T inlet and outlet cooler hoses.
2. Identify the inlet and outlet 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.

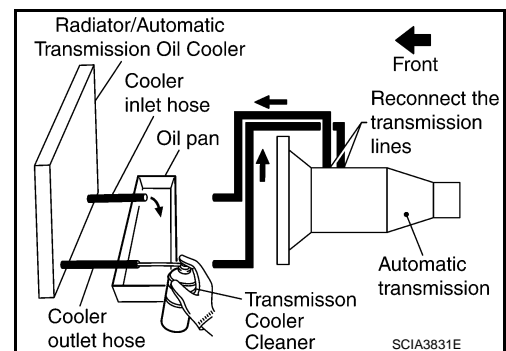


5. Insert the extension adapter hose of a can of Transmission Cooler Cleaner (Nissan P/N 999MP-AM006) into the cooler outlet hose.

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.

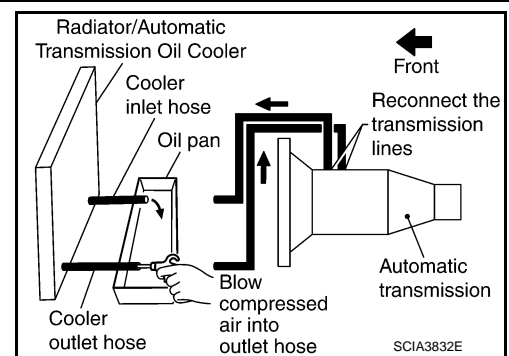
6. Hold the hose and can as high as possible and spray Transmission Cooler Cleaner in a continuous stream into the cooler outlet hose until ATF flows out of the cooler inlet hose for 5 seconds.



A/T FLUID

< SERVICE INFORMATION >

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/cm² (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/cm² (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

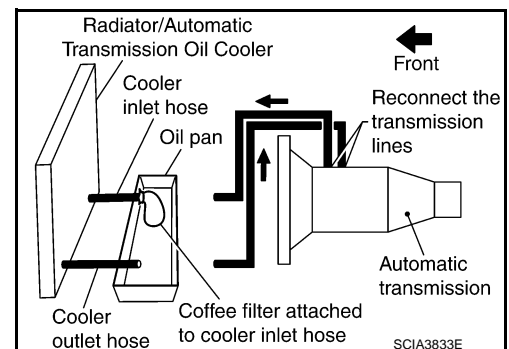
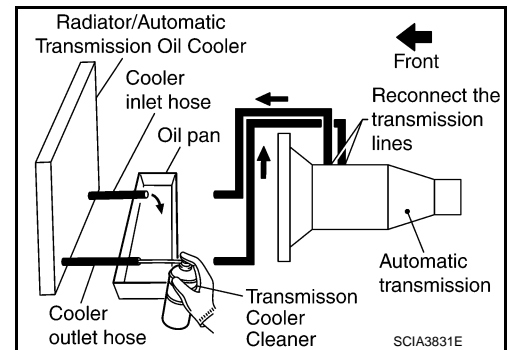
NOTE:

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:

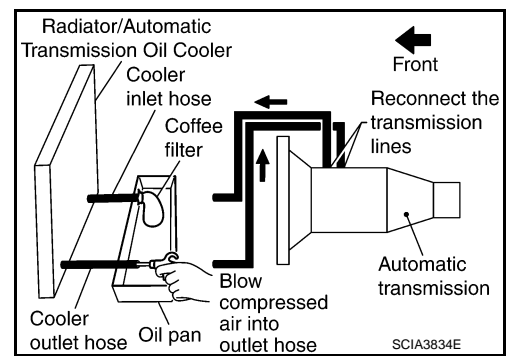
- Wear safety glasses and rubber gloves when spraying the Transmission Cooler Cleaner.
 - Spray Transmission Cooler Cleaner only with adequate ventilation.
 - Avoid contact with eyes and skin.
 - Do not breath vapors or spray mist.
4. Hold the hose and can as high as possible and spray Transmission Cooler 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.



A/T FLUID

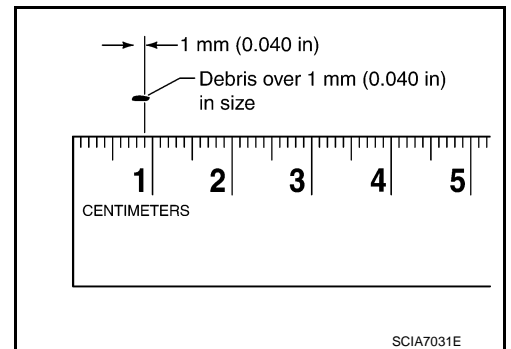
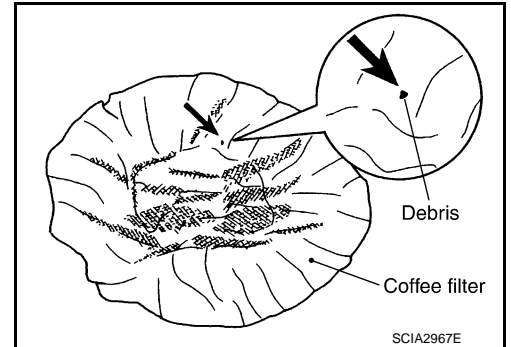
< SERVICE INFORMATION >

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/cm² (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 1mm (0.040 in) in size or metal powder is found in the coffee filter, this is normal. If normal debris is found, the A/T fluid cooler/radiator can be re-used and the procedure is ended.
 - b. If one or more pieces of debris are found that are over 1 mm (0.040 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-13](#) (for VQ35DE engine), [CO-41](#) (for VK45DE engine).



A/T FLUID COOLER FINAL INSPECTION

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

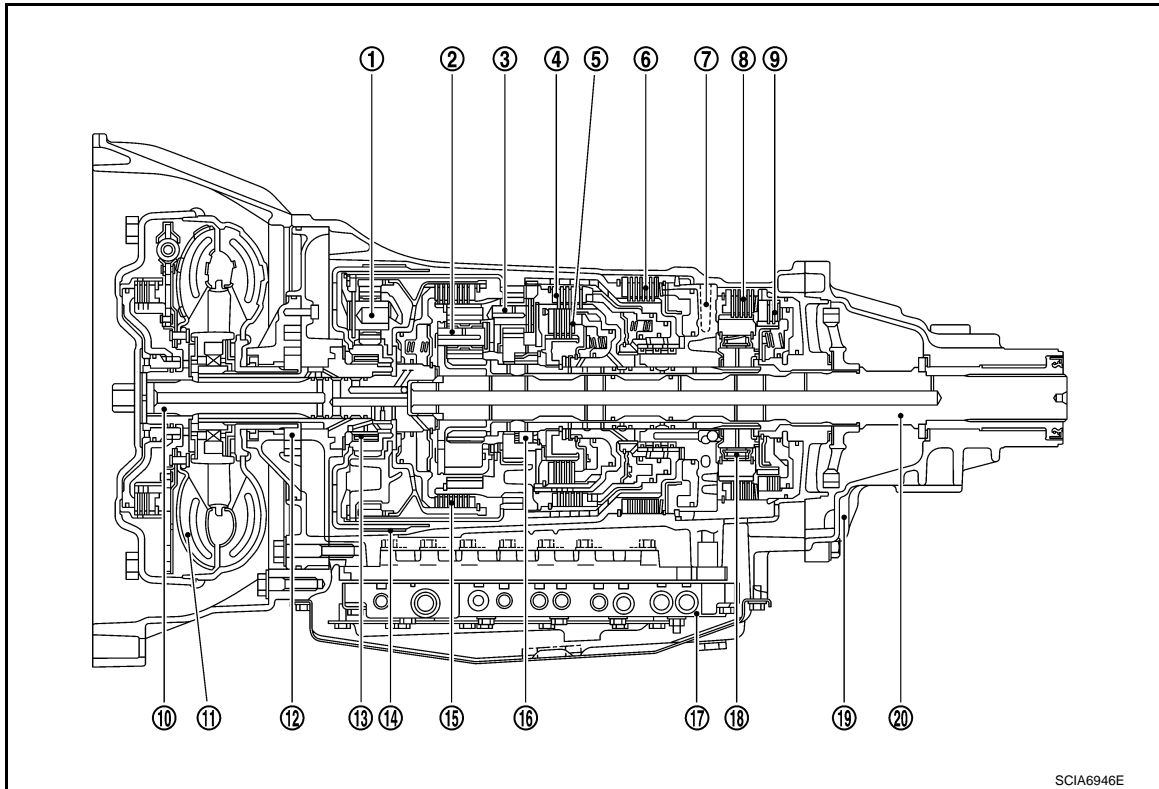
A/T CONTROL SYSTEM

< SERVICE INFORMATION >

A/T CONTROL SYSTEM

Cross-Sectional View (VQ35DE Models for 2WD)

INFOID:000000002955382



- | | | |
|-------------------------|--------------------------------|----------------------------|
| 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. 3rd one-way clutch | 14. Front brake | 15. Input clutch |
| 16. 1st one-way clutch | 17. Control valve with TCM | 18. Forward one-way clutch |
| 19. Rear extension | 20. Output shaft | |

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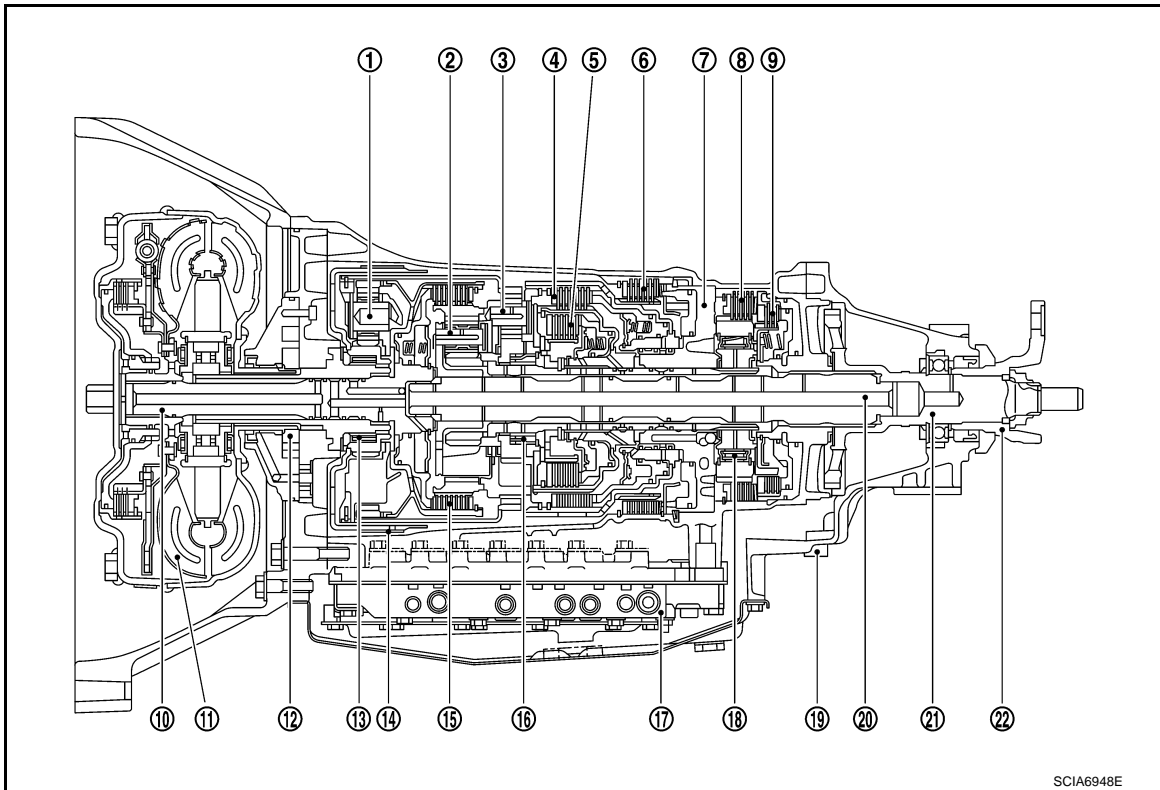
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A/T CONTROL SYSTEM

< SERVICE INFORMATION >

Cross-Sectional View (VK45DE Models for 2WD)

INFOID:00000002955383



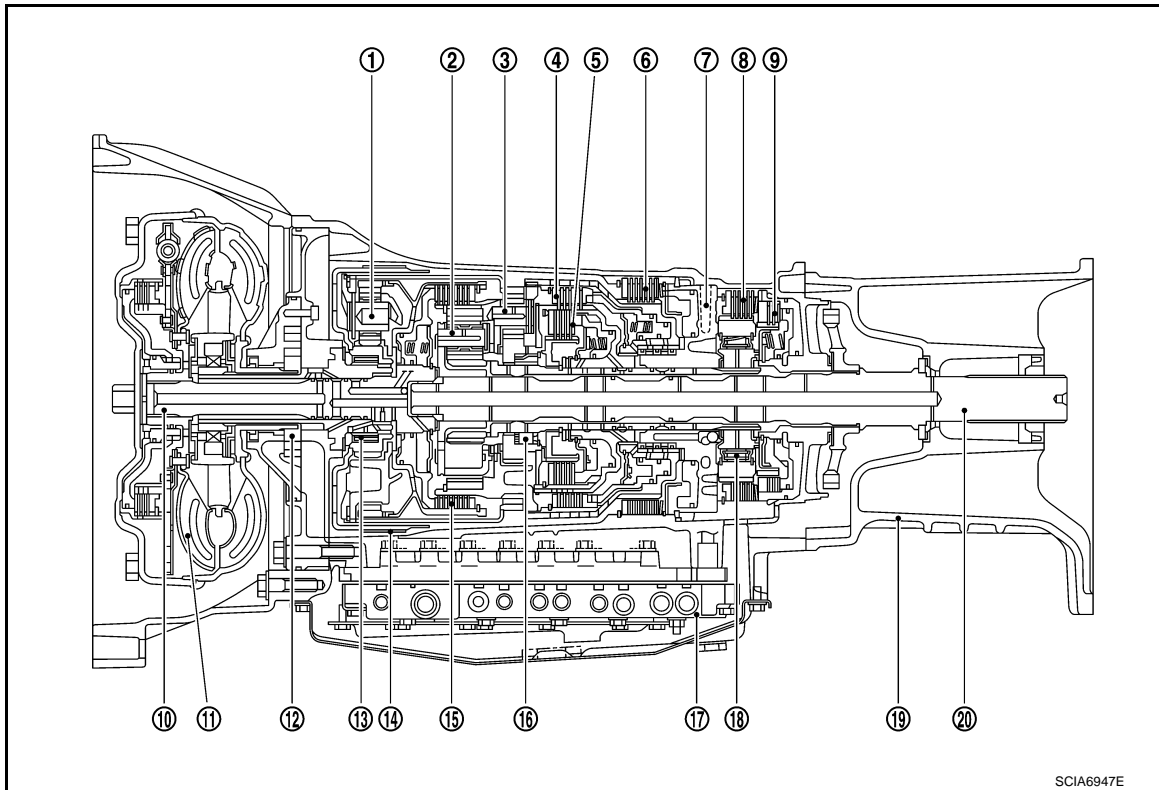
- | | | |
|-------------------------|--------------------------------|----------------------------|
| 1. Front planetary gear | 2. Mid planetary gear | 3. Rear planetary gear |
| 4. Direct clutch | 5. High and low reverse clutch | 6. Reverse brake |
| 7. Drum support | 8. Forward brake | 9. Low coast brake |
| 10. Input shaft | 11. Torque converter | 12. Oil pump |
| 13. 3rd one-way clutch | 14. Front brake | 15. Input clutch |
| 16. 1st one-way clutch | 17. Control valve with TCM | 18. Forward one-way clutch |
| 19. Rear extension | 20. Intermediate shaft | 21. Output shaft |
| 22. Companion flange | | |

A/T CONTROL SYSTEM

< SERVICE INFORMATION >

Cross-Sectional View (VQ35DE Models for AWD)

INFOID:00000002955384



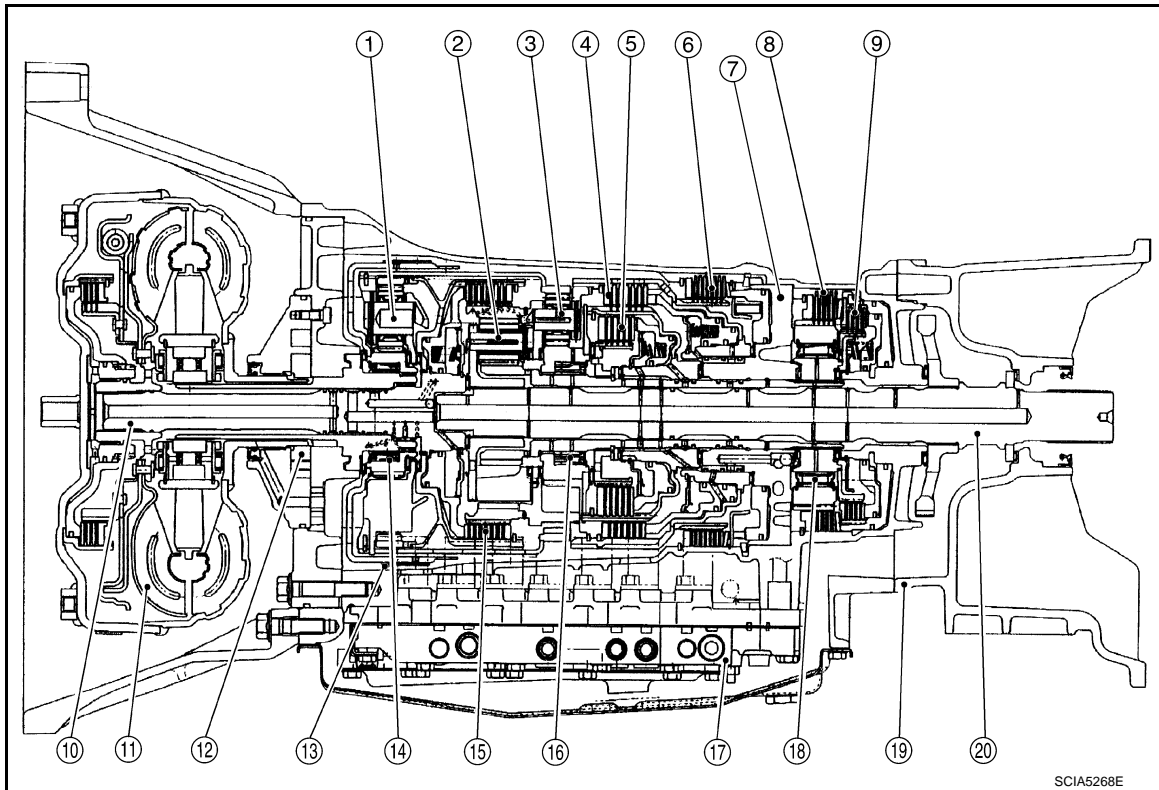
- | | | |
|-------------------------|--------------------------------|----------------------------|
| 1. Front planetary gear | 2. Mid planetary gear | 3. Rear planetary gear |
| 4. Direct clutch | 5. High and low reverse clutch | 6. Reverse brake |
| 7. Drum support | 8. Forward brake | 9. Low coast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

A/T CONTROL SYSTEM

< SERVICE INFORMATION >

Cross-Sectional View (VK45DE Models for AWD)

INFOID:000000003047165



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

Shift Mechanism

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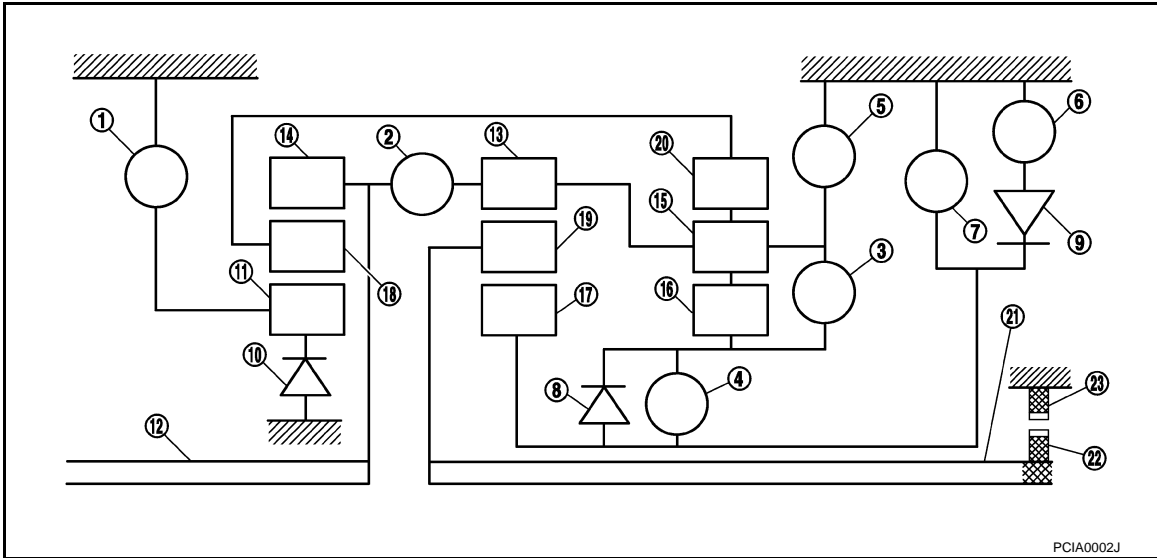
The A/T uses compact triple planetary gear systems to improve power transmission efficiency, simplify construction and reduce weight.

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

A/T CONTROL SYSTEM

< SERVICE INFORMATION >



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

FUNCTION OF CLUTCH AND BRAKE

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

A/T CONTROL SYSTEM

< SERVICE INFORMATION >

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	1 st		△ *		△	△ **	○	◎	◎	◎	Automatic shift 1→2→3→4→5
	2 nd			○	△		○		◎	◎	
	3 rd		○	○			△	◇		◎	
	4 th	○	○	○			△	◇			
	5 th	○	○			○	△	◇		◇	
M5	5 th	○	○				△	◇		◇	Locks* (held stationary) in 5GR
M4	4 th	○	○	○			△	◇			Locks* (held stationary) in 4GR
M3	3 rd		○	○			△	◇		◎	Locks* (held stationary) in 3GR
M2	2 nd			○		○	○		◎	◎	Locks* (held stationary) in 2GR
M1	1 st		○			○	○	◎	◎	◎	Locks* (held stationary) in 1GR

* : Down shift automatically according to the vehicle speed.

○ — Operates

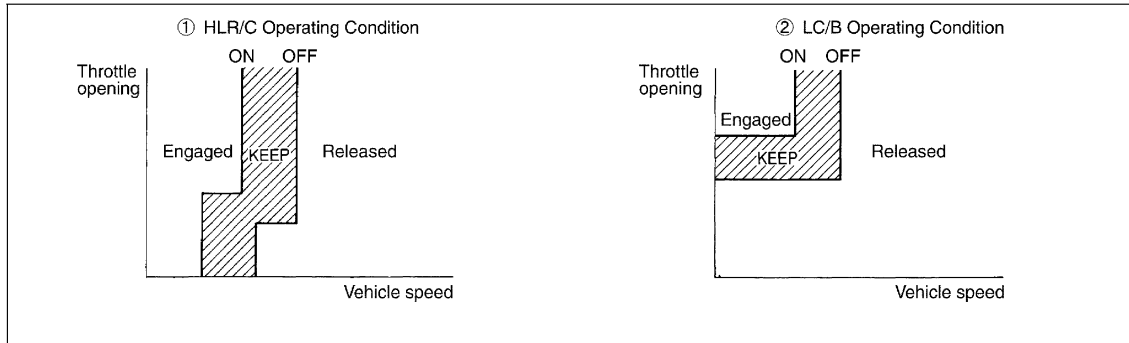
◎ — Operates during "progressive" acceleration.

◇ — 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

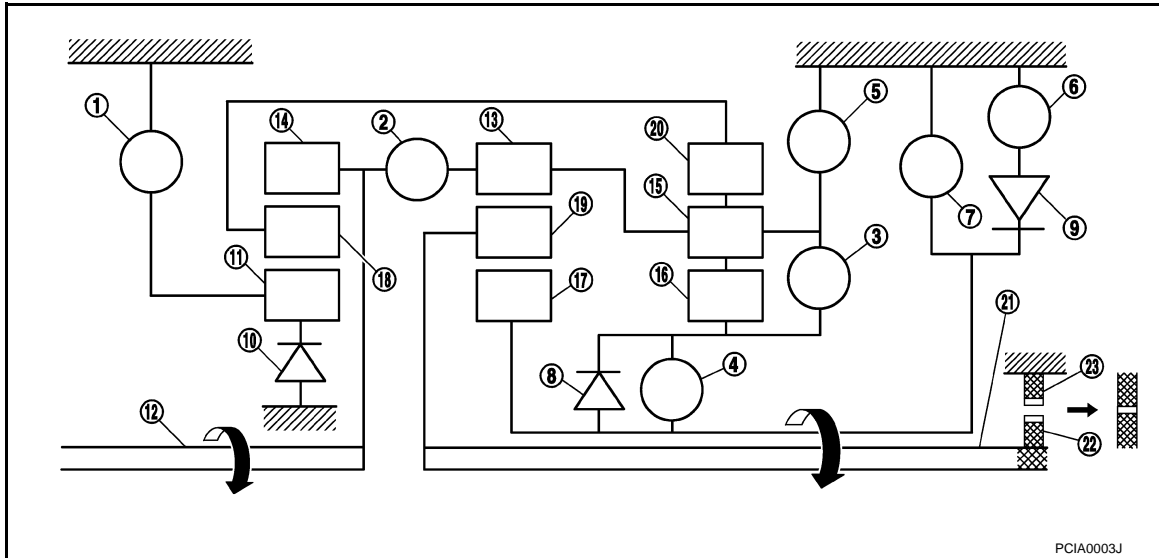
Since both the forward brake and the reverse brake are released, torque from the input shaft drive is not transmitted to the output shaft.

"P" Position

A/T CONTROL SYSTEM

< SERVICE INFORMATION >

- 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.



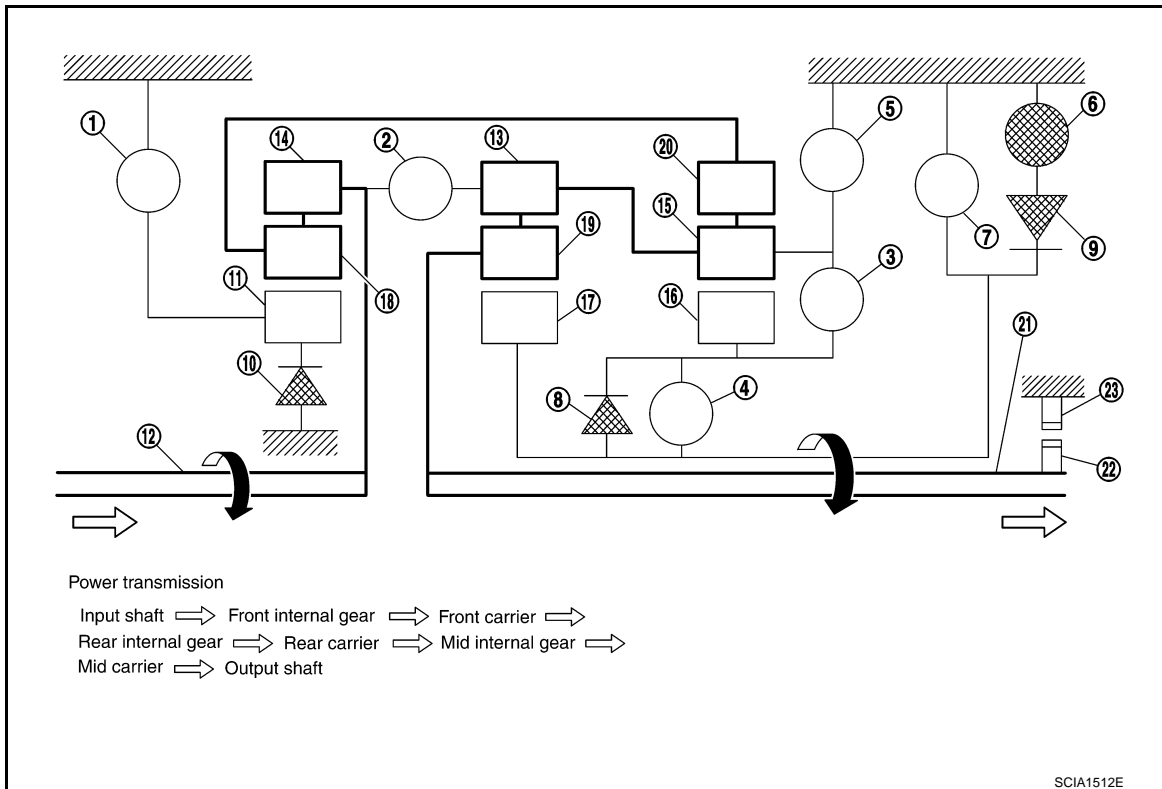
- | | | |
|--------------------------------|-------------------------|---------------------------|
| 1. Front brake | 2. Input clutch | 3. Direct clutch |
| 4. High and low reverse clutch | 5. Reverse brake | 6. Forward brake |
| 7. Low coast brake | 8. 1st one-way clutch | 9. Forward one-way clutch |
| 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 | |

“D1” 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.

A/T CONTROL SYSTEM

< SERVICE INFORMATION >



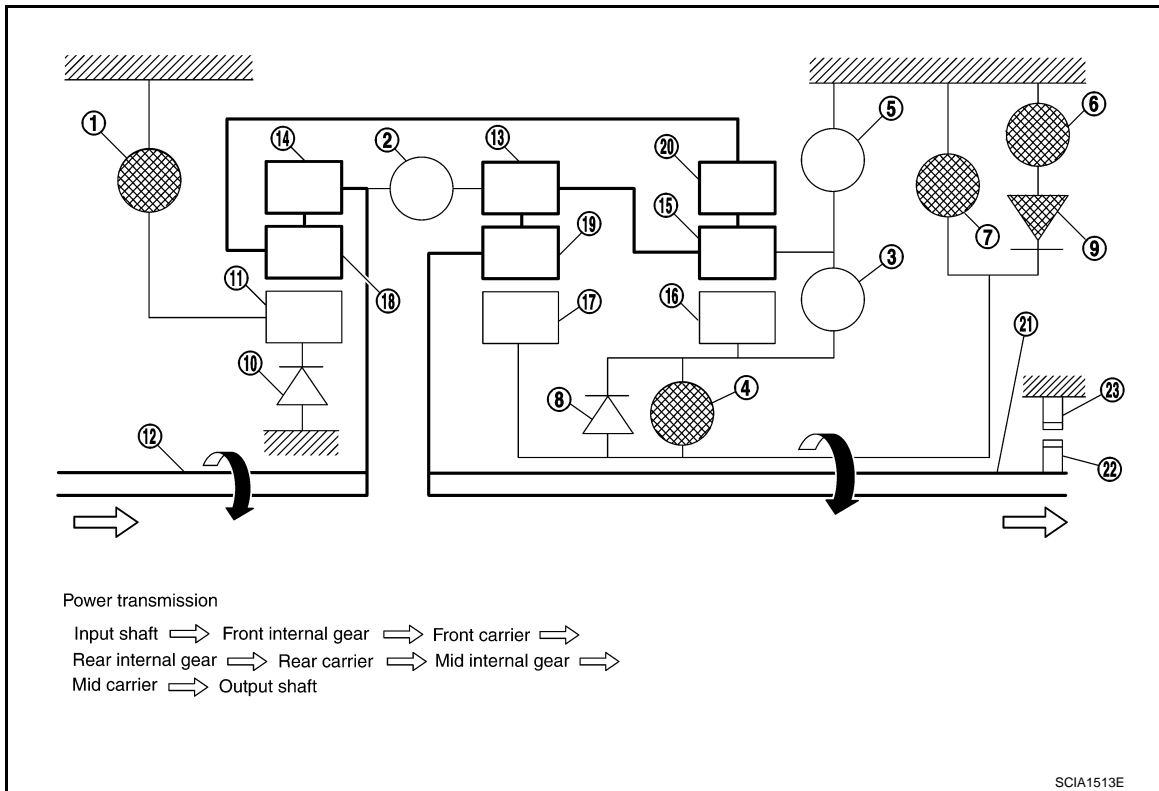
- | | | |
|--------------------------------|-------------------------|---------------------------|
| 1. Front brake | 2. Input clutch | 3. Direct clutch |
| 4. High and low reverse clutch | 5. Reverse brake | 6. Forward brake |
| 7. Low coast brake | 8. 1st one-way clutch | 9. Forward one-way clutch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

"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.

A/T CONTROL SYSTEM

< SERVICE INFORMATION >



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

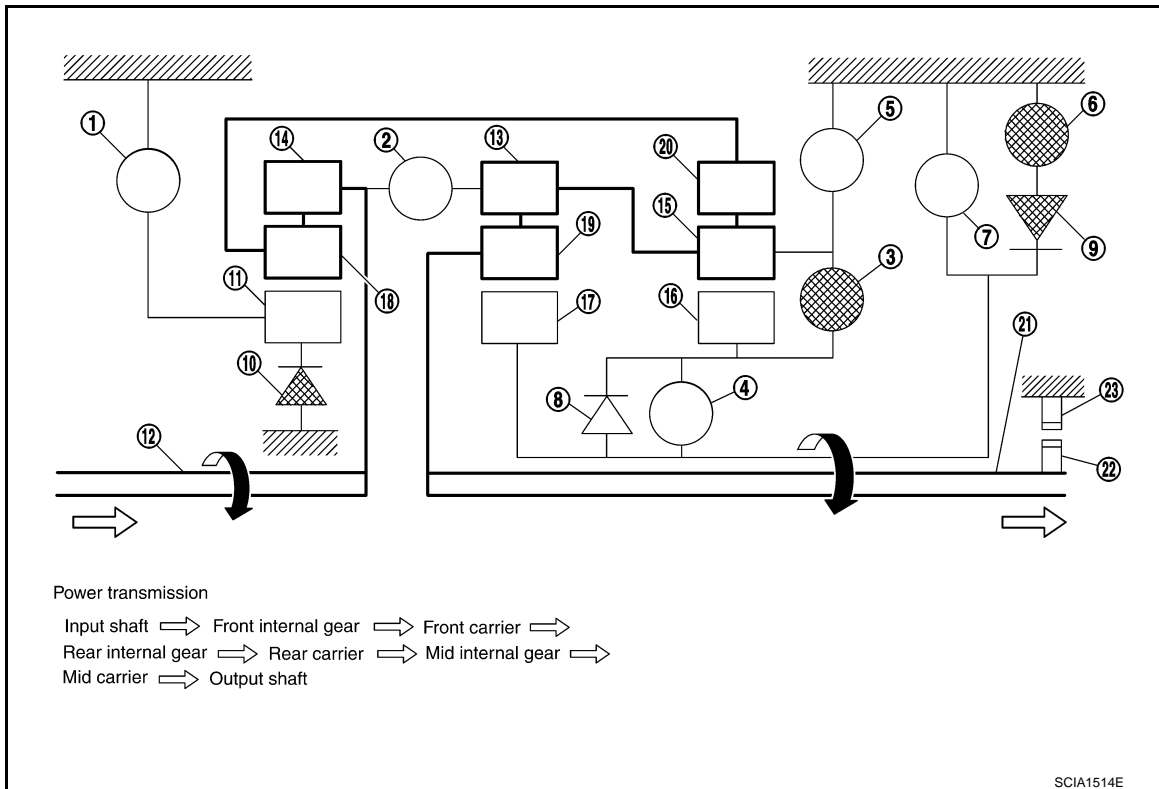
"D2" Position

- 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.

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A/T CONTROL SYSTEM

< SERVICE INFORMATION >



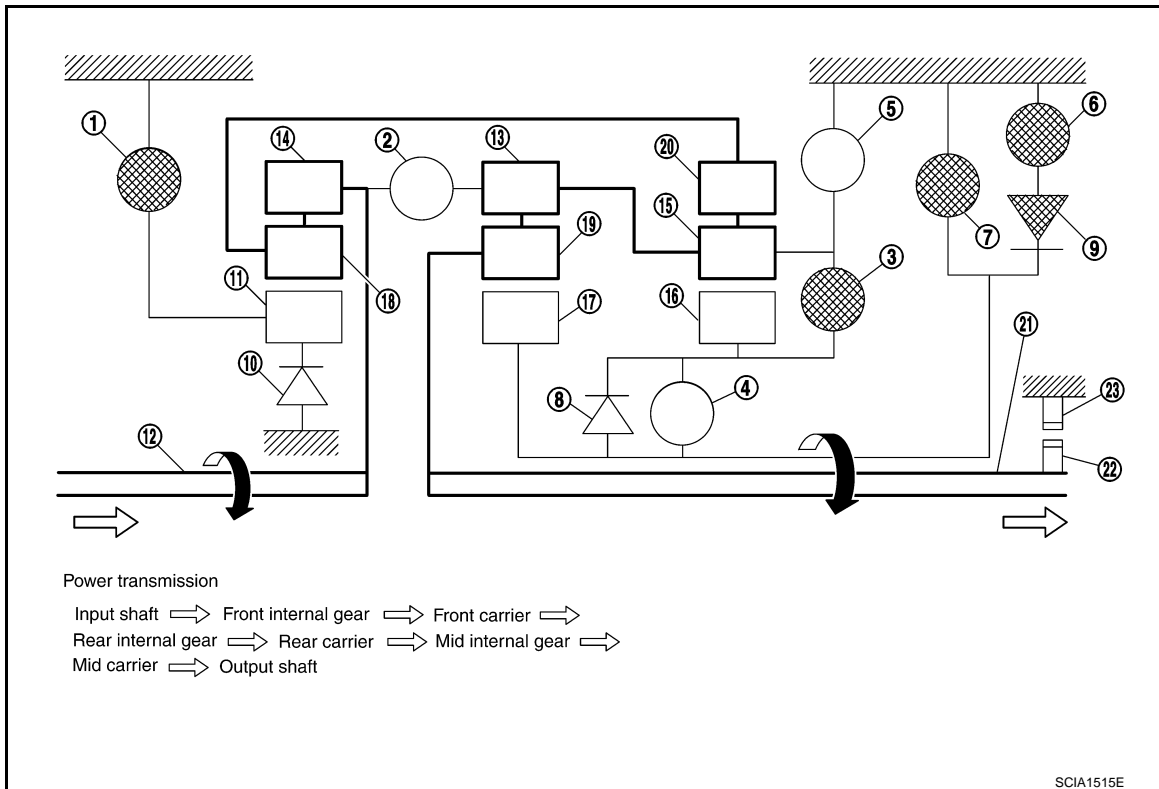
- | | | |
|--------------------------------|-------------------------|---------------------------|
| 1. Front brake | 2. Input clutch | 3. Direct clutch |
| 4. High and low reverse clutch | 5. Reverse brake | 6. Forward brake |
| 7. Low coast brake | 8. 1st one-way clutch | 9. Forward one-way clutch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

"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.

A/T CONTROL SYSTEM

< SERVICE INFORMATION >



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

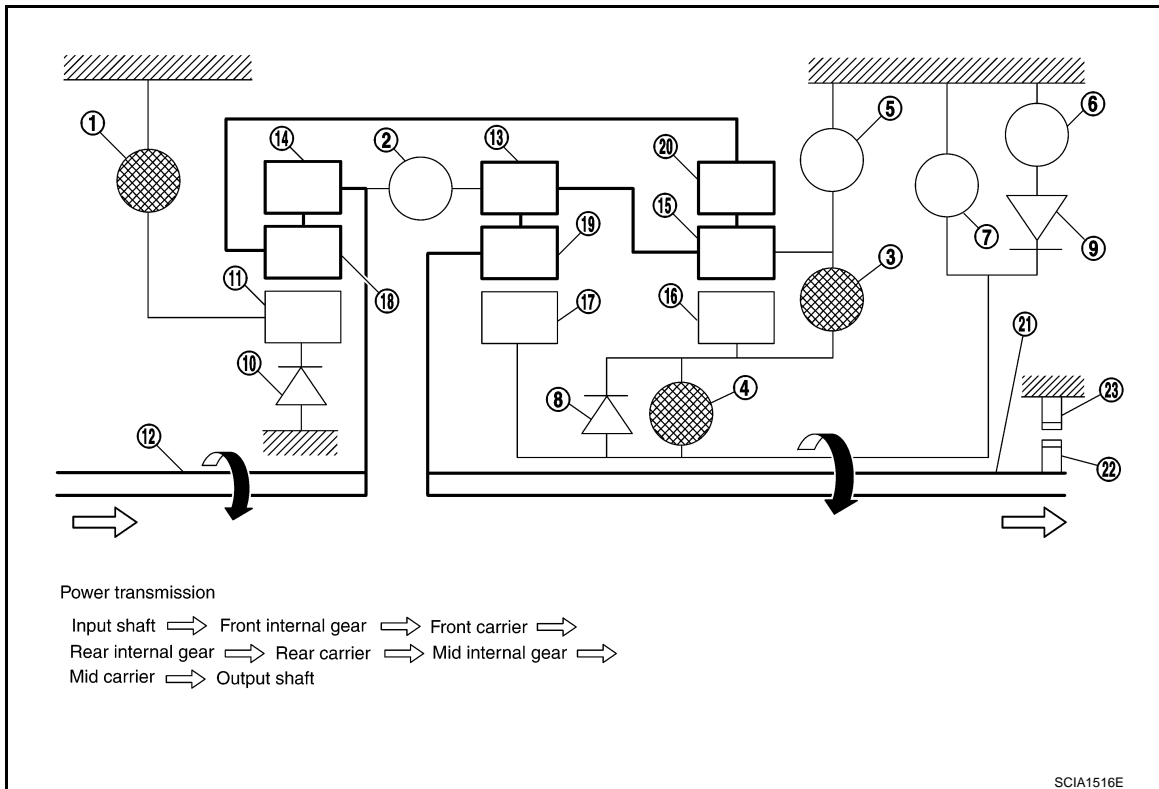
“D3” and “M3” Positions

- 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.

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A/T CONTROL SYSTEM

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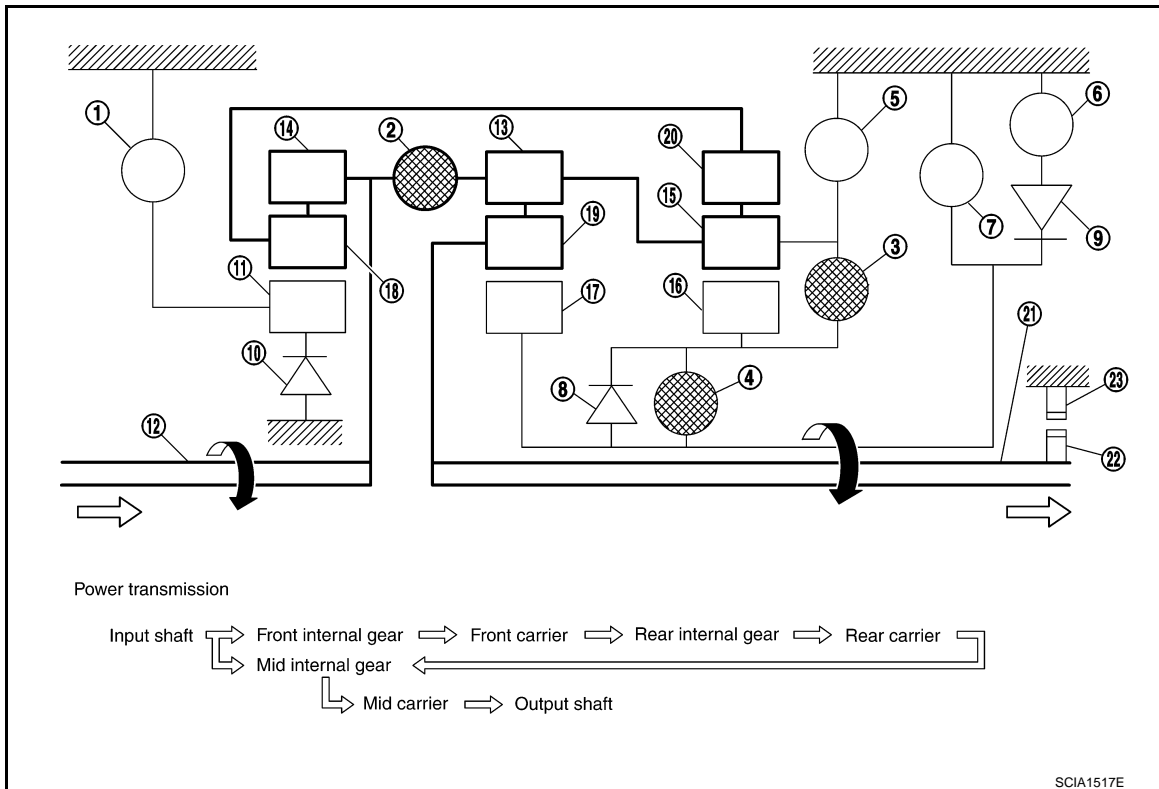
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|--------------------------------|-------------------------|---------------------------|
| 1. Front brake | 2. Input clutch | 3. Direct clutch |
| 4. High and low reverse clutch | 5. Reverse brake | 6. Forward brake |
| 7. Low coast brake | 8. 1st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

“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.

A/T CONTROL SYSTEM

< SERVICE INFORMATION >



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

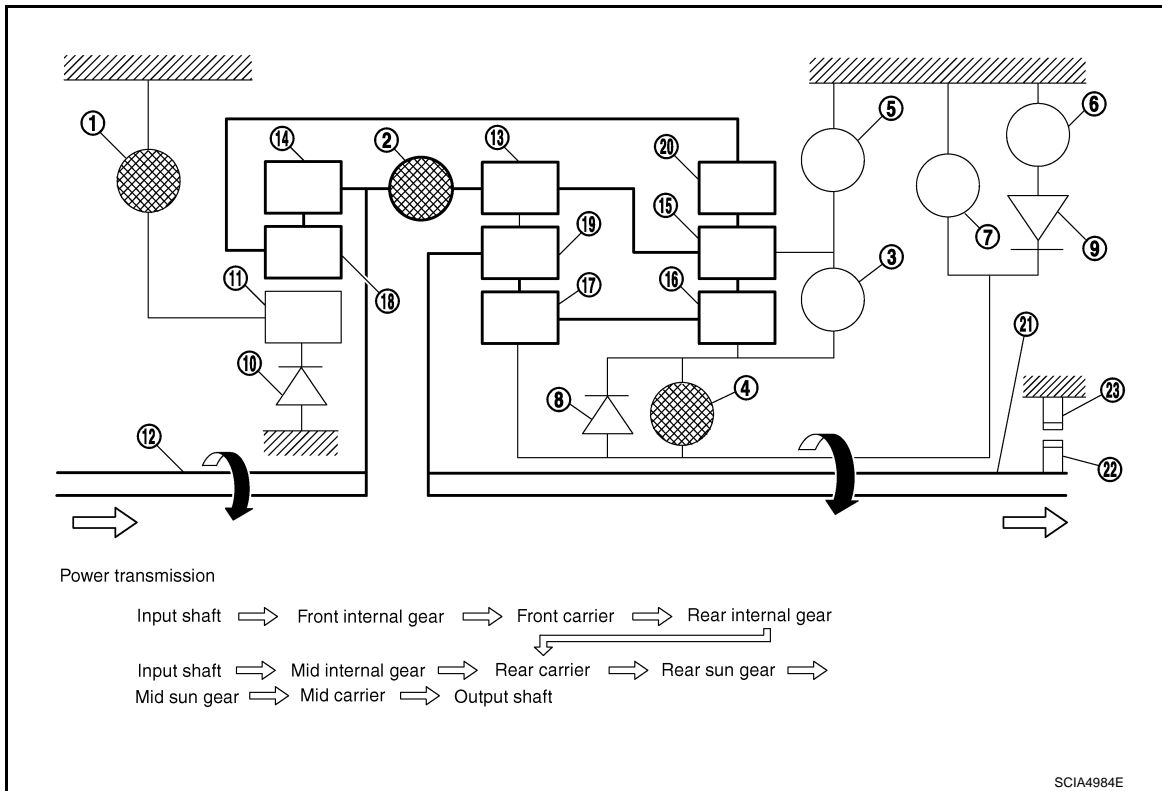
"D5" and "M5" Positions

- 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.

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A/T CONTROL SYSTEM

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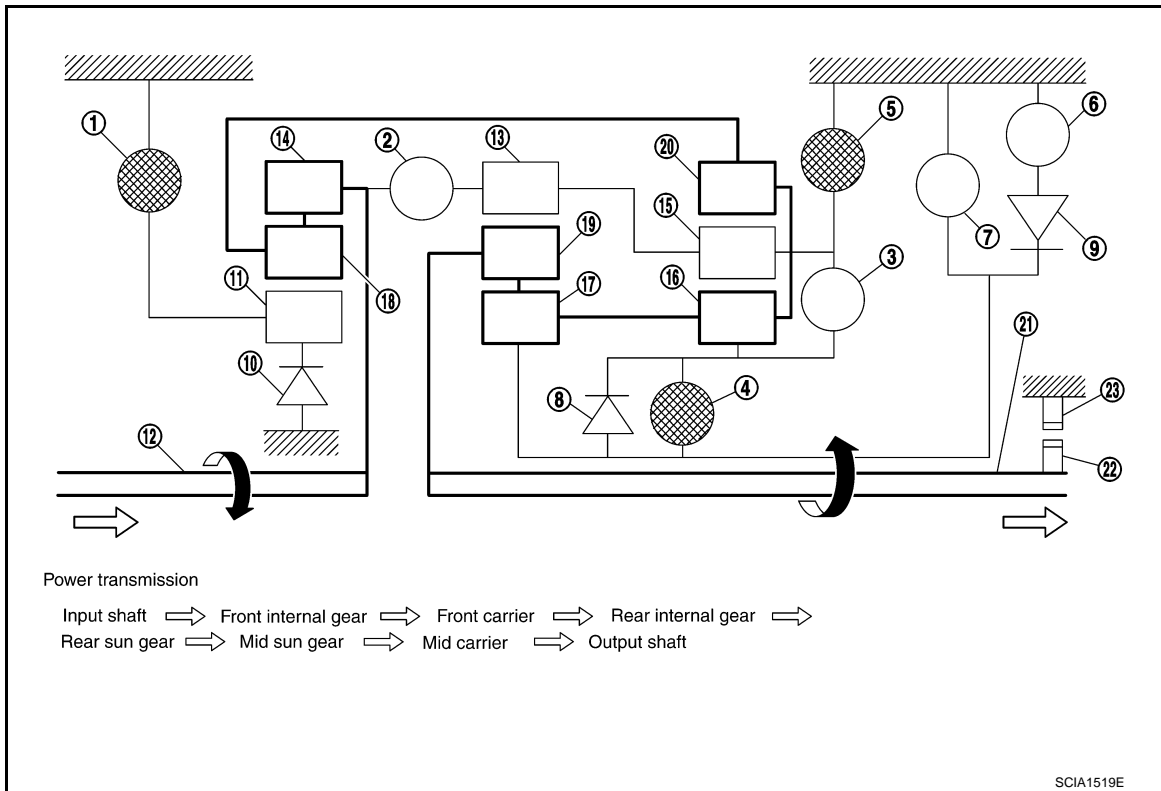
- | | | |
|--------------------------------|-------------------------|---------------------------|
| 1. Front brake | 2. Input clutch | 3. Direct clutch |
| 4. High and low reverse clutch | 5. Reverse brake | 6. Forward brake |
| 7. Low coast brake | 8. 1st one-way clutch | 9. Forward one-way clutch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

"R" Position

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

A/T CONTROL SYSTEM

< SERVICE INFORMATION >



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

TCM Function

INFOID:000000002955386

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

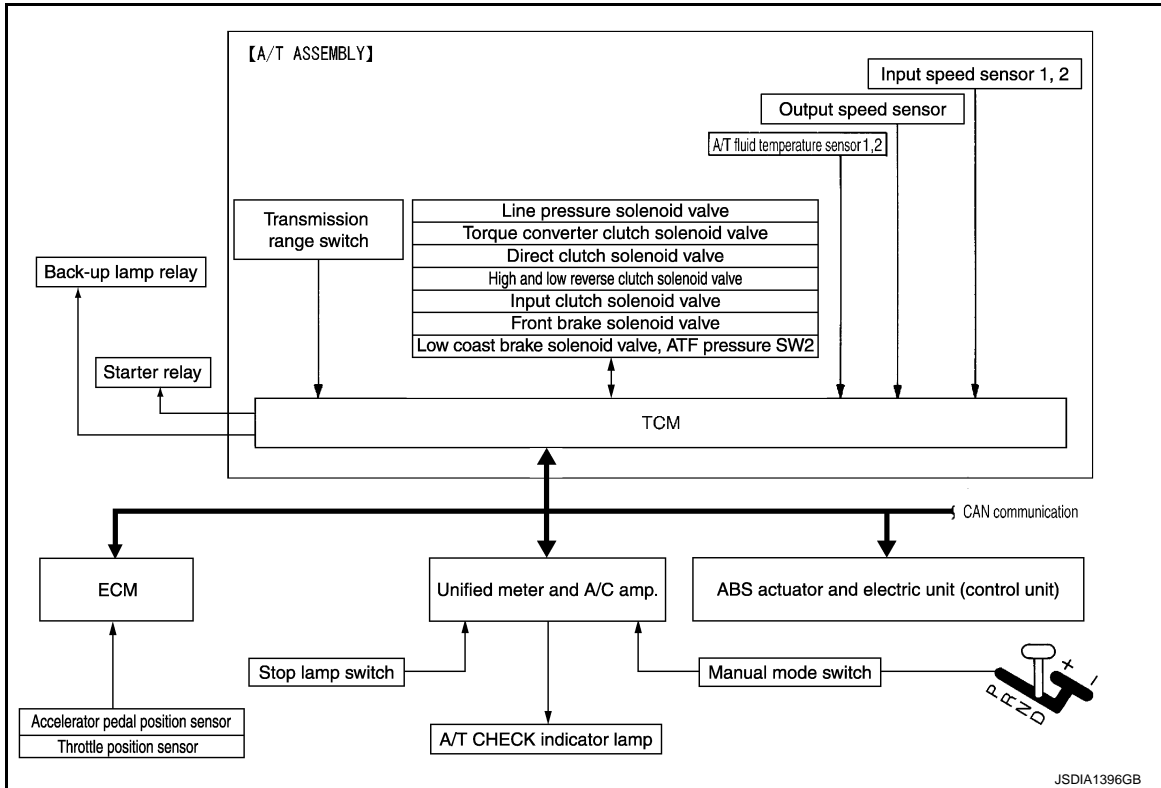
The A/T senses vehicle operating conditions through various sensors or signals. It always controls the optimum shift position and reduces shifting and lock-up shocks.

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 Back-up lamp relay Starter relay

A/T CONTROL SYSTEM

< SERVICE INFORMATION >

CONTROL SYSTEM DIAGRAM



CAN Communication

INFOID:000000002955387

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. Refer to [LAN-30. "CAN Communication Signal Chart"](#).

A/T CONTROL SYSTEM

< SERVICE INFORMATION >

Input/Output Signal of TCM

INFOID:000000002955388

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
	Output speed sensor	X	X	X	X	X	X	X
	Vehicle speed signal(*1) (*5)						X	
	Closed throttle position signal(*5)		X(*2)	X	X		X	X(*4)
	Wide open throttle position signal(*5)						X	X(*4)
	Input speed sensor 1		X		X	X	X	X
	Input speed 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 or ICC sensor integrated unit	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 output speed 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

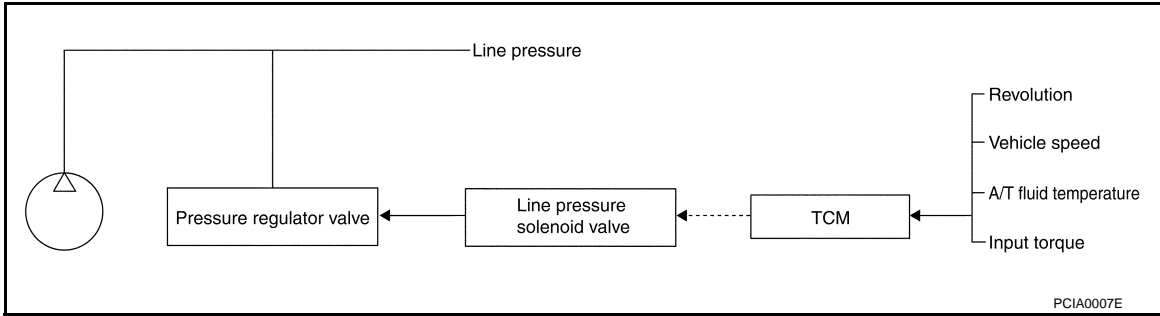
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- When an input torque signal equivalent to the engine drive force is sent from the ECM to the TCM, the TCM controls the line pressure solenoid.

A/T CONTROL SYSTEM

< SERVICE INFORMATION >

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

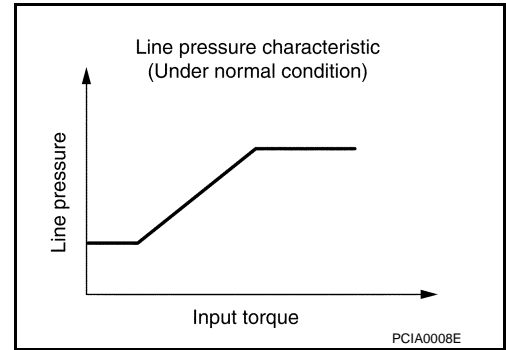


LINE PRESSURE CONTROL IS BASED ON THE TCM LINE PRESSURE CHARACTERISTIC PATTERN

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

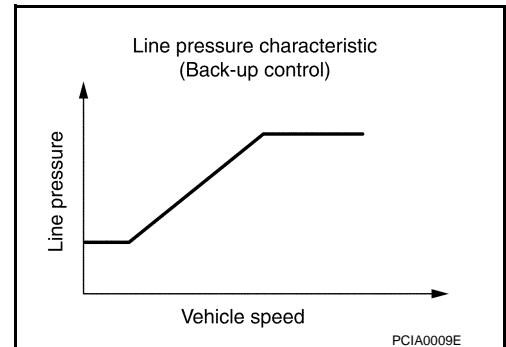
Normal Control

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



Back-up Control (Engine Brake)

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

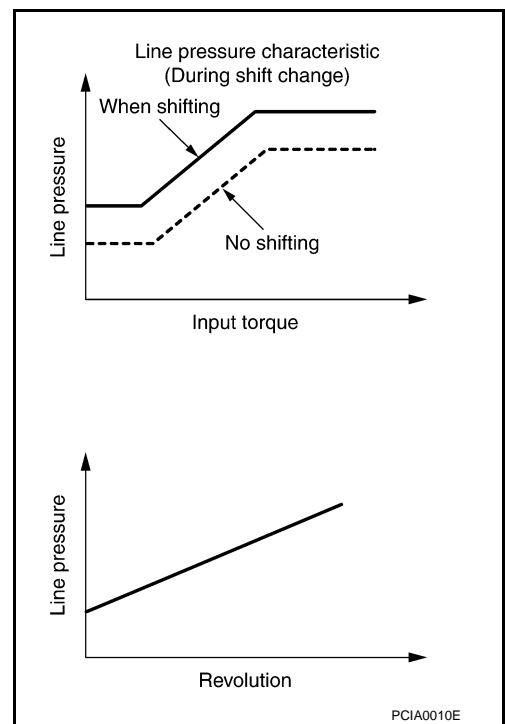


During Shift Change

A/T CONTROL SYSTEM

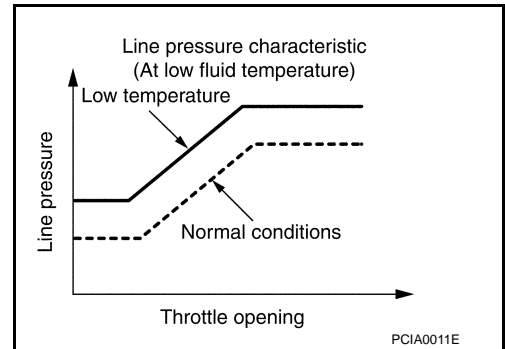
< SERVICE INFORMATION >

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



At Low Fluid Temperature

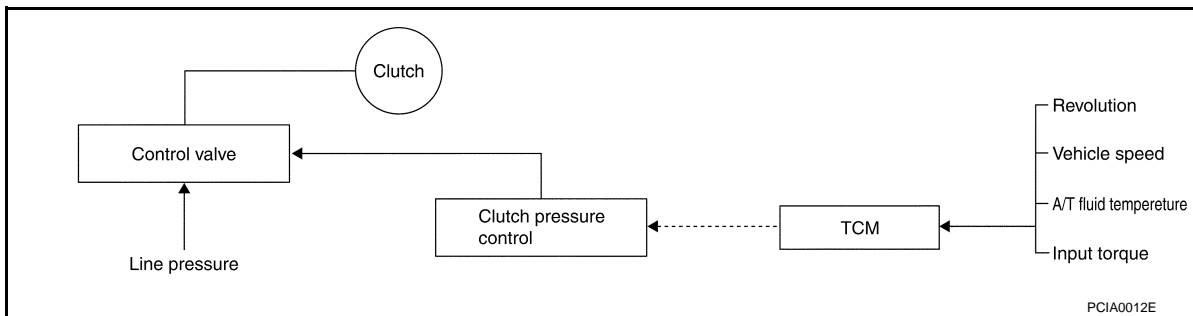
When the A/T fluid temperature drops below the prescribed temperature, in order to speed up the action of each friction element, the line pressure is set higher than the normal line pressure characteristic.



Shift Control

INFOID:000000002955390

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



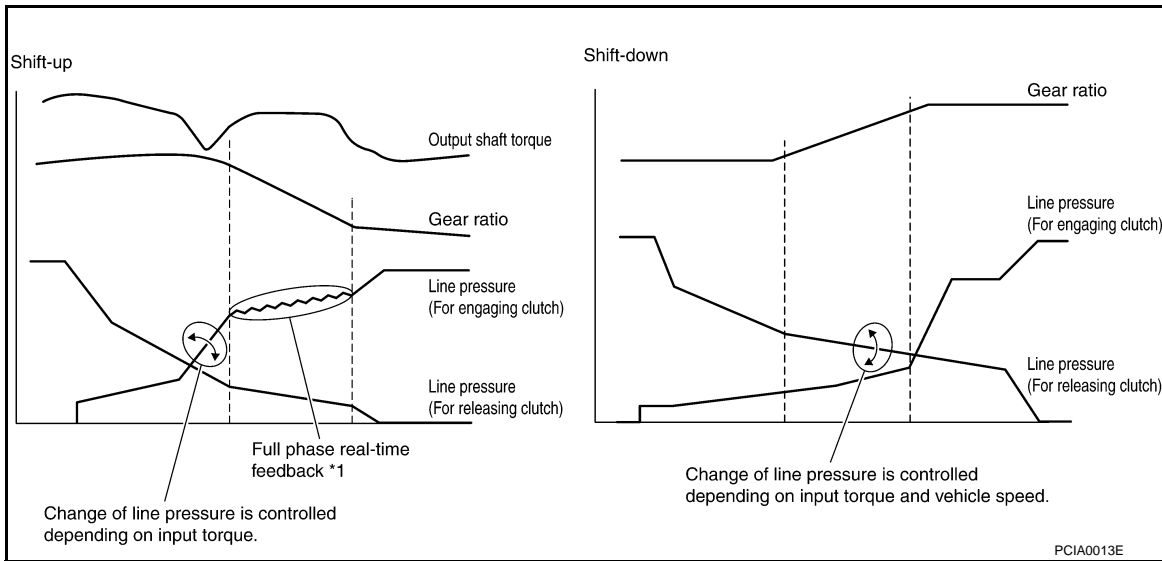
SHIFT CHANGE

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

Shift Change System Diagram

A/T CONTROL SYSTEM

< SERVICE INFORMATION >



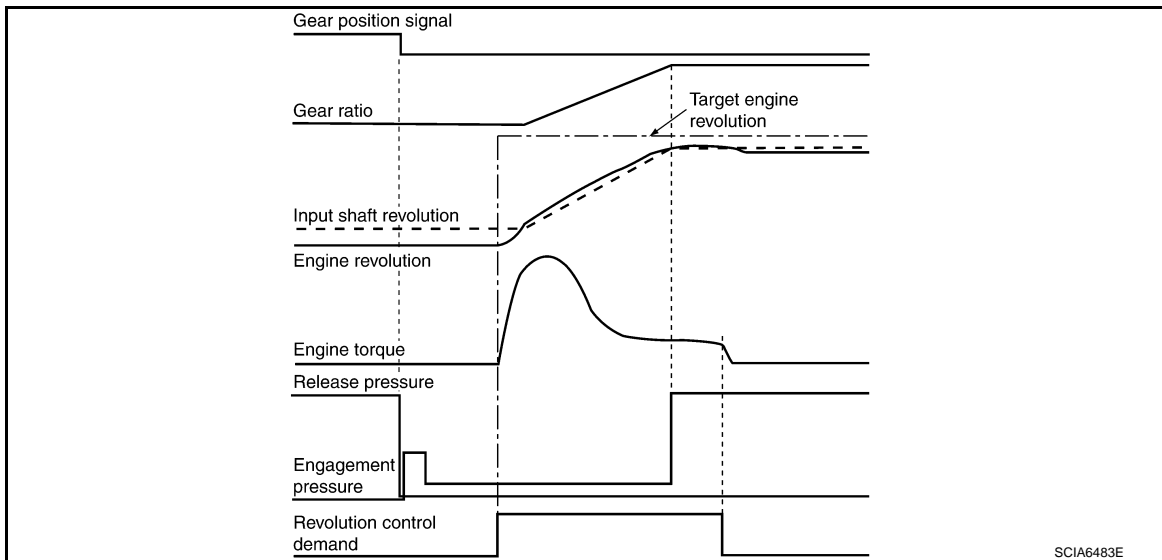
*1: Full phase real-time feedback control monitors movement of gear ratio at gear change, and controls oil pressure at real-time to achieve the best gear ratio.

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

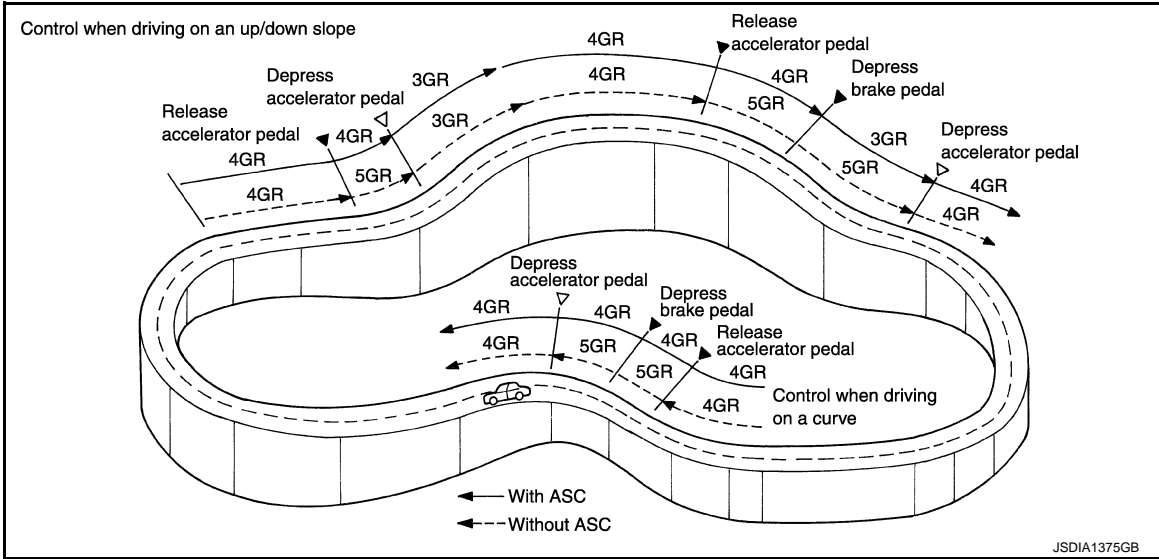


ASC (ADOPTIVE SHIFT CONTROL)

A/T CONTROL SYSTEM

< SERVICE INFORMATION >

ASC automatically shifts or hold at 3GR or 4GR on certain roads (up/down slope and curve) and driving condition.



When Driving on an Up/Down Slope

ASC judges up/down slope according to the angle of accelerator pedal and vehicle speed. Fixing at 3GR or 4GR on an up-slope prevents shift hunting and controls the vehicle to gain maximum driving force. On a down-slope, automatic shift-down to 3GR or 4GR controls to gain maximum engine brake.

When Driving on a Curve

TCM receives side G sensor signal from ABS actuator and electric unit (control unit). Fixing at 3GR or 4GR based on the signal prevents shift-up and kick-down and controls to drive smoothly.

Lock-up Control

INFOID:000000002955391

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

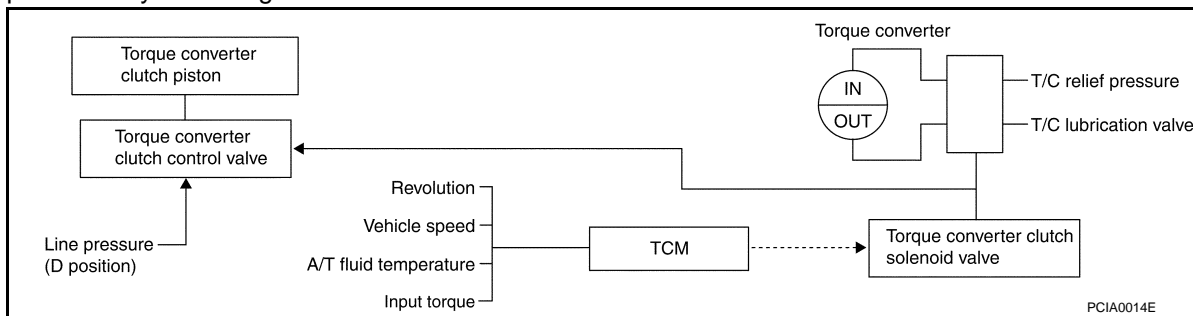
The torque converter clutch control valve operation is controlled by the torque converter clutch solenoid valve, which is controlled by a signal from TCM, and the torque converter clutch control valve engages or releases the torque converter clutch piston.

Lock-up operation condition table

Selector lever	"D" position			"M" position	
Gear position	5	4	3	5	4
Lock-up	×	–	–	×	×
Slip lock-up	×	×	×	–	–

TORQUE CONVERTER CLUTCH CONTROL VALVE CONTROL

Lock-up Control System Diagram



Lock-up Released

In the lock-up released state, the torque converter clutch control valve is set into the unlocked state by the torque converter clutch solenoid and the lock-up apply pressure is drained.

In this way, the torque converter clutch piston is not coupled.

A/T CONTROL SYSTEM

< SERVICE INFORMATION >

Lock-up Applied

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

In this way, the torque converter clutch piston is pressed and coupled.

SMOOTH LOCK-UP CONTROL

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

Half-clutched State

The current output from the TCM to the torque converter clutch solenoid is varied to steadily increase the torque converter clutch solenoid pressure.

In this way, the lock-up apply pressure gradually rises and while the torque converter clutch piston is put into half-clutched status, the torque converter clutch piston operating pressure is increased and the coupling is completed smoothly.

Slip Lock-up Control

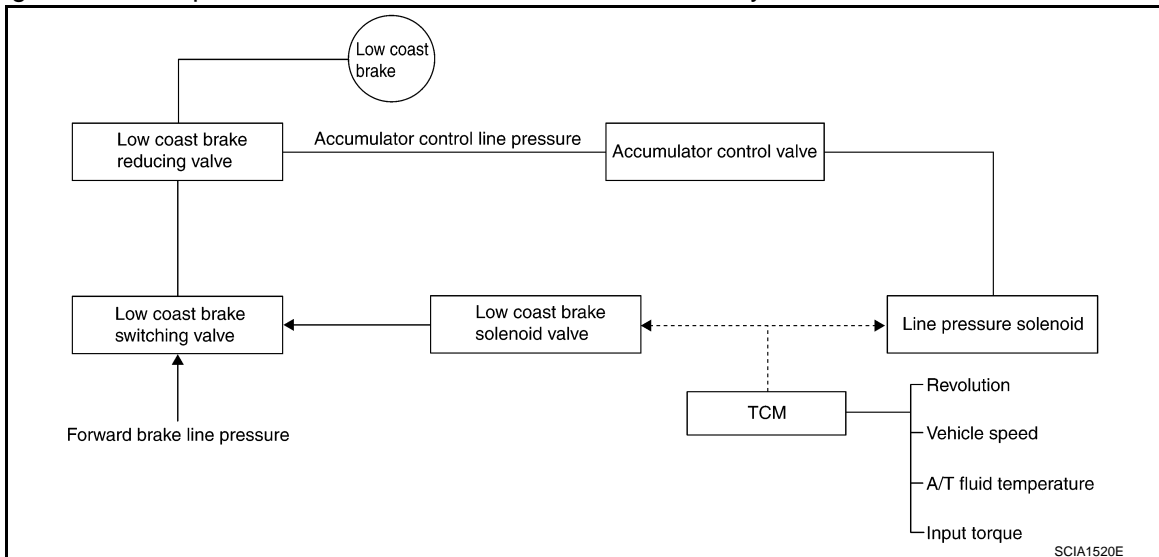
In the slip region, the torque converter clutch solenoid current is controlled with the TCM to put it into the half-clutched state. This absorbs the engine torque fluctuation and lock-up operates from low speed.

This raises the fuel efficiency for 3GR, 4GR and 5GR at both low speed and when the accelerator has a low degree of opening.

Engine Brake Control

INFOID:000000002955392

- 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:000000002955393

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.

A/T CONTROL SYSTEM

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Name	Function
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, 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.)
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 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

< SERVICE INFORMATION >

ON BOARD DIAGNOSTIC (OBD) SYSTEM

Introduction

INFOID:000000002955394

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-85, "CONSULT-III Function \(TRANSMISSION\)"](#).

OBD-II Function for A/T System

INFOID:000000002955395

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:000000002955396

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:000000002955397

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.**

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

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

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

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

ON BOARD DIAGNOSTIC (OBD) SYSTEM

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detail, refer to [EC-116. "CONSULT-III Function \(ENGINE\)"](#) (for VQ35DE engine), [EC-741. "CONSULT-III Function"](#) (for VK45DE 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* ¹ or P0300 - P0308* ² 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	

*1: For VQ35DE engine.

*2: For VK45DE engine.

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 from the terminal, the DTC 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-55. "Emission-Related Diagnostic Information"](#) (for VQ35DE engine), [EC-677. "Emission-Related Diagnostic Information"](#) (for VK45DE engine).

- **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 [AT-92. "Diagnosis Procedure without CONSULT-III"](#). (The engine warm-up step can be skipped when performing the diagnosis only to erase the DTC.)
3. Select Mode 4 with GST (Generic Scan Tool). For details, refer to [EC-125. "Generic Scan Tool \(GST\) Function"](#) (for VQ35DE engine), [EC-750. "Generic Scan Tool \(GST\) Function"](#) (for VK45DE engine).

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 [AT-92. "Diagnosis Procedure without CONSULT-III"](#). (The engine warm-up step can be skipped when performing the diagnosis only to erase the DTC.)
3. Perform "OBD-II SELF-DIAGNOSTIC PROCEDURE (No tools)". Refer to [EC-55. "Emission-Related Diagnostic Information"](#) (for VQ35DE engine), [EC-677. "Emission-Related Diagnostic Information"](#) (for VK45DE engine).

ON BOARD DIAGNOSTIC (OBD) SYSTEM

< SERVICE INFORMATION >

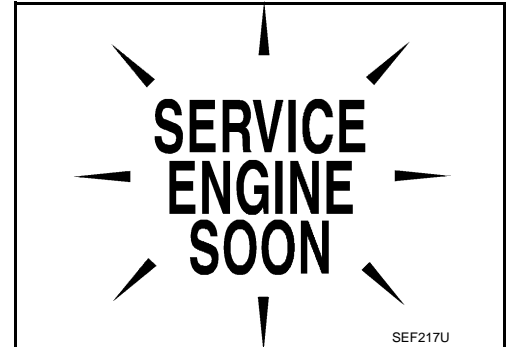
Malfunction Indicator Lamp (MIL)

INFOID:000000002955398

DESCRIPTION

The MIL is located on the combination meters.

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-34](#), or see [EC-636](#) (for VQ35DE engine), [EC-1276](#) (for VK45DE engine).
2. When the engine is started, the MIL should go off.
If the MIL remains on, the on board diagnostic system has detected an engine system malfunction.



TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

TROUBLE DIAGNOSIS

DTC Inspection Priority Chart

INFOID:000000002955399

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

NOTE:

If DTC “U1000” is displayed with other DTC, first perform the trouble diagnosis for “DTC U1000 CAN COMM CIRCUIT”. Refer to [AT-95](#).

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

Fail-Safe

INFOID:000000002955400

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 2GR, 4GR and 5GR (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-44](#)).

FAIL-SAFE FUNCTION

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

Output Speed Sensor

Signals are input from two systems - from output speed 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 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 A/T is fixed in 2GR to make driving possible.

NOTE:

When the vehicle is driven fixed in 2GR, an input speed sensor malfunction is displayed, but this is not an input speed sensor malfunction.

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

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.

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

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, the A/T is 4GR.

High and Low Reverse Clutch Solenoid

If a (electrical or functional) malfunction 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 input speed sensors, 5GR and manual mode are prohibited.

How to Perform Trouble Diagnosis for Quick and Accurate Repair

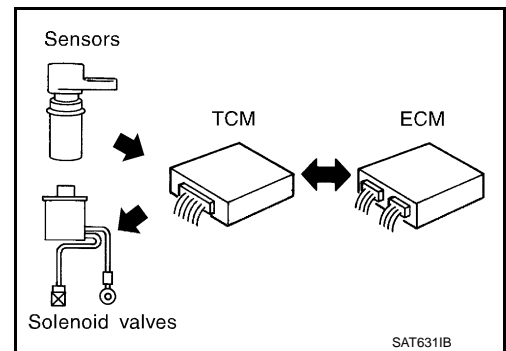
INFOID:000000002955401

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.

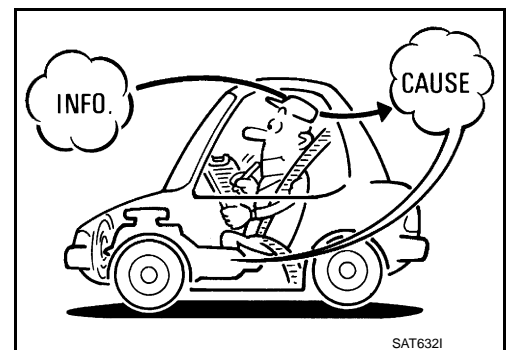
The TCM also communicates with the ECM by means of a signal sent from sensing elements used with the OBD-related parts of the A/T system for malfunction-diagnostic purposes. The TCM is capable of diagnosing malfunctioning parts while the ECM can store malfunctions in its memory.

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".



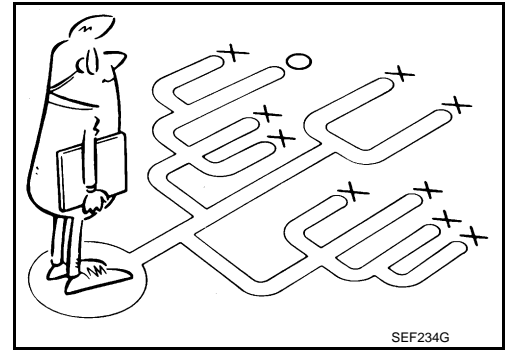
TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

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.



SEF234G

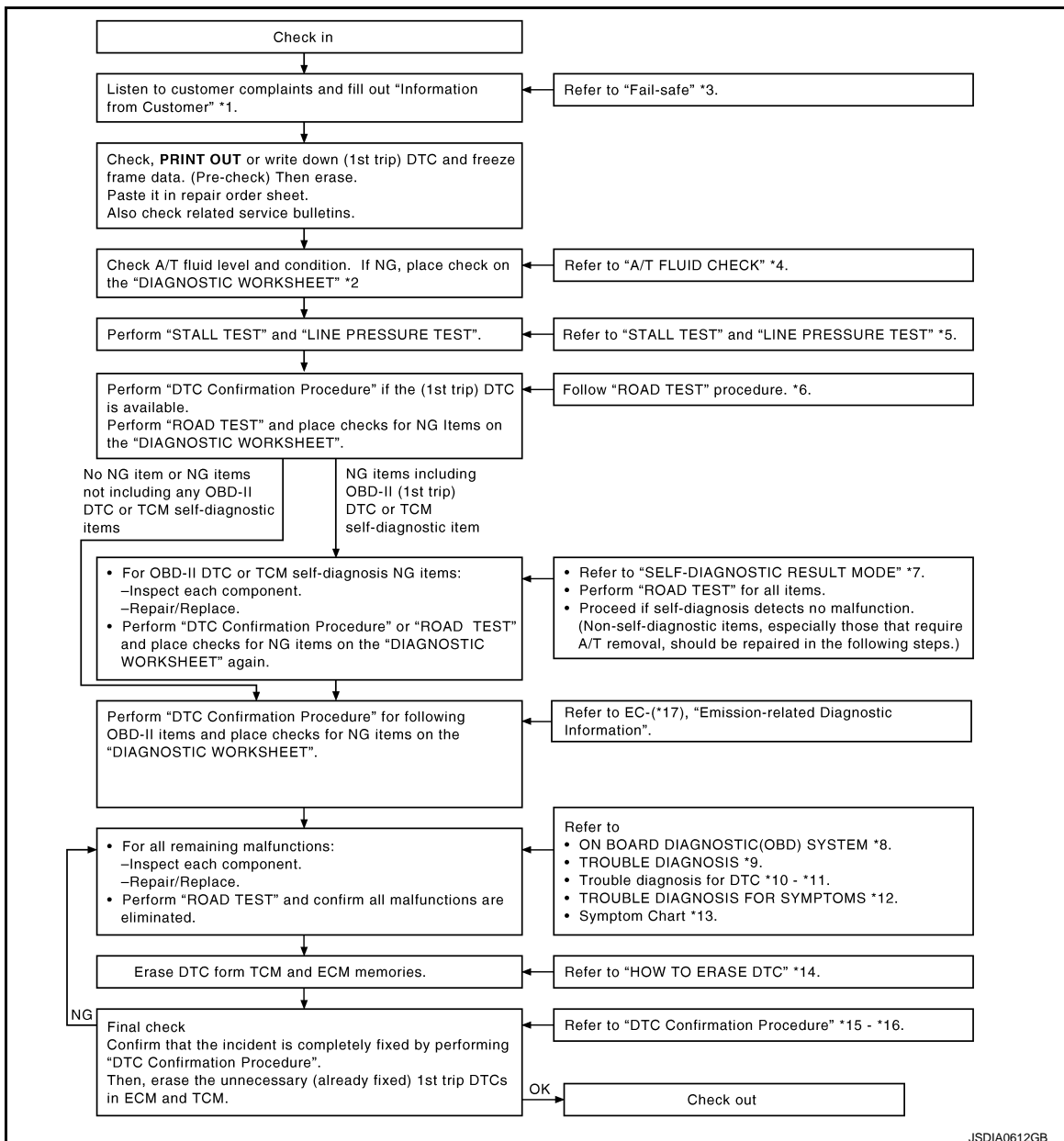
WORK FLOW

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's 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



JSDIA0612GB

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

		<input type="checkbox"/> Perform all road tests and enter checks in required inspection items.	AT-50	A
4	4-1.	Check before engine is started	AT-54	A
		<input type="checkbox"/> AT-171, "A/T Check Indicator Lamp Does Not Come On" <input type="checkbox"/> Perform self-diagnostics. Enter checks for detected items. AT-85,AT-92		B
		<input type="checkbox"/> DTC U1000 CAN COMM CIRCUIT AT-95 <input type="checkbox"/> DTC P0615 STARTER RELAY AT-98 <input type="checkbox"/> DTC P0700 TRANSMISSION CONTROL AT-102 <input type="checkbox"/> DTC P0705 TRANSMISSION RANGE SWITCH A AT-103 <input type="checkbox"/> DTC P0717 INPUT SPEED SENSOR A AT-106 <input type="checkbox"/> DTC P0720 OUTPUT SPEED SENSOR AT-108 <input type="checkbox"/> DTC P0725 ENGINE SPEED AT-113 <input type="checkbox"/> DTC P0731 1GR INCORRECT RATIO AT-115 <input type="checkbox"/> DTC P0732 2GR INCORRECT RATIO AT-117 <input type="checkbox"/> DTC P0733 3GR INCORRECT RATIO AT-119 <input type="checkbox"/> DTC P0734 4GR INCORRECT RATIO AT-121 <input type="checkbox"/> DTC P0735 5GR INCORRECT RATIO AT-123 <input type="checkbox"/> DTC P0740 TORQUE CONVERTER AT-125 <input type="checkbox"/> DTC P0744 TORQUE CONVERTER AT-127 <input type="checkbox"/> DTC P0745 PRESSURE CONTROL SOLENOID A AT-129 <input type="checkbox"/> DTC P1705 TP SENSOR AT-131 <input type="checkbox"/> DTC P1710 TRANSMISSION FLUID TEMPERATURE SENSOR AT-133 <input type="checkbox"/> DTC P1721 VEHICLE SPEED SIGNAL AT-138 <input type="checkbox"/> DTC P1730 INTERLOCK AT-140 <input type="checkbox"/> DTC P1731 1ST ENGINE BRAKING AT-142 <input type="checkbox"/> DTC P1752 INPUT CLUTCH SOLENOID AT-144 <input type="checkbox"/> DTC P1757 FRONT BRAKE SOLENOID AT-146 <input type="checkbox"/> DTC P1762 DIRECT CLUTCH SOLENOID AT-148 <input type="checkbox"/> DTC P1767 HIGH AND LOW REVERSE CLUTCH SOLENOID AT-150 <input type="checkbox"/> DTC P1772 LOW COAST BRAKE SOLENOID AT-152 <input type="checkbox"/> DTC P1774 LOW COAST BRAKE SOLENOID AT-154 <input type="checkbox"/> DTC P1815 M-MODE SWITCH AT-156		AT D E F G H I
	4-2.	Check at Idle	AT-54	J
		<input type="checkbox"/> AT-171, "Engine Cannot Be Started in "P" or "N" Position" <input type="checkbox"/> AT-172, "In "P" Position, Vehicle Moves When Pushed" <input type="checkbox"/> AT-172, "In "N" Position, Vehicle Moves" <input type="checkbox"/> AT-173, "Large Shock ("N" to "D" Position)" <input type="checkbox"/> AT-175, "Vehicle Does Not Creep Backward in "R" Position" <input type="checkbox"/> AT-177, "Vehicle Does Not Creep Forward in "D" Position"		K
	4-3.	Cruise Test	AT-54	L
		Part 1		M
		<input type="checkbox"/> AT-179, "Vehicle Cannot Be Started from D₁" <input type="checkbox"/> AT-180, "A/T Does Not Shift: D₁→ D₂" <input type="checkbox"/> AT-182, "A/T Does Not Shift: D₂→ D₃" <input type="checkbox"/> AT-184, "A/T Does Not Shift: D₃→ D₄" <input type="checkbox"/> AT-185, "A/T Does Not Shift: D₄→ D₅" <input type="checkbox"/> AT-187, "A/T Does Not Lock-up" <input type="checkbox"/> AT-188, "A/T Does Not Hold Lock-up Condition" <input type="checkbox"/> AT-189, "Lock-up Is Not Released" <input type="checkbox"/> AT-190, "Engine Speed Does Not Return to Idle"		N O P

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

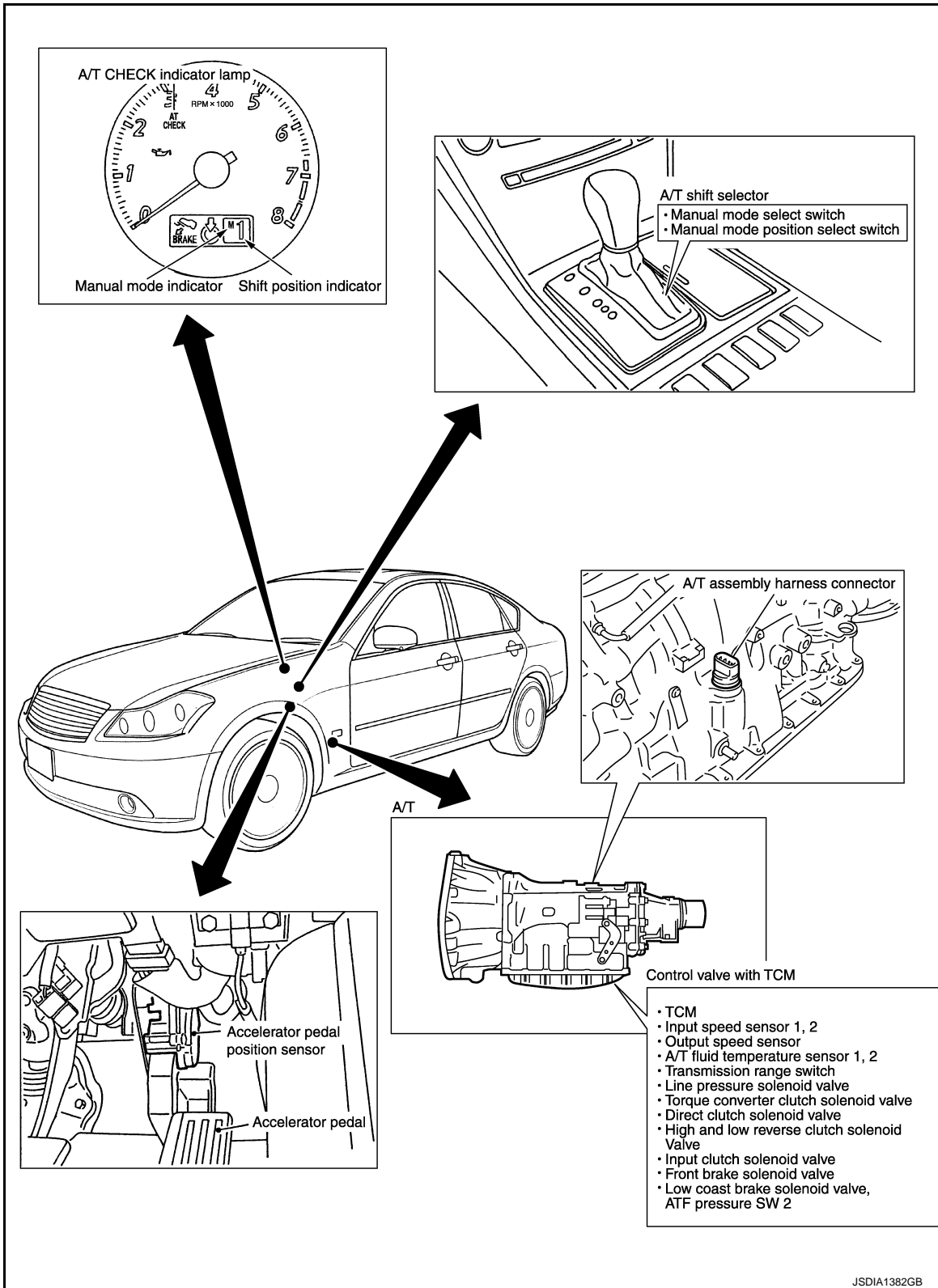
4	4-3	Part 2	AT-54
		<input type="checkbox"/> AT-179. "Vehicle Cannot Be Started from D1" <input type="checkbox"/> AT-180. "A/T Does Not Shift: D1→ D2" <input type="checkbox"/> AT-182. "A/T Does Not Shift: D2→ D3" <input type="checkbox"/> AT-184. "A/T Does Not Shift: D3→ D4"	
		Part 3	AT-54
		<input type="checkbox"/> AT-191. "Cannot Be Changed to Manual Mode" <input type="checkbox"/> AT-191. "A/T Does Not Shift: 5GR → 4GR" <input type="checkbox"/> AT-193. "A/T Does Not Shift: 4GR → 3GR" <input type="checkbox"/> AT-194. "A/T Does Not Shift: 3GR → 2GR" <input type="checkbox"/> AT-195. "A/T Does Not Shift: 2GR → 1GR" <input type="checkbox"/> AT-196. "Vehicle Does Not Decelerate by Engine Brake" <input type="checkbox"/> Perform self-diagnostics. Enter checks for detected items. AT-85 , AT-92	
		<input type="checkbox"/> DTC U1000 CAN COMM CIRCUIT AT-95 <input type="checkbox"/> DTC P0615 STARTER RELAY AT-98 <input type="checkbox"/> DTC P0700 TRANSMISSION CONTROL AT-102 <input type="checkbox"/> DTC P0705 TRANSMISSION RANGE SWITCH A AT-103 <input type="checkbox"/> DTC P0717 INPUT SPEED SENSOR A AT-106 <input type="checkbox"/> DTC P0720 OUTPUT SPEED SENSOR AT-108 <input type="checkbox"/> DTC P0725 ENGINE SPEED AT-113 <input type="checkbox"/> DTC P0731 1GR INCORRECT RATIO AT-115 <input type="checkbox"/> DTC P0732 2GR INCORRECT RATIO AT-117 <input type="checkbox"/> DTC P0733 3GR INCORRECT RATIO AT-119 <input type="checkbox"/> DTC P0734 4GR INCORRECT RATIO AT-121 <input type="checkbox"/> DTC P0735 5GR INCORRECT RATIO AT-123 <input type="checkbox"/> DTC P0740 TORQUE CONVERTER AT-125 <input type="checkbox"/> DTC P0744 TORQUE CONVERTER AT-127 <input type="checkbox"/> DTC P0745 PRESSURE CONTROL SOLENOID A AT-129 <input type="checkbox"/> DTC P1705 TP SENSOR AT-131 <input type="checkbox"/> DTC P1710 TRANSMISSION FLUID TEMPERATURE SENSOR AT-133 <input type="checkbox"/> DTC P1721 VEHICLE SPEED SIGNAL AT-138 <input type="checkbox"/> DTC P1730 INTERLOCK AT-140 <input type="checkbox"/> DTC P1731 1ST ENGINE BRAKING AT-142 <input type="checkbox"/> DTC P1752 INPUT CLUTCH SOLENOID AT-144 <input type="checkbox"/> DTC P1757 FRONT BRAKE SOLENOID AT-146 <input type="checkbox"/> DTC P1762 DIRECT CLUTCH SOLENOID AT-148 <input type="checkbox"/> DTC P1767 HIGH AND LOW REVERSE CLUTCH SOLENOID AT-150 <input type="checkbox"/> DTC P1772 LOW COAST BRAKE SOLENOID AT-152 <input type="checkbox"/> DTC P1774 LOW COAST BRAKE SOLENOID AT-154 <input type="checkbox"/> DTC P1815 M-MODE SWITCH AT-156	
5		<input type="checkbox"/> Inspect each system for items found to be NG in the self-diagnostics and repair or replace the malfunctioning parts.	
6		<input type="checkbox"/> Perform all road tests and enter the checks again for the required items.	AT-50
7		<input type="checkbox"/> 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-61
8		<input type="checkbox"/> Erase the results of the self-diagnostics from the TCM.	AT-85 , AT-92

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

A/T Electrical Parts Location

INFOID:00000002955402



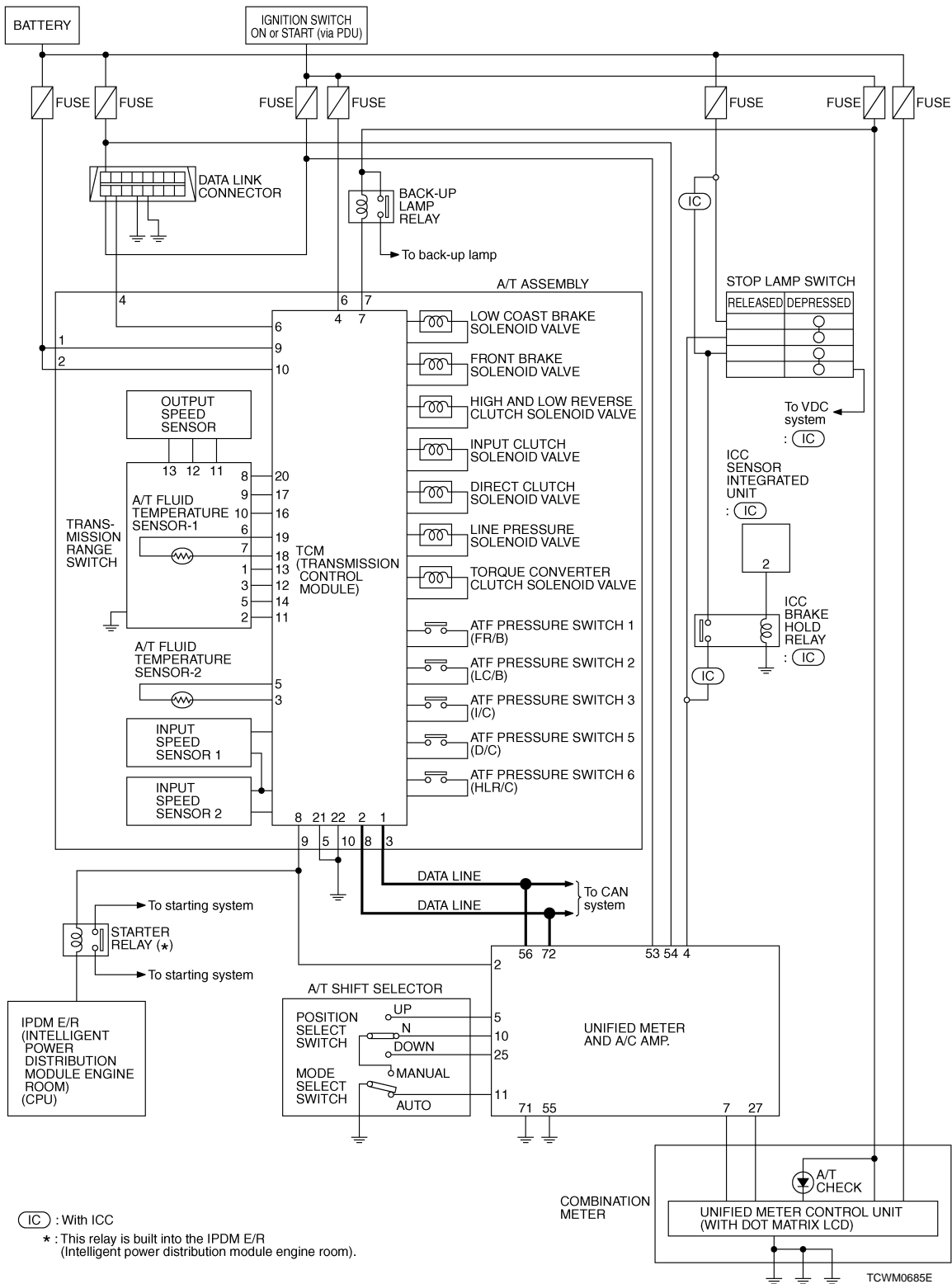
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TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

Circuit Diagram

INFOID:00000002955403



Inspections Before Trouble Diagnosis

INFOID:000000003049789

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"](#).

TROUBLE DIAGNOSIS

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A/T Fluid Condition Check

Inspect the A/T fluid condition.

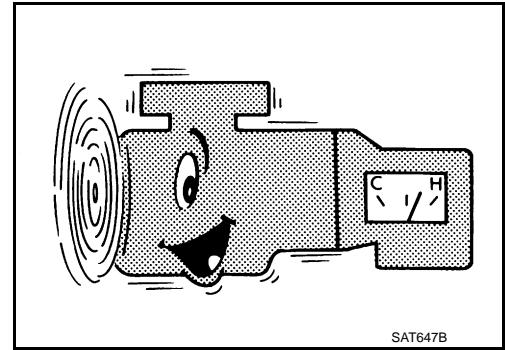
Fluid condition	Conceivable cause	Required operation
Varnished (viscous varnish state)	Clutch, brake scorched	Replace the ATF and check the A/T main unit and the vehicle for malfunctions (wire harnesses, cooler pipes, etc.)
Milky white or cloudy	Water in the fluid	Replace the ATF and check for places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



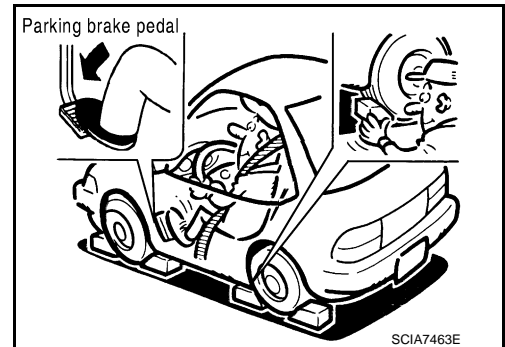
STALL TEST

Stall Test Procedure

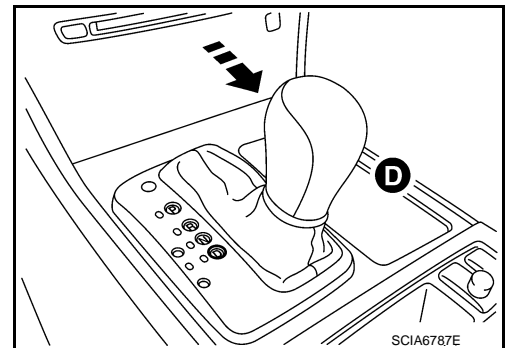
1. Inspect the amount of engine oil. Replenish the engine oil if necessary.
2. Drive for about 10 minutes to warm up the vehicle so that the A/T fluid temperature is 50 to 80°C (122 to 176°F). Inspect the amount of ATF. Replenish if necessary.



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



4. Engine start, apply foot brake, and place selector lever in "D" position.



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TROUBLE DIAGNOSIS

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

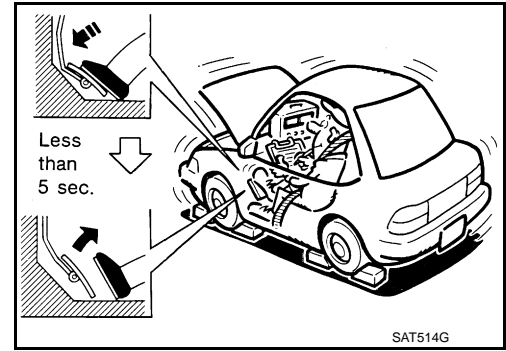
CAUTION:

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

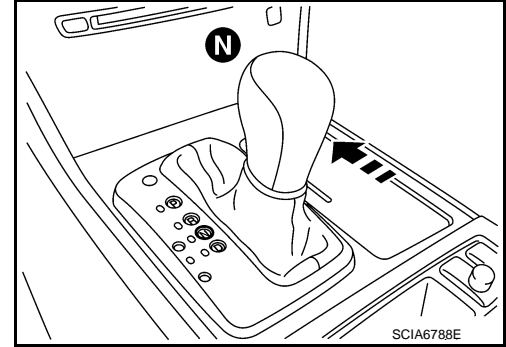
Stall speed

VQ35DE models: 2,650 - 2,950 rpm

VK45DE models: 2,260 - 2,560 rpm



7. Move the selector lever to the "N" position.
8. Cool down the ATF.
CAUTION:
Run the engine at idle for at least 1 minute.
9. Repeat steps 5 through 8 with selector lever in "R" position.



Judgment of Stall Test

	Selector lever position		Possible location of malfunction
	"D", "M"	"R"	
Stall speed	H	O	<ul style="list-style-type: none"> • Forward brake • Forward one-way clutch • 1st one-way clutch • 3rd one-way clutch
	O	H	<ul style="list-style-type: none"> • Reverse brake
	L	L	<ul style="list-style-type: none"> • Engine and torque converter one-way clutch
	H	H	<ul style="list-style-type: none"> • Line pressure low

O: 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

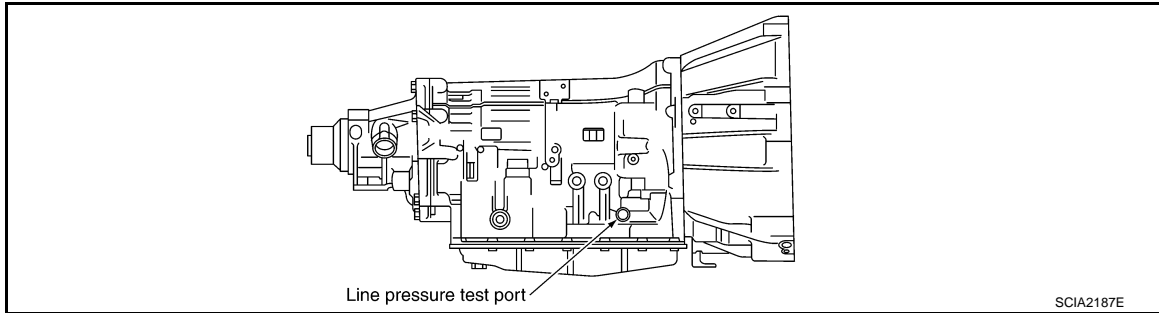
Does not shift-up "D" or "M" position 1 → 2	Slipping in 2GR, 3GR or 4GR	Direct clutch slippage
Does not shift-up "D" or "M" position 2 → 3	Slipping in 3GR, 4GR or 5GR	High and low reverse clutch slippage
Does not shift-up "D" or "M" position 3 → 4	Slipping in 4GR or 5GR	Input clutch slippage
Does not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

LINE PRESSURE TEST

Line Pressure Test Port

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< SERVICE INFORMATION >



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.

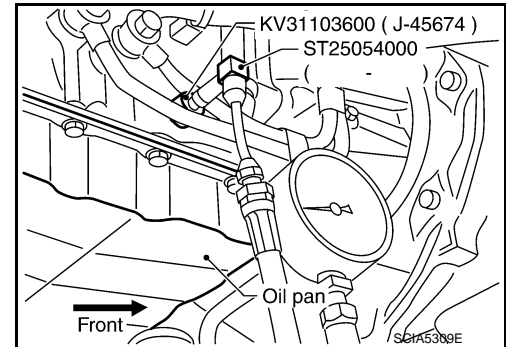
NOTE:

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

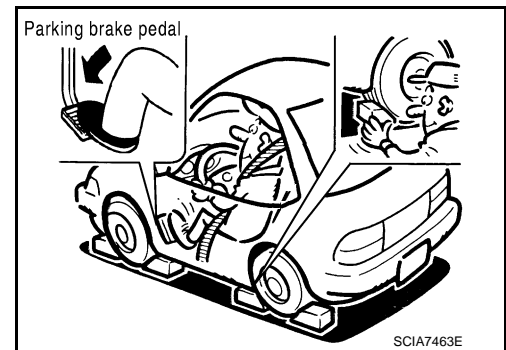
3. Remove the front propeller shaft from vehicle (with AWD models). Refer to [PR-5, "Removal and Installation"](#).
4. After warming up remove the oil pressure detection plug and install the oil pressure gauge [ST2505S001(J-34301-C)].

CAUTION:

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



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



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

CAUTION:

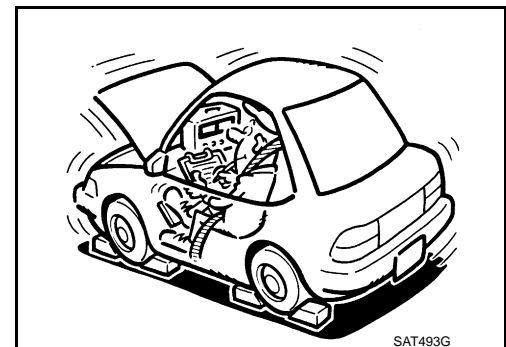
- Keep the brake pedal pressed all the way down during measurement.
- When measuring the line pressure at the stall speed, refer to "STALL TEST".

7. After the measurements are complete, install the oil pressure detection plug and tighten to the specified torque.

 : 7.3 N·m (0.74 kg·m, 65 in·lb)

CAUTION:

- Do not reuse O-ring.



TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

- **Apply ATF to O-ring.**

Line Pressure

Engine speed	Line pressure kPa (kg/cm ² , psi)	
	"R" position	"D", "M" positions
At idle speed	425 - 465 (4.3 - 4.7, 62 - 67)	379 - 428 (3.9 - 4.3, 55 - 62)
At stall speed	1,605 - 1,950 (16.4 - 19.8, 233 - 282)	1,310 - 1,500 (13.4 - 15.3, 190 - 217)

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 <ul style="list-style-type: none"> • Oil pump wear • Pressure regulator valve or plug sticking or spring fatigue • Oil strainer ⇒ oil pump ⇒ pressure regulator valve passage oil leak • Engine idle speed too low
	Only low for a specific position	Possible causes include an oil pressure leak in a passage or device related to the position after the pressure is distributed by the manual valve.
	High	Possible causes include a sensor malfunction or malfunction in the line pressure adjustment function. For example <ul style="list-style-type: none"> • 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
Stall speed	Oil pressure does not rise higher than the oil pressure for idle.	Possible causes include a sensor malfunction or malfunction in the pressure adjustment function. For example <ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> • Accelerator pedal position signal malfunction • Line pressure solenoid malfunction (sticking, filter clog) • Pressure regulator valve or plug sticking • Pilot valve sticking or pilot filter clogged
	Only low for a specific position	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:000000003049790

DESCRIPTION

- The road test checks overall performance of the A/T and analyzes possible malfunction causes.
- The road test is carried out in the following three stages.
 1. Check before engine is started.
 2. Check at idle.
 3. Cruise test
 - Inspect all the items Part 1 to Part 3.
- Before beginning the road test, check the procedure and inspection items.
- Test all inspection items until the symptom is uncovered. Include NG items in "Diagnostic Worksheet Chart" (Refer to [AT-44](#)). Perform a diagnosis of the NG items after the completion of all the road test.

CHECK BEFORE ENGINE IS STARTED

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

1. CHECK A/T CHECK INDICATOR LAMP

1. Park vehicle on level surface.
2. Move selector lever to "P" position.
3. Turn ignition switch OFF and wait at least 10 seconds.
4. Turn ignition switch ON.

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

YES - 1>> **With CONSULT-III**

1. Select "SELF-DIAG RESULTS" mode for "TRANSMISSION" with CONSULT-III and record all NG items on the "Diagnostic Worksheet Chart".
2. Go to "CHECK AT IDLE".

YES - 2>> **Without CONSULT-III**

1. Perform self-diagnostics and record all NG items on the "Diagnostic Worksheet Chart". Refer to [AT-92, "Diagnosis Procedure without CONSULT-III"](#).
2. Go to "CHECK AT IDLE".

NO >> Stop the road test and go to [AT-171, "A/T Check Indicator Lamp Does Not Come On"](#).

CHECK AT IDLE

1. CHECK STARTING THE ENGINE

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

Does the engine start?

YES >> GO TO 2.

NO >> Stop the road test and go to [AT-171, "Engine Cannot Be Started in "P" or "N" Position"](#).

2. CHECK STARTING THE ENGINE

1. Turn ignition switch ON.
2. Move selector lever to "D", "M" or "R" position.
3. Start engine.

Does the engine start in any positions?

YES >> Stop the road test and go to [AT-171, "Engine Cannot Be Started in "P" or "N" Position"](#).

NO >> GO TO 3.

3. CHECK "P" POSITION FUNCTIONS

1. Move selector lever to "P" position.
2. Turn ignition switch 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-172, "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 engine.
2. Move selector lever to "N" position.
3. Release the parking brake.

Does vehicle move forward or backward?

YES >> Enter a check mark at [AT-172, "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.

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

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

YES >> Enter a check mark at [AT-173, "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-175, "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-177, "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. Move selector lever to "P" position.
4. Start the engine.
5. Move selector lever to "D" position.
6. Press the accelerator pedal about half way down to accelerate the vehicle.

With CONSULT-III

Read the value of "GEAR". Refer to [AT-85, "CONSULT-III Function \(TRANSMISSION\)"](#).

Starts from D1?

YES >> GO TO 2.

NO >> Enter a check mark at [AT-179, "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-59, "Vehicle Speed at Which Gear Shifting Occurs"](#).

With CONSULT-III

Read the value of "GEAR", "ACCELE POSI" and "VEHICLE SPEED" with "DATA MONITOR" mode. Refer to [AT-85, "CONSULT-III Function \(TRANSMISSION\)"](#).

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

YES >> GO TO 3.

NO >> Enter a check mark at [AT-180, "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-59, "Vehicle Speed at Which Gear Shifting Occurs"](#).

With CONSULT-III

Read the value of "GEAR", "ACCELE POSI" and "VEHICLE SPEED" with "DATA MONITOR" mode. Refer to [AT-85, "CONSULT-III Function \(TRANSMISSION\)"](#).

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

YES >> GO TO 4.

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

NO >> Enter a check mark at [AT-182. "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-59. "Vehicle Speed at Which Gear Shifting Occurs"](#).

With CONSULT-III

Read the value of "GEAR", "ACCELE POSI" and "VEHICLE SPEED" with "DATA MONITOR" mode. Refer to [AT-85. "CONSULT-III Function \(TRANSMISSION\)"](#).

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

YES >> GO TO 5.

NO >> Enter a check mark at [AT-184. "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-59. "Vehicle Speed at Which Gear Shifting Occurs"](#).

With CONSULT-III

Read the value of "GEAR", "ACCELE POSI" and "VEHICLE SPEED" with "DATA MONITOR" mode. Refer to [AT-85. "CONSULT-III Function \(TRANSMISSION\)"](#).

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

YES >> GO TO 6.

NO >> Enter a check mark at [AT-185. "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-59. "Vehicle Speed at Which Gear Shifting Occurs"](#).

With CONSULT-III

Select "TCC SOLENOID" with the "DATA MONITOR" mode. Refer to [AT-85. "CONSULT-III Function \(TRANSMISSION\)"](#).

Does it lock-up?

YES >> GO TO 7.

NO >> Enter a check mark at [AT-187. "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

Select "TCC SOLENOID" with the "DATA MONITOR" mode. Refer to [AT-85. "CONSULT-III Function \(TRANSMISSION\)"](#).

Does it maintain lock-up status?

YES >> GO TO 8.

NO >> Enter a check mark at [AT-188. "A/T Does Not Hold Lock-up Condition"](#) on the "Diagnostic Worksheet Chart", then continue the road test.

8.CHECK LOCK-UP RELEASE

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

With CONSULT-III

Select "TCC SOLENOID" with the "DATA MONITOR" mode. Refer to [AT-85. "CONSULT-III Function \(TRANSMISSION\)"](#).

Does lock-up cancel?

YES >> GO TO 9.

NO >> Enter a check mark at [AT-189. "Lock-up Is Not Released"](#) on the "Diagnostic Worksheet Chart", GO TO 9.

9.CHECK SHIFT-DOWN D5 → D4

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

Decelerate by pressing lightly on the brake pedal.

With CONSULT-III

Read the value of "GEAR" and "ENGINE SPEED" with "DATA MONITOR" mode. Refer to [AT-85, "CONSULT-III Function \(TRANSMISSION\)"](#).

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-190, "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. Move selector lever to "D" position.

2. Accelerate at half throttle.

With CONSULT-III

Read the value of "GEAR" with "DATA MONITOR" mode. Refer to [AT-85, "CONSULT-III Function \(TRANSMISSION\)"](#).

Does it start from D1?

YES >> GO TO 2.

NO >> Enter a check mark at [AT-179, "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-59, "Vehicle Speed at Which Gear Shifting Occurs"](#).

With CONSULT-III

Read the value of "GEAR", "ACCELE POSI" and "VEHICLE SPEED" with "DATA MONITOR" mode. Refer to [AT-85, "CONSULT-III Function \(TRANSMISSION\)"](#).

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

YES >> GO TO 3.

NO >> Enter a check mark at [AT-180, "A/T Does Not Shift: D1→ D2"](#) on the "Diagnostic Worksheet Chart", GO TO 3.

3. CHECK SHIFT-UP D2 → D3

Press the accelerator pedal down all the way and inspect whether or not the A/T shifts up (D2 → D3) at the correct speed. Refer to [AT-59, "Vehicle Speed at Which Gear Shifting Occurs"](#).

With CONSULT-III

Read the value of "GEAR", "ACCELE POSI" and "VEHICLE SPEED" with "DATA MONITOR" mode. Refer to [AT-85, "CONSULT-III Function \(TRANSMISSION\)"](#).

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

YES >> GO TO 4.

NO >> Enter a check mark at [AT-182, "A/T Does Not Shift: D2→ D3"](#) on the "Diagnostic Worksheet Chart", GO TO 4.

4. CHECK SHIFT-UP D3 → D4 AND ENGINE BRAKE

When the A/T changes speed D3 → D4, return the accelerator pedal.

With CONSULT-III

Read the value of "GEAR" with "DATA MONITOR" mode. Refer to [AT-85, "CONSULT-III Function \(TRANSMISSION\)"](#).

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

YES >> 1. Stop the vehicle.

2. Go to "CRUISE TEST - PART 3".

NO >> Enter a check mark at [AT-184, "A/T Does Not Shift: D3→ D4"](#) on the "Diagnostic Worksheet Chart", then continue the road test. Go to "CRUISE TEST - PART 3".

CRUISE TEST - PART 3

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

1. MANUAL MODE FUNCTION

Move to manual mode from "D" position.

Does it switch to manual mode?

YES >> GO TO 2.

NO >> Continue road test and add check mark to [AT-191, "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 M5 → M4 → M3 → M2 → M1 performed?

With CONSULT-III

Read the value of "GEAR" with "DATA MONITOR" mode. Refer to [AT-85, "CONSULT-III Function \(TRANSMISSION\)"](#).

Is downshifting correctly performed?

YES >> GO TO 3.

NO >> Enter a check mark at "Vehicle 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 M1 position?

YES - 1>> **With CONSULT-III**

1. Stop the vehicle.
2. Select "SELF-DIAG RESULTS" mode for "TRANSMISSION" with CONSULT-III.

YES - 2>> **Without CONSULT-III**

1. Stop the vehicle.
2. Perform self-diagnostics. Refer to [AT-92, "Diagnosis Procedure without CONSULT-III"](#).

NO - 1 >> **With CONSULT-III**

1. Enter a check mark at [AT-196, "Vehicle Does Not Decelerate by Engine Brake"](#) on the "Diagnostic Worksheet Chart".
2. Select "SELF-DIAG RESULTS" mode for "TRANSMISSION" with CONSULT-III.

NO - 2 >> **Without CONSULT-III**

1. Enter a check mark at [AT-196, "Vehicle Does Not Decelerate by Engine Brake"](#) on the "Diagnostic Worksheet Chart".
2. Perform self-diagnostics. Refer to [AT-92, "Diagnosis Procedure without CONSULT-III"](#).

Vehicle Speed at Which Gear Shifting Occurs

INFOID:000000002955410

2WD MODELS

Engine model	Throttle position	Vehicle speed km/h (MPH)							
		D1→D2	D2→D3	D3→D4	D4→D5	D5→D4	D4→D3	D3→D2	D2→D1
VQ35DE	Full throttle	52 - 56 (32 - 35)	85 - 93 (53 - 58)	126 - 136 (78 - 85)	195 - 205 (121 - 127)	191 - 201 (119 - 125)	113 - 123 (70 - 76)	70 - 78 (44 - 48)	28 - 32 (17 - 20)
	Half throttle	46 - 50 (29 - 31)	76 - 82 (47 - 51)	107 - 115 (67 - 71)	140 - 148 (87 - 92)	111 - 119 (69 - 74)	67 - 75 (42 - 47)	35 - 41 (22 - 25)	11 - 15 (7 - 9)

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

Engine model	Throttle position	Vehicle speed km/h (MPH)							
		D1→D2	D2→D3	D3→D4	D4→D5	D5→D4	D4→D3	D3→D2	D2→D1
VK45DE	Full throttle	56 - 60 (35 - 37)	89 - 97 (55 - 60)	138 - 148 (86 - 92)	206 - 216 (128 - 134)	202 - 212 (126 - 132)	121 - 131 (75 - 81)	73 - 81 (45 - 50)	30 - 34 (19 - 21)
	Half throttle	50 - 54 (31 - 34)	82 - 88 (51 - 55)	126 - 134 (78 - 83)	155 - 163 (96 - 101)	128 - 136 (80 - 85)	70 - 78 (43 - 48)	29 - 35 (18 - 22)	9 - 13 (6 - 8)

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

AWD MODELS

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

Engine model	Throttle position	Vehicle speed km/h (MPH)							
		D1→D2	D2→D3	D3→D4	D4→D5	D5→D4	D4→D3	D3→D2	D2→D1
VQ35DE	Full throttle	50 - 54 (31 - 34)	81 - 89 (50 - 55)	120 - 130 (75 - 81)	187 - 197 (116 - 122)	183 - 193 (114 - 120)	108 - 118 (67 - 73)	66 - 74 (41 - 46)	27 - 31 (17 - 19)
	Half throttle	45 - 49 (28 - 30)	73 - 79 (45 - 49)	102 - 110 (63 - 68)	133 - 141 (83 - 88)	106 - 114 (66 - 71)	64 - 72 (40 - 45)	33 - 39 (21 - 24)	11 - 15 (7 - 9)

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

Engine model	Throttle position	Vehicle speed km/h (MPH)							
		D1→D2	D2→D3	D3→D4	D4→D5	D5→D4	D4→D3	D3→D2	D2→D1
VK45DE	Full throttle	56 - 60 (35 - 37)	89 - 97 (55 - 60)	138 - 148 (86 - 92)	206 - 216 (128 - 134)	202 - 212 (126 - 132)	121 - 131 (75 - 81)	73 - 81 (45 - 50)	30 - 34 (19 - 21)
	Half throttle	50 - 54 (31 - 34)	82 - 88 (51 - 55)	126 - 134 (78 - 83)	155 - 163 (96 - 101)	128 - 136 (80 - 85)	70 - 78 (43 - 48)	29 - 35 (18 - 22)	9 - 13 (6 - 8)

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

Vehicle Speed at Which Lock-Up Occurs/Releases

INFOID:000000002955411

2WD MODELS

Engine model	Throttle position	Vehicle speed km/h (MPH)	
		Lock-up ON	Lock-up OFF
VQ35DE	Closed throttle	53 - 61 (33 - 38)	50 - 58 (31 - 36)
	Half throttle	196 - 204 (122 - 127)	138 - 146 (86 - 91)

- 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.

Engine model	Throttle position	Vehicle speed km/h (MPH)	
		Lock-up ON	Lock-up OFF
VK45DE	Closed throttle	53 - 61 (33 - 38)	50 - 58 (31 - 36)
	Half throttle	196 - 204 (122 - 127)	138 - 146 (86 - 91)

- 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.

AWD MODELS

Engine model	Throttle position	Vehicle speed km/h (MPH)	
		Lock-up ON	Lock-up OFF
VQ35DE	Closed throttle	51 - 59 (32 - 37)	48 - 56 (30 - 35)
	Half throttle	188 - 196 (117 - 122)	132 - 140 (82 - 87)

- 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.

Engine model	Throttle position	Vehicle speed km/h (MPH)	
		Lock-up ON	Lock-up OFF
VK45DE	Closed throttle	53 - 61 (33 - 38)	50 - 58 (31 - 36)
	Half throttle	196 - 204 (122 - 127)	138 - 146 (86 - 91)

- 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.

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

Symptom Chart

INFOID:00000002955412

- The diagnostics item numbers show the sequence for inspection. Inspect in order from item 1.
- Overhaul and inspection inside the A/T only if A/T fluid condition is NG. Refer to [AT-50, "Inspections Before Trouble Diagnosis"](#).

No.	Item	Symptom	Condition	Diagnostic Item	Reference page
1	Shift Shock	Large shock. ("N" → "D" position) Refer to AT-173, "Large Shock ("N" to "D" Position)" .	ON vehicle	1. Engine idle speed	EC-80 (for VQ35DE engine), EC-705 (for VK45DE engine)
				2. Engine speed signal	AT-113
				3. Accelerator pedal position sensor	AT-131
				4. A/T position	AT-202
				5. A/T fluid temperature sensor	AT-133
				6. Front brake solenoid valve	AT-146
				7. CAN communication line	AT-95
				8. A/T fluid level and state	AT-50
				9. Line pressure test	AT-50
				10. Control valve with TCM	AT-210
			OFF vehicle	11. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17, "Cross-Sectional View (VQ35DE Models for 2WD)" , AT-18, "Cross-Sectional View (VK45DE Models for 2WD)" , AT-19, "Cross-Sectional View (VQ35DE Models for AWD)" or AT-20, "Cross-Sectional View (VK45DE Models for AWD)" .)	AT-275
2		Shock is too large when changing D1 → D2 or M1 → M2.	ON vehicle	1. Accelerator pedal position sensor	AT-131
				2. A/T position	AT-202
				3. Direct clutch solenoid valve	AT-148
				4. CAN communication line	AT-95
				5. Engine speed signal	AT-113
				6. Input speed sensor	AT-106
				7. Output speed sensor and vehicle speed signal	AT-108, AT-138
				8. A/T fluid level and state	AT-50
				9. Control valve with TCM	AT-210
			OFF vehicle	10. Direct clutch	AT-314

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TROUBLE DIAGNOSIS

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No.	Item	Symptom	Condition	Diagnostic Item	Reference page
3		Shock is too large when changing D2 → D3 or M2 → M3.	ON vehicle	1. Accelerator pedal position sensor	AT-131
				2. A/T position	AT-202
				3. High and low reverse clutch solenoid valve	AT-150
				4. CAN communication line	AT-95
				5. Engine speed signal	AT-113
				6. Input speed sensor	AT-106
				7. Output speed sensor and vehicle speed signal	AT-108, AT-138
				8. A/T fluid level and state	AT-50
				9. Control valve with TCM	AT-210
			OFF vehicle	10. High and low reverse clutch	AT-312
4	Shift Shock	Shock is too large when changing D3 → D4 or M3 → M4.	ON vehicle	1. Accelerator pedal position sensor	AT-131
				2. A/T position	AT-202
				3. Input clutch solenoid valve	AT-144
				4. CAN communication line	AT-95
				5. Engine speed signal	AT-113
				6. Input speed sensor	AT-106
				7. Output speed sensor and vehicle speed signal	AT-108, AT-138
				8. A/T fluid level and state	AT-50
				9. Control valve with TCM	AT-210
			OFF vehicle	10. Input clutch	AT-300
5		Shock is too large when changing D4 → D5 or M4 → M5.	ON vehicle	1. Accelerator pedal position sensor	AT-131
				2. A/T position	AT-202
				3. Front brake solenoid valve	AT-146
				4. CAN communication line	AT-95
				5. Engine speed signal	AT-113
				6. Input speed sensor	AT-106
				7. Output speed sensor and vehicle speed signal	AT-108, AT-138
				8. A/T fluid level and state	AT-50
				9. Control valve with TCM	AT-210
			OFF vehicle	10. Front brake (brake band)	AT-275
				11. Input clutch	AT-300

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

No.	Item	Symptom	Condition	Diagnostic Item	Reference page
6		Shock is too large for downshift when accelerator pedal is pressed.	ON vehicle	1. Accelerator pedal position sensor	AT-131
				2. A/T position	AT-202
				3. CAN communication line	AT-95
				4. Engine speed signal	AT-113
				5. Input speed sensor	AT-106
				6. Output speed sensor and vehicle speed signal	AT-108, AT-138
				7. A/T fluid level and state	AT-50
				8. Control valve with TCM	AT-210
			OFF vehicle	9. Front brake (brake band)	AT-275
				10. Input clutch	AT-300
				11. High and low reverse clutch	AT-312
				12. Direct clutch	AT-314
7	Shift Shock	Shock is too large for upshift when accelerator pedal is released.	ON vehicle	1. Accelerator pedal position sensor	AT-131
				2. A/T position	AT-202
				3. Engine speed signal	AT-113
				4. CAN communication line	AT-95
				5. Input speed sensor	AT-106
				6. Output speed sensor and vehicle speed signal	AT-108, AT-138
				7. A/T fluid level and state	AT-50
				8. Control valve with TCM	AT-210
			OFF vehicle	9. Front brake (brake band)	AT-275
				10. Input clutch	AT-300
				11. High and low reverse clutch	AT-312
				12. Direct clutch	AT-314
8		Shock is too large for lock-up.	ON vehicle	1. Accelerator pedal position sensor	AT-131
				2. A/T position	AT-202
				3. Engine speed signal	AT-113
				4. CAN communication line	AT-95
				5. Input speed sensor	AT-106
				6. Output speed sensor and vehicle speed signal	AT-108, AT-138
				7. Torque converter clutch solenoid valve	AT-125
				8. A/T fluid level and state	AT-50
				9. Control valve with TCM	AT-210
			OFF vehicle	10. Torque converter	AT-275

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TROUBLE DIAGNOSIS

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No.	Item	Symptom	Condition	Diagnostic Item	Reference page
9	Shift Shock	Shock is too large during engine brake.	ON vehicle	1. Accelerator pedal position sensor	AT-131
				2. A/T position	AT-202
				3. CAN communication line	AT-95
				4. A/T fluid level and state	AT-50
				5. Control valve with TCM	AT-210
			OFF vehicle	6. Front brake (brake band)	AT-275
				7. Input clutch	AT-300
				8. High and low reverse clutch	AT-312
				9. Direct clutch	AT-314
10	Gear does not change from D1 → D2 or from M1 → M2. Refer to AT-180, "A/T Does Not Shift: D1→D2" .	ON vehicle	1. A/T fluid level and state	AT-50	
			2. Output speed sensor and vehicle speed signal	AT-108, AT-138	
			3. Direct clutch solenoid valve	AT-148	
			4. Line pressure test	AT-50	
			5. CAN communication line	AT-95	
			6. Control valve with TCM	AT-210	
OFF vehicle	7. Direct clutch	AT-314			
11	Gear does not change from D2 → D3 or from M2 → M3. Refer to AT-182, "A/T Does Not Shift: D2→D3" .	ON vehicle	1. A/T fluid level and state	AT-50	
			2. Output speed sensor and vehicle speed signal	AT-108, AT-138	
			3. High and low reverse clutch solenoid valve	AT-150	
			4. Line pressure test	AT-50	
			5. CAN communication line	AT-95	
			6. Control valve with TCM	AT-210	
OFF vehicle	7. High and low reverse clutch	AT-312			
12	No Up Shift	Gear does not change from D3 → D4 or from M3 → M4. Refer to AT-184, "A/T Does Not Shift: D3→D4" .	ON vehicle	1. A/T fluid level and state	AT-50
				2. Output speed sensor and vehicle speed signal	AT-108, AT-138
				3. Input clutch solenoid valve	AT-144
				4. Front brake solenoid valve	AT-146
				5. Line pressure test	AT-50
				6. CAN communication line	AT-95
				7. Control valve with TCM	AT-210
OFF vehicle	8. Input clutch	AT-300			
13	Gear does not change from D4 → D5 or from M4 → M5. Refer to AT-185, "A/T Does Not Shift: D4→D5" .	ON vehicle	1. A/T fluid level and state	AT-50	
			2. Output speed sensor and vehicle speed signal	AT-108, AT-138	
			3. Front brake solenoid valve	AT-146	
			4. Direct clutch solenoid valve	AT-148	
			5. Input speed sensor	AT-106	
			6. Line pressure test	AT-50	
			7. CAN communication line	AT-95	
			8. Control valve with TCM	AT-210	
		OFF vehicle	9. Front brake (brake band)	AT-275	
			10. Input clutch	AT-300	

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No.	Item	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-50
				2. Output speed sensor and vehicle speed signal	AT-108, AT-138
				3. Front brake solenoid valve	AT-146
				4. Direct clutch solenoid valve	AT-148
				5. CAN communication line	AT-95
				6. Line pressure test	AT-50
				7. Control valve with TCM	AT-210
			OFF vehicle	8. Front brake (brake band)	AT-275
				9. Input clutch	AT-300
15	No Down Shift	In "D" or "M" position, does not downshift to 3GR.	ON vehicle	1. A/T fluid level and state	AT-50
				2. Output speed sensor and vehicle speed signal	AT-108, AT-138
				3. Input clutch solenoid valve	AT-144
				4. Front brake solenoid valve	AT-146
				5. CAN communication line	AT-95
				6. Line pressure test	AT-50
				7. Control valve with TCM	AT-210
			OFF vehicle	8. Input clutch	AT-300
16	No Down Shift	In "D" or "M" position, does not downshift to 2GR.	ON vehicle	1. A/T fluid level and state	AT-50
				2. Output speed sensor and vehicle speed signal	AT-108, AT-138
				3. High and low reverse clutch solenoid valve	AT-150
				4. CAN communication line	AT-95
				5. Line pressure test	AT-50
				6. Control valve with TCM	AT-210
			OFF vehicle	7. High and low reverse clutch	AT-312
17	No Down Shift	In "D" or "M" position, does not downshift to 1GR.	ON vehicle	1. A/T fluid level and state	AT-50
				2. Output speed sensor and vehicle speed signal	AT-108, AT-138
				3. Direct clutch solenoid valve	AT-148
				4. CAN communication line	AT-95
				5. Line pressure test	AT-50
				6. Control valve with TCM	AT-210
			OFF vehicle	7. Direct clutch	AT-314

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No.	Item	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-50
				2. Output speed sensor and vehicle speed signal	AT-108 , AT-138
				3. Direct clutch solenoid valve	AT-148
				4. Line pressure test	AT-50
				5. CAN communication line	AT-95
				6. Control valve with TCM	AT-210
			OFF vehicle	7. 3rd one-way clutch	AT-298
				8. 1st one-way clutch	AT-306
				9. Gear system	AT-254
				10. Reverse brake	AT-275
				11. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17 , " Cross-Sectional View (VQ35DE Models for 2WD) ", AT-18 , " Cross-Sectional View (VK45DE Models for 2WD) ", AT-19 , " Cross-Sectional View (VQ35DE Models for AWD) " or AT-20 , " Cross-Sectional View (VK45DE Models for AWD) ".)	AT-275
12. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17 , " Cross-Sectional View (VQ35DE Models for 2WD) ", AT-18 , " Cross-Sectional View (VK45DE Models for 2WD) ", AT-19 , " Cross-Sectional View (VQ35DE Models for AWD) " or AT-20 , " Cross-Sectional View (VK45DE Models for AWD) ".)	AT-275				
19		When "D" or "M" position, remains in 2GR.	ON vehicle	1. A/T fluid level and state	AT-50
				2. Output speed sensor and vehicle speed signal	AT-108 , AT-138
				3. Low coast brake solenoid valve	AT-152
				4. Line pressure test	AT-50
				5. CAN communication line	AT-95
				6. Control valve with TCM	AT-210
			OFF vehicle	7. 3rd one-way clutch	AT-298
				8. Gear system	AT-254
				9. Direct clutch	AT-314
				10. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17 , " Cross-Sectional View (VQ35DE Models for 2WD) ", AT-18 , " Cross-Sectional View (VK45DE Models for 2WD) ", AT-19 , " Cross-Sectional View (VQ35DE Models for AWD) " or AT-20 , " Cross-Sectional View (VK45DE Models for AWD) ".)	AT-275

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No.	Item	Symptom	Condition	Diagnostic Item	Reference page
20	Slips/Will Not Engage	When "D" or "M" position, remains in 3GR.	ON vehicle	1. A/T fluid level and state	AT-50
				2. Output speed sensor and vehicle speed signal	AT-108, AT-138
				3. Line pressure test	AT-50
				4. CAN communication line	AT-95
				5. Control valve with TCM	AT-210
			OFF vehicle	6. 3rd one-way clutch	AT-298
				7. Gear system	AT-254
				8. High and low reverse clutch	AT-312
				9. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17, "Cross-Sectional View (VQ35DE Models for 2WD)" , AT-18, "Cross-Sectional View (VK45DE Models for 2WD)" , AT-19, "Cross-Sectional View (VQ35DE Models for AWD)" or AT-20, "Cross-Sectional View (VK45DE Models for AWD)" .)	AT-275
				10. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17, "Cross-Sectional View (VQ35DE Models for 2WD)" , AT-18, "Cross-Sectional View (VK45DE Models for 2WD)" , AT-19, "Cross-Sectional View (VQ35DE Models for AWD)" or AT-20, "Cross-Sectional View (VK45DE Models for AWD)" .)	AT-275
21	Slips/Will Not Engage	When "D" or "M" position, remains in 4GR.	ON vehicle	1. A/T fluid level and state	AT-50
				2. Output speed sensor and vehicle speed signal	AT-108, AT-138
				3. Input clutch solenoid valve	AT-144
				4. Direct clutch solenoid valve	AT-148
				5. High and low reverse clutch solenoid valve	AT-150
				6. Low coast brake solenoid valve	AT-152
				7. Front brake solenoid valve	AT-146
				8. Line pressure test	AT-50
				9. CAN communication line	AT-95
				10. Control valve with TCM	AT-210
			OFF vehicle	11. Input clutch	AT-300
				12. Gear system	AT-254
				13. High and low reverse clutch	AT-312
				14. Direct clutch	AT-314

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No.	Item	Symptom	Condition	Diagnostic Item	Reference page
22		When "D" or "M" position, remains in 5GR.	ON vehicle	1. A/T fluid level and state	AT-50
				2. Output speed sensor and vehicle speed signal	AT-108, AT-138
				3. Front brake solenoid valve	AT-146
				4. Line pressure test	AT-50
				5. CAN communication line	AT-95
				6. Control valve with TCM	AT-210
			OFF vehicle	7. Front brake (brake band)	AT-275
				8. Input clutch	AT-300
				9. Gear system	AT-254
				10. High and low reverse clutch	AT-312
23	Slips/Will Not Engage	Vehicle cannot be started from D1. Refer to AT-179, "Vehicle Cannot Be Started from D1" .	ON vehicle	1. A/T fluid level and state	AT-50
				2. Accelerator pedal position sensor	AT-131
				3. Line pressure test	AT-50
				4. CAN communication line	AT-95
				5. Control valve with TCM	AT-210
			OFF vehicle	6. Torque converter	AT-275
				7. Oil pump assembly	AT-296
				8. 3rd one-way clutch	AT-298
				9. 1st one-way clutch	AT-306
				10. Gear system	AT-254
				11. Reverse brake	AT-275
				12. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17, "Cross-Sectional View (VQ35DE Models for 2WD)" , AT-18, "Cross-Sectional View (VK45DE Models for 2WD)" , AT-19, "Cross-Sectional View (VQ35DE Models for AWD)" or AT-20, "Cross-Sectional View (VK45DE Models for AWD)" .)	AT-275
				13. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17, "Cross-Sectional View (VQ35DE Models for 2WD)" , AT-18, "Cross-Sectional View (VK45DE Models for 2WD)" , AT-19, "Cross-Sectional View (VQ35DE Models for AWD)" or AT-20, "Cross-Sectional View (VK45DE Models for AWD)" .)	AT-275
24		Does not lock-up. Refer to AT-187, "A/T Does Not Lock-up" .	ON vehicle	1. A/T fluid level and state	AT-50
				2. Line pressure test	AT-50
				3. Engine speed signal	AT-113
				4. Input speed sensor	AT-106
				5. Torque converter clutch solenoid valve	AT-125
				6. CAN communication line	AT-95
				7. Control valve with TCM	AT-210
			OFF vehicle	8. Torque converter	AT-275
				9. Oil pump assembly	AT-296

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No.	Item	Symptom	Condition	Diagnostic Item	Reference page
25		Does not hold lock-up condition. Refer to AT-188, "A/T Does Not Hold Lock-up Condition" .	ON vehicle	1. A/T fluid level and state	AT-50
				2. Line pressure test	AT-50
				3. Engine speed signal	AT-113
				4. Input speed sensor	AT-106
				5. Torque converter clutch solenoid valve	AT-125
				6. CAN communication line	AT-95
				7. Control valve with TCM	AT-210
			OFF vehicle	8. Torque converter	AT-275
				9. Oil pump assembly	AT-296
26	Slips/Will Not Engage	Lock-up is not released. Refer to AT-189, "Lock-up Is Not Released" .	ON vehicle	1. A/T fluid level and state	AT-50
				2. Line pressure test	AT-50
				3. Engine speed signal	AT-113
				4. Input speed sensor	AT-106
				5. Torque converter clutch solenoid valve	AT-125
				6. CAN communication line	AT-95
				7. Control valve with TCM	AT-210
			OFF vehicle	8. Torque converter	AT-275
				9. Oil pump assembly	AT-296
27	Slips/Will Not Engage	No shock at all or the clutch slips when vehicle changes speed D1 → D2 or M1 → M2.	ON vehicle	1. A/T fluid level and state	AT-50
				2. Output speed sensor and vehicle speed signal	AT-108, AT-138
				3. Direct clutch solenoid valve	AT-148
				4. CAN communication line	AT-95
				5. Line pressure test	AT-50
				6. Control valve with TCM	AT-210
			OFF vehicle	7. Torque converter	AT-275
				8. Oil pump assembly	AT-296
				9. 3rd one-way clutch	AT-298
				10. Gear system	AT-254
				11. Direct clutch	AT-314
				12. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17, "Cross-Sectional View (VQ35DE Models for 2WD)" , AT-18, "Cross-Sectional View (VK45DE Models for 2WD)" , AT-19, "Cross-Sectional View (VQ35DE Models for AWD)" or AT-20, "Cross-Sectional View (VK45DE Models for AWD)" .)	AT-275

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No.	Item	Symptom	Condition	Diagnostic Item	Reference page
28	Slips/Will Not Engage	No shock at all or the clutch slips when vehicle changes speed D2 → D3 or M2 → M3.	ON vehicle	1. A/T fluid level and state	AT-50
				2. Output speed sensor and vehicle speed signal	AT-108 , AT-138
				3. High and low reverse clutch solenoid valve	AT-150
				4. CAN communication line	AT-95
				5. Line pressure test	AT-50
				6. Control valve with TCM	AT-210
			OFF vehicle	7. Torque converter	AT-275
				8. Oil pump assembly	AT-296
				9. 3rd one-way clutch	AT-298
				10. Gear system	AT-254
				11. High and low reverse clutch	AT-312
				12. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17 , " Cross-Sectional View (VQ35DE Models for 2WD) ", AT-18 , " Cross-Sectional View (VK45DE Models for 2WD) ", AT-19 , " Cross-Sectional View (VQ35DE Models for AWD) " or AT-20 , " Cross-Sectional View (VK45DE Models for AWD) ".)	AT-275
				13. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17 , " Cross-Sectional View (VQ35DE Models for 2WD) ", AT-18 , " Cross-Sectional View (VK45DE Models for 2WD) " AT-19 , " Cross-Sectional View (VQ35DE Models for AWD) " or AT-20 , " Cross-Sectional View (VK45DE Models for AWD) ".)	AT-275
29	No shock at all or the clutch slips when vehicle changes speed D3 → D4 or M3 → M4.	ON vehicle	1. A/T fluid level and state	AT-50	
			2. Output speed sensor and vehicle speed signal	AT-108 , AT-138	
			3. Input clutch solenoid valve	AT-144	
			4. Front brake solenoid valve	AT-146	
			5. CAN communication line	AT-95	
			6. Line pressure test	AT-50	
			7. Control valve with TCM	AT-210	
		OFF vehicle	8. Torque converter	AT-275	
			9. Oil pump assembly	AT-296	
			10. Input clutch	AT-300	
			11. Gear system	AT-254	
			12. High and low reverse clutch	AT-312	
			13. Direct clutch	AT-314	

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No.	Item	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-50
				2. Output speed sensor and vehicle speed signal	AT-108, AT-138
				3. Front brake solenoid valve	AT-146
				4. Direct clutch solenoid valve	AT-148
				5. CAN communication line	AT-95
				6. Line pressure test	AT-50
				7. Control valve with TCM	AT-210
			OFF vehicle	8. Torque converter	AT-275
				9. Oil pump assembly	AT-296
				10. Front brake (brake band)	AT-275
				11. Input clutch	AT-300
				12. Gear system	AT-254
				13. High and low reverse clutch	AT-312
31	Slips/Will Not Engage	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-50
				2. Output speed sensor and vehicle speed signal	AT-108, AT-138
				3. Front brake solenoid valve	AT-146
				4. Direct clutch solenoid valve	AT-148
				5. CAN communication line	AT-95
				6. Line pressure test	AT-50
				7. Control valve with TCM	AT-210
			OFF vehicle	8. Torque converter	AT-275
				9. Oil pump assembly	AT-296
				10. Input clutch	AT-300
				11. Gear system	AT-254
				12. High and low reverse clutch	AT-312
				13. Direct clutch	AT-314

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No.	Item	Symptom	Condition	Diagnostic Item	Reference page
32	Slips/Will Not Engage	When you press the accelerator pedal and shift speed D4 → D3 or M4 → M3 the engine idles or the A/T slips.	ON vehicle	1. A/T fluid level and state	AT-50
				2. Output speed sensor and vehicle speed signal	AT-108 , AT-138
				3. Input clutch solenoid valve	AT-144
				4. Front brake solenoid valve	AT-146
				5. CAN communication line	AT-95
				6. Line pressure test	AT-50
				7. Control valve with TCM	AT-210
			OFF vehicle	8. Torque converter	AT-275
				9. Oil pump assembly	AT-296
				10. 3rd one-way clutch	AT-298
				11. Gear system	AT-254
				12. High and low reverse clutch	AT-312
				13. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17 , " Cross-Sectional View (VQ35DE Models for 2WD) ", AT-18 , " Cross-Sectional View (VK45DE Models for 2WD) ", AT-19 , " Cross-Sectional View (VQ35DE Models for AWD) " or AT-20 , " Cross-Sectional View (VK45DE Models for AWD) ".)	AT-275
				14. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17 , " Cross-Sectional View (VQ35DE Models for 2WD) ", AT-18 , " Cross-Sectional View (VK45DE Models for 2WD) ", AT-19 , " Cross-Sectional View (VQ35DE Models for AWD) " or AT-20 , " Cross-Sectional View (VK45DE Models for AWD) ".)	AT-275
33	Slips/Will Not Engage	When you press the accelerator pedal and shift speed D3 → D2 or M3 → M2 the engine idles or the A/T slips.	ON vehicle	1. A/T fluid level and state	AT-50
				2. Output speed sensor and vehicle speed signal	AT-108 , AT-138
				3. High and low reverse clutch solenoid valve	AT-150
				4. Direct clutch solenoid valve	AT-148
				5. CAN communication line	AT-95
				6. Line pressure test	AT-50
				7. Control valve with TCM	AT-210
			OFF vehicle	8. Torque converter	AT-275
				9. Oil pump assembly	AT-296
				10. 3rd one-way clutch	AT-298
				11. Gear system	
				12. Direct clutch	AT-314
				13. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17 , " Cross-Sectional View (VQ35DE Models for 2WD) ", AT-18 , " Cross-Sectional View (VK45DE Models for 2WD) ", AT-19 , " Cross-Sectional View (VQ35DE Models for AWD) " or AT-20 , " Cross-Sectional View (VK45DE Models for AWD) ".)	AT-275

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No.	Item	Symptom	Condition	Diagnostic Item	Reference page
34	Slips/Will Not Engage	When you press the accelerator pedal and shift speed D ₂ → D ₁ or M ₂ → M ₁ the engine idles or the A/T slips.	ON vehicle	1. A/T fluid level and state	AT-50
				2. Output speed sensor and vehicle speed signal	AT-108 , AT-138
				3. Direct clutch solenoid valve	AT-148
				4. CAN communication line	AT-95
				5. Line pressure test	AT-50
				6. Control valve with TCM	AT-210
			OFF vehicle	7. Torque converter	AT-275
				8. Oil pump assembly	AT-296
				9. 3rd one-way clutch	AT-298
				10. 1st one-way clutch	AT-306
				11. Gear system	AT-254
				12. Reverse brake	AT-275
				13. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17 , " Cross-Sectional View (VQ35DE Models for 2WD) ", AT-18 , " Cross-Sectional View (VK45DE Models for 2WD) ", AT-19 , " Cross-Sectional View (VQ35DE Models for AWD) " or AT-20 , " Cross-Sectional View (VK45DE Models for AWD) ".)	AT-275
				14. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17 , " Cross-Sectional View (VQ35DE Models for 2WD) ", AT-18 , " Cross-Sectional View (VK45DE Models for 2WD) ", AT-19 , " Cross-Sectional View (VQ35DE Models for AWD) " or AT-20 , " Cross-Sectional View (VK45DE Models for AWD) ".)	AT-275
35	With selector lever in "D" position, acceleration is extremely poor.	ON vehicle	1. A/T fluid level and state	AT-50	
			2. Line pressure test	AT-50	
			3. Accelerator pedal position sensor	AT-131	
			4. CAN communication line	AT-95	
			5. Transmission range switch	AT-103	
			6. A/T position	AT-202	
			7. Control valve with TCM	AT-210	
		OFF vehicle	8. Torque converter	AT-275	
			9. Oil pump assembly	AT-296	
			10. 1st one-way clutch	AT-306	
			11. Gear system	AT-254	
			12. Reverse brake	AT-275	
			13. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17 , " Cross-Sectional View (VQ35DE Models for 2WD) ", AT-18 , " Cross-Sectional View (VK45DE Models for 2WD) ", AT-19 , " Cross-Sectional View (VQ35DE Models for AWD) " or AT-20 , " Cross-Sectional View (VK45DE Models for AWD) ".)	AT-275	
			14. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17 , " Cross-Sectional View (VQ35DE Models for 2WD) ", AT-18 , " Cross-Sectional View (VK45DE Models for 2WD) ", AT-19 , " Cross-Sectional View (VQ35DE Models for AWD) " or AT-20 , " Cross-Sectional View (VK45DE Models for AWD) ".)	AT-275	

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No.	Item	Symptom	Condition	Diagnostic Item	Reference page
36		With selector lever in "R" position, acceleration is extremely poor.	ON vehicle	1. A/T fluid level and state	AT-50
				2. Line pressure test	AT-50
				3. Accelerator pedal position sensor	AT-131
				4. High and low reverse clutch solenoid valve	AT-150
				5. CAN communication line	AT-95
				6. Transmission range switch	AT-103
				7. A/T position	AT-202
				8. Control valve with TCM	AT-210
			OFF vehicle	9. Gear system	AT-254
				10. Output shaft	AT-275
				11. Reverse brake	AT-275
37	Slips/Will Not Engage	While starting off by accelerating in 1GR, engine races or slip-page occurs.	ON vehicle	1. A/T fluid level and state	AT-50
				2. Line pressure test	AT-50
				3. Accelerator pedal position sensor	AT-131
				4. CAN communication line	AT-95
				5. Control valve with TCM	AT-210
			OFF vehicle	6. Torque converter	AT-275
				7. Oil pump assembly	AT-296
				8. 3rd one-way clutch	AT-298
				9. 1st one-way clutch	AT-306
				10. Gear system	AT-254
				11. Reverse brake	AT-275
				12. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17 , " Cross-Sectional View (VQ35DE Models for 2WD) ", AT-18 , " Cross-Sectional View (VK45DE Models for 2WD) ", AT-19 , " Cross-Sectional View (VQ35DE Models for AWD) " or AT-20 , " Cross-Sectional View (VK45DE Models for AWD) ".)	AT-275
				13. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17 , " Cross-Sectional View (VQ35DE Models for 2WD) ", AT-18 , " Cross-Sectional View (VK45DE Models for 2WD) ", AT-19 , " Cross-Sectional View (VQ35DE Models for AWD) " or AT-20 , " Cross-Sectional View (VK45DE Models for AWD) ".)	AT-275

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No.	Item	Symptom	Condition	Diagnostic Item	Reference page
38		While accelerating in 2GR, engine races or slippage occurs.	ON vehicle	1. A/T fluid level and state	AT-50
				2. Line pressure test	AT-50
				3. Accelerator pedal position sensor	AT-131
				4. CAN communication line	AT-95
				5. Direct clutch solenoid valve	AT-148
				6. Control valve with TCM	AT-210
			OFF vehicle	7. Torque converter	AT-275
				8. Oil pump assembly	AT-296
				9. 3rd one-way clutch	AT-298
				10. Gear system	AT-254
				11. Direct clutch	AT-314
		12. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17 , " Cross-Sectional View (VQ35DE Models for 2WD) ", AT-18 , " Cross-Sectional View (VK45DE Models for 2WD) ", AT-19 , " Cross-Sectional View (VQ35DE Models for AWD) " or AT-20 , " Cross-Sectional View (VK45DE Models for AWD) ".)	AT-275		
39	Slips/Will Not Engage	While accelerating in 3GR, engine races or slippage occurs.	ON vehicle	1. A/T fluid level and state	AT-50
				2. Line pressure test	AT-50
				3. Accelerator pedal position sensor	AT-131
				4. CAN communication line	AT-95
				5. High and low reverse clutch solenoid valve	AT-150
				6. Control valve with TCM	AT-210
			OFF vehicle	7. Torque converter	AT-275
				8. Oil pump assembly	AT-296
				9. 3rd one-way clutch	AT-298
				10. Gear system	AT-254
				11. High and low reverse clutch	AT-312
				12. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17 , " Cross-Sectional View (VQ35DE Models for 2WD) ", AT-18 , " Cross-Sectional View (VK45DE Models for 2WD) ", AT-19 , " Cross-Sectional View (VQ35DE Models for AWD) " or AT-20 , " Cross-Sectional View (VK45DE Models for AWD) ".)	AT-275
				13. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17 , " Cross-Sectional View (VQ35DE Models for 2WD) ", AT-18 , " Cross-Sectional View (VK45DE Models for 2WD) ", AT-19 , " Cross-Sectional View (VQ35DE Models for AWD) " or AT-20 , " Cross-Sectional View (VK45DE Models for AWD) ".)	AT-275

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TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

No.	Item	Symptom	Condition	Diagnostic Item	Reference page
40		While accelerating in 4GR, engine races or slippage occurs.	ON vehicle	1. A/T fluid level and state	AT-50
				2. Line pressure test	AT-50
				3. Accelerator pedal position sensor	AT-131
				4. CAN communication line	AT-95
				5. Input clutch solenoid valve	AT-144
				6. Control valve with TCM	AT-210
			OFF vehicle	7. Torque converter	AT-275
				8. Oil pump assembly	AT-296
				9. Input clutch	AT-300
				10. Gear system	AT-254
				11. High and low reverse clutch	AT-312
				12. Direct clutch	AT-314
41	Slips/Will Not Engage	While accelerating in 5GR, engine races or slippage occurs.	ON vehicle	1. A/T fluid level and state	AT-50
				2. Line pressure test	AT-50
				3. Accelerator pedal position sensor	AT-131
				4. CAN communication line	AT-95
				5. Front brake solenoid valve	AT-146
				6. Control valve with TCM	AT-210
			OFF vehicle	7. Torque converter	AT-275
				8. Oil pump assembly	AT-296
				9. Front brake (brake band)	AT-275
				10. Input clutch	AT-300
				11. Gear system	AT-254
				12. High and low reverse clutch	AT-312
42		Slips at lock-up.	ON vehicle	1. A/T fluid level and state	AT-50
				2. Line pressure test	AT-50
				3. Engine speed signal	AT-113
				4. Input speed sensor	AT-106
				5. Torque converter clutch solenoid valve	AT-125
				6. CAN communication line	AT-95
				7. Control valve with TCM	AT-210
			OFF vehicle	8. Torque converter	AT-275
				9. Oil pump assembly	AT-296

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No.	Item	Symptom	Condition	Diagnostic Item	Reference page
43	Slips/Will Not Engage	No creep at all. Refer to AT-175, "Vehicle Does Not Creep Backward in "R" Position" , AT-177, "Vehicle Does Not Creep Forward in "D" Position" .	ON vehicle	1. A/T fluid level and state	AT-50
				2. Line pressure test	AT-50
				3. Accelerator pedal position sensor	AT-131
				4. Direct clutch solenoid valve	AT-148
				5. Transmission range switch	AT-103
				6. CAN communication line	AT-95
				7. A/T position	AT-202
				8. Control valve with TCM	AT-210
			OFF vehicle	9. Torque converter	AT-275
				10. Oil pump assembly	AT-296
				11. 1st one-way clutch	AT-306
				12. Gear system	AT-254
				13. Reverse brake	AT-275
				14. Direct clutch	AT-314
				15. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17, "Cross-Sectional View (VQ35DE Models for 2WD)" , AT-18, "Cross-Sectional View (VK45DE Models for 2WD)" , AT-19, "Cross-Sectional View (VQ35DE Models for AWD)" or AT-20, "Cross-Sectional View (VK45DE Models for AWD)" .)	AT-275
				16. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17, "Cross-Sectional View (VQ35DE Models for 2WD)" , AT-18, "Cross-Sectional View (VK45DE Models for 2WD)" , AT-19, "Cross-Sectional View (VQ35DE Models for AWD)" or AT-20, "Cross-Sectional View (VK45DE Models for AWD)" .)	AT-275
44	Vehicle cannot run in all positions.	ON vehicle	1. A/T fluid level and state	AT-50	
			2. Line pressure test	AT-50	
			3. Transmission range switch	AT-103	
			4. A/T position	AT-202	
			5. Control valve with TCM	AT-210	
		OFF vehicle	6. Oil pump assembly	AT-296	
			7. Gear system	AT-254	
			8. Output shaft	AT-275	

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No.	Item	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-50
				2. Line pressure test	AT-50
				3. Transmission range switch	AT-103
				4. A/T position	AT-202
				5. Control valve with TCM	AT-210
			OFF vehicle	6. Torque converter	AT-275
				7. Oil pump assembly	AT-296
				8. 1st one-way clutch	AT-306
				9. Gear system	AT-254
				10. Reverse brake	AT-275
				11. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17 . "Cross-Sectional View (VQ35DE Models for 2WD)", AT-18 . "Cross-Sectional View (VK45DE Models for 2WD)", AT-19 . "Cross-Sectional View (VQ35DE Models for AWD)" or AT-20 . "Cross-Sectional View (VK45DE Models for AWD)".)	AT-275
				12. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17 . "Cross-Sectional View (VQ35DE Models for 2WD)", AT-18 . "Cross-Sectional View (VK45DE Models for 2WD)", AT-19 . "Cross-Sectional View (VQ35DE Models for AWD)" or AT-20 . "Cross-Sectional View (VK45DE Models for AWD)".)	AT-275
46	Does Not Change	With selector lever in "R" position, driving is not possible.	ON vehicle	1. A/T fluid level and state	AT-50
				2. Line pressure test	AT-50
				3. Transmission range switch	AT-103
				4. A/T position	AT-202
				5. Control valve with TCM	AT-210
			OFF vehicle	6. Gear system	AT-254
				7. Output shaft	AT-275
				8. Reverse brake	AT-275
47	Does Not Change	Does not change M5 → M4. Refer to AT-191 . "A/T Does Not Shift: 5GR → 4GR".	ON vehicle	1. Transmission range switch	AT-103
				2. A/T fluid level and state	AT-50
				3. A/T position	AT-202
				4. Manual mode switch	AT-156
				5. CAN communication line	AT-95
				6. Control valve with TCM	AT-210
			OFF vehicle	7. Front brake (brake band)	AT-275

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

No.	Item	Symptom	Condition	Diagnostic Item	Reference page
48	Does Not Change	Does not change M4 → M3. Refer to AT-193, "A/T Does Not Shift: 4GR → 3GR" .	ON vehicle	1. Transmission range switch	AT-103
				2. A/T fluid level and state	AT-50
				3. A/T position	AT-202
				4. Manual mode switch	AT-156
				5. CAN communication line	AT-95
				6. Control valve with TCM	AT-210
			OFF vehicle	7. Front brake (brake band)	AT-275
				8. Input clutch	AT-300
49	Does Not Change	Does not change M3 → M2. Refer to AT-194, "A/T Does Not Shift: 3GR → 2GR" .	ON vehicle	1. Transmission range switch	AT-103
				2. A/T fluid level and state	AT-50
				3. A/T position	AT-202
				4. Manual mode switch	AT-156
				5. CAN communication line	AT-95
				6. Control valve with TCM	AT-210
			OFF vehicle	7. Front brake (brake band)	AT-275
				8. Input clutch	AT-300
				9. High and low reverse clutch	AT-312
50	Does Not Change	Does not change M2 → M1. Refer to AT-195, "A/T Does Not Shift: 2GR → 1GR" .	ON vehicle	1. Transmission range switch	AT-103
				2. A/T fluid level and state	AT-50
				3. A/T position	AT-202
				4. Manual mode switch	AT-156
				5. CAN communication line	AT-95
				6. Control valve with TCM	AT-210
			OFF vehicle	7. Input clutch	AT-300
				8. High and low reverse clutch	AT-312
				9. Direct clutch	AT-314
51	Does Not Change	Cannot be changed to manual mode. Refer to AT-191, "Cannot Be Changed to Manual Mode" .	ON vehicle	1. Manual mode switch	AT-156
				2. Input speed sensor	AT-106
				3. CAN communication line	AT-95
52	Others	Shift point is high in "D" position.	ON vehicle	1. Output speed sensor and vehicle speed signal	AT-108, AT-138
				2. Accelerator pedal position sensor	AT-131
				3. CAN communication line	AT-95
				4. A/T fluid temperature sensor	AT-133
				5. Control valve with TCM	AT-210

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No.	Item	Symptom	Condition	Diagnostic Item	Reference page
53		Shift point is low in "D" position.	ON vehicle	1. Output speed sensor and vehicle speed signal	AT-108 , AT-138
				2. Accelerator pedal position sensor	AT-131
				3. CAN communication line	AT-95
				4. Control valve with TCM	AT-210
54		Judder occurs during lock-up.	ON vehicle	1. A/T fluid level and state	AT-50
				2. Engine speed signal	AT-113
				3. Input speed sensor	AT-106
				4. Output speed sensor and vehicle speed signal	AT-108 , AT-138
			OFF vehicle	5. Accelerator pedal position sensor	AT-131
				6. CAN communication line	AT-95
				7. Torque converter clutch solenoid valve	AT-125
				8. Control valve with TCM	AT-210
9. Torque converter	AT-275				
55	Others	Strange noise in "R" position.	ON vehicle	1. A/T fluid level and state	AT-50
				2. Engine speed signal	AT-113
				3. CAN communication line	AT-95
				4. Control valve with TCM	AT-210
			OFF vehicle	5. Torque converter	AT-275
				6. Oil pump assembly	AT-296
				7. Gear system	AT-254
				8. High and low reverse clutch	AT-312
				9. Reverse brake	AT-275
56		Strange noise in "N" position.	ON vehicle	1. A/T fluid level and state	AT-50
				2. Engine speed signal	AT-113
				3. CAN communication line	AT-95
				4. Control valve with TCM	AT-210
			OFF vehicle	5. Torque converter	AT-275
				6. Oil pump assembly	AT-296
				7. Gear system	AT-254
57		Strange noise in "D" position.	ON vehicle	1. A/T fluid level and state	AT-50
				2. Engine speed signal	AT-113
				3. CAN communication line	AT-95
				4. Control valve with TCM	AT-210
			OFF vehicle	5. Torque converter	AT-275
				6. Oil pump assembly	AT-296
				7. Gear system	AT-254
				8. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17 , " Cross-Sectional View (VQ35DE Models for 2WD) ", AT-18 , " Cross-Sectional View (VK45DE Models for 2WD) ", AT-19 , " Cross-Sectional View (VQ35DE Models for AWD) " or AT-20 , " Cross-Sectional View (VK45DE Models for AWD) ".)	AT-275

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No.	Item	Symptom	Condition	Diagnostic Item	Reference page			
58		Vehicle does not decelerate by engine brake. Refer to AT-196, "Vehicle Does Not Decelerate by Engine Brake" .	ON vehicle	1. Transmission range switch	AT-103			
				2. A/T fluid level and state	AT-50			
				3. A/T position	AT-202			
				4. Manual mode switch	AT-156			
				5. CAN communication line	AT-95			
				6. Control valve with TCM	AT-210			
			OFF vehicle	7. Input clutch	AT-300			
				8. High and low reverse clutch	AT-312			
				9. Direct clutch	AT-314			
59		Engine brake does not work M5 → M4.	ON vehicle	1. Transmission range switch	AT-103			
				2. A/T fluid level and state	AT-50			
				3. A/T position	AT-202			
				4. Manual mode switch	AT-156			
				5. CAN communication line	AT-95			
				6. Control valve with TCM	AT-210			
			OFF vehicle	7. Front brake (brake band)	AT-275			
			60	Others	Engine brake does not work M4 → M3.	ON vehicle	1. Transmission range switch	AT-103
							2. A/T fluid level and state	AT-50
3. A/T position	AT-202							
4. Manual mode switch	AT-156							
5. CAN communication line	AT-95							
6. Control valve with TCM	AT-210							
OFF vehicle	7. Front brake (brake band)	AT-275						
	8. Input clutch	AT-300						
	61					Engine brake does not work M3 → M2.	ON vehicle	1. Transmission range switch
2. A/T fluid level and state			AT-50					
3. A/T position			AT-202					
4. Manual mode switch			AT-156					
5. CAN communication line			AT-95					
6. Control valve with TCM			AT-210					
OFF vehicle			7. Front brake (brake band)	AT-275				
			8. Input clutch	AT-300				
			9. High and low reverse clutch	AT-312				
62		Engine brake does not work M2 → M1.	ON vehicle	1. Transmission range switch	AT-103			
				2. A/T fluid level and state	AT-50			
				3. A/T position	AT-202			
				4. Manual mode switch	AT-156			
				5. CAN communication line	AT-95			
				6. Control valve with TCM	AT-210			
			OFF vehicle	7. Input clutch	AT-300			
				8. High and low reverse clutch	AT-312			
				9. Direct clutch	AT-314			

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No.	Item	Symptom	Condition	Diagnostic Item	Reference page
63	Others	Maximum speed low.	ON vehicle	1. A/T fluid level and state	AT-50
				2. Line pressure test	AT-50
				3. Accelerator pedal position sensor	AT-131
				4. CAN communication line	AT-95
				5. Direct clutch solenoid valve	AT-148
				6. Control valve with TCM	AT-210
			OFF vehicle	7. Torque converter	AT-275
				8. Oil pump assembly	AT-296
				9. Input clutch	AT-300
				10. Gear system	AT-254
				11. High and low reverse clutch	AT-312
				12. Direct clutch	AT-314
				13. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17 , " Cross-Sectional View (VQ35DE Models for 2WD) ", AT-18 , " Cross-Sectional View (VK45DE Models for 2WD) ", AT-19 , " Cross-Sectional View (VQ35DE Models for AWD) " or AT-20 , " Cross-Sectional View (VK45DE Models for AWD) ".)	AT-275
				14. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17 , " Cross-Sectional View (VQ35DE Models for 2WD) ", AT-18 , " Cross-Sectional View (VK45DE Models for 2WD) ", AT-19 , " Cross-Sectional View (VQ35DE Models for AWD) " or AT-20 , " Cross-Sectional View (VK45DE Models for AWD) ".)	AT-275
64		Extremely large creep.	ON vehicle	1. Engine idle speed	EC-80 (for VQ35DE engine), EC-705 (for VK45DE engine)
				2. CAN communication line	AT-95
			OFF vehicle	3. Torque converter	AT-275
			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. Refer to AT-172 , " In "P" Position, Vehicle Moves When Pushed ".	ON vehicle
2. A/T position	AT-202				
OFF vehicle	3. Parking components	AT-222 (2WD models) or AT-275 (AWD models)			

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No.	Item	Symptom	Condition	Diagnostic Item	Reference page
66	Others	Vehicle runs with A/T in "P" position.	ON vehicle	1. Transmission range switch	AT-103
				2. A/T fluid level and state	AT-50
				3. A/T position	AT-202
				4. Control valve with TCM	AT-210
			OFF vehicle	5. Parking components	AT-222 (2WD models) or AT-275 (AWD models)
				6. Gear system	AT-254
67	Others	Vehicle runs with A/T in "N" position. Refer to AT-172 , " In "N" Position, Vehicle Moves ".	ON vehicle	1. Transmission range switch	AT-103
				2. A/T fluid level and state	AT-50
				3. A/T position	AT-202
				4. Control valve with TCM	AT-210
			OFF vehicle	5. Input clutch	AT-300
				6. Gear system	AT-254
				7. Direct clutch	AT-314
				8. Reverse brake	AT-275
				9. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17 , " Cross-Sectional View (VQ35DE Models for 2WD) ", AT-18 , " Cross-Sectional View (VK45DE Models for 2WD) ", AT-19 , " Cross-Sectional View (VQ35DE Models for AWD) " or AT-20 , " Cross-Sectional View (VK45DE Models for AWD) ".)	AT-275
				10. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-17 , " Cross-Sectional View (VQ35DE Models for 2WD) ", AT-18 , " Cross-Sectional View (VK45DE Models for 2WD) ", AT-19 , " Cross-Sectional View (VQ35DE Models for AWD) " or AT-20 , " Cross-Sectional View (VK45DE Models for AWD) ".)	AT-275
68	Others	Engine does not start in "N" or "P" position. Refer to AT-171 , " Engine Cannot Be Started in "P" or "N" Position ".	ON vehicle	1. Push-button ignition switch and starter	PG-4, SC-8
				2. A/T position	AT-202
				3. Transmission range switch	AT-103
69	Others	Engine starts in positions other than "N" or "P".	ON vehicle	1. Push-button ignition switch and starter	PG-4, SC-8
				2. A/T position	AT-202
				3. Transmission range switch	AT-103
70	Others	Engine stall.	ON vehicle	1. A/T fluid level and state	AT-50
				2. Engine speed signal	AT-113
				3. Input speed sensor	AT-106
				4. Torque converter clutch solenoid valve	AT-125
				5. CAN communication line	AT-95
				6. Control valve with TCM	AT-210
			OFF vehicle	7. Torque converter	AT-275

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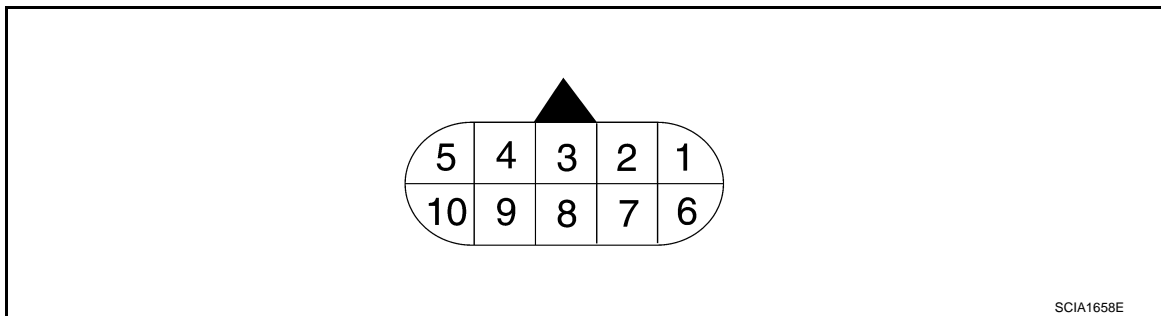
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No.	Item	Symptom	Condition	Diagnostic Item	Reference page
71	Others	Engine stalls when selector lever shifted "N" → "D" or "R".	ON vehicle	1. A/T fluid level and state	AT-50
				2. Engine speed signal	AT-113
				3. Input speed sensor	AT-106
				4. Torque converter clutch solenoid valve	AT-125
				5. CAN communication line	AT-95
				6. Control valve with TCM	AT-210
			OFF vehicle	7. Torque converter	AT-275
72	Others	Engine speed does not return to idle. Refer to AT-190 , " Engine Speed Does Not Return to Idle ".	ON vehicle	1. A/T fluid level and state	AT-50
				2. Direct clutch solenoid valve	AT-148
				3. Front brake solenoid valve	AT-146
				4. Accelerator pedal position sensor	AT-131
				5. Output speed sensor and vehicle speed signal	AT-108 , AT-138
				6. CAN communication line	AT-95
				7. Control valve with TCM	AT-210
			OFF vehicle	8. Front brake (brake band)	AT-275
			9. Direct clutch	AT-314	

TCM Input/Output Signal Reference Value



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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	R/W	Power supply (Memory back-up)	Always	Battery voltage
2	R/W	Power supply (Memory back-up)	Always	Battery voltage
3	L	CAN-H	—	—
4	V	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		—
				—

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Terminal	Wire color	Item	Condition	Data (Approx.)
7	R/L	Back-up lamp relay	 Selector lever in "R" position.	0 V
			Selector lever in other positions.	Battery voltage
8	P	CAN-L	—	—
9	GR/R	Starter relay	 Selector lever in "N", "P" positions.	Battery voltage
			Selector lever in "R", "D" positions.	0 V
10	B	Ground	Always	0 V

CONSULT-III Function (TRANSMISSION)

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

FUNCTION

Diagnostic test mode	Function
Work support	This mode enables a technician to adjust some devices faster and more accurately by following the indications on CONSULT-III.
Self-diagnostic results	Self-diagnostic results can be read and erased quickly.
Data monitor	Input/Output data in the ECU can be read.
CAN diagnostic support monitor	The results of transmit/receive diagnosis of CAN communication can be read.
DTC work support	Select the operating condition to confirm Diagnostic Trouble Codes.
ECU part number	ECU part number can be read.

CONSULT-III REFERENCE VALUE

NOTICE:

- 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.
- 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.
- 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.)
VHCL/S SE-A/T	During driving	Approximately matches the speed meter reading.
VHCL/S SE-MTR	During driving	Approximately matches the speed meter reading.
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

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Item name	Condition	Display value (Approx.)
ENGINE SPEED	Engine running	Closely matches the tachometer reading.
INPUT SPEED	During driving (lock-up ON)	Approximately matches the engine speed.
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	0°C (32° F) - 20°C (68°F) - 80°C (176°F)	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
LINE PRES SOL	During driving	0.2 - 0.6 A
FR/B SOLENOID	Front brake engaged. Refer to AT-20 .	0.6 - 0.8 A
	Front brake disengaged. Refer to AT-20 .	0 - 0.05 A
I/C SOLENOID	Input clutch disengaged. Refer to AT-20 .	0.6 - 0.8 A
	Input clutch engaged. Refer to AT-20 .	0 - 0.05 A
D/C SOLENOID	Direct clutch disengaged. Refer to AT-20 .	0.6 - 0.8 A
	Direct clutch engaged. Refer to AT-20 .	0 - 0.05 A
HLR/C SOL	High and low reverse clutch disengaged. Refer to AT-20 .	0.6 - 0.8 A
	High and low reverse clutch engaged. Refer to AT-20 .	0 - 0.05 A
STARTER RELAY	Selector lever in "N", "P" positions.	ON
	Selector lever in "R", "D" positions.	OFF
SLCT LVR POSI	Selector lever in "N", "P" positions.	N/P
	Selector lever in "R" position.	R
	Selector lever in "D" position.	D
ON OFF SOL	Low coast brake engaged. Refer to AT-20 .	ON
	Low coast brake disengaged. Refer to AT-20 .	OFF
ATF PRES SW 2	Low coast brake engaged. Refer to AT-20 .	ON
	Low coast brake disengaged. Refer to AT-20 .	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
GEAR	During driving	1, 2, 3, 4, 5

SELF-DIAGNOSTIC RESULT MODE

Display Items List

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

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		
CAN COMM CIRCUIT	When TCM is not transmitting or receiving CAN communication signal for 2 seconds or more.	U1000	U1000	AT-95	AT
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-98	D
TRANSMISSION CONT	TCM is malfunctioning	P0700	P0700	AT-102	E
T/M RANGE SWITCH A	<ul style="list-style-type: none"> 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-103	F
INPUT SPEED SENSOR A	<ul style="list-style-type: none"> TCM does not receive the proper voltage signal from the sensor. TCM detects an irregularity only at position of 4GRr for input speed sensor 2. 	P0717	P0717	AT-106	G
OUTPUT SPEED SENSOR	<ul style="list-style-type: none"> Signal from output speed 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-108	H
ENGINE SPEED	TCM does not receive the CAN communication signal from the ECM.	P0725	P0725	AT-113	I
1GR INCORRECT RATIO	A/T cannot shift to 1GR.	P0731	P0731	AT-115	J
2GR INCORRECT RATIO	A/T cannot shift to 2GR.	P0732	P0732	AT-117	K
3GR INCORRECT RATIO	A/T cannot shift to 3GR.	P0733	P0733	AT-119	L
4GR INCORRECT RATIO	A/T cannot shift to 4GR.	P0734	P0734	AT-121	M
5GR INCORRECT RATIO	A/T cannot shift to 5GR.	P0735	P0735	AT-123	N
TORQUE CONVERTER	Normal voltage not applied to solenoid due to cut line, short, or the like.	P0740	P0740	AT-125	O
TORQUE CONVERTER	<ul style="list-style-type: none"> A/T cannot perform lock-up even if electrical circuit is good. TCM detects as irregular by comparing difference value with slip rotation. 	P0744	P0744*2	AT-127	P
PC SOLENOID A	<ul style="list-style-type: none"> Normal voltage not applied to solenoid due to cut line, short, or the like. TCM detects as irregular by comparing target value with monitor value. 	P0745	P0745	AT-129	
TP SENSOR	TCM does not receive the proper accelerator pedal position signals (input by CAN communication) from ECM.	P1705	P1705	AT-131	
TRANS FLUID TEMP SEN	During running, the A/T fluid temperature sensor signal voltage is excessively high or low.	P1710	P0710	AT-133	
VEHICLE SPEED SIGNAL	<ul style="list-style-type: none"> Signal (CAN communication) from vehicle speed signal not input due to cut line or the like. Unexpected signal input during running. 	P1721	—	AT-138	

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

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	
INTERLOCK	Except during shift change, the gear position and ATF pressure switch states are monitored and comparative judgement made.	P1730	P1730	AT-140
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-142
INPUT CLUTCH SOLENOID	<ul style="list-style-type: none"> Normal voltage not applied to solenoid due to functional malfunction, cut line, short, or the like. TCM detects as irregular by comparing target value with monitor value. 	P1752	P1752	AT-144
FR BRAKE SOLENOID	<ul style="list-style-type: none"> Normal voltage not applied to solenoid due to functional malfunction, cut line, short, or the like. TCM detects as irregular by comparing target value with monitor value. 	P1757	P1757	AT-146
DRCT CLUTCH SOLENOID	<ul style="list-style-type: none"> Normal voltage not applied to solenoid due to cut line, short, or the like. TCM detects as irregular by comparing target value with monitor value. 	P1762	P1762	AT-148
HLR CLUTCH SOLENOID	<ul style="list-style-type: none"> Normal voltage not applied to solenoid due to functional malfunction, cut line, short, or the like. TCM detects as irregular by comparing target value with monitor value. 	P1767	P1767	AT-150
L C BRAKE SOLENOID	Normal voltage not applied to solenoid due to functional malfunction, cut line, short, or the like.	P1772	P1772	AT-152
L C BRAKE SOLENOID	<ul style="list-style-type: none"> TCM detects an improper voltage drop when it tries to operate the solenoid valve. Condition of ATF pressure switch 2 is different from monitor value, and relation between gear position and actual gear ratio is irregular. 	P1774	P1774*2	AT-154
M-MODE SWITCH	When an impossible pattern of switch signals is detected, a malfunction is detected.	P1815	—	AT-156
NO DTC IS DETECTED FURTHER TESTING MAY BE REQUIRED	No NG item has been detected.	X	X	—

*1: Refer to [EC-67, "Malfunction Indicator Lamp \(MIL\)"](#) (for VQ35DE engine), [EC-693, "Malfunction Indicator Lamp \(MIL\)"](#) (for VK45DE engine).

*2: 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 ITEM	
VHCL/S SE-A/T (km/h)	X	X	▼	Output speed sensor
VHCL/S SE-MTR (km/h)	X	—	▼	—

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

Monitored item (Unit)	Monitor Item Selection			Remarks	
	ECU IN-PUT SIG-NALS	MAIN SIG-NALS	SELEC-TION FROM ITEM		
ACCELE POSI (0.0/8)	X	—	▼	Accelerator pedal position signal	A
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.	B AT
CLSD THL POS (ON/OFF)	X	—	▼	Signal input with CAN communications.	D
W/O THL POS (ON/OFF)	X	—	▼		
BRAKE SW (ON/OFF)	X	—	▼	Stop lamp switch	E
GEAR	—	X	▼	Gear position recognized by the TCM updated after gear-shifting.	
ENGINE SPEED (rpm)	X	X	▼	—	F
INPUT SPEED (rpm)	X	X	▼	—	
OUTPUT REV (rpm)	X	X	▼	—	G
GEAR RATIO	—	X	▼	—	
TC SLIP SPEED (rpm)	—	X	▼	Difference between engine speed and torque converter input shaft speed.	H
F SUN GR REV (rpm)	—	—	▼	—	
F CARR GR REV (rpm)	—	—	▼	—	I
ATF TEMP SE 1 (V)	X	—	▼	—	
ATF TEMP SE 2 (V)	X	—	▼	—	J
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.	K
BATTERY VOLT (V)	X	—	▼	—	
ATF PRES SW 1 (ON/OFF)	X	X	▼	—	L
ATF PRES SW 2 (ON/OFF)	X	X	▼	for LC/B solenoid	
ATF PRES SW 3 (ON/OFF)	X	X	▼	—	M
ATF PRES SW 5 (ON/OFF)	X	X	▼	—	
ATF PRES SW 6 (ON/OFF)	X	X	▼	—	N
RANGE SW 1 (ON/OFF)	X	—	▼	—	
RANGE SW 2 (ON/OFF)	X	—	▼	—	O
RANGE SW 3 (ON/OFF)	X	—	▼	—	
RANGE SW 4 (ON/OFF)	X	—	▼	—	P
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.	

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

Monitored item (Unit)	Monitor Item Selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM ITEM	
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)	—	—	▼	
ASCD-OD CUT (ON/OFF)	—	—	▼	—
ASCD-CRUISE (ON/OFF)	—	—	▼	—
ABS SIGNAL (ON/OFF)	—	—	▼	—
ACC OD CUT (ON/OFF)	—	—	▼	Intelligent cruise control (ICC) system
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)	—	—	▼	—

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

Monitored item (Unit)	Monitor Item Selection			Remarks	
	ECU IN-PUT SIG-NALS	MAIN SIG-NALS	SELEC-TION FROM ITEM		
4TH POSI IND (ON/OFF)	—	—	▼	—	A
3RD POSI IND (ON/OFF)	—	—	▼	—	B
2ND POSI IND (ON/OFF)	—	—	▼	—	AT
1ST POSI IND (ON/OFF)	—	—	▼	—	D
MANU MODE IND (ON/OFF)	—	—	▼	—	D
POWER M LAMP (ON/OFF)	—	—	▼	—	E
F-SAFE IND/L (ON/OFF)	—	—	▼	—	E
ATF WARN LAMP (ON/OFF)	—	—	▼	Not mounted but displayed.	F
BACK-UP LAMP (ON/OFF)	—	—	▼	—	F
STARTER RELAY (ON/OFF)	—	—	▼	—	G
RANGE SW3 MON (ON/OFF)	—	—	▼	—	G
C/V CLB ID1	—	—	▼	—	H
C/V CLB ID2	—	—	▼	—	H
C/V CLB ID3	—	—	▼	—	I
UNIT CLB ID1	—	—	▼	—	I
UNIT CLB ID2	—	—	▼	—	J
UNIT CLB ID3	—	—	▼	—	J
TRGT GR RATIO	—	—	▼	—	K
TRGT PRES TCC (kPa)	—	—	▼	—	K
TRGT PRES L/P (kPa)	—	—	▼	—	L
TRGT PRES I/C (kPa)	—	—	▼	—	L
TRGT PRE FR/B (kPa)	—	—	▼	—	M
TRGT PRES D/C (kPa)	—	—	▼	—	M
TRG PRE HLR/C (kPa)	—	—	▼	—	N
SHIFT PATTERN	—	—	▼	—	N
DRV CST JUDGE	—	—	▼	—	O
START RLY MON	—	—	▼	—	O
NEXT GR POSI	—	—	▼	—	P
SHIFT MODE	—	—	▼	—	P
MANU GR POSI	—	—	▼	—	P
VEHICLE SPEED (km/h)	—	X	▼	Vehicle speed recognized by the TCM.	P

DTC WORK SUPPORT MODE

Display Items List

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

DTC work support item	Description	Check item
1ST GR FNCTN P0731	Following items for "1GR function ratio" can be confirmed. <ul style="list-style-type: none"> • Self-diagnosis status (whether the diagnosis is being performed or not) • Self-diagnostic results (OK or NG) 	<ul style="list-style-type: none"> • 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. <ul style="list-style-type: none"> • 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. <ul style="list-style-type: none"> • 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. <ul style="list-style-type: none"> • 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. <ul style="list-style-type: none"> • Self-diagnosis status (whether the diagnosis is being performed or not) • Self-diagnostic results (OK or NG) 	

Diagnosis Procedure without CONSULT-III

INFOID:000000002955415

OBD-II SELF-DIAGNOSTIC PROCEDURE (WITH GST)

Refer to [EC-125, "Generic Scan Tool \(GST\) Function"](#) (for VQ35DE engine), [EC-750, "Generic Scan Tool \(GST\) Function"](#) (for VK45DE engine).

OBD-II SELF-DIAGNOSTIC PROCEDURE (NO TOOLS)

Refer to [EC-67, "Malfunction Indicator Lamp \(MIL\)"](#) (for VQ35DE engine), [EC-693, "Malfunction Indicator Lamp \(MIL\)"](#) (for VK45DE engine).

TCM SELF-DIAGNOSTIC PROCEDURE (NO TOOLS)

Description

As a method for locating the suspect circuit, when the self-diagnostics start signal is input, the memory for the malfunction location is output and the A/T CHECK indicator lamp flashes to display the corresponding DTC.

Operation 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-171, "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.
7. Wait 3 seconds.
8. Move the selector lever to the manual shift gate side. (Manual mode signal ON.)
9. Release brake pedal. (Stop lamp switch signal OFF.)
10. Move the selector lever to "D" position. (Manual mode signal OFF.)

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

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-103](#), [AT-165](#), [AT-156](#), [AT-166](#).

>> **DIAGNOSIS END**

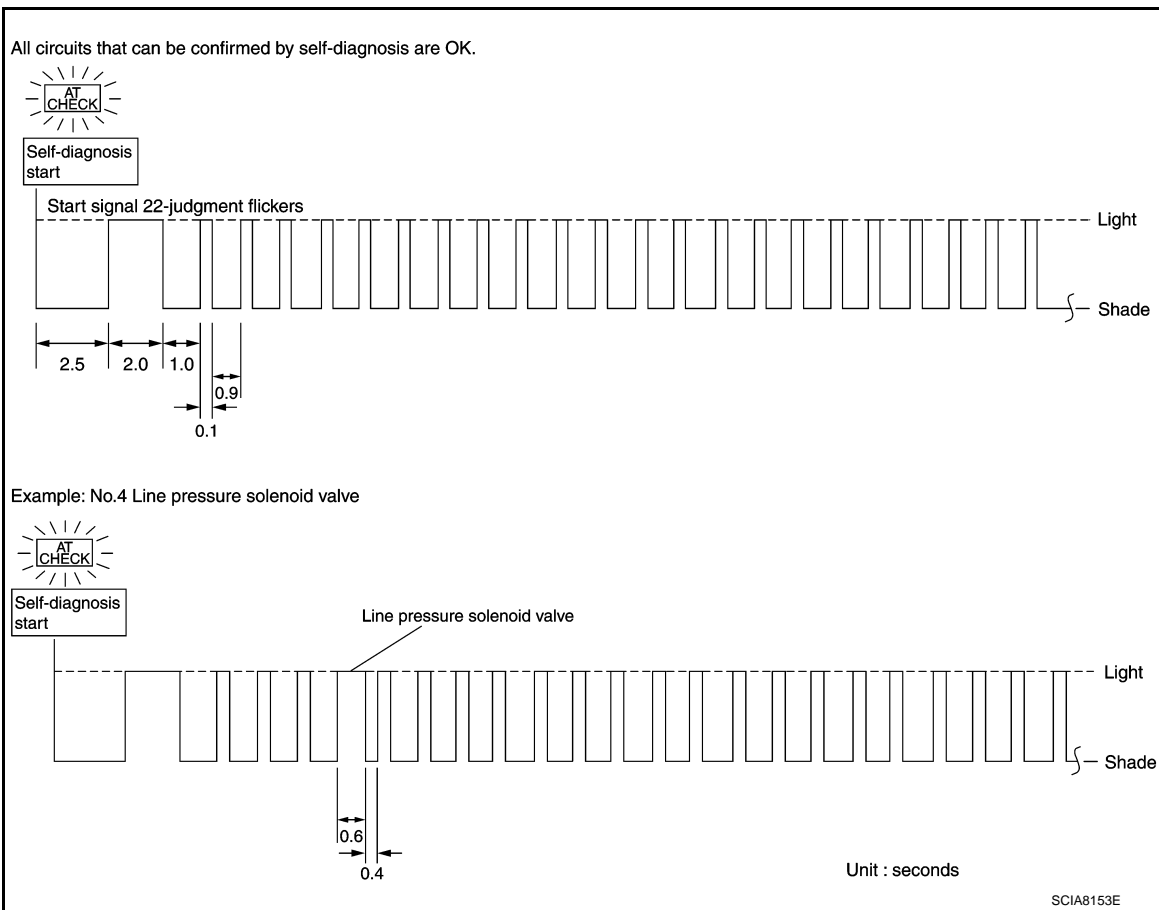
Judgment Self-diagnosis Code

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-108	12	Interlock AT-140
2	Direct clutch solenoid AT-148	13	1st engine braking AT-142
3	Torque converter AT-125 , AT-127	14	Start relay AT-98
4	Line pressure solenoid AT-129	15	Accelerator pedal position sensor AT-131
5	Input clutch solenoid AT-144	16	Engine speed AT-113
6	Front brake solenoid AT-146	17	CAN communication line AT-95
7	Low coast brake solenoid AT-152 , AT-154	18	1GR incorrect ratio AT-115
8	High and low reverse clutch solenoid AT-150	19	2GR incorrect ratio AT-117
9	Transmission range switch AT-103	20	3GR incorrect ratio AT-119
10	A/T fluid temperature sensor AT-133	21	4GR incorrect ratio AT-121
11	Input speed sensor AT-106	22	5GR incorrect ratio AT-123

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >



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.

DTC U1000 CAN COMMUNICATION LINE

< SERVICE INFORMATION >

DTC U1000 CAN COMMUNICATION LINE

Description

INFOID:000000002955416

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:000000002955417

- 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:000000002955418

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

DTC Confirmation Procedure

INFOID:000000002955419

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. Turn ignition switch ON.
2. Select "SELF-DIAG RESULTS" mode for "TRANSMISSION" with CONSULT-III.
3. Touch "START"
4. Start engine and wait for at least 6 seconds.
5. If DTC is detected, go to [AT-97. "Diagnosis Procedure"](#).

Ⓢ WITH GST

Follow the procedure "WITH CONSULT-III".




DTC U1000 CAN COMMUNICATION LINE

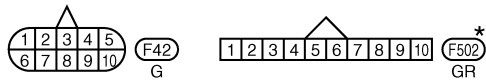
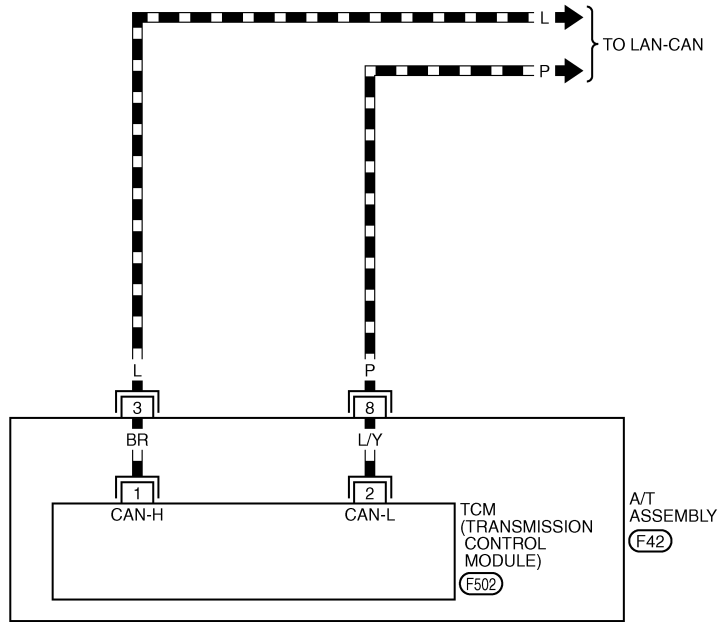
< SERVICE INFORMATION >

Wiring Diagram - AT - CAN

INFOID:000000002955420

AT-CAN-01

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



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

TCWT0342E

DTC U1000 CAN COMMUNICATION LINE

< SERVICE INFORMATION >

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:000000002955421

1. CHECK CAN COMMUNICATION CIRCUIT

With CONSULT-III

1. Turn ignition switch ON and start engine.
2. Select "SELF-DIAG RESULTS" mode for "TRANSMISSION" with CONSULT-III.

Is the "U1000" indicated?

- YES >> GO TO LAN section. Refer to [LAN-29, "CAN System Specification Chart"](#).
NO >> **INSPECTION END**

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

P0615 STARTER RELAY

< SERVICE INFORMATION >

P0615 STARTER RELAY

Description

INFOID:000000002955422

TCM prohibits cranking other than at "P" or "N" position.

CONSULT-III Reference Value in Data Monitor Mode

INFOID:000000002955423

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

On Board Diagnosis Logic

INFOID:000000002955424

- 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:000000002955425

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

DTC Confirmation Procedure

INFOID:000000002955426

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 the 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-100. "Diagnosis Procedure"](#).





P0615 STARTER RELAY

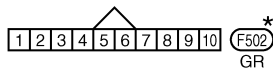
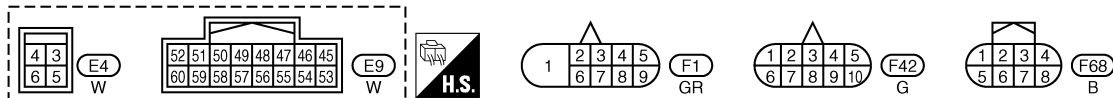
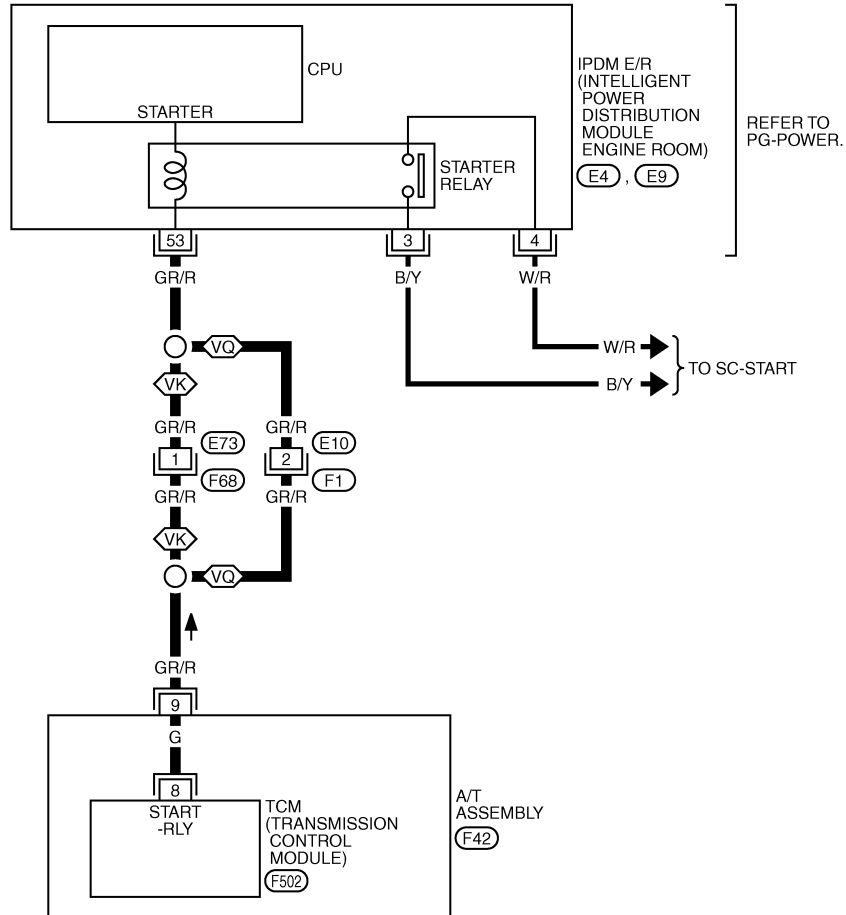
< SERVICE INFORMATION >

Wiring Diagram - AT - STSIG

INFOID:000000002955427

AT-STSIG-01


-  : DETECTABLE LINE FOR DTC
-  : NON-DETECTABLE LINE FOR DTC
-  : WITH VK ENGINE
-  : WITH VQ ENGINE



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

TCWT0343E

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

Terminal	Wire color	Item	Condition	Data (Approx.)
9	GR/R	Starter relay	 Selector lever in "N", "P" positions.	Battery voltage
			Selector lever in "R", "D" positions.	0 V

P0615 STARTER RELAY

< SERVICE INFORMATION >

Diagnosis Procedure

INFOID:00000002955428

1. CHECK STARTER RELAY

With CONSULT-III

- Turn ignition switch ON.
- Select "SELECTION FROM MENU" in "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III and check monitor "STARTER RELAY" ON/OFF. Refer to [AT-98. "CONSULT-III Reference Value in Data Monitor Mode"](#).

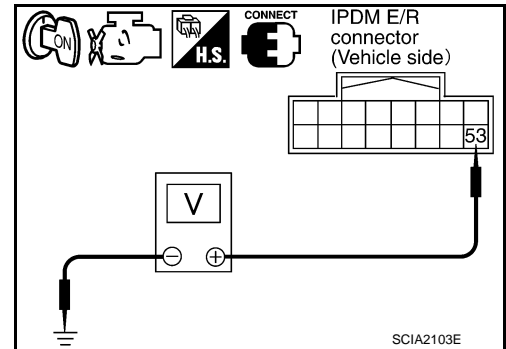
Without CONSULT-III

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

Item	Connector	Terminal	Shift position	Voltage (Approx.)
Starter re-lay	E9	53	Ground	Battery voltage
				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

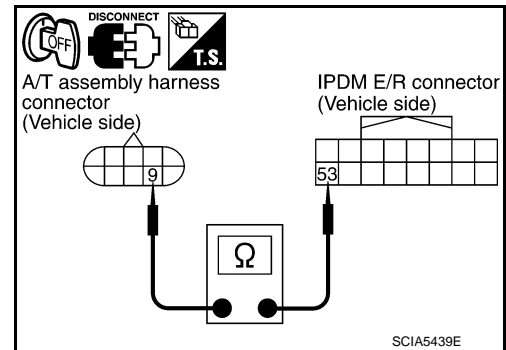
- Turn ignition switch OFF.
- Disconnect A/T assembly harness connector and IPDM E/R connector.
- Check continuity between A/T assembly harness connector and IPDM E/R connector.

Item	Connector	Terminal	Continuity
A/T assembly harness connector	F42	9	Yes
IPDM E/R connector	E9	53	

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

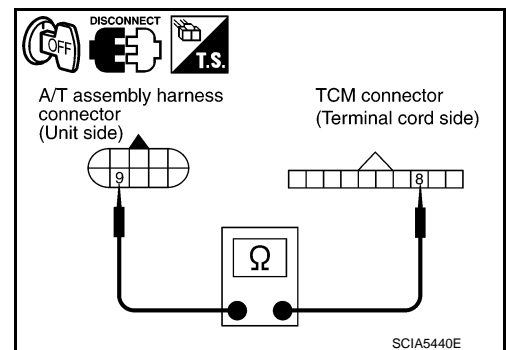
- Remove control valve with TCM. Refer to [AT-210. "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
- Disconnect A/T assembly harness connector and TCM connector.
- Check continuity between A/T assembly harness connector terminal and TCM connector terminal.

Item	Connector	Terminal	Continuity
A/T assembly harness connector	F42	9	Yes
TCM connector	F502	8	

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

P0615 STARTER RELAY

< SERVICE INFORMATION >

Check the following.

- Starter relay, Refer to [SC-8](#).
- IPDM E/R, Refer to [PG-19](#).

OK or NG

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

NG >> Repair or replace damaged parts.

5.CHECK DTC

Perform [AT-98, "DTC Confirmation Procedure"](#).

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 2.

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P0700 TRANSMISSION CONTROL

< SERVICE INFORMATION >

P0700 TRANSMISSION CONTROL

Description

INFOID:000000002955429

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

On Board Diagnosis Logic

INFOID:000000002955430

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

Possible Cause

INFOID:000000002955431

TCM.

DTC Confirmation Procedure

INFOID:000000002955432

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. Turn ignition switch ON.
2. Select "SELF-DIAG RESULTS" in "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
3. Touch "START".
4. Start engine.
5. Run engine for at least 2 consecutive seconds at idle speed.
6. If DTC is detected, go to [AT-102. "Diagnosis Procedure"](#).

Ⓜ WITH GST

Follow the procedure "WITH CONSULT-III".

Diagnosis Procedure

INFOID:000000002955433

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 for at least 10 seconds.
5. Perform [AT-102. "DTC Confirmation Procedure"](#).

Is the "P0700" displayed again?

- YES >> Replace the control valve with TCM. Refer to [AT-210. "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
- NO >> **INSPECTION END**

P0705 TRANSMISSION RANGE SWITCH A

< SERVICE INFORMATION >

P0705 TRANSMISSION RANGE SWITCH A

Description

INFOID:000000002955434

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

CONSULT-III Reference Value in Data Monitor Mode

INFOID:000000002955435

Item name	Condition	Display value
SLCT LVR POSI	Selector lever in "N", "P" positions.	N/P
	Selector lever in "R" position.	R
	Selector lever in "D" position.	D

On Board Diagnosis Logic

INFOID:000000002955436

- 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 the transmission range switches 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:000000002955437

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

DTC Confirmation Procedure

INFOID:000000002955438

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-104. "Diagnosis Procedure"](#).

WITH GST

Follow the procedure "WITH CONSULT-III".

P0705 TRANSMISSION RANGE SWITCH A

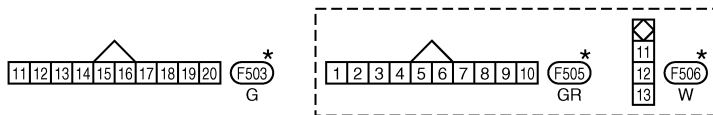
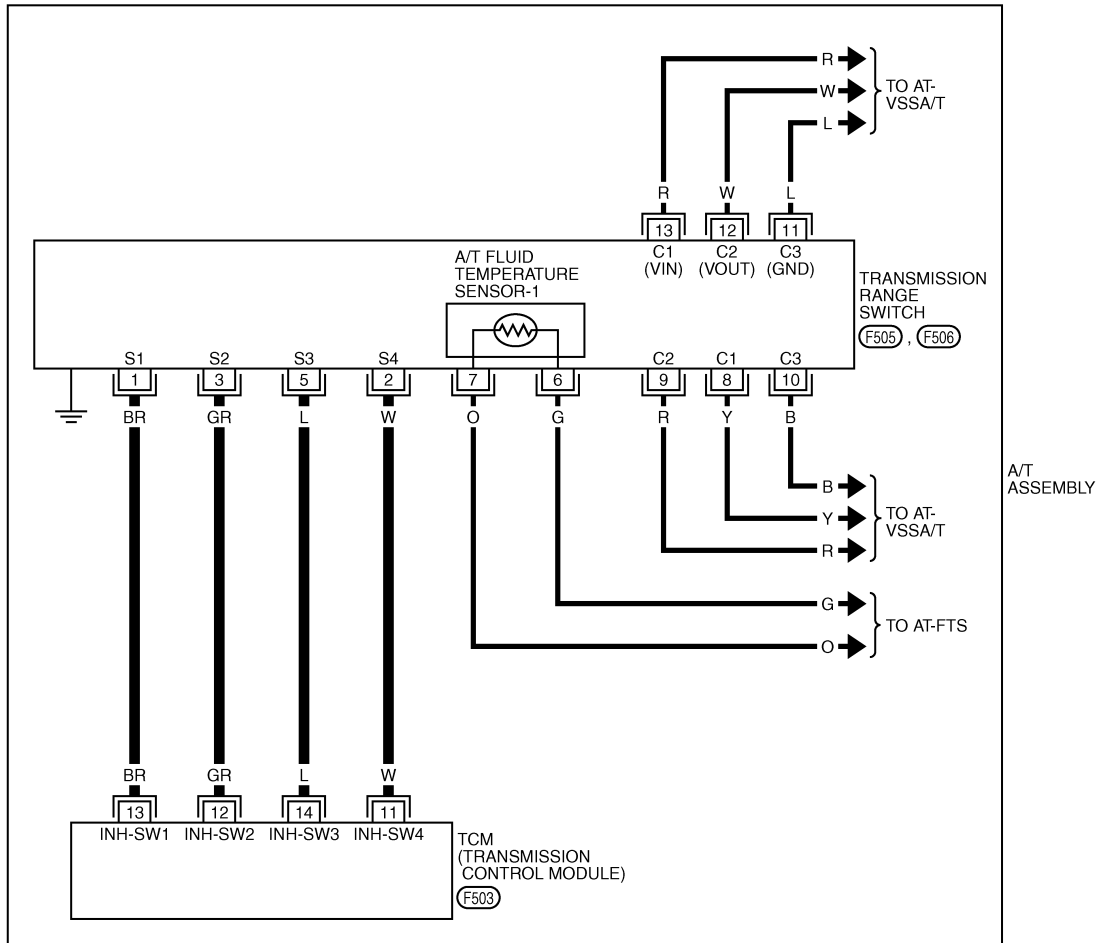
< SERVICE INFORMATION >

Wiring Diagram - AT - TR/SW

INFOID:000000002955439

AT-TR/SW-01

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



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

TCWM0688E

Diagnosis Procedure

INFOID:000000002955440

1. CHECK TRANSMISSION RANGE SWITCH CIRCUIT

Ⓟ With CONSULT-III

1. Turn ignition switch ON.

P0705 TRANSMISSION RANGE SWITCH A

< SERVICE INFORMATION >

2. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III and read out the value of "SLCT LVR POSI".
3. Check if correct selector lever position (N/P, R or D) is displayed as selector lever is moved into each position. Refer to [AT-103, "CONSULT-III Reference Value in Data Monitor Mode"](#).

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-161](#).

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.

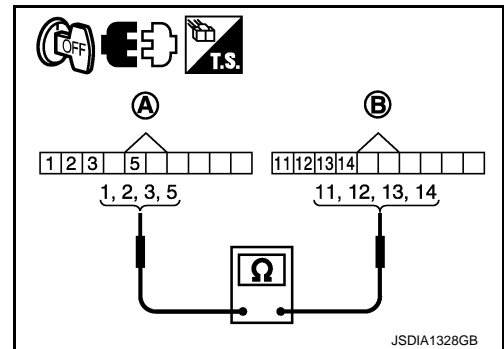
OK or NG

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

4.CHECK SUB-HARNESS

1. Remove control valve with TCM. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Disconnect transmissin range switch connector and TCM connector.
3. Check continuity between transmissin 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 the control valve with TCM. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
- NG >> Replace open circuit or short to ground and short to power in harness or connectors.

5.CHECK DTC

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

OK or NG

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

P0717 INPUT SPEED SENSOR A

< SERVICE INFORMATION >

P0717 INPUT SPEED SENSOR A

Description

INFOID:000000002955441

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

CONSULT-III Reference Value in Data Monitor Mode

INFOID:000000002955442

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

On Board Diagnosis Logic

INFOID:000000002955443

- 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:000000002955444

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

DTC Confirmation Procedure

INFOID:000000002955445

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 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-106, "Diagnosis Procedure"](#).

Ⓟ WITH GST

Follow the procedure "WITH CONSULT-III".

Diagnosis Procedure

INFOID:000000002955446

1. CHECK INPUT SIGNAL

Ⓟ With CONSULT-III

1. Start engine.

P0717 INPUT SPEED SENSOR A

< SERVICE INFORMATION >

2. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
3. Vehicle start and read out the value of "INPUT SPEED". Refer to [AT-106, "CONSULT-III Reference Value in Data Monitor Mode"](#).

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-161](#).

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

4.CHECK DTC

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

OK or NG

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

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P0720 OUTPUT SPEED SENSOR

< SERVICE INFORMATION >

P0720 OUTPUT SPEED SENSOR

Description

INFOID:000000002955447

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 in Data Monitor Mode

INFOID:000000002955448

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

On Board Diagnosis Logic

INFOID:000000002955449

- 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:000000002955450

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

DTC Confirmation Procedure

INFOID:000000002955451

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-110. "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 the check result is NG, go to [AT-110. "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

P0720 OUTPUT SPEED SENSOR

< SERVICE INFORMATION >

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-110. "Diagnosis Procedure"](#).

 WITH GST

Follow the procedure "WITH CONSULT-III".

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P0720 OUTPUT SPEED SENSOR

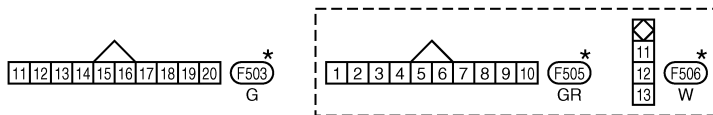
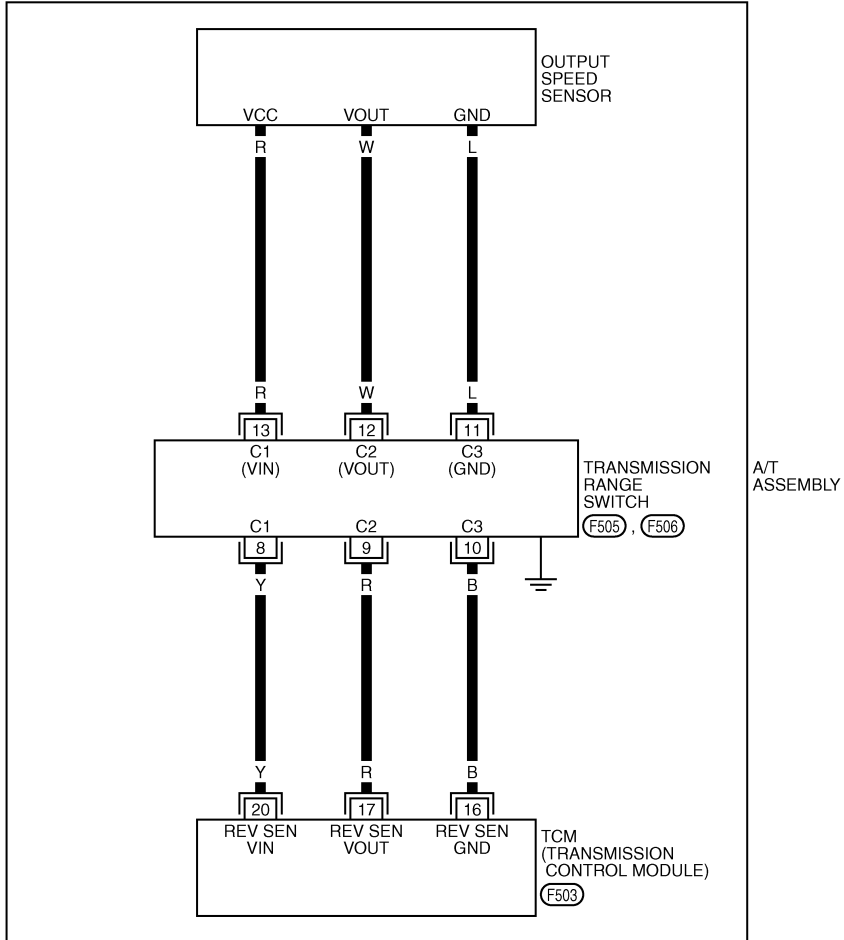
< SERVICE INFORMATION >

Wiring Diagram - AT - VSSA/T

INFOID:000000002955452

AT-VSSA/T-01

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



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

TCWM0687E

Diagnosis Procedure

INFOID:000000002955453

1. CHECK INPUT SIGNAL

With CONSULT-III

1. Turn ignition switch ON.

P0720 OUTPUT SPEED SENSOR

< SERVICE INFORMATION >

2. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
3. Start engine.
4. Read out the value of "VHCL/S SE-A/T" while driving. Check the value changes according to driving speed. Refer to [AT-108. "CONSULT-III Reference Value in Data Monitor Mode"](#).

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-161](#).

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.

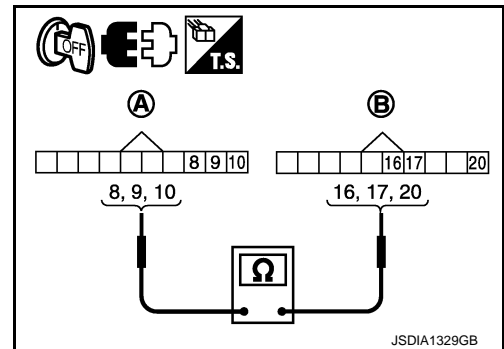
OK or NG

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

4.CHECK SUB-HARNESS

1. Remove control valve with TCM. Refer to [AT-210. "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 the output speed sensor. Refer to [AT-235. "Output Speed Sensor Component \(2WD Models Only\)"](#) (2WD models) or [AT-275, AT-254. "Component"](#) (AWD models).
2. Perform [AT-108. "DTC Confirmation Procedure"](#).

OK or NG

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

6.CHECK DTC

Perform [AT-108. "DTC Confirmation Procedure"](#).

OK or NG

- OK >> **INSPECTION END**

P0720 OUTPUT SPEED SENSOR

< SERVICE INFORMATION >

NG >> GO TO 2.

P0725 ENGINE SPEED

< SERVICE INFORMATION >

P0725 ENGINE SPEED

Description

INFOID:000000002955454

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

CONSULT-III Reference Value in Data Monitor Mode

INFOID:000000002955455

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

On Board Diagnosis Logic

INFOID:000000002955456

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:000000002955457

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

DTC Confirmation Procedure

INFOID:000000002955458

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

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

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

④ WITH CONSULT-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-113, "Diagnosis Procedure"](#).

④ WITH GST

Follow the procedure "WITH CONSULT-III".

Diagnosis Procedure

INFOID:000000002955459

1.CHECK CAN COMMUNICATION LINE

④ With CONSULT-III

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

⊗ Without CONSULT-III

- Perform the self-diagnosis. Refer to [AT-92, "Diagnosis Procedure without CONSULT-III"](#).

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

YES >> Check CAN communication line. Refer to [AT-95](#).
NO >> GO TO 2.

2.CHECK INPUT SIGNAL

④ With CONSULT-III

1. Start engine.
2. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III and read out the value of "ENGINE SPEED".

P0725 ENGINE SPEED

< SERVICE INFORMATION >

3. While monitoring engine speed, check for engine speed change corresponding to wide-open throttle position signal. Refer to [AT-113, "CONSULT-III Reference Value in Data Monitor Mode"](#).

OK or NG

OK >> GO TO 3.

NG >> Check the ignition signal circuit. Refer to [EC-614](#) (for VQ35DE engine), [EC-1248](#) (for VK45DE engine).

3.CHECK DTC

Perform [AT-113, "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-161](#).

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

NG >> Repair or replace damaged parts.

P0731 1GR INCORRECT RATIO

< SERVICE INFORMATION >

P0731 1GR INCORRECT RATIO

Description

INFOID:000000003072481

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:000000003072482

- 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:000000003072483

- 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:000000003072484

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 (68°F) – 140°C (284°F)

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-85, “CONSULT-III Function \(TRANSMISSION\)”](#)”.

If “COMPLETED RESULT NG” is detected, go to [AT-116, “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.

P0731 1GR INCORRECT RATIO

< SERVICE INFORMATION >

- Touch "NG" when an unusual shift shock, etc. occurs in spite of shifting from the 1GR to 5GR. Go to [AT-54, "Road Test"](#).
- Perform [AT-85, "CONSULT-III Function \(TRANSMISSION\)"](#) 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-116, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000003072485

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-92, "Diagnosis Procedure without CONSULT-III"](#).

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

- YES >> Check CAN communication line. Refer to [AT-97](#).
- NO >> GO TO 2.

2.CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit. Refer to [AT-162](#).

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-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Perform [AT-115, "DTC Confirmation Procedure"](#).

OK or NG

- OK >> **INSPECTION END**
- NG >> Confirm malfunction phenomena by "ROAD TEST" to repair malfunctioning part. Refer to [AT-54, "Road Test"](#).

P0732 2GR INCORRECT RATIO

< SERVICE INFORMATION >

P0732 2GR INCORRECT RATIO

Description

INFOID:000000003072486

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:000000003072487

- 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:000000003072488

- 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:000000003072489

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 (68°F) – 140°C (284°F)

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-85, "CONSULT-III Function \(TRANSMISSION\)"](#).

If "COMPLETED RESULT NG" is detected, go to [AT-118, "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.

P0732 2GR INCORRECT RATIO

< SERVICE INFORMATION >

- Touch "NG" when an unusual shift shock, etc. occurs in spite of shifting from the 1GR to 5GR. Go to [AT-54, "Road Test"](#).
- Perform [AT-85, "CONSULT-III Function \(TRANSMISSION\)"](#) 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-118, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000003072490

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-92, "Diagnosis Procedure without CONSULT-III"](#).

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

- YES >> Check CAN communication line. Refer to [AT-97](#).
NO >> GO TO 2.

2. CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit. Refer to [AT-162](#).

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-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Perform [AT-117, "DTC Confirmation Procedure"](#).

OK or NG

- OK >> **INSPECTION END**
NG >> Confirm malfunction phenomena by "ROAD TEST" to repair malfunctioning part. Refer to [AT-54, "Road Test"](#).

P0733 3GR INCORRECT RATIO

< SERVICE INFORMATION >

P0733 3GR INCORRECT RATIO

Description

INFOID:000000003072491

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:000000003072492

- 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:000000003072493

- 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:000000003072494

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 (68°F) – 140°C (284°F)

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-85, "CONSULT-III Function \(TRANSMISSION\)"](#).

If "COMPLETED RESULT NG" is detected, go to [AT-120, "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.

P0733 3GR INCORRECT RATIO

< SERVICE INFORMATION >

- Touch "NG" when an unusual shift shock, etc. occurs in spite of shifting from the 1GR to 5GR. Go to [AT-54, "Road Test"](#).
- Perform [AT-85, "CONSULT-III Function \(TRANSMISSION\)"](#) 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-120, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000003072495

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-92, "Diagnosis Procedure without CONSULT-III"](#).

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

- YES >> Check CAN communication line. Refer to [AT-97](#).
- NO >> GO TO 2.

2. CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit. Refer to [AT-162](#).

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-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Perform [AT-119, "DTC Confirmation Procedure"](#).

OK or NG

- OK >> **INSPECTION END**
- NG >> Confirm malfunction phenomena by "ROAD TEST" to repair malfunctioning part. Refer to [AT-54, "Road Test"](#).

P0734 4GR INCORRECT RATIO

< SERVICE INFORMATION >

P0734 4GR INCORRECT RATIO

Description

INFOID:000000003072496

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:000000003072497

- 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:000000003072498

- 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:000000003072499

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 (68°F) – 140°C (284°F)

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-85, "CONSULT-III Function \(TRANSMISSION\)"](#).

If "COMPLETED RESULT NG" is detected, go to [AT-122, "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.

P0734 4GR INCORRECT RATIO

< SERVICE INFORMATION >

- Touch "NG" when an unusual shift shock, etc. occurs in spite of shifting from the 1GR to 5GR. Go to [AT-54, "Road Test"](#).
- Perform [AT-85, "CONSULT-III Function \(TRANSMISSION\)"](#) 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-122, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000003072500

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-92, "Diagnosis Procedure without CONSULT-III"](#).

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

- YES >> Check CAN communication line. Refer to [AT-97](#).
- NO >> GO TO 2.

2. CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit. Refer to [AT-162](#).

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-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Perform [AT-121, "DTC Confirmation Procedure"](#).

OK or NG

- OK >> **INSPECTION END**
- NG >> Confirm malfunction phenomena by "ROAD TEST" to repair malfunctioning part. Refer to [AT-54, "Road Test"](#).

P0735 5GR INCORRECT RATIO

< SERVICE INFORMATION >

P0735 5GR INCORRECT RATIO

Description

INFOID:000000003072501

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:000000003072502

- 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:000000003072503

- 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:000000003072504

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 (68°F) – 140°C (284°F)

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-85, “CONSULT-III Function \(TRANSMISSION\)”](#)”.

If “COMPLETED RESULT NG” is detected, go to [AT-124, “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.

P0735 5GR INCORRECT RATIO

< SERVICE INFORMATION >

- Touch "NG" when an unusual shift shock, etc. occurs in spite of shifting from the 1GR to 5GR. Go to [AT-54, "Road Test"](#).
- Perform [AT-85, "CONSULT-III Function \(TRANSMISSION\)"](#) 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-124, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000003072505

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-92, "Diagnosis Procedure without CONSULT-III"](#).

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

- YES >> Check CAN communication line. Refer to [AT-97](#).
- NO >> GO TO 2.

2.CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit. Refer to [AT-162](#).

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-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Perform [AT-123, "DTC Confirmation Procedure"](#).

OK or NG

- OK >> **INSPECTION END**
- NG >> Confirm malfunction phenomena by "ROAD TEST" to repair malfunctioning part. Refer to [AT-54, "Road Test"](#).

P0740 TORQUE CONVERTER

< SERVICE INFORMATION >

P0740 TORQUE CONVERTER

Description

INFOID:000000002955460

- The torque converter clutch solenoid valve is activated, with the gear in D3, D4, D5, M4 and M5 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 1/8) 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 in Data Monitor Mode

INFOID:000000002955461

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

On Board Diagnosis Logic

INFOID:000000002955462

- 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:000000002955463

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

DTC Confirmation Procedure

INFOID:000000002955464

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-125. "Diagnosis Procedure"](#).

Ⓞ WITH GST

Follow the procedure "WITH CONSULT-III".

Diagnosis Procedure

INFOID:000000002955465

1. CHECK INPUT SIGNAL

Ⓟ With CONSULT-III

1. Turn ignition switch ON.
2. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.

P0740 TORQUE CONVERTER

< SERVICE INFORMATION >

3. Start engine.
4. Read out the value of "TCC SOLENOID" while driving. Refer to [AT-125, "CONSULT-III Reference Value in Data Monitor Mode"](#).

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-161](#).

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

4.CHECK DTC

Perform [AT-125, "DTC Confirmation Procedure"](#).

OK or NG

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

P0744 TORQUE CONVERTER

< SERVICE INFORMATION >

P0744 TORQUE CONVERTER

Description

INFOID:000000002955466

This malfunction is detected when the A/T does not shift into 5GR 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 in Data Monitor Mode

INFOID:000000002955467

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

On Board Diagnosis Logic

INFOID:000000002955468

- 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:000000002955469

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

DTC Confirmation Procedure

INFOID:000000002955470

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-127, "Diagnosis Procedure"](#).

Ⓢ WITH GST

Follow the procedure "WITH CONSULT-III".

Diagnosis Procedure

INFOID:000000002955471

1. CHECK INPUT SIGNAL

Ⓟ With CONSULT-III

1. Turn ignition switch ON.
2. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.

P0744 TORQUE CONVERTER

< SERVICE INFORMATION >

3. Start engine.
4. Read out the value of "TCC SOLENOID" while driving. Refer to [AT-127, "CONSULT-III Reference Value in Data Monitor Mode"](#).

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-161](#).

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

4.CHECK DTC

Perform [AT-127, "DTC Confirmation Procedure"](#).

OK or NG

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

P0745 PRESSURE CONTROL SOLENOID A

< SERVICE INFORMATION >

P0745 PRESSURE CONTROL SOLENOID A

Description

INFOID:000000002955472

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

CONSULT-III Reference Value in Data Monitor Mode

INFOID:000000002955473

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

On Board Diagnosis Logic

INFOID:000000002955474

- 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:000000002955475

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

DTC Confirmation Procedure

INFOID:000000002955476

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. Turn ignition switch ON.
2. Select "SELF-DIAG RESULTS" mode for "TRANSMISSION" with CONSULT-III.
3. Touch "START".
4. Engine start and wait for at least 5 seconds.
5. If DTC is detected, go to [AT-129, "Diagnosis Procedure"](#).

Ⓜ WITH GST

Follow the procedure "WITH CONSULT-III".

Diagnosis Procedure

INFOID:000000002955477

1. CHECK INPUT SIGNAL

Ⓜ With CONSULT-III

1. Turn ignition switch ON.
2. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
3. Start engine.
4. Read out the value of "LINE PRES SOL" during driving. Refer to [AT-129, "CONSULT-III Reference Value in Data Monitor Mode"](#).

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-161](#).

OK or NG

- OK >> GO TO 3.

P0745 PRESSURE CONTROL SOLENOID A

< SERVICE INFORMATION >

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

NG >> Repair or replace damaged parts.

4. CHECK DTC

Perform [AT-129. "DTC Confirmation Procedure"](#).

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 2.

P1705 TP SENSOR

< SERVICE INFORMATION >

P1705 TP SENSOR

Description

INFOID:000000002955478

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 in Data Monitor Mode

INFOID:000000002955479

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:000000002955480

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:000000002955481

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

DTC Confirmation Procedure

INFOID:000000002955482

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. Turn ignition switch ON.
2. Select "SELF-DIAG RESULTS" mode for "TRANSMISSION" with CONSULT-III.
3. Touch "START".
4. Start engine and let it idle for 1 second.
5. If DTC is detected, go to [AT-131, "Diagnosis Procedure"](#).

WITH GST

Follow the procedure "WITH CONSULT-III".

Diagnosis Procedure

INFOID:000000002955483

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-92, "Diagnosis Procedure without CONSULT-III"](#).

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

YES >> Check CAN communication line. Refer to [AT-95](#).

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". Refer to [AT-131, "CONSULT-III Reference Value in Data Monitor Mode"](#).

P1705 TP SENSOR

< SERVICE INFORMATION >

4. Select "SELF-DIAG RESULTS" mode for "TRANSMISSION" with CONSULT-III. Refer to [AT-85, "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-116, "CONSULT-III Function \(ENGINE\)"](#) (for VQ35DE engine), [EC-741, "CONSULT-III Function"](#) (for VK45DE engine).

OK or NG

- OK >> GO TO 4.
- NG >> Check the DTC detected item. Refer to [EC-116, "CONSULT-III Function \(ENGINE\)"](#) (for VQ35DE engine), [EC-741, "CONSULT-III Function"](#) (for VK45DE engine).
 - If CAN communication line is detected, go to [AT-95](#).

4.CHECK DTC

Perform [AT-131, "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-161](#).

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

P1710 TRANSMISSION FLUID TEMPERATURE SENSOR

< SERVICE INFORMATION >

P1710 TRANSMISSION FLUID TEMPERATURE SENSOR

Description

INFOID:000000002955484

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

CONSULT-III Reference Value in Data Monitor Mode

INFOID:000000002955485

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:000000002955486

- 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:000000002955487

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

DTC Confirmation Procedure

INFOID:000000002955488

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-134, "Diagnosis Procedure"](#).

Ⓟ WITH GST

Follow the procedure “WITH CONSULT-III”.

P1710 TRANSMISSION FLUID TEMPERATURE SENSOR

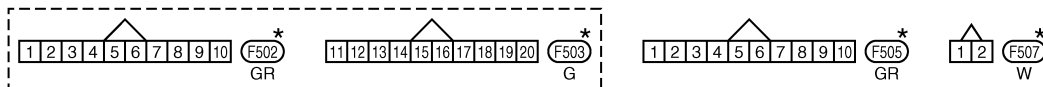
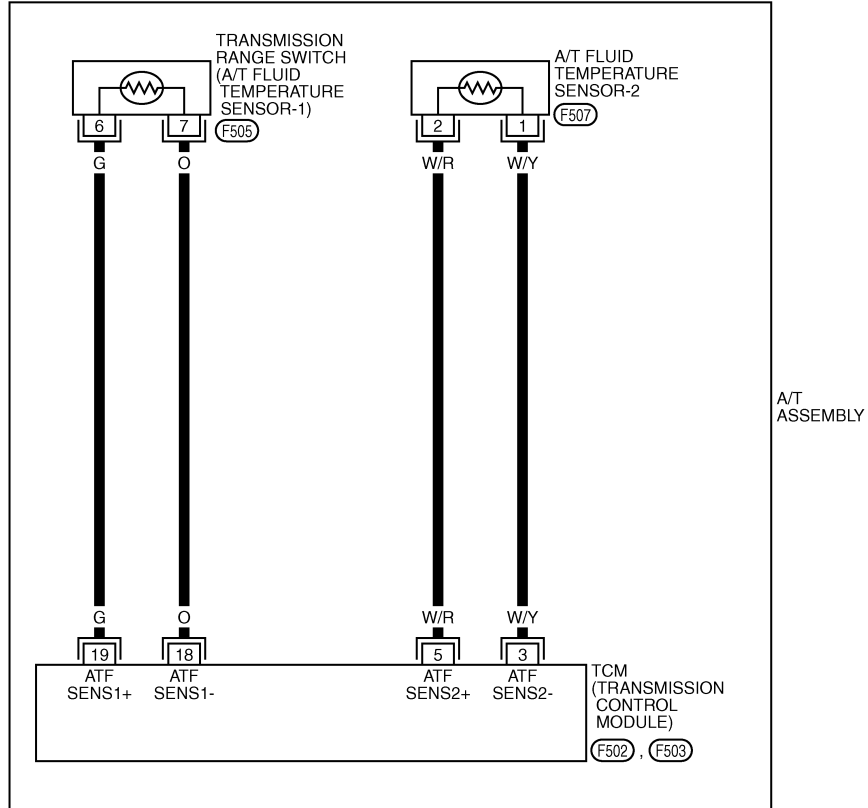
< SERVICE INFORMATION >

Wiring Diagram - AT - FTS

INFOID:00000002955489

AT-FTS-01

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



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

TCWM0688E

Diagnosis Procedure

INFOID:00000002955490

1. CHECK A/T FLUID TEMPERATURE SENSOR 1 SIGNAL

Ⓟ With CONSULT-III

1. Start engine.

P1710 TRANSMISSION FLUID TEMPERATURE SENSOR

< SERVICE INFORMATION >

2. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
3. Read out the value of "ATF TEMP SE 1". Refer to [AT-133, "CONSULT-III Reference Value in Data Monitor Mode"](#).

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 engine.
2. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
3. Read out the value of "ATF TEMP SE 2". Refer to [AT-133, "CONSULT-III Reference Value in Data Monitor Mode"](#).

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-136, "Component Inspection"](#).

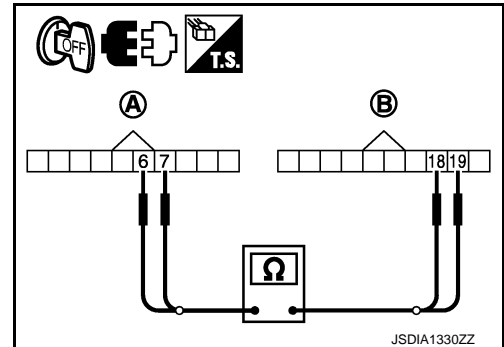
OK or NG

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

4.CHECK SUB-HARNESS

1. Disconnect transmission range switch connector and TCM connector.
2. Check continuity between transmission range switch connector (A) terminals 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-136, "Component Inspection"](#).

OK or NG

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

6.CHECK TERMINAL CORD ASSEMBLY

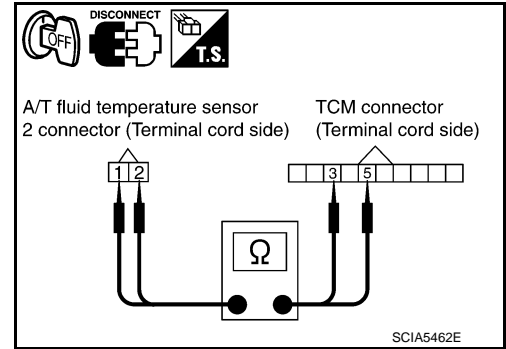
1. Disconnect A/T fluid temperature sensor 2 connector and TCM connector.

P1710 TRANSMISSION FLUID TEMPERATURE SENSOR

< SERVICE INFORMATION >

- 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	



- 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

- Check TCM power supply and ground circuit. Refer to [AT-161](#).
- Reinstall any part removed.

OK or NG

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

NG >> Repair or replace damaged parts.

8. CHECK DTC

Perform [AT-133, "DTC Confirmation Procedure"](#).

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 1.

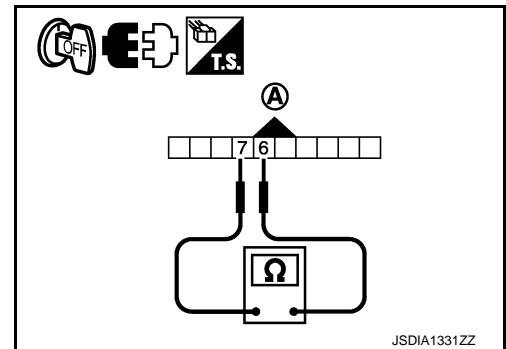
Component Inspection

INFOID:00000002955491

A/T FLUID TEMPERATURE SENSOR 1

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

Item	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



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

A/T FLUID TEMPERATURE SENSOR 2

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

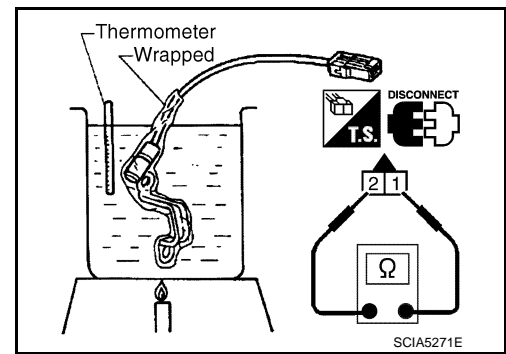
P1710 TRANSMISSION FLUID TEMPERATURE SENSOR

< SERVICE INFORMATION >

2. Check resistance between terminals.

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



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P1721 VEHICLE SPEED SIGNAL

< SERVICE INFORMATION >

P1721 VEHICLE SPEED SIGNAL

Description

INFOID:000000002955492

The vehicle speed sensor signal is transmitted from unified meter and A/C amp. 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 sensor signal.

CONSULT-III Reference Value in Data Monitor Mode

INFOID:000000002955493

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

On Board Diagnosis Logic

INFOID:000000002955494

- 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 sensor MTR signal (input by CAN communication) from unified meter and A/C amp.

Possible Cause

INFOID:000000002955495

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

DTC Confirmation Procedure

INFOID:000000002955496

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-138, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000002955497

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-92, "Diagnosis Procedure without CONSULT-III"](#).

Is malfunction in the CAN communication indicated in the result?

- YES >> Check CAN communication line. Refer to [AT-95](#).
NO >> GO TO 2.

2.CHECK INPUT SIGNAL

With CONSULT-III

1. Start engine.
2. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
3. Drive vehicle and read out the value of "VHCL/S SE-MTR". Refer to [AT-138, "CONSULT-III Reference Value in Data Monitor Mode"](#).

P1721 VEHICLE SPEED SIGNAL

< SERVICE INFORMATION >

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-26](#).

OK or NG

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

4.CHECK DTC

Perform [AT-138, "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-161](#).

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

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P1730 INTERLOCK

< SERVICE INFORMATION >

P1730 INTERLOCK

Description

INFOID:000000002955498

Fail-safe function to detect interlock conditions.

On Board Diagnosis Logic

INFOID:000000002955499

- 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:000000002955500

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

DTC Confirmation Procedure

INFOID:000000002955501

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-140, "Diagnosis Procedure"](#).

Ⓟ WITH GST

Follow the procedure "WITH CONSULT-III".

Judgment of A/T Interlock

INFOID:000000002955502

When A/T 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, an input speed sensor malfunction is displayed, but this is not an input speed sensor malfunction.

When interlock is detected at the 3GR or more, it is locked at the 2GR.

Diagnosis Procedure

INFOID:000000002955503

1. CHECK SELF-DIAGNOSTIC RESULTS

Ⓟ 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-92, "Diagnosis Procedure without CONSULT-III"](#).

OK or NG

P1730 INTERLOCK

< SERVICE INFORMATION >

OK >> GO TO 2.

NG >> Check low coast brake solenoid valve circuit and function. Refer to [AT-152](#), [AT-154](#).

2.CHECK DTC

Perform [AT-140, "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-161](#).

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

NG >> Repair or replace damaged parts.

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P1731 1ST ENGINE BRAKING

< SERVICE INFORMATION >

P1731 1ST ENGINE BRAKING

Description

INFOID:000000002955504

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

CONSULT-III Reference Value in Data Monitor Mode

INFOID:000000002955505

Item name	Condition	Display value
ON OFF SOL	Low coast brake engaged. Refer to AT-20 .	ON
	Low coast brake disengaged. Refer to AT-20 .	OFF
ATF PRES SW 2	Low coast brake engaged. Refer to AT-20 .	ON
	Low coast brake disengaged. Refer to AT-20 .	OFF

On Board Diagnosis Logic

INFOID:000000002955506

- 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:000000002955507

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

DTC Confirmation Procedure

INFOID:000000002955508

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 preformed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

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

④ WITH CONSULT-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-142, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000002955509

1. CHECK INPUT SIGNALS

④ With CONSULT-II

1. Start engine.
2. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-II.
3. Drive vehicle in the "M" position (1GR), and confirm the ON/OFF actuation of "ATF PRES SW 2" and "ON OFF SOL". Refer to [AT-142, "CONSULT-III Reference Value in Data Monitor Mode"](#).

P1731 1ST ENGINE BRAKING

< SERVICE INFORMATION >

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-161](#).

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

NG >> Repair or replace damaged parts.

4.CHECK DTC

Perform [AT-142. "DTC Confirmation Procedure"](#).

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 2.

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P1752 INPUT CLUTCH SOLENOID

< SERVICE INFORMATION >

P1752 INPUT CLUTCH SOLENOID

Description

INFOID:000000002955510

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 in Data Monitor Mode

INFOID:000000002955511

Item name	Condition	Display value (Approx.)
I/C SOLENOID	Input clutch disengaged. Refer to AT-20 .	0.6 - 0.8 A
	Input clutch engaged. Refer to AT-20 .	0 - 0.05 A

On Board Diagnosis Logic

INFOID:000000002955512

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "P1752" with CONSULT-III or 5th 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:000000002955513

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

DTC Confirmation Procedure

INFOID:000000002955514

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-144, "Diagnosis Procedure"](#).

WITH GST

Follow the procedure "WITH CONSULT-III".

Diagnosis Procedure

INFOID:000000002955515

1. CHECK INPUT SIGNAL

With CONSULT-III

1. Turn ignition switch ON.
2. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
3. Start engine.

P1752 INPUT CLUTCH SOLENOID

< SERVICE INFORMATION >

4. Read out the value of "I/C SOLENOID" while driving. Refer to [AT-144. "CONSULT-III Reference Value in Data Monitor Mode"](#).

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-161](#).

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

4.CHECK DTC

Perform [AT-144. "DTC Confirmation Procedure"](#).

OK or NG

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

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P1757 FRONT BRAKE SOLENOID

< SERVICE INFORMATION >

P1757 FRONT BRAKE SOLENOID

Description

INFOID:000000002955522

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 in Data Monitor Mode

INFOID:000000002955523

Item name	Condition	Display value (Approx.)
FR/B SOLENOID	Front brake engaged. Refer to AT-20 .	0.6 - 0.8 A
	Front brake disengaged. Refer to AT-20 .	0 - 0.05 A

On Board Diagnosis Logic

INFOID:000000002955524

- 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:000000002955525

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

DTC Confirmation Procedure

INFOID:000000002955526

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-146, "Diagnosis Procedure"](#).

WITH GST

Follow the procedure "WITH CONSULT-III".

Diagnosis Procedure

INFOID:000000002955527

1. CHECK INPUT SIGNAL

With CONSULT-III

1. Turn ignition switch ON.
2. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
3. Start engine.

P1757 FRONT BRAKE SOLENOID

< SERVICE INFORMATION >

4. Read out the value of "FR/B SOLENOID" while driving. Refer to [AT-146. "CONSULT-III Reference Value in Data Monitor Mode"](#).

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-161](#).

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

NG >> Repair or replace damaged parts.

4.CHECK DTC

Perform [AT-146. "DTC Confirmation Procedure"](#).

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 2.

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P1762 DIRECT CLUTCH SOLENOID

< SERVICE INFORMATION >

P1762 DIRECT CLUTCH SOLENOID

Description

INFOID:000000002955534

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 in Data Monitor Mode

INFOID:000000002955535

Item name	Condition	Display value (Approx.)
D/C SOLENOID	Direct clutch disengaged. Refer to AT-20 .	0.6 - 0.8 A
	Direct clutch engaged. Refer to AT-20 .	0 - 0.05 A

On Board Diagnosis Logic

INFOID:000000002955536

- 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:000000002955537

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

DTC Confirmation Procedure

INFOID:000000002955538

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-148, "Diagnosis Procedure"](#).

WITH GST

Follow the procedure "WITH CONSULT-III".

Diagnosis Procedure

INFOID:000000002955539

1. CHECK INPUT SIGNAL

With CONSULT-III

1. Turn ignition switch ON.
2. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
3. Start engine.

P1762 DIRECT CLUTCH SOLENOID

< SERVICE INFORMATION >

4. Read out the value of "D/C SOLENOID" while driving. Refer to [AT-148. "CONSULT-III Reference Value in Data Monitor Mode"](#).

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-161](#).

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

4.CHECK DTC

Perform [AT-148. "DTC Confirmation Procedure"](#).

OK or NG

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

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P1767 HIGH AND LOW REVERSE CLUTCH SOLENOID

< SERVICE INFORMATION >

P1767 HIGH AND LOW REVERSE CLUTCH SOLENOID

Description

INFOID:000000002955546

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 in Data Monitor Mode

INFOID:000000002955547

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

On Board Diagnosis Logic

INFOID:000000002955548

- 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:000000002955549

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

DTC Confirmation Procedure

INFOID:000000002955550

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-150, "Diagnosis Procedure"](#).

WITH GST

Follow the procedure "WITH CONSULT-III".

Diagnosis Procedure

INFOID:000000002955551

1. CHECK INPUT SIGNAL

With CONSULT-III

1. Turn ignition switch ON.
2. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-II.
3. Start engine.

P1767 HIGH AND LOW REVERSE CLUTCH SOLENOID

< SERVICE INFORMATION >

4. Read out the value of "HLR/C SOL" while driving. Refer to [AT-150. "CONSULT-III Reference Value in Data Monitor Mode"](#).

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-161](#).

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

NG >> Repair or replace damaged parts.

4.CHECK DTC

Perform [AT-150. "DTC Confirmation Procedure"](#).

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 2.

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P1772 LOW COAST BRAKE SOLENOID

< SERVICE INFORMATION >

P1772 LOW COAST BRAKE SOLENOID

Description

INFOID:000000002955558

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 in Data Monitor Mode

INFOID:000000002955559

Item name	Condition	Display value
ON OFF SOL	Low coast brake engaged. Refer to AT-20 .	ON
	Low coast brake disengaged. Refer to AT-20 .	OFF

On Board Diagnosis Logic

INFOID:000000002955560

- 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:000000002955561

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

DTC Confirmation Procedure

INFOID:000000002955562

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. Touch "START".
4. 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)

5. If DTC is detected, go to [AT-152, "Diagnosis Procedure"](#).

Ⓟ WITH GST

Follow the procedure "WITH CONSULT-III".

Diagnosis Procedure

INFOID:000000002955563

1. CHECK INPUT SIGNAL

Ⓟ With CONSULT-III

1. Turn ignition switch ON.
2. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
3. Start engine.
4. Read out the value of "ON OFF SOL" while driving. Refer to [AT-152, "CONSULT-III Reference Value in Data Monitor Mode"](#).

OK or NG

OK >> GO TO 4.

P1772 LOW COAST BRAKE SOLENOID

< SERVICE INFORMATION >

NG >> GO TO 2.

2.CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit. Refer to [AT-161](#).

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

NG >> Repair or replace damaged parts.

4.CHECK DTC

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

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 2.

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P1774 LOW COAST BRAKE SOLENOID

< SERVICE INFORMATION >

P1774 LOW COAST BRAKE SOLENOID

Description

INFOID:000000002955564

- 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 in Data Monitor Mode

INFOID:000000002955565

Item name	Condition	Display value
ON OFF SOL	Low coast brake engaged. Refer to AT-20 .	ON
	Low coast brake disengaged. Refer to AT-20 .	OFF
ATF PRES SW 2	Low coast brake engaged. Refer to AT-20 .	ON
	Low coast brake disengaged. Refer to AT-20 .	OFF

On Board Diagnosis Logic

INFOID:000000002955566

- 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:000000002955567

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

DTC Confirmation Procedure

INFOID:000000002955568

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, go to [AT-155. "Diagnosis Procedure"](#).
 - If DTC (P1772) is detected, go to [AT-152. "Diagnosis Procedure"](#).

WITH GST

Follow the procedure "WITH CONSULT-III".

P1774 LOW COAST BRAKE SOLENOID

< SERVICE INFORMATION >

Diagnosis Procedure

INFOID:00000002955569

1. CHECK INPUT SIGNALS

Ⓜ With CONSULT-III

1. Start engine.
2. Select in "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". Refer to [AT-154, "CONSULT-III Reference Value in Data Monitor Mode"](#).

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-161](#).

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

4. CHECK DTC

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

OK or NG

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

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P1815 M-MODE SWITCH

< SERVICE INFORMATION >

P1815 M-MODE SWITCH

Description

INFOID:000000002955570

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 indicator. For inspection, refer to [AT-167](#).

CONSULT-III Reference Value in Data Monitor Mode

INFOID:000000002955571

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:000000002955572

- 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:000000002955573

- 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:000000002955574

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

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

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

④ WITH CONSULT-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-159, "Diagnosis Procedure"](#).

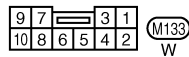
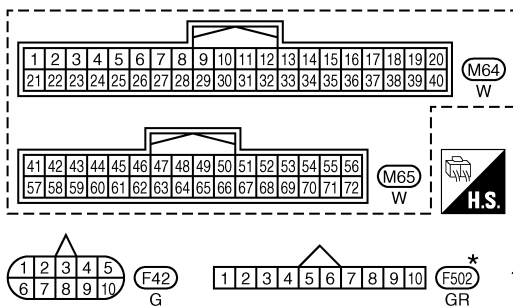
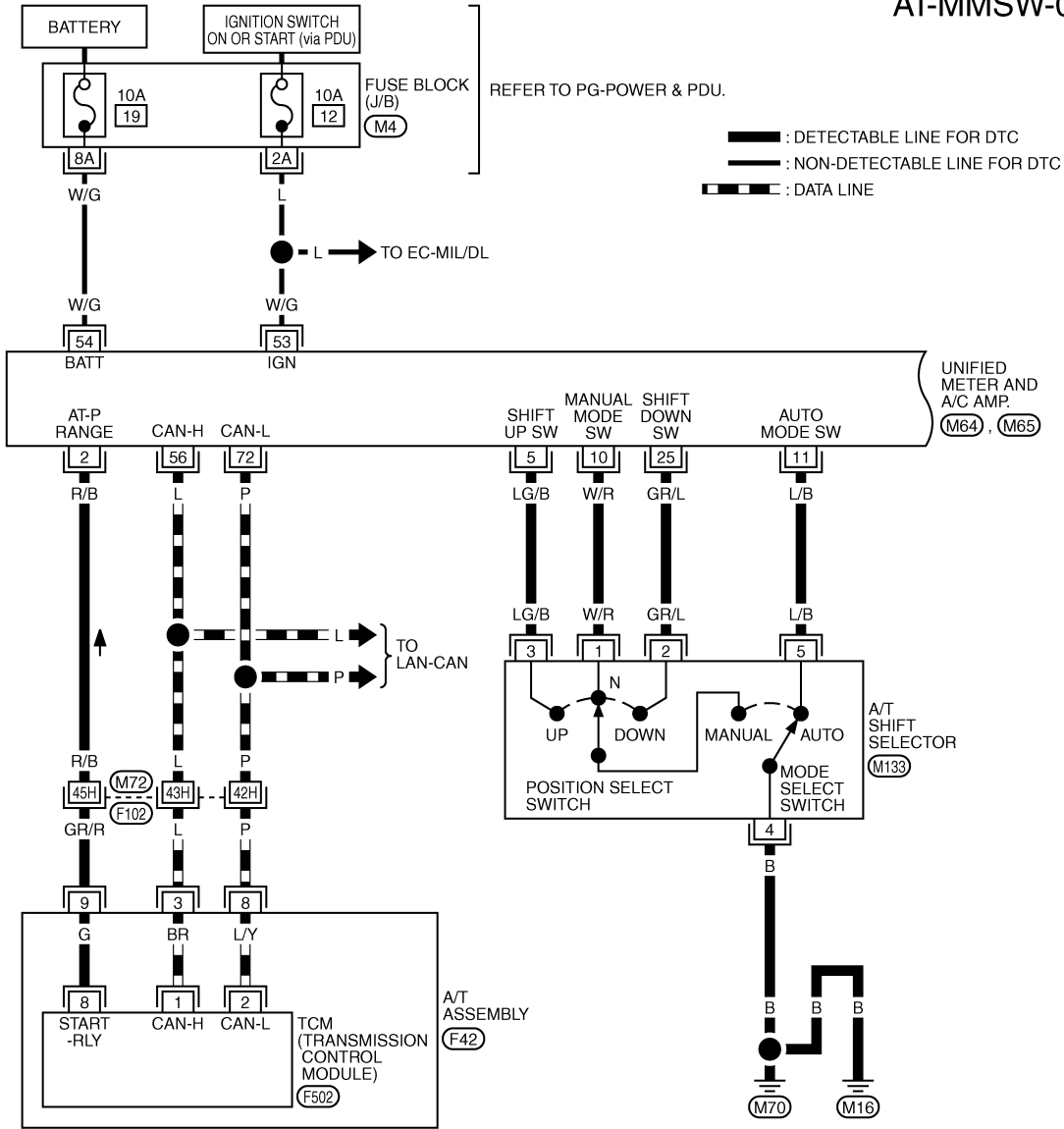
P1815 M-MODE SWITCH

< SERVICE INFORMATION >

Wiring Diagram - AT - MMSW

INFOID:00000002955575

AT-MMSW-01



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

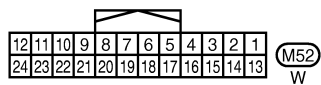
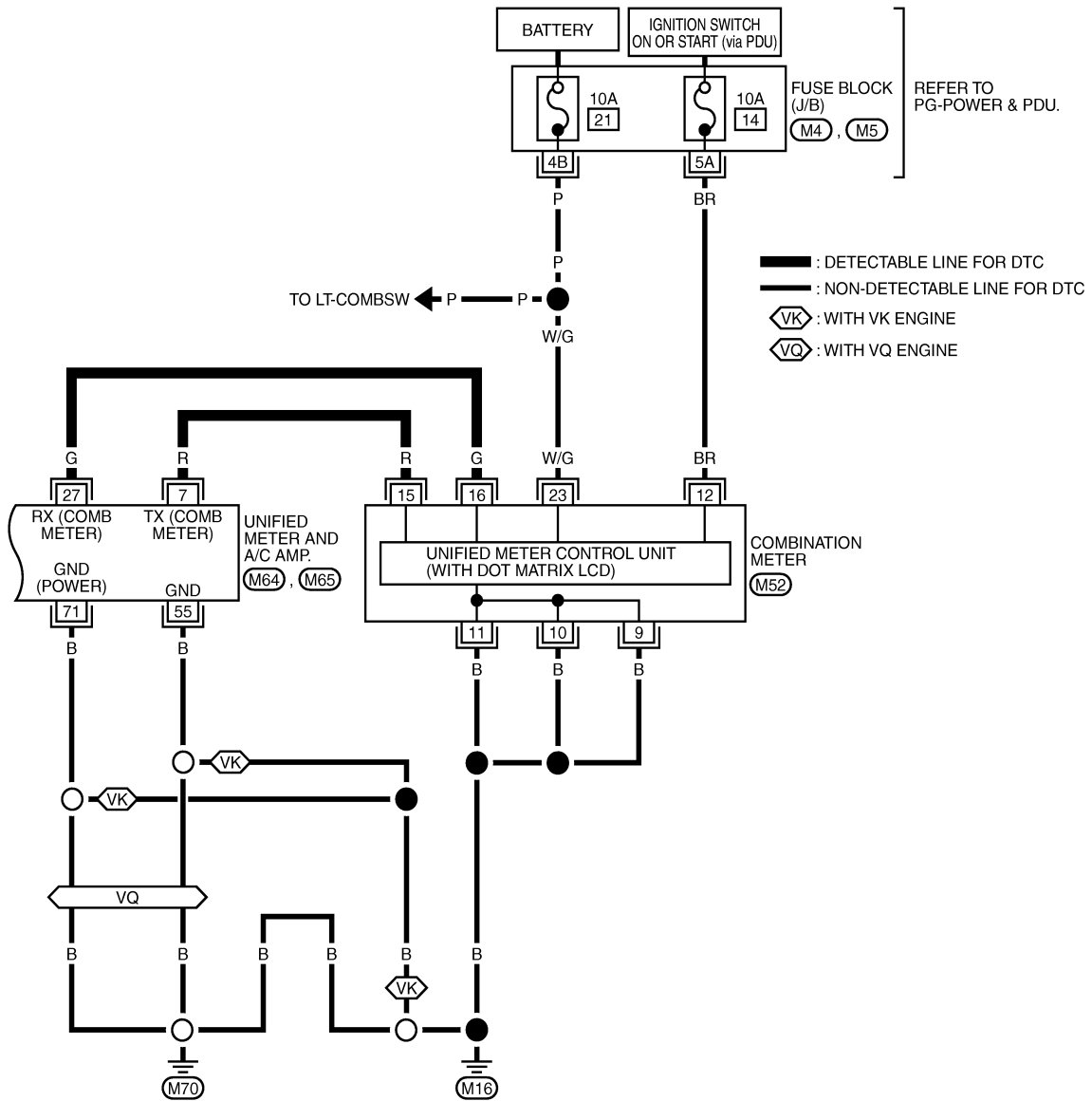
REFER TO THE FOLLOWING.
 (F102) - SUPER MULTIPLE JUNCTION (SMJ)
 (M4) - FUSE BLOCK - JUNCTION BOX (J/B)

TCWM0689E

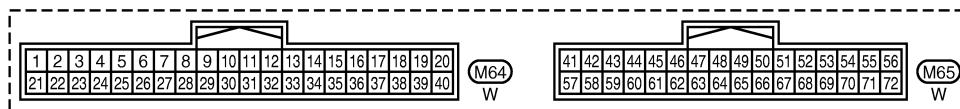
P1815 M-MODE SWITCH

< SERVICE INFORMATION >

AT-MMSW-02




REFER TO THE FOLLOWING.
 (M4), (M5) - FUSE BLOCK - JUNCTION BOX (J/B)



TCWT0576E

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	—	—
9	GR/R	Starter relay	 Selector lever in "N", "P" positions.	Battery voltage
			Selector lever in "R", "D" positions.	0 V

P1815 M-MODE SWITCH

< SERVICE INFORMATION >

Diagnosis Procedure

INFOID:00000002955576

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-92, "Diagnosis Procedure without CONSULT-III"](#).

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

YES >> Check CAN communication line. Refer to [AT-95](#).

NO >> GO TO 2.

2. CHECK MANUAL MODE 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 "MANU MODE SW", "NON M-MODE SW", "UP SW LEVER", "DOWN SW LEVER". Refer to [AT-156, "CONSULT-III Reference Value in Data Monitor Mode"](#).

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-160, "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-6](#).

OK or NG

OK >> GO TO 4.

NG >> Repair or replace damaged parts.

4. CHECK DTC

Perform [AT-156, "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-161](#).

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

NG >> Repair or replace damaged parts.

P1815 M-MODE SWITCH

< SERVICE INFORMATION >

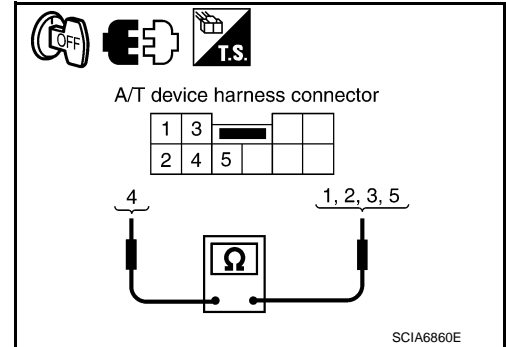
Component Inspection

INFOID:00000002955577

MANUAL MODE SWITCH

Check continuity between terminals.

Item	Position	Connector	Terminal	Continuity
Manual mode select switch	Auto	M133	4 - 5	Yes
	Manual		1 - 4	
Manual mode position select switch	UP		3 - 4	
	DOWN		2 - 4	



SCIA6860E

MAIN POWER SUPPLY AND GROUND CIRCUIT

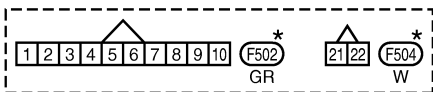
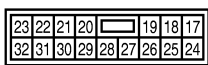
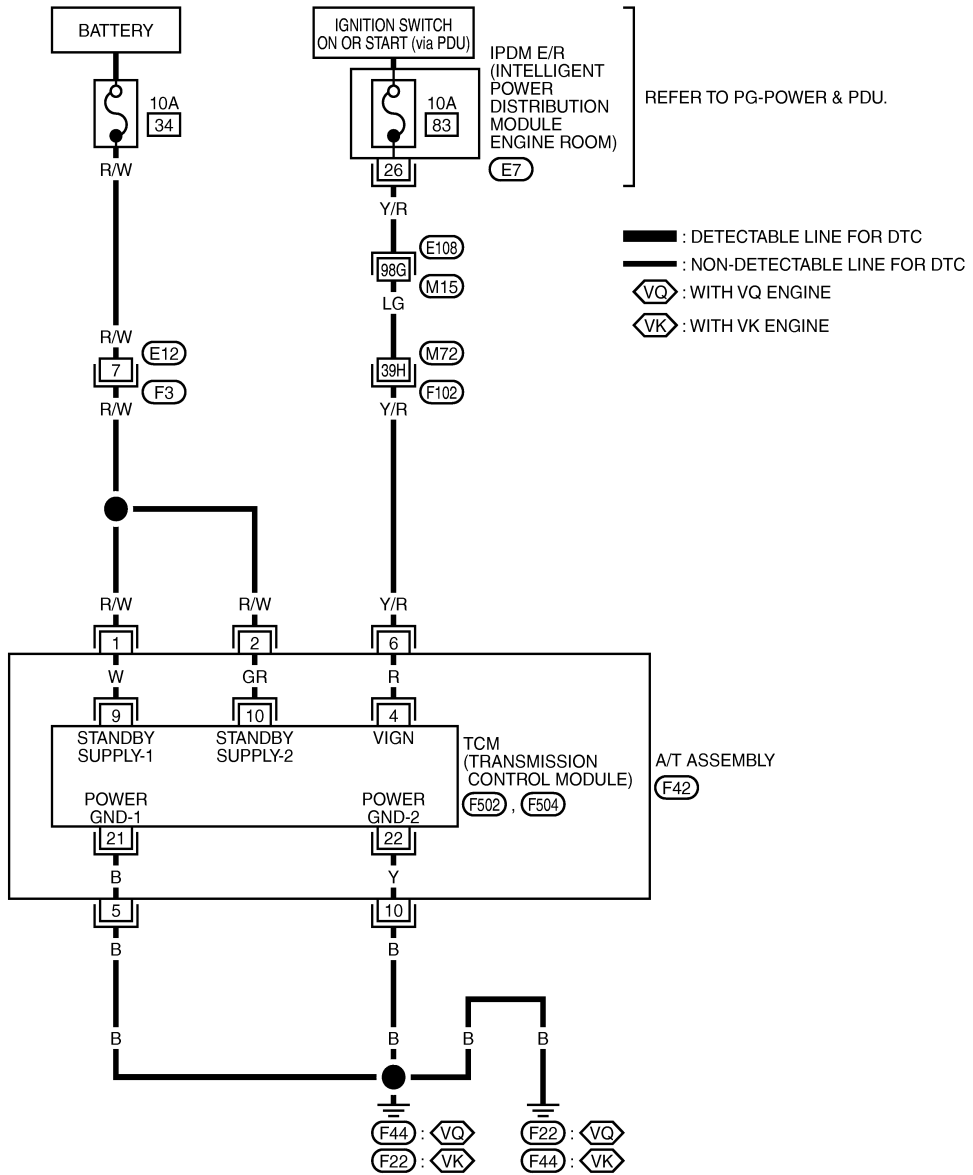
< SERVICE INFORMATION >

MAIN POWER SUPPLY AND GROUND CIRCUIT

Wiring Diagram - AT - MAIN

INFOID:000000002955602

AT-MAIN-01



REFER TO THE FOLLOWING.
E108, F102 : SUPER MULTIPLE JUNCTION (SMJ)



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

TCWT0571E

MAIN POWER SUPPLY AND GROUND CIRCUIT

< SERVICE INFORMATION >

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

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

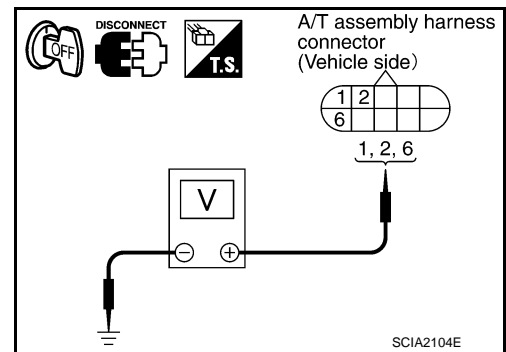
Diagnosis Procedure

INFOID:000000002955603

1. CHECK TCM POWER SOURCE STEP 1

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

Item	Connector	Terminal	Voltage
TCM	F42	1 - Ground	Battery voltage
		2 - Ground	
		6 - Ground	0 V



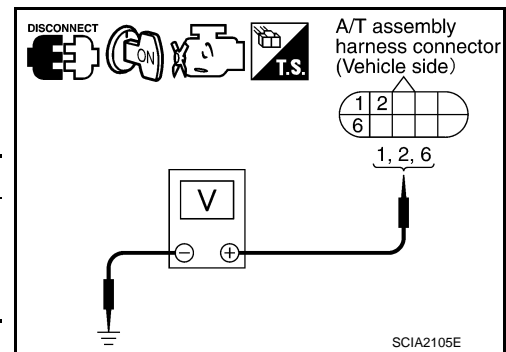
OK or NG

- 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 terminals and ground.

Item	Connector	Terminal	Voltage
TCM	F42	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 push-button ignition switch and A/T assembly harness connector terminal 6
- 10A fuse (No. 34, located in the fuse and fusible link block) and 10A fuse (No. 83, located in the IPDM E/R)
- Push-button ignition switch (Refer to [PG-4](#))

OK or NG

- OK >> GO TO 4.

MAIN POWER SUPPLY AND GROUND CIRCUIT

< SERVICE INFORMATION >

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.

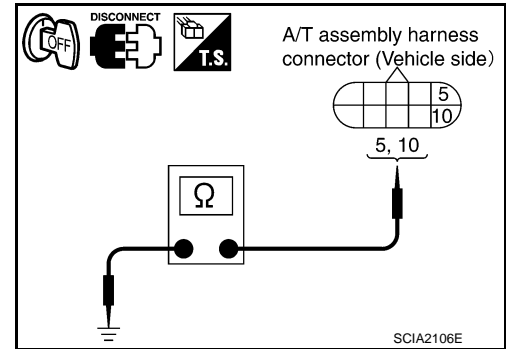
Continuity should exist.

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

OK or NG

OK >> GO TO 5.

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



5. DETECT MALFUNCTIONING ITEM

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

OK or NG

OK >> GO TO 6.

NG >> Repair or replace damaged parts.

6. PERFORM SELF-DIAGNOSIS

Perform self-diagnosis. Refer to [AT-85. "CONSULT-III Function \(TRANSMISSION\)"](#).

OK or NG

OK >> **INSPECTION END**

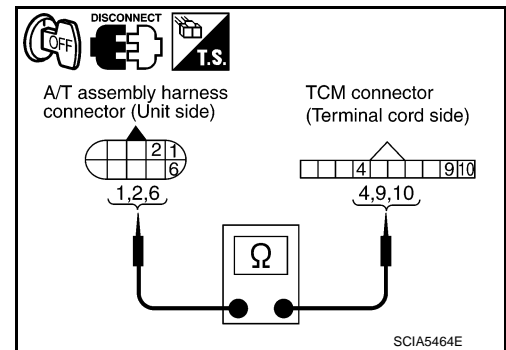
NG-1 >> Self-diagnosis does not activate: GO TO 7.

NG-2 >> DTC is displayed: Check the malfunctioning system. Refer to [AT-85. "CONSULT-III Function \(TRANSMISSION\)"](#).

7. CHECK TERMINAL CORD ASSEMBLY

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

Item	Connector	Terminal	Continuity
A/T assembly harness connector	F42	1	Yes
TCM connector	F502	9	
A/T assembly harness connector	F42	2	Yes
TCM connector	F502	10	
A/T assembly harness connector	F42	6	Yes
TCM connector	F502	4	

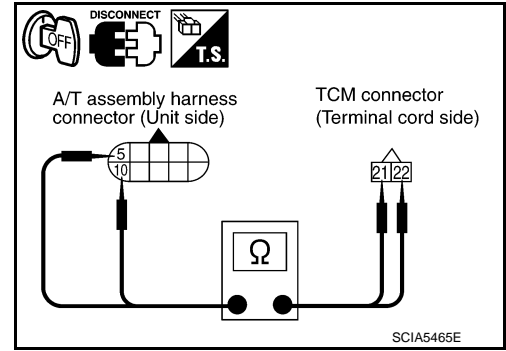


MAIN POWER SUPPLY AND GROUND CIRCUIT

< SERVICE INFORMATION >

4. Check continuity between A/T assembly harness connector terminals and TCM connector terminals.

Item	Connector	Terminal	Continuity
A/T assembly harness connector	F42	5	Yes
TCM connector	F504	21	
A/T assembly harness connector	F42	10	Yes
TCM connector	F504	22	



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

OK or NG

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

CLOSED THROTTLE POSITION AND WIDE OPEN THROTTLE POSITION CIRCUIT

< SERVICE INFORMATION >

CLOSED THROTTLE POSITION AND WIDE OPEN THROTTLE POSITION CIRCUIT

CONSULT-III Reference Value in Data Monitor Mode

INFOID:000000002955604

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:000000002955605

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-92, "Diagnosis Procedure without CONSULT-III"](#).

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

YES >> Check CAN communication line. Refer to [AT-95](#).

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". Refer to [AT-165, "CONSULT-III Reference Value in Data Monitor Mode"](#).

OK or NG

OK >> **INSPECTION END**

NG >> Check the following. If NG, repair or replace damaged parts.

- Perform the self-diagnosis for "ENGINE" with CONSULT-III. Refer to [EC-116, "CONSULT-III Function \(ENGINE\)"](#) (for VQ35DE engine), [EC-741, "CONSULT-III Function"](#) (for VK45DE 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

< SERVICE INFORMATION >

BRAKE SIGNAL CIRCUIT

CONSULT-III Reference Value in Data Monitor Mode

INFOID:000000002955606

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

Diagnosis Procedure

INFOID:000000002955607

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-92, "Diagnosis Procedure without CONSULT-III"](#).

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

YES >> Check CAN communication line. Refer to [AT-95](#).

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". Refer to [AT-166, "CONSULT-III Reference Value in Data Monitor Mode"](#).

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 3.

3. CHECK STOP LAMP SWITCH

Check continuity between stop lamp switch harness connector terminals. Refer to [AT-168, "Wiring Diagram - AT - NONDTC"](#).

Condition	Continuity
When brake pedal is depressed	Yes
When brake pedal is released	No

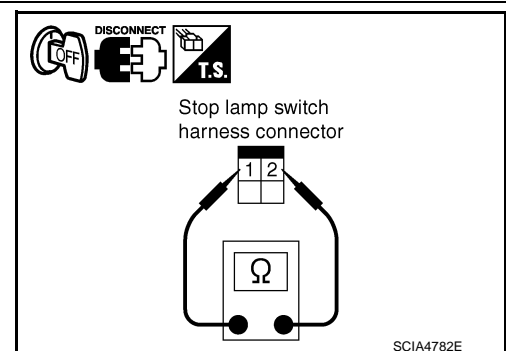
Check stop lamp switch after adjusting brake pedal — refer to [BR-6](#).

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.
- 10A fuse (No.20, located in fuse block).

NG >> Repair or replace the stop lamp switch.



A/T INDICATOR CIRCUIT

< SERVICE INFORMATION >

A/T INDICATOR CIRCUIT

Description

INFOID:000000002955608

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 indicator.

CONSULT-III Reference Value in Data Monitor Mode

INFOID:000000002955609

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

Diagnosis Procedure

INFOID:000000002955610

1. CHECK INPUT SIGNALS

With CONSULT-III

1. Start engine.
2. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III and read out the value of "GEAR". Refer to [AT-167, "CONSULT-III Reference Value in Data Monitor Mode"](#).
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	Possible location of malfunction
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 indicator is not indicated.	Manual mode switch Refer to AT-156 . A/T main system (Fail-safe function actuated) • Refer to AT-85, "CONSULT-III Function (TRANSMISSION)" .
The actual gear position changes, but the A/T indicator is not indicated.	Perform the self-diagnosis function. • Refer to AT-85, "CONSULT-III Function (TRANSMISSION)" .
The actual gear position and the indication on the A/T indicator do not coincide.	Perform the self-diagnosis function. • Refer to AT-85, "CONSULT-III Function (TRANSMISSION)" .
Only a specific position or positions is/are not indicated on the A/T indicator.	Check the unified meter and A/C amp. Refer to DI-6 .

TROUBLE DIAGNOSIS FOR SYMPTOMS

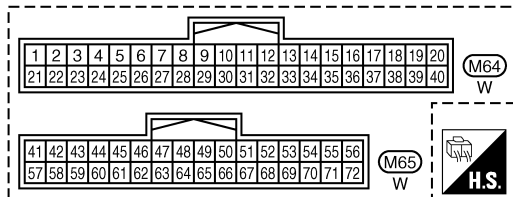
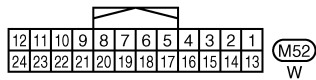
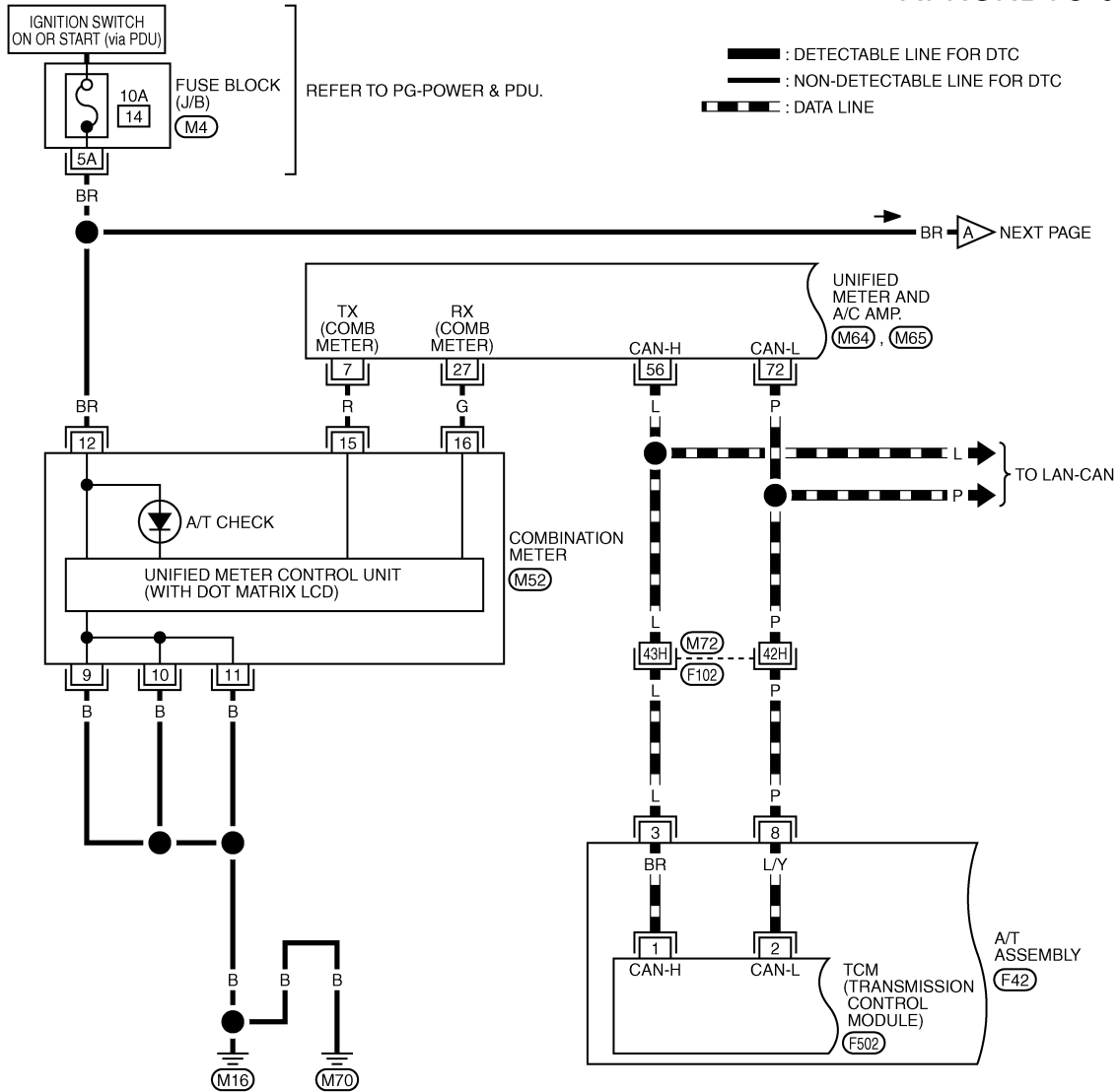
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TROUBLE DIAGNOSIS FOR SYMPTOMS

Wiring Diagram - AT - NONDTC

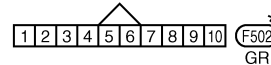
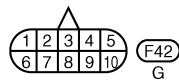
INFOID:000000002955611

AT-NONDTC-01



REFER TO THE FOLLOWING.
 (F102) -SUPER MULTIPLE JUNCTION (SMJ)
 (M4) -FUSE BLOCK-JUNCTION BOX (J/B)

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

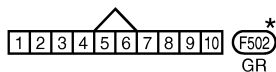
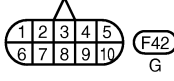
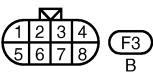
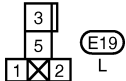
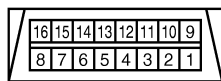
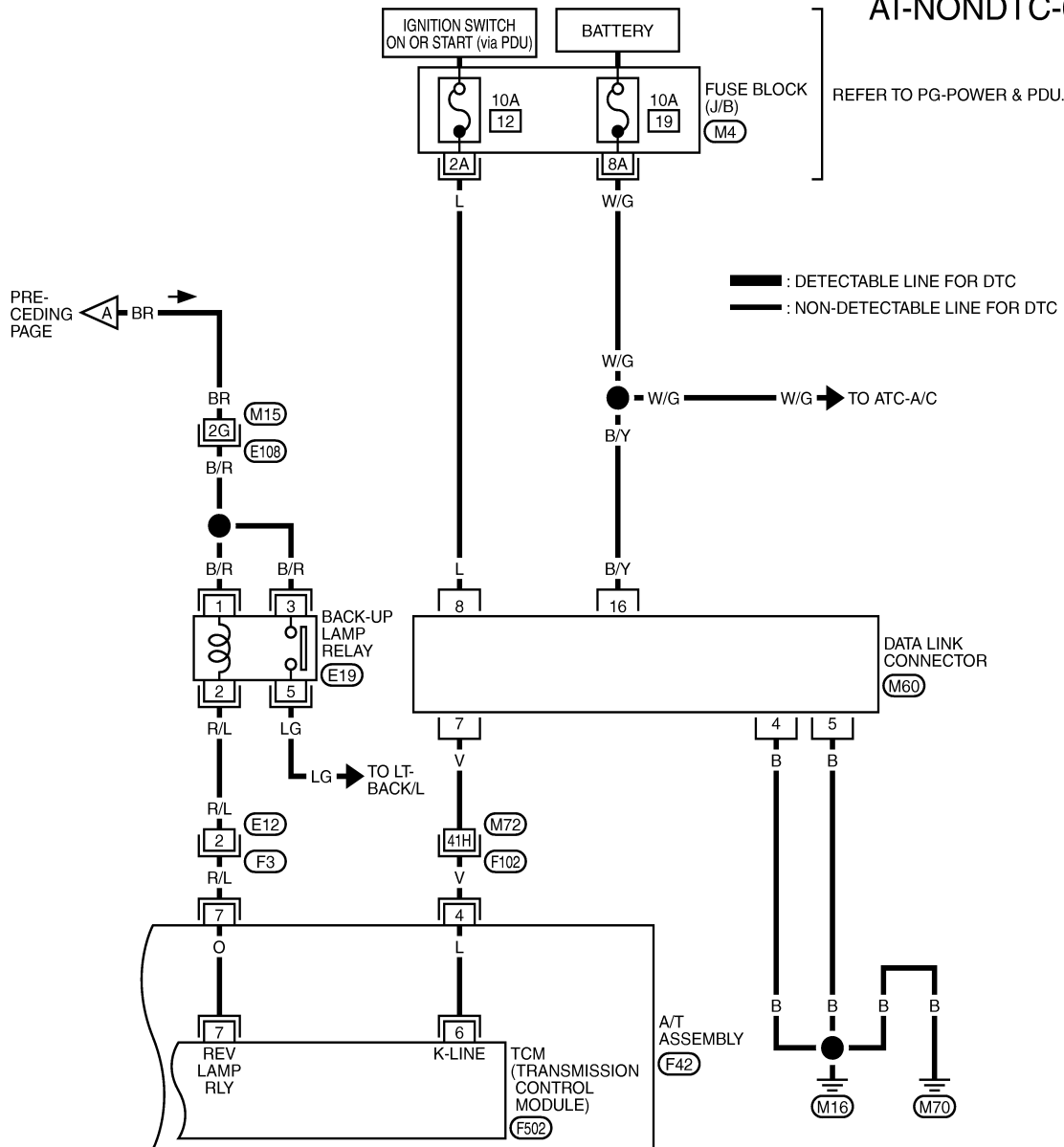


TCWT0421E

TROUBLE DIAGNOSIS FOR SYMPTOMS

< SERVICE INFORMATION >

AT-NONDTC-02



REFER TO THE FOLLOWING.
 (E108, F102) - SUPER MULTIPLE JUNCTION (SMJ)
 (M4) - FUSE BLOCK - JUNCTION BOX (J/B)

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

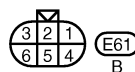
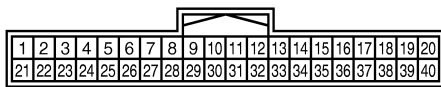
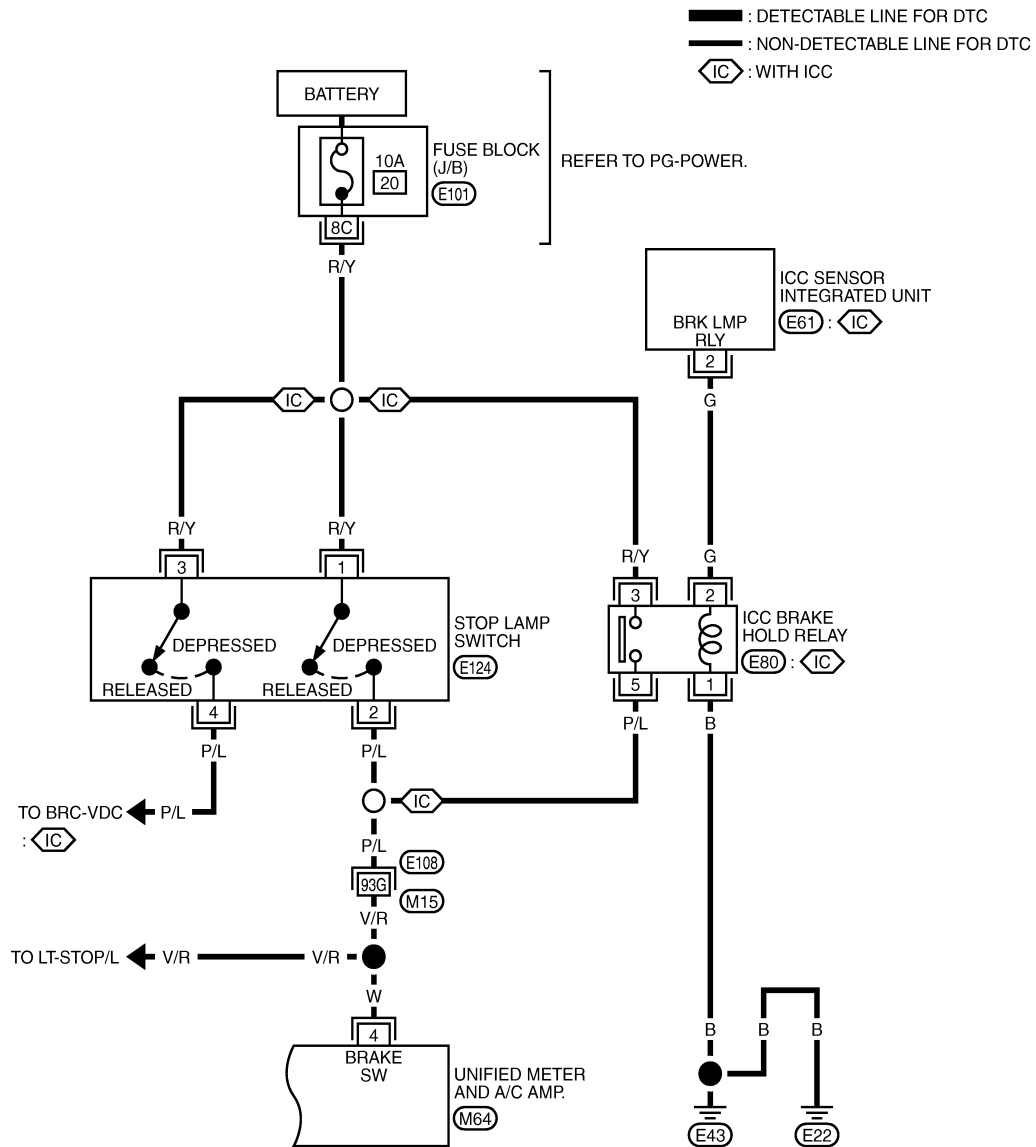
TCWT0572E

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TROUBLE DIAGNOSIS FOR SYMPTOMS

< SERVICE INFORMATION >

AT-NONDTC-03



REFER TO THE FOLLOWING.
 (E108) - SUPER MULTIPLE JUNCTION (SMJ)
 (E101) - FUSE BLOCK - JUNCTION BOX (J/B)


TCWT0573E

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	V	K-line (CONSULT-III signal)	The terminal is connected to the data link connector for CONSULT-III.	—

TROUBLE DIAGNOSIS FOR SYMPTOMS

< SERVICE INFORMATION >

Terminal	Wire color	Item	Condition	Data (Approx.)	
7	R/L	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:000000002955612

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-92. "Diagnosis Procedure without CONSULT-III"](#).

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

YES >> Check CAN communication line. Refer to [AT-95](#).

NO >> GO TO 2.

2. CHECK A/T CHECK INDICATOR LAMP CIRCUIT

Check combination meters. Refer to [DI-6](#).

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-161](#).

OK or NG

OK >> **INSPECTION END**

NG >> Repair or replace damaged parts.

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

INFOID:000000002955613

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-92. "Diagnosis Procedure without CONSULT-III"](#).

Do the self-diagnostic results indicate transmission range switch?

YES >> Check malfunctioning system. Refer to [AT-103](#).

NO >> GO TO 2.

2. CHECK A/T POSITION

Check A/T position. Refer to [AT-202. "Checking of A/T Position"](#).

OK or NG

OK >> GO TO 3.

NG >> Adjust A/T position. Refer to [AT-202. "Adjustment of A/T Position"](#).

TROUBLE DIAGNOSIS FOR SYMPTOMS

< SERVICE INFORMATION >

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:000000002955614

SYMPTOM:

Even though the selector lever is set in "P" position, the parking mechanism is not actuated, allowing the vehicle to be moved when it is pushed.

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-92, "Diagnosis Procedure without CONSULT-III"](#).

Do the self-diagnostic results indicate transmission range switch?

- YES >> Check malfunctioning system. Refer to [AT-103](#).
NO >> GO TO 2.

2.CHECK A/T POSITION

Check A/T position. Refer to [AT-202, "Checking of A/T Position"](#).

OK or NG

- OK >> GO TO 3.
NG >> Adjust A/T position. Refer to [AT-202, "Adjustment of A/T Position"](#).

3.CHECK PARKING COMPONENTS

Check parking components. Refer to [AT-222, "Parking Component \(2WD Models Only\)"](#) (VQ35DE models for 2WD), [AT-275](#) (VQ35DE models for AWD), [AT-222, "Parking Component \(2WD Models Only\)"](#) (VK45DE models).

OK or NG

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

4.CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Check A/T fluid condition. Refer to [AT-44, "How to Perform Trouble Diagnosis for Quick and Accurate Repair"](#).

OK or NG

- OK >> **INSPECTION END**
NG >> Check malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-61, "Symptom Chart"](#) (Symptom No.65).

In "N" Position, Vehicle Moves

INFOID:000000002955615

SYMPTOM:

Vehicle moves forward or backward when selecting "N" 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-92, "Diagnosis Procedure without CONSULT-III"](#).

TROUBLE DIAGNOSIS FOR SYMPTOMS

< SERVICE INFORMATION >

Do the self-diagnostic results indicate transmission range switch?

YES >> Check malfunctioning system. Refer to [AT-103](#).

NO >> GO TO 2.

2.CHECK A/T POSITION

Check A/T position. Refer to [AT-202, "Checking of A/T Position"](#).

OK or NG

OK >> GO TO 3.

NG >> Adjust A/T position. Refer to [AT-202, "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-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).

2. Check A/T fluid condition. Refer to [AT-44, "How to Perform Trouble Diagnosis for Quick and Accurate Repair"](#).

OK or NG

OK >> GO TO 5.

NG >> Check malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-61, "Symptom Chart"](#) (Symptom No.67).

5.CHECK SYMPTOM

Check again. Refer to "CHECK AT IDLE".

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 6.

6.CHECK TCM

1. Check TCM input/output signals. Refer to [AT-84, "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:000000002955616

SYMPTOM:

A noticeable shock occurs when the selector lever is shifted from "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-92, "Diagnosis Procedure without CONSULT-III"](#).

Is any malfunction detected by self-diagnostic results?

YES >> Check malfunctioning system. Refer to [AT-85, "CONSULT-III Function \(TRANSMISSION\)"](#), [AT-92, "Diagnosis Procedure without CONSULT-III"](#).

NO >> GO TO 2.

2.ENGINE IDLE SPEED

TROUBLE DIAGNOSIS FOR SYMPTOMS

< SERVICE INFORMATION >

Check engine idle speed. Refer to [EC-80, "Idle Speed and Ignition Timing Check"](#) (for VQ35DE engine), [EC-705, "Idle Speed and Ignition Timing Check"](#) (for VK45DE engine).

OK or NG

OK >> GO TO 3.

NG >> Adjust engine idle speed. Refer to [EC-80, "Idle Speed and Ignition Timing Check"](#) (for VQ35DE engine), [EC-705, "Idle Speed and Ignition Timing Check"](#) (for VK45DE engine).

3. CHECK A/T POSITION

Check A/T position. Refer to [AT-202, "Checking of A/T Position"](#).

OK or NG

OK >> GO TO 4.

NG >> Adjust A/T position. Refer to [AT-202, "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-50, "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

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

2. Disassemble A/T. Refer to [AT-275](#).

3. Check the following.

- Oil pump assembly. Refer to [AT-296, "Oil Pump"](#).

OK or NG

OK >> GO TO 8.

NG >> Repair or replace damaged parts.

7. DETECT MALFUNCTIONING ITEM

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

2. Disassemble A/T. Refer to [AT-275](#).

3. Check the following.

- Oil pump assembly. Refer to [AT-296](#).

- Power train system. Refer to [AT-275](#).

- Transmission case. Refer to [AT-275](#).

OK or NG

OK >> GO TO 8.

NG >> Repair or replace damaged parts.

8. CHECK A/T FLUID CONDITION

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

2. Check A/T fluid condition. Refer to [AT-44, "How to Perform Trouble Diagnosis for Quick and Accurate Repair"](#).

OK or NG

OK >> GO TO 10.

NG >> GO TO 9.

9. DETECT MALFUNCTIONING ITEM

TROUBLE DIAGNOSIS FOR SYMPTOMS

< SERVICE INFORMATION >

Check malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-61. "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 "CHECK AT IDLE".

OK or NG

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

11.CHECK TCM

1. Check TCM input/output signals. Refer to [AT-84. "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:000000002955617

SYMPTOM:

The vehicle does not creep in "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-92. "Diagnosis Procedure without CONSULT-III"](#).

Is any malfunction detected by self-diagnosis results?

- YES >> Check malfunctioning system. Refer to [AT-85. "CONSULT-III Function \(TRANSMISSION\)"](#), [AT-92. "Diagnosis Procedure without CONSULT-III"](#).

- NO >> GO TO 2.

2.CHECK A/T POSITION

Check A/T position. Refer to [AT-202. "Checking of A/T Position"](#).

OK or NG

- OK >> GO TO 3.
- NG >> Adjust A/T position. Refer to [AT-202. "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-50. "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

TROUBLE DIAGNOSIS FOR SYMPTOMS

< SERVICE INFORMATION >

1. Disassemble A/T. Refer to [AT-275](#).
2. Check the following.
 - Reverse brake. Refer to [AT-275](#).

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-50, "Inspections Before Trouble Diagnosis"](#).

OK or NG

- OK >> GO TO 9.
NG - 1 >> Line pressure high: GO TO 7.
NG - 2 >> Line pressure low: GO TO 8.

7.DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Disassemble A/T. Refer to [AT-275](#).
3. Check the following.
 - Oil pump assembly. Refer to [AT-296, "Oil Pump"](#).

OK or NG

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

8.DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Disassemble A/T. Refer to [AT-275](#).
3. Check the following.
 - Oil pump assembly. Refer to [AT-296, "Oil Pump"](#).
 - Power train system. Refer to [AT-275](#).
 - Transmission case. Refer to [AT-275](#).

OK or NG

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

9.CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Check A/T fluid condition. Refer to [AT-44, "How to Perform Trouble Diagnosis for Quick and Accurate Repair"](#).

OK or NG

- OK >> GO TO 10.
NG >> GO TO 13.

10.DETECT MALFUNCTIONING ITEM

Check malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-61, "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 "CHECK AT IDLE".

OK or NG

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

12.CHECK TCM

TROUBLE DIAGNOSIS FOR SYMPTOMS

< SERVICE INFORMATION >

1. Check TCM input/output signals. Refer to [AT-84. "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 malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-61. "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:000000002955618

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-92. "Diagnosis Procedure without CONSULT-III"](#).

Is any malfunction detected by self-diagnostic results?

- YES >> Check malfunctioning system. Refer to [AT-85. "CONSULT-III Function \(TRANSMISSION\)"](#), [AT-92. "Diagnosis Procedure without CONSULT-III"](#).

- NO >> GO TO 2.

2. CHECK A/T POSITION

Check A/T position. Refer to [AT-202. "Checking of A/T Position"](#).

OK or NG

- OK >> GO TO 3.
NG >> Adjust A/T position. Refer to [AT-202. "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-50. "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-50. "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.

TROUBLE DIAGNOSIS FOR SYMPTOMS

< SERVICE INFORMATION >

6. DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Disassemble A/T. Refer to [AT-275](#).
3. Check the following.
 - Oil pump assembly. Refer to [AT-296, "Oil Pump"](#).

OK or NG

- OK >> GO TO 8.
NG >> Repair or replace damaged parts.

7. DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Disassemble A/T. Refer to [AT-275](#).
3. Check the following.
 - Oil pump assembly. Refer to [AT-296, "Oil Pump"](#).
 - Power train system. Refer to [AT-275](#).
 - Transmission case. Refer to [AT-275](#).

OK or NG

- OK >> GO TO 8.
NG >> Repair or replace damaged parts.

8. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Check A/T fluid condition. Refer to [AT-44, "How to Perform Trouble Diagnosis for Quick and Accurate Repair"](#).

OK or NG

- OK >> GO TO 9.
NG >> GO TO 12.

9. DETECT MALFUNCTIONING ITEM

Check malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-61, "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 "CHECK AT IDLE".

OK or NG

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

11. CHECK TCM

1. Check TCM input/output signals. Refer to [AT-84, "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 malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-61, "Symptom Chart"](#) (Symptom No.43).

OK or NG

- OK >> GO TO 10.
NG >> Repair or replace damaged parts.

TROUBLE DIAGNOSIS FOR SYMPTOMS

< SERVICE INFORMATION >

Vehicle Cannot Be Started from D1

INFOID:00000002955619

SYMPTOM:

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

DIAGNOSTIC PROCEDURE

1. CONFIRM THE SYMPTOM

Check if vehicle creeps in "R" position.

OK or NG

OK >> GO TO 2.

NG >> Refer to [AT-175, "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-92, "Diagnosis Procedure without CONSULT-III"](#).

Is any malfunction detected by self-diagnostic results?

YES >> Check malfunctioning system. Refer to [AT-85, "CONSULT-III Function \(TRANSMISSION\)"](#), [AT-92, "Diagnosis Procedure without CONSULT-III"](#).

NO >> GO TO 3.

3. CHECK ACCELERATOR PEDAL POSITION (APP) SENSOR

Check accelerator pedal position (APP) sensor. Refer to [AT-103](#)

OK or NG

OK >> GO TO 4.

NG >> Repair or replace accelerator pedal position (APP) sensor.

4. CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to [AT-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-50, "Inspections Before Trouble Diagnosis"](#).

OK or NG

OK >> GO TO 8.

NG - 1 >> Line pressure high: GO TO 6.

NG - 2 >> Line pressure low: GO TO 7.

6. DETECT MALFUNCTIONING ITEM

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

2. Disassemble A/T. Refer to [AT-275](#).

3. Check the following.

- Oil pump assembly. Refer to [AT-296, "Oil Pump"](#).

OK or NG

OK >> GO TO 8.

NG >> Repair or replace damaged parts.

7. DETECT MALFUNCTIONING ITEM

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

2. Disassemble A/T. Refer to [AT-275](#).

3. Check the following.

- Oil pump assembly. Refer to [AT-296, "Oil Pump"](#).

TROUBLE DIAGNOSIS FOR SYMPTOMS

< SERVICE INFORMATION >

- Power train system. Refer to [AT-275](#).
- Transmission case. Refer to [AT-275](#).

OK or NG

- OK >> GO TO 8.
- NG >> Repair or replace damaged parts.

8.CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Check A/T fluid condition. Refer to [AT-44, "How to Perform Trouble Diagnosis for Quick and Accurate Repair"](#).

OK or NG

- OK >> GO TO 9.
- NG >> GO TO 12.

9.DETECT MALFUNCTIONING ITEM

Check malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-61, "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-54, "Road Test"](#).

OK or NG

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

11.CHECK TCM

1. Check TCM input/output signals. Refer to [AT-84, "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 malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-61, "Symptom Chart"](#) (Symptom No.23).

OK or NG

- OK >> GO TO 10.
- NG >> Repair or replace damaged parts.

A/T Does Not Shift: D1→ D2

INFOID:000000002955620

SYMPTOM:

The vehicle does not shift-up from the D1 to D2 gear at the specified speed.

DIAGNOSTIC PROCEDURE

1.CONFIRM THE SYMPTOM

Check if vehicle creep forward in "D" position and vehicle can be started from D1.

OK or NG

- OK >> GO TO 2.
- NG >> Refer to [AT-177, "Vehicle Does Not Creep Forward in "D" Position"](#), [AT-179, "Vehicle Cannot Be Started from D1"](#).

2.CHECK SELF-DIAGNOSTIC RESULTS

 With CONSULT-III

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

⊗ Without CONSULT-III

• Perform the self-diagnosis. Refer to [AT-92, "Diagnosis Procedure without CONSULT-III"](#).

Is any malfunction detected by self-diagnostic results?

YES >> Check malfunctioning system. Refer to [AT-85, "CONSULT-III Function \(TRANSMISSION\)"](#), [AT-92, "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-50, "Inspections Before Trouble Diagnosis"](#).

OK or NG

OK >> GO TO 7.

NG - 1 >> Line pressure high: GO TO 5.

NG - 2 >> Line pressure low: GO TO 6.

5.DETECT MALFUNCTIONING ITEM

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

2. Disassemble A/T. Refer to [AT-275](#).

3. Check the following.

- Oil pump assembly. Refer to [AT-296, "Oil Pump"](#).

OK or NG

OK >> GO TO 7.

NG >> Repair or replace damaged parts.

6.DETECT MALFUNCTIONING ITEM

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

2. Disassemble A/T. Refer to [AT-275](#).

3. Check the following.

- Oil pump assembly. Refer to [AT-296, "Oil Pump"](#).

- Power train system. Refer to [AT-275](#).

- Transmission case. Refer to [AT-275](#).

OK or NG

OK >> GO TO 7.

NG >> Repair or replace damaged parts.

7.CHECK A/T FLUID CONDITION

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

2. Check A/T fluid condition. Refer to [AT-44, "How to Perform Trouble Diagnosis for Quick and Accurate Repair"](#).

OK or NG

OK >> GO TO 8.

NG >> GO TO 11.

8.DETECT MALFUNCTIONING ITEM

Check malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-61, "Symptom Chart"](#) (Symptom No.10).

OK or NG

OK >> GO TO 9.

NG >> Repair or replace damaged parts.

TROUBLE DIAGNOSIS FOR SYMPTOMS

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9. CHECK SYMPTOM

Check again. Refer to [AT-54, "Road Test"](#).

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 10.

10. CHECK TCM

1. Check TCM input/output signals. Refer to [AT-84, "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 malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-61, "Symptom Chart"](#) (Symptom No.10).

OK or NG

OK >> GO TO 9.

NG >> Repair or replace damaged parts.

A/T Does Not Shift: D2→D3

INFOID:000000002955621

SYMPTOM:

The vehicle does not shift-up from D2 to D3 gear at the specified speed.

DIAGNOSTIC PROCEDURE

1. CONFIRM THE SYMPTOM

Check if vehicle creep forward in "D" position and vehicle can be started from D1.

OK or NG

OK >> GO TO 2.

NG >> Refer to [AT-177, "Vehicle Does Not Creep Forward in "D" Position"](#), [AT-179, "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-92, "Diagnosis Procedure without CONSULT-III"](#).

Is any malfunction detected by self-diagnostic results?

YES >> Check malfunctioning system. Refer to [AT-85, "CONSULT-III Function \(TRANSMISSION\)"](#), [AT-92, "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-50, "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.

TROUBLE DIAGNOSIS FOR SYMPTOMS

< SERVICE INFORMATION >

5. DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Disassemble A/T. Refer to [AT-275](#).
3. Check the following.
 - Oil pump assembly. Refer to [AT-296, "Oil Pump"](#).

OK or NG

- OK >> GO TO 7.
NG >> Repair or replace damaged parts.

6. DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Disassemble A/T. Refer to [AT-275](#).
3. Check the following.
 - Oil pump assembly. Refer to [AT-296, "Oil Pump"](#).
 - Power train system. Refer to [AT-275](#).
 - Transmission case. Refer to [AT-275](#).

OK or NG

- OK >> GO TO 7.
NG >> Repair or replace damaged parts.

7. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Check A/T fluid condition. Refer to [AT-44, "How to Perform Trouble Diagnosis for Quick and Accurate Repair"](#).

OK or NG

- OK >> GO TO 8.
NG >> GO TO 11.

8. DETECT MALFUNCTIONING ITEM

Check malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-61, "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-54, "Road Test"](#).

OK or NG

- OK >> **INSPECTION END**
NG >> GO TO 10.

10. CHECK TCM

1. Check TCM input/output signals. Refer to [AT-84, "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 malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-61, "Symptom Chart"](#) (Symptom No.11).

OK or NG

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

TROUBLE DIAGNOSIS FOR SYMPTOMS

< SERVICE INFORMATION >

A/T Does Not Shift: D3→D4

INFOID:00000002955622

SYMPTOM:

The vehicle does not shift-up from the D3 to D4 gear at the specified speed.

DIAGNOSTIC PROCEDURE

1. CONFIRM THE SYMPTOM

Check if vehicle creep forward in "D" position and vehicle can be started from D1.

OK or NG

OK >> GO TO 2.

NG >> Refer to [AT-177, "Vehicle Does Not Creep Forward in "D" Position"](#), [AT-179, "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-92, "Diagnosis Procedure without CONSULT-III"](#).

Is any malfunction detected by self-diagnostic results?

YES >> Check malfunctioning system. Refer to [AT-85, "CONSULT-III Function \(TRANSMISSION\)"](#), [AT-92, "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-50, "Inspections Before Trouble Diagnosis"](#).

OK or NG

OK >> GO TO 7.

NG - 1 >> Line pressure high: GO TO 5.

NG - 2 >> Line pressure low: GO TO 6.

5. DETECT MALFUNCTIONING ITEM

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

2. Disassemble A/T. Refer to [AT-275](#).

3. Check the following.

- Oil pump assembly. Refer to [AT-296, "Oil Pump"](#).

OK or NG

OK >> GO TO 7.

NG >> Repair or replace damaged parts.

6. DETECT MALFUNCTIONING ITEM

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

2. Disassemble A/T. Refer to [AT-275](#).

3. Check the following.

- Oil pump assembly. Refer to [AT-296, "Oil Pump"](#).

- Power train system. Refer to [AT-275](#).

- Transmission case. Refer to [AT-275](#).

OK or NG

OK >> GO TO 7.

NG >> Repair or replace damaged parts.

TROUBLE DIAGNOSIS FOR SYMPTOMS

< SERVICE INFORMATION >

7. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Check A/T fluid condition. Refer to [AT-44, "How to Perform Trouble Diagnosis for Quick and Accurate Repair"](#).

OK or NG

- OK >> GO TO 8.
NG >> GO TO 11.

8. DETECT MALFUNCTIONING ITEM

Check malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-61, "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-54, "Road Test"](#).

OK or NG

- OK >> **INSPECTION END**
NG >> GO TO 10.

10. CHECK TCM

1. Check TCM input/output signals. Refer to [AT-84, "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 malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-61, "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:000000002955623

SYMPTOM:

- The vehicle does not shift-up from the D4 to D5 gear at the specified speed.
- The vehicle does not shift-up from the D4 to D5 gear unless A/T is warmed up.

DIAGNOSTIC PROCEDURE

1. CONFIRM THE SYMPTOM

Check if vehicle creep forward in "D" position and vehicle can be started from D1.

OK or NG

- OK >> GO TO 2.
NG >> Refer to [AT-177, "Vehicle Does Not Creep Forward in "D" Position"](#), [AT-179, "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-92, "Diagnosis Procedure without CONSULT-III"](#).

Is any malfunction detected by self-diagnostic results?

TROUBLE DIAGNOSIS FOR SYMPTOMS

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- YES >> Check malfunctioning system. Refer to [AT-85, "CONSULT-III Function \(TRANSMISSION\)"](#), [AT-92, "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-50, "Inspections Before Trouble Diagnosis"](#).

OK or NG

- OK >> GO TO 7.
NG - 1 >> Line pressure high: GO TO 5.
NG - 2 >> Line pressure low: GO TO 6.

5.DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Disassemble A/T. Refer to [AT-275](#).
3. Check the following.
 - Oil pump assembly. Refer to [AT-296, "Oil Pump"](#).

OK or NG

- OK >> GO TO 7.
NG >> Repair or replace damaged parts.

6.DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Disassemble A/T. Refer to [AT-275](#).
3. Check the following.
 - Oil pump assembly. Refer to [AT-296, "Oil Pump"](#).
 - Power train system. Refer to [AT-275](#).
 - Transmission case. Refer to [AT-275](#).

OK or NG

- OK >> GO TO 7.
NG >> Repair or replace damaged parts.

7.CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Check A/T fluid condition. Refer to [AT-44, "How to Perform Trouble Diagnosis for Quick and Accurate Repair"](#).

OK or NG

- OK >> GO TO 8.
NG >> GO TO 11.

8.DETECT MALFUNCTIONING ITEM

Check malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-61, "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-54, "Road Test"](#).

OK or NG

- OK >> **INSPECTION END**

TROUBLE DIAGNOSIS FOR SYMPTOMS

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NG >> GO TO 10.

10.CHECK TCM

1. Check TCM input/output signals. Refer to [AT-84, "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 malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-61, "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:000000002955624

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-92, "Diagnosis Procedure without CONSULT-III"](#).

Is any malfunction detected by self-diagnostic results?

YES >> Check malfunctioning system. Refer to [AT-85, "CONSULT-III Function \(TRANSMISSION\)"](#), [AT-92, "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-50, "Inspections Before Trouble Diagnosis"](#).

OK or NG

OK >> GO TO 6.

NG - 1 >> Line pressure high: GO TO 4.

NG - 2 >> Line pressure low: GO TO 5.

4.DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Disassemble A/T. Refer to [AT-275](#).
3. Check the following.
 - Oil pump assembly. Refer to [AT-296, "Oil Pump"](#).

OK or NG

OK >> GO TO 6.

NG >> Repair or replace damaged parts.

5.DETECT MALFUNCTIONING ITEM

TROUBLE DIAGNOSIS FOR SYMPTOMS

< SERVICE INFORMATION >

1. Check control valve with TCM. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Disassemble A/T. Refer to [AT-275](#).
3. Check the following.
 - Oil pump assembly. Refer to [AT-296, "Oil Pump"](#).
 - Power train system. Refer to [AT-275](#).
 - Transmission case. Refer to [AT-275](#).

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-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Check A/T fluid condition. Refer to [AT-44, "How to Perform Trouble Diagnosis for Quick and Accurate Repair"](#).

OK or NG

- OK >> GO TO 7.
NG >> GO TO 10.

7. DETECT MALFUNCTIONING ITEM

Check malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-61, "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-54, "Road Test"](#).

OK or NG

- OK >> **INSPECTION END**
NG >> GO TO 9.

9. CHECK TCM

1. Check TCM input/output signals. Refer to [AT-84, "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 malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-61, "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:000000002955625

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

TROUBLE DIAGNOSIS FOR SYMPTOMS

< SERVICE INFORMATION >

- Perform the self-diagnosis. Refer to [AT-92, "Diagnosis Procedure without CONSULT-III"](#).

Is any malfunction detected by self-diagnostic results?

YES >> Check malfunctioning system. Refer to [AT-85, "CONSULT-III Function \(TRANSMISSION\)"](#), [AT-92, "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-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).

2. Check A/T fluid condition. Refer to [AT-44, "How to Perform Trouble Diagnosis for Quick and Accurate Repair"](#).

OK or NG

OK >> GO TO 4.

NG >> GO TO 7.

4.DETECT MALFUNCTIONING ITEM

Check malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-61, "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-54, "Road Test"](#).

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 6.

6.CHECK TCM

1. Check TCM input/output signals. Refer to [AT-84, "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 malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-61, "Symptom Chart"](#) (Symptom No.25).

OK or NG

OK >> GO TO 5.

NG >> Repair or replace damaged parts.

Lock-up Is Not Released

INFOID:000000002955626

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.

TROUBLE DIAGNOSIS FOR SYMPTOMS

< SERVICE INFORMATION >

Without CONSULT-III

- Perform the self-diagnosis. Refer to [AT-92. "Diagnosis Procedure without CONSULT-III"](#).

Is any malfunction detected by self-diagnostic results?

YES >> Check malfunctioning system. Refer to [AT-85. "CONSULT-III Function \(TRANSMISSION\)"](#), [AT-92. "Diagnosis Procedure without CONSULT-III"](#).

NO >> GO TO 2.

2.CHECK SYMPTOM

Check again. Refer to [AT-54. "Road Test"](#).

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 3.

3.CHECK TCM

1. Check TCM input/output signals. Refer to [AT-84. "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:000000002955627

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-92. "Diagnosis Procedure without CONSULT-III"](#).

Is any malfunction detected by self-diagnostic results?

YES >> Check malfunctioning system. Refer to [AT-85. "CONSULT-III Function \(TRANSMISSION\)"](#), [AT-92. "Diagnosis Procedure without CONSULT-III"](#).

NO >> GO TO 3.

3.CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-210. "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Check A/T fluid condition. Refer to [AT-44. "How to Perform Trouble Diagnosis for Quick and Accurate Repair"](#).

OK or NG

OK >> GO TO 4.

NG >> GO TO 7.

4.DETECT MALFUNCTIONING ITEM

Check malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-61. "Symptom Chart"](#) (Symptom No.72).

OK or NG

OK >> GO TO 5.

TROUBLE DIAGNOSIS FOR SYMPTOMS

< SERVICE INFORMATION >

NG >> Repair or replace damaged parts.

5.CHECK SYMPTOM

Check again. Refer to [AT-54, "Road Test"](#).

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 6.

6.CHECK TCM

1. Check TCM input/output signals. Refer to [AT-84, "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 malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-61, "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:000000002955628

SYMPTOM:

Does not change to manual mode when manual shift gate is used.

DIAGNOSTIC PROCEDURE

1.CHECK MANUAL MODE SWITCH

Check manual mode switch. Refer to [AT-156](#).

OK or NG

OK >> GO TO 2.

NG >> Repair or replace damaged parts.

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-92, "Diagnosis Procedure without CONSULT-III"](#).

Is any malfunction detected by self-diagnostic results?

YES >> Check malfunctioning system. Refer to [AT-85, "CONSULT-III Function \(TRANSMISSION\)"](#), [AT-92, "Diagnosis Procedure without CONSULT-III"](#).

NO >> **INSPECTION END**

A/T Does Not Shift: 5GR → 4GR

INFOID:000000002955629

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-92, "Diagnosis Procedure without CONSULT-III"](#).

TROUBLE DIAGNOSIS FOR SYMPTOMS

< SERVICE INFORMATION >

Is any malfunction detected by self-diagnostic results?

YES >> Check malfunctioning system. Refer to [AT-85, "CONSULT-III Function \(TRANSMISSION\)"](#), [AT-92, "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-202, "Checking of A/T Position"](#).

OK or NG

OK >> GO TO 4.

NG >> Adjust A/T position. Refer to [AT-202, "Adjustment of A/T Position"](#).

4.CHECK MANUAL MODE SWITCH

Check manual mode switch. Refer to [AT-156](#).

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-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).

2. Check A/T fluid condition. Refer to [AT-44, "How to Perform Trouble Diagnosis for Quick and Accurate Repair"](#).

OK or NG

OK >> GO TO 6.

NG >> GO TO 9.

6.DETECT MALFUNCTIONING ITEM

Check malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-61, "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-54, "Road Test"](#).

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 8.

8.CHECK TCM

1. Check TCM input/output signals. Refer to [AT-84, "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 malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-61, "Symptom Chart"](#) (Symptom No.47).

OK or NG

OK >> GO TO 7.

TROUBLE DIAGNOSIS FOR SYMPTOMS

< SERVICE INFORMATION >

NG >> Repair or replace damaged parts.

A/T Does Not Shift: 4GR → 3GR

INFOID:000000002955630

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-92, "Diagnosis Procedure without CONSULT-III"](#).

Is any malfunction detected by self-diagnostic results?

YES >> Check malfunctioning system. Refer to [AT-85, "CONSULT-III Function \(TRANSMISSION\)"](#), [AT-92, "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-202, "Checking of A/T Position"](#).

OK or NG

OK >> GO TO 4.

NG >> Adjust A/T position. Refer to [AT-202, "Adjustment of A/T Position"](#).

4. CHECK MANUAL MODE SWITCH

Check manual mode switch. Refer to [AT-156](#).

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-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).

2. Check A/T fluid condition. Refer to [AT-44, "How to Perform Trouble Diagnosis for Quick and Accurate Repair"](#).

OK or NG

OK >> GO TO 6.

NG >> GO TO 9.

6. DETECT MALFUNCTIONING ITEM

Check malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-61, "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-54, "Road Test"](#).

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 8.

TROUBLE DIAGNOSIS FOR SYMPTOMS

< SERVICE INFORMATION >

8. CHECK TCM

1. Check TCM input/output signals. Refer to [AT-84, "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 malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-61, "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:000000002955631

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-92, "Diagnosis Procedure without CONSULT-III"](#).

Is any malfunction detected by self-diagnostic results?

- YES >> Check malfunctioning system. Refer to [AT-85, "CONSULT-III Function \(TRANSMISSION\)"](#), [AT-92, "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-202, "Checking of A/T Position"](#).

OK or NG

- OK >> GO TO 4.
NG >> Adjust A/T position. Refer to [AT-202, "Adjustment of A/T Position"](#).

4. CHECK MANUAL MODE SWITCH

Check manual mode switch. Refer to [AT-156](#).

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-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Check A/T fluid condition. Refer to [AT-44, "How to Perform Trouble Diagnosis for Quick and Accurate Repair"](#).

OK or NG

- OK >> GO TO 6.
NG >> GO TO 9.

TROUBLE DIAGNOSIS FOR SYMPTOMS

< SERVICE INFORMATION >

6. DETECT MALFUNCTIONING ITEM

Check malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-61, "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-54, "Road Test"](#).

OK or NG

- OK >> **INSPECTION END**
- NG >> GO TO 8.

8. CHECK TCM

1. Check TCM input/output signals. Refer to [AT-84, "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 malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-61, "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:000000002955632

SYMPTOM:

When shifted from M2 to M1 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-92, "Diagnosis Procedure without CONSULT-III"](#).

Is any malfunction detected by self-diagnostic results?

- YES >> Check malfunctioning system. Refer to [AT-85, "CONSULT-III Function \(TRANSMISSION\)"](#), [AT-92, "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-202, "Checking of A/T Position"](#).

OK or NG

- OK >> GO TO 4.
- NG >> Adjust A/T position. Refer to [AT-202, "Adjustment of A/T Position"](#).

TROUBLE DIAGNOSIS FOR SYMPTOMS

< SERVICE INFORMATION >

4. CHECK MANUAL MODE SWITCH

Check manual mode switch. Refer to [AT-156](#).

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-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
2. Check A/T fluid condition. Refer to [AT-44, "How to Perform Trouble Diagnosis for Quick and Accurate Repair"](#).

OK or NG

- OK >> GO TO 6.
- NG >> GO TO 9.

6. DETECT MALFUNCTIONING ITEM

Check malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-61, "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-54, "Road Test"](#).

OK or NG

- OK >> **INSPECTION END**
- NG >> GO TO 8.

8. CHECK TCM

1. Check TCM input/output signals. Refer to [AT-84, "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 malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-61, "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:000000002955633

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-92, "Diagnosis Procedure without CONSULT-III"](#).

Is any malfunction detected by self-diagnostic results?

- YES >> Check malfunctioning system. Refer to [AT-85, "CONSULT-III Function \(TRANSMISSION\)"](#), [AT-92, "Diagnosis Procedure without CONSULT-III"](#).

TROUBLE DIAGNOSIS FOR SYMPTOMS

< SERVICE INFORMATION >

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-202, "Checking of A/T Position"](#).

OK or NG

OK >> GO TO 4.

NG >> Adjust A/T position. Refer to [AT-202, "Adjustment of A/T Position"](#).

4.CHECK MANUAL MODE SWITCH

Check manual mode switch. Refer to [AT-156](#).

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-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).

2. Check A/T fluid condition. Refer to [AT-44, "How to Perform Trouble Diagnosis for Quick and Accurate Repair"](#).

OK or NG

OK >> GO TO 6.

NG >> GO TO 9.

6.DETECT MALFUNCTIONING ITEM

Check malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-61, "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-54, "Road Test"](#).

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 8.

8.CHECK TCM

1. Check TCM input/output signals. Refer to [AT-84, "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 malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-61, "Symptom Chart"](#) (Symptom No.58).

OK or NG

OK >> GO TO 7.

NG >> Repair or replace damaged parts.

A

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SHIFT CONTROL SYSTEM

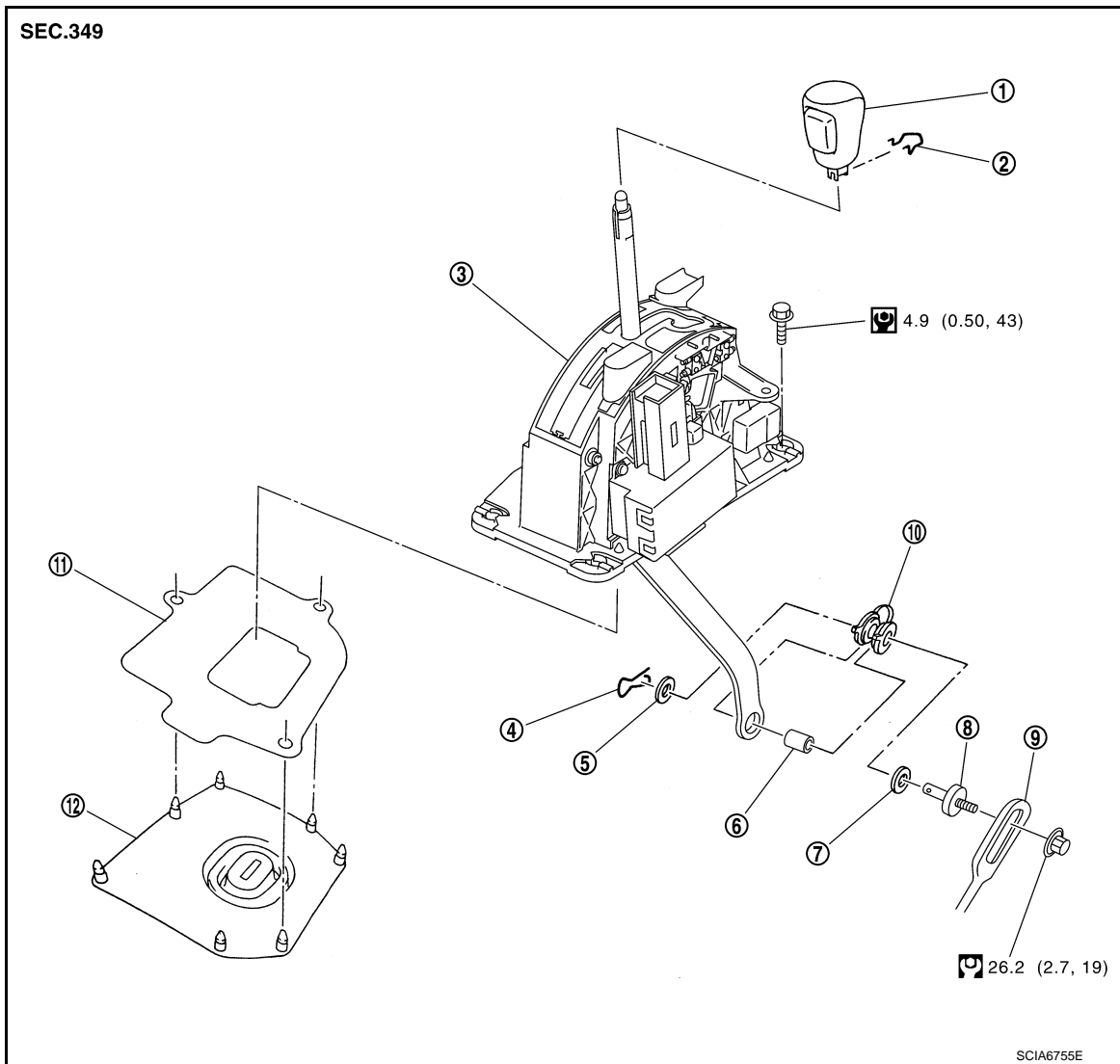
< SERVICE INFORMATION >

SHIFT CONTROL SYSTEM

A/T Shift Selector Removal and Installation

INFOID:000000002955634

A/T SHIFT SELECTOR COMPONENTS (2WD MODELS)



- | | | |
|------------------------|----------------------|--------------------------------|
| 1. Selector lever knob | 2. Lock pin | 3. A/T shift selector assembly |
| 4. Snap pin | 5. Plain washer | 6. Color |
| 7. Plain washer | 8. Pivot pin | 9. Control rod |
| 10. Insulator | 11. Dust cover plate | 12. Dust cover |

Refer to GI section to make sure icons (symbol marks) in the figure. Refer to [GI-9, "Component"](#).

REMOVAL

CAUTION:

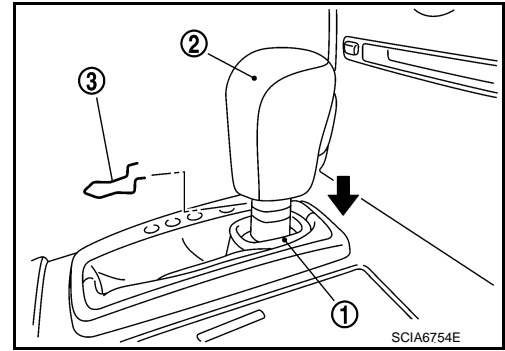
Make sure that parking brake is applied before removal/installation.

1. Move selector lever to "N" position.

SHIFT CONTROL SYSTEM

< SERVICE INFORMATION >

2. Remove knob cover (1) below selector lever downward.
3. Pull lock pin (3) out of selector lever knob (2).
4. Remove selector lever knob.
5. Remove cup holder, switch finisher, cluster lid C and A/T console console finisher. Refer to [IP-11](#)
6. Remove center console. Refer to [IP-11](#).
7. Disconnect A/T shift selector harness connector.
8. Remove A/T shift selector assembly.

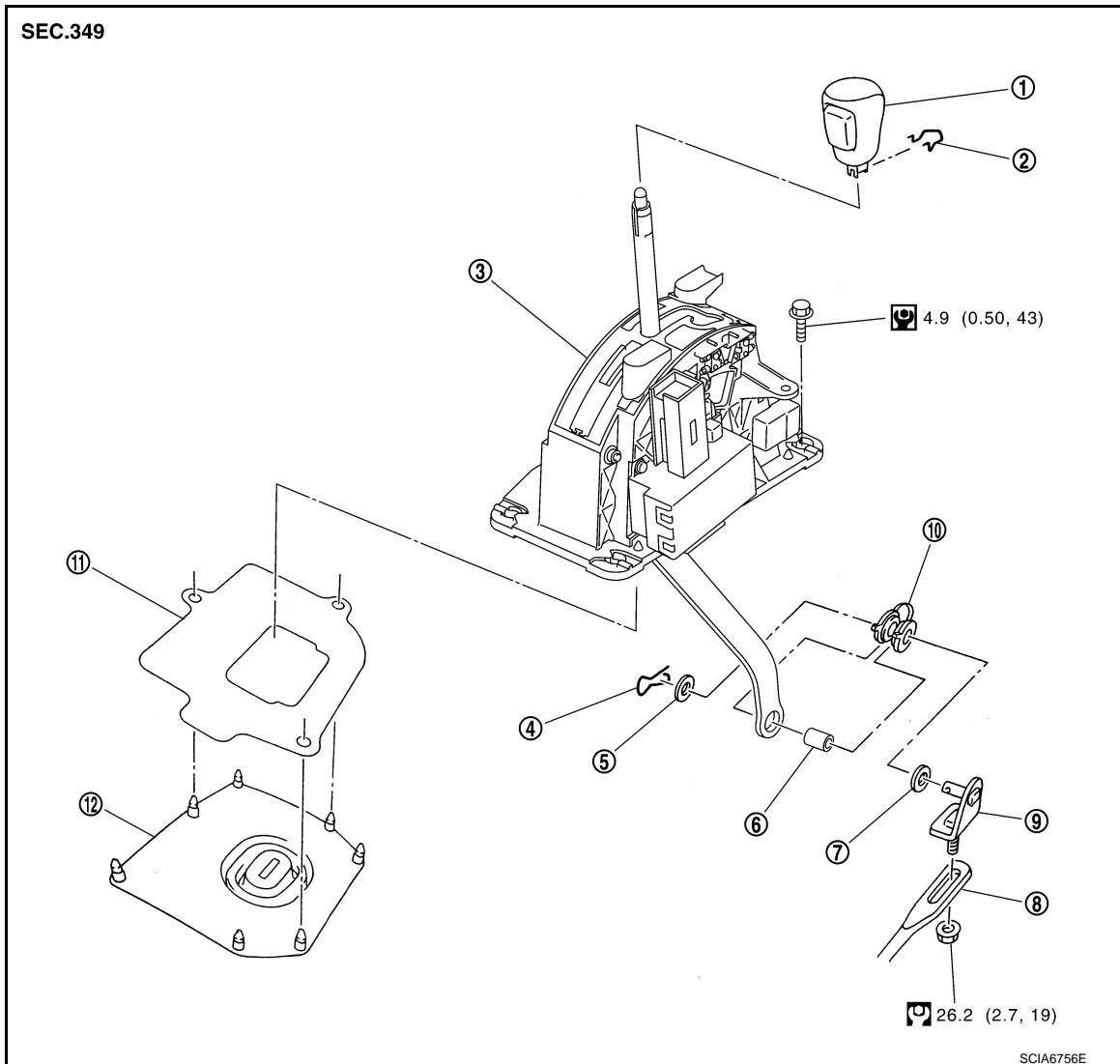


INSTALLATION

Note the following, and install in the reverse order of removal.

- After installation is completed, adjust and check A/T position. Refer to [AT-202. "Adjustment of A/T Position"](#) and [AT-202. "Checking of A/T Position"](#).

A/T SHIFT SELECTOR COMPONENTS (AWD MODELS)



- | | | |
|------------------------|----------------------|--------------------------------|
| 1. Selector lever knob | 2. Lock pin | 3. A/T shift selector assembly |
| 4. Snap pin | 5. Plain washer | 6. Color |
| 7. Plain washer | 8. Control rod | 9. Bracket |
| 10. Insulator | 11. Dust cover plate | 12. Dust cover |

Refer to GI section to make sure icons (symbol marks) in the figure. Refer to [GI-9. "Component"](#).

SHIFT CONTROL SYSTEM

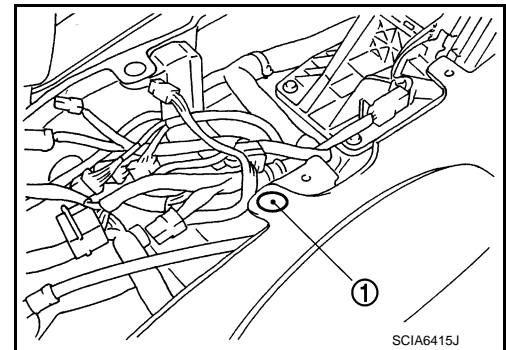
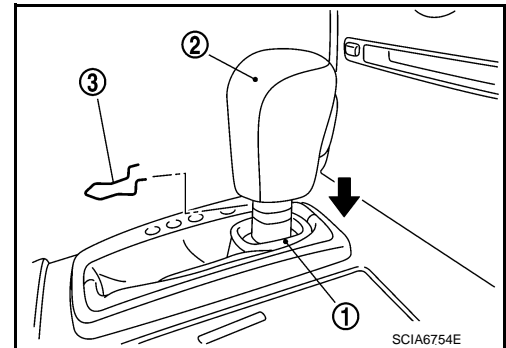
< SERVICE INFORMATION >

REMOVAL

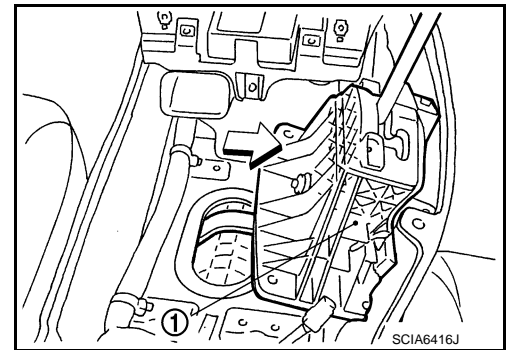
CAUTION:

Make sure that parking brake is applied before removal/installation.

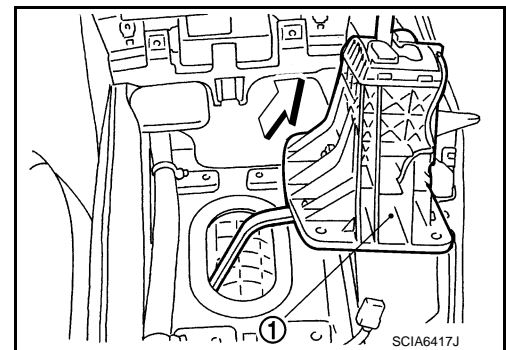
1. Disconnect lower lever of A/T shift selector and control rod.
2. Move selector lever to "N" position.
3. Remove knob cover (1) below selector lever downward.
4. Pull lock pin (3) out of selector lever knob (2).
5. Remove selector lever knob.
6. Remove cup holder, switch finisher, cluster lid C and A/T console finisher. Refer to [IP-11](#).
7. Remove center console. Refer to [IP-11](#).
8. Disconnect A/T shift selector harness connector.
9. Move selector lever to "P" position.
10. Move driver side seat to the end.
11. Remove one of floor carpet attachment clips (1).
12. Remove A/T shift selector assembly mounting bolts.



13. Lift A/T shift selector assembly (1). Then slide to the right till touching floor carpet.



14. Pull A/T shift selector assembly out in the right-slanting direction while pressing to the right.



INSTALLATION

Note the following, and install in the reverse order of removal.

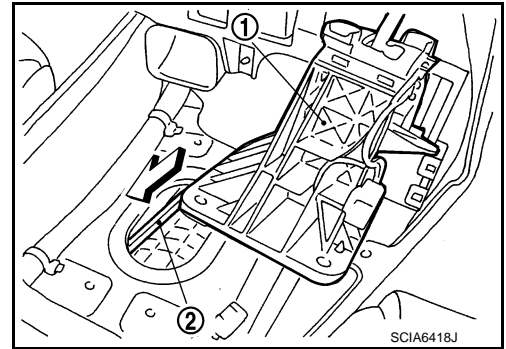
NOTE:

SHIFT CONTROL SYSTEM

< SERVICE INFORMATION >

Bend A/T shift selector assembly (1) to vehicle, then insert lower lever (2) to the rear of vehicle.

- After installation is completed, adjust and check A/T position. Refer to [AT-202. "Adjustment of A/T Position"](#) and [AT-202. "Checking of A/T Position"](#).

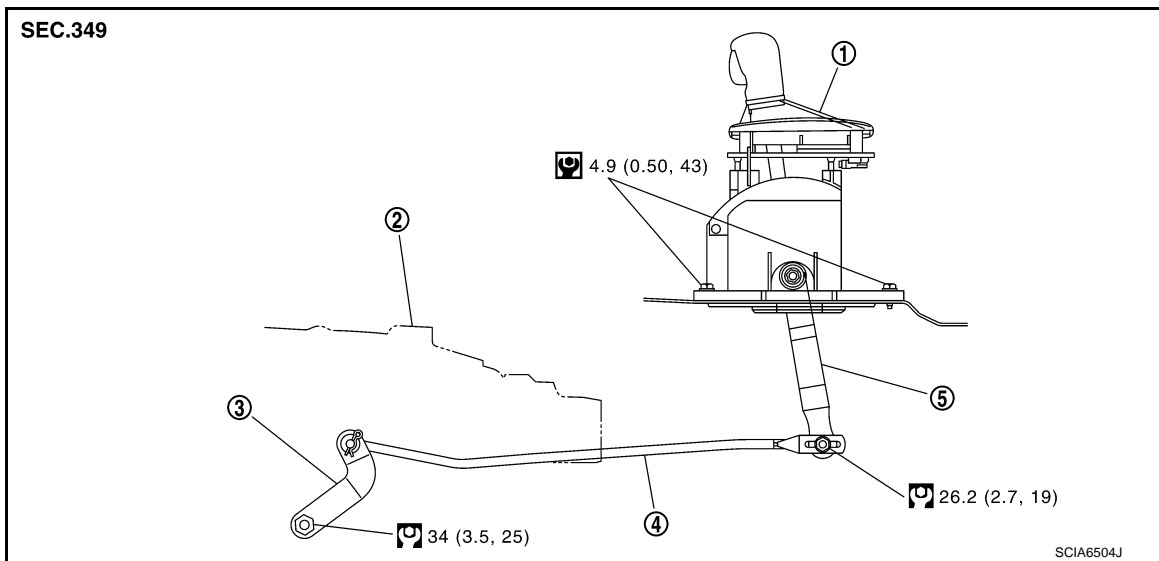


Control Rod Removal and Installation

INFOID:000000002955635

CONTROL ROD COMPONENTS (2WD MODELS)

Refer to the figure below for control rod removal and installation procedure.



1. A/T shift selector assembly
2. A/T assembly
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-9. "Component"](#).

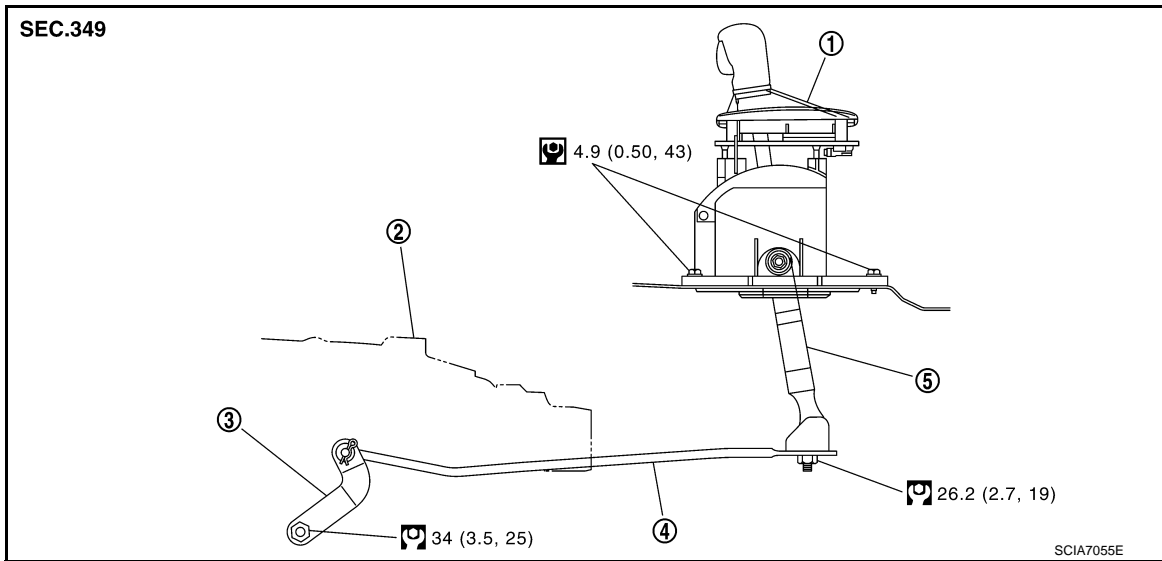
CONTROL ROD COMPONENTS (AWD MODELS)

Refer to the figure below for control rod removal and installation procedure.

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SHIFT CONTROL SYSTEM

< SERVICE INFORMATION >



1. A/T shift selector assembly
2. A/T assembly
3. Manual lever
4. Control rod
5. Lower lever

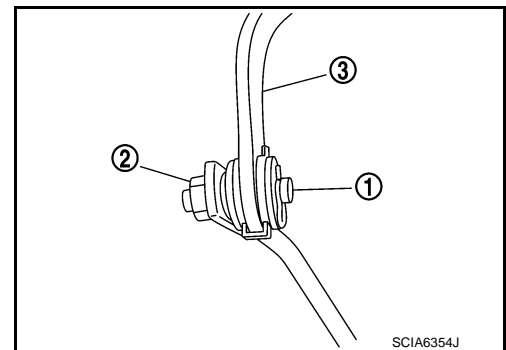
Refer to GI section to make sure icons (symbol marks) in the figure. Refer to [GI-9, "Component"](#).

Adjustment of A/T Position

INFOID:000000002955636

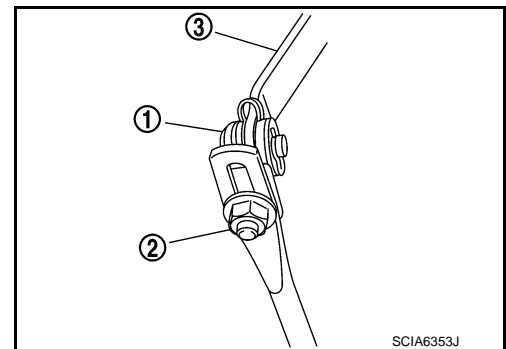
2WD MODELS

1. Loosen nut (2) of pivot pin (1).
2. Place manual lever and selector lever in "P" position.
3. While pressing lower lever (3) toward rear of vehicle (in "P" position direction), tighten nut to specified torque.
Refer to [AT-201, "Control Rod Removal and Installation"](#).



AWD MODELS

1. Loosen nut (2) of bracket (1).
2. Place manual lever and selector lever in "P" position.
3. While pressing lower lever (3) toward rear of vehicle (in "P" position direction), tighten nut to specified torque.
Refer to [AT-201, "Control Rod Removal and Installation"](#).



Checking of A/T Position

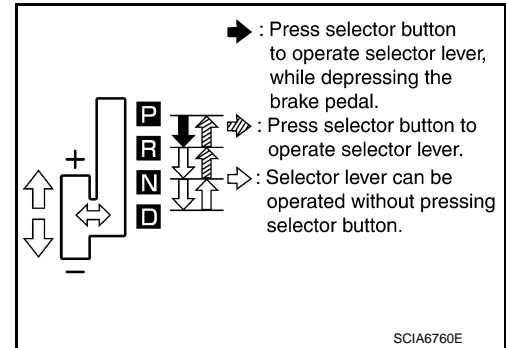
INFOID:000000002955637

1. Place selector lever in "P" position, and turn ignition switch ON (engine stop).
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.

SHIFT CONTROL SYSTEM

< SERVICE INFORMATION >

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 A/T 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 A/T 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.



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A/T SHIFT LOCK SYSTEM

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A/T SHIFT LOCK SYSTEM

Description

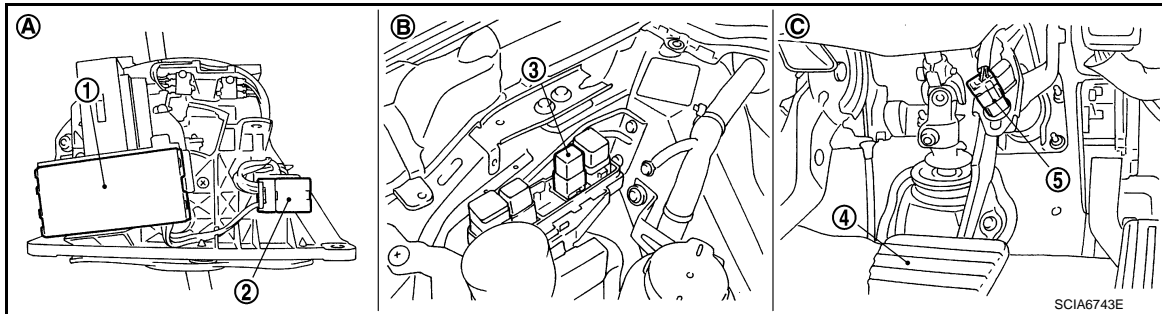
INFOID:000000002955638

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 positions unless the brake pedal is depressed.

Shift Lock System Electrical Parts Location

INFOID:000000002955639



- | | | |
|--|---|-----------------------|
| A. A/T shift selector assembly | B. Engine room, right side | C. Brake pedal, upper |
| 1. Shift lock unit (Shift lock solenoid installed) | 2. A/T shift selector harness connector | 3. Shift lock relay |
| 4. Brake pedal | 5. Stop lamp switch | |

AT SHIFT LOCK SYSTEM

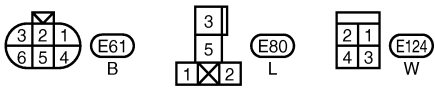
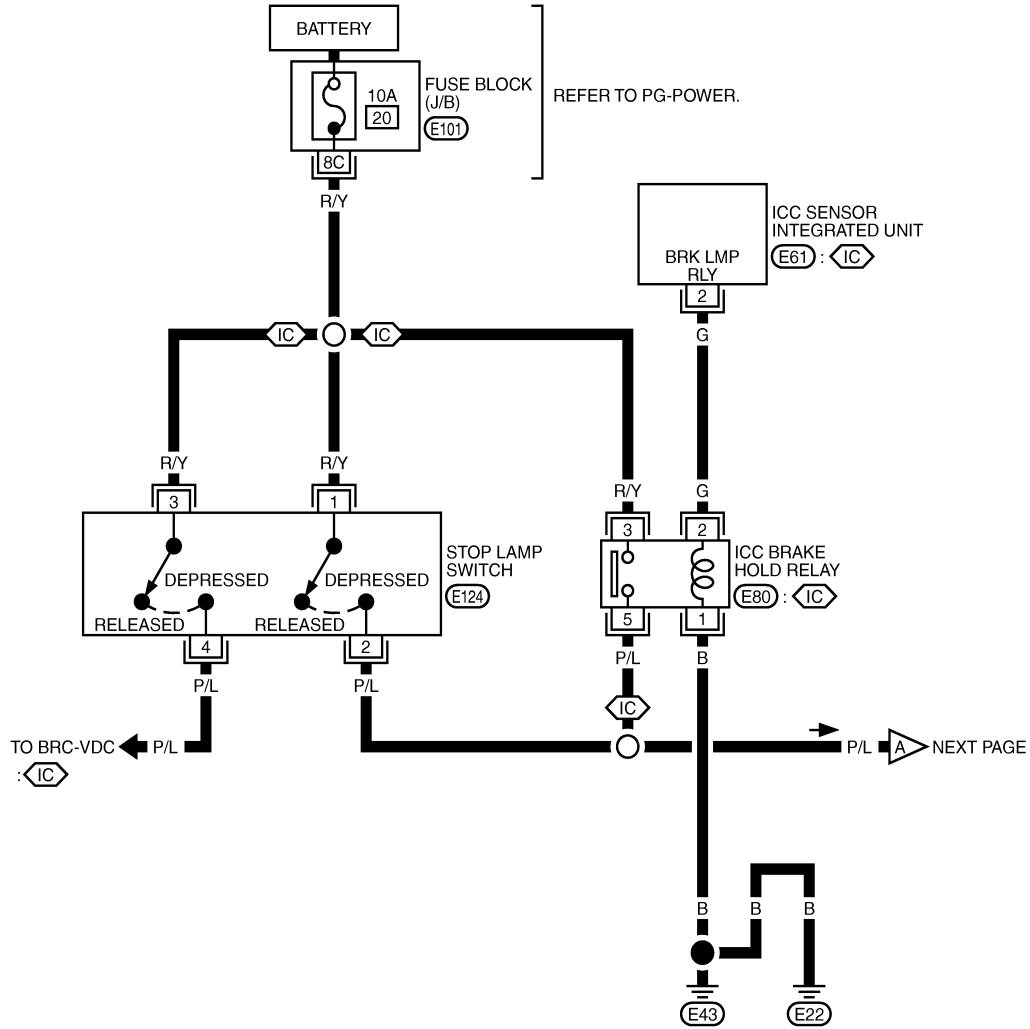
< SERVICE INFORMATION >

Wiring Diagram - AT - SHIFT

INFOID:000000002955640

AT-SHIFT-01

⬡: WITH ICC



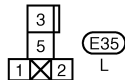
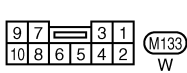
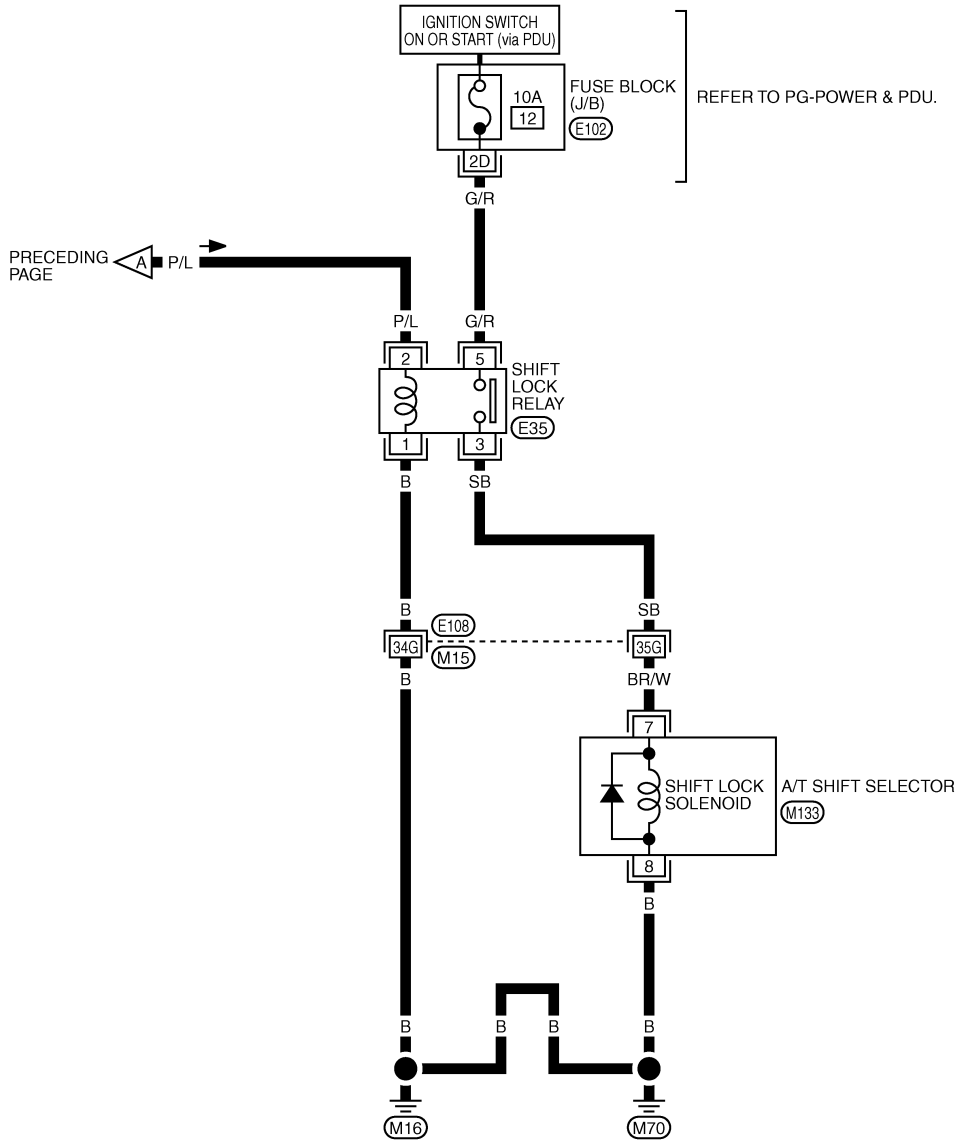
REFER TO THE FOLLOWING.
 ⬡ - FUSE BLOCK - JUNCTION BOX (J/B)

TCWT0574E

A/T SHIFT LOCK SYSTEM

< SERVICE INFORMATION >

AT-SHIFT-02



REFER TO THE FOLLOWING.
 (E108) - SUPER MULTIPLE JUNCTION (SMJ)
 (E102) - FUSE BLOCK - JUNCTION BOX (J/B)

TCWM0690E

INFOID:000000002955641

Diagnosis Procedure

SYMPTOM:

- 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.

1. CHECK SELECTOR LEVER POSITION

Check the selector lever position for damage. Refer to [AT-202, "Checking of A/T Position"](#).

A/T SHIFT LOCK SYSTEM

< SERVICE INFORMATION >

OK or NG

OK >> GO TO 2.

NG >> Adjust control linkage. Refer to [AT-202, "Adjustment of A/T Position"](#).

2.CHECK POWER SOURCE

1. Turn ignition switch OFF.
2. Disconnect shift lock relay.
3. Check voltage between shift lock relay E35 terminal 2 and ground.

Voltage

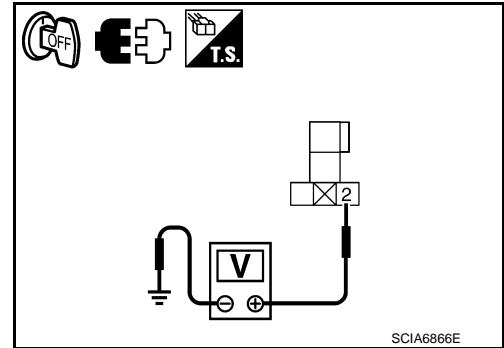
Brake pedal depressed: Battery voltage

Brake pedal released: 0 V

OK or NG

OK >> GO TO 4.

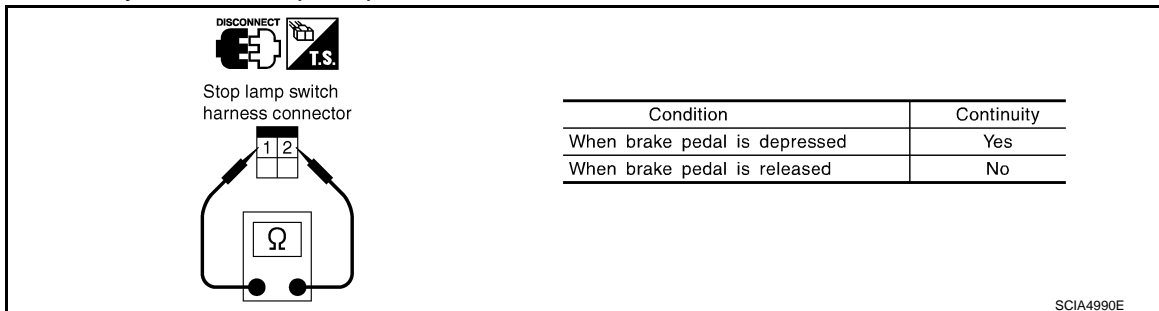
NG >> GO TO 3.



3.DETECT MALFUNCTIONING ITEM

Check the following.

- Harness for short or open between battery and stop lamp switch harness connector E124 terminal 1
- Harness for short or open between stop lamp switch harness connector E124 terminal 2 and shift lock relay E35 terminal 2
- 10A fuse [No.20, located in the fuse block (J/B)]
- Stop lamp switch
- Check continuity between stop lamp switch harness connector E124 terminals 1 and 2



Check stop lamp switch after adjusting brake pedal — refer to [BR-6](#).

- ICC brake hold relay. Refer to [ACS-68, "ICC Brake Hold Relay"](#). (With ICC only)
- Harness for short or open between battery and ICC brake hold relay E80 terminal 3. Refer to [ACS-49, "C1A13 STOP LAMP RLY FIX"](#). (With ICC only)
- Harness for short or open between ICC brake hold relay E80 terminal 5 and shift lock relay E35 terminal 2. (With ICC only)
- Harness for short or open between ICC sensor integrated unit harness connector E61 terminal 2 and ICC brake hold relay E80 terminal 2. Refer to [ACS-49, "C1A13 STOP LAMP RLY FIX"](#). (With ICC only)
- Harness for short or open between ICC brake hold relay E80 terminal 1 and ground. Refer to [ACS-49, "C1A13 STOP LAMP RLY FIX"](#). (With ICC only)

OK or NG

OK >> GO TO 4.

NG >> Repair or replace damaged parts.

4.CHECK GROUND CIRCUIT

A/T SHIFT LOCK SYSTEM

< SERVICE INFORMATION >

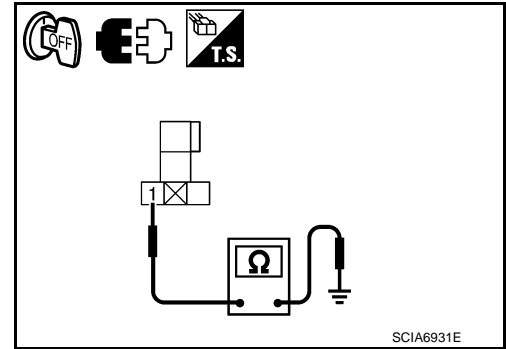
1. Turn ignition switch OFF.
2. Disconnect shift lock relay.
3. Check continuity between shift lock relay E35 terminal 1 and ground.

Continuity should exist.

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

OK or NG

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



5. CHECK INPUT SIGNAL A/T SHIFT SELECTOR

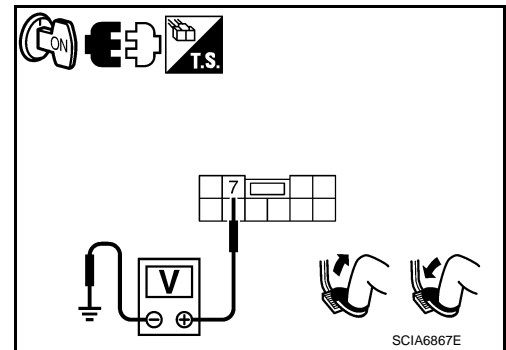
1. Turn ignition switch OFF.
2. Disconnect A/T shift selector connector.
3. Turn ignition switch ON.
4. Check voltage between A/T shift selector connector M133 terminal 7 and ground.

Voltage

- Brake pedal depressed: Battery voltage**
Brake pedal released: 0 V

OK or NG

- OK >> GO TO 7.
 NG >> GO TO 6.



6. DETECT MALFUNCTIONING ITEM

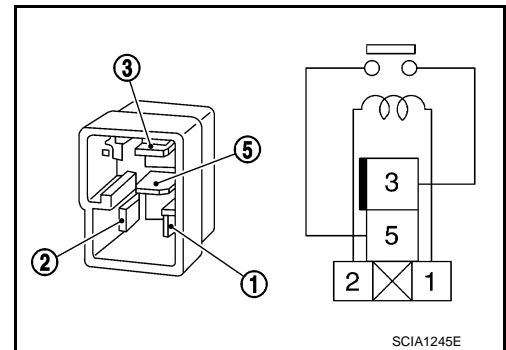
Check the following.

- Harness for short or open between push-button ignition switch and shift lock relay E35 terminal 5
 - Harness for short or open between shift lock relay E35 terminal 3 and A/T shift selector connector M133 terminal 7
 - 10A fuse [No.12, located in the fuse block (J/B)]
 - Push-button ignition switch (Refer to [PG-4.](#))
 - Shift lock relay
- Check continuity between shift lock relay E35 terminal 3 and 5

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

OK or NG

- OK >> GO TO 7.
 NG >> Repair or replace damaged parts.



7. CHECK GROUND CIRCUIT

A/T SHIFT LOCK SYSTEM

< SERVICE INFORMATION >

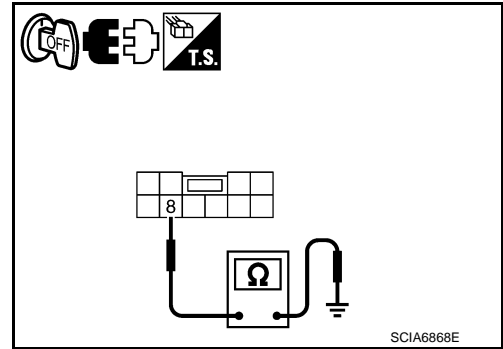
1. Turn ignition switch OFF.
2. Disconnect A/T shift selector connector.
3. Check continuity between A/T shift selector connector M133 terminal 8 and ground.

Continuity should exist.

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

OK or NG

- OK >> GO TO 8.
 NG >> Repair open circuit or short to ground or short to power in harness or connectors.



8. CHECK SHIFT LOCK SOLENOID

1. Connect A/T shift selector connector.
2. Turn ignition switch ON.
3. Check shift lock solenoid 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 damage parts.

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ON-VEHICLE SERVICE

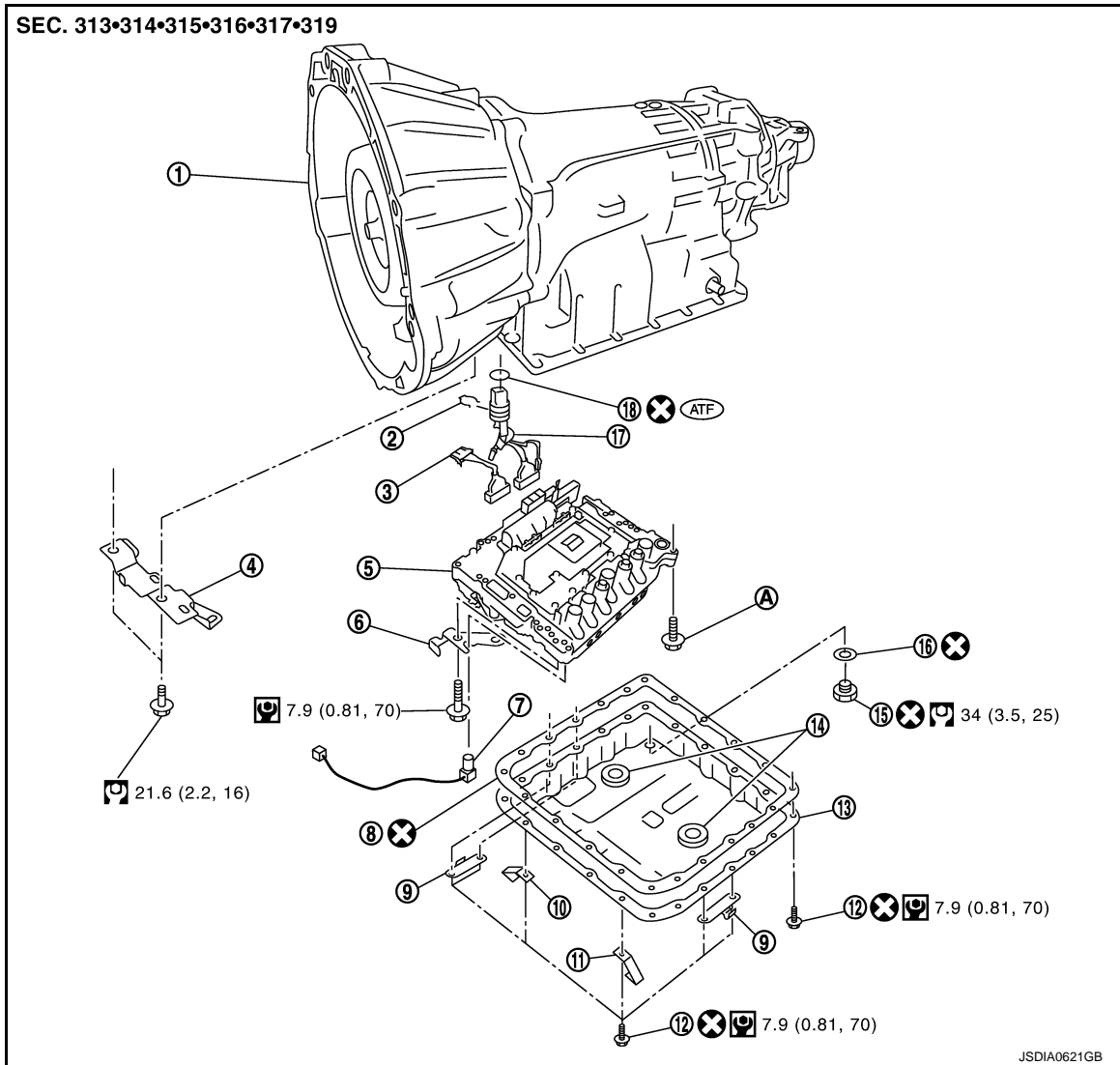
< SERVICE INFORMATION >

ON-VEHICLE SERVICE

Control Valve with TCM and A/T Fluid Temperature Sensor 2

INFOID:000000002955642

COMPONENTS



- | | | |
|-----------------------------------|----------------------------|---------------------------|
| 1. A/T | 2. Snap ring | 3. Sub-harness |
| 4. Bracket (VQ35DE) | 5. Control valve with TCM | 6. Bracket |
| 7. A/T fluid temperature sensor 2 | 8. Oil pan gasket | 9. Clip |
| 10. Bracket (VK45DE) | 11. Bracket (VK45DE) | 12. Oil pan mounting bolt |
| 13. Oil pan | 14. Magnet | 15. Drain plug |
| 16. Drain plug gasket | 17. Terminal cord assembly | 18. O-ring |
- A. For tightening torque, refer to "Installation".

Refer to GI section to make sure icons (symbol marks) in the figure. Refer to [GI-9. "Component"](#).

CONTROL VALVE WITH TCM REMOVAL AND INSTALLATION



Removal

1. Disconnect the battery cable from the negative terminal.
2. Drain ATF through drain plug.

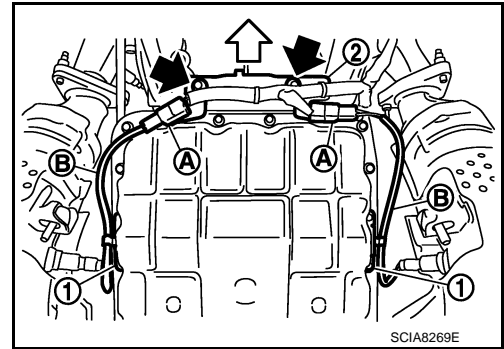
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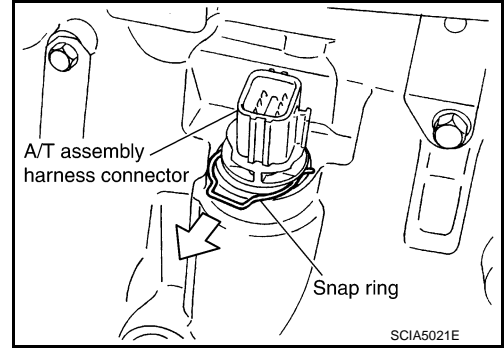
3. Disconnect heated oxygen sensor 2 harness connectors (A).

 : Vehicle front
 : Bolt

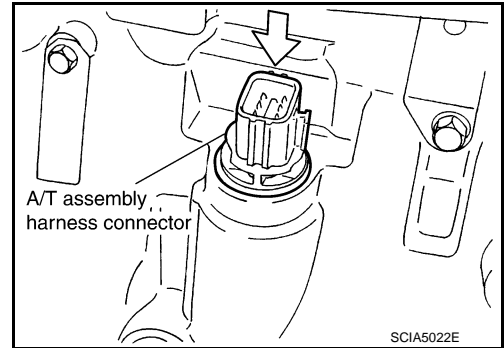
4. Remove heated oxygen sensor 2 harness (B) from clips (1).
5. Remove bracket (2) from transmission assembly. (for VQ35DE models)
6. Disconnect A/T assembly harness connector.



7. Remove snap ring from A/T assembly harness connector.





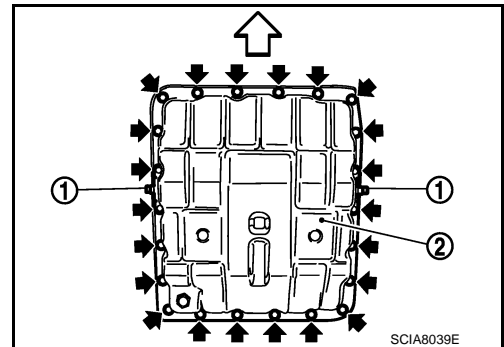
8. Push A/T assembly harness connector.
CAUTION:
 Be careful not to damage connector.



9. Remove oil pan, oil pan gasket and clips (VQ35DE models) or oil pan, oil pan gasket, brackets and clips (VK45DE models) according to the following procedures.

- a. VQ35DE models
 - i. Remove clips (1).
 - ii. Remove oil pan (2) and oil pan gasket.

 : Vehicle front
 : Oil pan mounting bolt



- b. VK45DE models

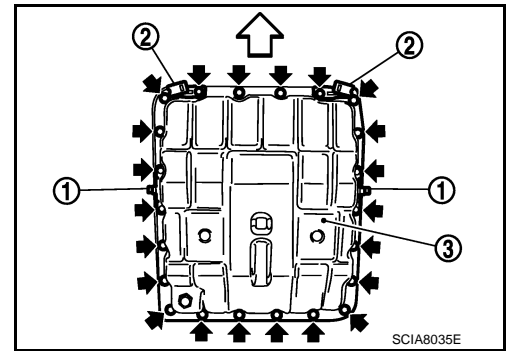
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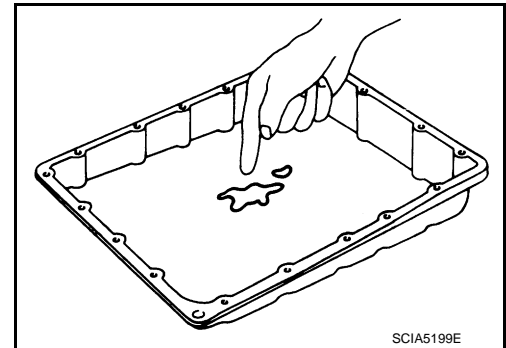
< SERVICE INFORMATION >

- i. Remove clips (1) and brackets (2).
- ii. Remove oil pan (3) and oil pan gasket.

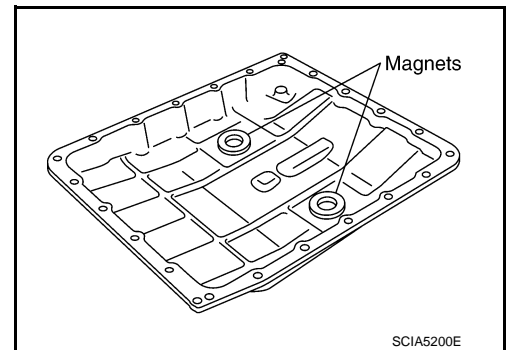
⇐ : Vehicle front
← : Oil pan mounting bolt



10. 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"](#).



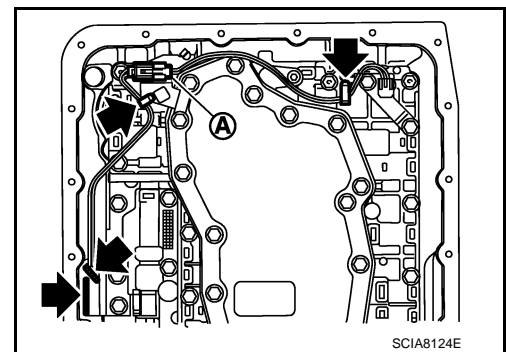
11. Remove magnets from oil pan.



12. Disconnect A/T fluid temperature sensor 2 connector (A).

CAUTION:
Be careful not to damage connector.

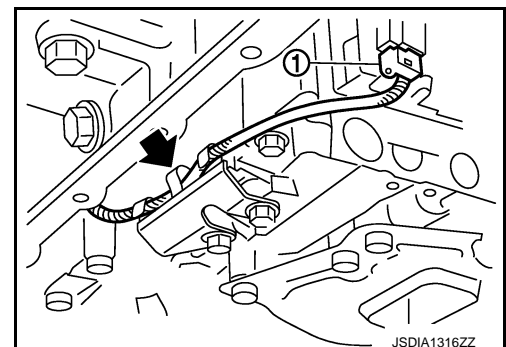
13. Straighten terminal clips (⇐) to free terminal cord assembly A/T fluid temperature sensor 2 harness.



14. Straighten terminal clip (⇐) to free output speed sensor harness.

15. Disconnect output speed sensor connector (1).

CAUTION:
Be careful not to damage connector.



ON-VEHICLE SERVICE

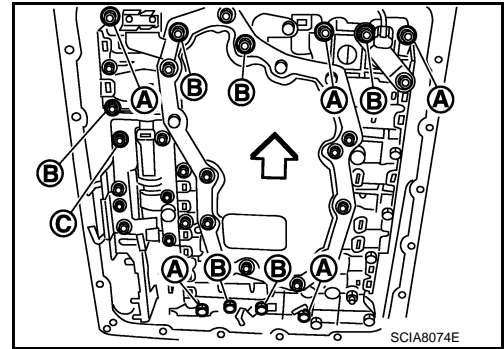
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16. Remove bolts A, B and C from control valve with TCM.



: Vehicle front

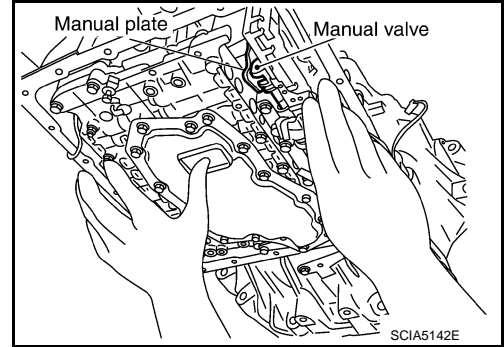
Bolt symbol	Length mm (in)	Number of bolts
A	42 (1.65)	5
B	55 (2.17)	6
C	40 (1.57)	1



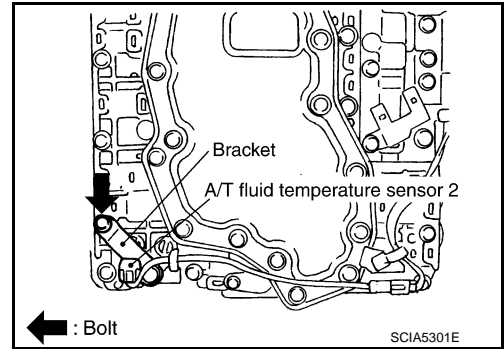
17. Remove control valve with TCM from transmission case.

CAUTION:

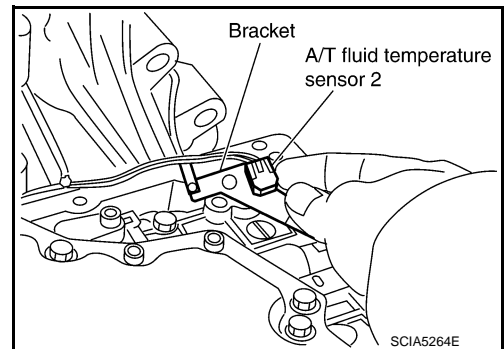
When removing, be careful with the manual valve notch and manual plate height. Remove it vertically.



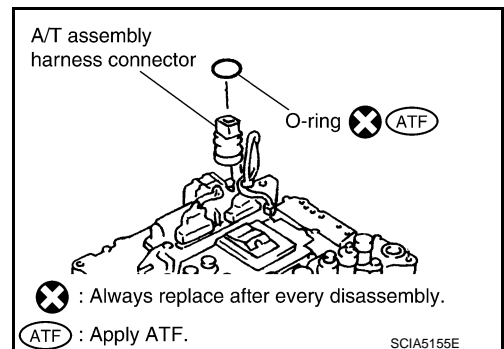
18. Remove A/T fluid temperature sensor 2 with bracket from control valve with TCM.



19. Remove bracket from A/T fluid temperature sensor 2.



20. Remove O-ring from A/T assembly harness connector.



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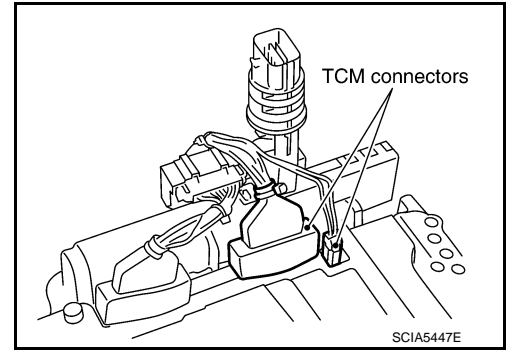
ON-VEHICLE SERVICE

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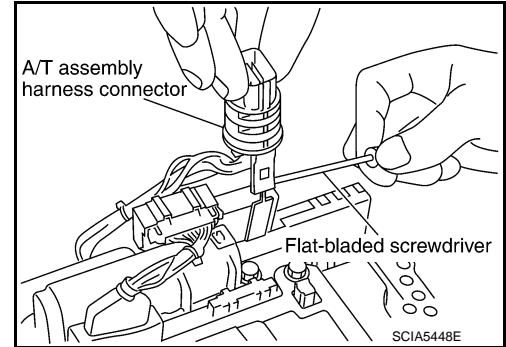
21. Disconnect TCM connectors.

CAUTION:

Be careful not to damage connectors.



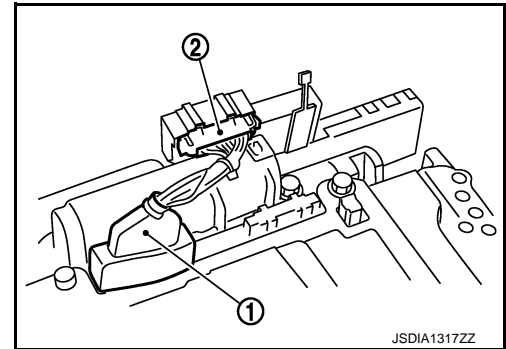
22. Remove A/T assembly harness connector from control valve with TCM using flat-blade screwdriver.



23. Disconnect TCM connector (1) and transmission range switch connector (2).

CAUTION:

Be careful not to damage connectors.

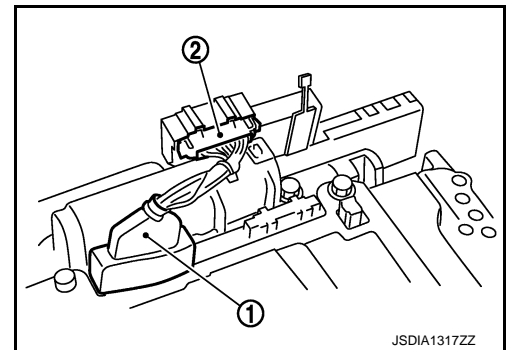


Installation

CAUTION:

After completing installation, check A/T fluid leakage and A/T fluid level. Refer to [AT-12, "Checking A/T Fluid"](#).

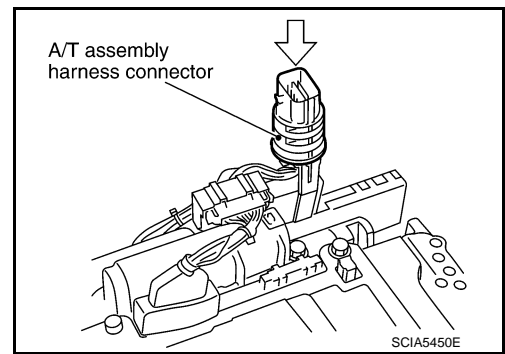
1. Connect TCM connector (1) and transmission range switch connector (2).



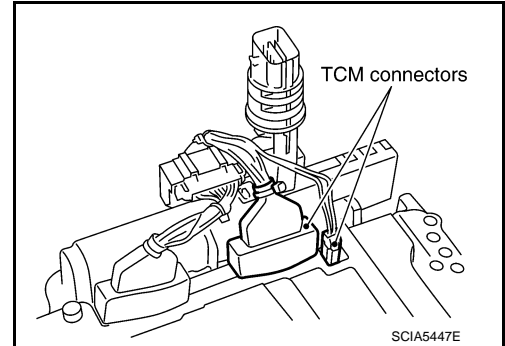
ON-VEHICLE SERVICE

< SERVICE INFORMATION >

2. Install A/T assembly harness connector to control valve with TCM.



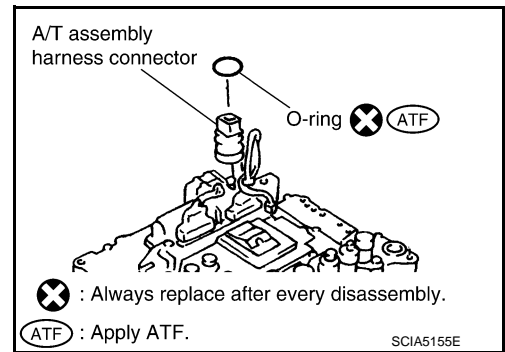
3. Connect TCM connectors.



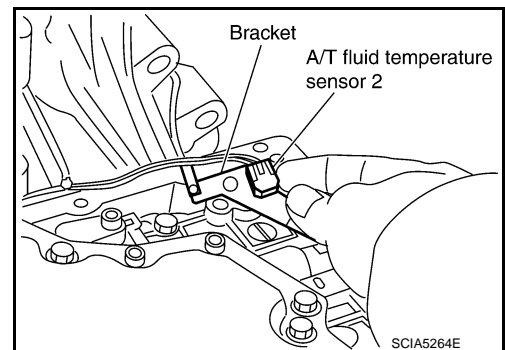
4. Install new O-ring in A/T assembly harness connector.

CAUTION:

- Do not reuse O-ring.
- Apply ATF to O-ring.



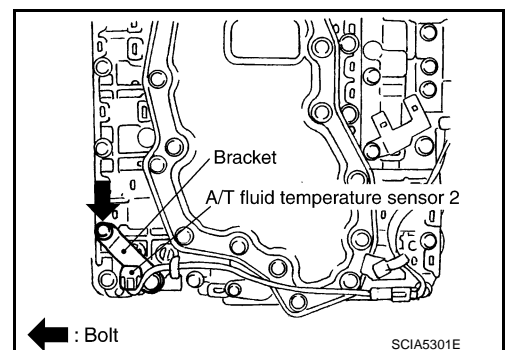
5. Install A/T fluid temperature sensor 2 to bracket.



6. Install A/T fluid temperature sensor 2 (with bracket) in control valve with TCM. 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.



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ON-VEHICLE SERVICE

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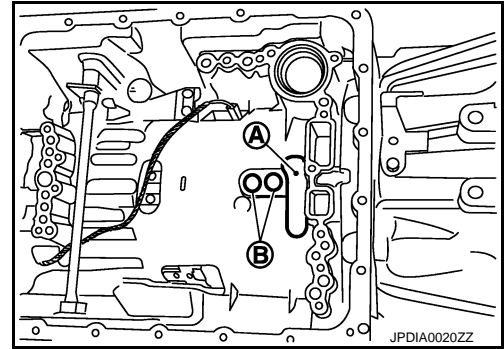
7. Install control valve with TCM in transmission case.

CAUTION:

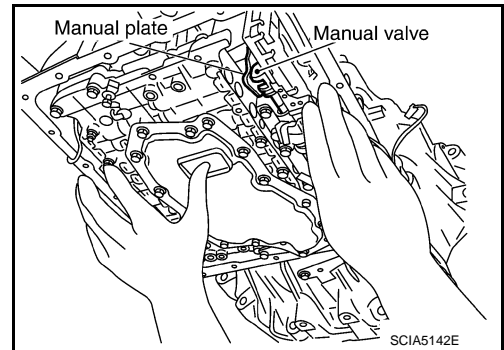
- Make sure that input speed sensor securely installs input speed sensor holes (B).

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.



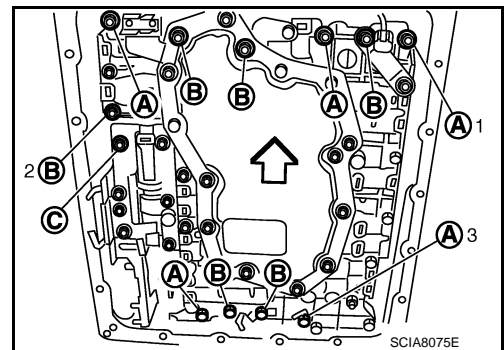
- Assemble it so that manual valve cutout is engaged with manual plate projection.



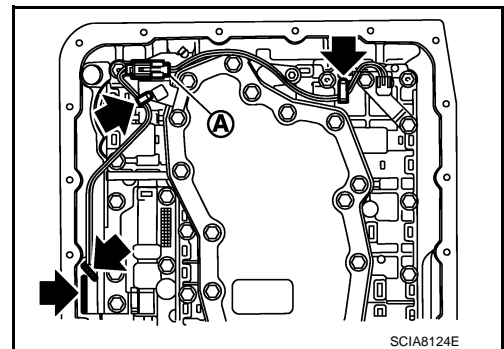
8. Install bolts A, B and C in control valve with TCM. Tighten bolt 1, 2 and 3 temporarily to prevent dislocation. After that tighten them in order (1 → 2 → 3), and then tighten other bolts. Tighten control valve with TCM bolts to the specified torque.

← : Vehicle front

Bolt symbol	A	B	C	
Number of bolts	5	6	1	
Length mm (in)	42 (1.65)	55 (2.17)	Bolt being 40 mm (1.57 in)	Bolt being 50 mm (1.97 in)
Tightening torque N·m (km-g, in-lb)	7.9 (0.81, 70)		With ATF applied	7.9 (0.81, 70)
			7.9 (0.81, 70)	



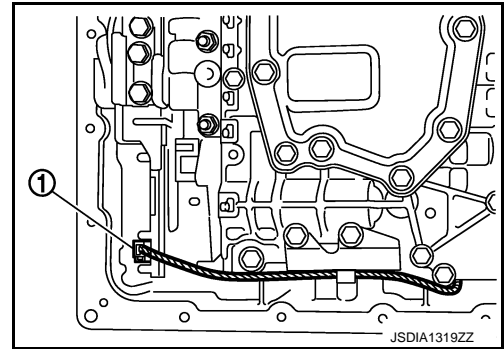
9. Connect A/T fluid temperature sensor 2 connector (A).
10. Securely fasten terminal cord assembly and A/T fluid temperature sensor 2 harness with terminal clips (←).



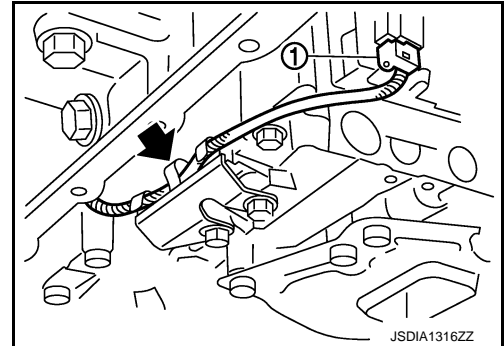
ON-VEHICLE SERVICE

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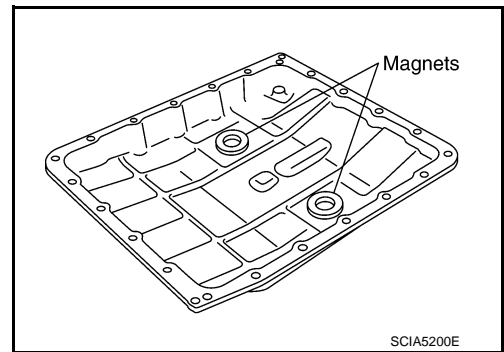
11. Connect output speed sensor connector (1).



12. Securely fasten output speed sensor (1) harness with terminal clip (←).



13. Install magnets in oil pan.



14. Install oil pan, oil pan gasket and clips (VQ35DE models) or oil pan, oil pan gasket, brackets and clips (VK45DE models) according to the following procedures.

a. VQ35DE models

i. Install oil pan gasket to oil pan.

CAUTION:

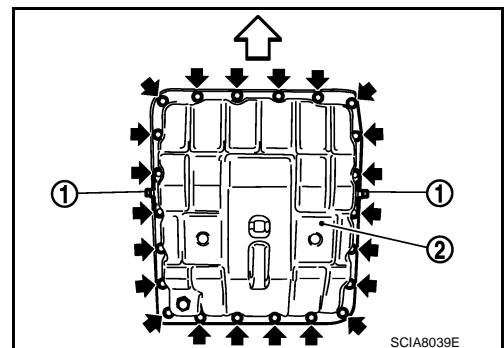
- Do not reuse oil pan gasket.
- Install it in the direction to align hole positions.
- Complete remove all moisture, oil and old gasket, etc. from oil pan gasket mounting surface.

ii. 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 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.



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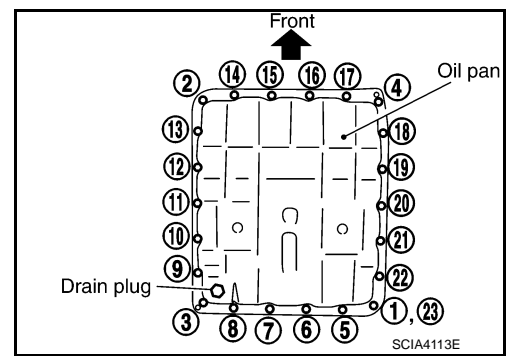
ON-VEHICLE SERVICE

< SERVICE INFORMATION >

- iii. Tighten oil pan mounting bolts to the specified torque in numerical order shown in the figure after temporarily tightening them. Tighten oil pan mounting bolts to the specified torque. Refer to "COMPONENTS".

CAUTION:

Do not reuse oil pan mounting bolts.



- b. VK45DE models

- i. Install oil pan gasket to oil pan.

CAUTION:

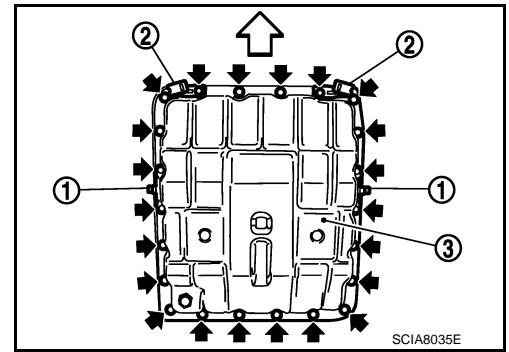
- Do not reuse oil pan gasket.
- Install it in the direction to align hole positions.
- Complete remove all moisture, oil and old gasket, etc. from oil pan gasket mounting surface.

- ii. Install oil pan (3) (with oil pan gasket), clips (1) and brackets (2) to transmission case.

- ↔ : Vehicle front
 ← : Oil pan mounting bolt

CAUTION:

- Install it so that drain plug 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.
- Be careful with installation direction of brackets (2).



- iii. Tighten oil pan mounting bolts to the specified torque in numerical order shown in the figure after temporarily tightening them. Tighten oil pan mounting bolts to the specified torque. Refer to "COMPONENTS".

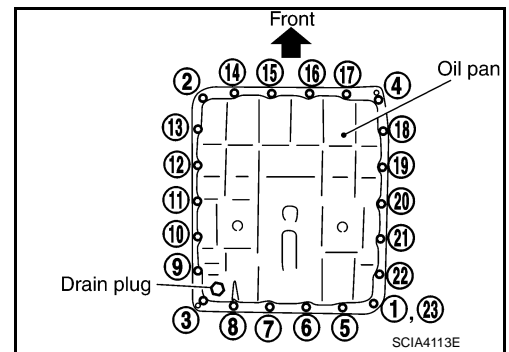
CAUTION:

Do not reuse oil pan mounting bolts.

15. Install drain plug to oil pan. Tighten drain plug to the specified torque. Refer to "COMPONENTS".

CAUTION:

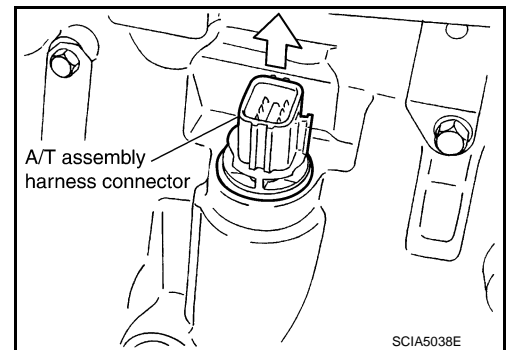
Do not reuse drain plug gasket.



16. Pull up A/T assembly harness connector.

CAUTION:

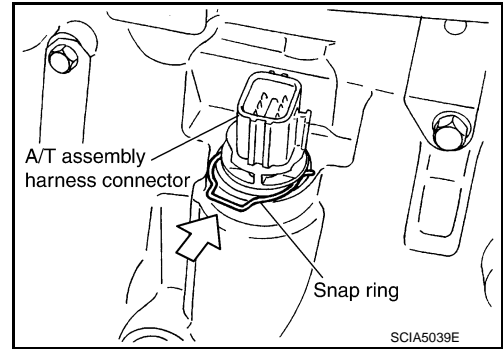
Be careful not to damage connector.



ON-VEHICLE SERVICE

< SERVICE INFORMATION >

17. Install snap ring to A/T assembly harness connector.
18. Connect A/T assembly harness connector.
19. Connect heated oxygen sensor 2 harness connector.
20. Pour ATF into A/T assembly. Refer to [AT-12, "Changing A/T Fluid"](#).
21. Connect the battery cable to the negative terminal.

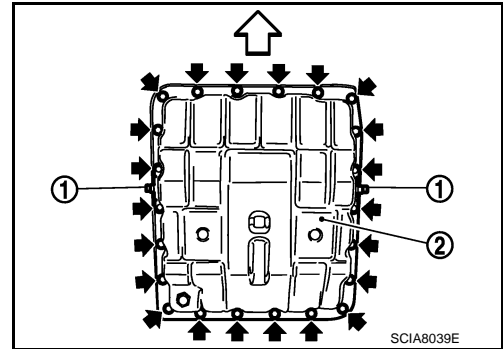
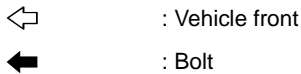


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A/T FLUID TEMPERATURE SENSOR 2 REMOVAL AND INSTALLATION

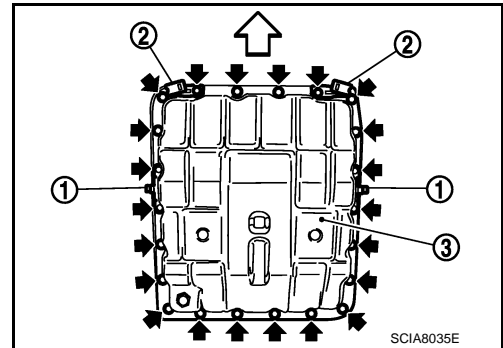
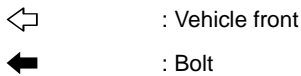
Removal

1. Disconnect the battery cable from the negative terminal.
2. Drain ATF through drain plug.
3. Disconnect heated oxygen sensor 2 harness connector.
4. Remove oil pan, oil pan gasket and clips (VQ35DE models) or oil pan, oil pan gasket, brackets and clips (VK45DE models) according to the following procedures.
 - a. VQ35DE models
 - i. Remove clips (1).
 - ii. Remove oil pan (2) and oil pan gasket.



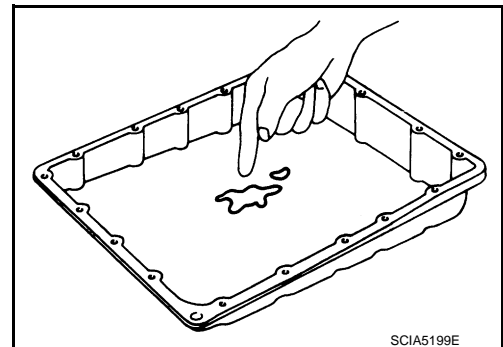
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- b. VK45DE models
 - i. Remove clips (1) and brackets (2).
 - ii. Remove oil pan (3) and oil pan gasket.



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5. 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"](#).



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ON-VEHICLE SERVICE

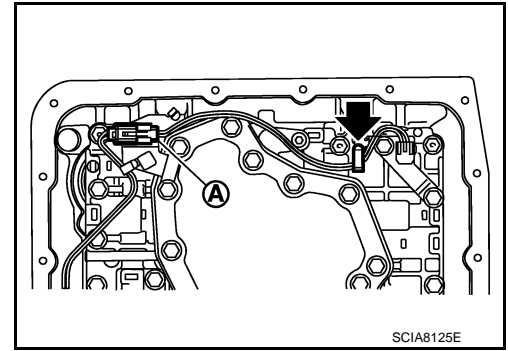
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6. Disconnect A/T fluid temperature sensor 2 connector (A).

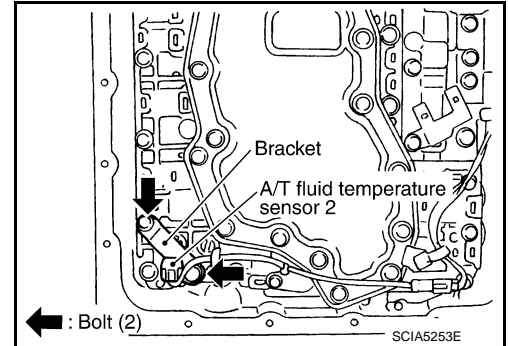
CAUTION:

Be careful not to damage connector.

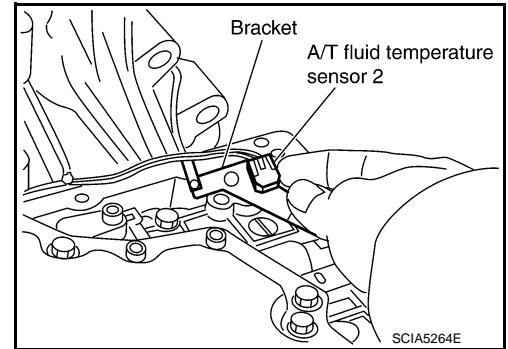
7. Straighten terminal clip (←) to free A/T fluid temperature sensor 2 harness.



8. Remove A/T fluid temperature sensor 2 with bracket from control valve with TCM.



9. Remove bracket from A/T fluid temperature sensor 2.

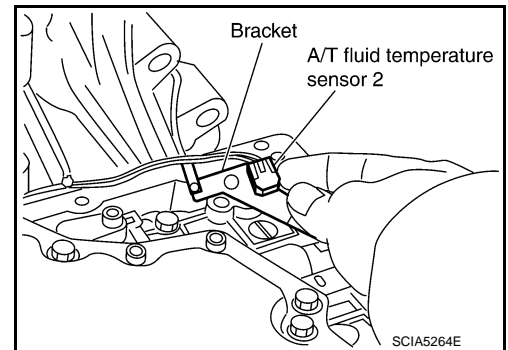


Installation

CAUTION:

After completing installation, check for A/T fluid leakage and A/T fluid level. Refer to [AT-12. "Checking A/T Fluid"](#).

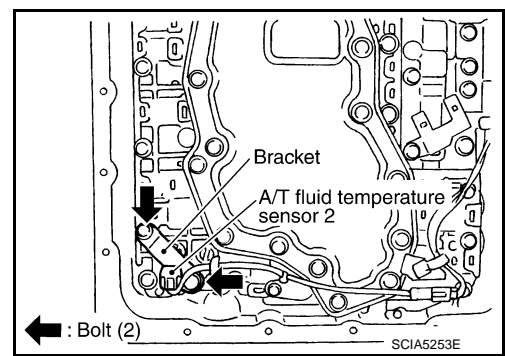
1. Install A/T fluid temperature sensor 2 to bracket.



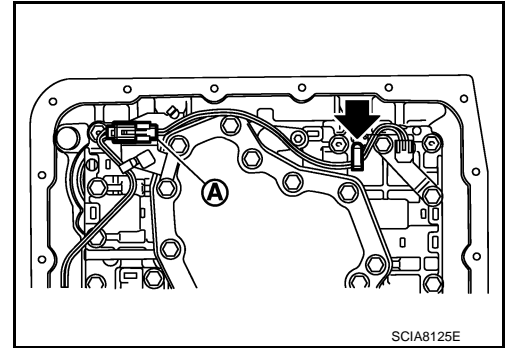
ON-VEHICLE SERVICE

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2. Install A/T fluid temperature sensor 2 (with bracket) in control valve with TCM. Tighten A/T fluid temperature sensor 2 bolts to the specified torque. Refer to "COMPONENTS".



3. Connect A/T fluid temperature sensor 2 connector (A).
4. Securely fasten A/T fluid temperature sensor 2 harness with terminal clip (A).



5. Install oil pan, oil pan gasket and clips (VQ35DE models) or oil pan, oil pan gasket, brackets and clips (VK45DE models) according to the following procedures.

a. VQ35DE models

- i. 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.

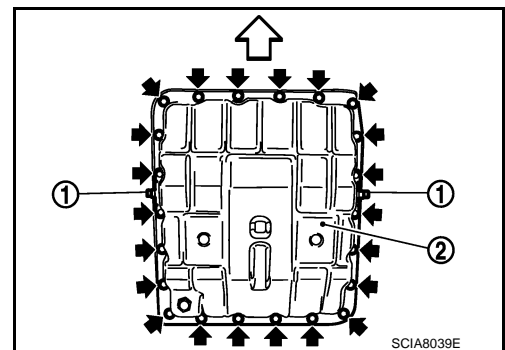
- ii. Install oil pan (2) (with oil pan gasket) and clips (1) to transmission case.

← : Vehicle front

← : Bolt

CAUTION:

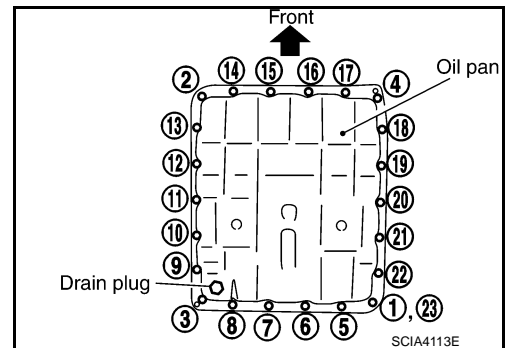
- Install it so that drain plug comes to the position as shown in the figure.
- Be careful not to pinch harnesses.
- Completely remove all moisture, oil and old gasket, etc. from oil pan mounting surface.



- iii. Tighten oil pan mounting bolts to the specified torque in numerical order shown in the figure after temporarily tightening them. Tighten oil pan mounting bolts to the specified torque. Refer to "COMPONENTS".

CAUTION:

Do not reuse oil pan mounting bolts.



b. VK45DE models

ON-VEHICLE SERVICE

< SERVICE INFORMATION >

- i. 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.

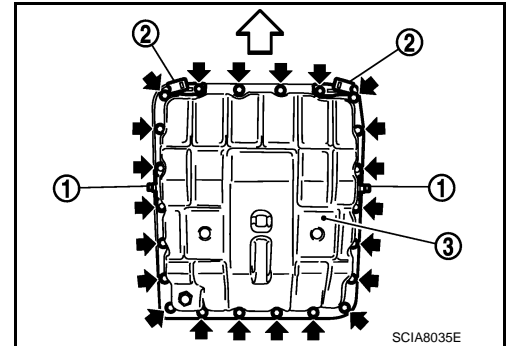
- ii. Install oil pan (3) (with oil pan gasket), clips (1) and brackets (2) to transmission case.

⇐ : Vehicle front

← : Bolt

CAUTION:

- Install it so that drain plug 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.
- Be careful with installation direction of brackets (2).



- iii. Tighten oil pan mounting bolts to the specified torque in numerical order shown in the figure after temporarily tightening them. Tighten oil pan mounting bolts to the specified torque. Refer to "COMPONENTS".

CAUTION:

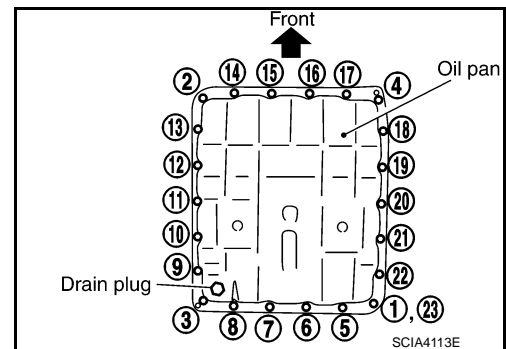
Do not reuse oil pan mounting bolts.

6. Install drain plug to oil pan. Tighten drain plug to the specified torque. Refer to "COMPONENTS".

CAUTION:

Do not reuse drain plug gasket.

7. Connect heated oxygen sensor 2 harness connector.
8. Pour ATF into A/T assembly. Refer to [AT-12. "Changing A/T Fluid"](#).
9. Connect the battery cable to the negative terminal.



Parking Component (2WD Models Only)

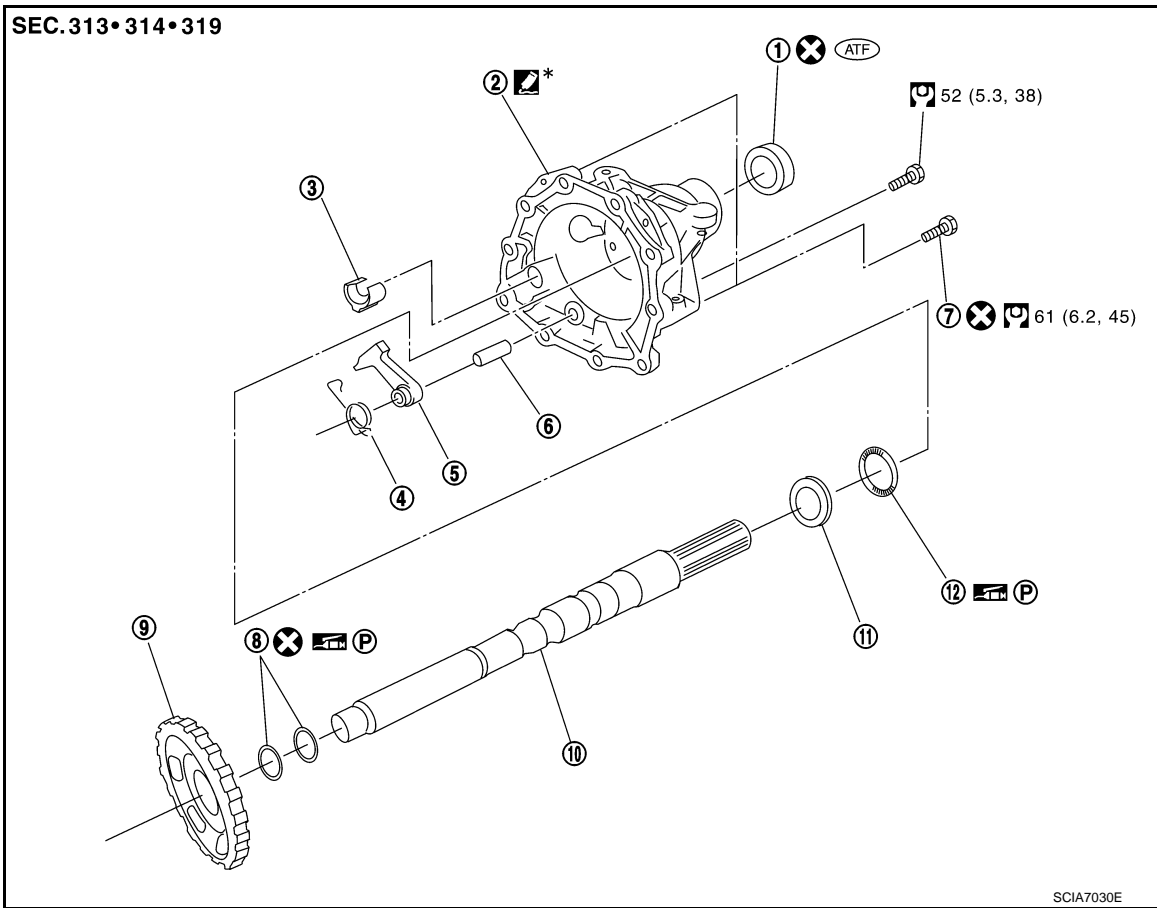
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REMOVAL AND INSTALLATION (VQ35DE MODELS)

Components

ON-VEHICLE SERVICE

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|----------------------|-------------------|-----------------------------|
| 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-9, "Component"](#).

However, refer to the following symbols for others.

: Apply Genuine Anaerobic Liquid Gasket or equivalent. Refer to [GI-44, "Recommended Chemical Product and Sealant"](#).

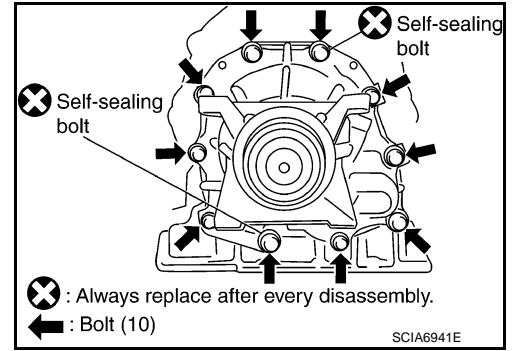
Removal

1. Drain ATF through drain plug.
2. Remove exhaust front tube and center muffler with power tool. Refer to [EX-4, "Removal and Installation"](#).
3. Remove rear propeller shaft. Refer to [PR-9, "Removal and Installation"](#).
4. Remove control rod. Refer to [AT-201, "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 the drain plug.
6. Remove rear engine mounting member with power tool. Refer to [AT-246, "Removal and Installation \(2WD Models\)"](#).
7. Remove engine mounting insulator (rear). Refer to [AT-246, "Removal and Installation \(2WD Models\)"](#).

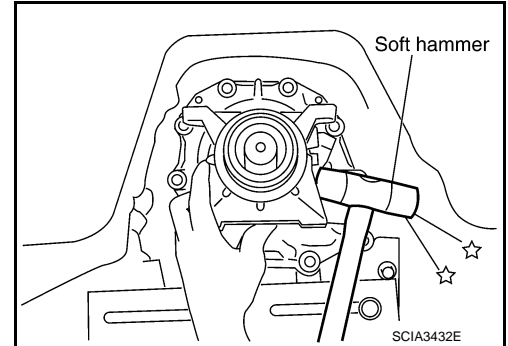
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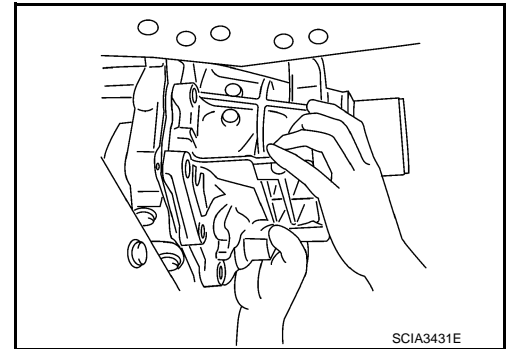
8. Remove tightening bolts for rear extension assembly and transmission case.



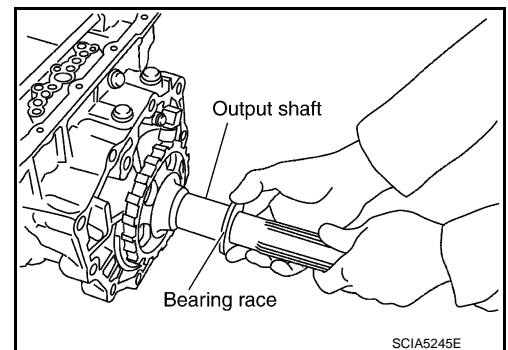
9. Tap rear extension assembly with a soft hammer.



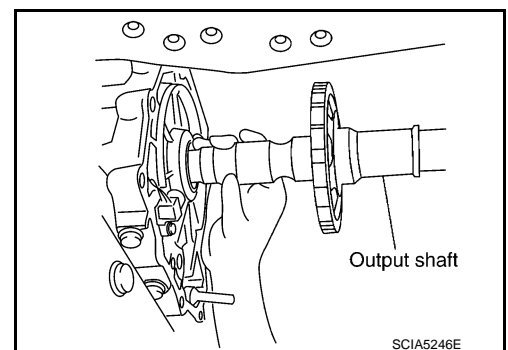
10. Remove rear extension assembly from transmission case. (With needle bearing.)



11. Remove bearing race from output shaft.



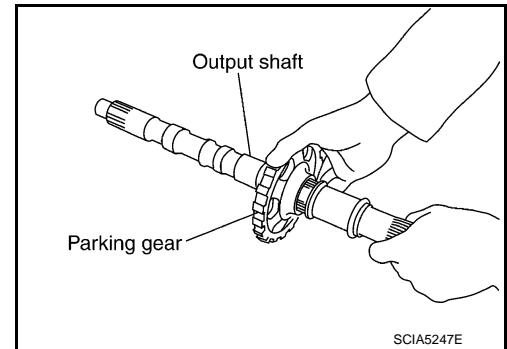
12. Remove output shaft from transmission case by rotating left/right.



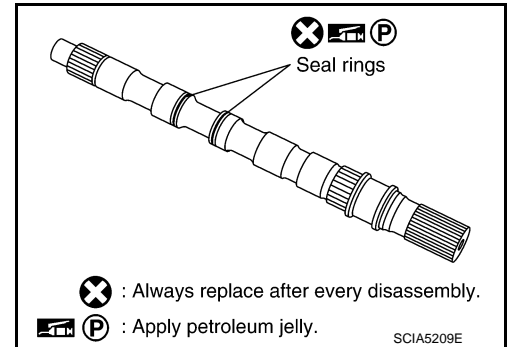
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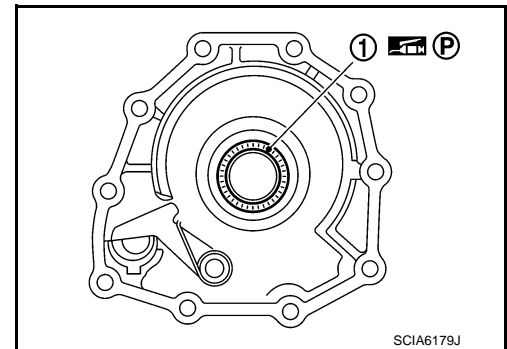
13. Remove parking gear from output shaft.



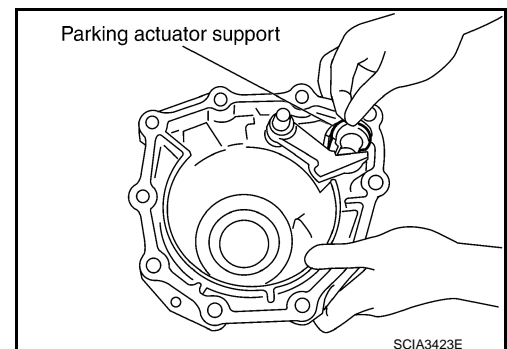
14. Remove seal rings from output shaft.



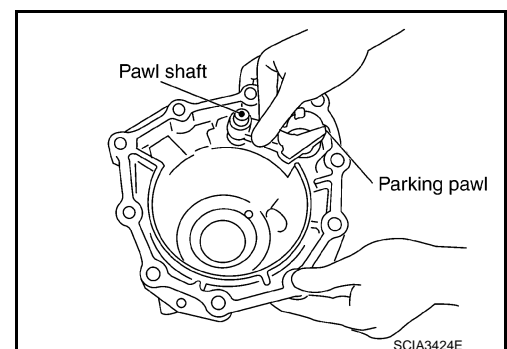
15. Remove needle bearing (1) from rear extension.



16. Remove parking actuator support from rear extension.



17. Remove parking pawl (with return spring) and pawl shaft from rear extension.

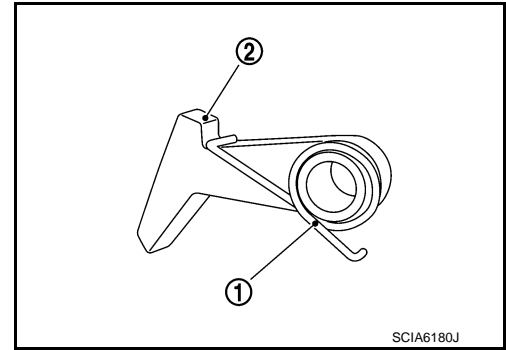


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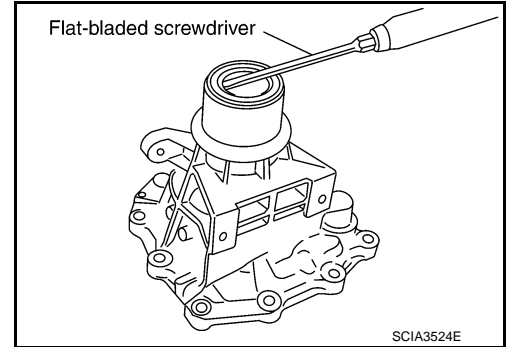
ON-VEHICLE SERVICE

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18. Remove return spring (1) from parking pawl (2).

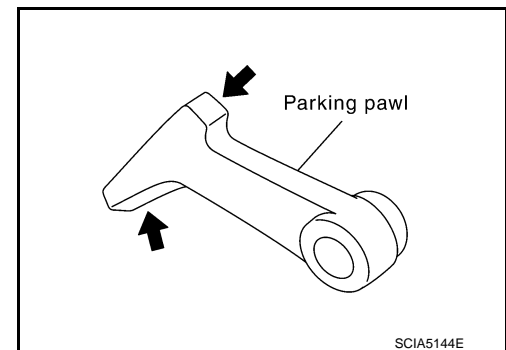
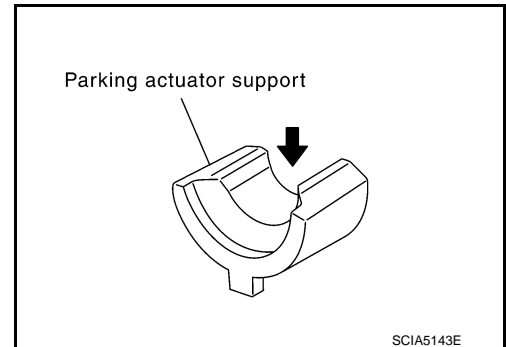


19. Remove rear oil seal from rear extension.
CAUTION:
Be careful not to scratch rear extension.



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 fluid leakage, A/T fluid level and A/T position. Refer to [AT-12](#), "[Checking A/T Fluid](#)", [AT-202](#), "[Checking of A/T Position](#)".

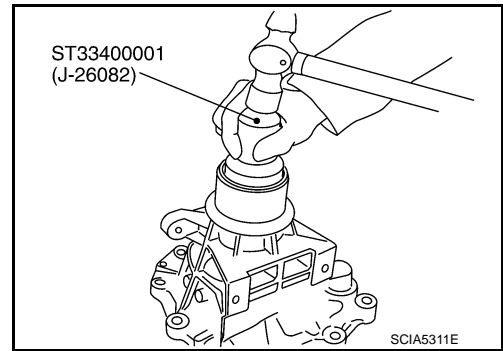
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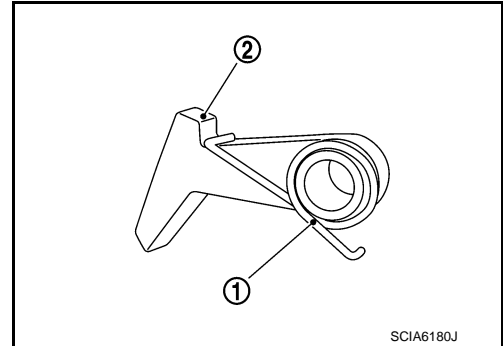
1. As shown in the figure, use a drift to drive rear oil seal into the rear extension until it is flush.

CAUTION:

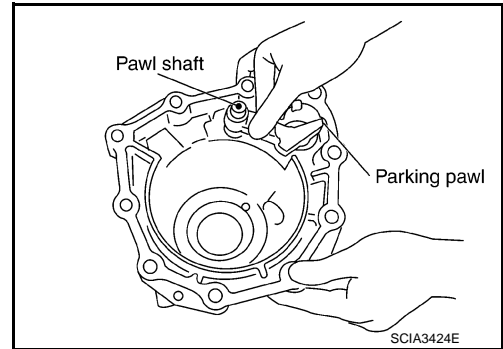
- Apply ATF to rear oil seal.
- Do not reuse rear oil seal.



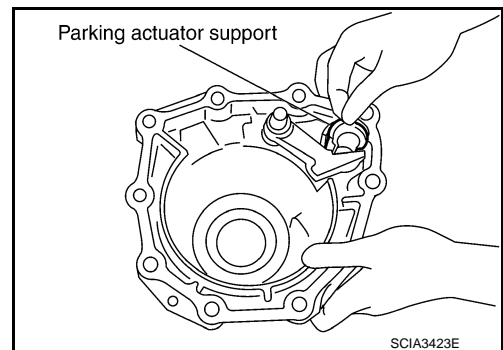
2. Install return spring (1) to parking pawl (2).



3. Install parking pawl (with return spring) and pawl shaft to rear extension.



4. Install parking actuator support to rear extension.

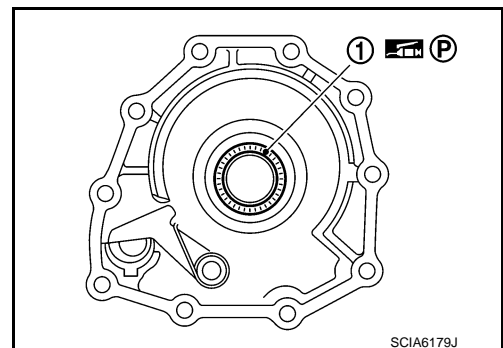


5. Install bearing (1) to rear extension.

CAUTION:

- Take care with the direction of needle bearing. Refer to [AT-271, "Location of Adjusting Shims, Needle Bearings, Thrust Washers and Snap Rings"](#).
- Apply petroleum jelly to needle bearing.

Refer to GI section to make sure icons (symbol marks) in the figure. Refer to [GI-9, "Component"](#).



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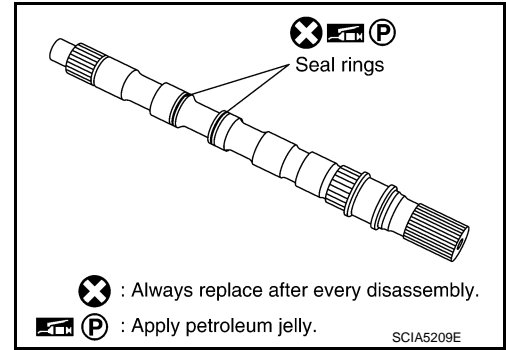
ON-VEHICLE SERVICE

< SERVICE INFORMATION >

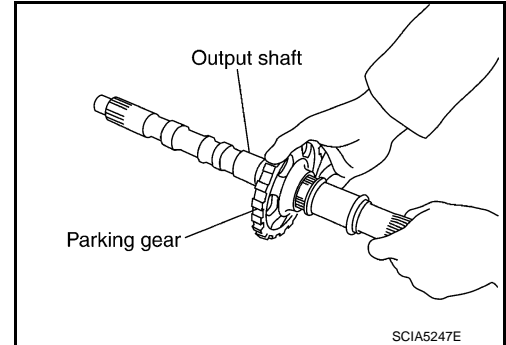
6. Install seal rings to output shaft.

CAUTION:

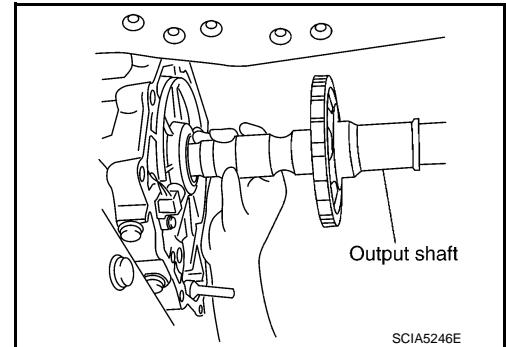
- Do not reuse seal rings.
- Apply petroleum jelly to seal rings.



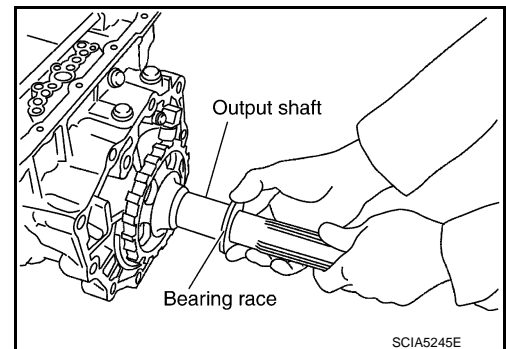
7. Install parking gear to output shaft



8. Install output shaft in transmission case.



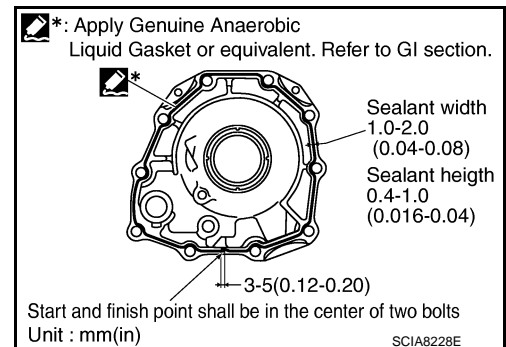
9. Install bearing race to output shaft.



10. Apply recommended sealant (Genuine Anaerobic Liquid Gasket or equivalent. Refer to [GI-44, "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 the transmission case and rear extension assembly mounting surfaces.



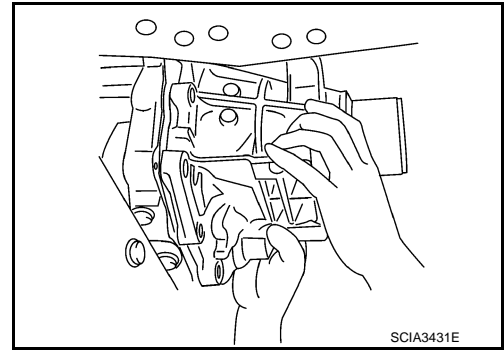
ON-VEHICLE SERVICE

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11. Install rear extension assembly to transmission case. (With needle bearing.)

CAUTION:

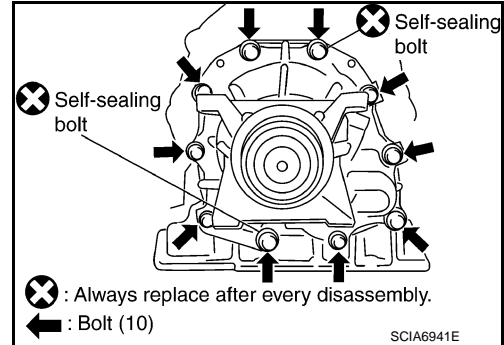
Insert the tip of parking rod between the parking pawl and the parking actuator support when assembling the rear extension assembly.



12. Tighten rear extension assembly bolts to the specified torque. Refer to "Components".

CAUTION:

Do not reuse self-sealing bolts.



13. Install engine mounting insulator (rear). Refer to [AT-246, "Removal and Installation \(2WD Models\)"](#).
14. Install rear engine mounting member. Refer to [AT-246, "Removal and Installation \(2WD Models\)"](#).
15. Install control rod. Refer to [AT-201, "Control Rod Removal and Installation"](#).
16. Install rear propeller shaft. Refer to [PR-9, "Removal and Installation"](#).
17. Install exhaust front tube and center muffler. Refer to [EX-4, "Removal and Installation"](#).
18. Install drain plug to oil pan. Tighten a necessary drain plug with specified torque. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).

CAUTION:

Do not reuse drain plug gasket.

19. Pour ATF into A/T assembly. Refer to [AT-12, "Changing A/T Fluid"](#).

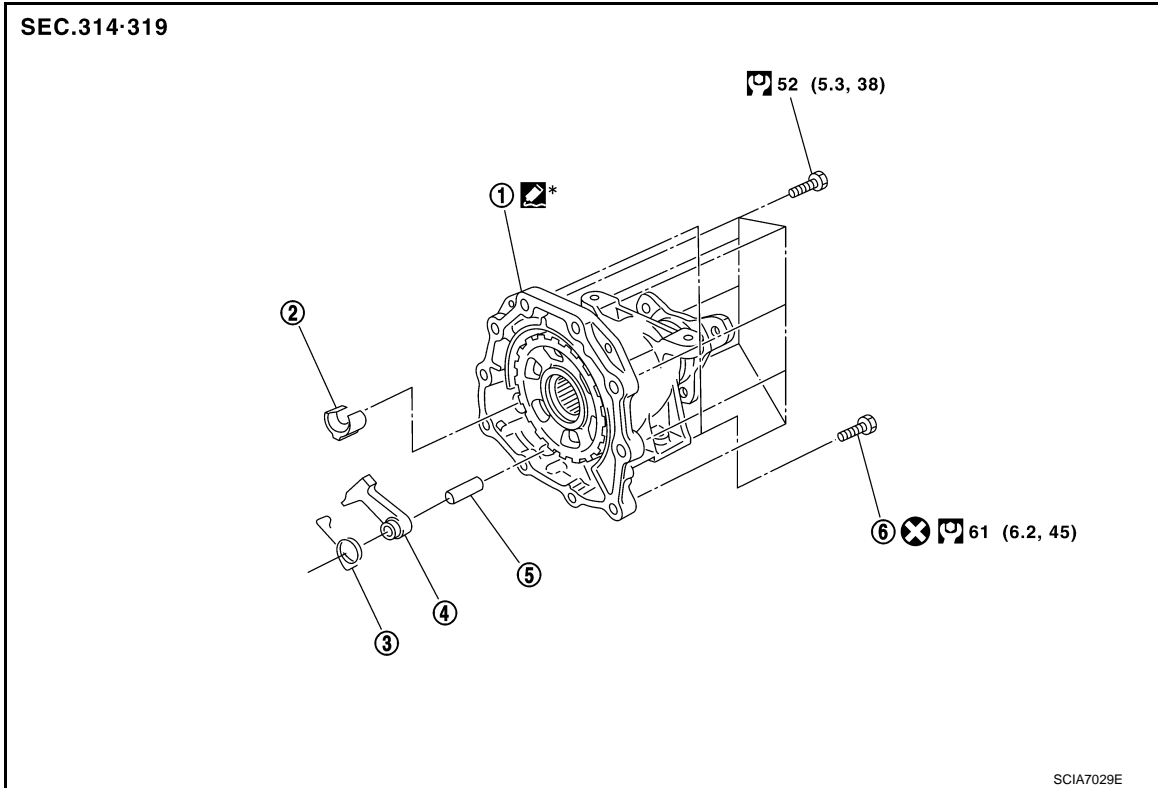
REMOVAL AND INSTALLATION (VK45DE MODELS)

Components

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ON-VEHICLE SERVICE

< SERVICE INFORMATION >



- | | | |
|---|-----------------------------|----------------------|
| 1. Output shaft & companion flange complement | 2. Parking actuator support | 3. Return spring |
| 4. Parking pawl | 5. Pawl shaft | 6. Self-sealing bolt |

Refer to GI section to make sure icons (symbol marks) in the figure. Refer to [GI-9, "Component"](#).
However, refer to the following symbols for others.

: Apply Genuine Anaerobic Liquid Gasket or equivalent. Refer to [GI-44, "Recommended Chemical Product and Sealant"](#).

Removal

1. Drain ATF through drain plug.
2. Remove exhaust front tube and center muffler with a power tool. Refer to [EX-6, "Removal and Installation"](#).
3. Remove rear propeller shaft. Refer to [PR-9, "Removal and Installation"](#).
4. Remove control rod. Refer to [AT-201, "Control Rod Removal and Installation"](#).
5. Support A/T assembly with a transmission jack.

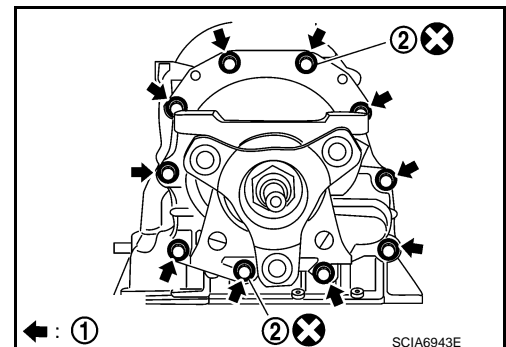
CAUTION:

When setting transmission jack, be careful not to allow it to collide against the drain plug.

6. Remove rear engine mounting member with a power tool. Refer to [AT-246, "Removal and Installation \(2WD Models\)"](#).
7. Remove engine mounting insulator (rear). Refer to [AT-246, "Removal and Installation \(2WD Models\)"](#).
8. Remove tightening bolts (1) for output shaft & companion flange complement and transmission case.

2 : Self-sealing bolt

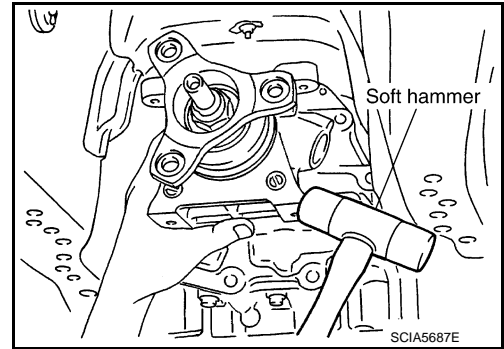
 : Bolt



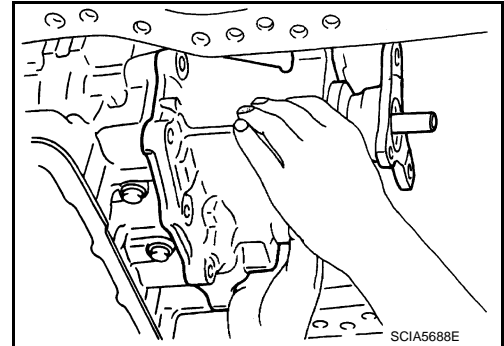
ON-VEHICLE SERVICE

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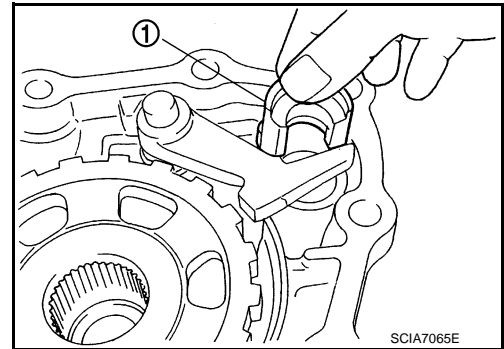
9. Tap output shaft & companion flange complement with a soft hammer.



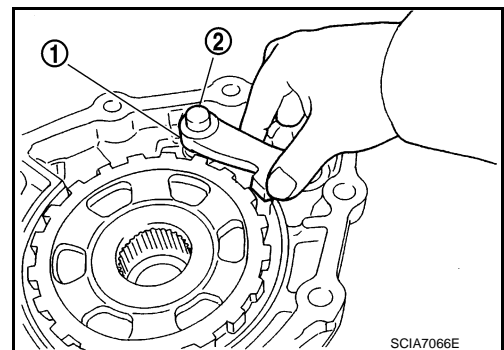
10. Remove output shaft & companion flange complement from transmission case.



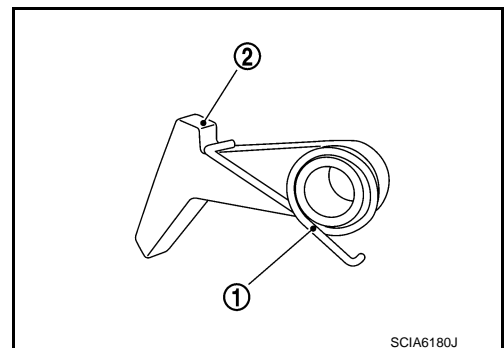
11. Remove parking actuator support (1) from output shaft & companion flange complement.



12. Remove parking pawl (with return spring) (1) and pawl shaft (2) from output shaft & companion flange complement.



13. Remove return spring (1) from parking pawl (2).



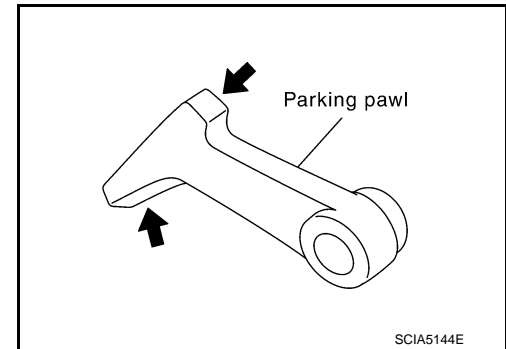
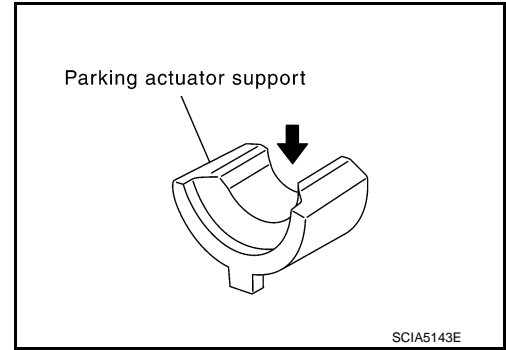
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ON-VEHICLE SERVICE

< SERVICE INFORMATION >

Inspection

- If the contact surface on parking actuator support, parking pawl, etc. has excessive wear, abrasion, bend, or any other damage, replace the components.

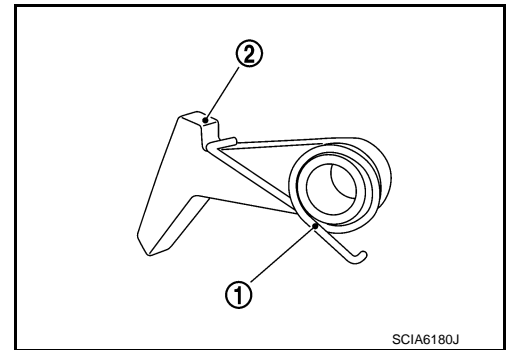


Installation

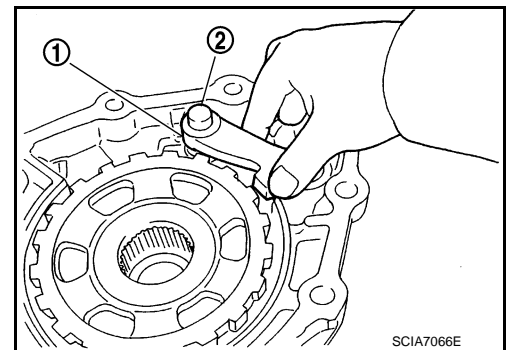
CAUTION:

After completing installation, check A/T fluid leakage, A/T fluid level and A/T position. Refer to [AT-12](#), "[Checking A/T Fluid](#)", [AT-202](#), "[Checking of A/T Position](#)".

1. Install return spring (1) to parking pawl (2).



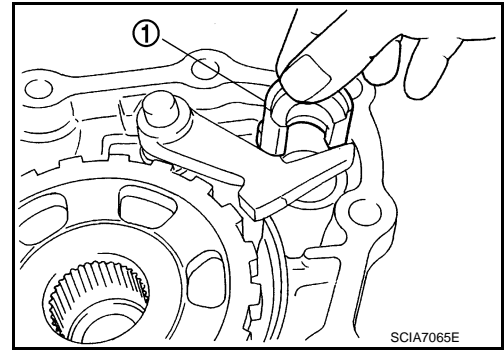
2. Install parking pawl (with return spring) (1) and pawl shaft (2) in output shaft & companion flange complement.



ON-VEHICLE SERVICE

< SERVICE INFORMATION >

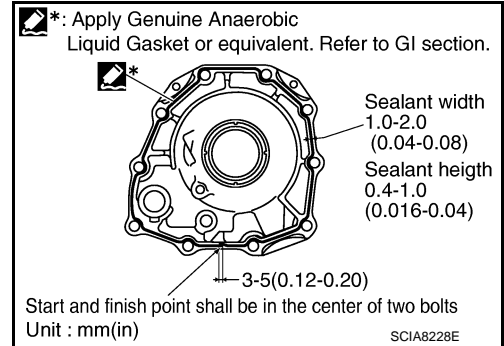
3. Install parking actuator support (1) in output shaft & companion flange complement.



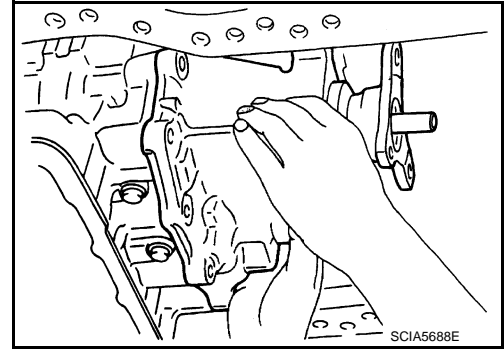
4. Apply recommended sealant (Genuine Anaerobic Liquid Gasket or equivalent. Refer to [GI-44, "Recommended Chemical Product and Sealant"](#).) to output shaft & companion flange complement as shown in the figure.

CAUTION:

Completely remove all moisture, oil and old sealant, etc. from the transmission case and output shaft & companion flange complement mounting surfaces.



5. Install output shaft & companion flange complement to transmission case.



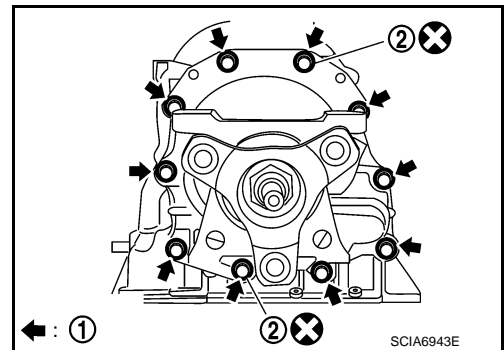
6. Tighten output shaft & companion flange complement bolts (1) to the specified torque. Refer to "Components".

← : Bolt

CAUTION:

Do not reuse self-sealing bolts (2).

Refer to GI section to make sure icons (symbol marks) in the figure. Refer to [GI-9, "Component"](#).



7. Install engine mounting insulator (rear). Refer to [AT-246, "Removal and Installation \(2WD Models\)"](#).
 8. Install rear engine mounting member. Refer to [AT-246, "Removal and Installation \(2WD Models\)"](#).
 9. Install control rod. Refer to [AT-201, "Control Rod Removal and Installation"](#).
 10. Install rear propeller shaft. Refer to [PR-9, "Removal and Installation"](#).
 11. Install exhaust front tube and center muffler. Refer to [EX-6, "Removal and Installation"](#).
 12. Install drain plug to oil pan. Tighten a necessary drain plug with specified torque. Refer to [AT-210, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#).
- CAUTION:**
Do not reuse drain plug gasket.
13. Pour ATF into A/T assembly. Refer to [AT-12, "Changing A/T Fluid"](#).

ON-VEHICLE SERVICE

< SERVICE INFORMATION >

Rear Oil Seal (VQ35DE Models Only)

INFOID:00000002955644

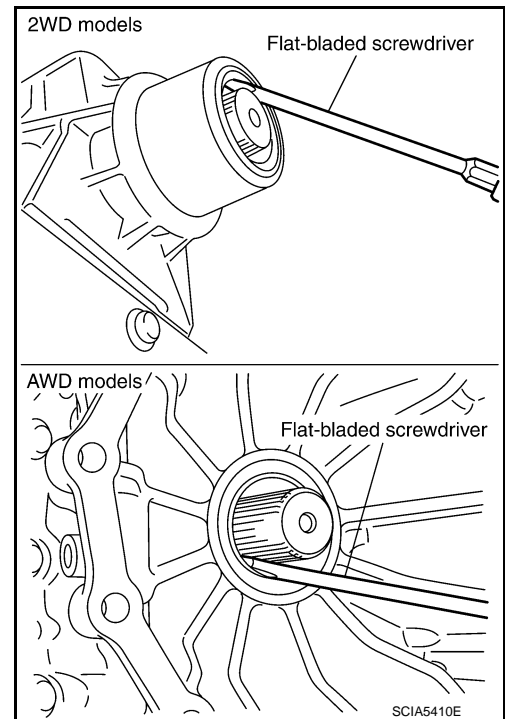
REMOVAL AND INSTALLATION

Removal

1. Remove rear propeller shaft. Refer to [PR-9, "Removal and Installation"](#).
2. Remove transfer assembly from A/T assembly (AWD models). Refer to [TF-41, "Removal and Installation"](#).
3. Remove rear oil seal using a flat-bladed screwdriver.

CAUTION:

Be careful not to scratch rear extension assembly (2WD models) or adapter case assembly (AWD models).



Installation

CAUTION:

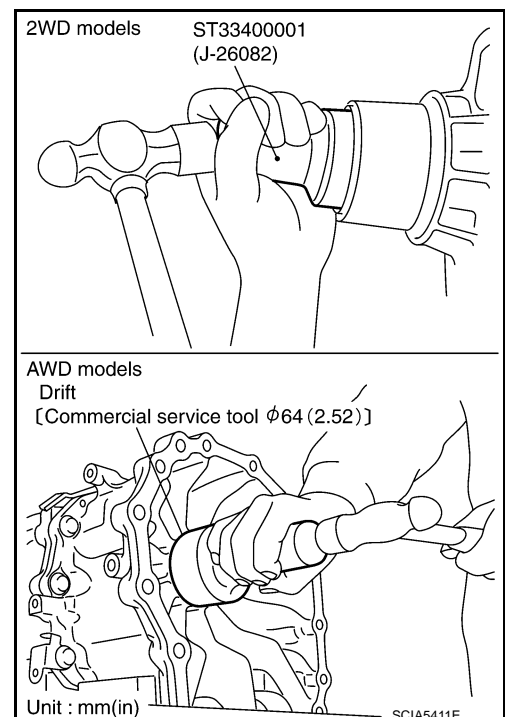
After completing installation, check for A/T fluid leakage and A/T fluid level. Refer to [AT-12, "Checking A/T Fluid"](#).

1. As shown in the figure, use the drift to drive rear oil seal into rear extension assembly (2WD models) or adapter case assembly (AWD models) until it is flush.

CAUTION:

- Do not reuse rear oil seal.
- Apply ATF to rear oil seal.

2. Install transfer assembly to A/T assembly (AWD models). Refer to [TF-41, "Removal and Installation"](#).
3. Install rear propeller shaft. Refer to [PR-9, "Removal and Installation"](#).



ON-VEHICLE SERVICE

< SERVICE INFORMATION >

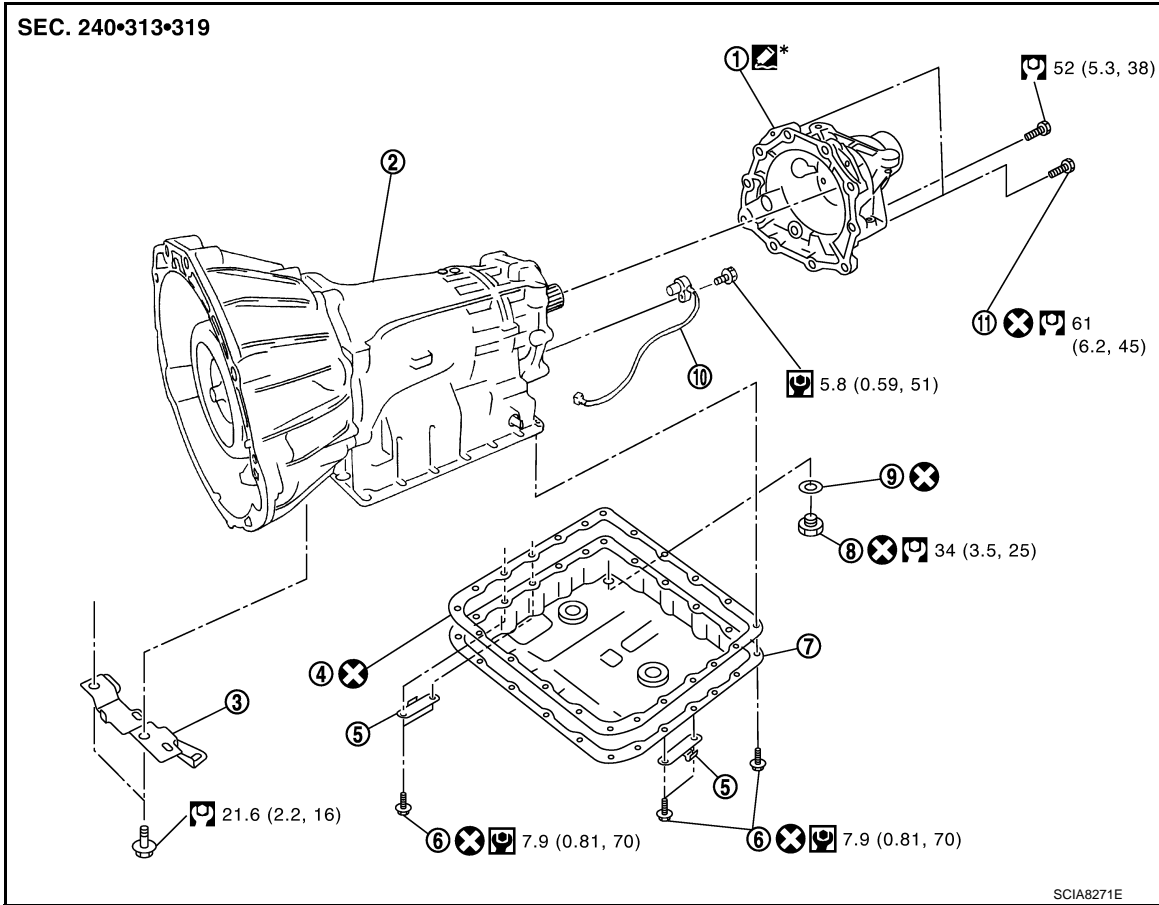
Output Speed Sensor Component (2WD Models Only)

INFOID:000000002955645

REMOVAL AND INSTALLATION

Components

VQ35DE models



- | | | |
|-------------------------|-----------------------|--------------------------|
| 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-9, "Component"](#).

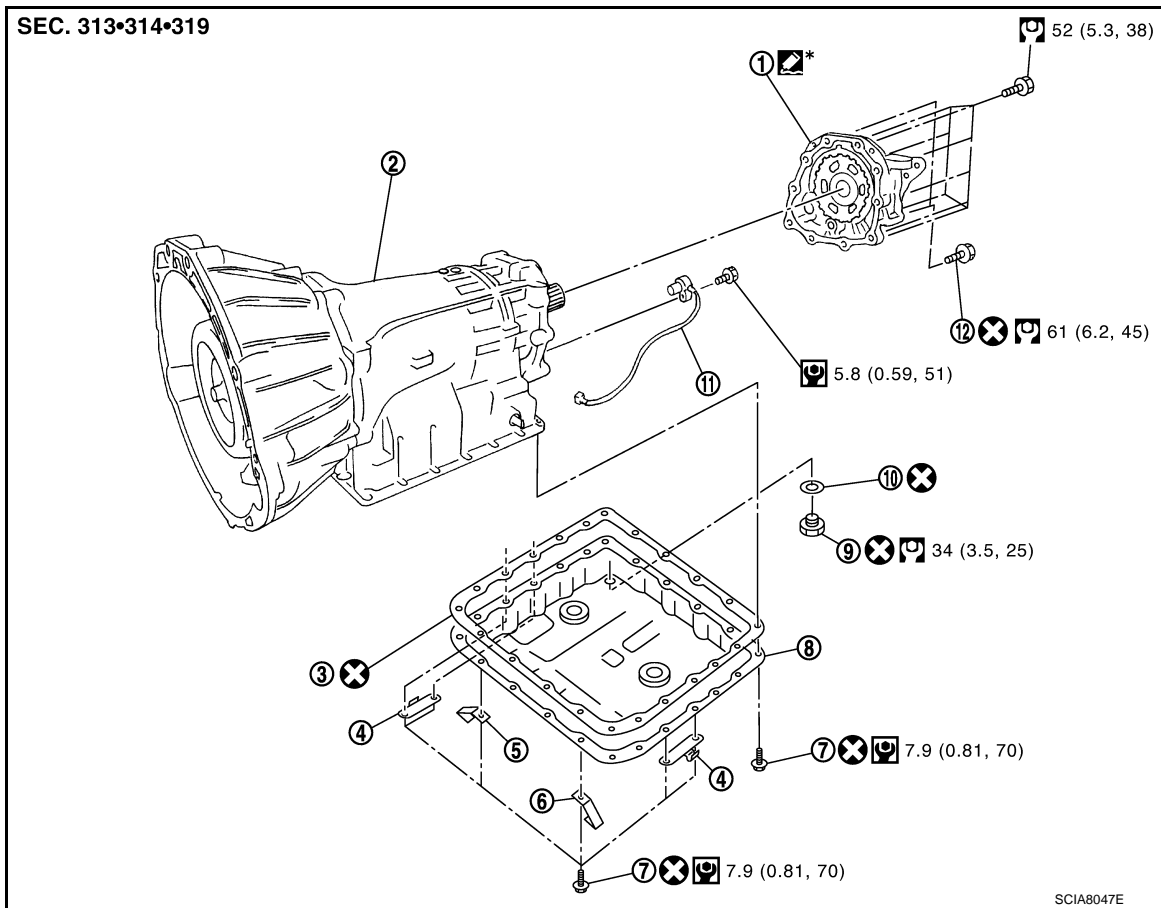
However, refer to the following symbols for others.

: Apply Genuine Anaerobic Liquid Gasket or equivalent. Refer to [GI-44, "Recommended Chemical Product and Sealant"](#).

ON-VEHICLE SERVICE

< SERVICE INFORMATION >

VK45DE models



- | | | |
|---|-------------------------|-----------------------|
| 1. Output shaft & companion flange complement | 2. A/T | 3. Oil pan gasket |
| 4. Clip | 5. Bracket | 6. Bracket |
| 7. Oil pan mounting bolt | 8. Oil pan | 9. Drain plug |
| 10. Drain plug gasket | 11. Output speed sensor | 12. Self-sealing bolt |

Refer to GI section to make sure icons (symbol marks) in the figure. Refer to [GI-9. "Component"](#).

However, refer to the following symbols for others.

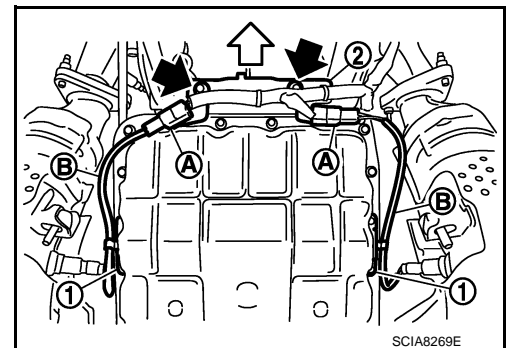
: Apply Genuine Anaerobic Liquid Gasket or equivalent. Refer to [GI-44. "Recommended Chemical Product and Sealant"](#).

Removal

1. Disconnect the battery cable from the negative terminal.
2. Drain ATF through drain plug.
3. Remove exhaust front tube and center muffler with power tool. Refer to [EX-4. "Removal and Installation"](#)
4. Remove rear propeller shaft. Refer to [PR-9. "Removal and Installation"](#).
5. Remove control rod. Refer to [AT-201. "Control Rod Removal and Installation"](#).
6. Disconnect heated oxygen sensor 2 harness connectors (A).

: Vehicle front
 : Bolt

7. Remove heated oxygen sensor 2 harness (B) from clips (1).
8. Remove bracket (2) from transmission assembly. (for VQ35DE models)





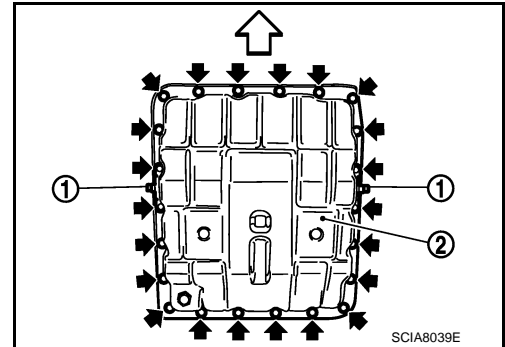
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ON-VEHICLE SERVICE



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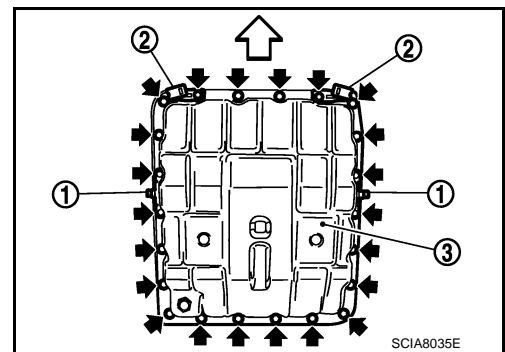
9. Remove oil pan, oil pan gasket and clips (VQ35DE models) or oil pan, oil pan gasket, brackets and clips (VK45DE models) according to the following procedures.
 - a. VQ35DE models
 - i. Remove clips (1).
 - ii. Remove oil pan (2) and oil pan gasket.

-  : Vehicle front
 : Oil pan mounting bolt



- b. VK45DE models
 - i. Remove clips (1) and brackets (2).
 - ii. Remove oil pan (3) and oil pan gasket.

-  : Vehicle front
 : Oil pan mounting bolt



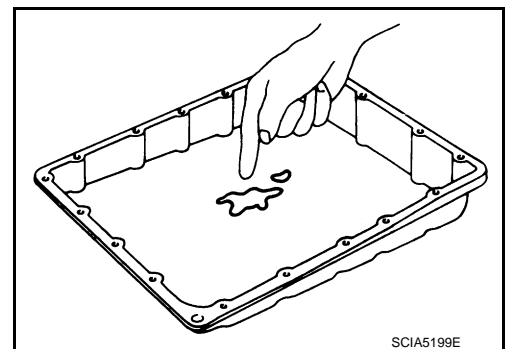
10. Check foreign materials in oil pan to help determine causes of malfunction. If the ATF is very dark, smells burned, or contains foreign particles, the frictional material (clutches, band) may need replacement. A tacky film that will not wipe clean indicates varnish build up. Varnish can cause valves, 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"](#).

11. Support A/T assembly with a transmission jack.

CAUTION:

When setting transmission jack, place wooden blocks to prevent from damaging control valve with TCM and transmission case.

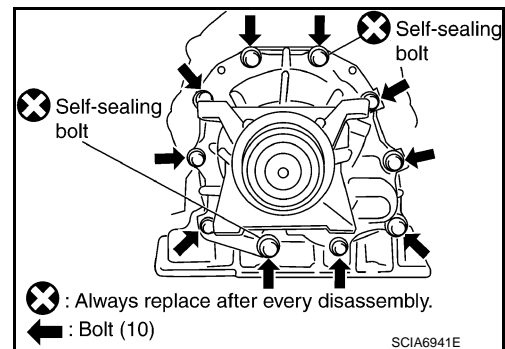


12. Remove rear engine mounting member with power tool. Refer to [AT-246, "Removal and Installation \(2WD Models\)"](#).

13. Remove rear extension assembly (VQ35DE models) or output shaft & companion flange complement (VK45DE models) according to the following procedures.

a. **VQ35DE models**

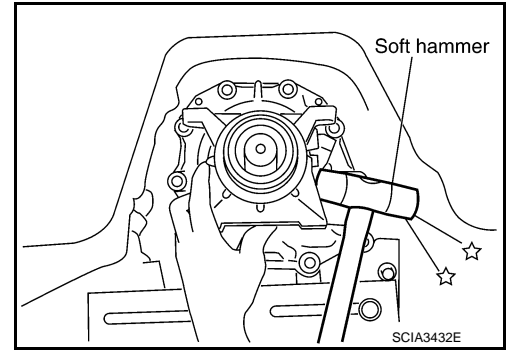
- i. Remove tightening bolts for rear extension assembly and transmission case.



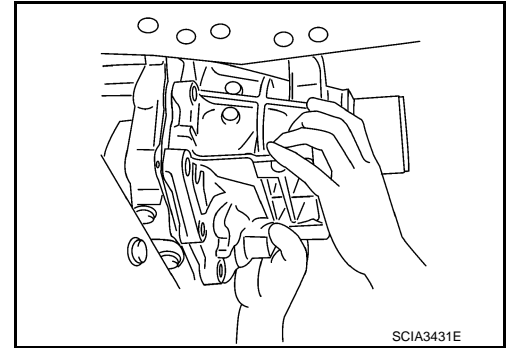
ON-VEHICLE SERVICE

< SERVICE INFORMATION >

ii. Tap rear extension assembly with a soft hammer.



iii. Remove rear extension assembly from transmission case. (With needle bearing.)

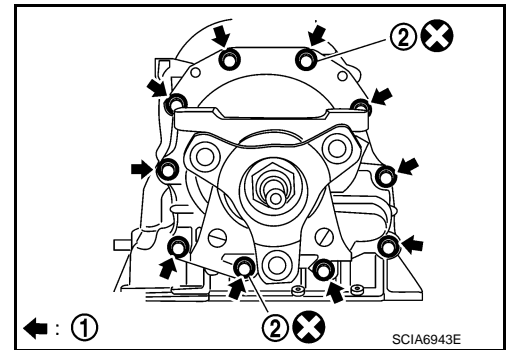


b. VK45DE models

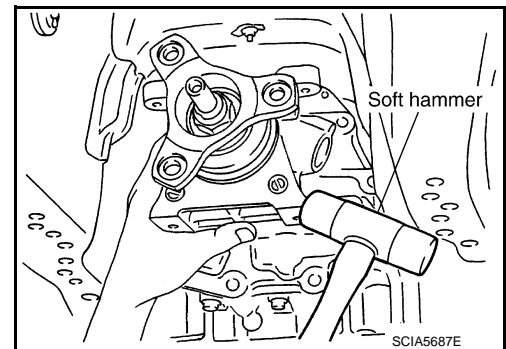
i. Remove tightening bolts (1) for output shaft & companion flange complement and transmission case.

2 : Self-sealing bolt

← : Bolt



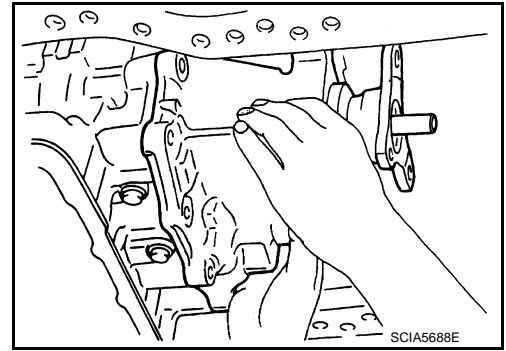
ii. Tap output shaft & companion flange complement with a soft hammer.



ON-VEHICLE SERVICE

< SERVICE INFORMATION >

- iii. Remove output shaft & companion flange complement from transmission case

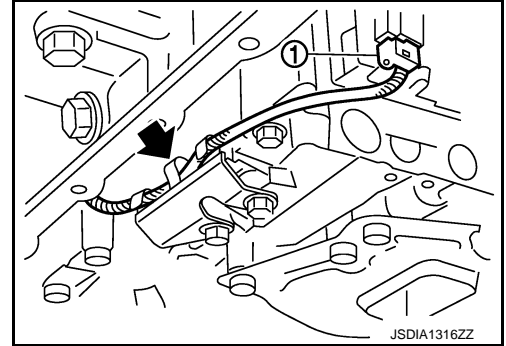


14. Straighten terminal clip (←) to free output speed sensor harness.

15. Disconnect output speed sensor connector (1).

CAUTION:

Be careful not to damage connector

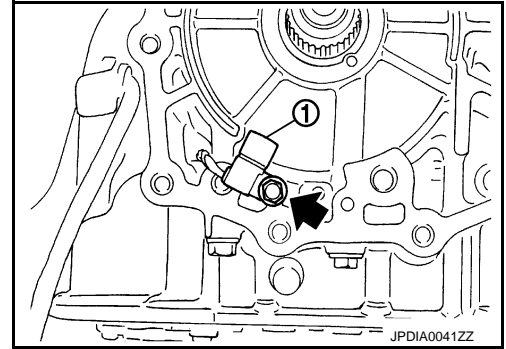


16. Remove output speed sensor (1) from transmission case.

← : Bolt

CAUTION:

- Never subject it to impact by dropping or hitting it.
- Never disassemble.
- Never allow metal filings, etc., to get on the sensor's front edge magnetic area.
- Never place in an area affected by magnetism.



Installation

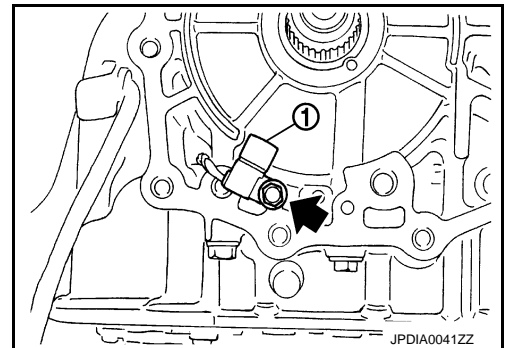
CAUTION:

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-202, "Checking of A/T Position"](#).

1. Install output speed sensor (1) in transmission case. Tighten a necessary bolt (←) for output speed sensor with specified torque. Refer to "Components".

CAUTION:

- Never subject it to impact by dropping or hitting it.
- Never disassemble.
- Never allow metal filings, etc., to get on the sensor's front edge magnetic area.
- Never place in an area affected by magnetism.

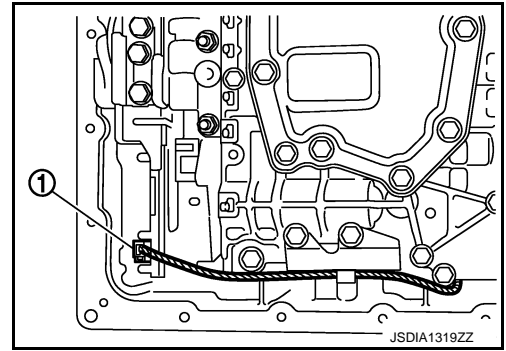


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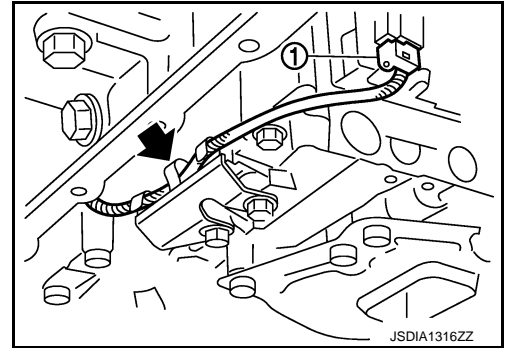
ON-VEHICLE SERVICE

< SERVICE INFORMATION >

2. Connect output speed sensor connector (1).



3. Securely fasten output speed sensor (1) harness with clip (←).



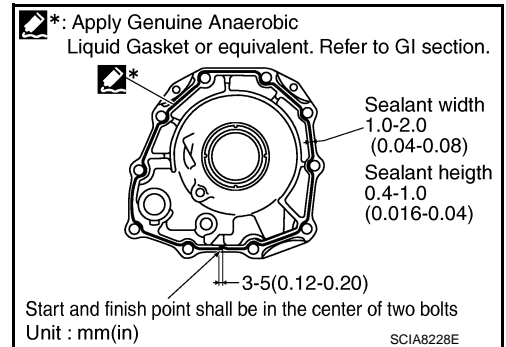
4. Install rear extension assembly (VQ35DE models) or output shaft & companion flange complement (VK45DE models) according to the following procedures.

a. **VQ35DE models**

i. Apply recommended sealant (Genuine Anaerobic Liquid Gasket or equivalent. Refer to [GI-44, "Recommended Chemical Product and Sealant"](#).) to rear extension assembly as shown in the figure.

CAUTION:

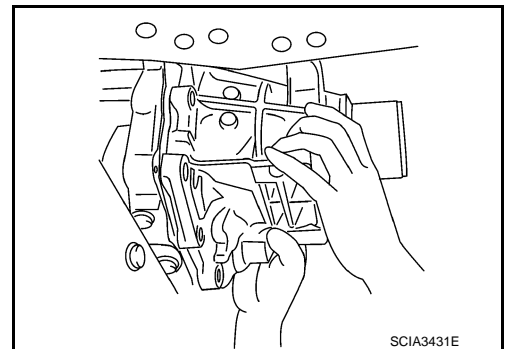
Completely remove all moisture, oil and old sealant, etc. from transmission case and rear extension assembly mounting surfaces.



ii. Install rear extension assembly to transmission case. (With needle bearing.)

CAUTION:

Insert the tip of parking rod between the parking pole and the parking actuator support when assembling the rear extension assembly.



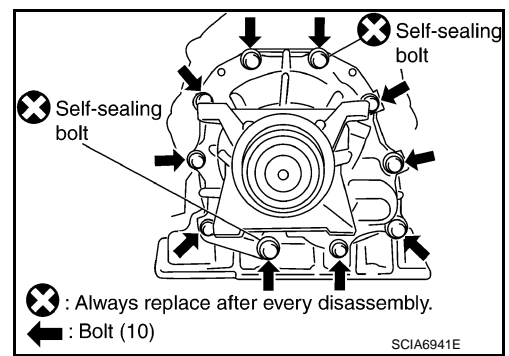
ON-VEHICLE SERVICE

< SERVICE INFORMATION >

- iii. Tighten rear extension assembly bolts to the specified torque. Refer to "REMOVAL AND INSTALLATION".

CAUTION:

Do not reuse self-sealing bolts.

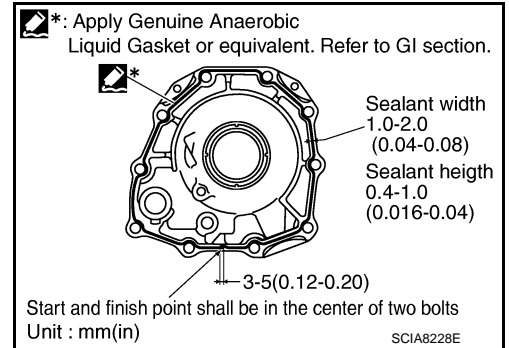


b. **VK45DE models**

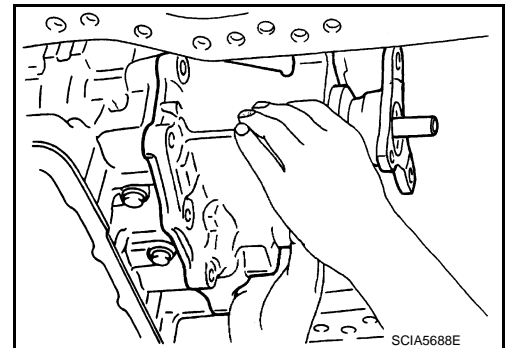
- i. Apply recommended sealant (Genuine Anaerobic Liquid Gasket or equivalent. Refer to [GI-44. "Recommended Chemical Product and Sealant"](#).) to output shaft & companion flange complement as shown in the figure.

CAUTION:

Completely remove all moisture, oil and old sealant, etc. from the transmission case and output shaft & companion flange complement mounting surfaces.



- ii. Install output shaft & companion flange complement to transmission case.



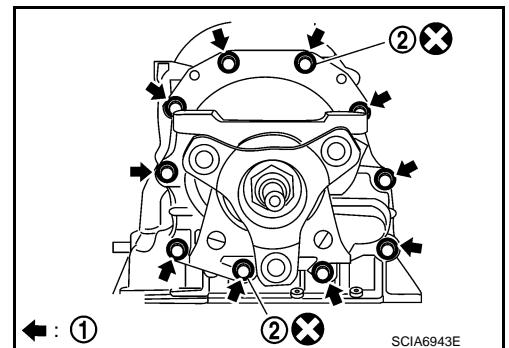
- iii. Tighten output shaft & companion flange complement bolts (1) to the specified torque. Refer to "REMOVAL AND INSTALLATION".

← : Bolt

CAUTION:

Do not reuse self-sealing bolts (2).

Refer to GI section to make sure icons (symbol marks) in the figure. Refer to [GI-9. "Component"](#).



5. Install rear engine mounting member. Refer to [AT-246. "Removal and Installation \(2WD Models\)"](#).
 6. Install oil pan, oil pan gasket and clips (VQ35DE models) or oil pan, oil pan gasket, brackets and clips (VK45DE models) according to the following procedures.

a. **VQ35DE models**

- i. 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.

ON-VEHICLE SERVICE

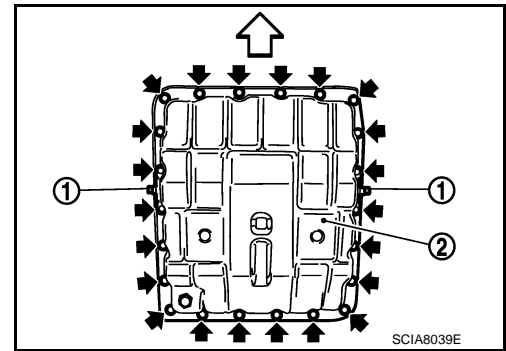
< SERVICE INFORMATION >

- ii. Install oil pan (2) (with oil pan gasket) and clips (1) to transmission case.

 : Vehicle front
 : Oil pan mounting bolt

CAUTION:

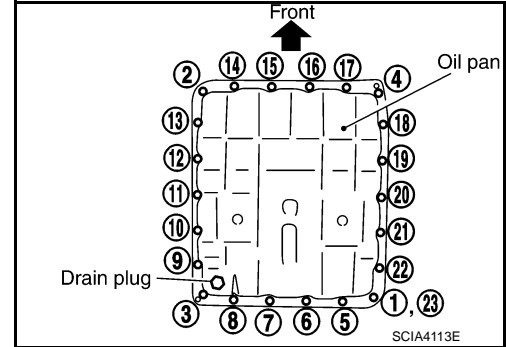
- Install it so that drain plug comes to the position as shown in the figure.
- Be careful not to pinch harnesses.
- Completely remove all moisture, oil and old gasket, etc. from oil pan mounting surface.



- iii. Tighten oil pan mounting bolts to the specified torque in numerical order shown in the figure after temporarily tightening them. Tighten oil pan mounting bolts to the specified torque. Refer to "Components".

CAUTION:

Do not reuse oil pan mounting bolts.





- b. VK45DE models

- i. Install oil pan gasket to oil pan.

CAUTION:

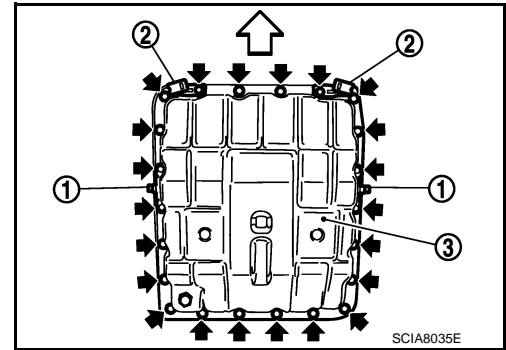
- Do not reuse oil pan gasket.
- Install it in the direction to align hole positions.
- Complete remove all moisture, oil and old gasket, etc. from oil pan gasket mounting surface.

- ii. Install oil pan (3) (with oil pan gasket), clips (1) and brackets (2) to transmission case.

 : Vehicle front
 : Oil pan mounting bolt

CAUTION:

- Install it so that drain plug 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.
- Be careful with installation direction of brackets (2).



- iii. Tighten oil pan mounting bolts to the specified torque in numerical order shown in the figure after temporarily tightening them. Tighten oil pan mounting bolts to the specified torque. Refer to "Components".

CAUTION:

Do not reuse oil pan mounting bolts.

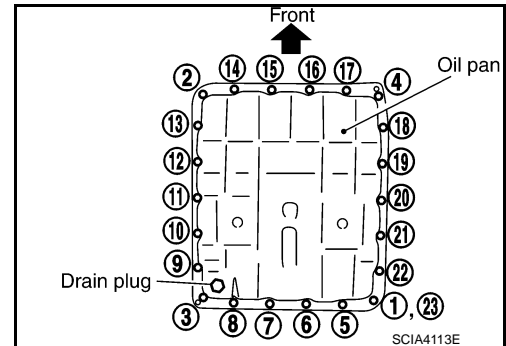
7. Install drain plug to oil pan. Tighten a necessary drain plug with specified torque. Refer to "Components".

CAUTION:

Do not reuse drain plug gasket.

8. Install control rod. Refer to [AT-201, "Control Rod Removal and Installation"](#).

9. Install rear propeller shaft. Refer to [PR-9, "Removal and Installation"](#).



ON-VEHICLE SERVICE

< SERVICE INFORMATION >

10. Install exhaust front tube and center muffler. Refer to [EX-4, "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.

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AIR BREATHER HOSE

< SERVICE INFORMATION >

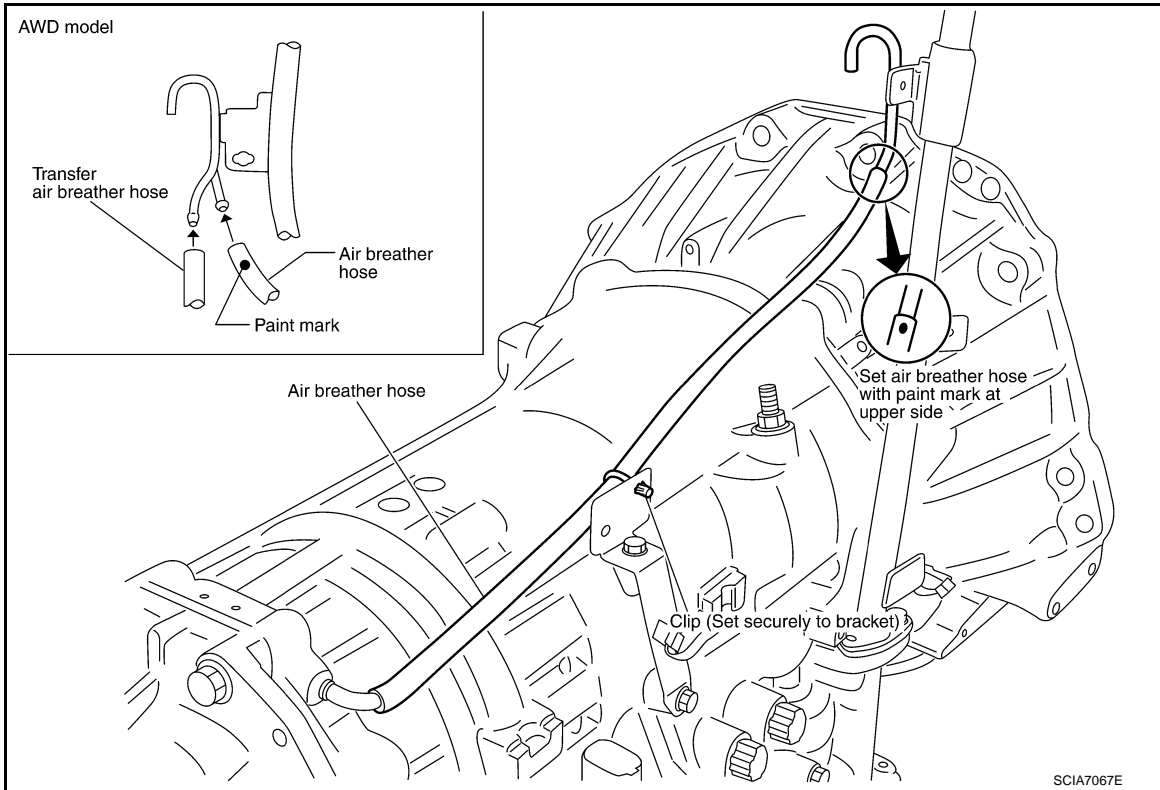
AIR BREATHER HOSE

Removal and Installation

INFOID:00000002955646

VQ35DE ENGINE MODEL

Refer to the figure below for air breather hose removal and installation procedure.



CAUTION:

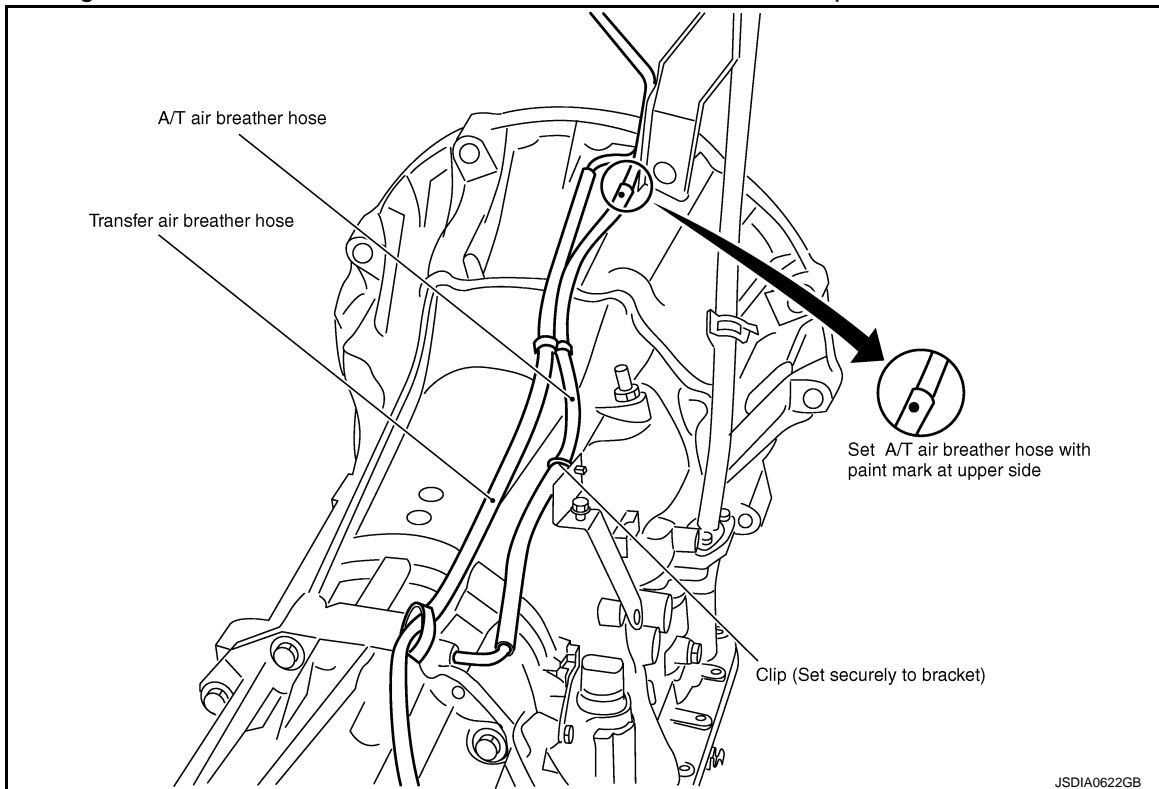
- When installing an air breather hose, be careful not to be crushed or blocked by folding or bending the hose.
- When inserting an air breather hose to the transmission tube, be sure to insert it fully until its end reaches the tube bend "R" portion.

VK45DE ENGINE MODEL

AIR BREATHER HOSE

< SERVICE INFORMATION >

Refer to the figure below for A/T air breather hose removal and installation procedure.



CAUTION:

- When installing an A/T air breather hose, be careful not to be crushed or blocked by folding or bending the hose.
- When inserting an A/T air breather hose to the transmission tube, be sure to insert it fully until its end reaches the tube bend "R" portion.

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TRANSMISSION ASSEMBLY

< SERVICE INFORMATION >

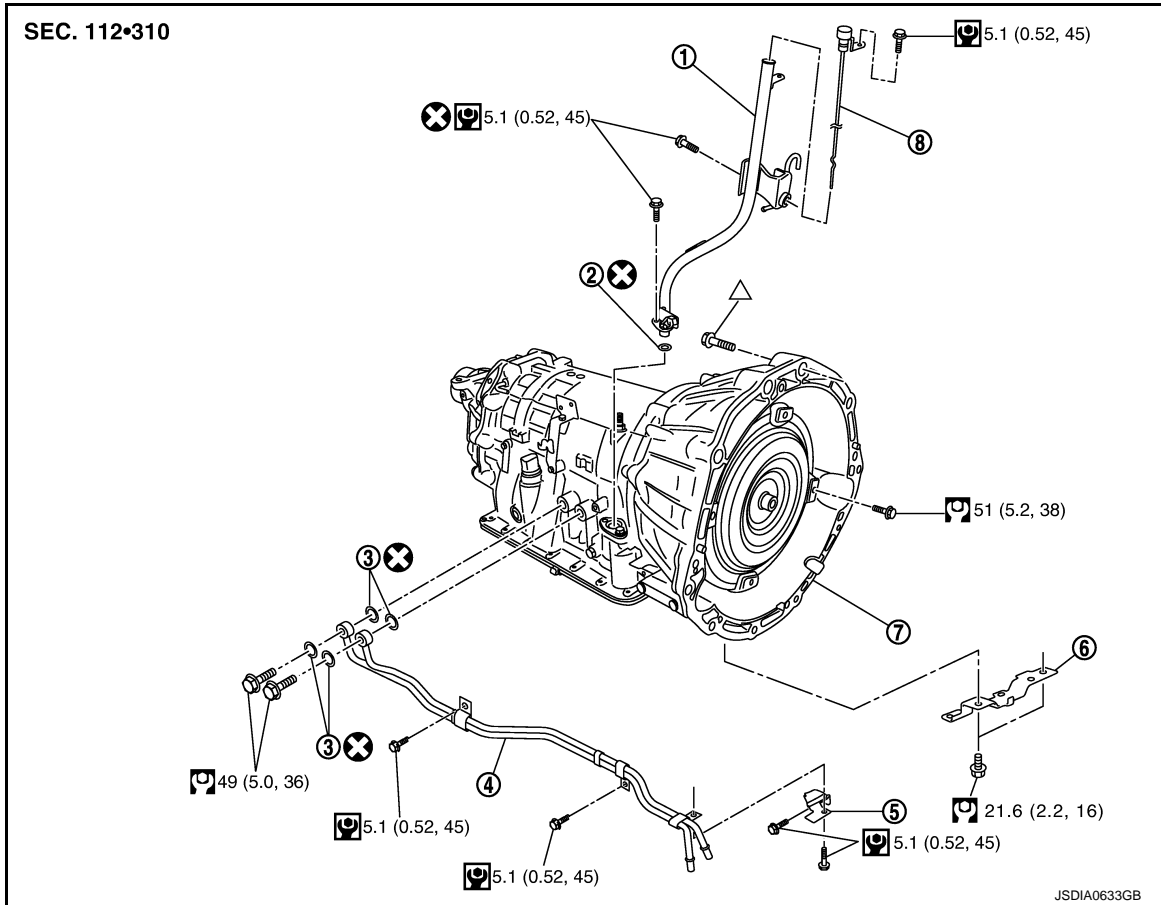
TRANSMISSION ASSEMBLY

Removal and Installation (2WD Models)

INFOID:00000002955647

COMPONENTS

VQ35DE models



- | | | |
|----------------------------|--------------------------|------------------|
| 1. A/T fluid charging pipe | 2. O-ring | 3. Copper washer |
| 4. Fluid cooler tube | 5. Bracket | 6. Bracket |
| 7. A/T assembly | 8. A/T fluid level gauge | |

Refer to GI section to make sure icons (symbol marks) in the figure. Refer to [GI-9, "Component"](#).

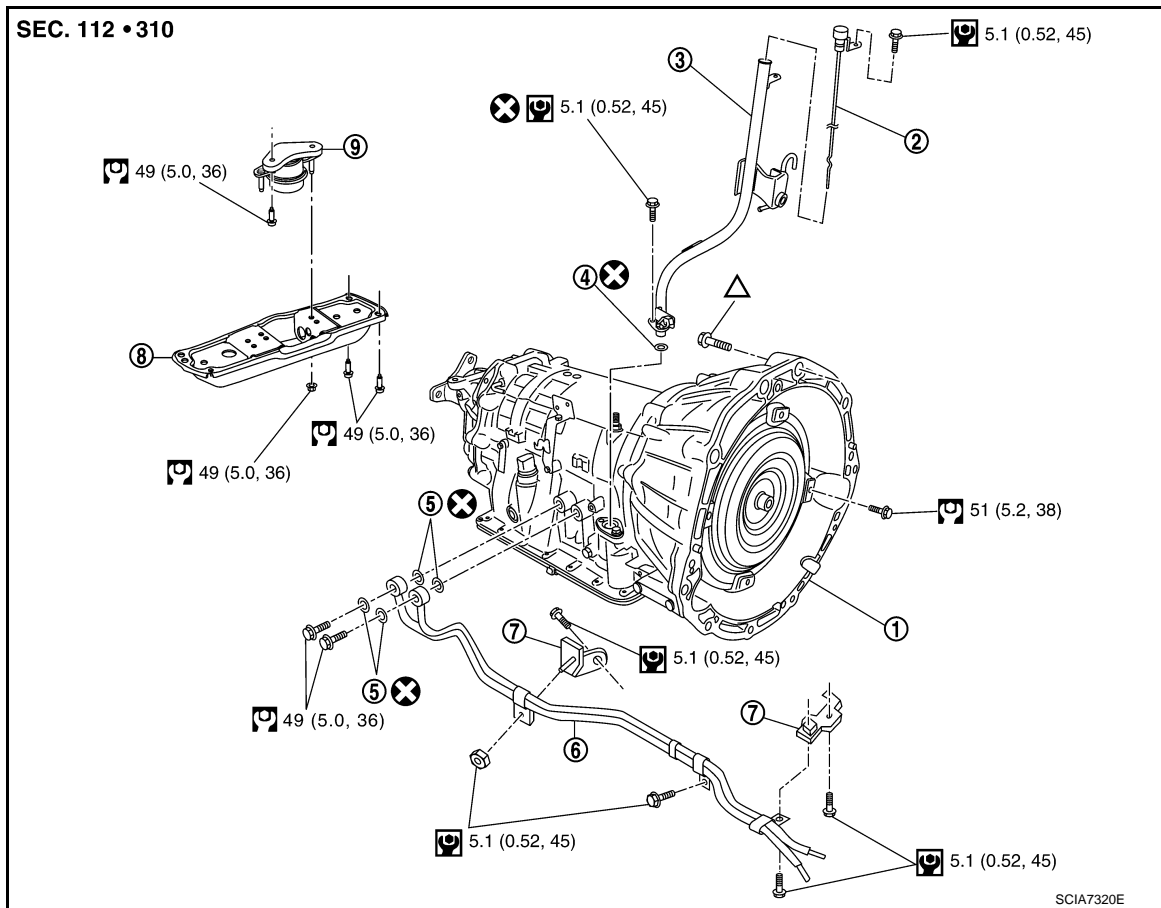
However, refer to the following symbols for others.

△: For tightening torque, refer to "INSTALLATION".

TRANSMISSION ASSEMBLY

< SERVICE INFORMATION >

VK45DE models



- | | | |
|-----------------|--------------------------------|-------------------------------------|
| 1. A/T assembly | 2. A/T fluid level gauge | 3. A/T fluid charging pipe |
| 4. O-ring | 5. Copper washer | 6. Fluid cooler tube |
| 7. Bracket | 8. Rear engine mounting member | 9. Engine mounting insulator (rear) |

Refer to GI section to make sure icons (symbol marks) in the figure. Refer to [GI-9. "Component"](#).

However, refer to following symbols for others.

△: For tightening torque, refer to "INSTALLATION".

REMOVAL

CAUTION:

- When removing the A/T assembly from engine, first remove the crankshaft position sensor (POS) from the A/T assembly.
 - Be careful not to damage sensor edge.
1. Disconnect the battery cable from the negative terminal.
 2. Remove engine under cover with power tool.
 3. Remove A/T fluid level gauge.
 4. Remove exhaust front tube and center muffler with power tool. Refer to [EX-4. "Removal and Installation"](#) (for VQ35DE engine), [EX-6. "Removal and Installation"](#) (for VK45DE engine).
 5. Remove heat insulator.
 6. Remove rear propeller shaft. Refer to [PR-9. "Removal and Installation"](#).
 7. Remove rack stay. Refer to [FSU-8. "Removal and Installation"](#).
 8. Remove exhaust mounting bracket. Refer to [EX-4. "Removal and Installation"](#) (for VQ35DE engine), [EX-6. "Removal and Installation"](#) (for VK45DE engine).

TRANSMISSION ASSEMBLY

< SERVICE INFORMATION >

9. Disconnect heated oxygen sensor 2 harness connectors (A).



10. Remove heated oxygen sensor 2 harness (B) from clips (1).
11. Remove bracket (2) from transmission assembly. (for VQ35DE models)
12. Remove control rod. Refer to [AT-201, "Control Rod Removal and Installation"](#).
13. Remove crankshaft position sensor (POS) from A/T assembly.

CAUTION:

- Do not subject it to impact by dropping or hitting it.
- Do not disassemble.
- Do not allow metal filings, etc., to get on the sensor's front edge magnetic area.
- Do not place in an area affected by magnetism.

14. Remove starter motor. Refer to [SC-13, "Removal and Installation"](#), [SC-13, "Removal and Installation"](#).
15. Remove rear cover plate. Refer to [EM-30, "2WD : Removal and Installation"](#) (for VQ35DE engine).
16. Remove rear plate cover. Refer to [EM-30, "2WD : Removal and Installation"](#) (for VQ35DE engine), [EM-186, "Removal and Installation"](#) (for VK45DE engine).
17. Turn crankshaft, and remove the four tightening bolts for drive plate and torque converter.

CAUTION:

When turning the crankshaft, turn it clockwise as viewed from the front of the engine.

18. Support A/T assembly with a transmission jack.

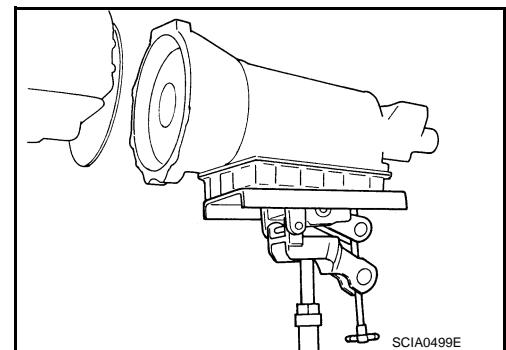
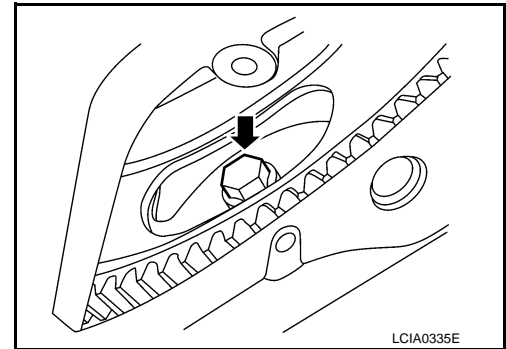
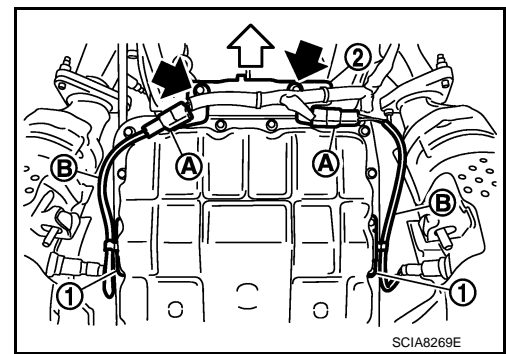
CAUTION:

When setting the transmission jack, be careful not to allow it to collide against the drain plug.

19. Remove rear engine mounting member with power tool.
20. Remove engine mounting insulator (rear).
21. Disconnect A/T assembly harness connector.
22. Remove air breather hose. Refer to [AT-244, "Removal and Installation"](#).
23. Remove A/T fluid charging pipe from A/T assembly.
24. Remove O-ring from A/T fluid charging pipe.
25. Disconnect fluid cooler tube from A/T assembly.
26. Plug up openings such as the A/T fluid charging pipe hole, etc.
27. Remove bolts fixing A/T assembly to engine assembly with power tool.
28. Remove A/T assembly from vehicle.

CAUTION:

- Secure torque converter to prevent it from dropping.
- Secure A/T assembly to a transmission jack.



INSPECTION

Installation and Inspection of Torque Converter

TRANSMISSION ASSEMBLY

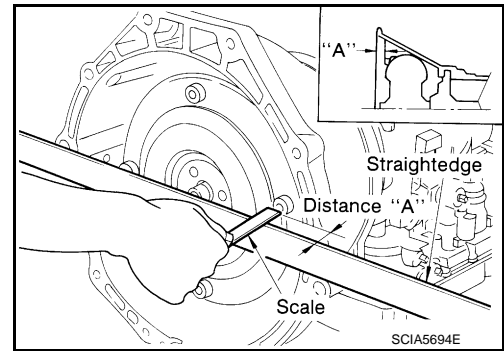
< SERVICE INFORMATION >

- 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"

VQ35DE models: 25.0 mm (0.98 in) or more

VK45DE models: 22.0 mm (0.87 in) or more



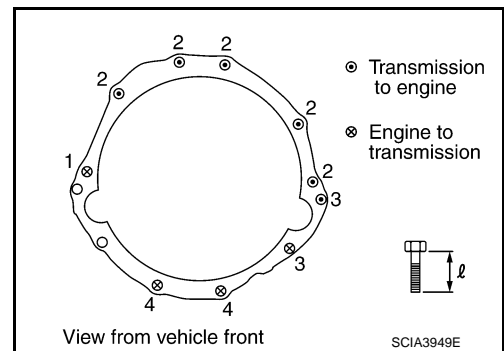
INSTALLATION

Install the removed parts in the reverse order of the removal, while paying attention to the following work.

- When installing A/T assembly to the engine assembly, attach the fixing bolts in accordance with the following standard.

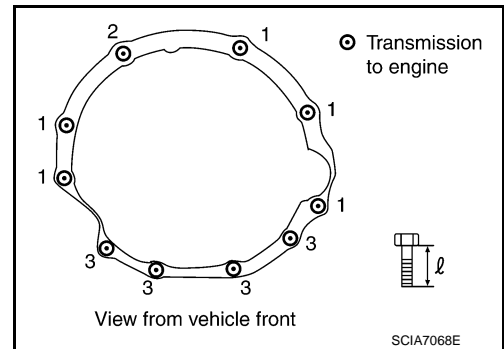
VQ35DE models

Bolt No.	1	2	3	4
Number of bolts	1	5	2	2
Bolt length "ℓ"mm (in)	55 (2.17)	65 (2.56)	65 (2.56)	35 (1.38)
Tightening torque N·m (kg·m, ft·lb)	75 (7.7, 55)		55 (5.6, 41)	47 (4.8, 35)



VK45DE models

Bolt No.	1	2*	3
Number of bolts	5	1	4
Bolt length "ℓ"mm (in)	70 (2.76)	70 (2.76)	65 (2.56)
Tightening torque N·m (kg·m, ft·lb)	113 (12, 83)		74 (7.5, 55)

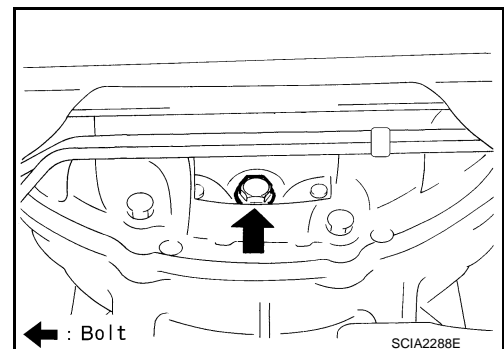


*: No.2 bolt also secures A/T fluid charging pipe.

- Align the positions of tightening bolts for drive plate with those of the torque converter, and temporarily tighten the bolts. Then, tighten the bolts with the specified torque. Refer to "COMPONENTS".

CAUTION:

- When turning crankshaft, turn it clockwise as viewed from the front of the engine.
- When tightening the tightening bolts for the torque converter after fixing the crankshaft pulley bolts, be sure to confirm the tightening torque of the crankshaft pulley mounting bolts. Refer to [EM-66, "Removal and Installation"](#) (for VQ35DE engine), [EM-203, "Removal and Installation"](#) (for VK45DE engine).
- After converter is installed to drive plate, rotate crankshaft several turns and check to be sure that A/T rotates freely without binding.
- Install crankshaft position sensor (POS). Refer to [EM-30, "2WD : Removal and Installation"](#) (for VQ35DE engine), [EM-186, "Removal and Installation"](#) (for VK45DE engine).



TRANSMISSION ASSEMBLY

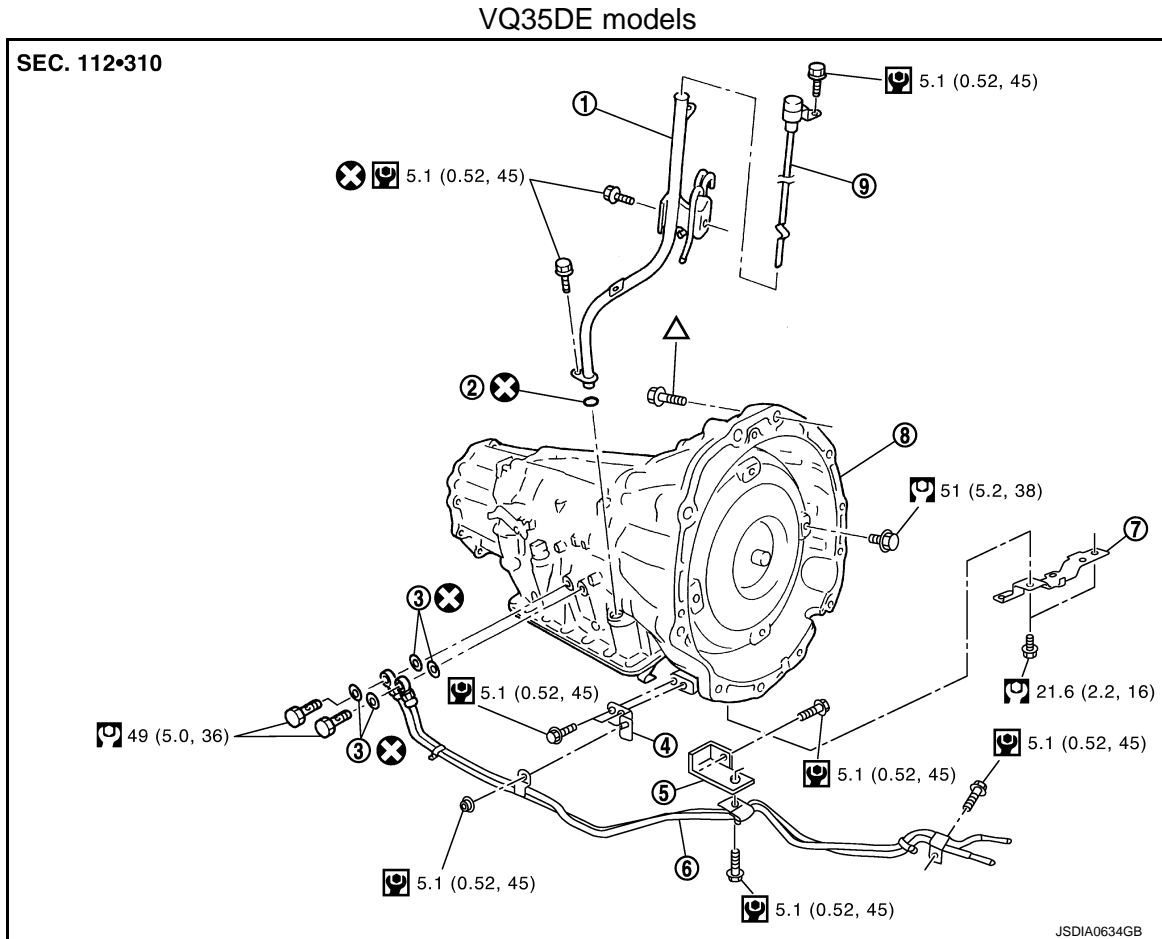
< SERVICE INFORMATION >

- 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-202, "Checking of A/T Position"](#).

Removal and Installation (AWD Models)

INFOID:000000002955648

COMPONENTS



- | | | |
|----------------------------|-----------------|--------------------------|
| 1. A/T fluid charging pipe | 2. O-ring | 3. Copper washer |
| 4. Bracket | 5. Bracket | 6. Fluid cooler tube |
| 7. Bracket | 8. A/T assembly | 9. A/T fluid level gauge |

Refer to GI section to make sure icons (symbol marks) in the figure. Refer to [GI-9, "Component"](#).

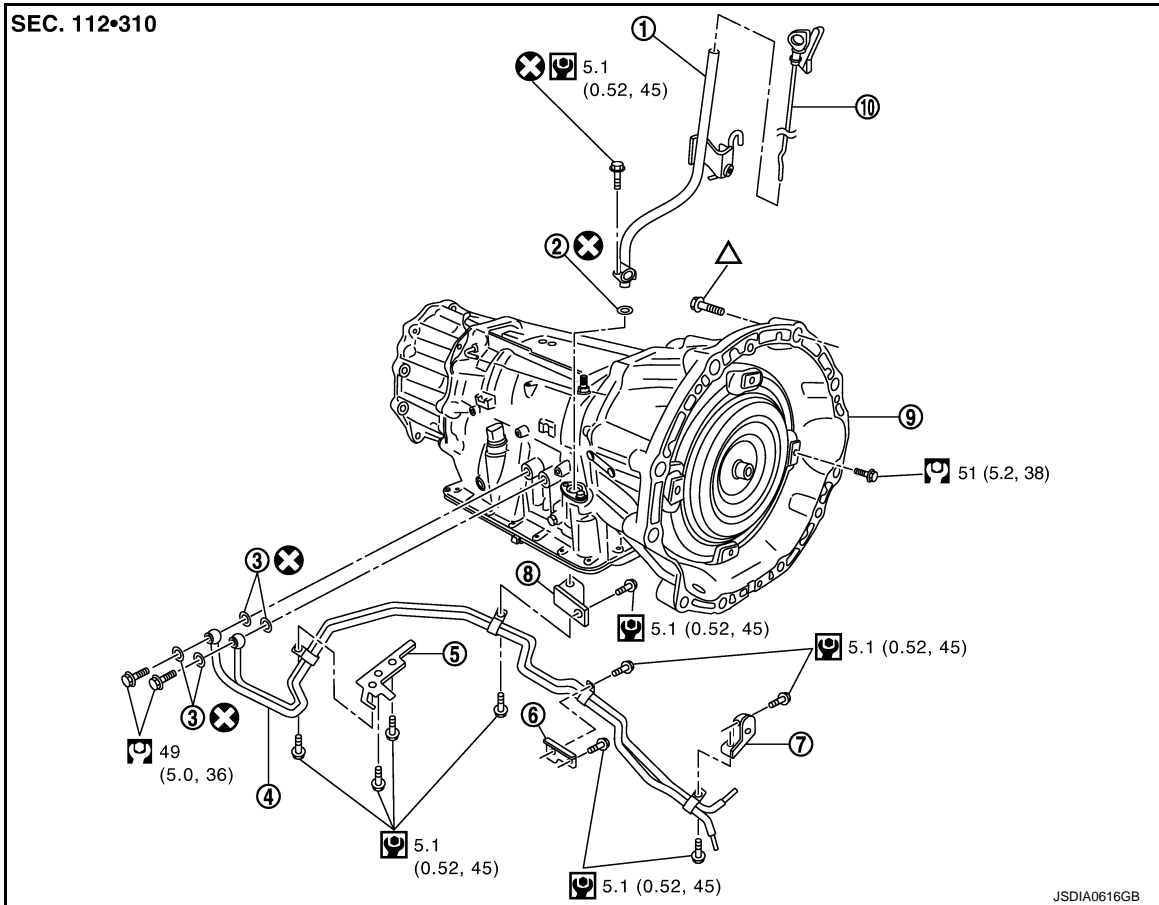
However, refer to the following symbols for others.

△: For tightening torque, refer to "INSTALLATION".

TRANSMISSION ASSEMBLY

< SERVICE INFORMATION >

VK45DE models



- | | | |
|----------------------------|------------|------------------|
| 1. A/T fluid charging pipe | 2. O-ring | 3. Copper washer |
| 4. Fluid cooler tube | 5. Bracket | 6. Bracket |
| 7. Bracket | 8. Bracket | 9. A/T assembly |
| 10. A/T fluid level gauge | | 12. |

Refer to GI section to make sure icons (symbol marks) in the figure. Refer to [GI-9. "Component"](#).

However, refer to the following symbols for others.

Δ: For tightening torque, refer to "INSTALLATION".

REMOVAL

CAUTION:

- When removing the A/T assembly from engine, first remove the crankshaft position sensor (POS) from the A/T assembly.
- Be careful not to damage sensor edge.

1. Disconnect the battery cable from the negative terminal.
2. Remove engine under cover with power tool.
3. Remove A/T fluid level gauge.
4. Remove exhaust front tube and center muffler and with power tool. Refer to [EX-4. "Removal and Installation"](#).
5. Remove heat insulator.
6. Remove rear propeller shaft. Refer to [PR-9. "Removal and Installation"](#).
7. Remove front cross bar with power tool. Refer to [FSU-25. "Removal and Installation"](#).
8. Remove exhaust mounting bracket. Refer to [EX-4. "Removal and Installation"](#).
9. Remove three way catalyst. Refer to [EX-4. "Removal and Installation"](#).
10. Remove front propeller shaft. Refer to [PR-5. "Removal and Installation"](#).

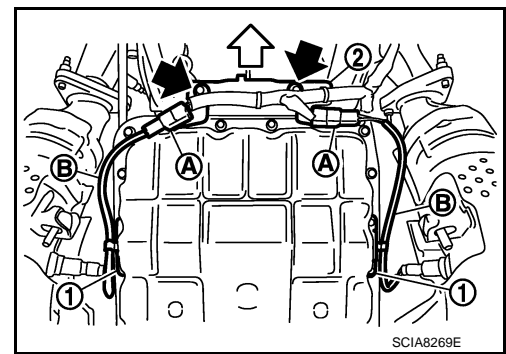
TRANSMISSION ASSEMBLY

< SERVICE INFORMATION >

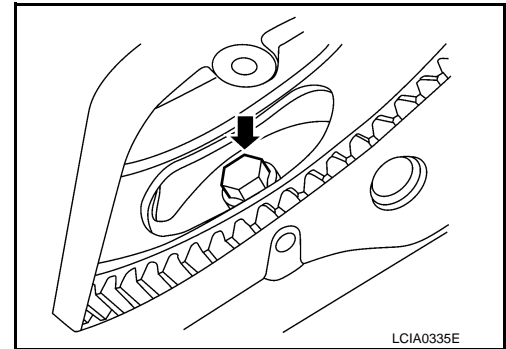
11. Disconnect heated oxygen sensor 2 harness connectors (A).



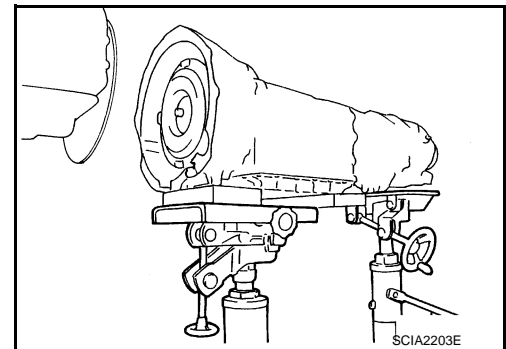
12. Remove heated oxygen sensor 2 harness (B) from clips (1).
13. Remove bracket (2) from transmission assembly. (for VQ35DE models)
14. Remove control rod. Refer to [AT-201, "Control Rod Removal and Installation"](#).
15. Remove crankshaft position sensor (POS) from A/T assembly.
CAUTION:
• Do not subject it to impact by dropping or hitting it.
• Do not disassemble.
• Do not allow metal filings, etc., to get on the sensor's front edge magnetic area.
• Do not place in an area affected by magnetism.
16. Remove starter motor. Refer to [SC-13, "Removal and Installation"](#).
17. Remove rear plate cover. Refer to [EM-37, "AWD : Removal and Installation"](#).



18. Turn crankshaft, and remove the four tightening bolts for drive plate and torque converter.
CAUTION:
When turning the crankshaft, turn it clockwise as viewed from the front of the engine.



19. 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.
20. Remove rear engine mounting member with power tool.
21. Remove engine mounting insulator (rear).
22. Disconnect A/T assembly harness connector.
23. Remove air breather hose. Refer to [AT-244, "Removal and Installation"](#).
24. Remove A/T fluid charging pipe from A/T assembly.
25. Remove O-ring from A/T fluid charging pipe.
26. Disconnect fluid cooler tube from the A/T assembly.
27. Plug up openings such as the A/T fluid charging pipe hole, etc.
28. Remove bolts fixing A/T assembly to engine assembly with power tool.
29. Remove A/T assembly with transfer assembly from vehicle.
CAUTION:
• Secure torque converter to prevent it from dropping.
• Secure A/T assembly to a transmission jack.
30. Remove transfer assembly from A/T assembly with power tool.



INSPECTION

Installation and Inspection of Torque Converter

TRANSMISSION ASSEMBLY

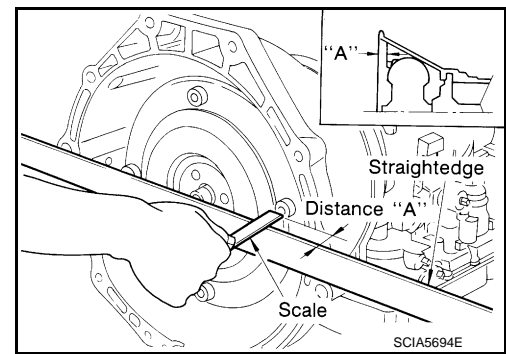
< SERVICE INFORMATION >

- 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"

VQ35DE models : 25.0 mm (0.98 in) or more

VK45DE models : 22.0 mm (0.87 in) or more



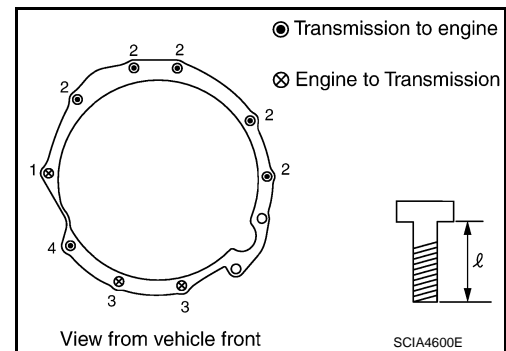
INSTALLATION

Install the removed parts in the reverse order of the removal, while paying attention to the following work.

- When installing A/T assembly to the engine assembly, attach the fixing bolts in accordance with the following standard.

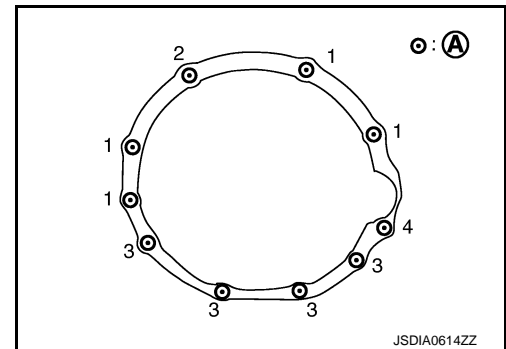
VQ35DE models

Bolt No.	1	2	3	4
Number of bolts	1	5	2	1
Bolt length "ℓ"mm (in)	55 (2.17)	65 (2.56)	35 (1.38)	40 (1.57)
Tightening torque N·m (kg·m, ft·lb)	75 (7.7, 55)		47 (4.8, 35)	34 (3.5, 25)



VK45DE models

Bolt No.	1	2 ^{*1}	3	4 ^{*2}
Number of bolts	4	1	4	1
Bolt length "ℓ"mm (in)	70 (2.76)		65 (2.56)	70 (2.76)
Tightening torque N·m (kg·m, ft·lb)	113 (12, 83)		74 (7.5, 55)	113 (12, 83)



*1: No.2 bolt also secures A/T fluid charging pipe.

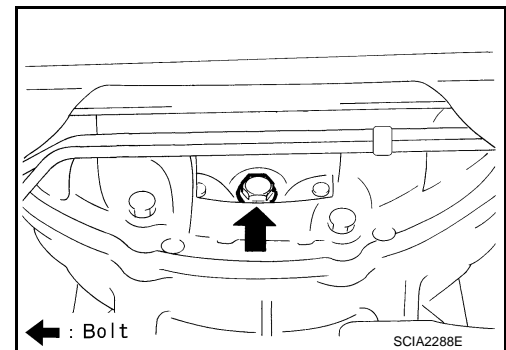
*2: No.4 bolt also secures bracket.

(A): A/T to engine

- 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. Refer to "COMPONENTS".

CAUTION:

- When turning crankshaft, turn it clockwise as viewed from the front of the engine.
- When tightening the tightening bolts for the torque converter after fixing the crankshaft pulley bolts, be sure to confirm the tightening torque of the crankshaft pulley mounting bolts. Refer to [EM-66, "Removal and Installation"](#).
- After converter is installed to drive plate, rotate crankshaft several turns and check to be sure that A/T rotates freely without binding.
- Install crankshaft position sensor (POS). Refer to [EM-37, "AWD : 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-202, "Checking of A/T Position"](#).



OVERHAUL

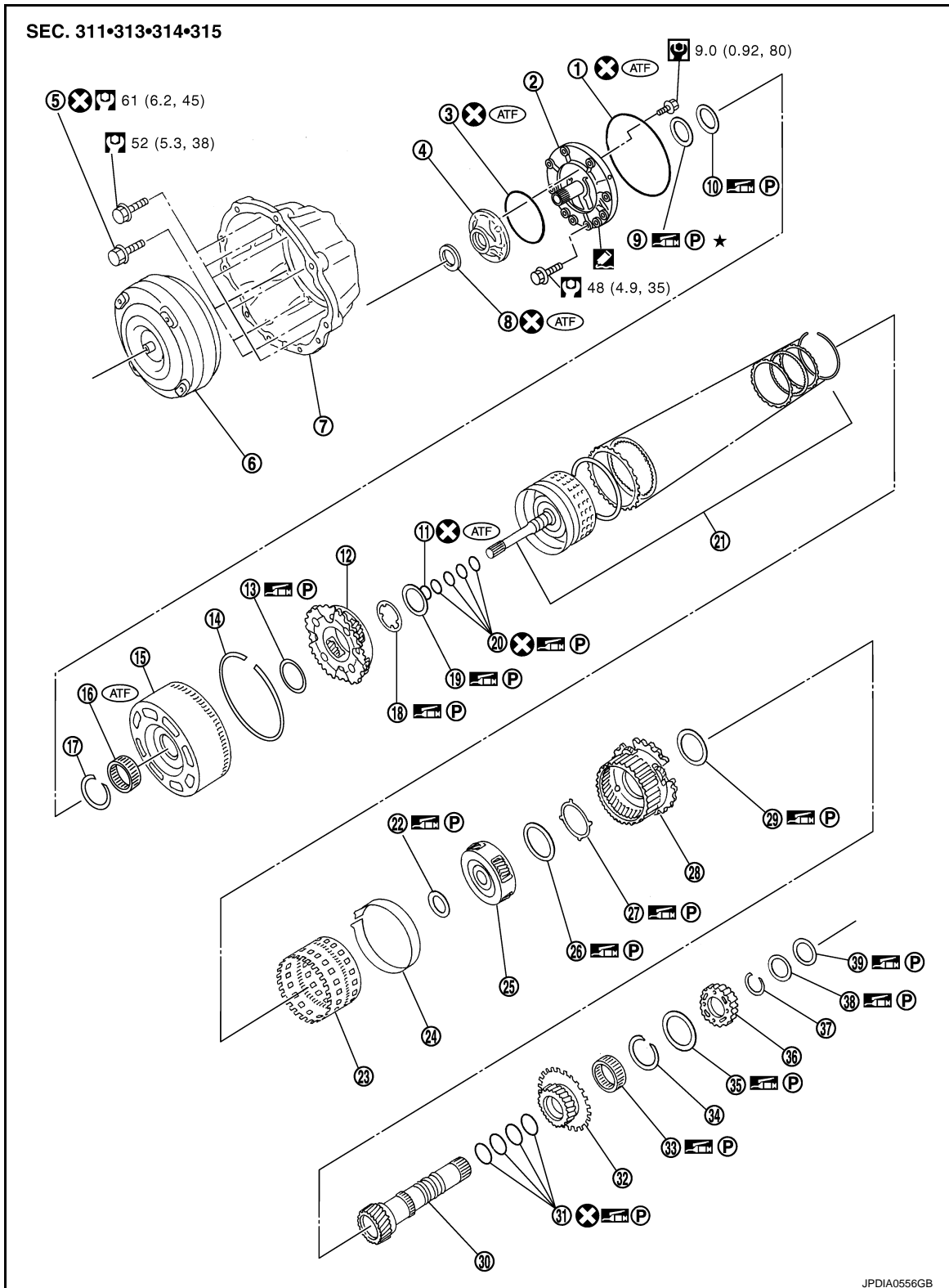
< SERVICE INFORMATION >

OVERHAUL

Component

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VQ35DE models



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- | | | |
|----------------------|------------------------------|---------------------|
| 1. O-ring | 2. Oil pump cover | 3. O-ring |
| 4. Oil pump housing | 5. Self-sealing bolt | 6. Torque converter |
| 7. Converter housing | 8. Oil pump housing oil seal | 9. Bearing race |


OVERHAUL

< SERVICE INFORMATION >

- | | | |
|---------------------------|------------------------|-------------------------------------|
| 10. Needle bearing | 11. O-ring | 12. Front carrier assembly |
| 13. Needle bearing | 14. Snap ring | 15. Front sun gear |
| 16. Snap ring | 17. Bearing race | 18. Needle bearing |
| 19. 3rd one-way clutch | 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-9. "Component"](#).

However, refer to the following symbols for others.

 Apply Genuine RTV silicone sealant or equivalent. Refer to [GI-44. "Recommended Chemical Product and Sealant"](#).

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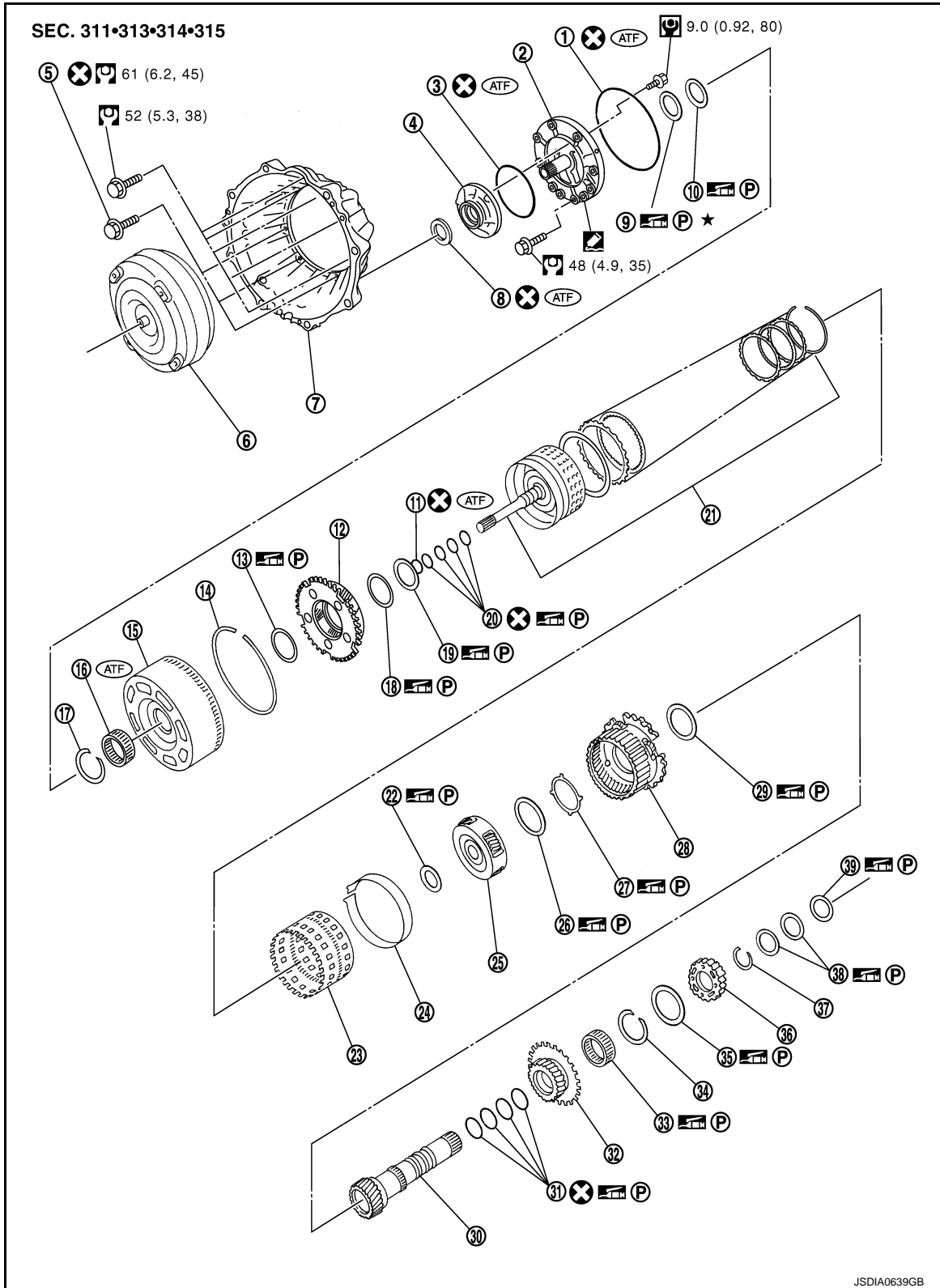
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OVERHAUL

< SERVICE INFORMATION >

VK45DE models



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


OVERHAUL

< SERVICE INFORMATION >

- | | | |
|---------------------------|------------------------|-------------------------------------|
| 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-9. "Component"](#).

However, refer to the following symbols for others.

 Apply Genuine RTV silicone sealant or equivalent. Refer to [GI-44. "Recommended Chemical Product and Sealant"](#).

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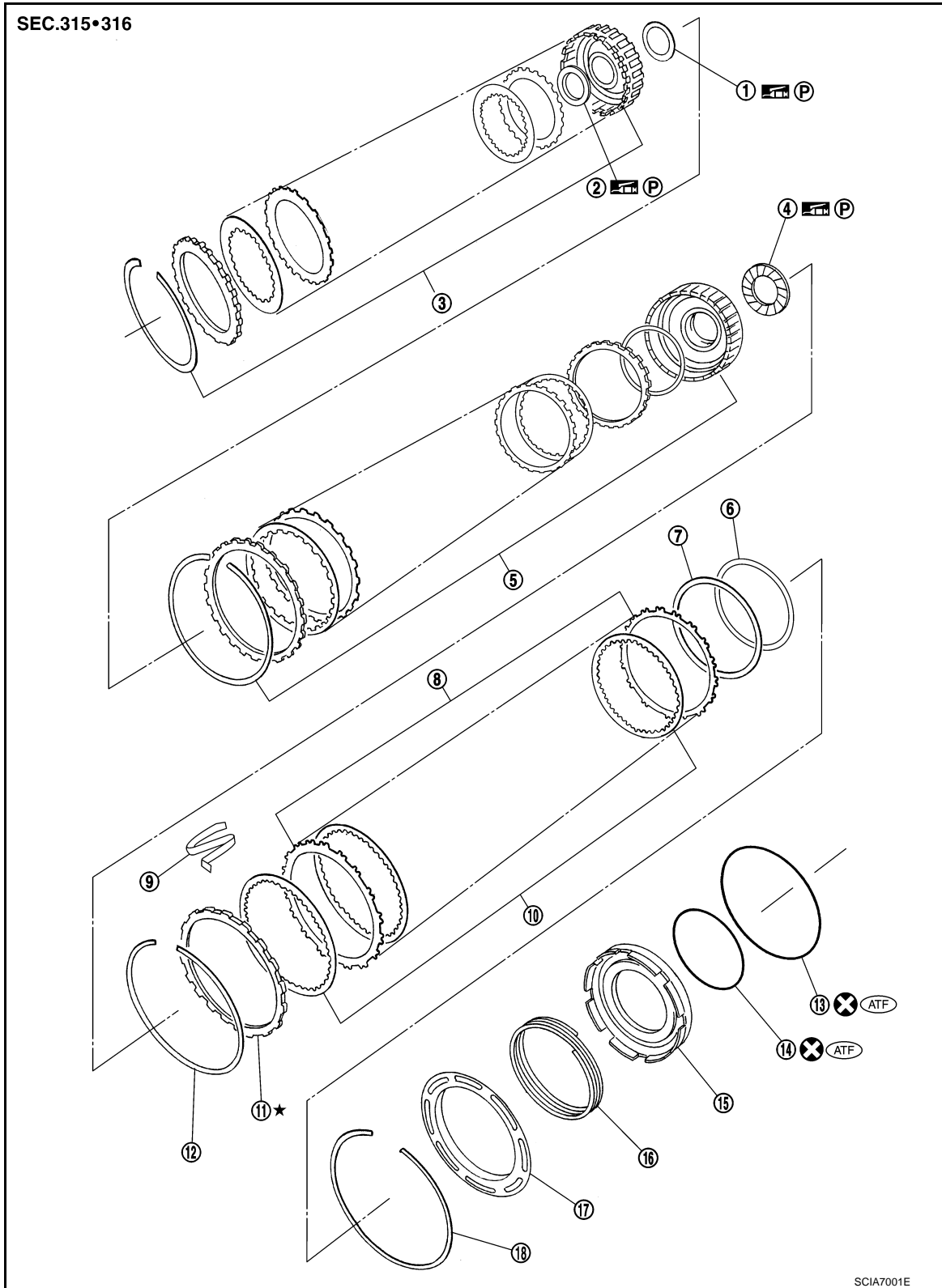
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OVERHAUL

< SERVICE INFORMATION >

VQ35DE models



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

OVERHAUL

< SERVICE INFORMATION >

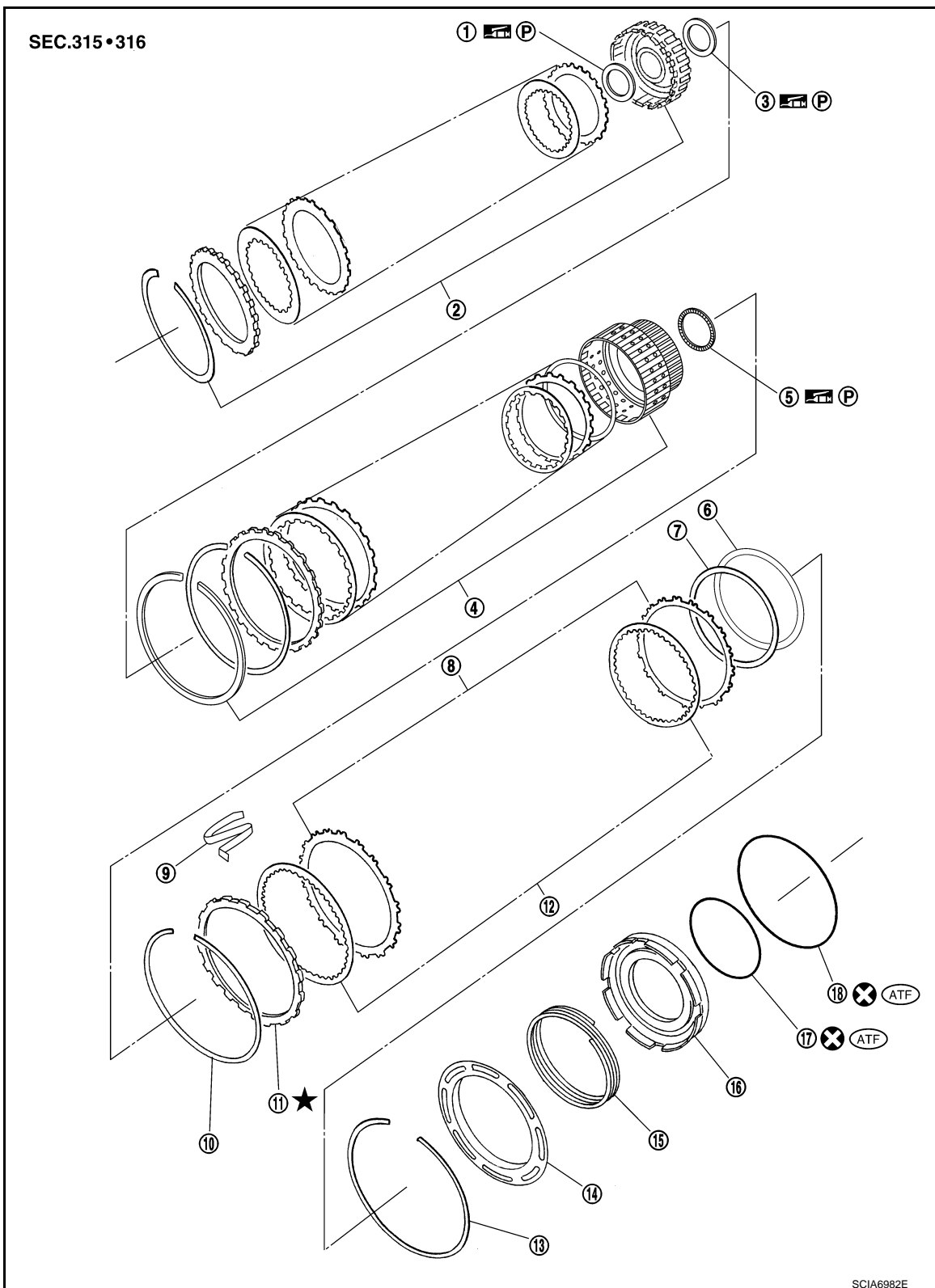
16. Return spring

17. Spring retainer

18. Snap ring

Refer to GI section to make sure icons (symbol marks) in the figure. Refer to [GI-9, "Component"](#).

VK45DE models



1. Bearing race

2. High and low reverse clutch assembly

3. Needle bearing

4. Direct clutch assembly

5. Needle bearing

6. Reverse brake dish plate

7. Reverse brake dish plate

8. Reverse brake driven plate

9. N-spring

10. Snap ring

11. Reverse brake retaining plate

12. Reverse brake drive plate

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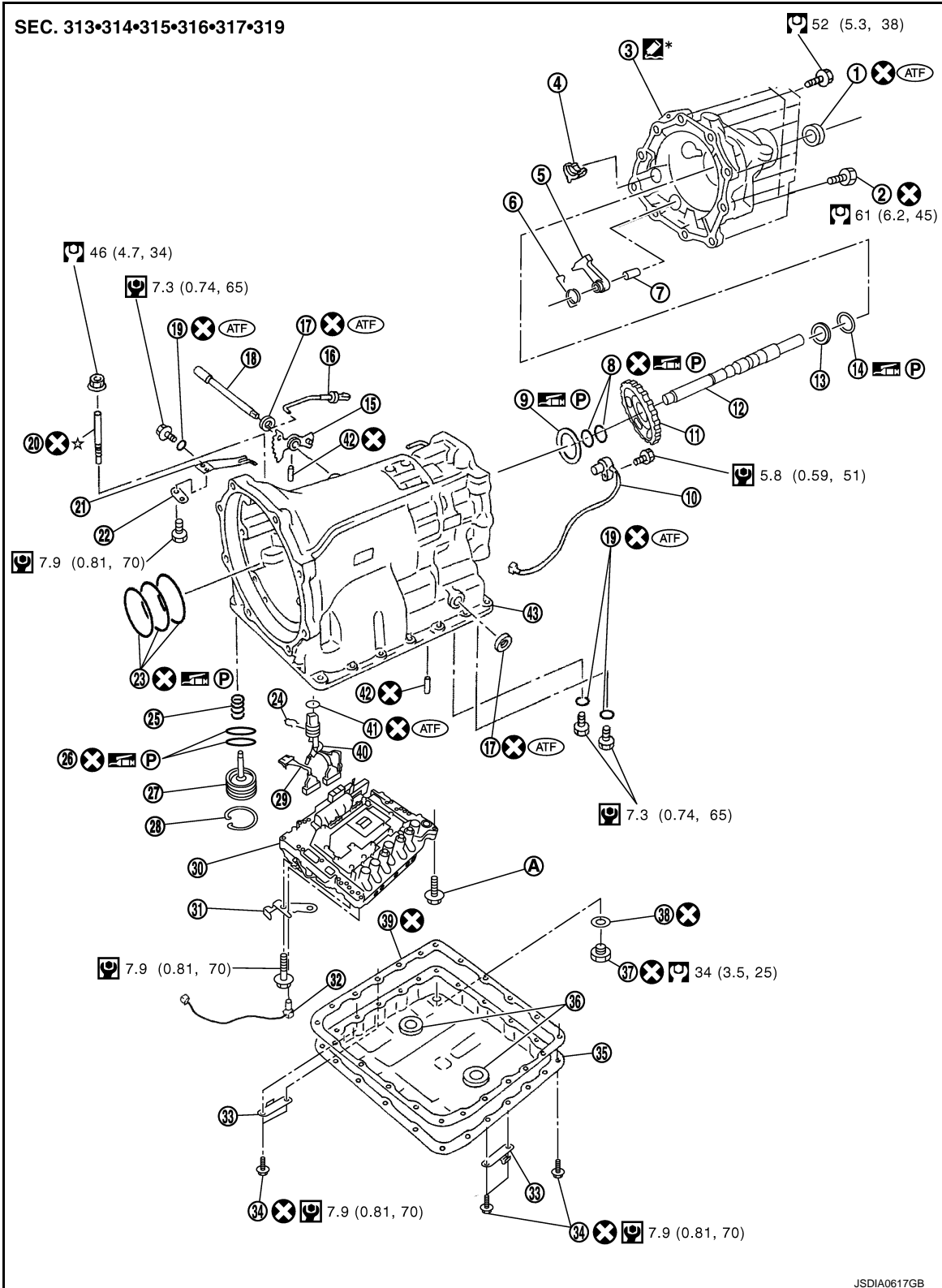
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|--------------------------|---------------------|-------------------|
| 13. Snap ring | 14. Spring retainer | 15. Return spring |
| 16. Reverse brake piston | 17. D-ring | 18. D-ring |

Refer to GI section to make sure icons (symbol marks) in the figure. Refer to [GI-9. "Component"](#)

VQ35DE models for 2WD



- | | | |
|-----------------------------|----------------------|-------------------|
| 1. Rear oil seal | 2. Self-sealing bolt | 3. Rear extension |
| 4. Parking actuator support | 5. Parking pawl | 6. Return spring |
| 7. Pawl shaft | 8. Seal ring | 9. Needle bearing |

OVERHAUL


< SERVICE INFORMATION >

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

A. For tightening torque, refer to [AT-336. "Assembly \(2\)"](#).

Refer to GI section to make sure icons (symbol marks) in the figure. Refer to [GI-9. "Component"](#).

However, refer to the following symbols for others.

: Apply Genuine Anaerobic Liquid Gasket or equivalent. Refer to [GI-44. "Recommended Chemical Product and Sealant"](#).

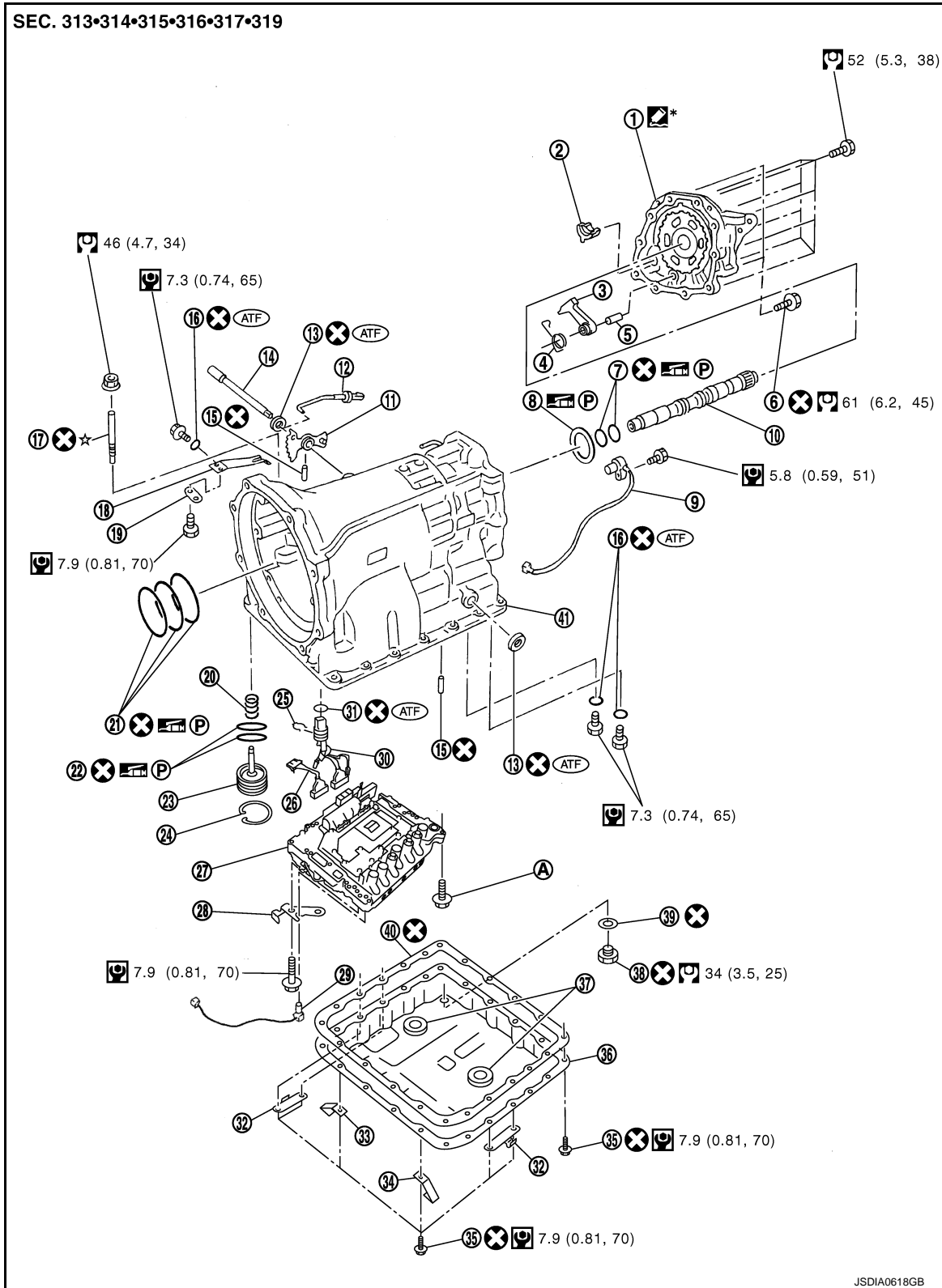
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VK45DE models for 2WD

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JSDIA0618GB

- | | | |
|---|-----------------------------|------------------------|
| 1. Output shaft & companion flange complement | 2. Parking actuator support | 3. Parking pawl |
| 4. Return spring | 5. Pawl shaft | 6. Self-sealing bolt |
| 7. Seal ring | 8. Needle bearing | 9. Output speed sensor |
| 10. Intermediate shaft | 11. Manual plate | 12. Parking rod |
| 13. Manual shaft oil seal | 14. Manual shaft | 15. Retaining pin |

OVERHAUL


< SERVICE INFORMATION >

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|--------------------|------------------------------------|----------------------------|
| 16. O-ring | 17. Band servo anchor end pin | 18. Detent spring |
| 19. Spacer | 20. Return spring | 21. Seal ring |
| 22. O-ring | 23. Servo assembly | 24. Snap ring |
| 25. Snap ring | 26. Sub-harness | 27. Control valve with TCM |
| 28. Bracket | 29. A/T fluid temperature sensor 2 | 30. Terminal cord assembly |
| 31. O-ring | 32. Clip | 33. Bracket |
| 34. Bracket | 35. Oil pan mounting bolt | 36. Oil pan |
| 37. Magnet | 38. Drain plug | 39. Drain plug gasket |
| 40. Oil pan gasket | 41. Transmission case | |

A. For tightening torque, refer to [AT-336. "Assembly \(2\)"](#).

Refer to GI section to make sure icons (symbol marks) in the figure. Refer to [GI-9. "Component"](#).

However, refer to the following symbols for others.

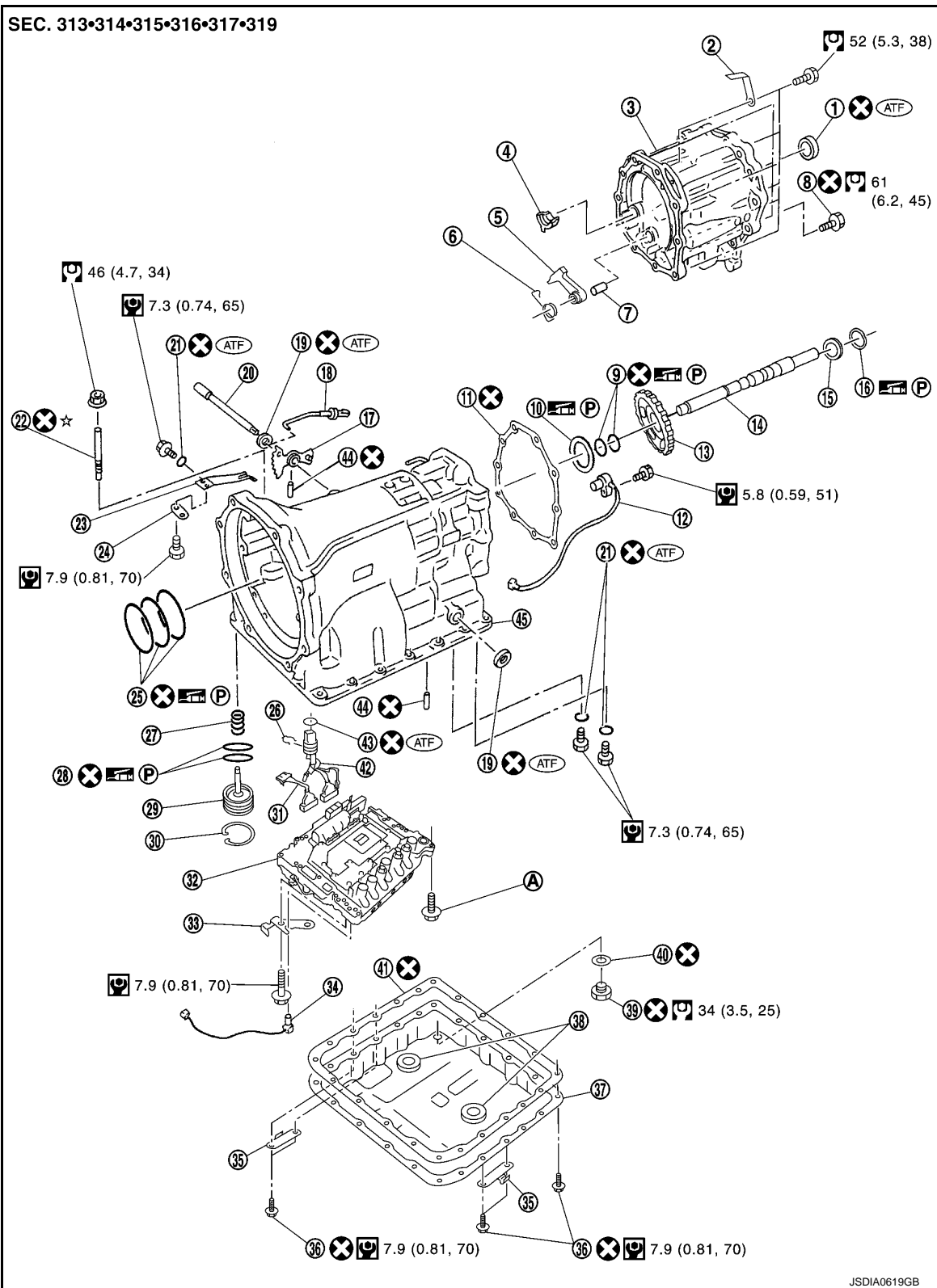
: Apply Genuine Anaerobic Liquid Gasket or equivalent. Refer to [GI-44. "Recommended Chemical Product and Sealant"](#).

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VQ35DE models for AWD



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|-----------------------------|----------------------|-------------------------|
| 1. Rear oil seal | 2. Bracket | 3. Adapter case |
| 4. Parking actuator support | 5. Parking pawl | 6. Return spring |
| 7. Pawl shaft | 8. Self-sealing bolt | 9. Seal ring |
| 10. Needle bearing | 11. Gasket | 12. Output speed sensor |
| 13. Parking gear | 14. Output shaft | 15. Bearing race |
| 16. Needle bearing | 17. Manual plate | 18. Parking rod |

OVERHAUL

< SERVICE INFORMATION >

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|------------------------------------|----------------------------|----------------------------|
| 19. Manual shaft oil seal | 20. Manual shaft | 21. O-ring |
| 22. Band servo anchor end pin | 23. Detent spring | 24. Spacer |
| 25. Seal ring | 26. Snap ring | 27. Return spring |
| 28. O-ring | 29. Servo assembly | 30. Snap ring |
| 31. Sub-harness | 32. Control valve with TCM | 33. Bracket |
| 34. A/T fluid temperature sensor 2 | 35. Clip | 36. Oil pan mounting bolt |
| 37. Oil pan | 38. Magnet | 39. Drain plug |
| 40. Drain plug gasket | 41. Oil pan gasket | 42. Terminal cord assembly |
| 43. O-ring | 44. Retaining pin | 45. Transmission case |

A. For tightening torque, refer to [AT-336. "Assembly \(2\)"](#).

Refer to GI section to make sure icons (symbol marks) in the figure. Refer to [GI-9. "Component"](#).

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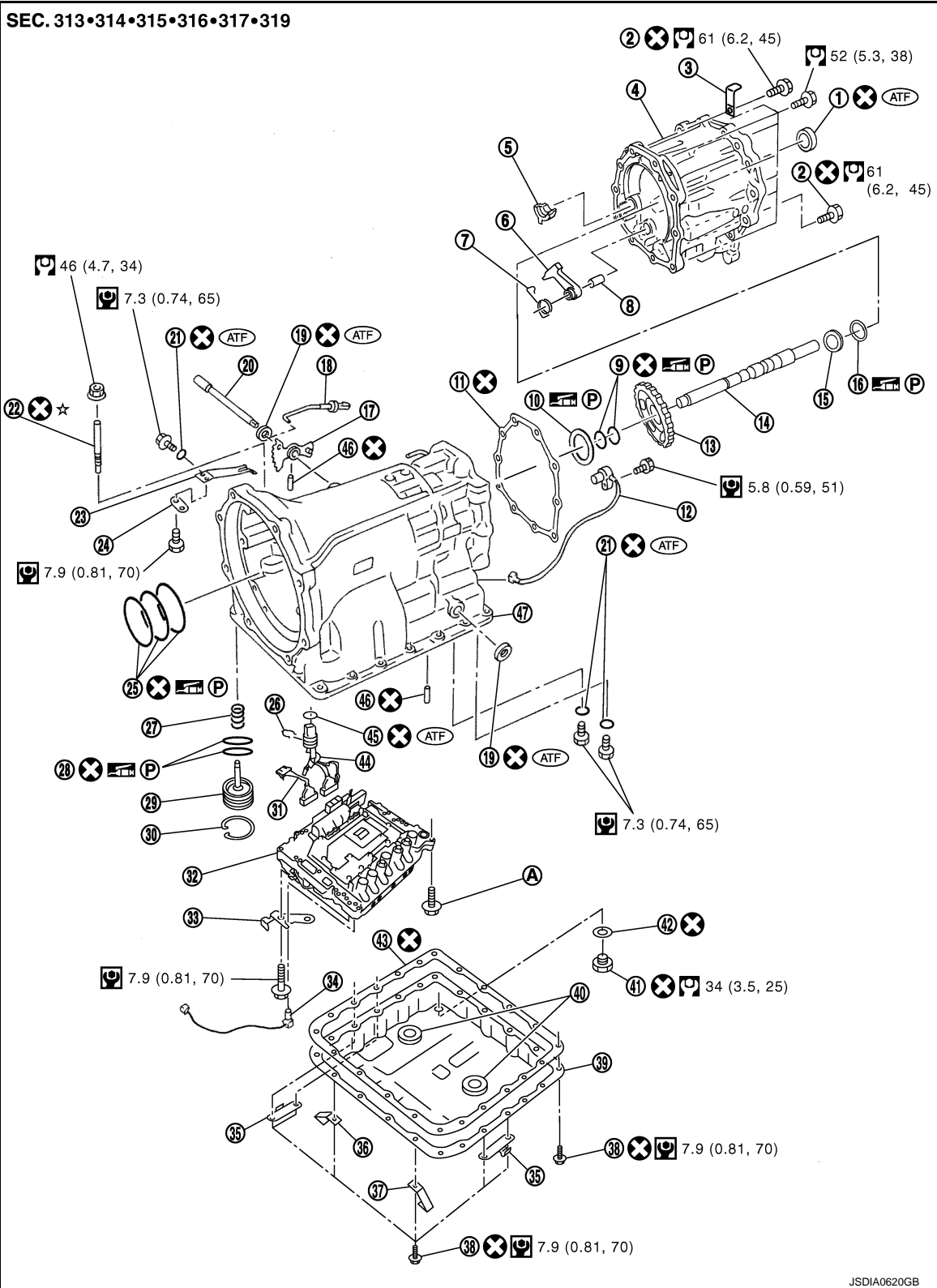
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VK45DE models for AWD



- | | | |
|--------------------|-----------------------------|-------------------------|
| 1. Rear oil seal | 2. Self-sealing bolt | 3. Bracket |
| 4. Adapter case | 5. Parking actuator support | 6. Parking pawl |
| 7. Return spring | 8. Pawl shaft | 9. Seal ring |
| 10. Needle bearing | 11. Gasket | 12. Output speed sensor |
| 13. Parking gear | 14. Output shaft | 15. Bearing race |
| 16. Needle bearing | 17. Manual plate | 18. Parking rod |

OVERHAUL

< SERVICE INFORMATION >

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|------------------------------------|----------------------------|-----------------------|
| 19. Manual shaft oil seal | 20. Manual shaft | 21. O-ring |
| 22. Band servo anchor end pin | 23. Detent spring | 24. Spacer |
| 25. Seal ring | 26. Snap ring | 27. Return spring |
| 28. O-ring | 29. Servo assembly | 30. Snap ring |
| 31. Sub-harness | 32. Control valve with TCM | 33. Bracket |
| 34. A/T fluid temperature sensor 2 | 35. Clip | 36. Bracket |
| 37. Bracket | 38. Oil pan mounting bolt | 39. Oil pan |
| 40. Magnet | 41. Drain plug | 42. Drain plug gasket |
| 43. Oil pan gasket | 44. Terminal cord assembly | 45. O-ring |
| 46. Retaining pin | 47. Transmission case | |

A. For tightening torque, refer to [AT-336. "Assembly \(2\)"](#).

Refer to GI section to make sure icons (symbol marks) in the figure. Refer to [GI-9. "Component"](#).

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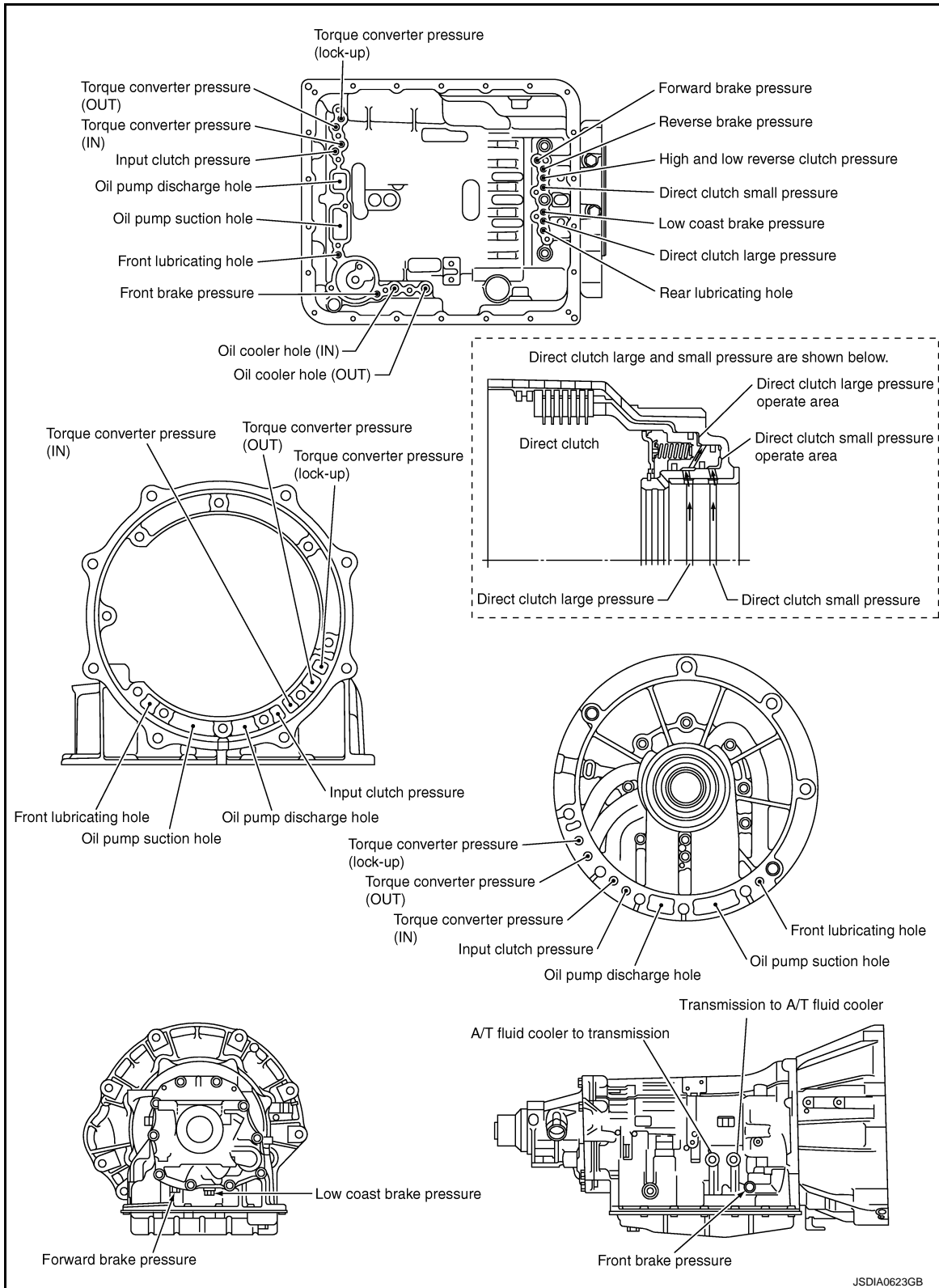
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Oil Channel

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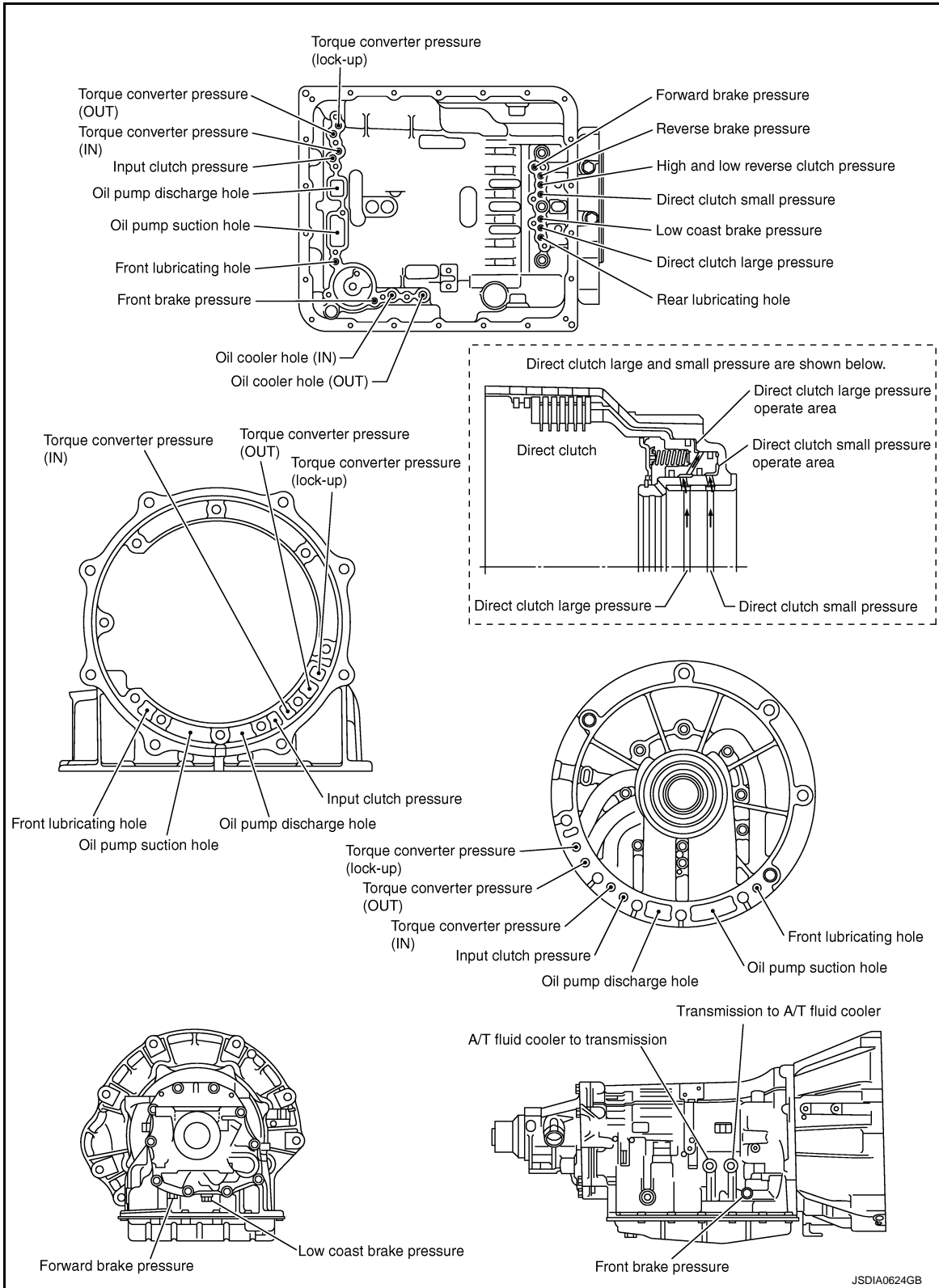
VQ35DE models for 2WD



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VK45DE models for 2WD



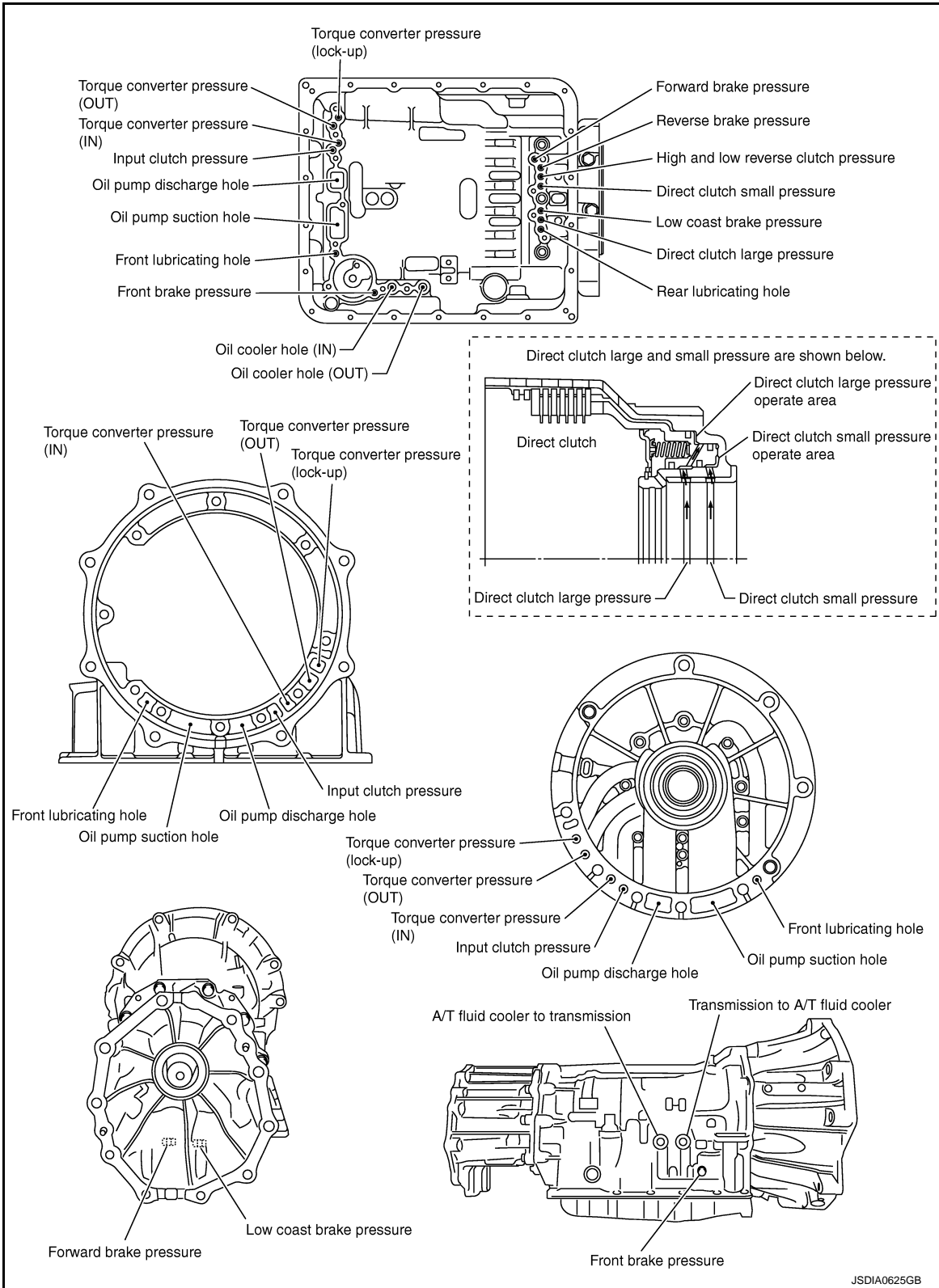
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AWD models



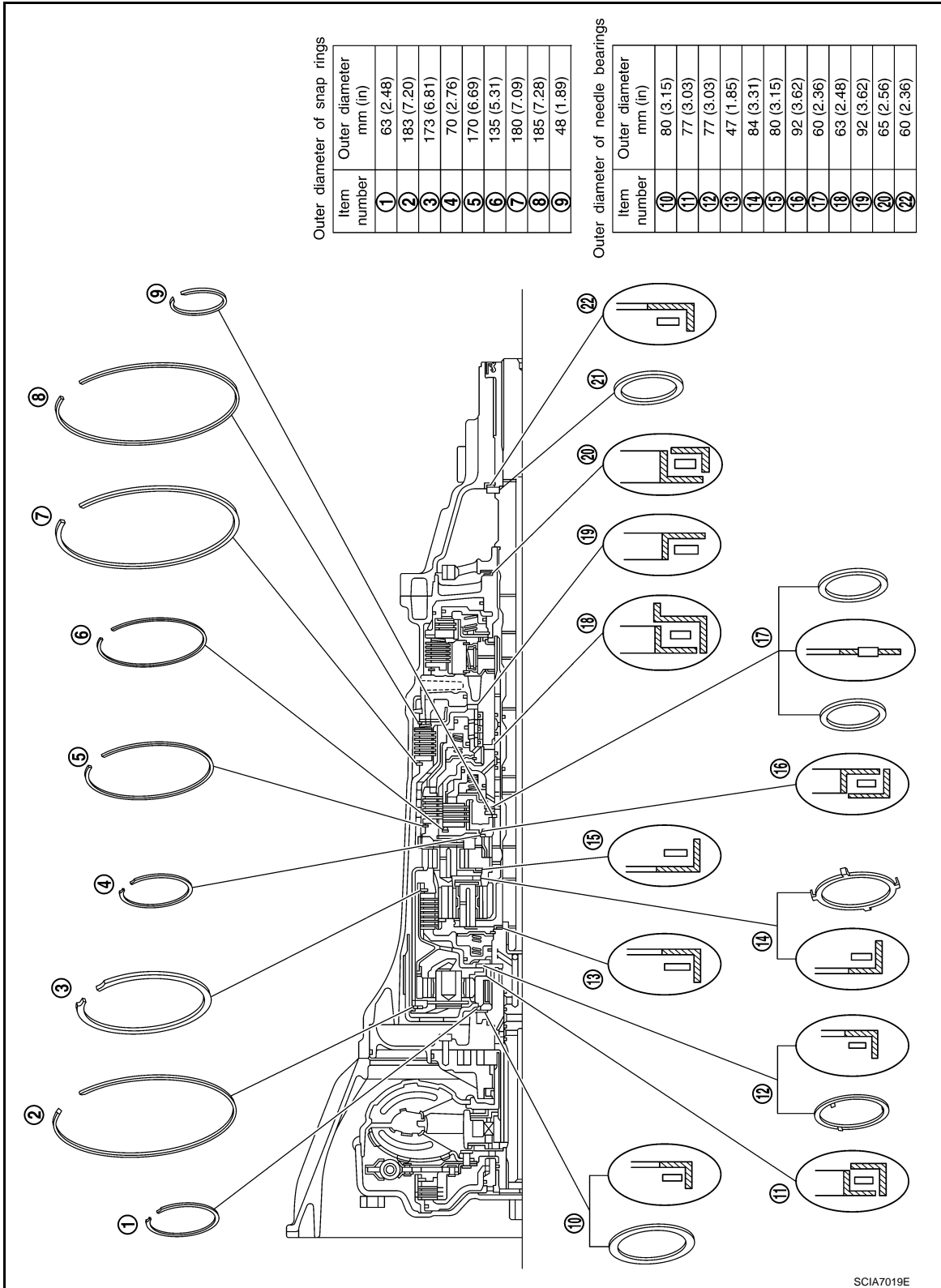
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< SERVICE INFORMATION >

Location of Adjusting Shims, Needle Bearings, Thrust Washers and Snap Rings

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VQ35DE models for 2WD



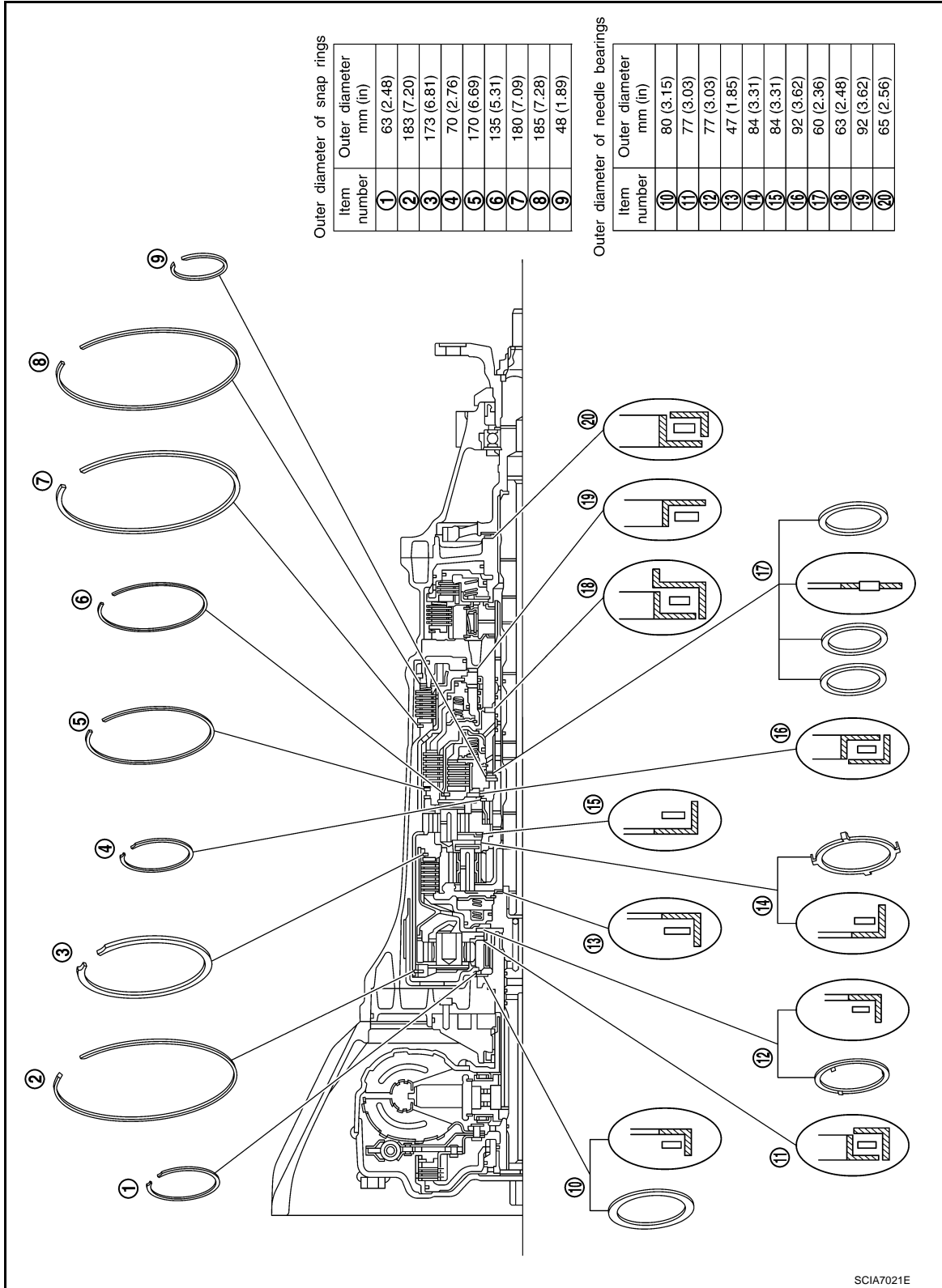
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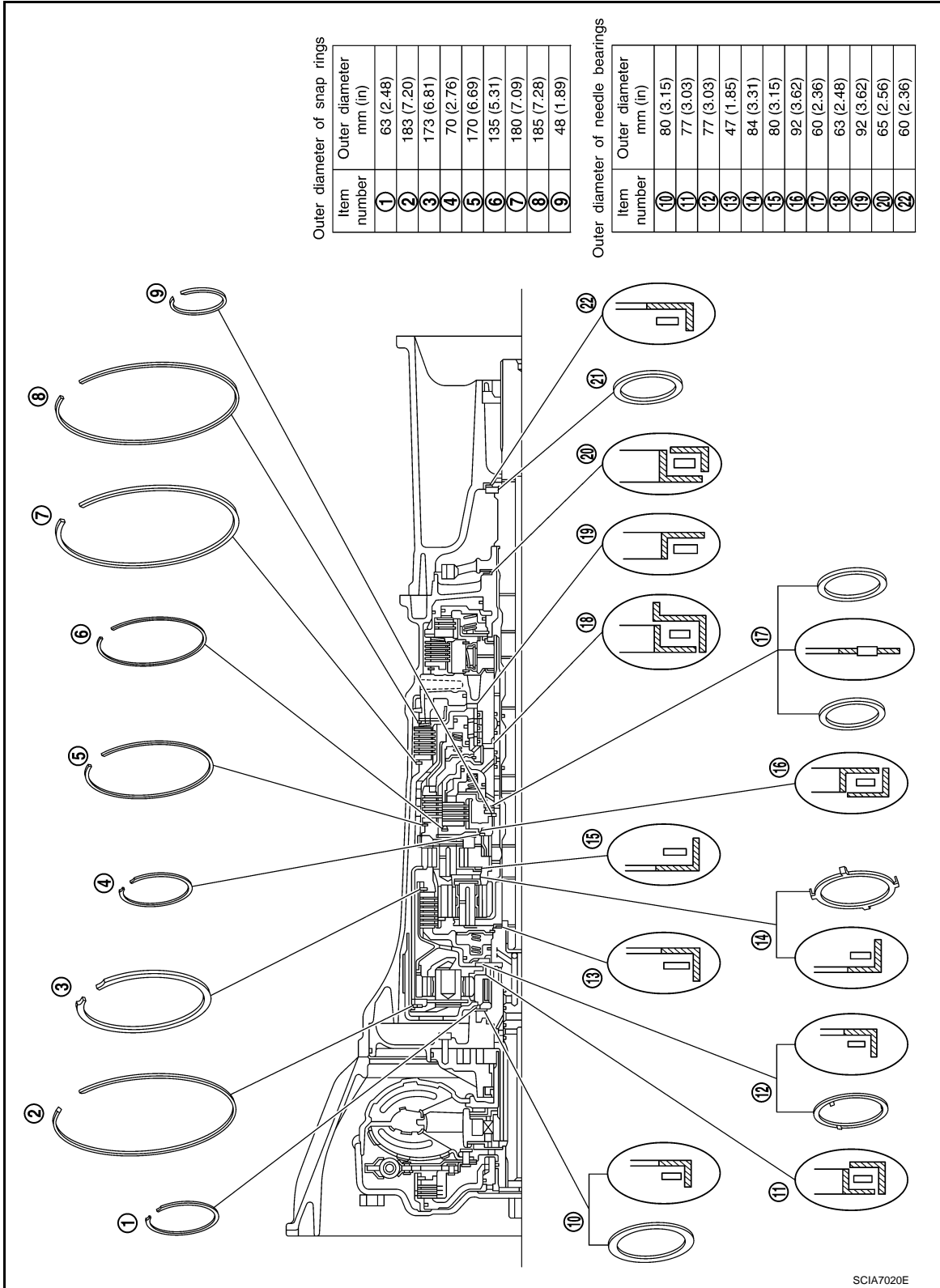
VK45DE models for 2WD



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VQ35DE models for AWD



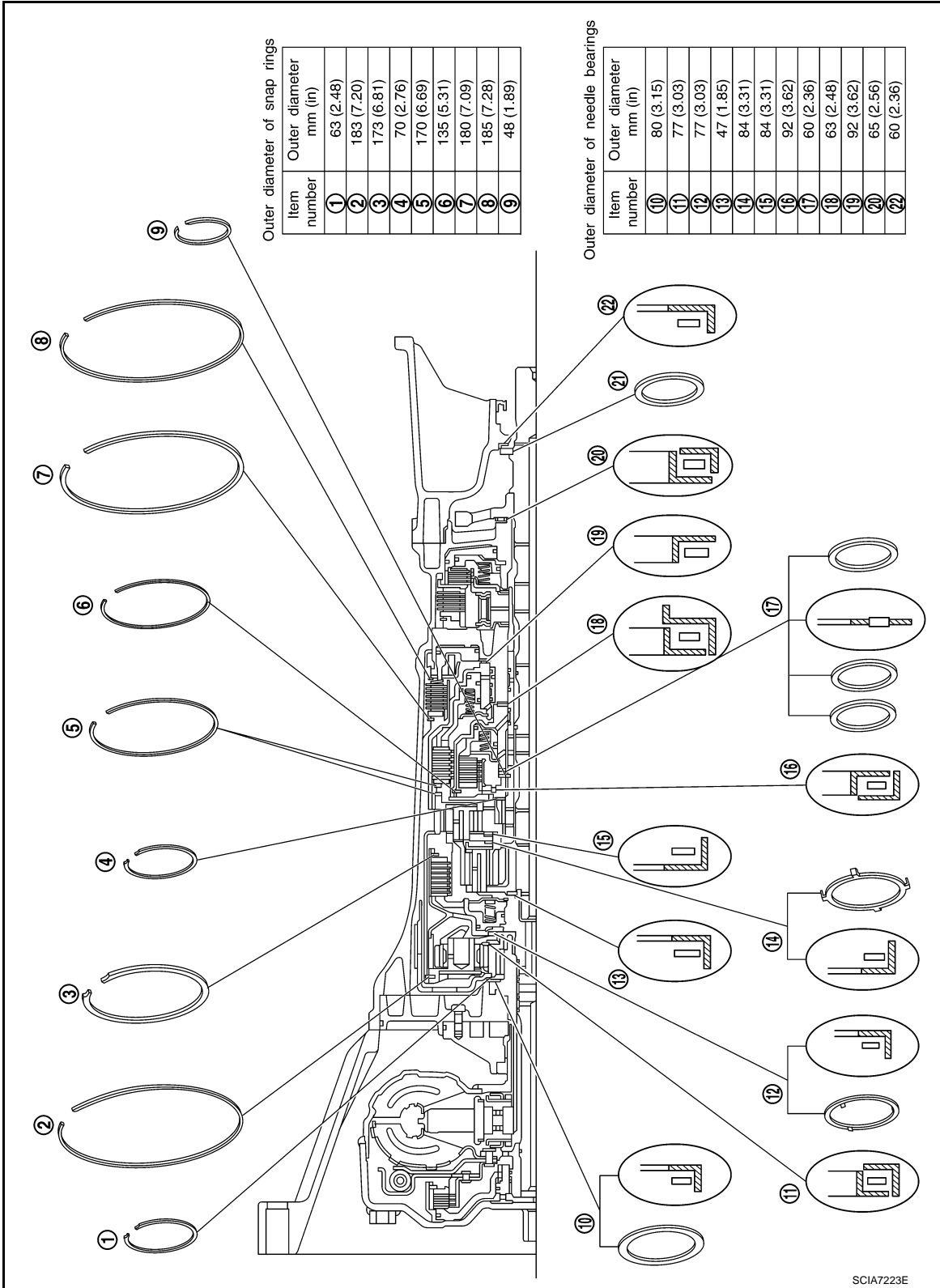
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VK45DE models for AWD



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DISASSEMBLY

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DISASSEMBLY

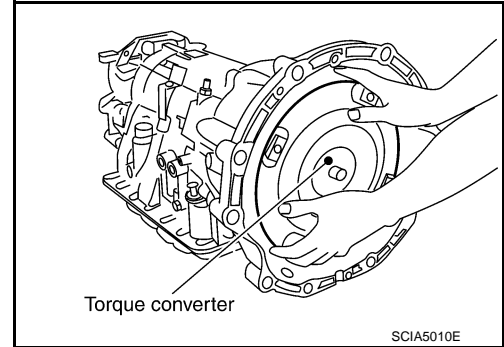
Disassembly

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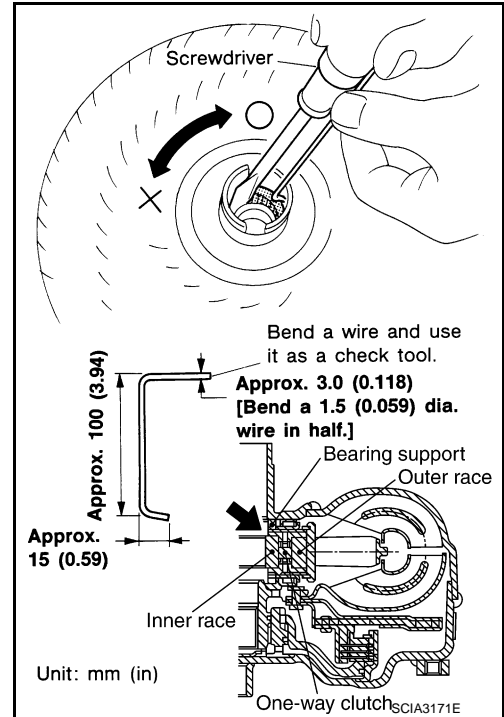
CAUTION:

Do not disassemble parts behind Drum Support. Refer to [AT-17, "Cross-Sectional View \(VQ35DE Models for 2WD\)"](#), [AT-18, "Cross-Sectional View \(VK45DE Models for 2WD\)"](#), [AT-19, "Cross-Sectional View \(VQ35DE Models for AWD\)"](#), [AT-20, "Cross-Sectional View \(VK45DE Models for AWD\)"](#).

1. Drain ATF through drain plug.
2. Remove torque converter by holding it firmly and turning while pulling straight out.



3. Check torque converter one-way clutch using a check tool as shown at figure.
 - a. Insert a check tool into the groove of bearing support built into one-way clutch outer race.
 - b. When fixing bearing support with a check tool, rotate one-way clutch spline using a screwdriver.
 - c. Make sure that inner race rotates clockwise only. If not, replace torque converter assembly.



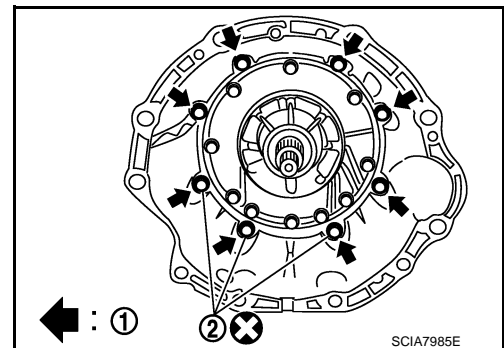
4. Remove tightening bolts (1) for converter housing and transmission case.

- ← : Bolt
- 2 : Self-sealing bolt

5. Remove converter housing from transmission case.

CAUTION:

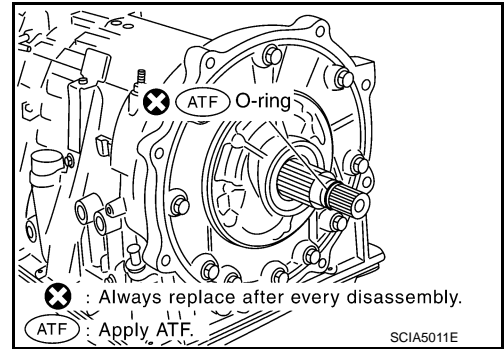
Be careful not to scratch converter housing.



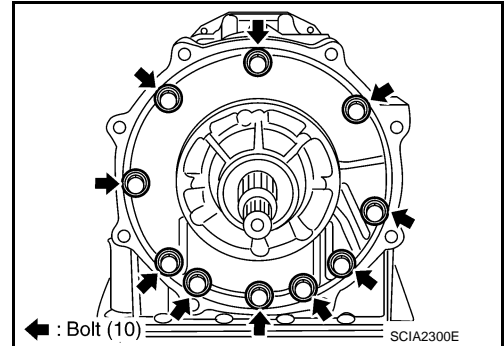
DISASSEMBLY

< SERVICE INFORMATION >

6. Remove O-ring from input clutch assembly.



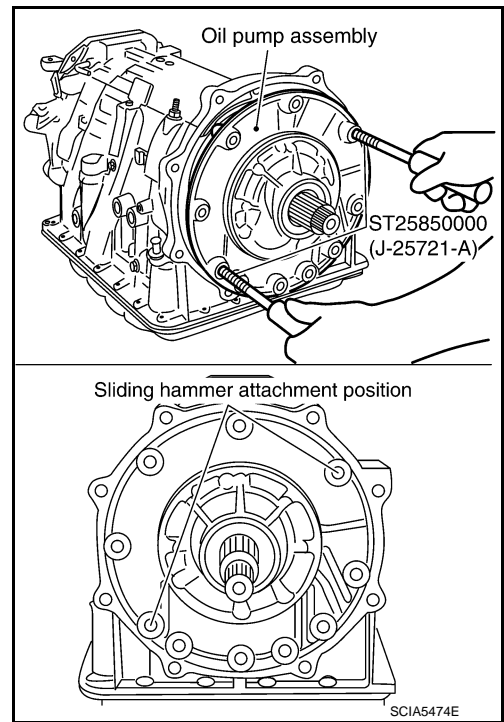
7. Remove tightening bolts for oil pump assembly and transmission case.



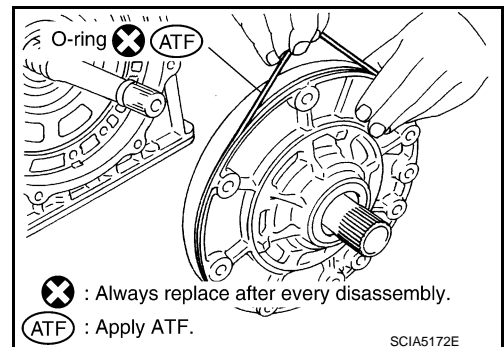
8. Attach the sliding hammers to oil pump assembly and extract it evenly from transmission case.

CAUTION:

- Fully tighten the sliding hammer screws.
- Make sure that bearing race is installed to the oil pump assembly edge surface.



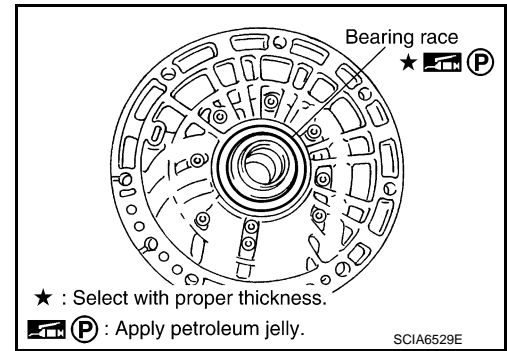
9. Remove O-ring from oil pump assembly.



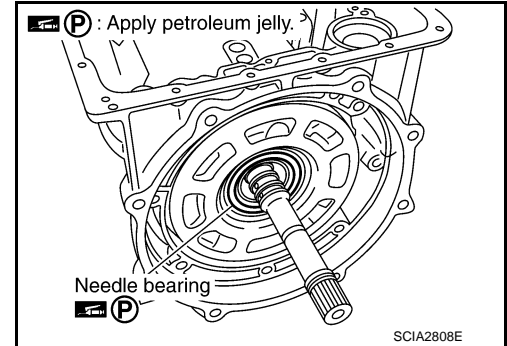
DISASSEMBLY

< SERVICE INFORMATION >

10. Remove bearing race from oil pump assembly.



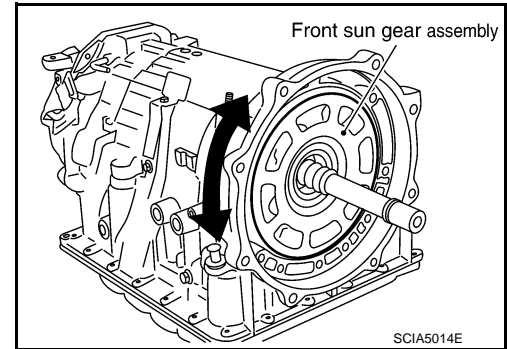
11. Remove needle bearing from front sun gear.



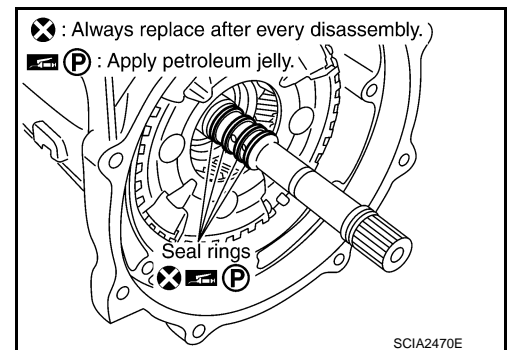
12. Remove front sun gear assembly from front carrier assembly.

NOTE:

Remove front sun gear by rotating left/right.



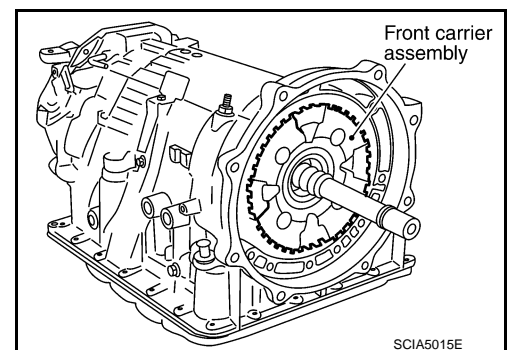
13. Remove seal rings from input clutch assembly.



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.

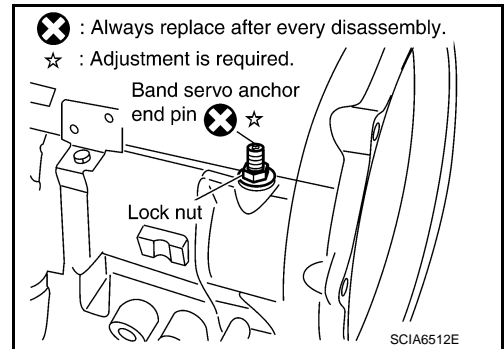


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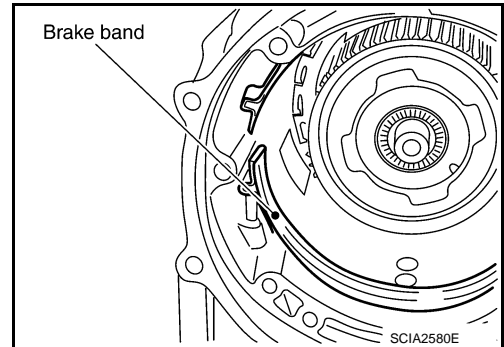
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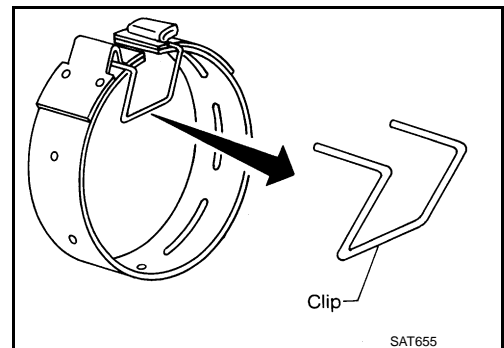
15. Loosen lock nut and remove band servo anchor end pin from transmission case.



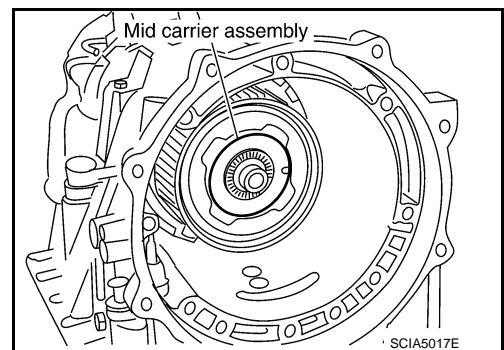
16. Remove brake band from transmission case.



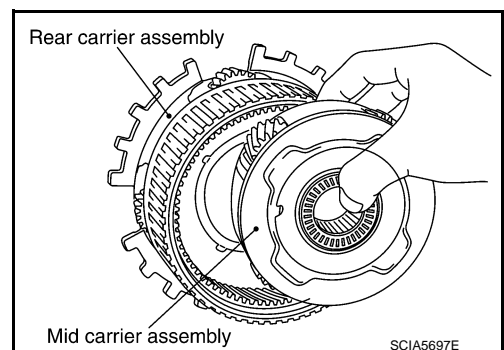
- To prevent brake linings from cracking or peeling, do not stretch the flexible band unnecessarily. When removing the brake band, always secure it with a clip as shown in the figure at right. Leave the clip in position after removing the brake band.
- Check brake band facing for damage, cracks, wear or burns.



17. Remove mid carrier assembly and rear carrier assembly as a unit.



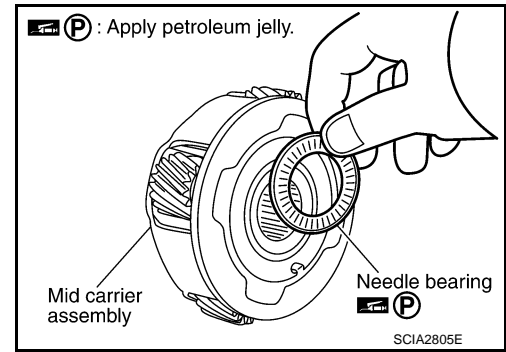
18. Remove mid carrier assembly from rear carrier assembly.



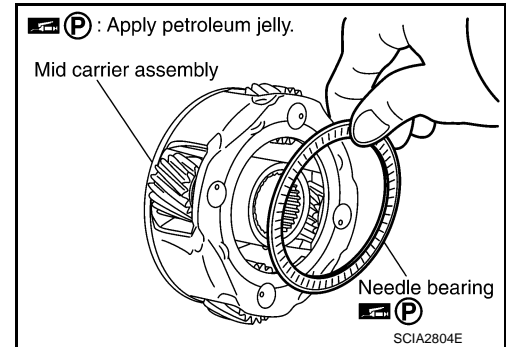
DISASSEMBLY

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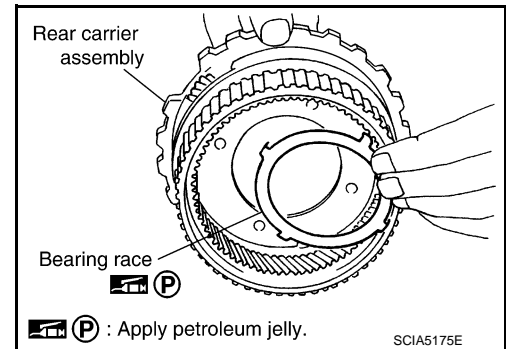
19. Remove needle bearing (front side) from mid carrier assembly.



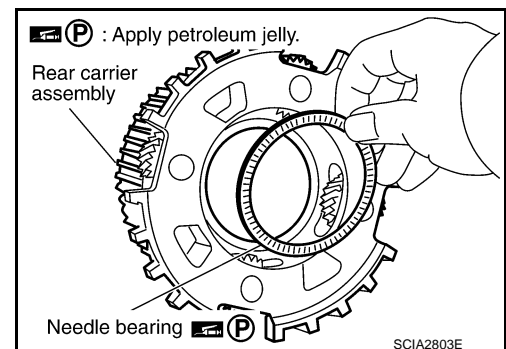
20. Remove needle bearing (rear side) from mid carrier assembly.



21. Remove bearing race from rear carrier assembly.



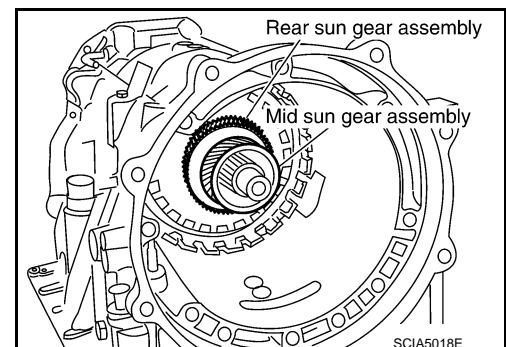
22. Remove needle bearing from rear carrier assembly.



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 them with bearing race and needle bearing.



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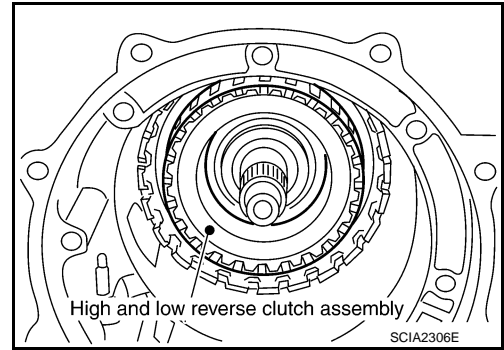
DISASSEMBLY

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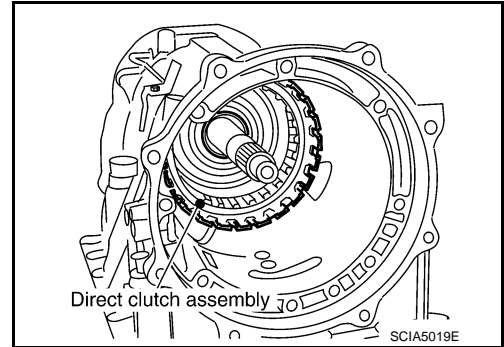
24. Remove high and low reverse clutch assembly from direct clutch assembly.

CAUTION:

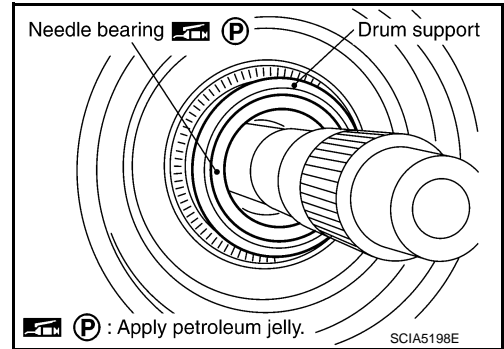
Make sure that needle bearing is installed to the high and low reverse clutch assembly edge surface.



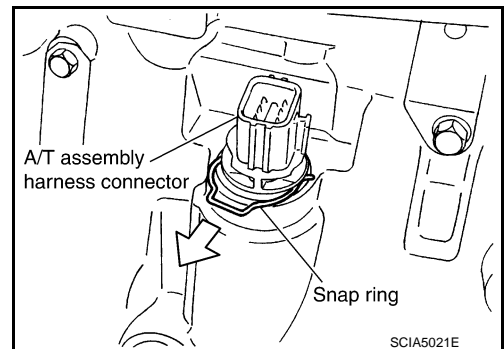
25. Remove direct clutch assembly from reverse brake.



26. Remove needle bearing from drum support.



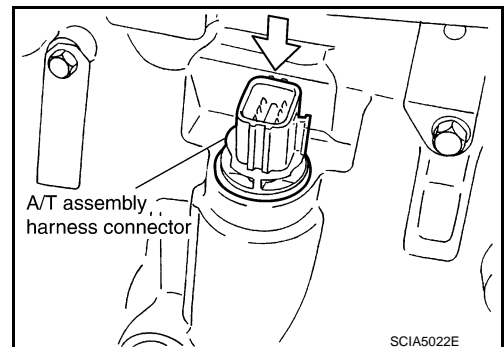
27. Remove snap ring from A/T assembly harness connector.



28. Push A/T assembly harness connector.

CAUTION:

Be careful not to damage connector.



DISASSEMBLY

< SERVICE INFORMATION >

29. Remove oil pan, oil pan gasket and clips (VQ35DE models) or oil pan, oil pan gasket, brackets and clips (VK45DE models) according to the following procedures.

a. VQ35DE models

i. Remove clips (1).

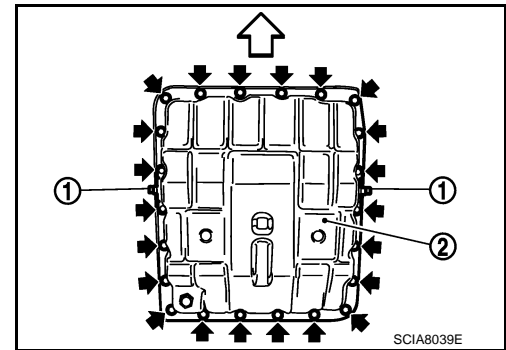
ii. Remove oil pan (2) and oil pan gasket.



: Front



: Oil pan mounting bolt



b. VK45DE models

i. Remove clips (1) and brackets (2).

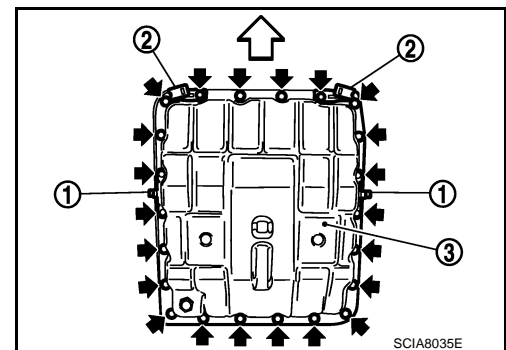
ii. Remove oil pan (3) and oil pan gasket.



: Front

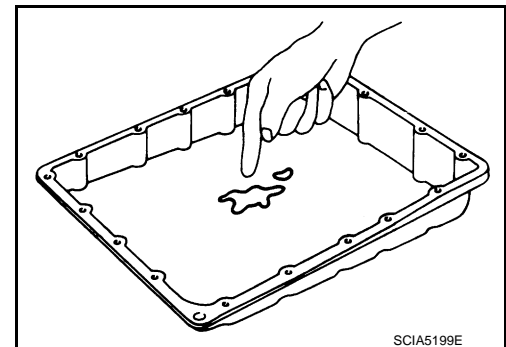


: Oil pan mounting bolt

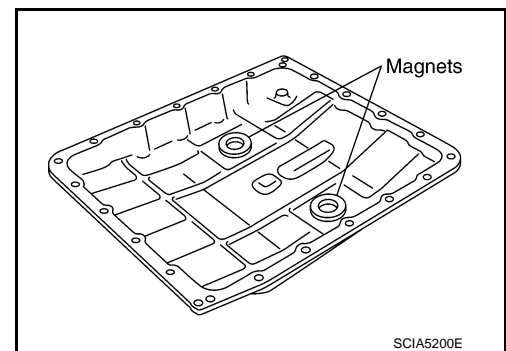


30. Check foreign materials in oil pan to help determine causes of malfunction. If the ATF is very dark, smells burned, or contains foreign particles, the frictional material (clutches, band) may need replacement. A tacky film that will not wipe clean indicates varnish build up. Varnish can cause valves, 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.



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DISASSEMBLY

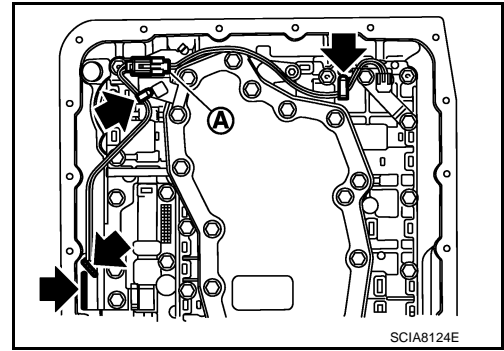
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32. Disconnect A/T fluid temperature sensor 2 connector (A).

CAUTION:

Be careful not to damage connector.

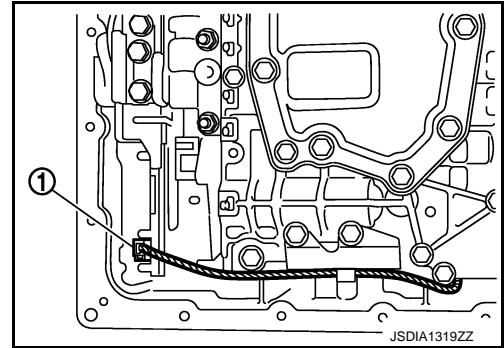
33. Straighten terminal clips (←) to free terminal cord assembly and A/T fluid temperature sensor 2 harness.



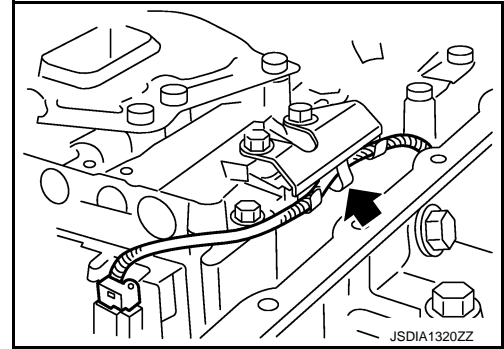
34. Disconnect output speed sensor connector (1).

CAUTION:

Be careful not to damage connector.



35. Straighten terminal clip (←) to free output speed sensor harness.

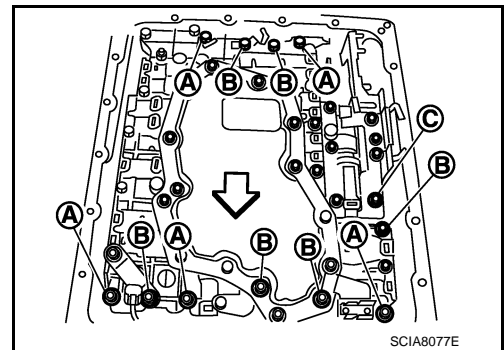


36. Remove bolts A, B and C from control valve with TCM.



: Front

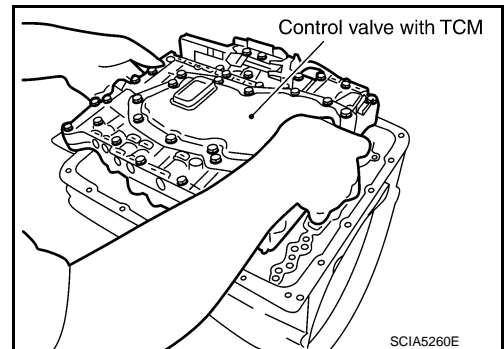
Bolt symbol	Length mm (in)	Number of bolts
A	42 (1.65)	5
B	55 (2.17)	6
C	40 (1.57)	1



37. Remove control valve with TCM from transmission case.

CAUTION:

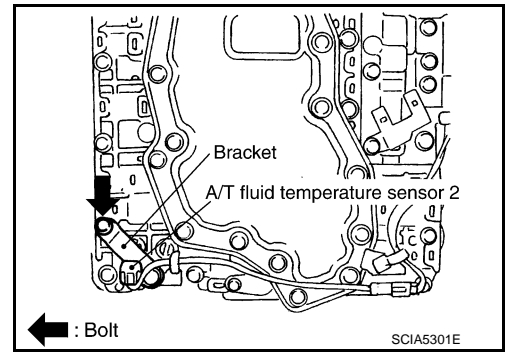
When removing, be careful with the manual valve notch and manual plate height. Remove it vertically.



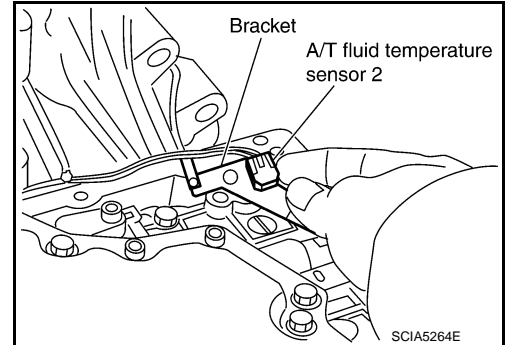
DISASSEMBLY

< SERVICE INFORMATION >

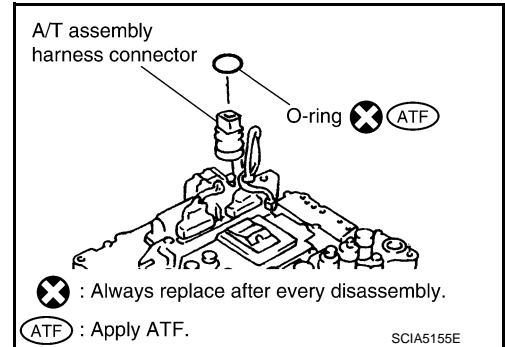
38. Remove A/T fluid temperature sensor 2 with bracket from control valve with TCM.



39. Remove bracket from A/T fluid temperature sensor 2.

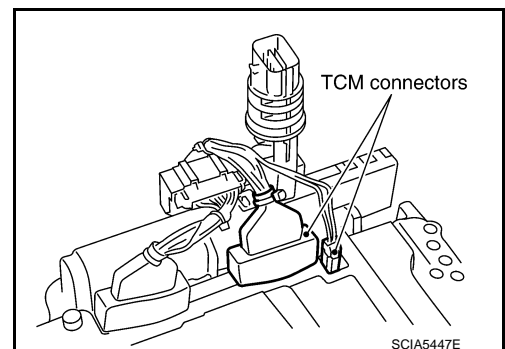


40. Remove O-ring from A/T assembly harness connector.

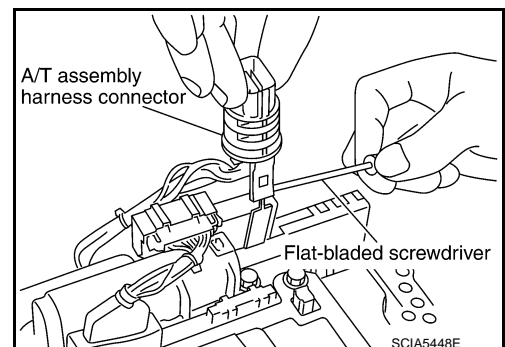


41. Disconnect TCM connectors.

CAUTION:
Be careful not to damage connectors.



42. Remove A/T assembly harness connector from control valve with TCM using a flat-bladed screwdriver.



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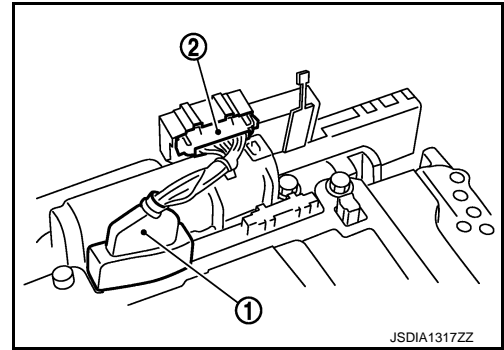
DISASSEMBLY

< SERVICE INFORMATION >

43. Disconnect TCM connector (1) and transmission range switch connector (2).

CAUTION:

Be careful not to damage connectors.

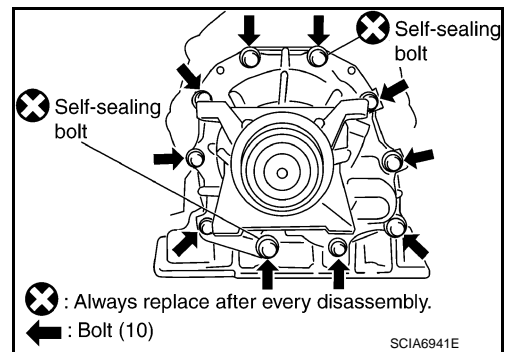


44. Remove one of the following parts.

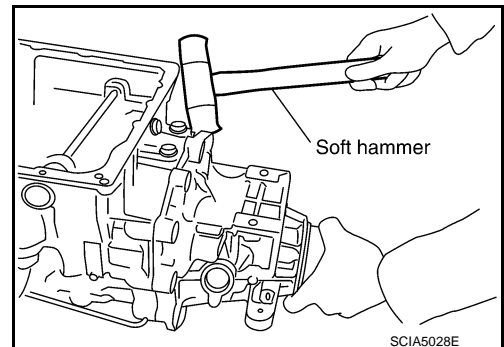
- Rear extension assembly (VQ35DE models for 2WD)
- Output shaft & companion flange complement (VK45DE models for 2WD)
- Adapter case assembly (AWD models)

a. **VQ35DE models for 2WD**

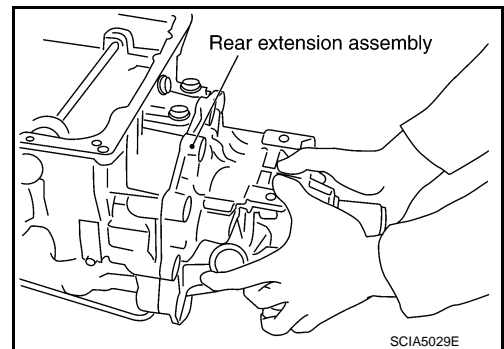
- i. Remove tightening bolts for rear extension assembly and transmission case.



- ii. Tap rear extension assembly with a soft hammer.



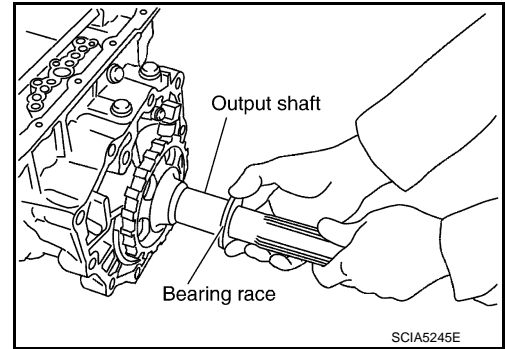
- iii. Remove rear extension assembly from transmission case. (With needle bearing.)



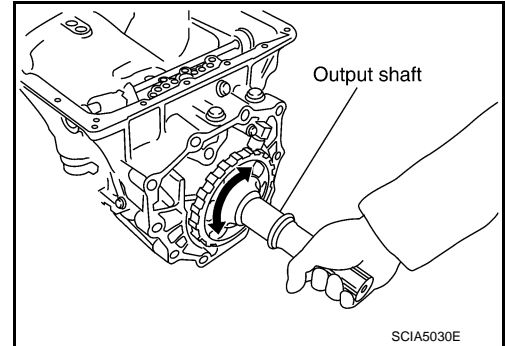
DISASSEMBLY

< SERVICE INFORMATION >

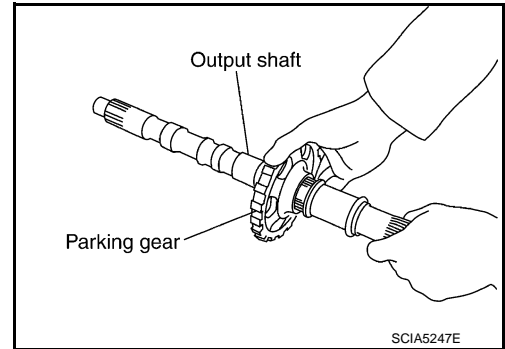
iv. Remove bearing race from output shaft.



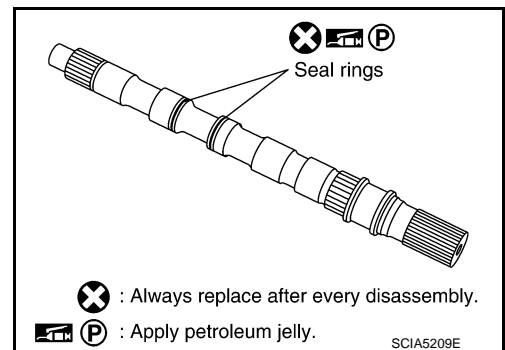
v. Remove output shaft from transmission case by rotating left/right.



vi. Remove parking gear from output shaft.



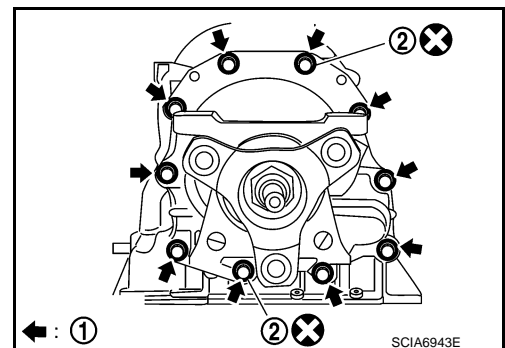
vii. Remove seal rings from output shaft.



b. **VK45DE models for 2WD**

i. Remove tightening bolts (1) for output shaft & companion flange complement and transmission case.

- ← : Bolt
- 2 ⊗ : Self-sealing bolt

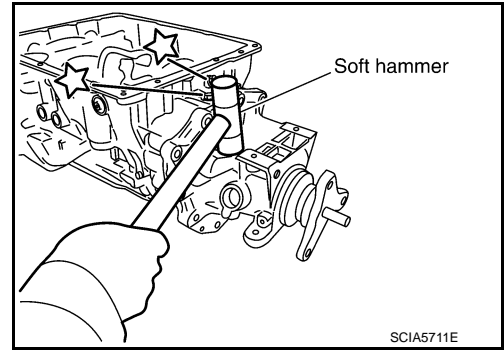


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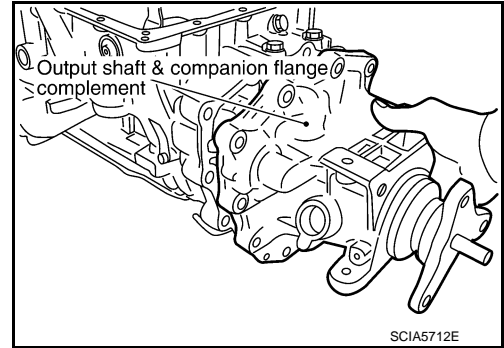
DISASSEMBLY

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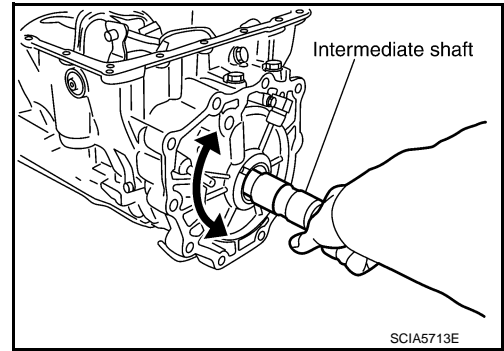
- ii. Tap output shaft & companion flange complement with a soft hammer.



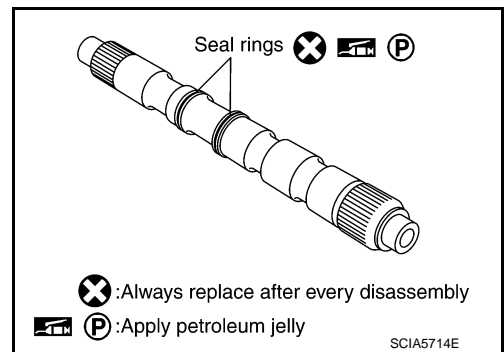
- iii. Remove output shaft & companion flange complement from transmission case.



- iv. Remove intermediate shaft from transmission case by rotating left/right.



- v. Remove seal rings from intermediate shaft.



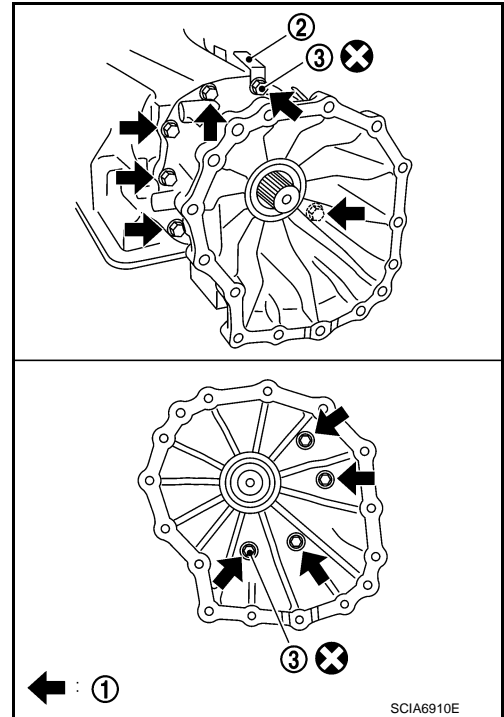
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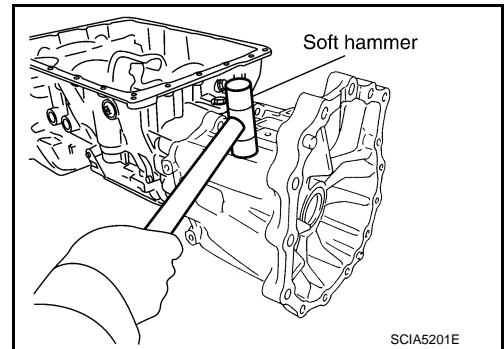
c. AWD models

- i. Remove tightening bolts (1) for adapter case assembly and transmission case. (With bracket (2).)

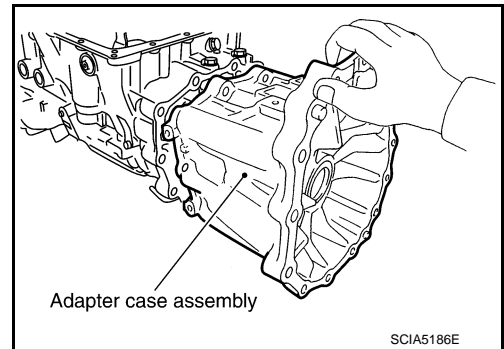
← : Bolt
2 : Self-sealing bolt



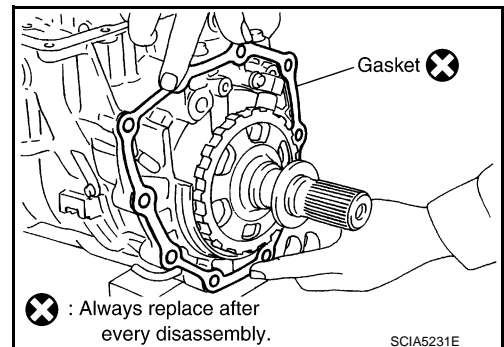
- ii. Tap adapter case assembly with a soft hammer.



- iii. Remove adapter case assembly from transmission case. (With needle bearing)



- iv. Remove gasket from transmission case.

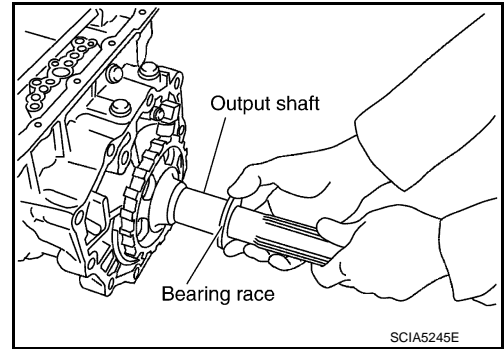


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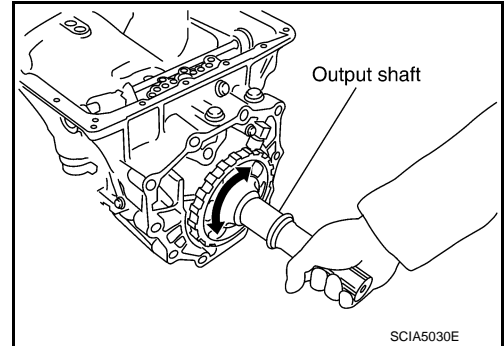
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< SERVICE INFORMATION >

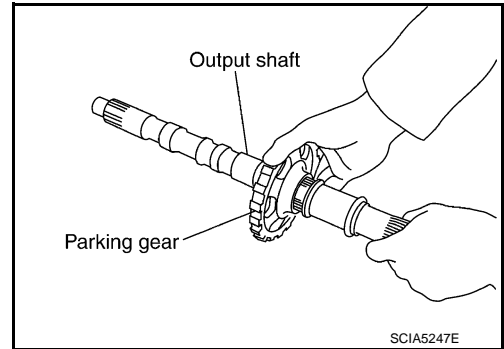
v. Remove bearing race from output shaft.



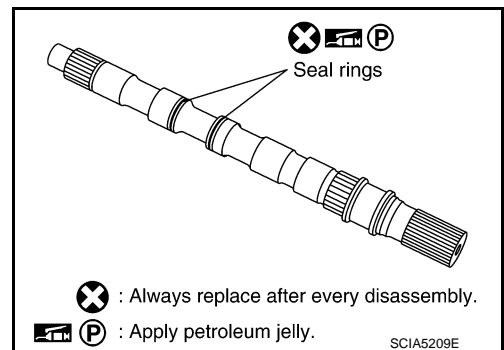
vi. Remove output shaft from transmission case by rotating left/right.



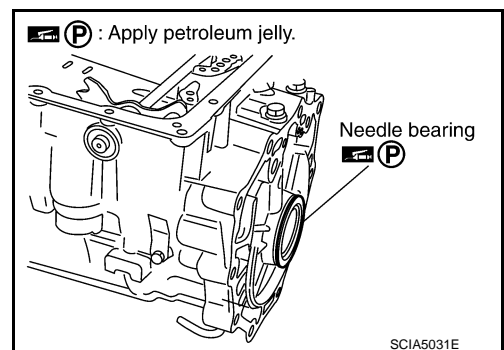
vii. Remove parking gear from output shaft.



viii. Remove seal rings from output shaft.



45. Remove needle bearing from transmission case.



DISASSEMBLY

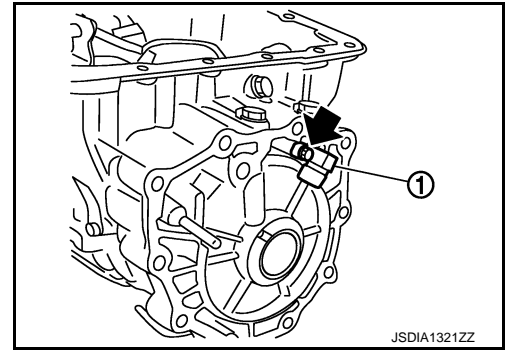
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46. Remove output speed sensor (1) from transmission case.

← : Bolt

CAUTION:

- Never subject it to impact by dropping or hitting it.
- Never disassemble.
- Never allow metal filings, etc., to get on the sensor's front edge magnetic area.
- Never place in an area affected by magnetism.



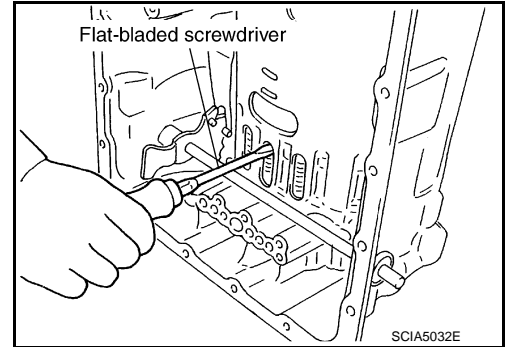
47. Remove reverse brake snap ring (fixing plate) using 2 flat-bladed screwdrivers.

NOTE:

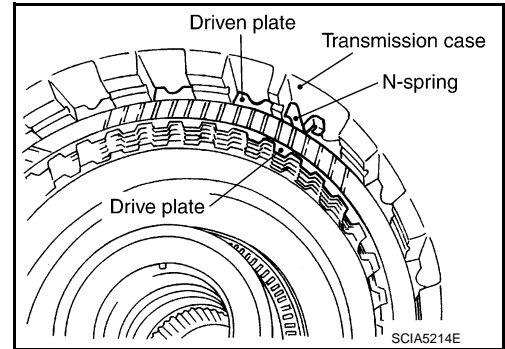
Press out snap ring from the transmission case oil pan side gap using a flat-bladed screwdriver, and remove it using a another screwdriver.

48. Remove reverse brake retaining plate from transmission case.

- Check facing for burns, cracks or damage. If necessary, replace the plate.

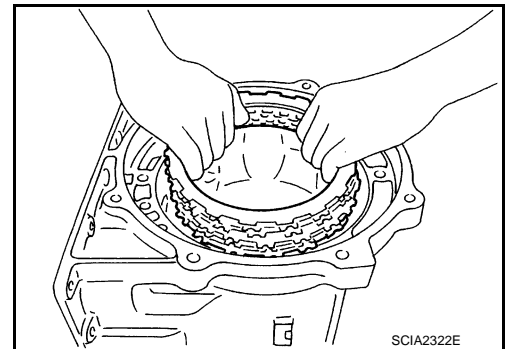


49. Remove N-spring from transmission case.

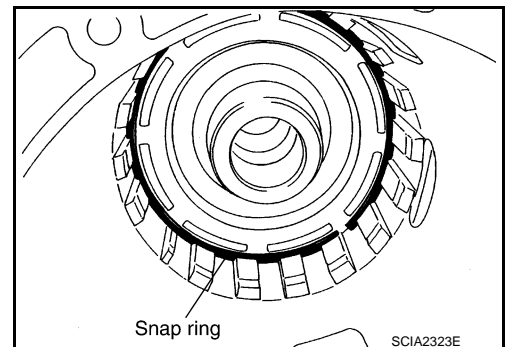


50. Remove reverse brake drive plates, driven plates and dish plates from transmission case.

- Check facing for burns, cracks or damage. If necessary, replace the plate.



51. Remove snap ring (fixing spring retainer) using a flat-bladed screwdriver.

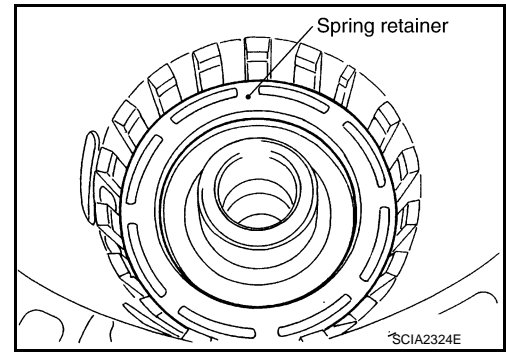


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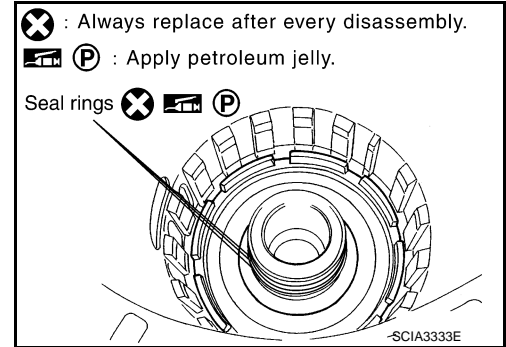
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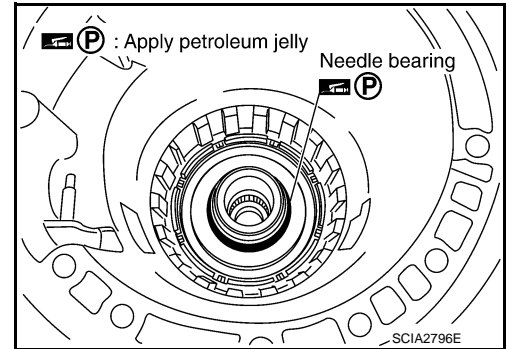
52. Remove spring retainer and return spring from transmission case.



53. Remove seal rings from drum support.



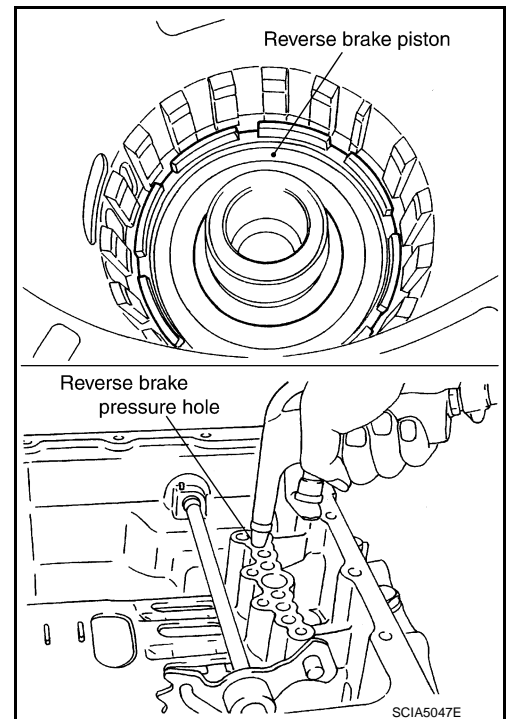
54. Remove needle bearing from drum support edge surface.



55. Remove reverse brake piston from transmission case with compressed air. Refer to [AT-268, "Oil Channel"](#).

CAUTION:

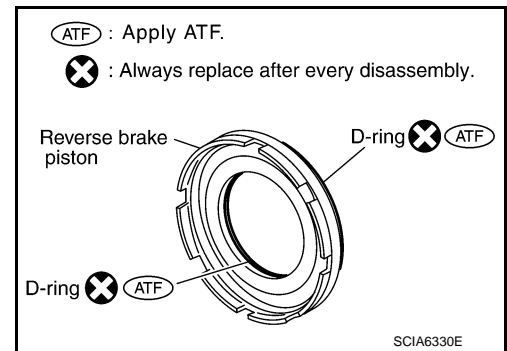
Care should be taken not to abruptly blow air. It makes pistons incline, as the result, it becomes hard to disassemble the pistons.



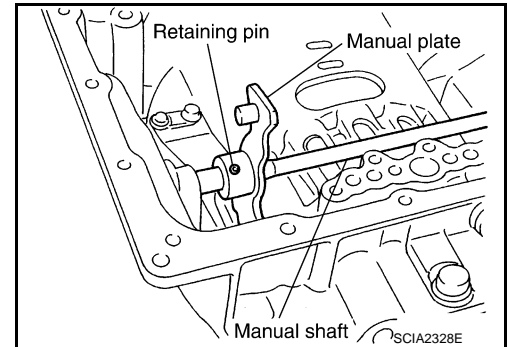
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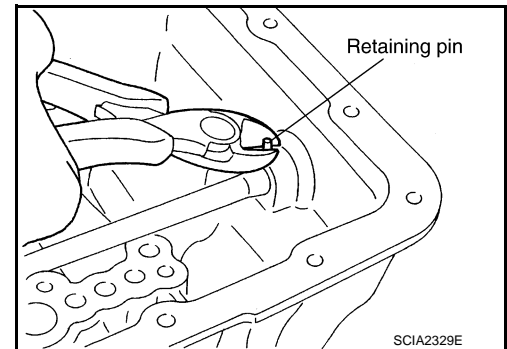
56. Remove D-rings from reverse brake piston.



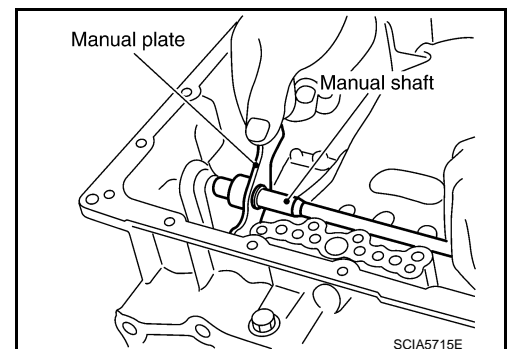
57. Use a pin punch [4 mm (0.16 in) dia. commercial service tool] to knock out retaining pin.



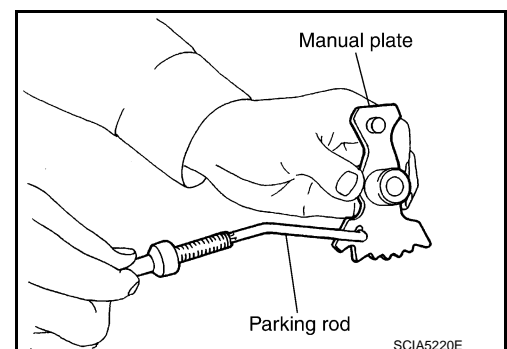
58. Remove manual shaft retaining pin with a pair of nippers.



59. Remove manual plate (with parking rod) from manual shaft.



60. Remove parking rod from manual plate.

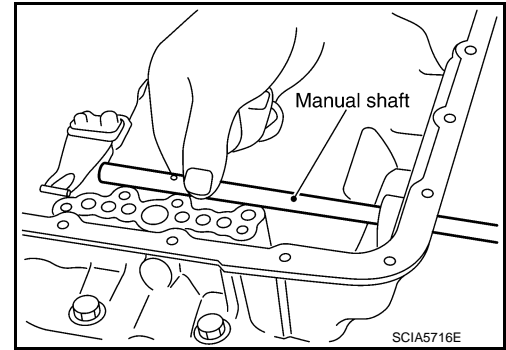


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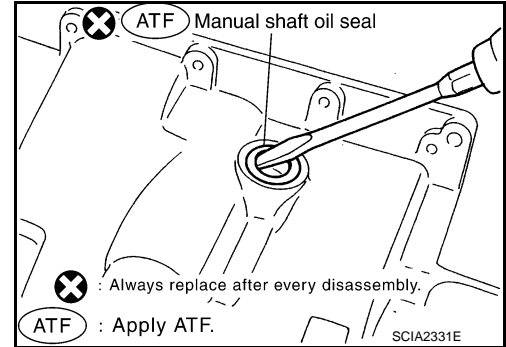
61. Remove manual shaft from transmission case.



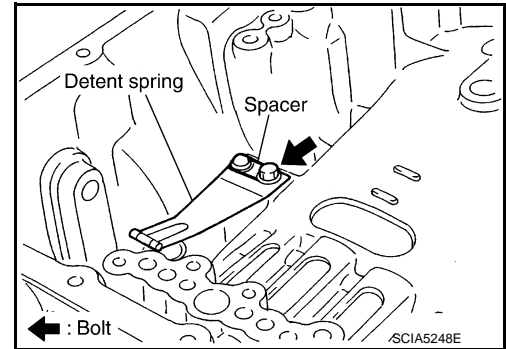
62. Remove manual shaft oil seals using a flat-bladed screwdriver.

CAUTION:

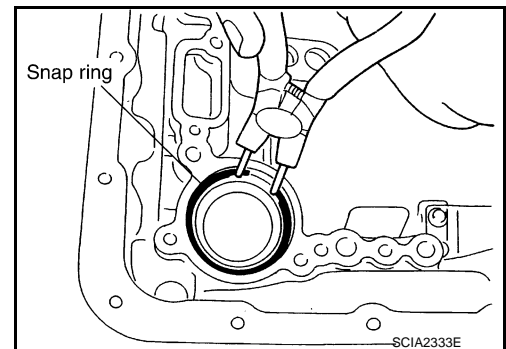
Be careful not to scratch transmission case.



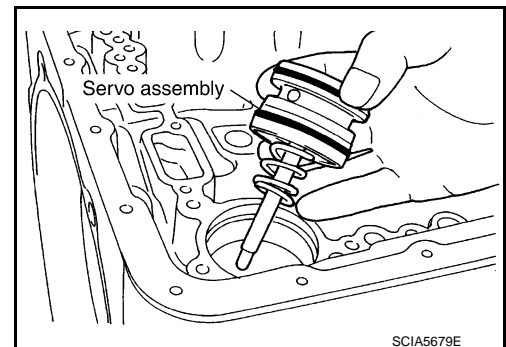
63. Remove detent spring and spacer from transmission case.



64. Using a pair of snap ring pliers, remove snap ring from transmission case.



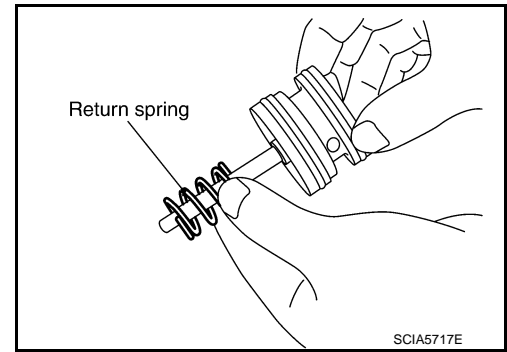
65. Remove servo assembly (with return spring) from transmission case.



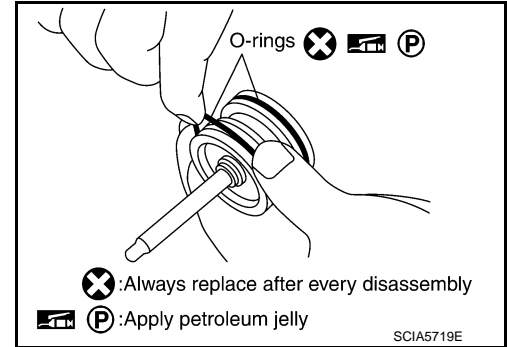
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66. Remove return spring from servo assembly.



67. Remove O-rings from servo assembly.

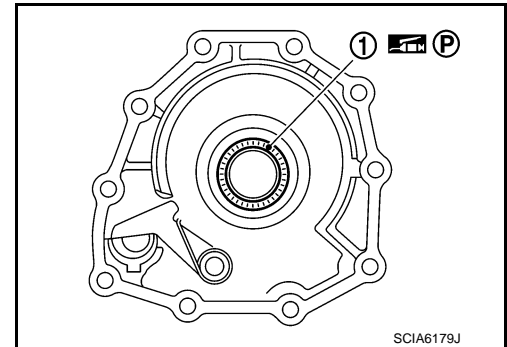


68. Remove one of the following parts.

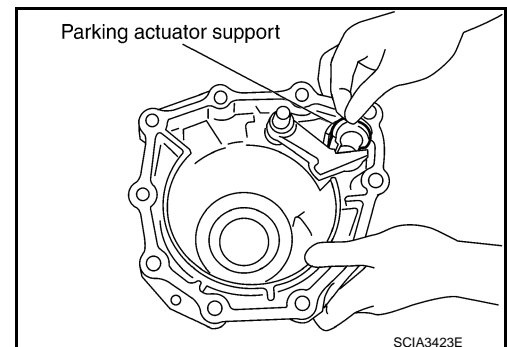
- Rear extension assembly (VQ35DE models for 2WD)
- Adapter case assembly (AWD models)
- Output shaft & companion flange complement (VK45DE models for 2WD)

a. **VQ35DE models**

i. Remove needle bearing (1) from rear extension (2WD models) or adapter case (AWD models).



ii. Remove parking actuator support from rear extension (2WD models) or adapter case (AWD models).

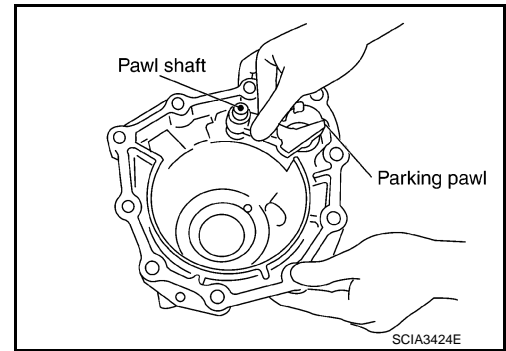


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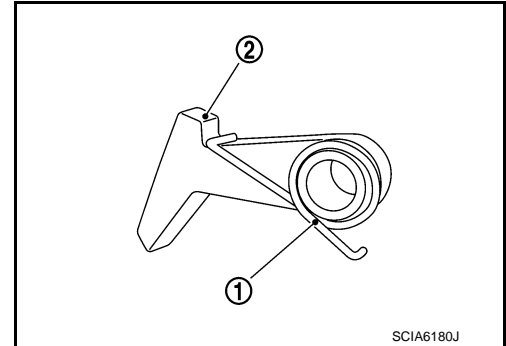
DISASSEMBLY

< SERVICE INFORMATION >

- iii. Remove parking pawl (with return spring) and pawl shaft from rear extension (2WD models) or adapter case (AWD models).



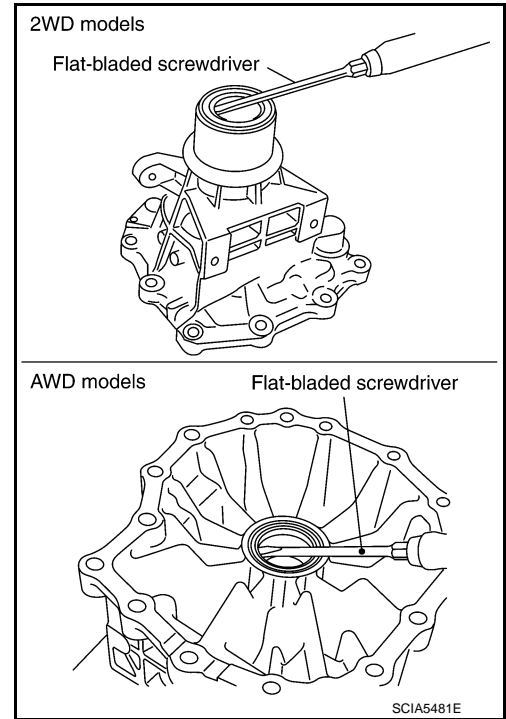
- iv. Remove return spring (1) from parking pawl (2).



- v. Remove rear oil seal from rear extension (2WD models) or adapter case (AWD models).

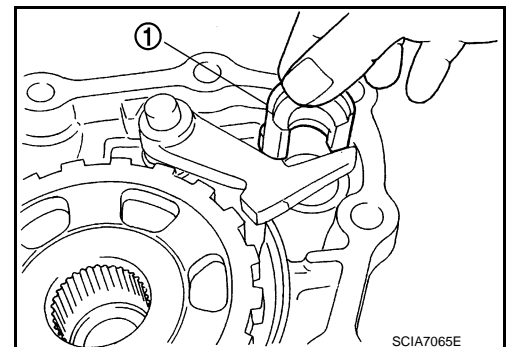
CAUTION:

Be careful not to scratch rear extension (2WD models) or adapter case (AWD models).



- b. **VK45DE models**

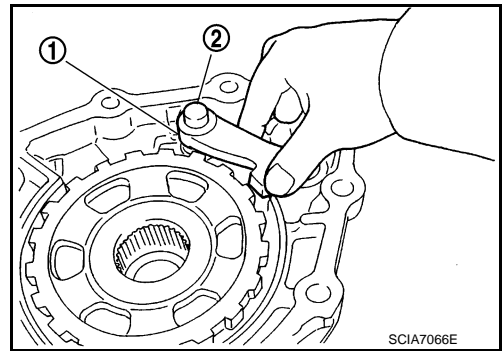
- i. Remove parking actuator support (1) from output shaft & companion flange complement.



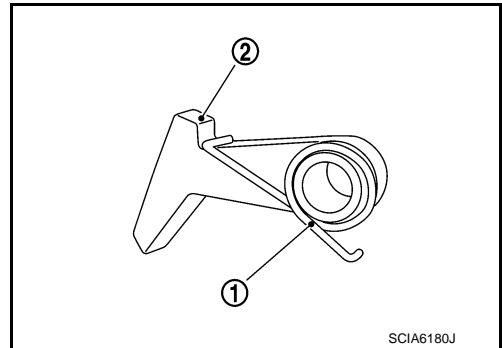
DISASSEMBLY

< SERVICE INFORMATION >

- ii. Remove parking pawl (with return spring) (1) and pawl shaft (2) from output shaft & companion flange complement.



- iii. Remove return spring (1) from parking pawl (2).



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REPAIR FOR COMPONENT PARTS

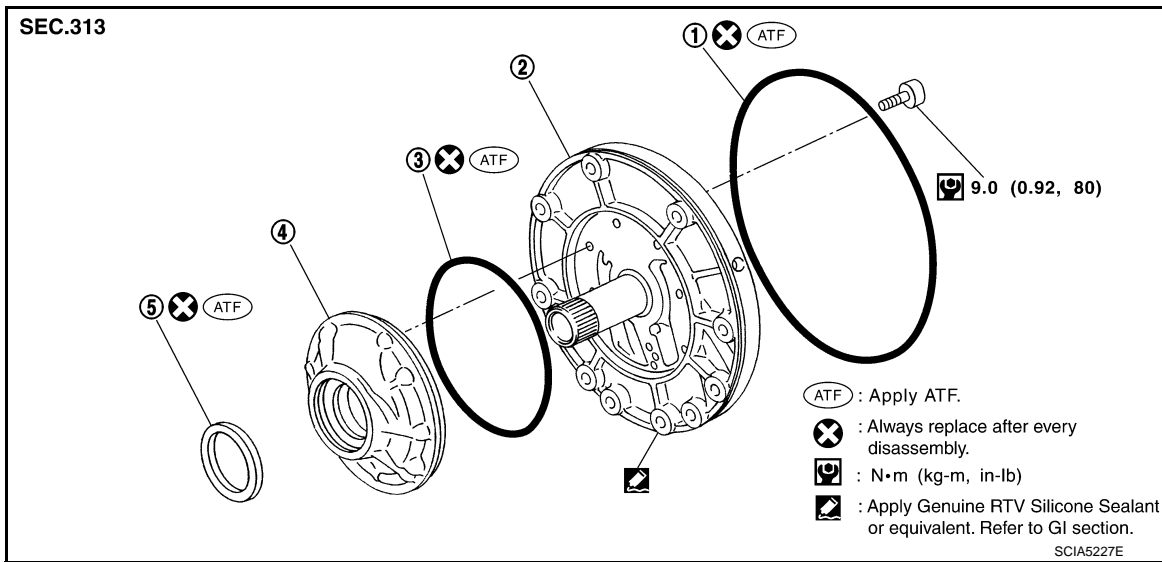
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REPAIR FOR COMPONENT PARTS

Oil Pump

INFOID:000000002955653

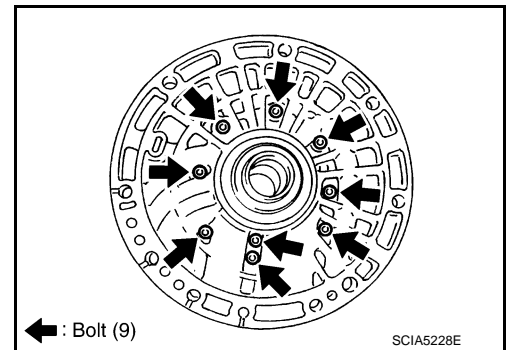
COMPONENTS



- | | | |
|---------------------|------------------------------|-----------|
| 1. O-ring | 2. Oil pump cover | 3. O-ring |
| 4. Oil pump housing | 5. Oil pump housing oil seal | |

DISASSEMBLY

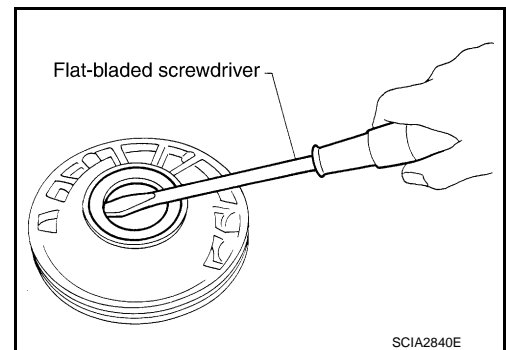
1. Remove oil pump housing from oil pump cover.



2. Remove oil pump housing oil seal using a flat-bladed screwdriver.

CAUTION:

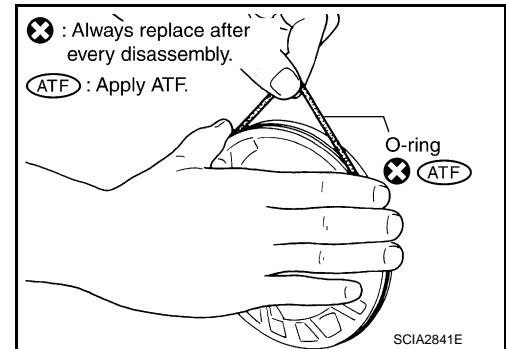
Be careful not to scratch oil pump housing.



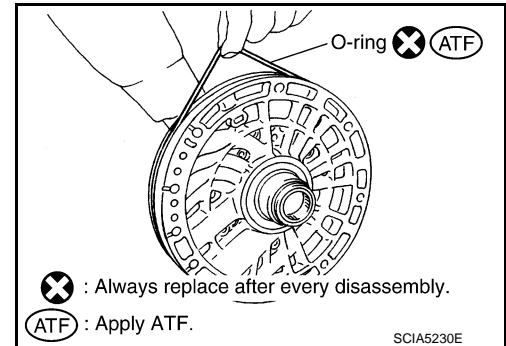
REPAIR FOR COMPONENT PARTS

< SERVICE INFORMATION >

3. Remove O-ring from oil pump housing.



4. Remove O-ring from oil pump cover.

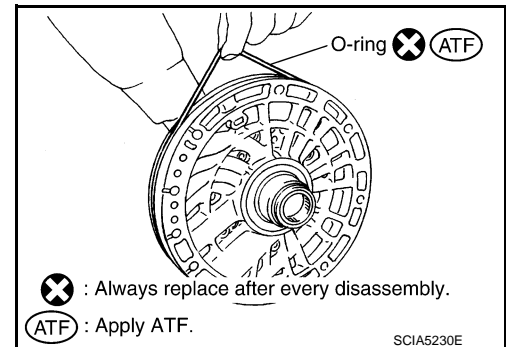


ASSEMBLY

1. Install O-ring to oil pump cover.

CAUTION:

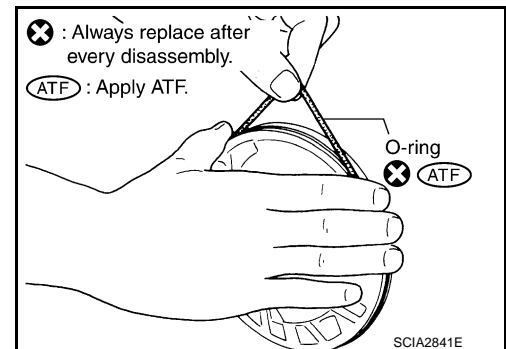
- Do not reuse O-ring.
- Apply ATF to O-ring.



2. Install O-ring to oil pump housing.

CAUTION:

- Do not reuse O-ring.
- Apply ATF to O-ring.



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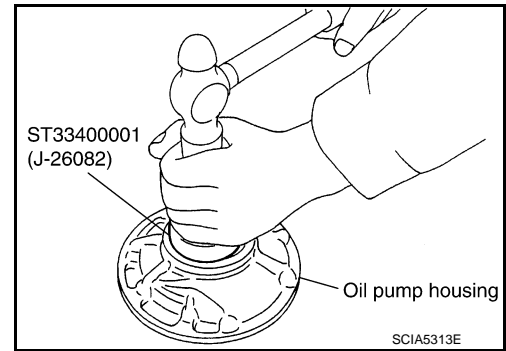
REPAIR FOR COMPONENT PARTS

< SERVICE INFORMATION >

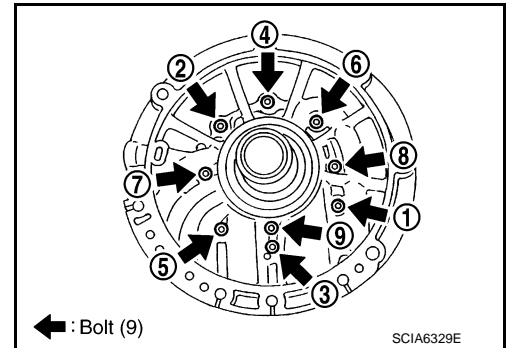
- Using the drift, install oil pump housing oil seal to the oil pump housing until it is flush.

CAUTION:

- Do not reuse oil seal.
- Apply ATF to oil seal.



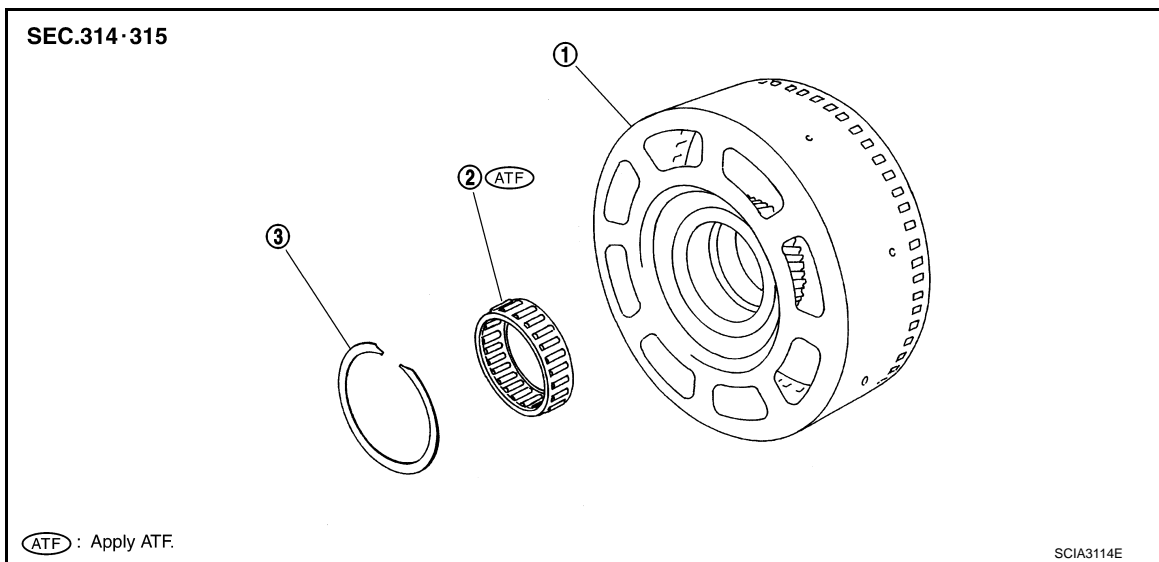
- Install oil pump housing to oil pump cover.
- Tighten bolts to the specified torque in numerical order shown in the figure after temporarily tightening them. Refer to "COMPONENTS".



Front Sun Gear, 3rd One-Way Clutch

INFOID:000000002955654

COMPONENTS



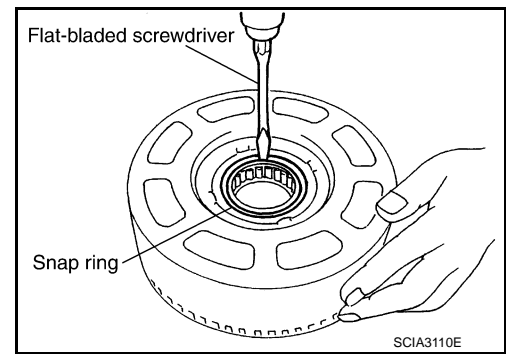
- Front sun gear
- 3rd one-way clutch
- Snap ring

DISASSEMBLY

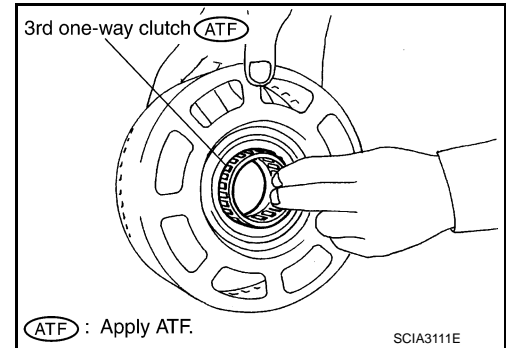
REPAIR FOR COMPONENT PARTS

< SERVICE INFORMATION >

1. Using a flat-bladed screwdriver, remove snap ring from front sun gear.



2. Remove 3rd one-way clutch from front sun gear.



INSPECTION

3rd One-way Clutch

- Check frictional surface for wear or damage.

CAUTION:

If necessary, replace the 3rd one-way clutch.

Front Sun Gear Snap Ring

- Check for deformation, fatigue or damage.

CAUTION:

If necessary, replace the snap ring.

Front Sun Gear

- Check for deformation, fatigue or damage.

CAUTION:

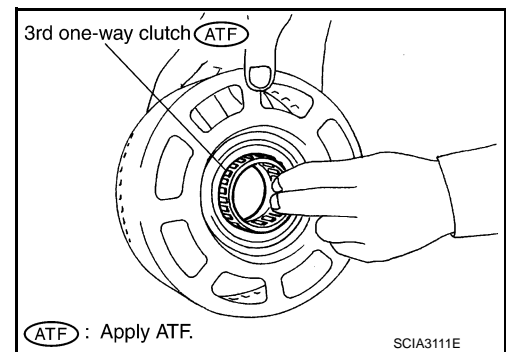
If necessary, replace the front sun gear.

ASSEMBLY

1. Install 3rd one-way clutch in front sun gear.

CAUTION:

Apply ATF to 3rd one-way clutch.

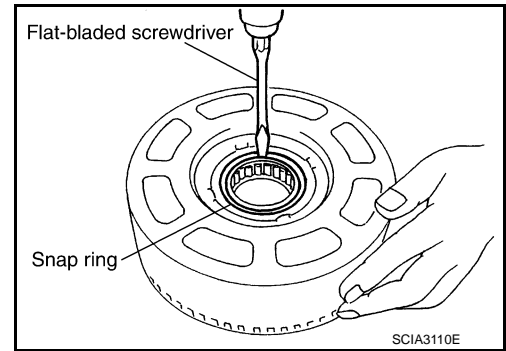


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REPAIR FOR COMPONENT PARTS

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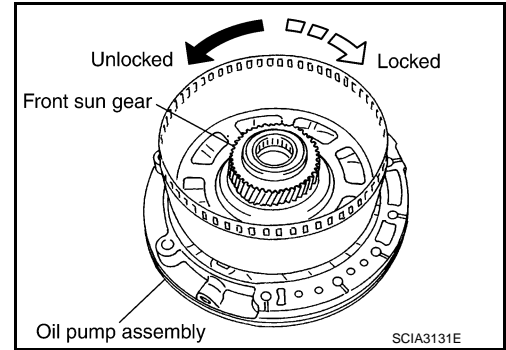
2. Using a flat-bladed screwdriver, install snap ring in front sun gear.



3. Check operation of 3rd one-way clutch.
 - a. Hold oil pump assembly and turn front sun gear.
 - b. Check 3rd one-way clutch for correct locking and unlocking directions.

CAUTION:

If not as shown in figure, check installation direction of 3rd one-way clutch.



Front Carrier, Input Clutch, Rear Internal Gear

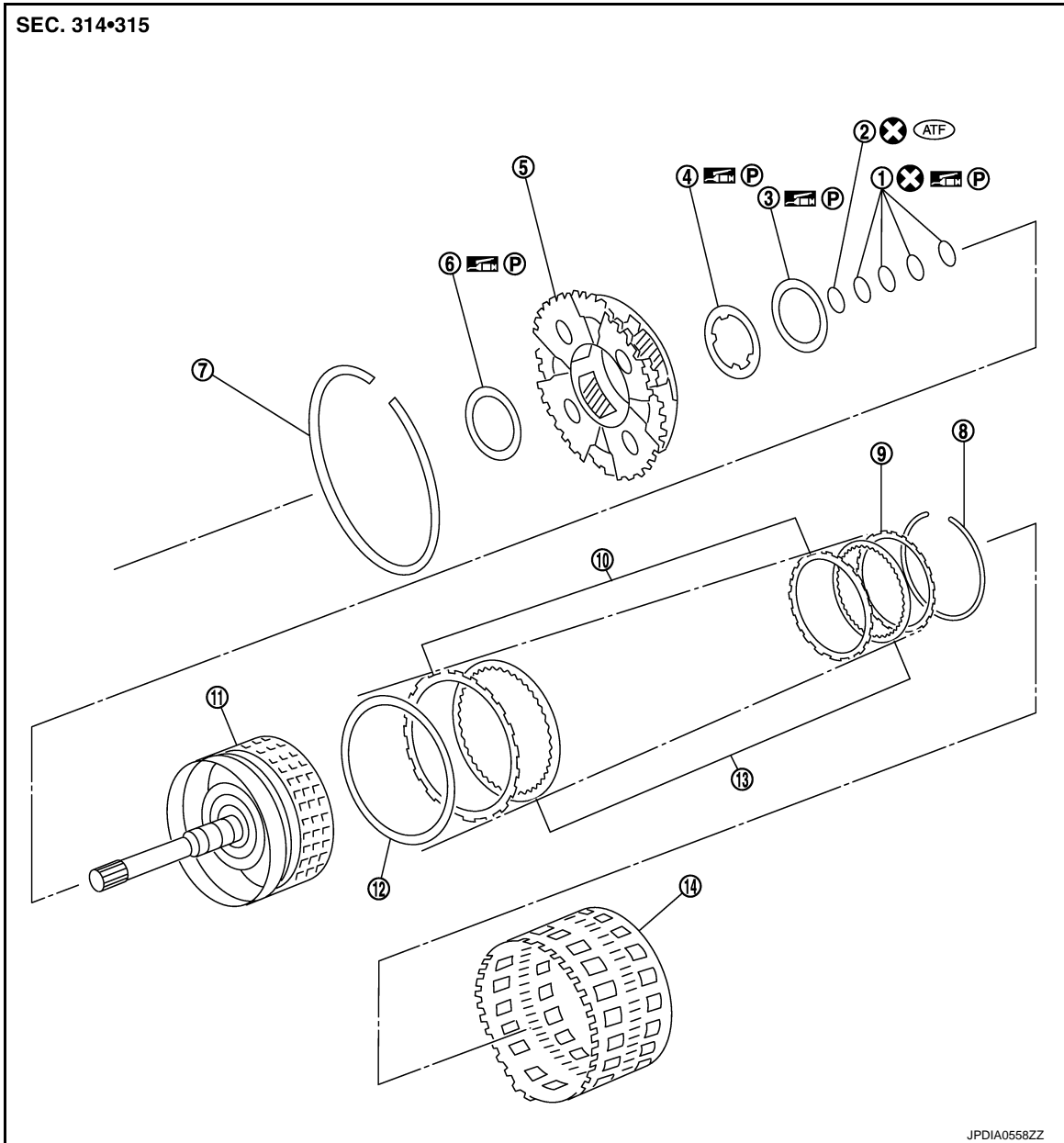
COMPONENTS

INFOID:000000002955655

REPAIR FOR COMPONENT PARTS

< SERVICE INFORMATION >

VQ35DE models



- | | | |
|------------------|---------------------------|--------------------|
| 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-9. "Component"](#).

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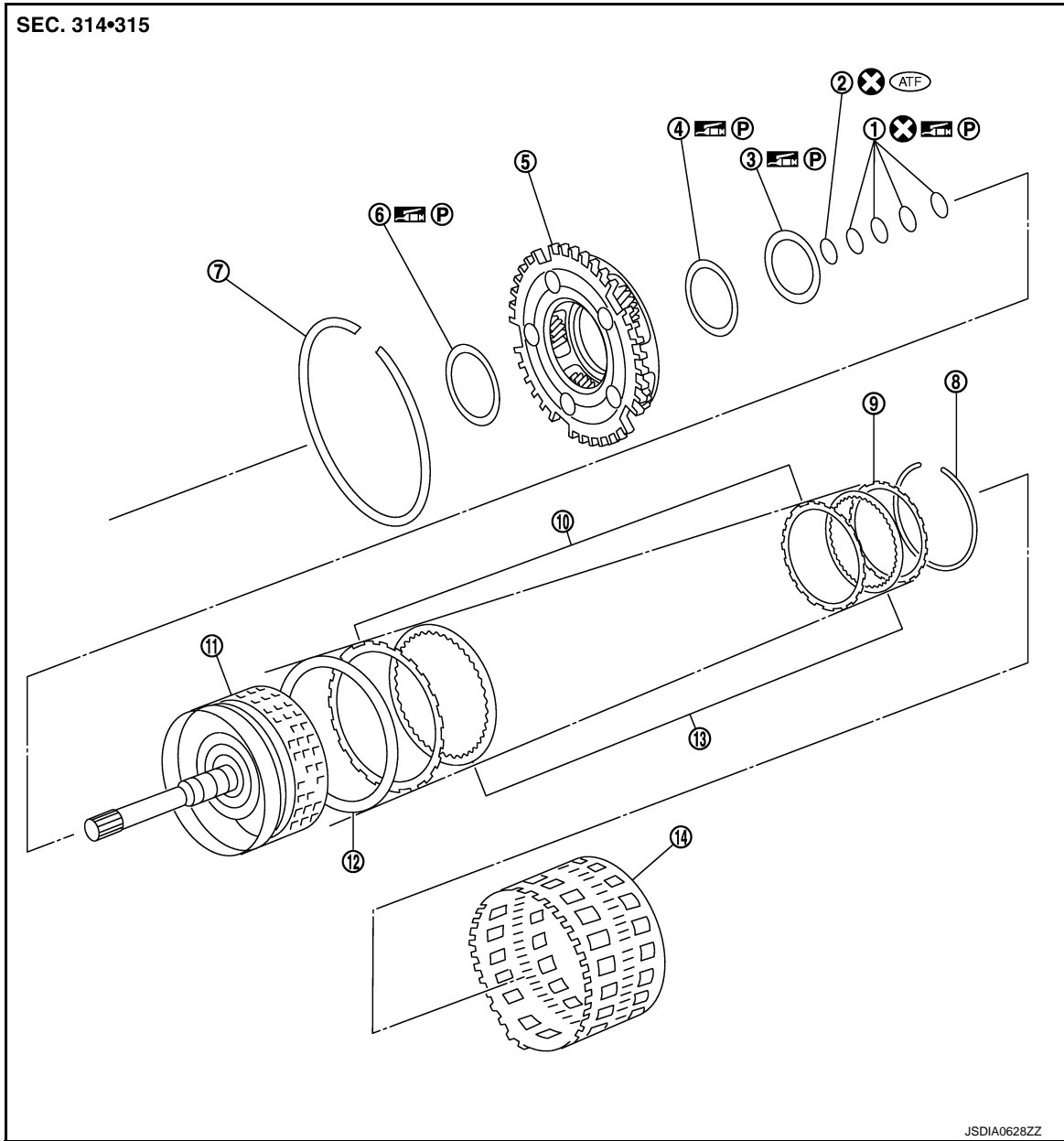
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REPAIR FOR COMPONENT PARTS

< SERVICE INFORMATION >

VK45DE models



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|------------------|---------------------------|--------------------|
| 1. Seal ring | 2. O-ring | 3. Needle bearing |
| 4. Bearing race | 5. Front carrier assembly | 6. Needle bearing |
| 7. Snap ring | 8. Snap ring | 9. Retaining plate |
| 10. Driven plate | 11. Input clutch drum | 12. Dish plate |
| 13. Drive plate | 14. Rear internal gear | |

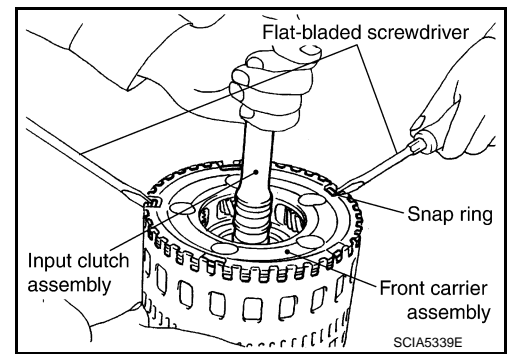
Refer to GI section to make sure icons (symbol marks) in the figure. Refer to [GI-9. "Component"](#).

DISASSEMBLY

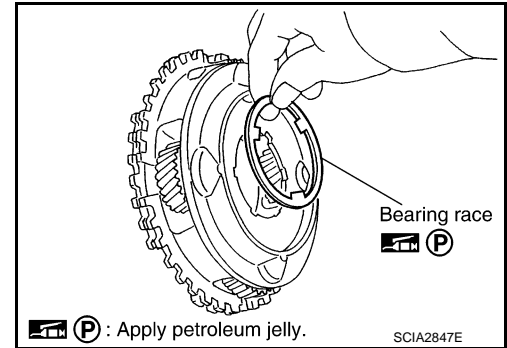
REPAIR FOR COMPONENT PARTS

< SERVICE INFORMATION >

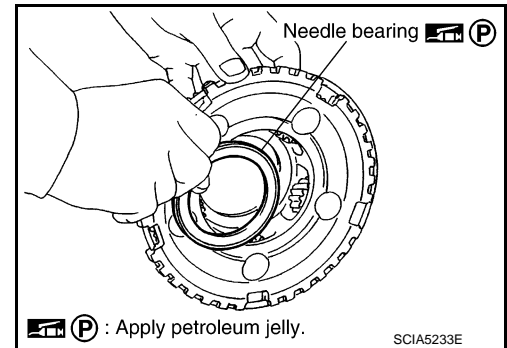
1. Compress snap ring using 2 flat-bladed screwdrivers.
2. Remove front carrier assembly and input clutch assembly from rear internal gear.
3. Remove front carrier assembly from input clutch assembly.



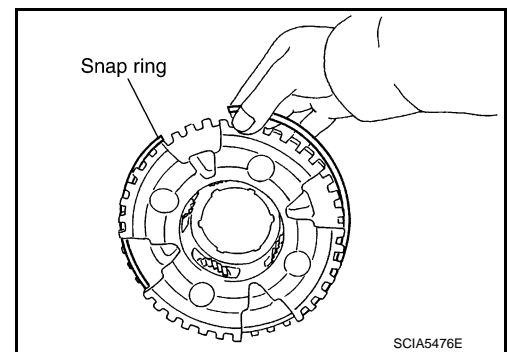
- a. Remove bearing race from front carrier assembly.



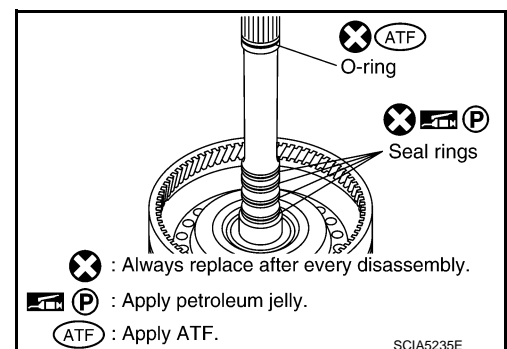
- b. Remove needle bearing from front carrier assembly.



- 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.



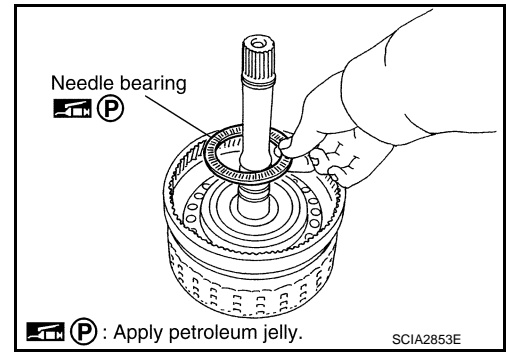
- ⊗ : Always replace after every disassembly.
- Ⓟ : Apply petroleum jelly.
- Ⓜ : Apply ATF.

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REPAIR FOR COMPONENT PARTS

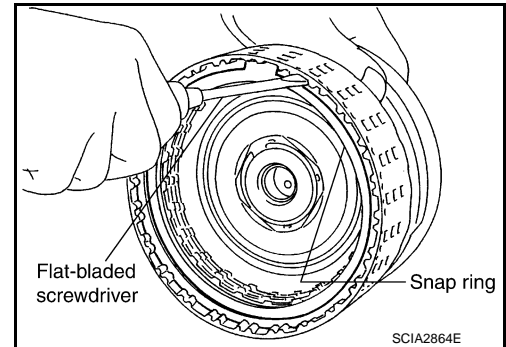
< SERVICE INFORMATION >

b. Remove needle bearing from input clutch assembly.



c. Using a flat-bladed screwdriver, remove snap ring from input clutch drum.

d. Remove drive plates, driven plates and retaining plate from input clutch drum.



INSPECTION

Front Carrier Snap Ring

- Check for deformation, fatigue or damage.

CAUTION:

If necessary, replace the snap ring.

Input Clutch Snap Ring

- Check for deformation, fatigue or damage.

CAUTION:

If necessary, replace the input clutch assembly.

Input Clutch Drum

- Check for deformation, fatigue or damage or burns.

CAUTION:

If necessary, replace the input clutch assembly.

Input Clutch Drive Plates

- Check facing for burns, cracks or damage.

CAUTION:

If necessary, replace the input clutch assembly.

Input Clutch Retaining Plate and Driven Plates

- Check facing for burns, cracks or damage.

CAUTION:

If necessary, replace the input clutch assembly.

Front Carrier

- Check for deformation, fatigue or damage.

CAUTION:

If necessary, replace the front carrier assembly.

Rear Internal Gear

- Check for deformation, fatigue or damage.

CAUTION:

If necessary, replace the rear internal gear.

ASSEMBLY

1. Install input clutch.

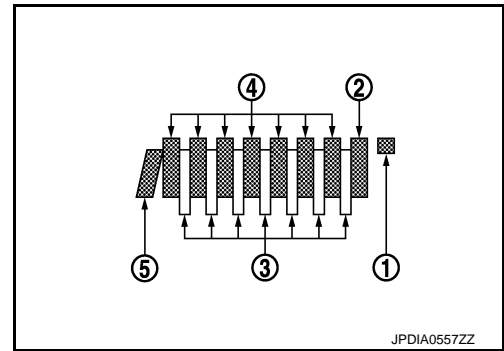
REPAIR FOR COMPONENT PARTS

< SERVICE INFORMATION >

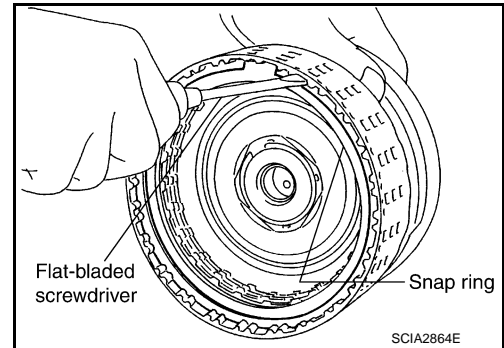
- a. Install drive plates, driven plates, dish plate and retaining plate in input clutch drum.
- Snap ring (1)
 - Retaining plate (2)
 - Drive plate (3)
 - Driven plate (4)
 - Dish plate (5)
 - Drive plate/Driven plate: 7/7

CAUTION:

Take care with order of plates.



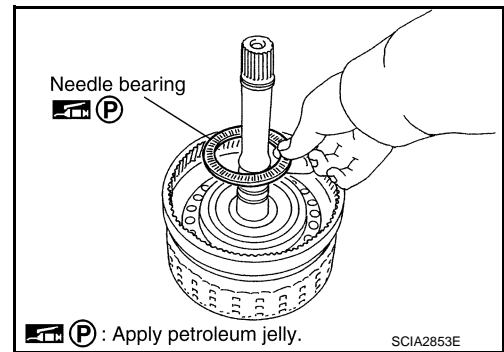
- b. Using a flat-bladed screwdriver, install snap ring in input clutch drum.



- c. Install needle bearing in input clutch assembly.

CAUTION:

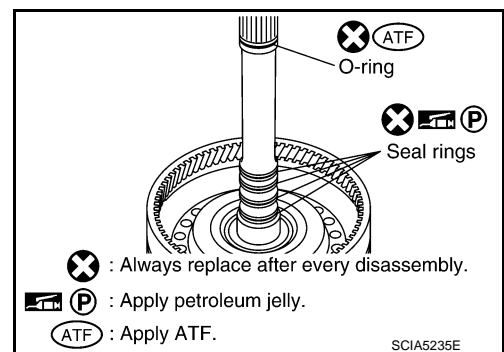
- Take care with the direction of needle bearing. Refer to [AT-271, "Location of Adjusting Shims, Needle Bearings, Thrust Washers and Snap Rings"](#).
- Apply petroleum jelly to needle bearing.



- 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.

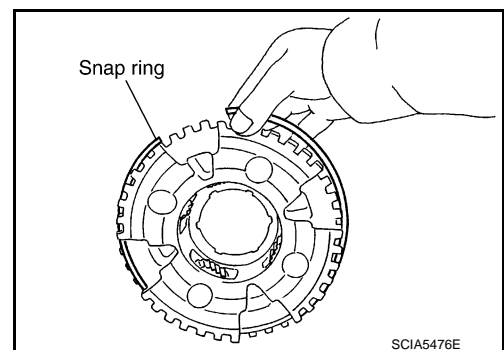


2. Install front carrier assembly.

- a. Install snap ring to front carrier assembly.

CAUTION:

Do not expand snap ring excessively.



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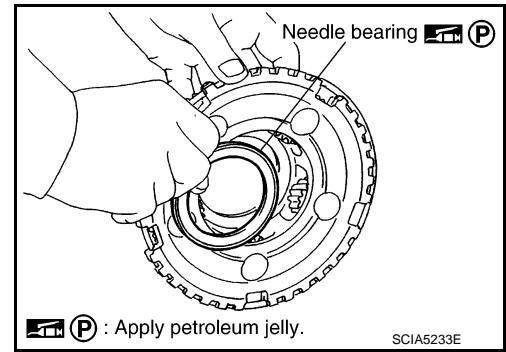
REPAIR FOR COMPONENT PARTS

< SERVICE INFORMATION >

b. Install needle bearing in front carrier assembly.

CAUTION:

- Take care with the direction of needle bearing. Refer to [AT-271, "Location of Adjusting Shims, Needle Bearings, Thrust Washers and Snap Rings"](#).
- Apply petroleum jelly to needle bearing.

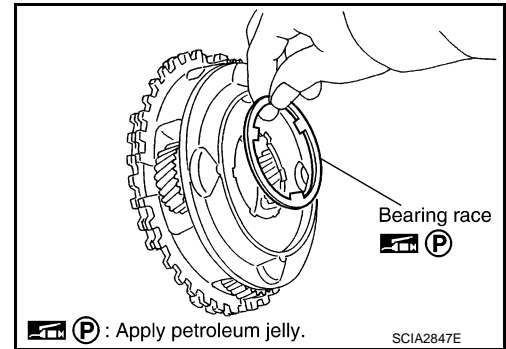


c. Install bearing race in front carrier assembly.

CAUTION:

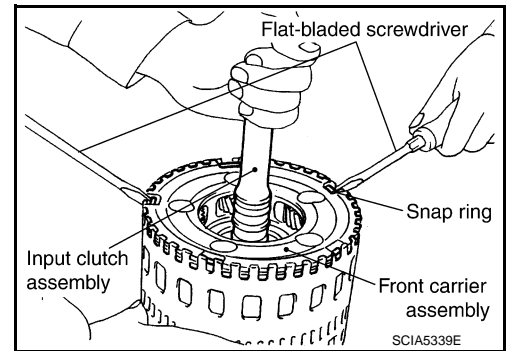
Apply petroleum jelly to bearing race.

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.

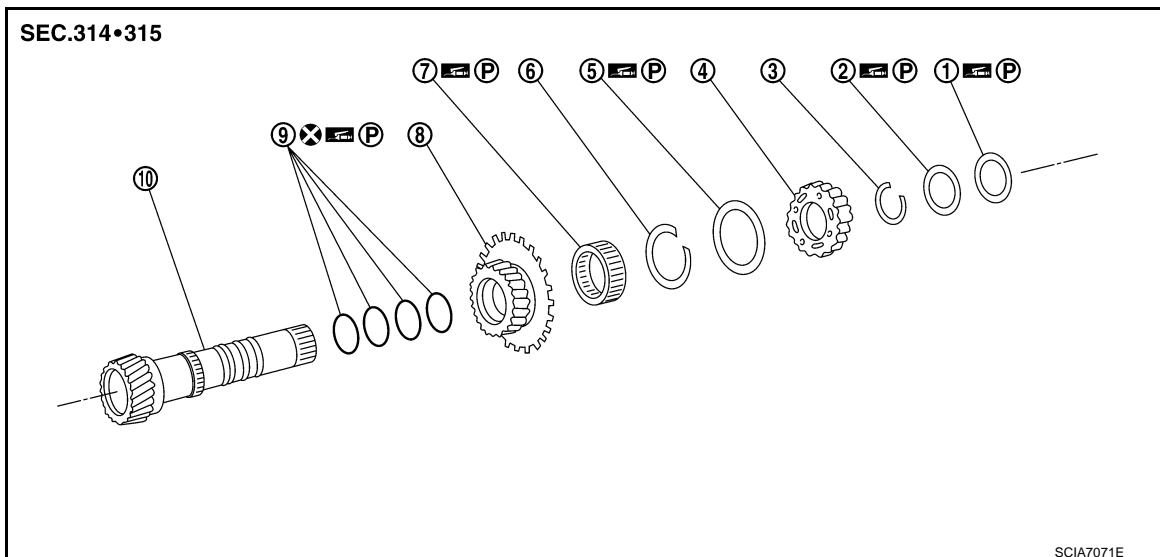


Mid Sun Gear, Rear Sun Gear, High and Low Reverse Clutch Hub

INFOID:000000002955656

COMPONENTS

VQ35DE models



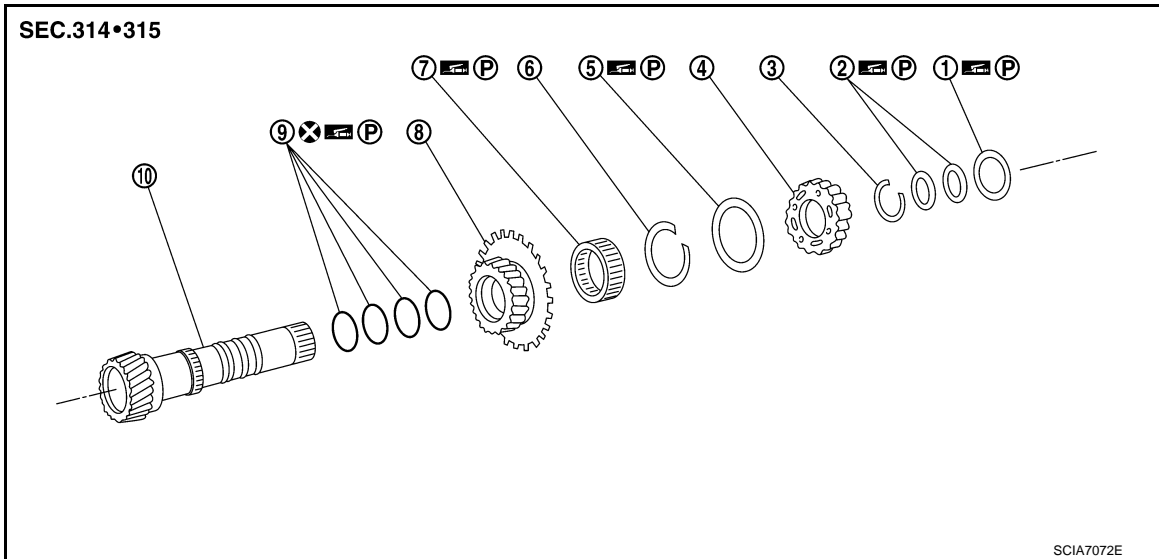
REPAIR FOR COMPONENT PARTS

< SERVICE INFORMATION >

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

Refer to GI section to make sure icons (symbol marks) in the figure. Refer to [GI-9, "Component"](#).

VK45DE models

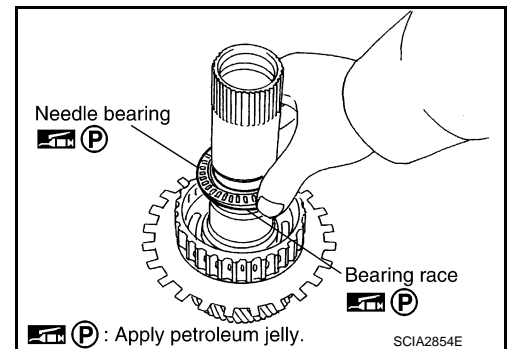


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|------------------------------------|-------------------|--------------|
| 1. Needle bearing | 2. Bearing race | 3. Snap ring |
| 4. High and low reverse clutch hub | 5. Needle bearing | 6. Snap ring |
| 7. 1st one-way clutch | 8. Rear sun gear | 9. Seal ring |
| 10. Mid sun gear | | |

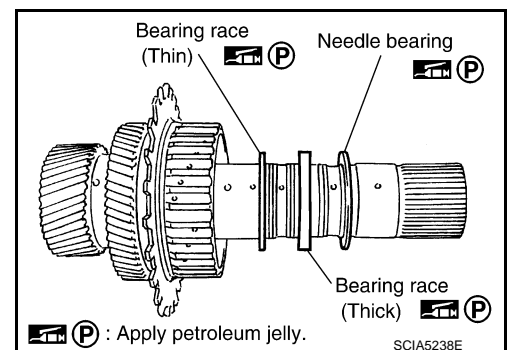
Refer to GI section to make sure icons (symbol marks) in the figure. Refer to [GI-9, "Component"](#).

DISASSEMBLY

- Remove needle bearing and bearing races from high and low reverse clutch hub.
 - VQ35DE models



- VK45DE models



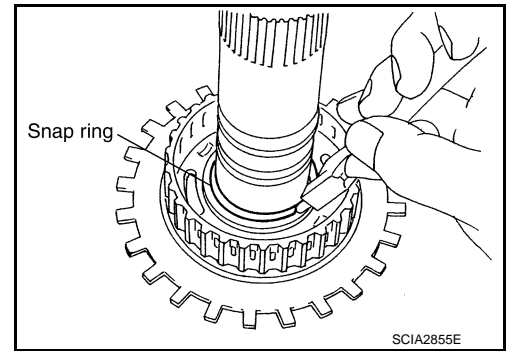
REPAIR FOR COMPONENT PARTS

< SERVICE INFORMATION >

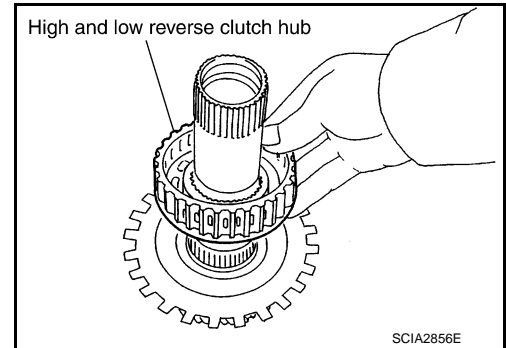
- Using a pair of snap ring pliers, remove snap ring from mid sun gear assembly.

CAUTION:

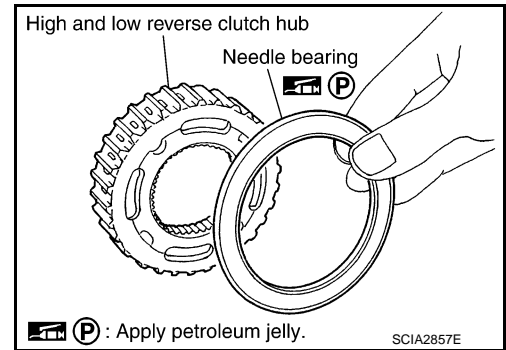
Do not expand snap ring excessively.



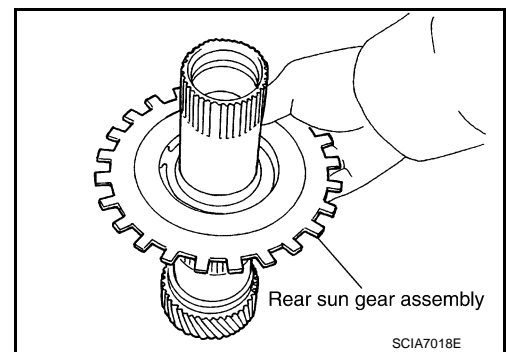
- Remove high and low reverse clutch hub from mid sun gear assembly.



- Remove needle bearing from high and low reverse clutch hub.



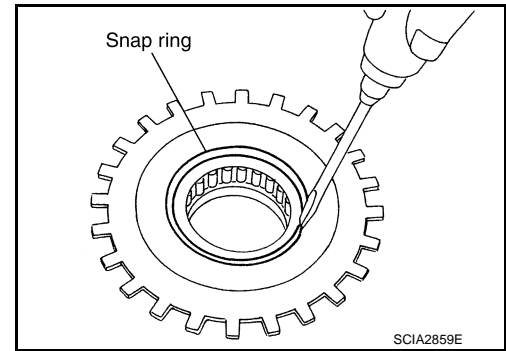
- Remove rear sun gear assembly from mid sun gear assembly.



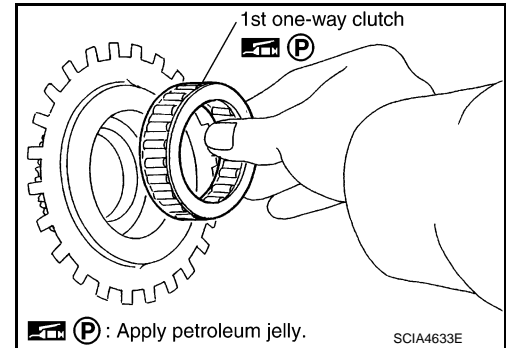
REPAIR FOR COMPONENT PARTS

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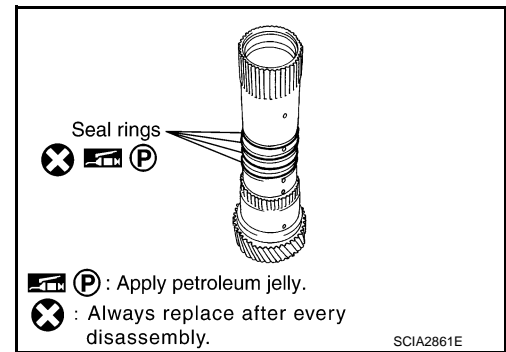
- a. Using a flat-bladed screwdriver, remove snap ring from rear sun gear.



- b. Remove 1st one-way clutch from rear sun gear.



5. Remove seal rings from mid sun gear.



INSPECTION

High and Low Reverse Clutch Hub Snap Ring, Rear Sun Gear Snap Ring

- Check for deformation, fatigue or damage.

CAUTION:

If necessary, replace the snap ring.

1st One-way Clutch

- Check frictional surface for wear or damage.

CAUTION:

If necessary, replace the 1st one-way clutch.

Mid Sun Gear

- Check for deformation, fatigue or damage.

CAUTION:

If necessary, replace the mid sun gear.

Rear Sun Gear

- Check for deformation, fatigue or damage.

CAUTION:

If necessary, replace the rear sun gear.

High and Low Reverse Clutch Hub

- Check for deformation, fatigue or damage.

CAUTION:

If necessary, replace the high and low reverse clutch hub.

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REPAIR FOR COMPONENT PARTS

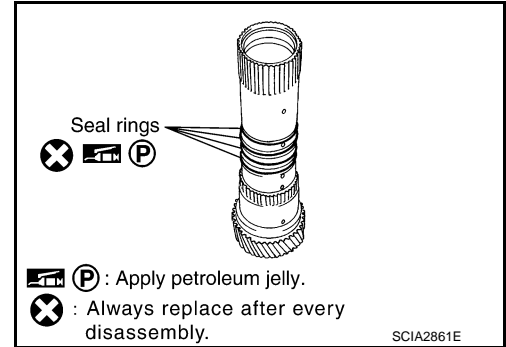
< SERVICE INFORMATION >

ASSEMBLY

1. Install seal rings to mid sun gear.

CAUTION:

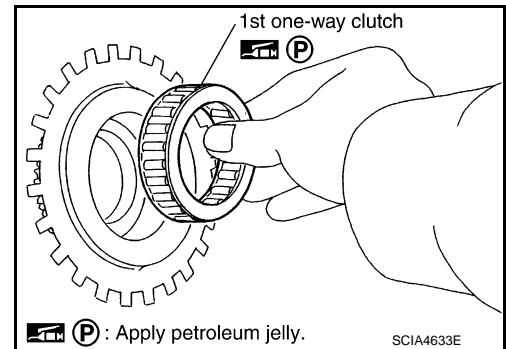
- Do not reuse seal rings.
- Apply petroleum jelly to seal rings.



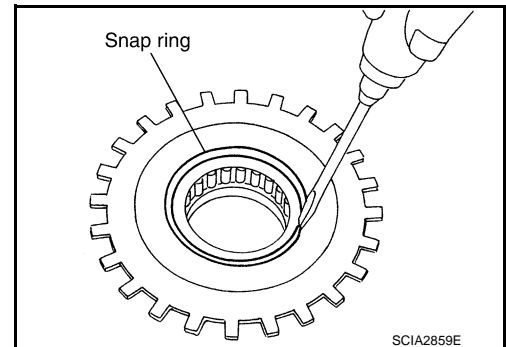
2. Install 1st one-way clutch to rear sun gear.

CAUTION:

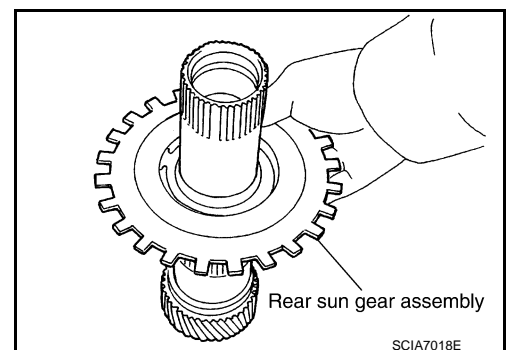
Apply petroleum jelly to 1st one-way clutch.



3. Using a flat-bladed screwdriver, install snap ring to rear sun gear.



4. Install rear sun gear assembly to mid sun gear assembly.



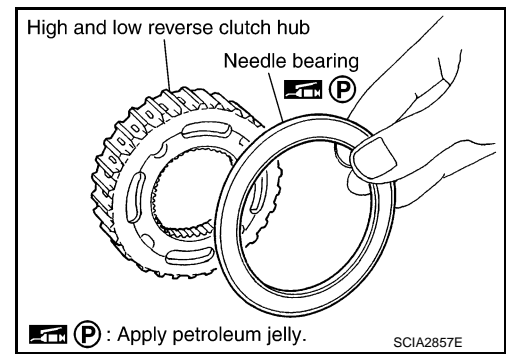
REPAIR FOR COMPONENT PARTS

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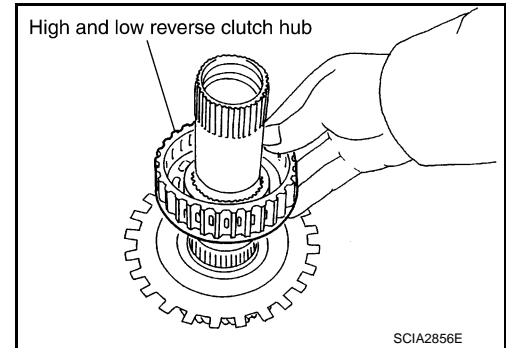
5. Install needle bearing to high and low reverse clutch hub.

CAUTION:

- Take care with the direction of needle bearing. Refer to [AT-271, "Location of Adjusting Shims, Needle Bearings, Thrust Washers and Snap Rings"](#).
- Apply petroleum jelly to needle bearing.



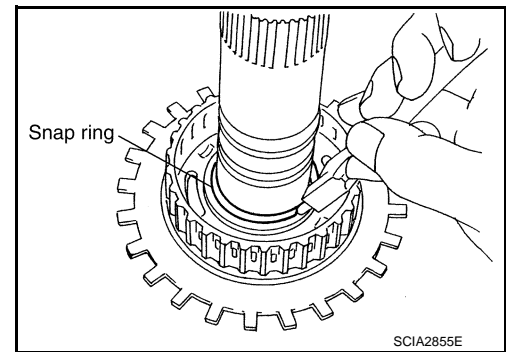
6. Install high and low reverse clutch hub to mid sun gear assembly.



7. Using a pair of snap ring pliers, install snap ring to mid sun gear assembly.

CAUTION:

Do not expand snap ring excessively.

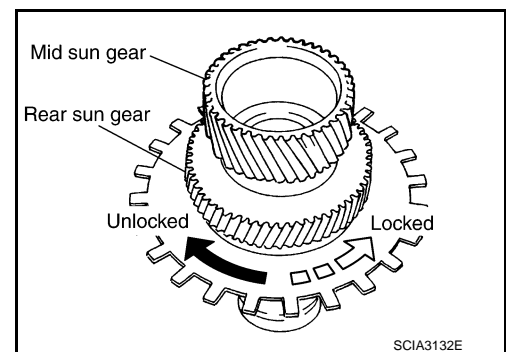


8. Check operation of 1st one-way clutch.

- 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 the figure, check installation direction of 1st one-way clutch.



9. Install needle bearing and bearing races to high and low reverse clutch hub.

CAUTION:

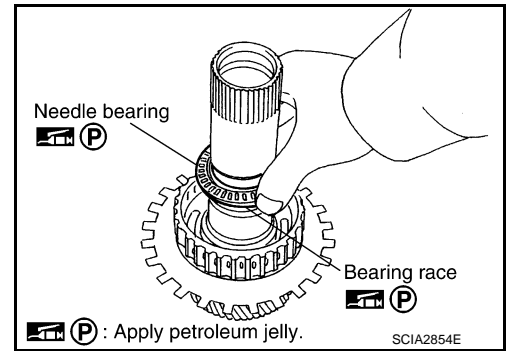
Apply petroleum jelly to needle bearing and bearing races.

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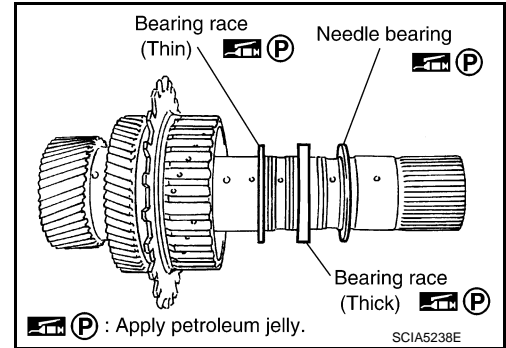
REPAIR FOR COMPONENT PARTS

< SERVICE INFORMATION >

- VQ35DE models



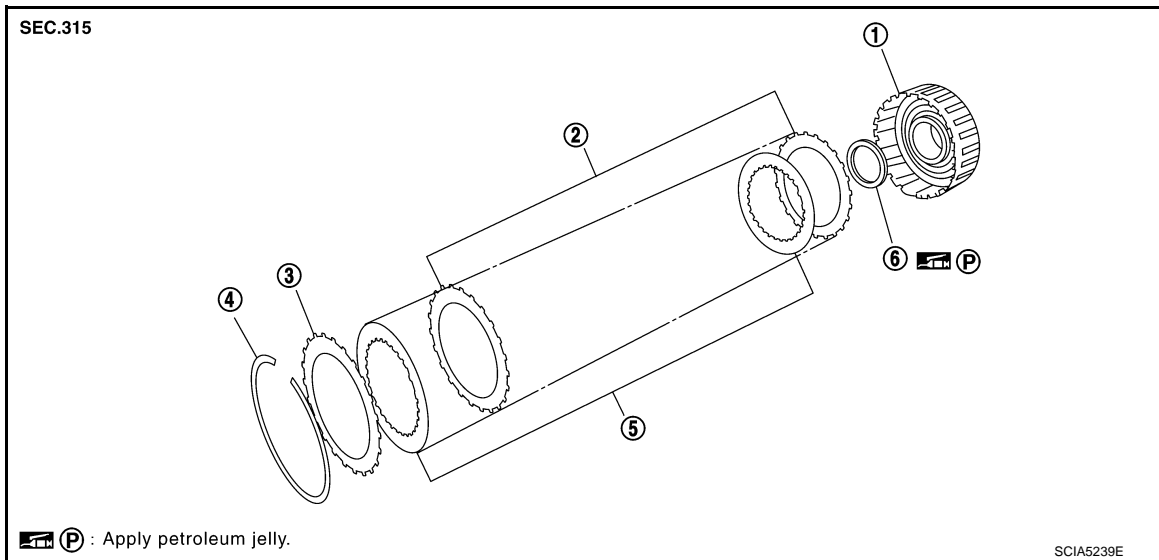
- VK45DE models



High and Low Reverse Clutch

INFOID:000000002955657

COMPONENTS



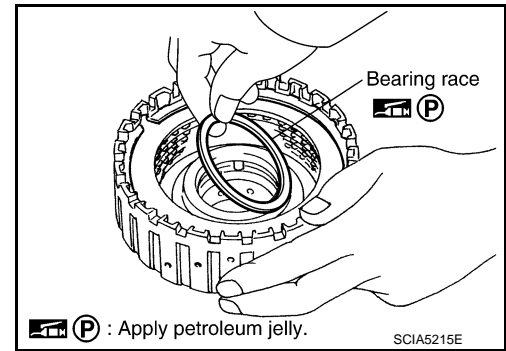
- | | | |
|-------------------------------------|-----------------|--------------------|
| 1. High and low reverse clutch drum | 2. Driven plate | 3. Retaining plate |
| 4. Snap ring | 5. Drive plate | 6. Bearing race |

DISASSEMBLY

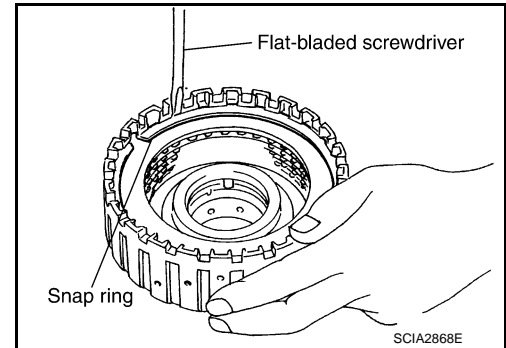
REPAIR FOR COMPONENT PARTS

< SERVICE INFORMATION >

1. Remove bearing race from high and low reverse clutch drum.



2. Using a flat-bladed screwdriver, remove snap ring from high and low reverse clutch drum.
3. Remove drive plates, driven plates and retaining plate from high and low reverse clutch drum.



INSPECTION

- Check the following, and replace high and low reverse clutch assembly if necessary.

High and Low Reverse Clutch Snap Ring

- Check for deformation, fatigue or damage.

High and Low Reverse Clutch Drive Plates

- Check facing for burns, cracks or damage.

High and Low Reverse Clutch Retaining Plate and Driven Plates

- Check facing for burns, cracks or damage.

ASSEMBLY

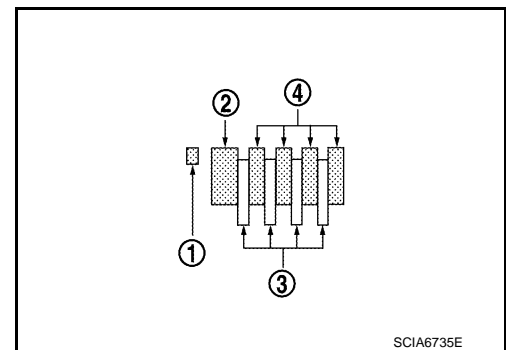
1. Install drive plates, driven plates and retaining plate in high and low reverse clutch drum.

CAUTION:

Take care with the order of plates.

- VQ35DE models

- | | |
|-----|----------------------------|
| 1 | : Snap ring |
| 2 | : Retaining plate |
| 3 | : Drive plate |
| 4 | : Driven plate |
| 4/4 | : Drive plate/Driven plate |



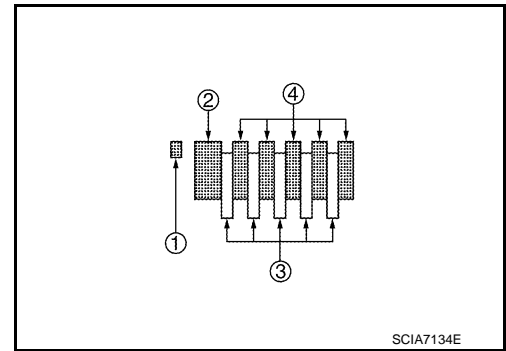
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REPAIR FOR COMPONENT PARTS

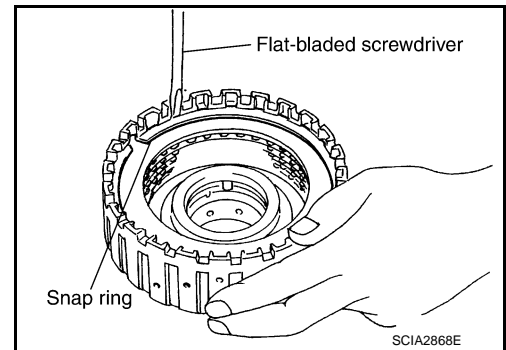
< SERVICE INFORMATION >

- VK45DE models

- 1 : Snap ring
- 2 : Retaining plate
- 3 : Drive plate
- 4 : Driven plate
- 5/5 : Drive plate/Driven plate

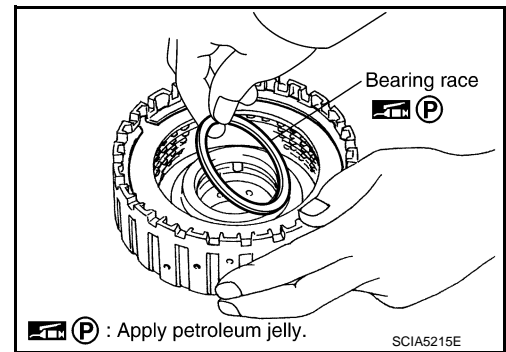


- Using a flat-bladed screwdriver, install snap ring in high and low reverse clutch drum.



- Install bearing race to high and low reverse clutch drum.

CAUTION:
Apply petroleum jelly to bearing race.

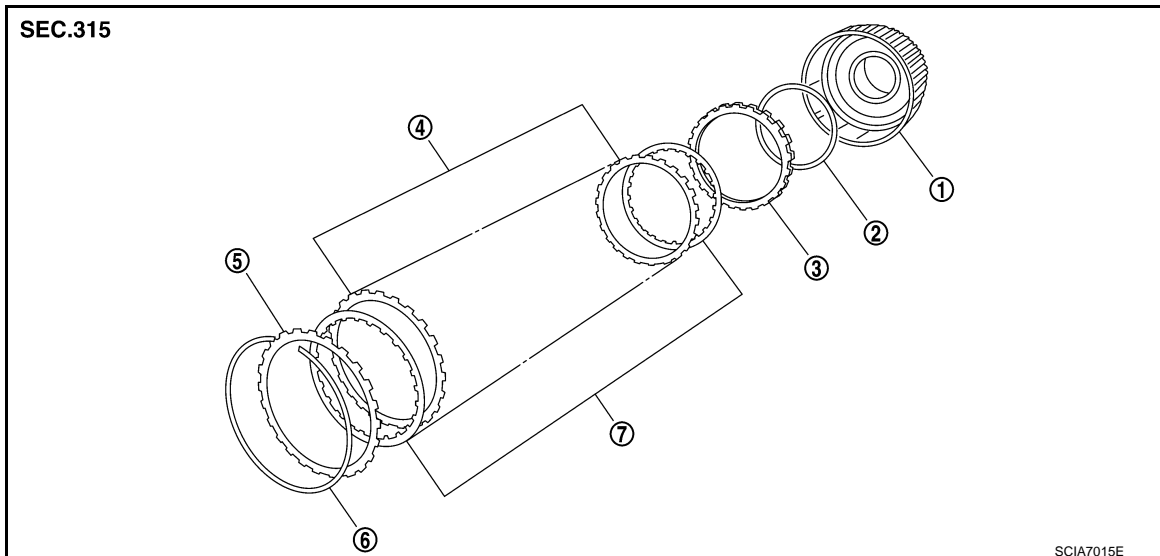


Direct Clutch

INFOID:000000002955658

COMPONENTS

VQ35DE models

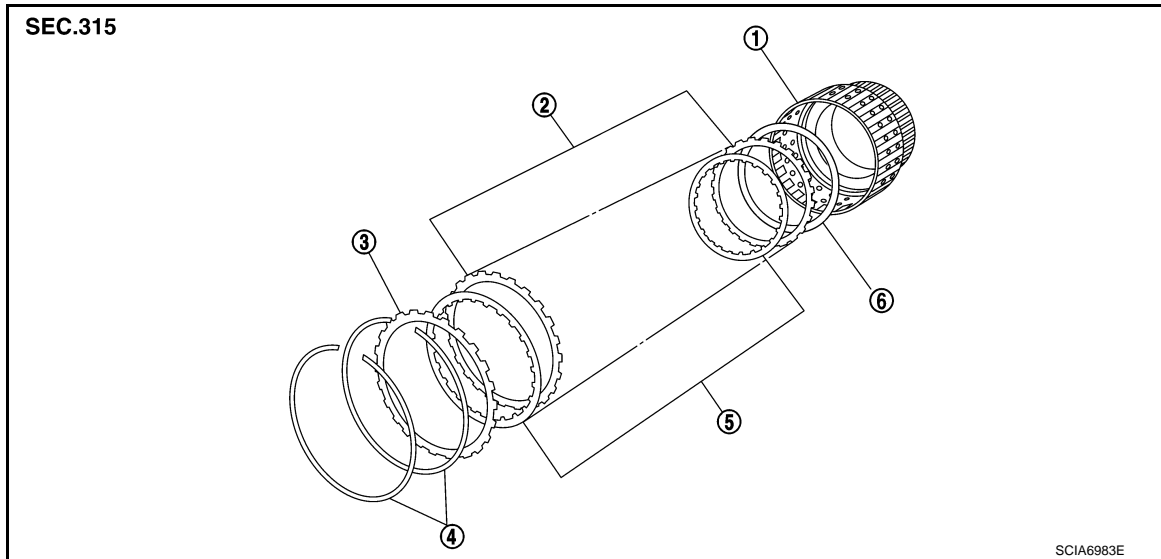


REPAIR FOR COMPONENT PARTS

< SERVICE INFORMATION >

- | | | |
|-----------------------|--------------------|--------------------|
| 1. Direct clutch drum | 2. Dish plate | 3. Retaining plate |
| 4. Driven plate | 5. Retaining plate | 6. Snap ring |
| 7. Drive plate | | |

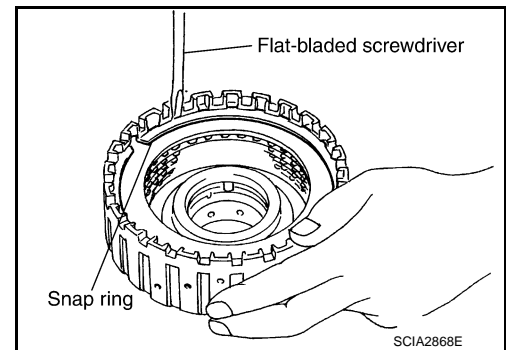
VK45DE models



- | | | |
|-----------------------|-----------------|--------------------|
| 1. Direct clutch drum | 2. Driven plate | 3. Retaining plate |
| 4. Snap ring | 5. Drive plate | 6. Dish plate |

DISASSEMBLY

1. Using a flat-bladed screwdriver, remove snap ring from direct clutch drum.
2. Remove drive plates, driven plates, dish plate and retaining plates 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 and Driven Plates

- Check facing for burns, cracks or damage.

Direct Clutch Dish Plate and Retaining Plates

- Check facing for burns, cracks or damage.

ASSEMBLY

1. Install drive plates, driven plates, dish plate and retaining plates in direct clutch drum.

CAUTION:

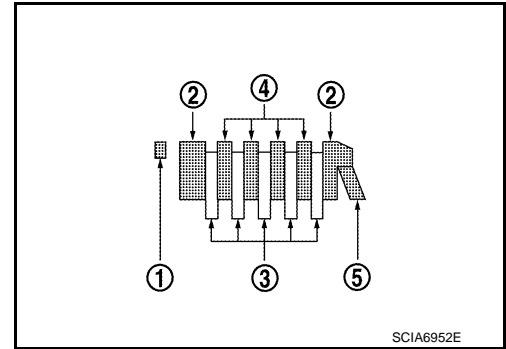
Take care with the order of plates.

REPAIR FOR COMPONENT PARTS

< SERVICE INFORMATION >

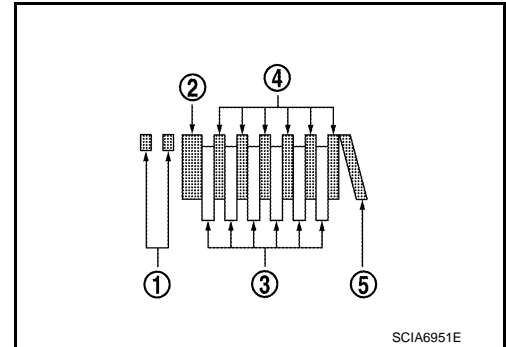
- VQ35DE models

- 1 : Snap ring
- 2 : Retaining plate
- 3 : Drive plate
- 4 : Driven plate
- 5 : Dish plate
- 5/4 : Drive plate/Driven plate

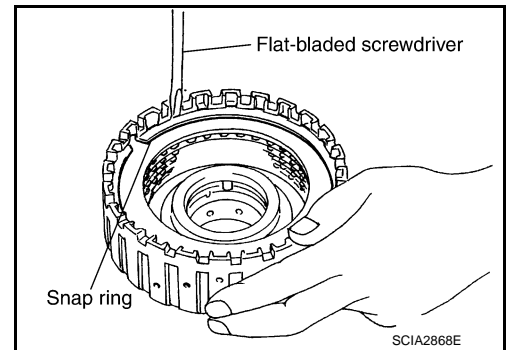


- VK45DE models

- 1 : Snap ring
- 2 : Retaining plate
- 3 : Drive plate
- 4 : Driven plate
- 5 : Dish plate
- 6/6 : Drive plate/Driven plate



2. Using a flat-bladed screwdriver, install snap ring in direct clutch drum.



ASSEMBLY

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ASSEMBLY

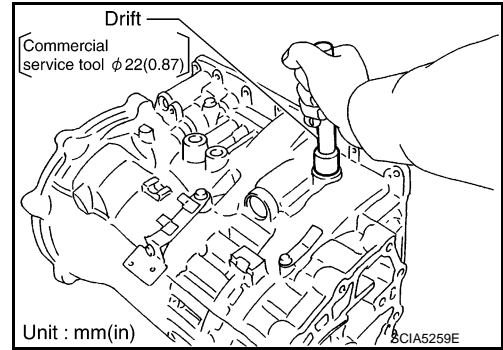
Assembly (1)

INFOID:000000002955659

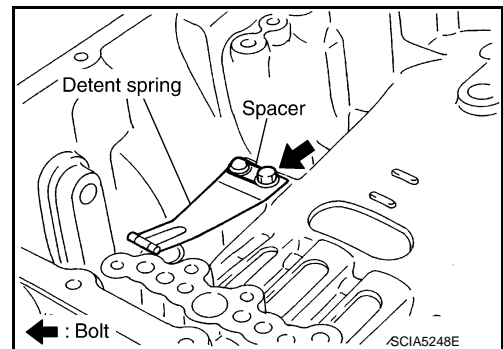
1. As shown in the figure, use a drift [22 mm (0.87 in) dia. commercial service tool] to drive manual shaft oil seals into the transmission case until it is flush.

CAUTION:

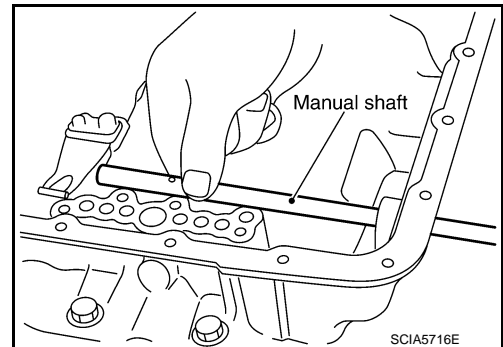
- Do not reuse manual shaft oil seals.
- Apply ATF to manual shaft oil seals.



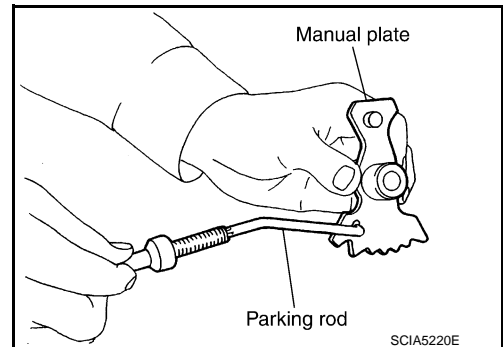
2. Install detent spring and spacer in transmission case. Tighten detent spring and spacer bolts to the specified torque. Refer to [AT-254, "Component"](#).



3. Install manual shaft to transmission case.



4. Install parking rod to manual plate.

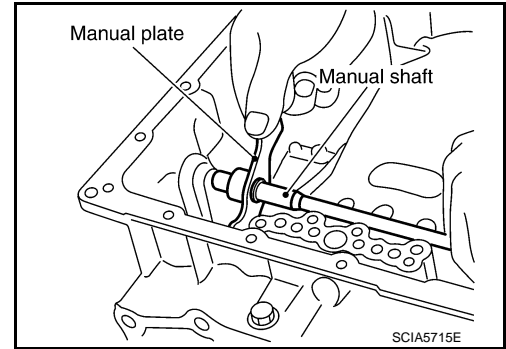


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5. Install manual plate (with parking rod) to manual shaft.

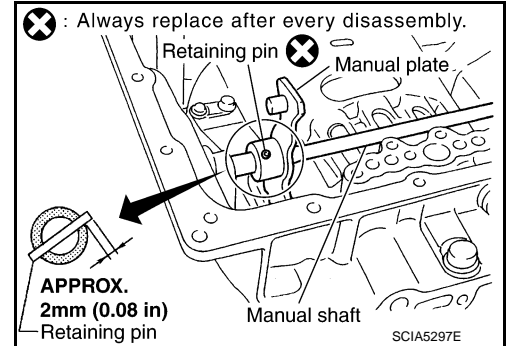


6. Install retaining pin into the manual plate and manual shaft.

- a. Fit pinhole of the manual plate to pinhole of the manual shaft with a pin punch.
- b. Use a hammer to tap the retaining pin into the manual plate.

CAUTION:

- Do not reuse retaining pin.
- Drive retaining pin to 2 ± 0.5 mm (0.08 ± 0.020 in) over the manual plate.

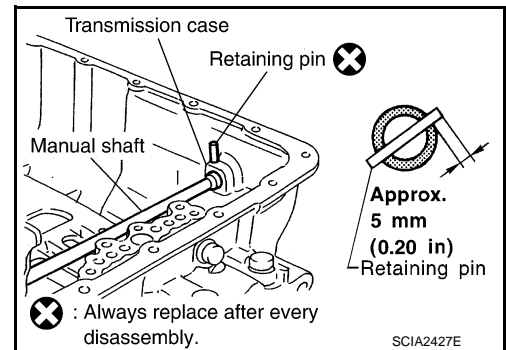


7. Install retaining pin into the transmission case and manual shaft.

- a. Fit pinhole of the transmission case to pinhole of the manual shaft with a pin punch.
- b. Use a hammer to tap the retaining pin into the transmission case.

CAUTION:

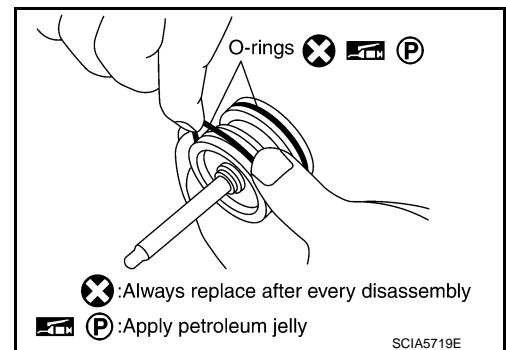
- Do not reuse retaining pin.
- Drive retaining pin to 5 ± 1 mm (0.20 ± 0.04 in) over the transmission case.



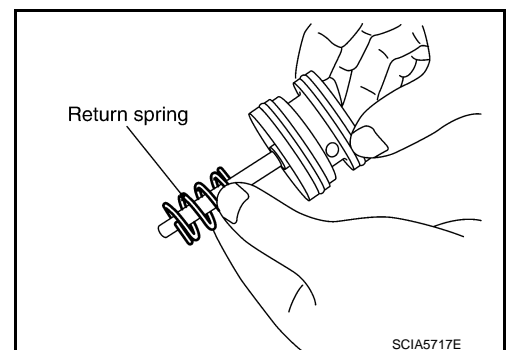
8. Install O-rings to servo assembly.

CAUTION:

- Do not reuse O-rings.
- Apply petroleum jelly to O-rings.



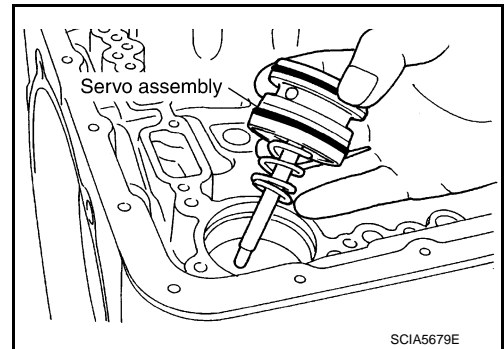
9. Install return spring to servo assembly.



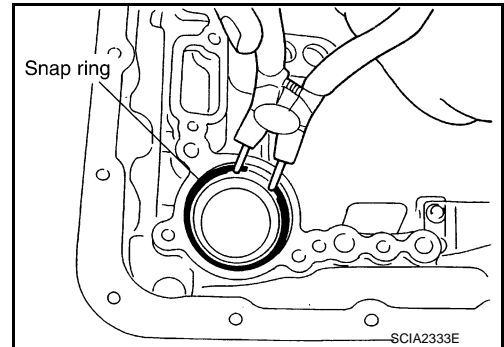
ASSEMBLY

< SERVICE INFORMATION >

10. Install servo assembly in transmission case.



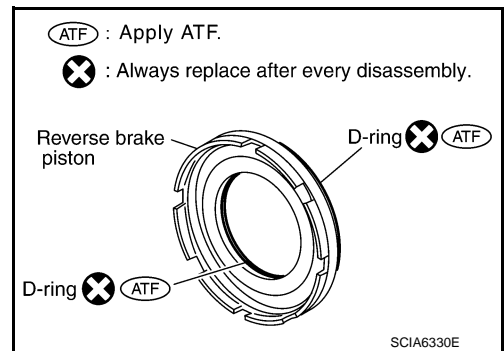
11. Using a pair of snap ring pliers, install snap ring to transmission case.



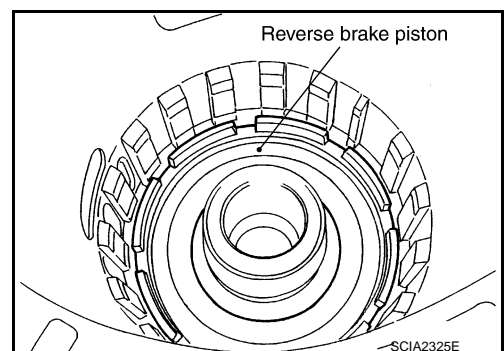
12. Install D-rings in reverse brake piston.

CAUTION:

- Do not reuse D-rings.
- Apply ATF to D-rings.



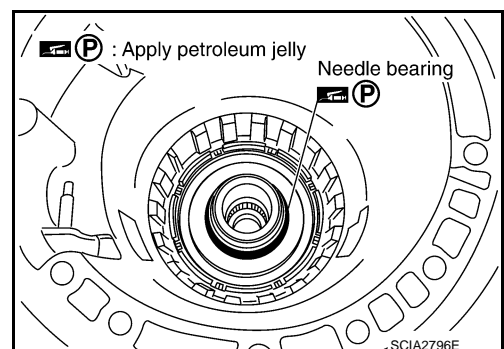
13. Install reverse brake piston in transmission case.



14. Install needle bearing to drum support edge surface.

CAUTION:

- Apply petroleum jelly to needle bearing.



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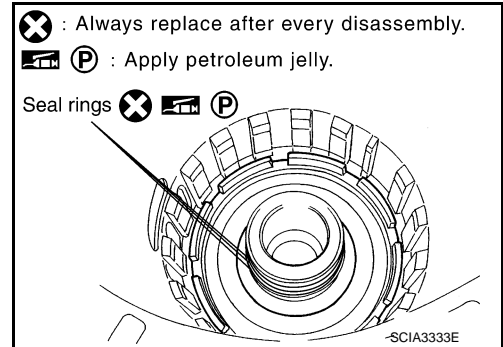
ASSEMBLY

< SERVICE INFORMATION >

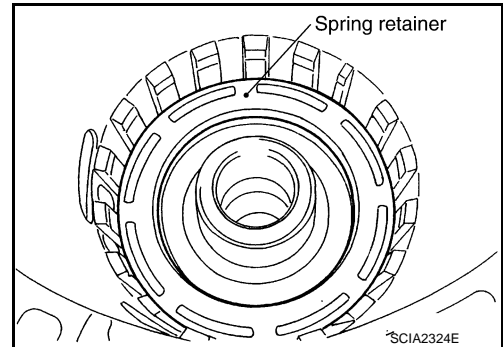
15. Install seal rings to drum support.

CAUTION:

- Do not reuse seal rings.
- Apply petroleum jelly to seal rings.



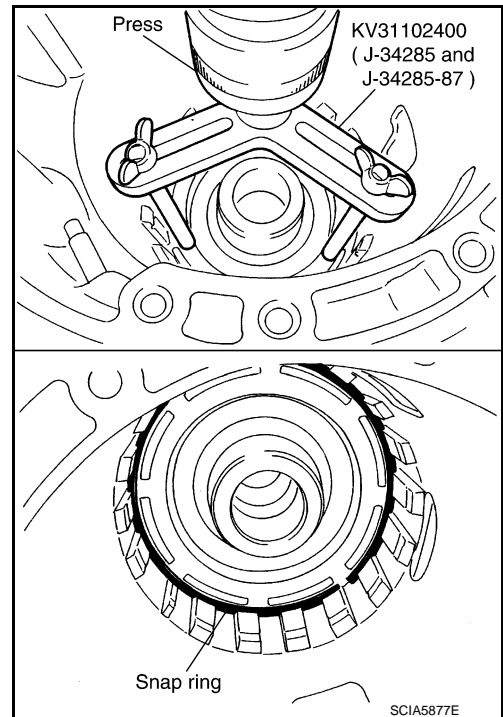
16. Install spring retainer and return spring in transmission case.



17. 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.**



ASSEMBLY

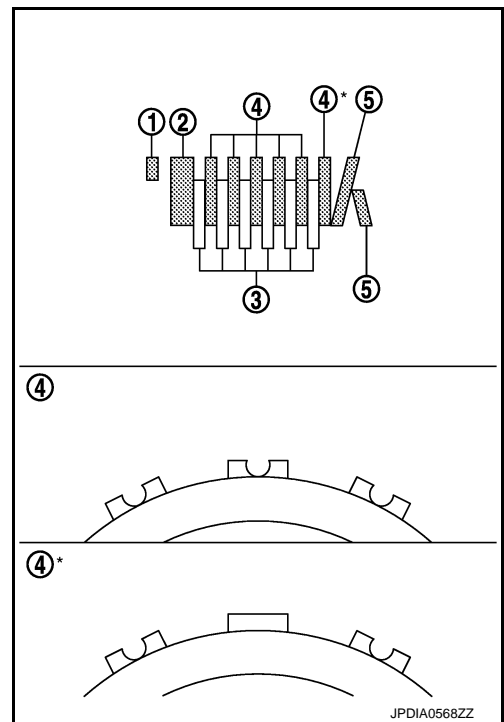
< SERVICE INFORMATION >

18. Install reverse brake drive plates, driven plates and dish plates in transmission case.

CAUTION:

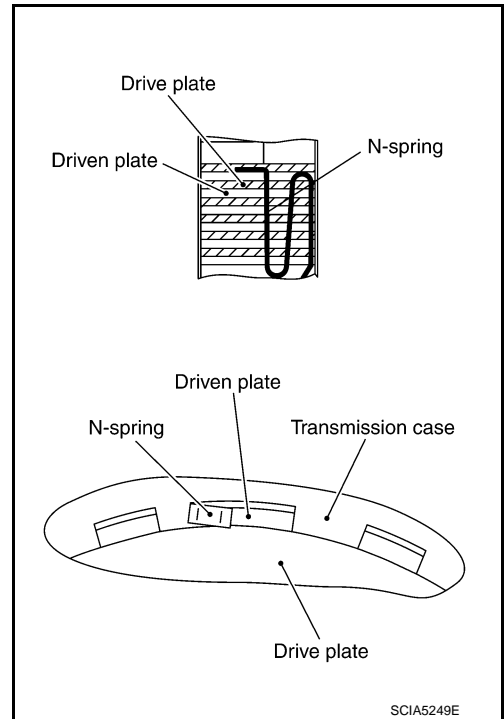
Take care with order of plates.

- | | | |
|-----|---|--------------------------|
| 1 | : | Snap ring |
| 2 | : | Retaining plate |
| 3 | : | Drive plate |
| 4 | : | Driven plate |
| 5 | : | Dish plate |
| 6/6 | : | Drive plate/Driven plate |

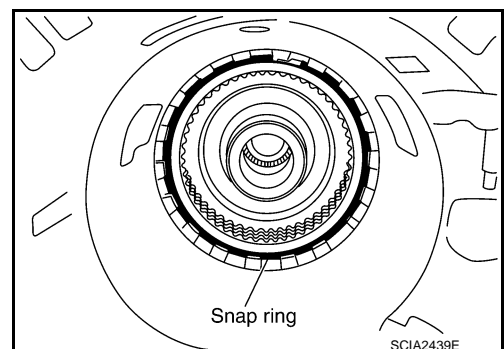


19. Assemble N-spring.

20. Install reverse brake retaining plate in transmission case.



21. Install snap ring in transmission case.



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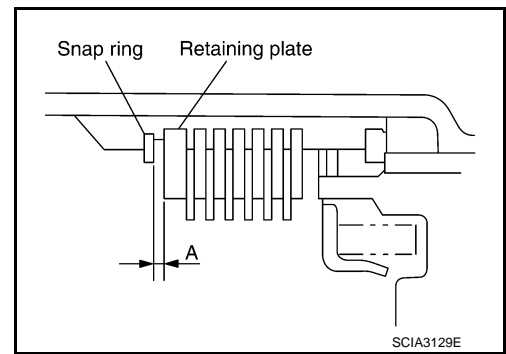
22. Measure clearance between retaining plate and snap ring. If not within specified clearance, select proper retaining plate.

Specified clearance A

Standard: 0.7 - 1.1 mm (0.028 - 0.043 in)

Retaining plate

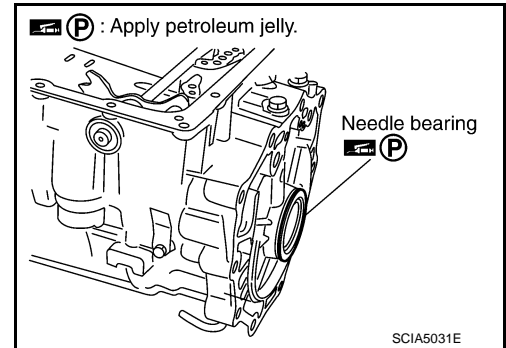
Refer to [AT-345, "Reverse Brake"](#).



23. Install needle bearing to transmission case.

CAUTION:

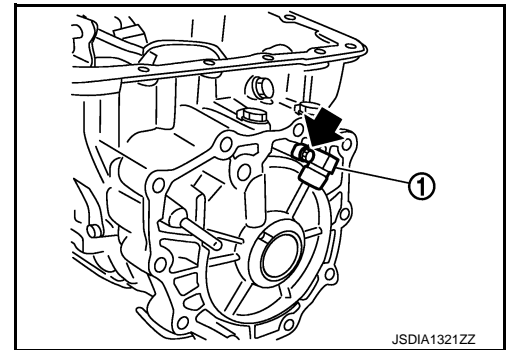
- Take care with the direction of needle bearing. Refer to [AT-271, "Location of Adjusting Shims, Needle Bearings, Thrust Washers and Snap Rings"](#).
- Apply petroleum jelly to needle bearing.



24. Install output speed sensor (1) to transmission case. Tighten bolt (⬅) to the specified torque. Refer to [AT-254, "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. Assemble one of the following parts.

- Rear extension assembly (VQ35DE models for 2WD)
- Adapter case assembly (AWD models)
- Output shaft & companion flange complement (VK45DE models for 2WD)

- a. **VQ35DE models**

ASSEMBLY

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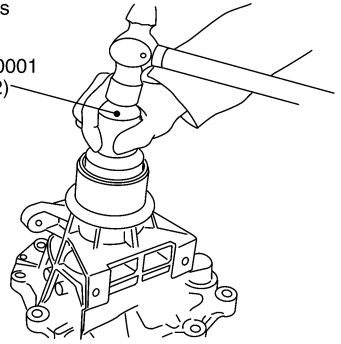
- i. As shown in the figure, use the drift to drive rear oil seal into the rear extension (2WD models) or adapter case (AWD models) until it is flush.

CAUTION:

- Apply ATF to rear oil seal.
- Do not reuse rear oil seal.

2WD models

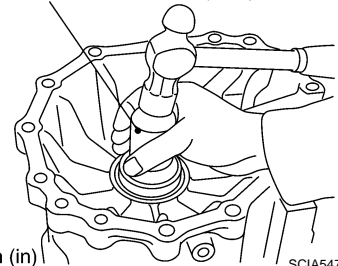
ST33400001
(J-26082)



AWD models

Drift

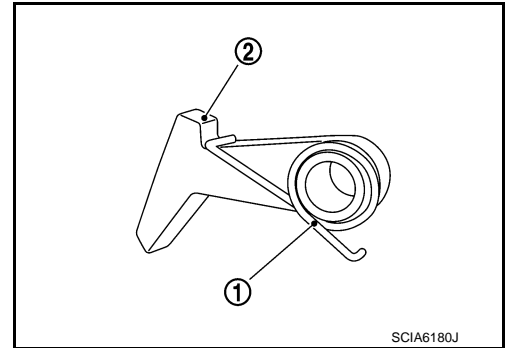
[Commercial service tool ϕ 64 (2.52)]



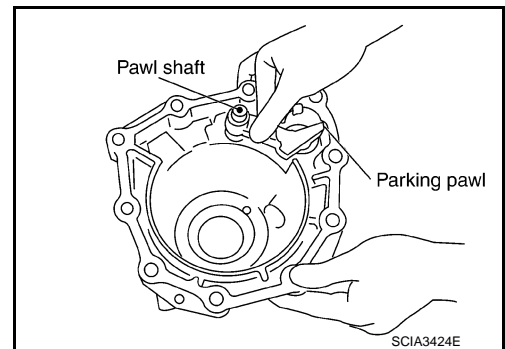
Unit : mm (in)

SCIA5477E

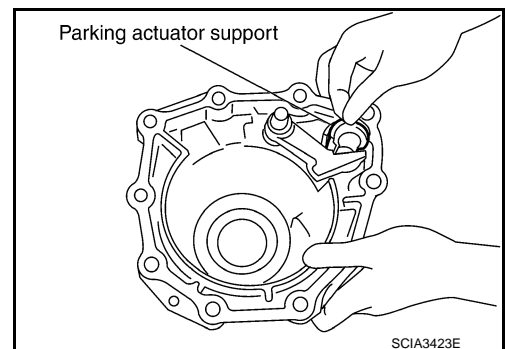
- ii. Install return spring (1) to parking pawl (2).



- iii. Install parking pawl (with return spring) and pawl shaft to rear extension (2WD models) or adapter case (AWD models).



- iv. Install parking actuator support from rear extension (2WD models) or adapter case (AWD models).



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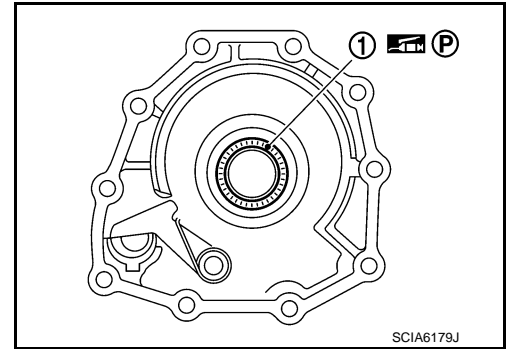
- v. Install needle bearing (1) to rear extension (2WD models) or adapter case (AWD models).

CAUTION:

• Take care with the direction of needle bearing. Refer to [AT-271, "Location of Adjusting Shims, Needle Bearings, Thrust Washers and Snap Rings"](#).

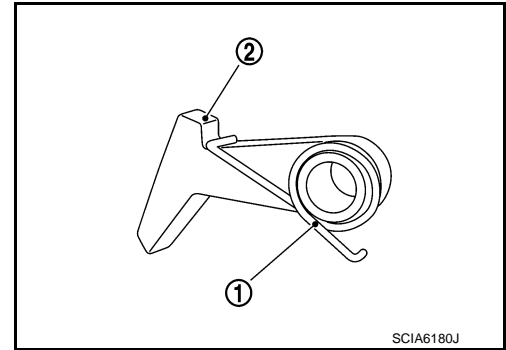
• Apply petroleum jelly to needle bearing.

Refer to GI section to make sure icons (symbol marks) in the figure. Refer to [GI-9, "Component"](#).

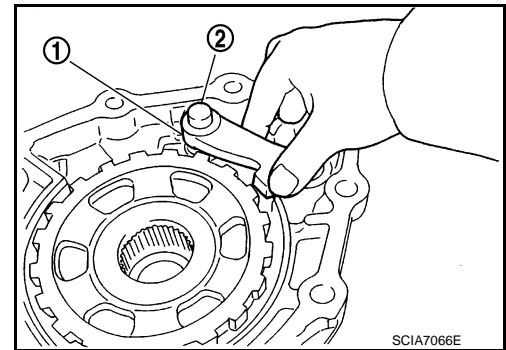


b. **VK45DE models**

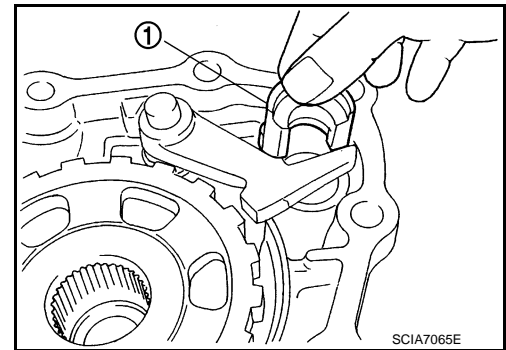
- i. Install return spring (1) to parking pawl (2).



- ii. Install parking pawl (with return spring) (1) and pawl shaft (2) to output shaft & companion flange complement.



- iii. Install parking actuator support (1) from output shaft & companion flange complement.



26. Assemble one of the following parts.

- Rear extension assembly (VQ35DE models for 2WD)
- Adapter case assembly (AWD models)
- Output shaft & companion flange complement (VK45DE models for 2WD)

a. **VQ35DE models for 2WD**

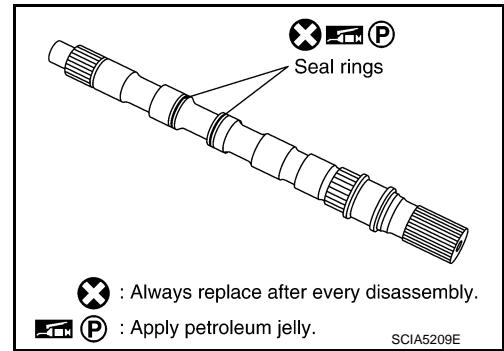
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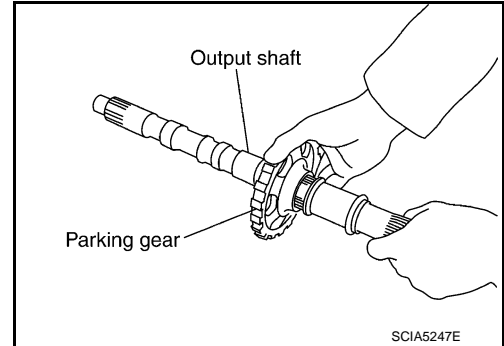
- i. Install seal rings to output shaft.

CAUTION:

- Do not reuse seal rings.
- Apply petroleum jelly to seal rings.



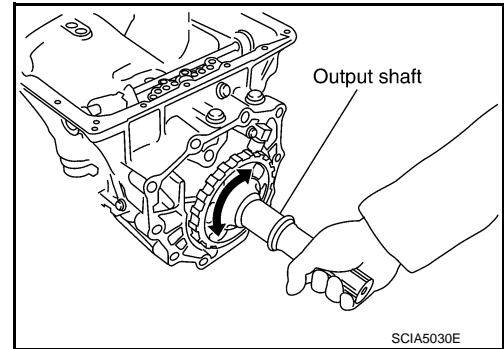
- ii. Install parking gear to output shaft.



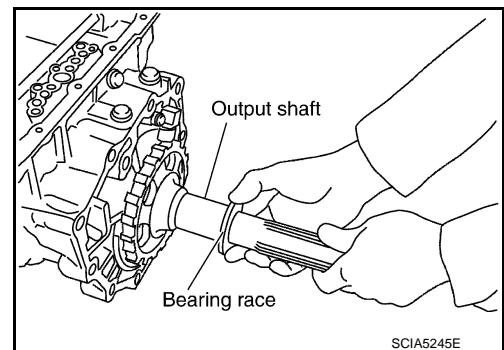
- iii. Install output shaft in transmission case.

CAUTION:

Be careful not to mistake front for rear because both sides looks similar. (Thinner end is front side.)



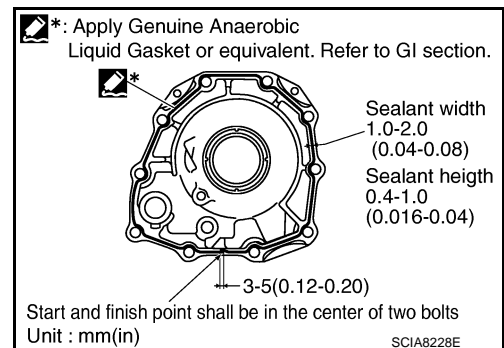
- iv. Install bearing race to output shaft.



- v. Apply recommended sealant (Genuine Anaerobic Liquid Gasket or equivalent. Refer to [GI-44. "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 the transmission case and rear extension assembly mounting surfaces.



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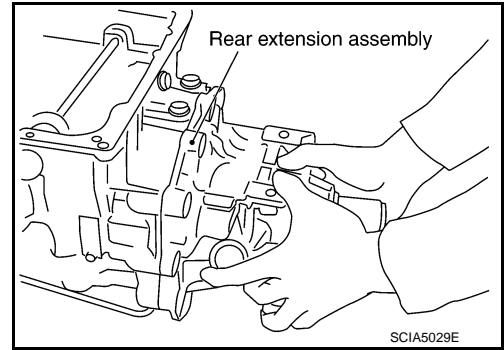
ASSEMBLY

< SERVICE INFORMATION >

- vi. Install rear extension assembly to transmission case.

CAUTION:

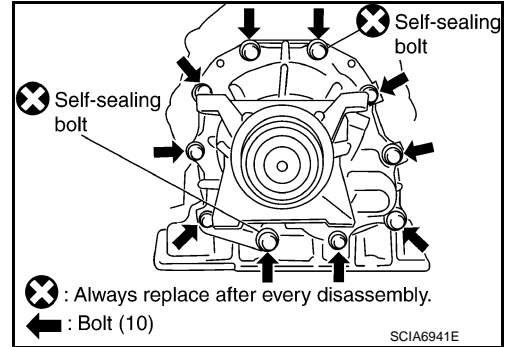
Insert the tip of parking rod between the parking pawl and the parking actuator support when assembling the rear extension assembly.



- vii. Tighten rear extension assembly bolts to the specified torque. Refer to [AT-254, "Component"](#).

CAUTION:

Do not reuse self-sealing bolts.

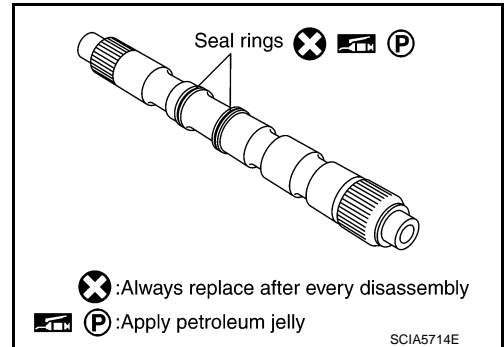


- b. VK45DE models for 2WD

- i. Install seal rings to intermediate shaft.

CAUTION:

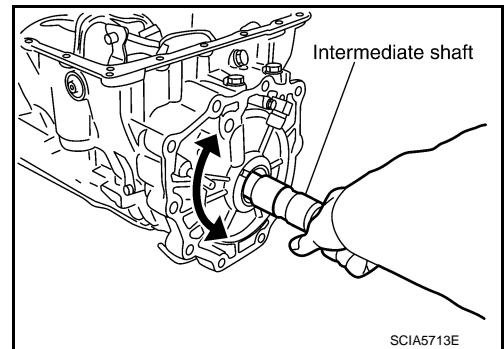
- Do not reuse seal rings.
- Apply petroleum jelly to seal rings.



- ii. Install intermediate shaft in transmission case.

CAUTION:

Be careful not to mistake front for rear because both sides looks similar. (Thinner end is front side.)



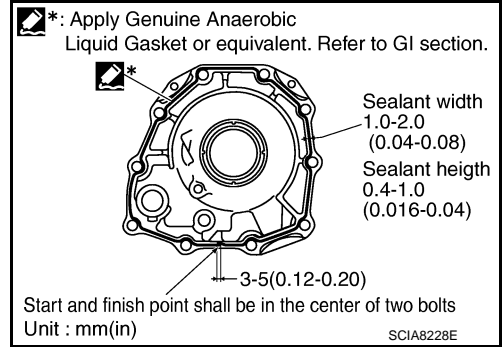
ASSEMBLY

< SERVICE INFORMATION >

- iii. Apply recommended sealant (Genuine Anaerobic Liquid Gasket or equivalent. Refer to [GI-44. "Recommended Chemical Product and Sealant"](#).) to output shaft & companion flange complement as shown in the figure.

CAUTION:

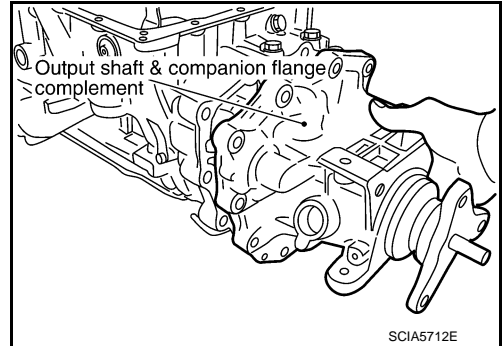
Completely remove all moisture, oil and old sealant, etc. from the transmission case and output shaft & companion flange complement mounting surfaces.



- iv. Install output shaft & companion flange complement in transmission case.

CAUTION:

Insert the tip of parking rod between the parking pawl and the parking actuator support when assembling the output shaft & companion flange complement.



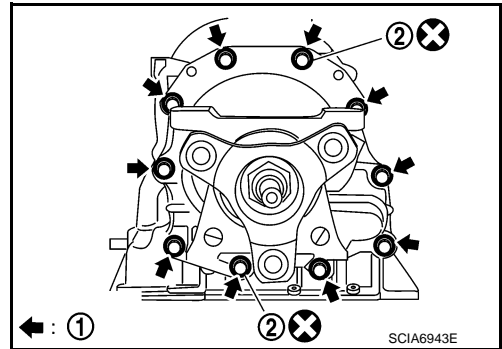
- v. Tighten output shaft & companion flange complement bolts (1) to the specified torque. Refer to [AT-254. "Component"](#).

← : Bolt

CAUTION:

Do not reuse self-sealing bolts (2).

Refer to GI section to make sure icons (symbol marks) in the figure. Refer to [GI-9. "Component"](#).

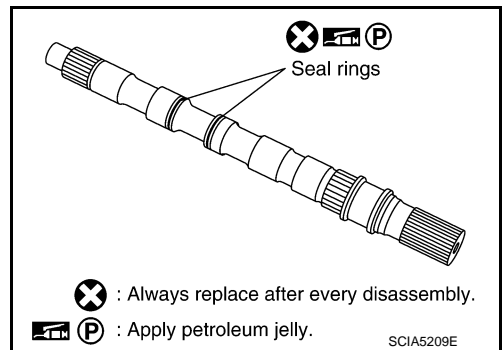


- c. **AWD models**

- i. Install seal rings to output shaft.

CAUTION:

- Do not reuse seal rings.
- Apply petroleum jelly to seal rings.

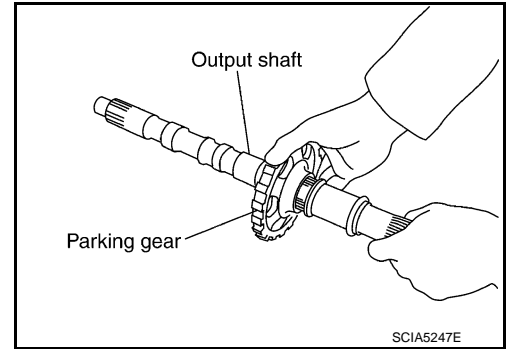


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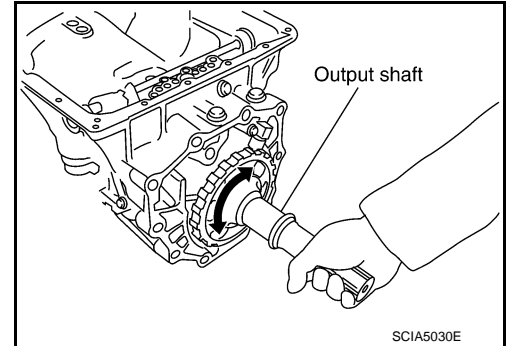
ii. Install parking gear to output shaft.



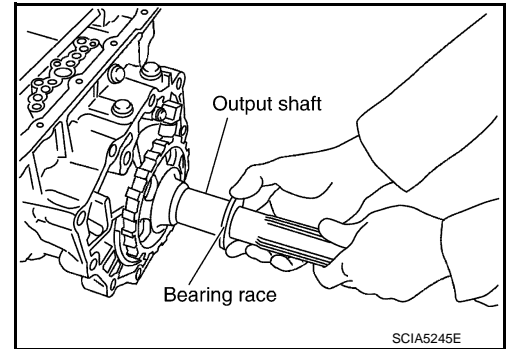
iii. Install output shaft in transmission case.

CAUTION:

Be careful not to mistake front for rear because both sides looks similar. (Thinner end is front side.)



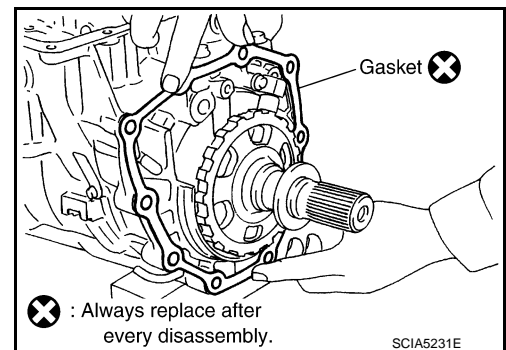
iv. Install bearing race to output shaft.



v. Install gasket onto transmission case.

CAUTION:

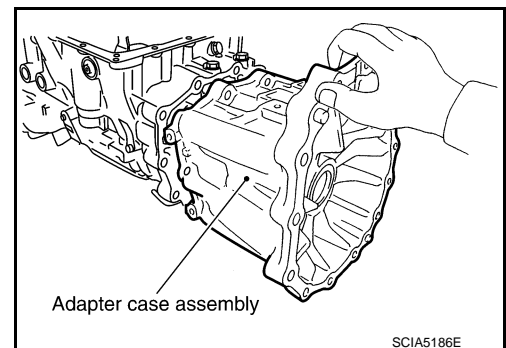
- Completely remove all moisture, oil and old gasket, etc. from the transmission case and adapter case assembly mounting surfaces.
- Do not reuse gasket.



vi. Install adapter case assembly to transmission case.

CAUTION:

Insert the tip of parking rod between the parking pawl and the parking actuator support when assembling the adapter case assembly.



ASSEMBLY

< SERVICE INFORMATION >

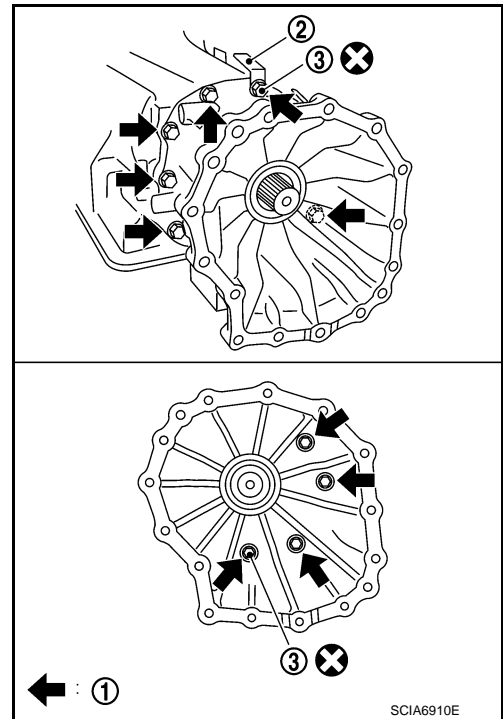
- vii. Tighten adapter case assembly bolts (1) to the specified torque. [With bracket (2).] Refer to [AT-254, "Component"](#).

← : Bolt

CAUTION:

Do not reuse self-sealing bolts (3).

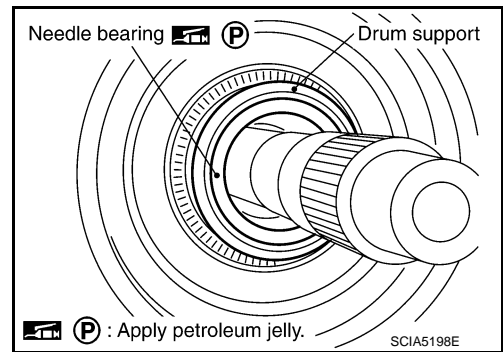
Refer to GI section to make sure icons (symbol marks) in the figure. Refer to [GI-9, "Component"](#).



27. Install needle bearing in drum support.

CAUTION:

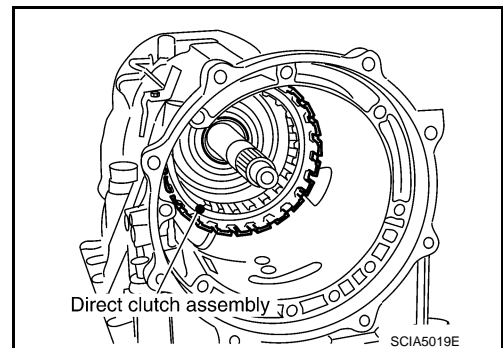
- Take care with the direction of needle bearing. Refer to [AT-271, "Location of Adjusting Shims, Needle Bearings, Thrust Washers and Snap Rings"](#).
- Apply petroleum jelly to needle bearing.



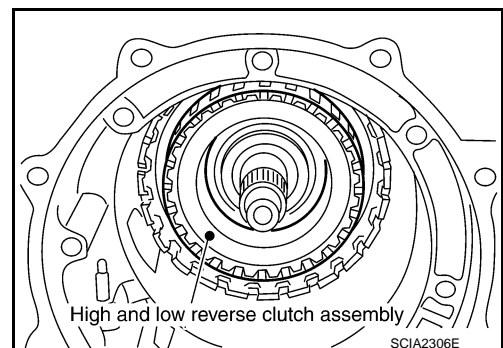
28. Install direct clutch assembly in reverse brake.

CAUTION:

Make sure that drum support edge surface and direct clutch inner boss edge surface come to almost same place.



29. Install high and low reverse clutch assembly in direct clutch.

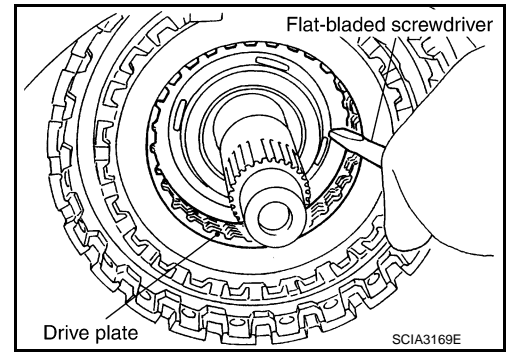


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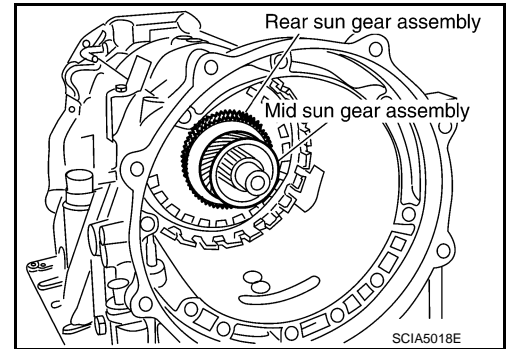
ASSEMBLY

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30. Using a flat-bladed screwdriver, align the drive plate.

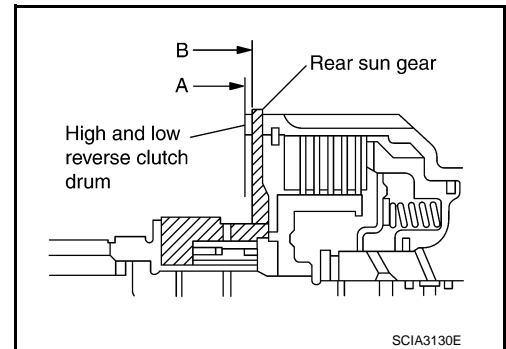


31. Install high and low reverse clutch hub, mid sun gear assembly and rear sun gear assembly as a unit.



CAUTION:

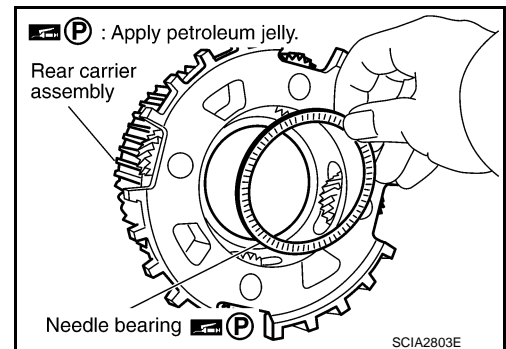
Make sure that portion "A" of high and low reverse clutch drum protrudes approximately 2 mm (0.08 in) beyond portion "B" of rear sun gear.



32. Install needle bearing in rear carrier assembly.

CAUTION:

- Take care with the direction of needle bearing. Refer to [AT-271, "Location of Adjusting Shims, Needle Bearings, Thrust Washers and Snap Rings"](#).
- Apply petroleum jelly to needle bearing.



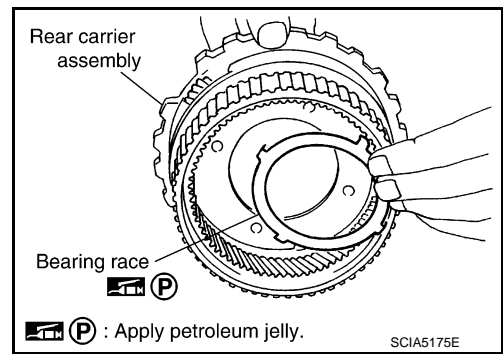
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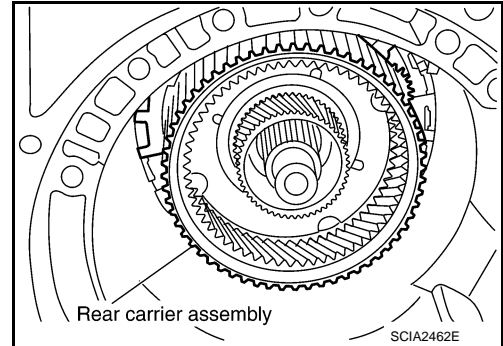
33. Install bearing race in rear carrier assembly.

CAUTION:

Apply petroleum jelly to bearing race.



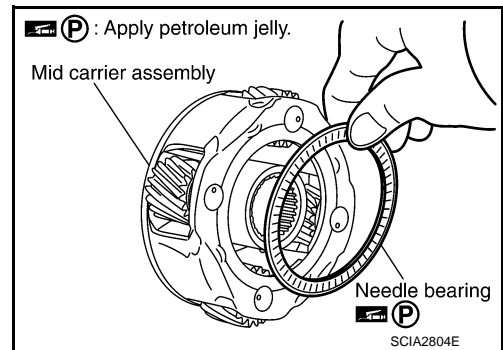
34. Install rear carrier assembly in direct clutch drum.



35. Install needle bearing (rear side) to mid carrier assembly.

CAUTION:

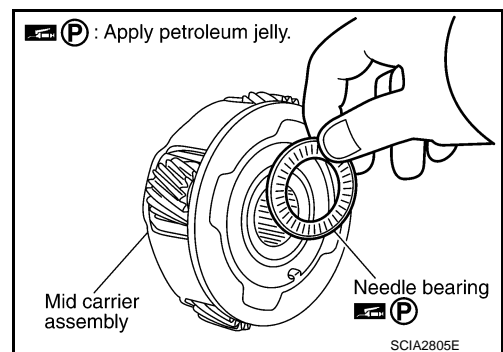
- Take care with the direction of needle bearing. Refer to [AT-271, "Location of Adjusting Shims, Needle Bearings, Thrust Washers and Snap Rings"](#).
- Apply petroleum jelly to needle bearing.



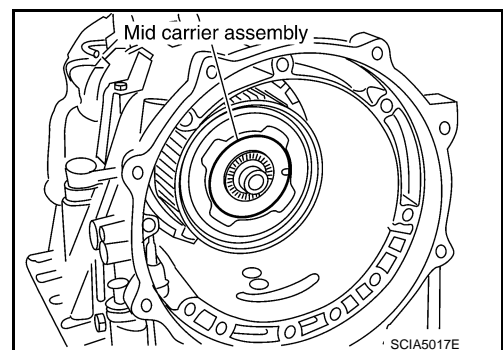
36. Install needle bearing (front side) to mid carrier assembly.

CAUTION:

- Take care with the direction of needle bearing. Refer to [AT-271, "Location of Adjusting Shims, Needle Bearings, Thrust Washers and Snap Rings"](#).
- Apply petroleum jelly to needle bearing.



37. Install mid carrier assembly in rear carrier assembly.

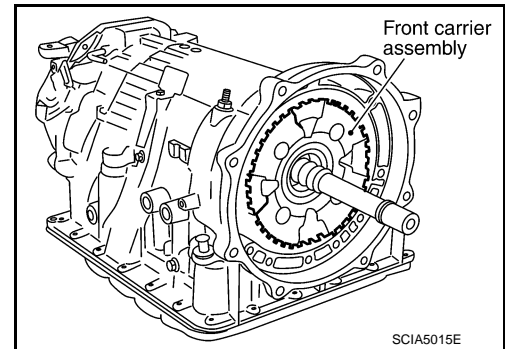


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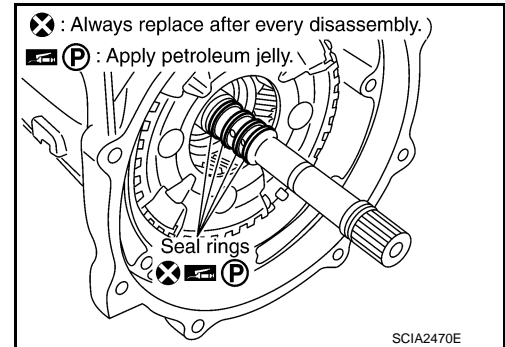
38. Install front carrier assembly, input clutch assembly and rear internal gear as a unit.



39. Install seal rings in input clutch assembly.

CAUTION:

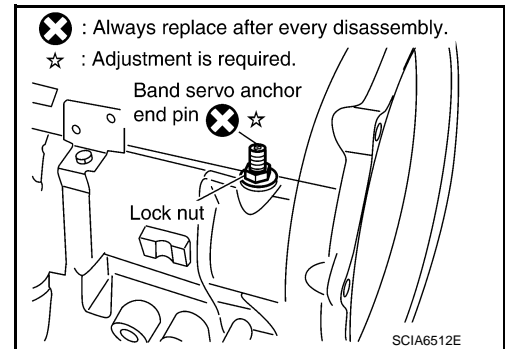
- Do not reuse seal rings.
- Apply petroleum jelly to seal rings.



40. Install band servo anchor end pin and lock nut in transmission case.

CAUTION:

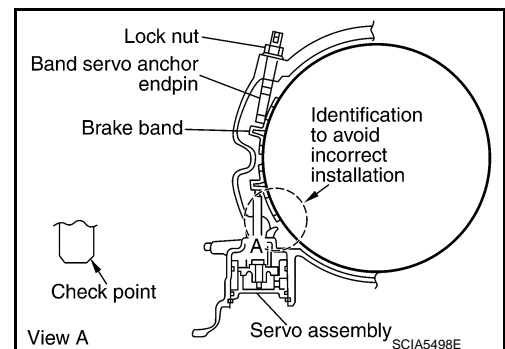
- Do not reuse band servo anchor end pin.



41. Install brake band in transmission case.

CAUTION:

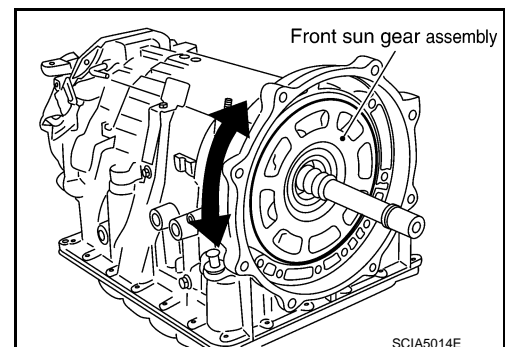
- Assemble it so that identification to avoid incorrect installation faces servo side.



42. Install front sun gear to front carrier assembly.

CAUTION:

- Apply ATF to front sun gear bearing and 3rd one-way clutch end bearing.



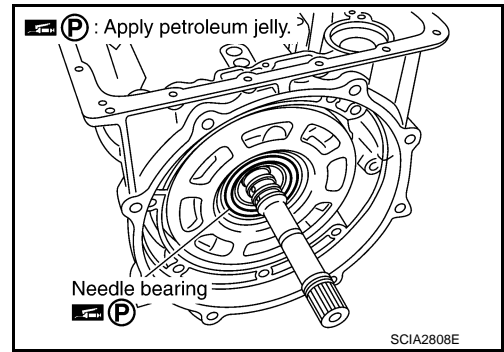
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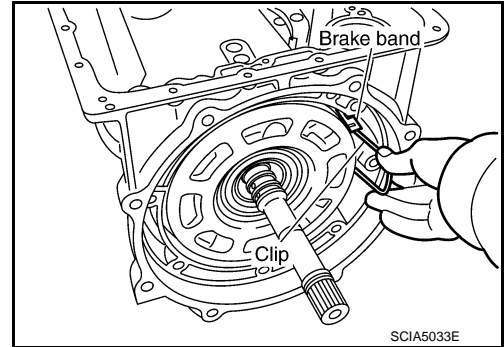
43. Install needle bearing to front sun gear.

CAUTION:

Apply petroleum jelly to needle bearing.



44. Adjust brake band tilting using a clip so that brake band contacts front sun gear drum evenly.

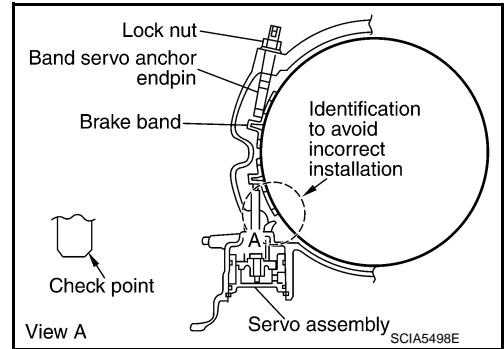


45. Adjust brake band.

- a. Loosen lock nut.
- b. Tighten band servo anchor end pin to 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-254. "Component"](#).

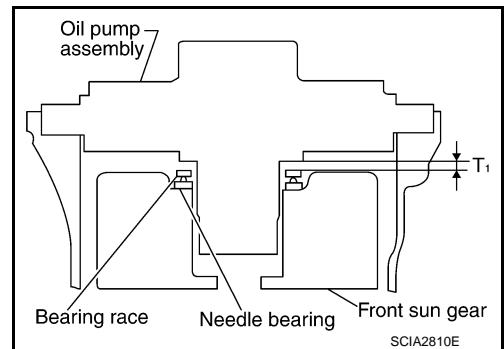


Adjustment

INFOID:000000002955660

TOTAL END PLAY

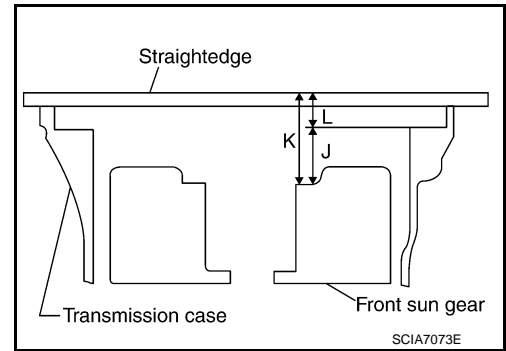
- Measure clearance between front sun gear and bearing race for oil pump cover.
- Select proper thickness of bearing race so that end play is within specifications.



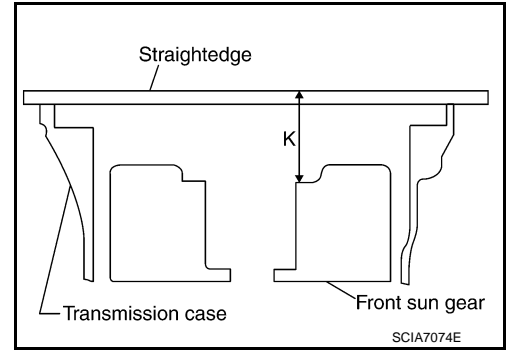
ASSEMBLY

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1. Measure dimensions "K" and "L" and then calculate dimension "J".



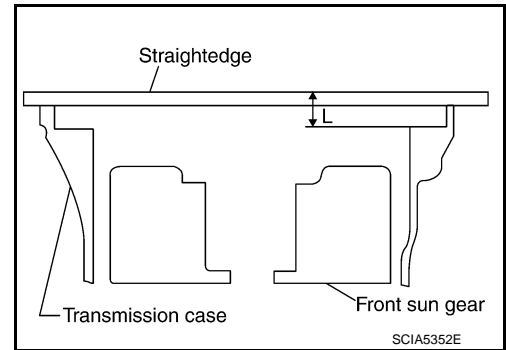
- a. Measure dimension "K".



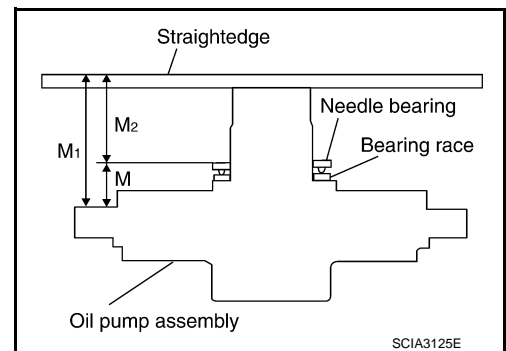
- b. Measure dimension "L".
- c. Calculate dimension "J".

"J": Distance between oil pump fitting surface of transmission case and needle bearing mating surface of front sun gear.

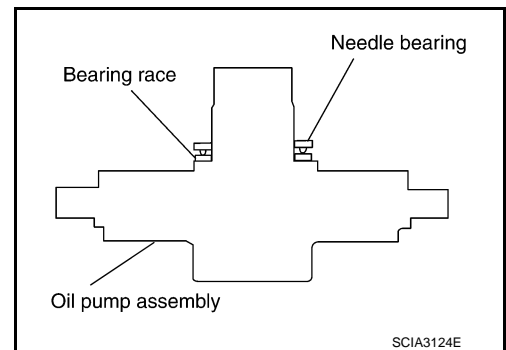
$$J = K - L$$



2. Measure dimensions "M1" and "M2" and then calculate dimension "M".



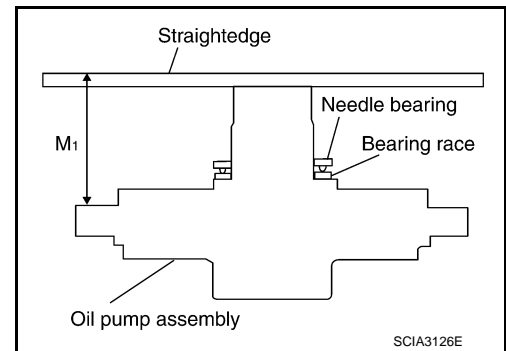
- a. Place bearing race and needle bearing on oil pump assembly.



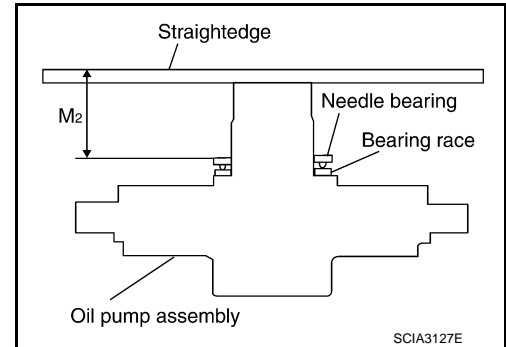
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b. Measure dimension "M1".



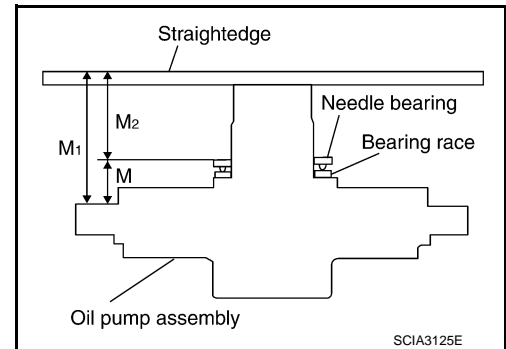
c. Measure dimension "M2".



d. Calculate dimension "M".

"M": Distance between transmission case fitting surface of oil pump and needle bearing on oil pump.

$$M = M1 - M2$$



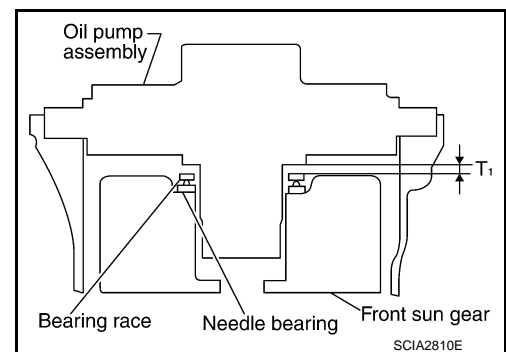
3. Adjust total end play "T1".

$$T1 = J - M$$

Total end play "T1": 0.25 - 0.55 mm (0.0098 - 0.0217 in)

- Select proper thickness of bearing race so that total end play is within specifications.

Bearing races: Refer to [AT-346, "Total End Play"](#).



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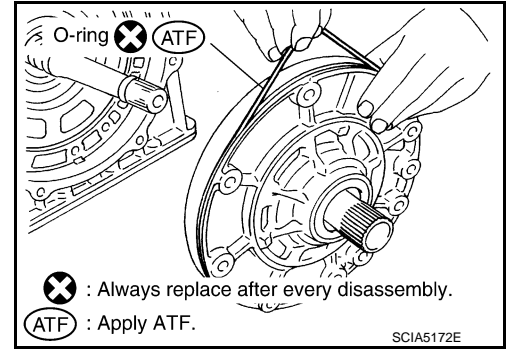
Assembly (2)

INFOID:00000002955661

1. Install O-ring to oil pump assembly.

CAUTION:

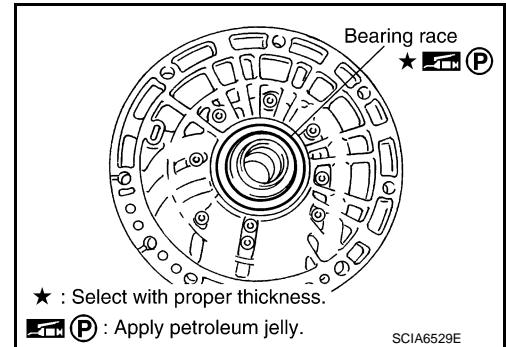
- Do not reuse O-ring.
- Apply ATF to O-ring.



2. Install bearing race to oil pump assembly.

CAUTION:

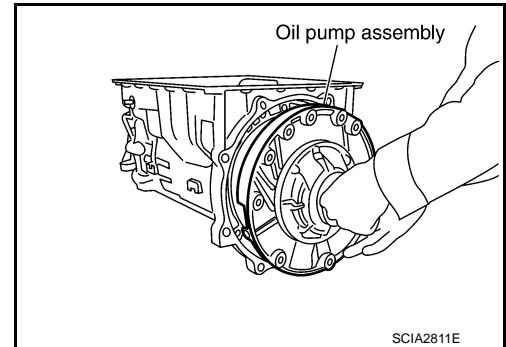
- Apply petroleum jelly to bearing race.



3. Install oil pump assembly in transmission case.

CAUTION:

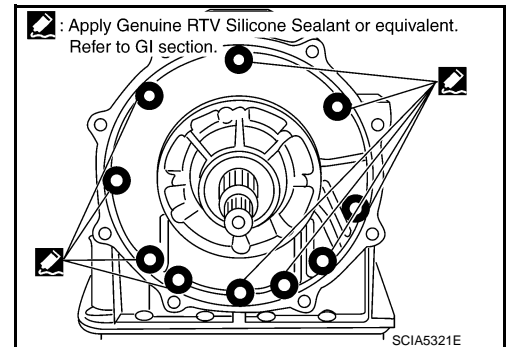
- Apply ATF to oil pump bearing.



4. Apply recommended sealant (Genuine RTV Silicone Sealant or equivalent. Refer to [GI-44. "Recommended Chemical Product and Sealant"](#).) to oil pump assembly as shown in the figure.

CAUTION:

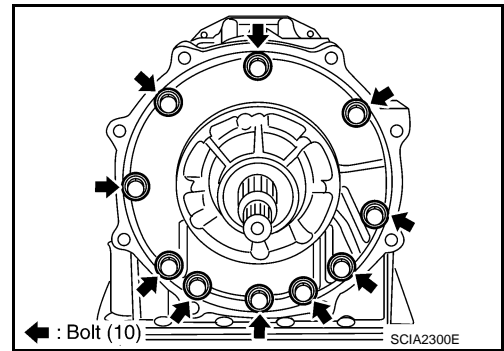
- Completely remove all moisture, oil and old sealant, etc. from the oil pump mounting bolts and oil pump mounting bolt mounting surfaces.



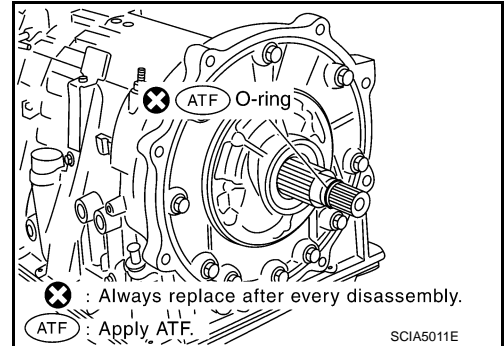
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5. Tighten oil pump bolts to the specified torque. Refer to [AT-254](#), "[Component](#)".
CAUTION:
 Apply ATF to oil pump bushing.



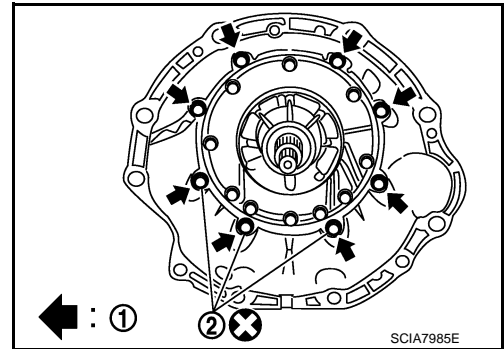
6. Install O-ring to input clutch assembly.
CAUTION:
- Do not reuse O-ring.
 - Apply ATF to O-ring.



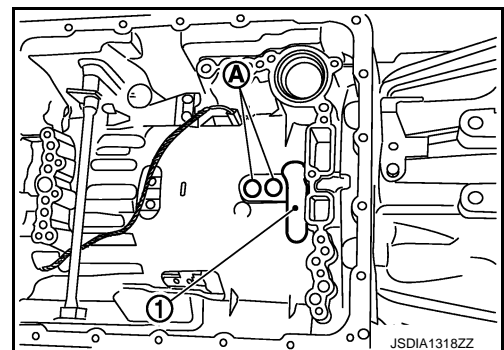
7. Install converter housing to transmission case. Tighten converter housing bolts (1) to the specified torque. Refer to [AT-254](#), "[Component](#)".

← : Bolt

- CAUTION:**
 Do not reuse self-sealing bolt (2).



8. Make sure that brake band (1) does not close input speed sensor holes (A).



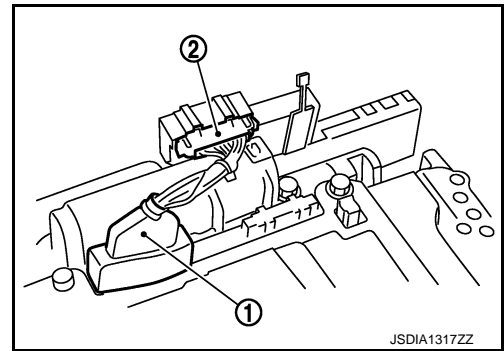
9. Install control valve with TCM.

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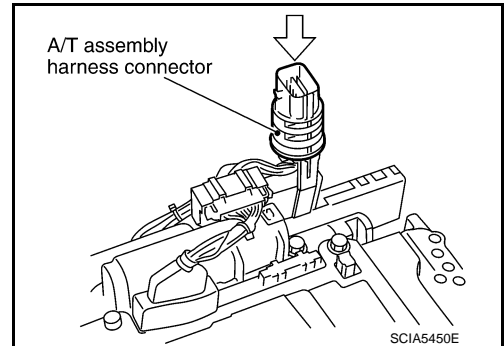
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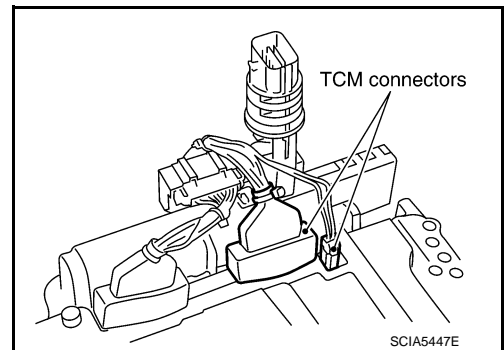
- a. Connect TCM connector (1) and transmission range switch connector (2).



- b. Install A/T assembly harness connector to control valve with TCM.



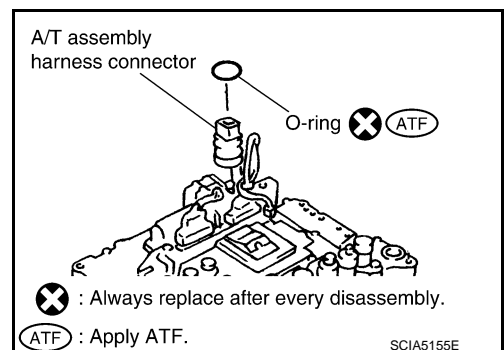
- c. Connect TCM connectors.



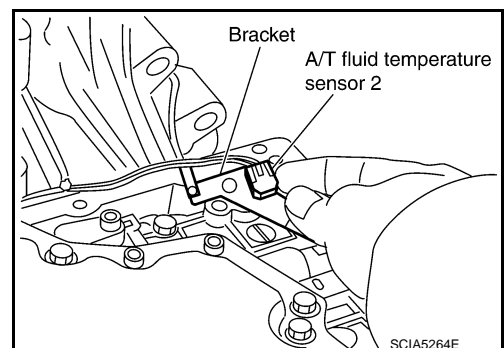
- d. Install O-ring to A/T assembly harness connector.

CAUTION:

- Do not reuse O-ring.
- Apply ATF to O-ring.



- e. Install A/T fluid temperature sensor 2 to bracket.



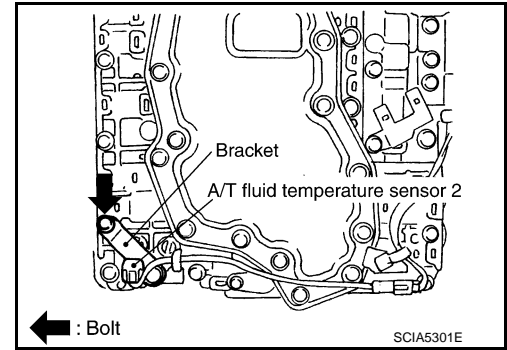
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< SERVICE INFORMATION >

- f. Install A/T fluid temperature sensor 2 (with bracket) in control valve with TCM. Tighten A/T fluid temperature sensor 2 bolt to the specified torque. Refer to [AT-254. "Component"](#).

CAUTION:

Adjust bolt hole of bracket to bolt hole of control valve.

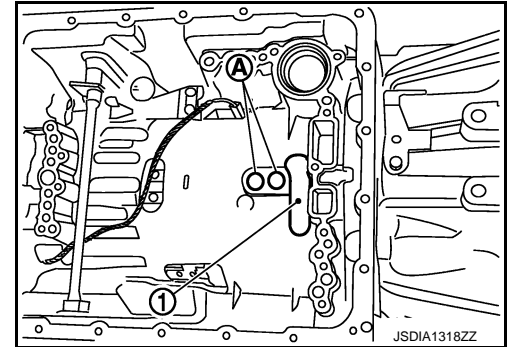


- g. Install control valve with TCM in transmission case.

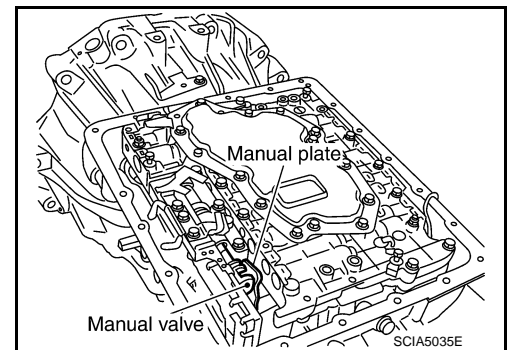
1 : Brake band

CAUTION:

- Make sure that input speed sensor securely installs input speed sensor holes (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.

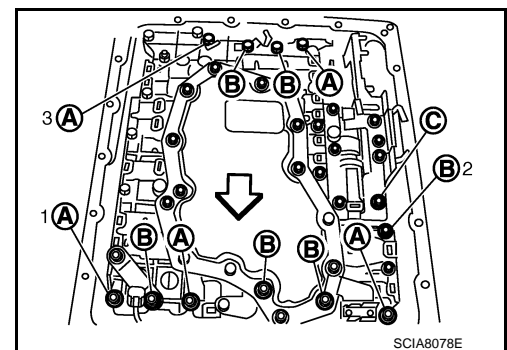


- Assemble it so that manual valve cutout is engaged with manual plate projection.



- h. Install bolts A, B and C to control valve with TCM. Tighten bolt 1, 2 and 3 temporarily to prevent dislocation. After that tighten them in order (1 → 2 → 3), and then tighten other bolts. Tighten control valve bolts to the TCM with specified torque.

← : Front



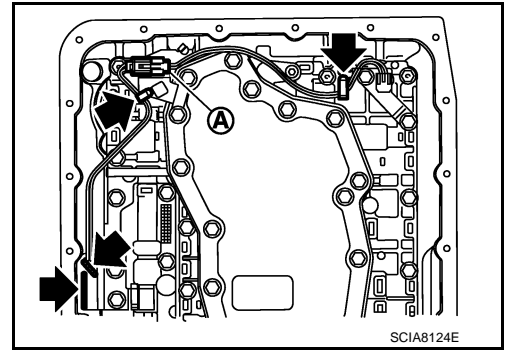
Bolt symbol	A	B	C	
Number of bolts	5	6	1	
Length mm (in)	42 (1.65)	55 (2.17)	Bolt being 40 mm (1.57 in)	Bolt being 50 mm (1.97 in)
Tightening torque N·m (km-g, in-lb)	7.9 (0.81, 70)		With ATF applied	7.9 (0.81, 70)
			7.9 (0.81, 70)	

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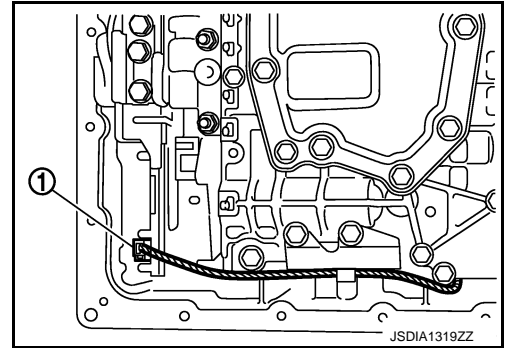
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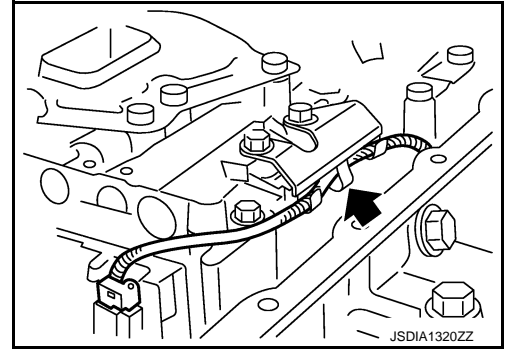
10. Connect A/T fluid temperature sensor 2 connector (A).
11. Securely fasten terminal cord assembly and A/T fluid temperature sensor 2 harness with terminal clips (←).



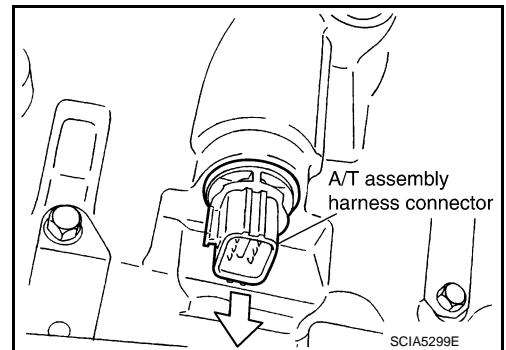
12. Connect output speed sensor connector (1).



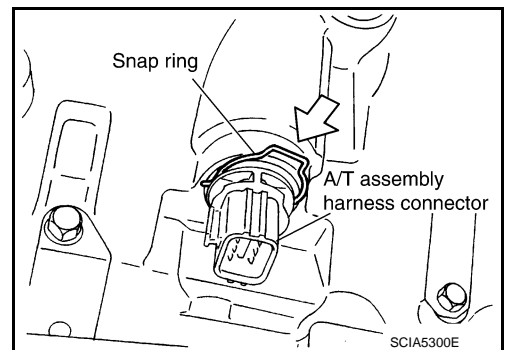
13. Securely fasten output speed sensor harness with terminal clip (←).



14. Pull down A/T assembly harness connector.
CAUTION:
Be careful not to damage connector.



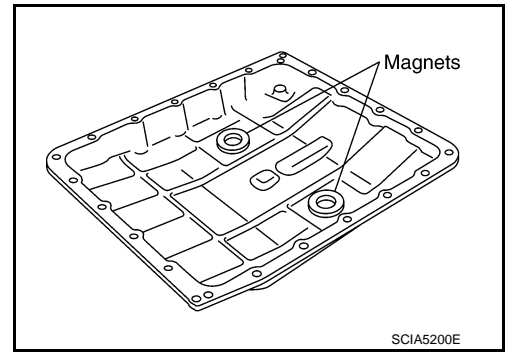
15. Install snap ring to A/T assembly harness connector.



ASSEMBLY

< SERVICE INFORMATION >

16. Install magnets in oil pan.



17. Install oil pan, oil pan gasket and clips (VQ35DE models) or oil pan, oil pan gasket, brackets and clips (VK45DE models) according to the following procedures.

a. VQ35DE models

i. Install oil pan gasket to transmission case.

CAUTION:

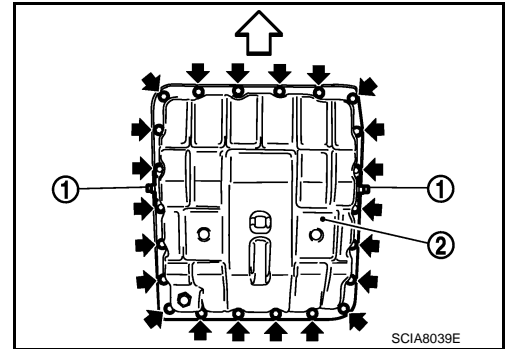
- Do not reuse oil pan gasket.
- Install it in the direction to align hole positions.
- Complete remove all moisture, oil and old gasket, etc. from oil pan gasket mounting surface.

ii. Install oil pan (2) and clips (1) to transmission case.

- ↔ : Front
 ← : Oil pan mounting bolt

CAUTION:

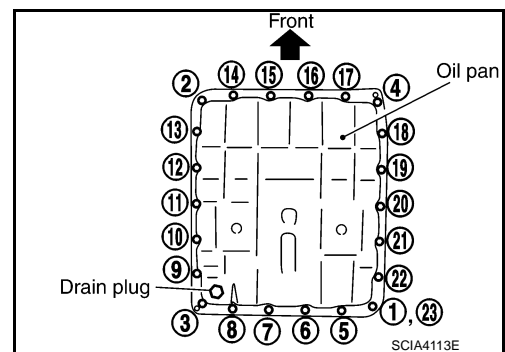
- Install it so that drain plug comes to the position as shown in the figure.
- Be careful not to pinch harnesses.
- Completely remove all moisture, oil and old gasket, etc. from oil pan mounting surface.



iii. Tighten oil pan mounting bolts to the specified torque in numerical order shown in the figure after temporarily tightening them. Tighten oil pan mounting bolts to the specified torque. Refer to [AT-254, "Component"](#).

CAUTION:

Do not reuse oil pan mounting bolts.



b. VK45DE models

i. Install oil pan gasket to transmission case.



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.

ASSEMBLY

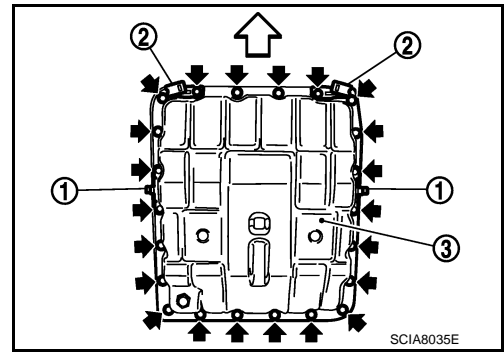
< SERVICE INFORMATION >

ii. Install oil pan (3), clips (1) and brackets (2) to transmission case.

-  : Front
 : Oil pan mounting bolt

CAUTION:

- Install it so that drain plug 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.
- Be careful with installation direction of brackets.



iii. Tighten oil pan mounting bolts to the specified torque in numerical order shown in the figure after temporarily tightening them. Tighten oil pan mounting bolts to the specified torque. Refer to [AT-254, "Component"](#)

CAUTION:

Do not reuse oil pan mounting bolts.

18. Install drain plug to oil pan. Tighten drain plug to the specified torque. Refer to [AT-254, "Component"](#).

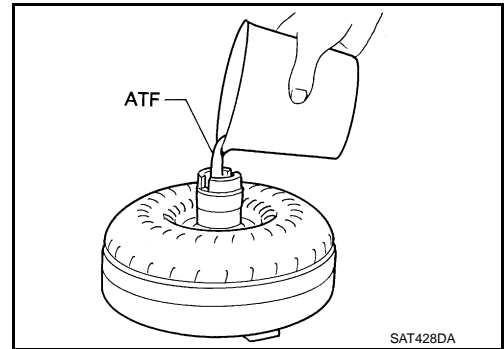
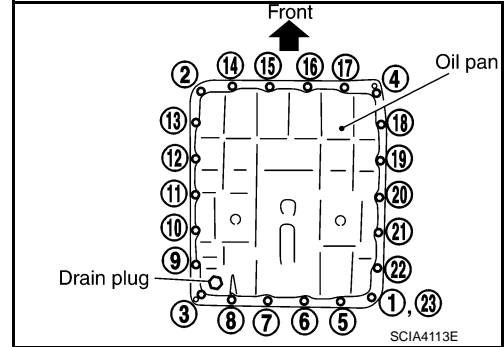
CAUTION:

Do not reuse drain plug gasket.

19. Install torque converter.

a. Pour ATF into torque converter.

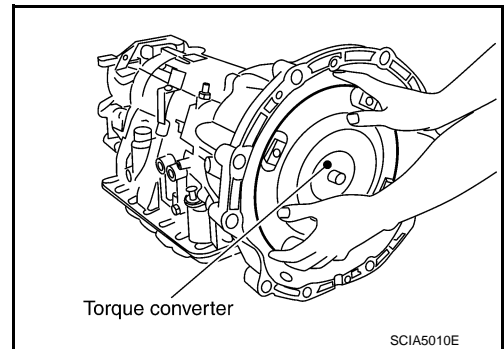
- Approximately 2 liter (2-1/8 US qt, 1-3/4 Imp qt) of ATF is required for a new torque converter.
- When reusing old torque converter, add the same amount of ATF as was drained.



b. Install torque converter while aligning notches of torque converter with notches of oil pump.

CAUTION:

Install torque converter while rotating it.

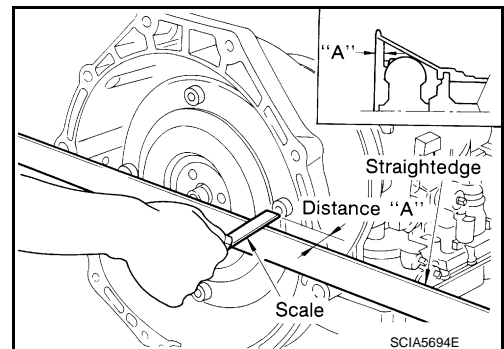


c. Measure distance "A" to make sure that torque converter is in proper position.

Distance "A"

VQ35DE models: 25.0 mm (0.98 in) or more

VK45DE models: 22.0 mm (0.87 in) or more



SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE INFORMATION >

SERVICE DATA AND SPECIFICATIONS (SDS)

General Specification

INFOID:000000002955662

Applied model		VQ35DE engine		VK45DE engine	
		2WD	AWD	2WD	AWD
Automatic transmission model		RE5R05A			
Transmission model code number		99X1E	99X2A	96X2A	96X2B
Stall torque ratio		1.74: 1		1.87: 1	
Transmission gear ratio	1st	3.842		3.827	
	2nd	2.353		2.368	
	3rd	1.529		1.519	
	4th	1.000		1.000	
	5th	0.839		0.834	
	Reverse	2.765		2.613	
Recommended fluid		Genuine NISSAN Matic S ATF*1			
Fluid capacity		10.3 liter (10-7/8 US qt, 9-1/8 Imp qt)			

CAUTION:

- If Genuine NISSAN Matic S ATF is not available, Genuine NISSAN Matic J ATF may also be used.
- Using ATF other than Genuine NISSAN Matic S ATF or Matic J ATF will cause deterioration in driveability and A/T durability, and may damage the A/T, which is not covered by the (INFINITI new vehicle limited) warranty.

*1: Refer to [MA-9. "Fluids and Lubricants"](#).

Vehicle Speed at Which Gear Shifting Occurs

INFOID:000000002955663

2WD MODELS

Engine model	Throttle position	Vehicle speed km/h (MPH)							
		D1→D2	D2→D3	D3→D4	D4→D5	D5→D4	D4→D3	D3→D2	D2→D1
VQ35DE	Full throttle	52 - 56 (32 - 35)	85 - 93 (53 - 58)	126 - 136 (78 - 85)	195 - 205 (121 - 127)	191 - 201 (119 - 125)	113 - 123 (70 - 76)	70 - 78 (44 - 48)	28 - 32 (17 - 20)
	Half throttle	46 - 50 (29 - 31)	76 - 82 (47 - 51)	107 - 115 (67 - 71)	140 - 148 (87 - 92)	111 - 119 (69 - 74)	67 - 75 (42 - 47)	35 - 41 (22 - 25)	11 - 15 (7 - 9)

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

Engine model	Throttle position	Vehicle speed km/h (MPH)							
		D1→D2	D2→D3	D3→D4	D4→D5	D5→D4	D4→D3	D3→D2	D2→D1
VK45DE	Full throttle	56 - 60 (35 - 37)	89 - 97 (55 - 60)	138 - 148 (86 - 92)	206 - 216 (128 - 134)	202 - 212 (126 - 132)	121 - 131 (75 - 81)	73 - 81 (45 - 50)	30 - 34 (19 - 21)
	Half throttle	50 - 54 (31 - 34)	82 - 88 (51 - 55)	126 - 134 (78 - 83)	155 - 163 (96 - 101)	128 - 136 (80 - 85)	70 - 78 (43 - 48)	29 - 35 (18 - 22)	9 - 13 (6 - 8)

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

AWD MODELS

Engine model	Throttle position	Vehicle speed km/h (MPH)							
		D1→D2	D2→D3	D3→D4	D4→D5	D5→D4	D4→D3	D3→D2	D2→D1
VQ35DE	Full throttle	50 - 54 (31 - 34)	81 - 89 (50 - 55)	120 - 130 (75 - 81)	187 - 197 (116 - 122)	183 - 193 (114 - 120)	108 - 118 (67 - 73)	66 - 74 (41 - 46)	27 - 31 (17 - 19)
	Half throttle	45 - 49 (28 - 30)	73 - 79 (45 - 49)	102 - 110 (63 - 68)	133 - 141 (83 - 88)	106 - 114 (66 - 71)	64 - 72 (40 - 45)	33 - 39 (21 - 24)	11 - 15 (7 - 9)

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE INFORMATION >

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

Engine model	Throttle position	Vehicle speed km/h (MPH)							
		D1→D2	D2→D3	D3→D4	D4→D5	D5→D4	D4→D3	D3→D2	D2→D1
VK45DE	Full throttle	56 - 60 (35 - 37)	89 - 97 (55 - 60)	138 - 148 (86 - 92)	206 - 216 (128 - 134)	202 - 212 (126 - 132)	121 - 131 (75 - 81)	73 - 81 (45 - 50)	30 - 34 (19 - 21)
	Half throttle	50 - 54 (31 - 34)	82 - 88 (51 - 55)	126 - 134 (78 - 83)	155 - 163 (96 - 101)	128 - 136 (80 - 85)	70 - 78 (43 - 48)	29 - 35 (18 - 22)	9 - 13 (6 - 8)

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

Vehicle Speed at Which Lock-Up Occurs/Releases

INFOID:000000002955664

2WD MODELS

Engine model	Throttle position	Vehicle speed km/h (MPH)	
		Lock-up ON	Lock-up OFF
VQ35DE	Closed throttle	53 - 61 (33 - 38)	50 - 58 (31 - 36)
	Half throttle	196 - 204 (122 - 127)	138 - 146 (86 - 91)

- 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.

Engine model	Throttle position	Vehicle speed km/h (MPH)	
		Lock-up ON	Lock-up OFF
VK45DE	Closed throttle	53 - 61 (33 - 38)	50 - 58 (31 - 36)
	Half throttle	196 - 204 (122 - 127)	138 - 146 (86 - 91)

- 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.

AWD MODELS

Engine model	Throttle position	Vehicle speed km/h (MPH)	
		Lock-up ON	Lock-up OFF
VQ35DE	Closed throttle	51 - 59 (32 - 37)	48 - 56 (30 - 35)
	Half throttle	188 - 196 (117 - 122)	132 - 140 (82 - 87)

- 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.

Engine model	Throttle position	Vehicle speed km/h (MPH)	
		Lock-up ON	Lock-up OFF
VK45DE	Closed throttle	53 - 61 (33 - 38)	50 - 58 (31 - 36)
	Half throttle	196 - 204 (122 - 127)	138 - 146 (86 - 91)

- 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:000000002955665

Engine model	Stall speed
VQ35DE	2,650 - 2,950 rpm
VK45DE	2,260 - 2,560 rpm

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE INFORMATION >

Line Pressure

INFOID:000000002955666

Engine speed	Line pressure [kPa (kg/cm ² , psi)]	
	"R" position	"D", "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:000000002955667

Name	Condition	CONSULT-III "DATA MONITOR" (Approx.)	Resistance (Approx.)
ATF TEMP SE 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
ATF TEMP SE 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:000000002955668

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 running at 20 km/h (12 MPH) in 1st speed with the closed throttle position signal "OFF".	

Output Speed Sensor

INFOID:000000002955669

Name	Condition	Data (Approx.)
Output speed sensor	When running at 20 km/h (12 MPH).	185 Hz

Reverse Brake

INFOID:000000002955670

Model code number	99X1E, 99X2A, 96X2A, 96X2B	
Number of drive plates	6	
Number of driven plates	6	
Clearance mm (in)	Standard	0.7 - 1.1 (0.028 - 0.043)
Thickness of retaining plates	Thickness mm (in)	Part number*
	4.2 (0.165)	31667 90X14
	4.4 (0.173)	31667 90X15
	4.6 (0.181)	31667 90X16
	4.8 (0.189)	31667 90X17
	5.0 (0.197)	31667 90X18
	5.2 (0.205)	31667 90X19
5.4 (0.213)	31667 90X0A	

*: Always check with the Parts Department for the latest parts information.

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE INFORMATION >

Total End Play

INFOID:00000002955671

Total end play mm (in)	0.25 - 0.55 (0.0098 - 0.0217)
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BEARING RACE FOR ADJUSTING TOTAL END PLAY

Thickness mm (in)	Part number*
0.8 (0.031)	31435 95X00
1.0 (0.039)	31435 95X01
1.2 (0.047)	31435 95X02
1.4 (0.055)	31435 95X03
1.6 (0.063)	31435 95X04
1.8 (0.071)	31435 95X05

*: Always check with the Parts Department for the latest parts information.