

# SECTION **AT**

## AUTOMATIC TRANSMISSION

A  
B  
AT

### CONTENTS

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### Alphabetical Index

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#### NOTE:

If DTC "U1000 CAN COMM CIRCUIT" is displayed with other DTCs, first perform the trouble diagnosis for "DTC U1000 CAN COMMUNICATION LINE". Refer to [AT-96](#).

Items (CONSULT- II screen terms)	DTC	Reference page
A/T 1ST E/BRAKING	P1731	<a href="#">AT-136</a>
ATF PRES SW 1/CIRC	P1841	<a href="#">AT-162</a>
ATF PRES SW 3/CIRC	P1843	<a href="#">AT-164</a>
ATF PRES SW 5/CIRC	P1845	<a href="#">AT-166</a>
ATF PRES SW 6/CIRC	P1846	<a href="#">AT-168</a>
A/T INTERLOCK	P1730	<a href="#">AT-133</a>
A/T TCC S/V FNCTN	P0744	<a href="#">AT-117</a>
ATF TEMP SEN/CIRC	P1710	<a href="#">AT-124</a>
CAN COMM CIRCUIT	U1000	<a href="#">AT-96</a>
D/C SOLENOID/CIRC	P1762	<a href="#">AT-148</a>
D/C SOLENOID FNCTN	P1764	<a href="#">AT-150</a>
ENGINE SPEED SIG	P0725	<a href="#">AT-113</a>
FR/B SOLENOID/CIRC	P1757	<a href="#">AT-143</a>
FR/B SOLENOID FNCT	P1759	<a href="#">AT-145</a>
HLR/C SOL/CIRC	P1767	<a href="#">AT-153</a>
HLR/C SOL FNCTN	P1769	<a href="#">AT-155</a>
I/C SOLENOID/CIRC	P1752	<a href="#">AT-138</a>
I/C SOLENOID FNCTN	P1754	<a href="#">AT-140</a>
L/PRESS SOL/CIRC	P0745	<a href="#">AT-119</a>
LC/B SOLENOID/CIRC	P1772	<a href="#">AT-158</a>
LC/B SOLENOID FNCT	P1774	<a href="#">AT-160</a>
PNP SW/CIRC	P0705	<a href="#">AT-104</a>
STARTER RELAY/CIRC	P0615	<a href="#">AT-99</a>
TCC SOLENOID/CIRC	P0740	<a href="#">AT-115</a>
TCM	P0700	<a href="#">AT-103</a>
TP SEN/CIRC A/T	P1705	<a href="#">AT-121</a>
TURBINE REV S/CIRC	P1716	<a href="#">AT-129</a>
VEH SPD SE/CIR-MTR	P1721	<a href="#">AT-131</a>
VEH SPD SEN/CIR AT	P0720	<a href="#">AT-108</a>

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**NOTE:**

If DTC “U1000 CAN COMM CIRCUIT” is displayed with other DTCs, first perform the trouble diagnosis for “DTC U1000 CAN COMMUNICATION LINE”. Refer to [AT-96](#) .

DTC	Items (CONSULT- II screen terms)	Reference page
P0615	STARTER RELAY/CIRC	<a href="#">AT-99</a>
P0700	TCM	<a href="#">AT-103</a>
P0705	PNP SW/CIRC	<a href="#">AT-104</a>
P0720	VEH SPD SEN/CIR AT	<a href="#">AT-108</a>
P0725	ENGINE SPEED SIG	<a href="#">AT-113</a>
P0740	TCC SOLENOID/CIRC	<a href="#">AT-115</a>
P0744	A/T TCC S/V FNCTN	<a href="#">AT-117</a>
P0745	L/PRESS SOL/CIRC	<a href="#">AT-119</a>
P1705	TP SEN/CIRC A/T	<a href="#">AT-121</a>
P1710	ATF TEMP SEN/CIRC	<a href="#">AT-124</a>
P1716	TURBINE REV S/CIRC	<a href="#">AT-129</a>
P1721	VEH SPD SE/CIR-MTR	<a href="#">AT-131</a>
P1730	A/T INTERLOCK	<a href="#">AT-133</a>
P1731	A/T 1ST E/BRAKING	<a href="#">AT-136</a>
P1752	I/C SOLENOID/CIRC	<a href="#">AT-138</a>
P1754	I/C SOLENOID FNCTN	<a href="#">AT-140</a>
P1757	FR/B SOLENOID/CIRC	<a href="#">AT-143</a>
P1759	FR/B SOLENOID FNCT	<a href="#">AT-145</a>
P1762	D/C SOLENOID/CIRC	<a href="#">AT-148</a>
P1764	D/C SOLENOID FNCTN	<a href="#">AT-150</a>
P1767	HLR/C SOL/CIRC	<a href="#">AT-153</a>
P1769	HLR/C SOL FNCTN	<a href="#">AT-155</a>
P1772	LC/B SOLENOID/CIRC	<a href="#">AT-158</a>
P1774	LC/B SOLENOID FNCT	<a href="#">AT-160</a>
P1841	ATF PRES SW 1/CIRC	<a href="#">AT-162</a>
P1843	ATF PRES SW 3/CIRC	<a href="#">AT-164</a>
P1845	ATF PRES SW 5/CIRC	<a href="#">AT-166</a>
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# PRECAUTIONS

## PRECAUTIONS

PF0:00001

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

GCS00016

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. Information necessary to service the system safely is included in the SRS and SB section of this Service Manual.

#### WARNING:

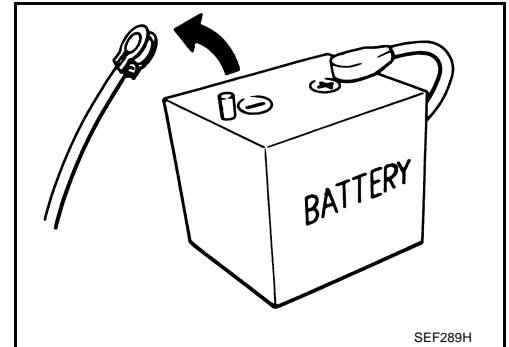
- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.
- Improper maintenance, including incorrect removal and installation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

### Precautions

GCS00017

- Before connecting or disconnecting the A/T assembly harness connector, turn ignition switch OFF and disconnect the battery cable from the negative terminal. Because battery voltage is applied to TCM even if ignition switch is turned OFF.
- After performing each TROUBLE DIAGNOSIS, perform "DTC Confirmation Procedure". If the repair is completed the DTC should not be displayed in the "DTC Confirmation Procedure".
- Always use the specified brand of ATF. Refer to [MA-13, "RECOMMENDED FLUIDS AND LUBRICANTS"](#).
- Use lint-free paper not cloth rags during work.
- After replacing 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.
- After overhaul, refill the transmission with new ATF.
- When the drain plug is removed, only some of the ATF is drained. Old ATF will remain in torque converter and A/T fluid cooling system.

Always follow the procedures under "Changing A/T Fluid" in the AT section when changing A/T fluid. Refer to [AT-10, "Changing A/T Fluid"](#), [AT-11, "Checking A/T Fluid"](#).



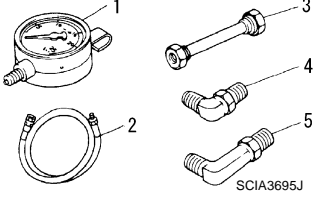
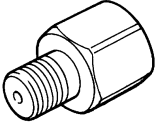
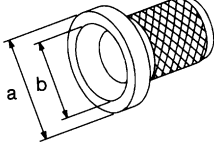
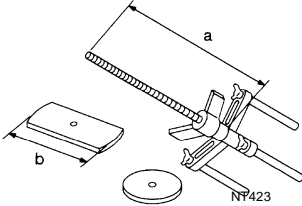
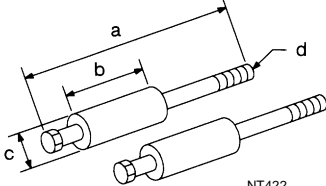
# PREPARATION

## PREPARATION

PFP:00002

### Special Service Tools

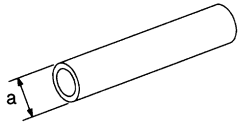
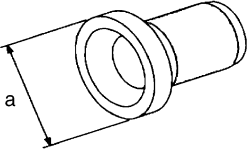
GCS00019

Tool number Tool name	Description
<p>ST2505S001 Oil pressure gauge set 1. ST25051001 Oil pressure gauge 2. ST25052000 Hose 3. ST25053000 Joint pipe 4. ST25054000 Adapter 5. ST25055000 Adapter</p> 	<p>Measuring line pressure</p>
<p>KV31103600 Joint pipe adapter (With ST25054000)</p> 	<p>Measuring line pressure</p>
<p>ST33400001 Drift a: 60 mm (2.36 in) dia. b: 47 mm (1.85 in) dia.</p> 	<ul style="list-style-type: none"> <li>● Installing rear oil seal (2WD models)</li> <li>● Installing oil pump housing oil seal</li> </ul>
<p>KV31102400 Clutch spring compressor a: 320 mm (12.60 in) b: 174 mm (6.85 in)</p> 	<p>Installing reverse brake return spring retainer</p>
<p>ST25850000 Sliding hammer a: 179 mm (7.05 in) b: 70 mm (2.76 in) c: 40 mm (1.57 in) d: M12X1.75P</p> 	<p>Remove oil pump assembly</p>

# PREPARATION

## Commercial Service Tools

GCS0001A

Tool name	Description
<p>Drift a: 22 mm (0.87 in) dia.</p>  <p>NT083</p>	Installing manual shaft oil seals
<p>Drift a: 64 mm (2.52 in) dia.</p>  <p>SCIA5338E</p>	Installing rear oil seal (4WD models)

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## A/T FLUID

PFP:KLE40

### Changing A/T Fluid

GCS0001B

1. Warm up ATF.
2. Stop engine.
3. Loosen level gauge bolt.
4. Remove A/T fluid level gauge.
5. Remove drain plug and drain ATF from drain hole.
6. Install drain plug gasket and drain plug to oil pan.

**CAUTION:**

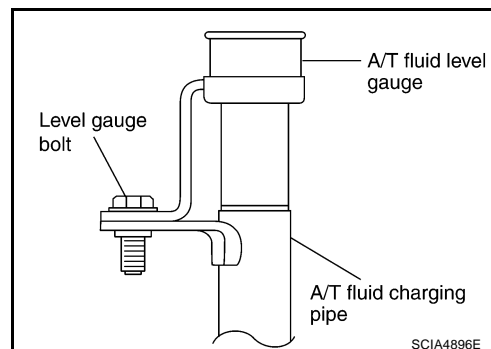
**Do not reuse drain plug gasket.**

7. Tighten drain plug to the specified torque. Refer to [AT-224, "COMPONENTS"](#).
8. Refill with new ATF. Always refill same volume with drained ATF.

- To replace the ATF, pour in new ATF at A/T fluid charging pipe with the engine idling and at the same time drain the old ATF from A/T fluid 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 specified amount.

**ATF:** **Genuine NISSAN ATF Matic Fluid J**

**Fluid capacity:** **10.3 ℓ (9-1/8 Imp qt)**



**CAUTION:**

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

9. Run engine at idle speed for 5 minutes.
10. Check A/T fluid level and condition. Refer to [AT-11, "Checking A/T Fluid"](#). If ATF is still dirty, repeat step 2 through 9.
11. Install the removed A/T fluid level gauge into A/T fluid charging pipe.
12. Tighten level gauge bolt to the specified torque. Refer to [AT-254, "COMPONENTS"](#) (for YD25DDTi engine) or [AT-258, "COMPONENTS"](#) (for VQ40DE engine).

## Checking A/T Fluid

1. Warm up engine.
2. Check for A/T fluid leakage.
3. Loosen 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:**

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

- e. Reinsert 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 A/T fluid level gauge until the cap contacts the end of A/T fluid charging pipe, with 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 A/T fluid charging pipe.

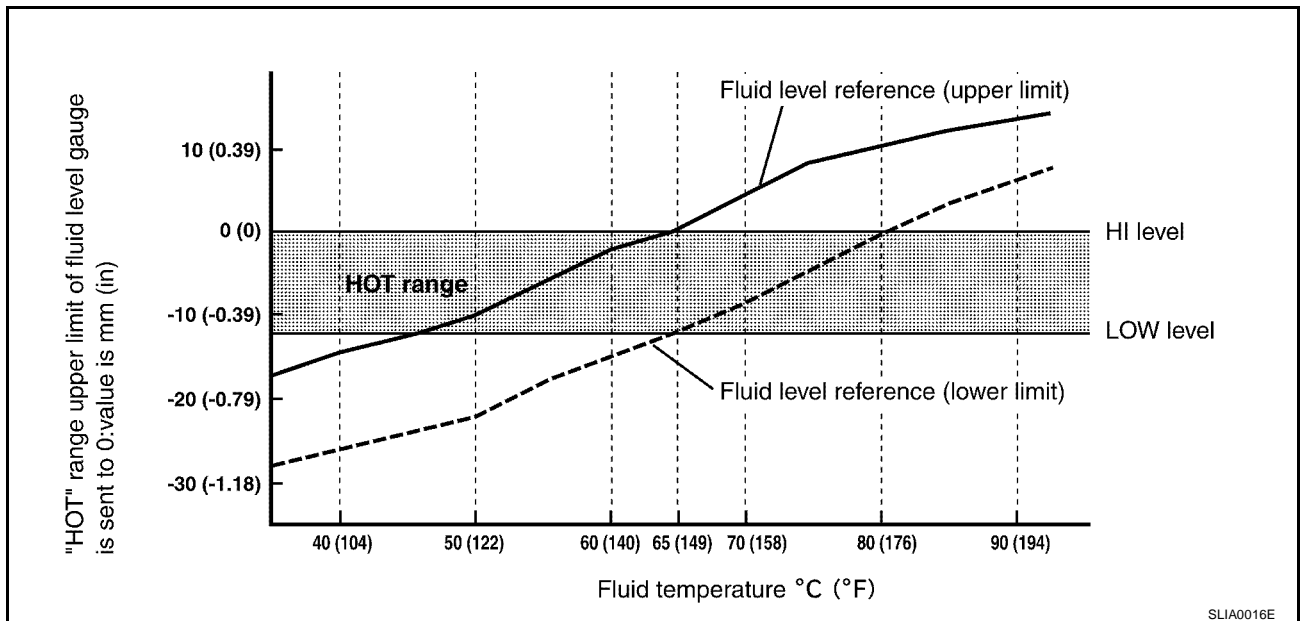
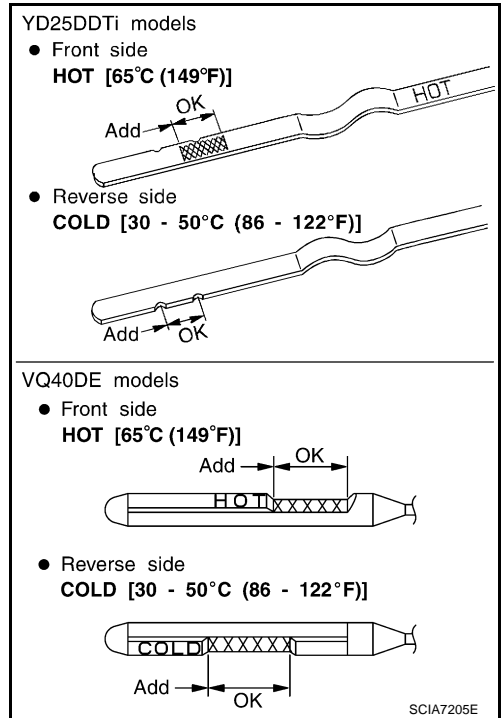
**CAUTION:**

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-II.



- a. Connect CONSULT-II to data link connector. Refer to [AT-84, "CONSULT-II SETTING PROCEDURE"](#).
- b. Select "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
- c. Read the value of "ATF TEMP 1".

## A/T FLUID

7. Recheck 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:**

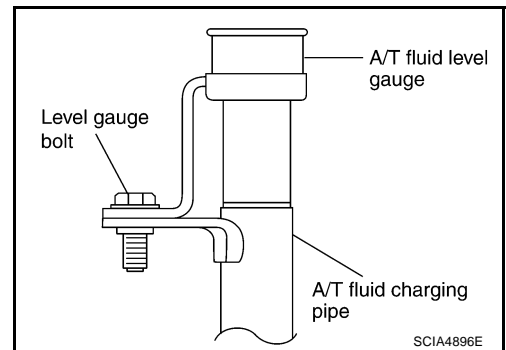
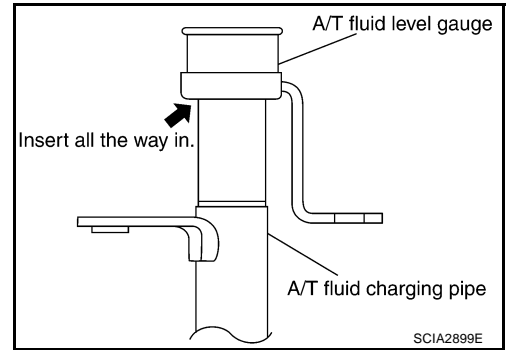
- When wiping away A/T fluid level gauge, always use lint-free paper, not a cloth one.
- To check A/T fluid level, insert A/T fluid level gauge until the cap contacts the end of A/T fluid charging pipe, with A/T fluid level gauge reversed from the normal attachment conditions as shown.

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-40, "RADIATOR"](#) (for YD25DDTi engine) or [CO-13, "RADIATOR"](#) (for VQ40DE engine).

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

10. Tighten level gauge bolt to the specified torque. Refer to [AT-254, "COMPONENTS"](#) (for YD25DDTi engine) or [AT-258, "COMPONENTS"](#) (for VQ40DE engine).





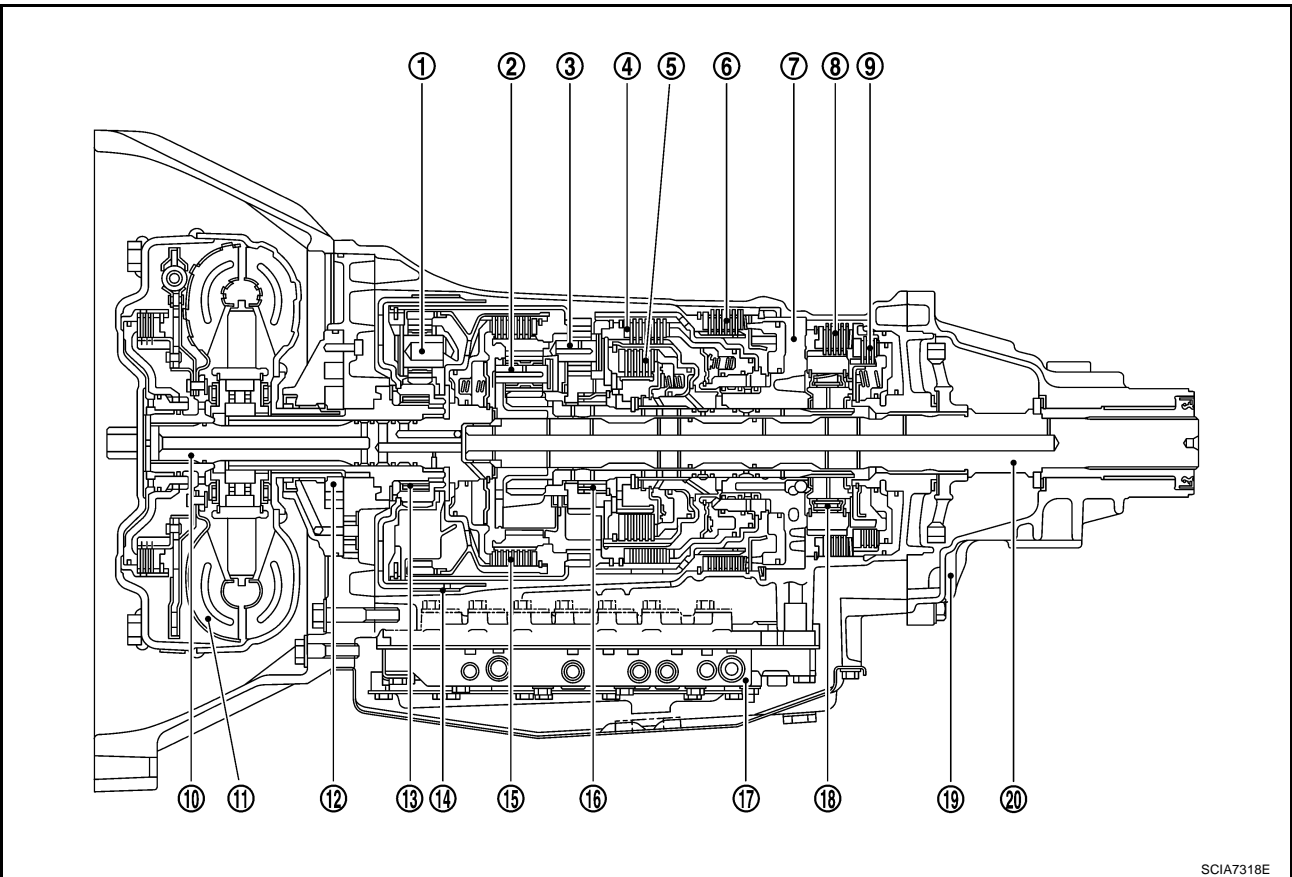
# A/T CONTROL SYSTEM

## A/T CONTROL SYSTEM

PFP:31036

### Cross-sectional View (YD25DDTi Models for 2WD)

GCS0001D



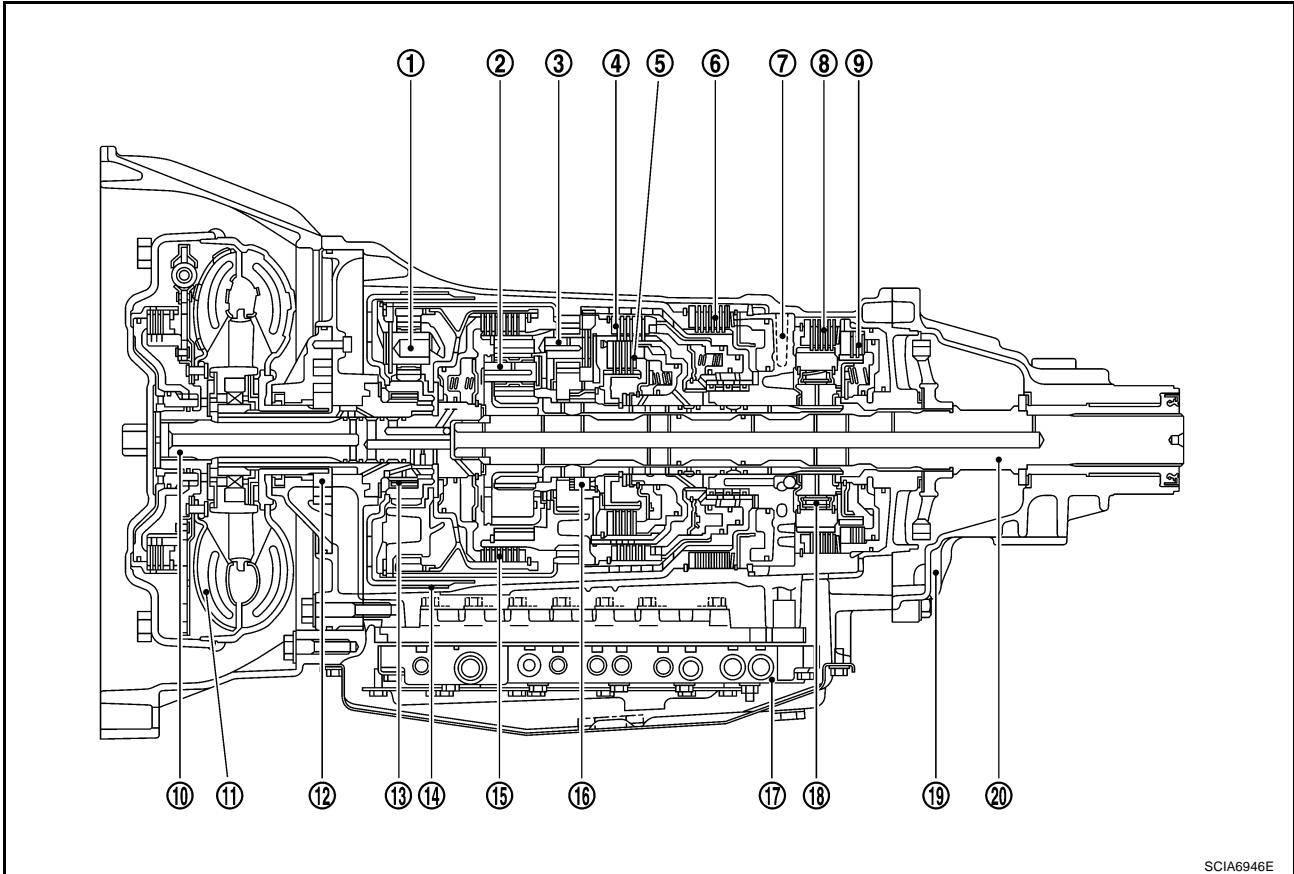
- |                         |                                |                            |
|-------------------------|--------------------------------|----------------------------|
| 1. Front planetary gear | 2. Mid planetary gear          | 3. Rear planetary gear     |
| 4. Direct clutch        | 5. 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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# A/T CONTROL SYSTEM

## Cross-sectional View (VQ40DE Models for 2WD)

GCS0009P



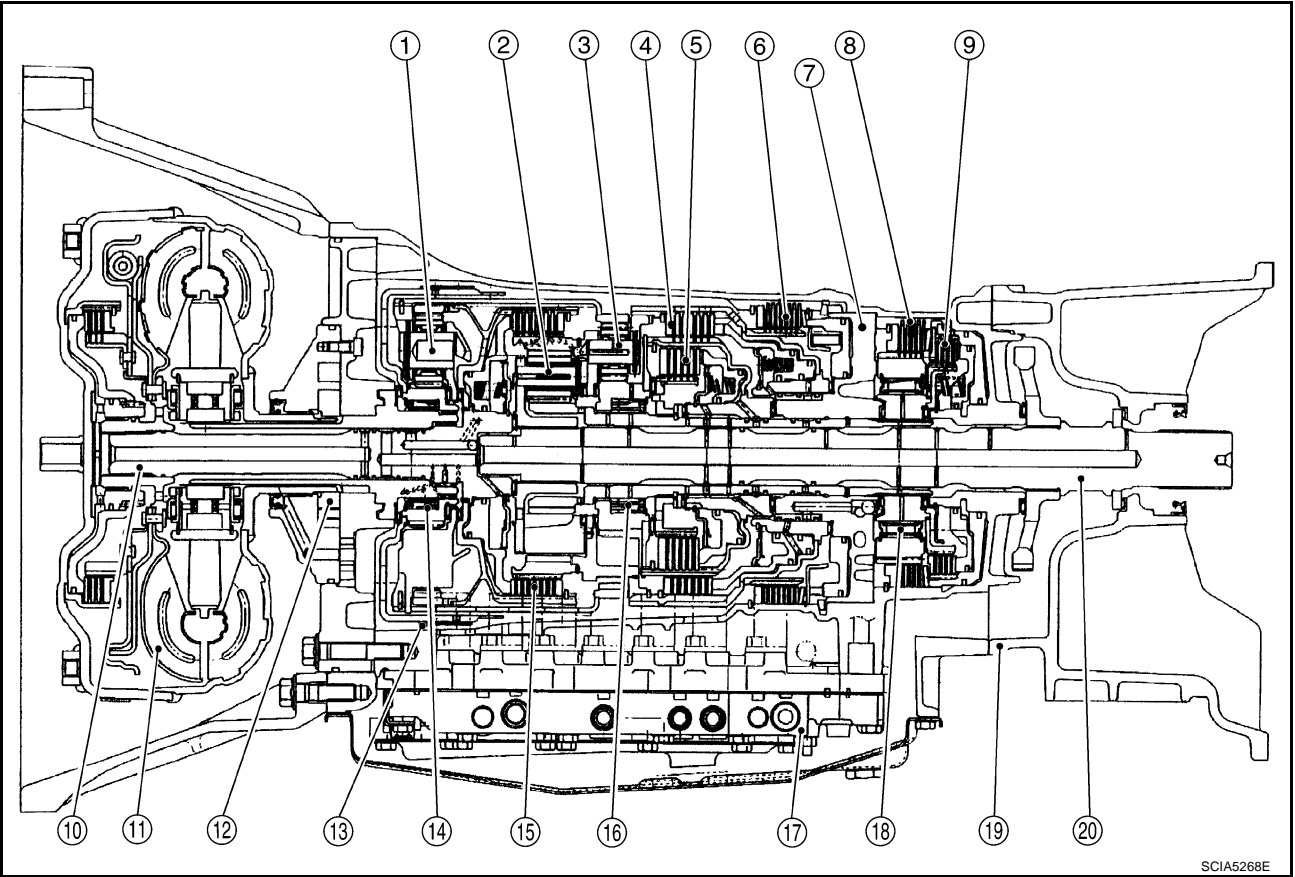
SCIA6946E

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

# A/T CONTROL SYSTEM

## Cross-sectional View (YD25DDTi Models for 4WD)

GCS0001E

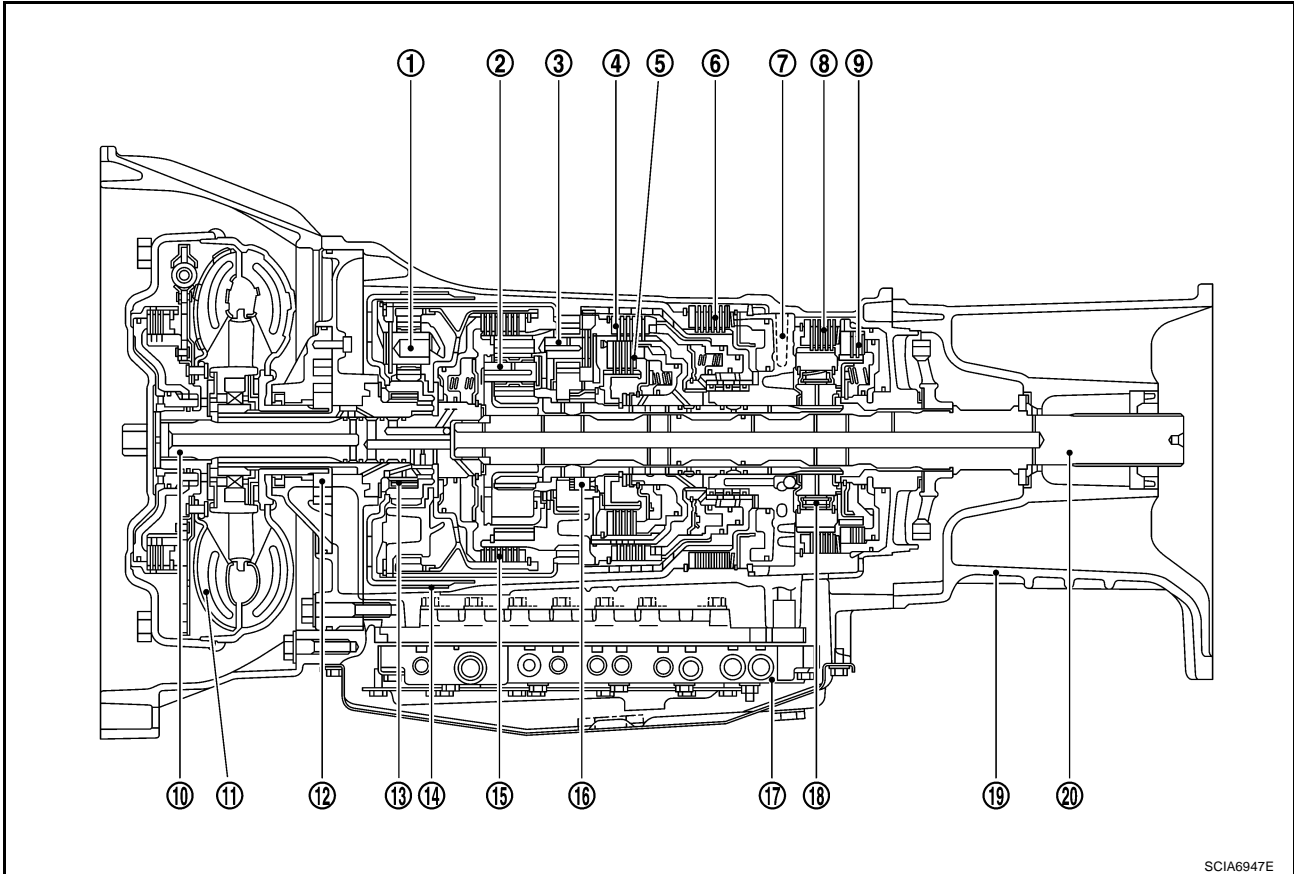


- |                         |                                |                            |
|-------------------------|--------------------------------|----------------------------|
| 1. Front planetary gear | 2. Mid planetary gear          | 3. Rear planetary gear     |
| 4. Direct clutch        | 5. 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               |                            |

# A/T CONTROL SYSTEM

## Cross-sectional View (VQ40DE Models for 4WD)

GCS0009Q



SCIA6947E

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

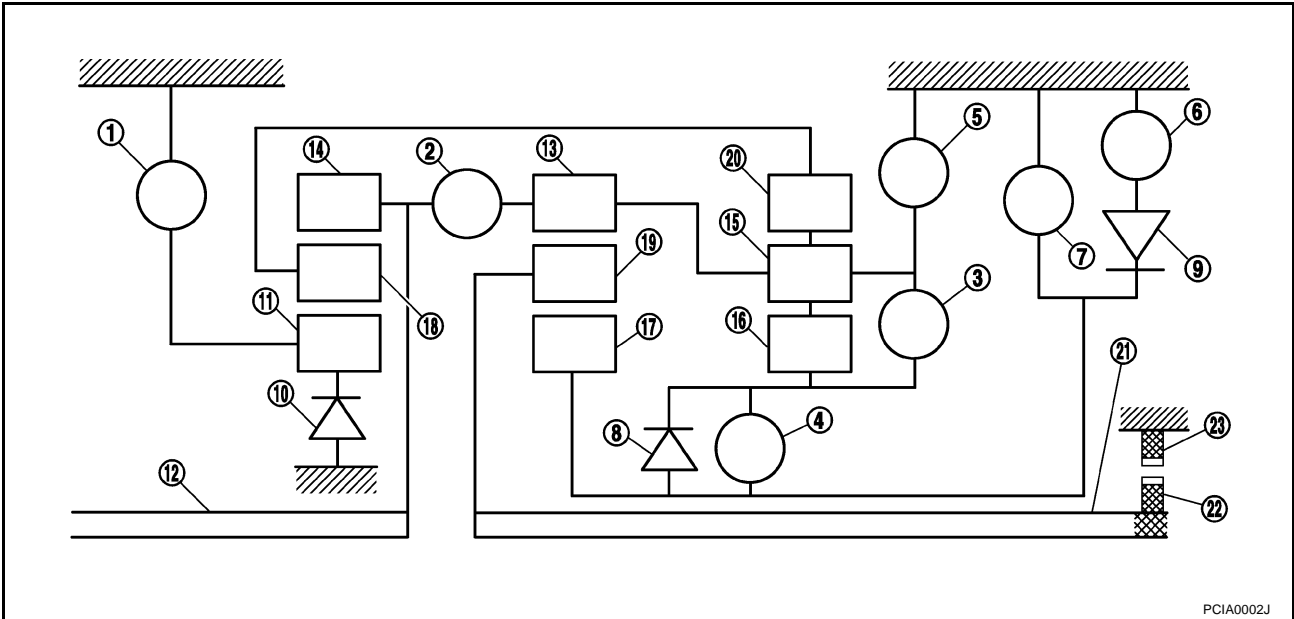
# A/T CONTROL SYSTEM

GCS0001F

## Shift Mechanism

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

## CONSTRUCTION



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

## FUNCTION OF CLUTCH AND BRAKE

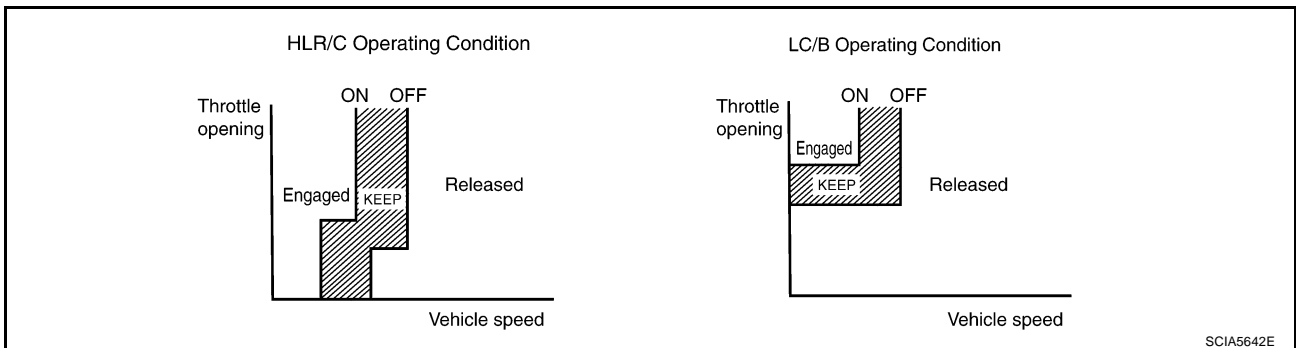
Name of the Part	Abbreviation	Function
Front brake (1)	FR/B	Fastens the front sun gear (11).
Input clutch (2)	I/C	Connects the input shaft (12), the front internal gear (14) and the mid internal gear (13).
Direct clutch (3)	D/C	Connects the rear carrier (15) and the rear sun gear (16).
High and low reverse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

# A/T CONTROL SYSTEM

## 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	1st		△*			△	△**	○	☆	☆	☆	Automatic shift 1↔2↔3↔4↔5
	2nd			○		△		○		☆	☆	
	3rd		○	○		△		△	★		☆	
	4th	○	○	○				△	★			
	5th	○	○			○		△	★		★	
3	1st		△*			△	△**	○	☆	☆	☆	Automatic shift 1↔2↔3↔4
	2nd			○		△		○		☆	☆	
	3rd		○	○		△		△	★		☆	
	4th	○	○	○				△	★			
2	1st		△*			△	△**	○	☆	☆	☆	Automatic shift 1↔2↔3↔4
	2nd			○		△	△	○		☆	☆	
	3rd		○	○		△		△	★		☆	
	4th	○	○	○				△	★			
1	1st		○			△	△	○	☆	☆	☆	Locks (held stationary in 1st gear) 1↔2↔3↔4
	2nd			○		△	△	○		☆	☆	
	3rd		○	○		△		△	★		☆	
	4th	○	○	○				△	★			

- ○—Operates
- ☆—Operates during “progressive” acceleration.
- ★—Operates and effects power transmission while coasting.
- △—Line pressure is applied but does not affect power transmission.
- △\*—Operates under conditions shown in HLR/C Operating Condition
- △\*\*—Operates under conditions shown in LC/B Operating Condition. Delay control is applied during “D” (4,3,2,1) ⇒“N” shift.
- \*1: A/T will not shift to 5th when OD OFF. (OD OFF indicator lamp is on.)



# A/T CONTROL SYSTEM

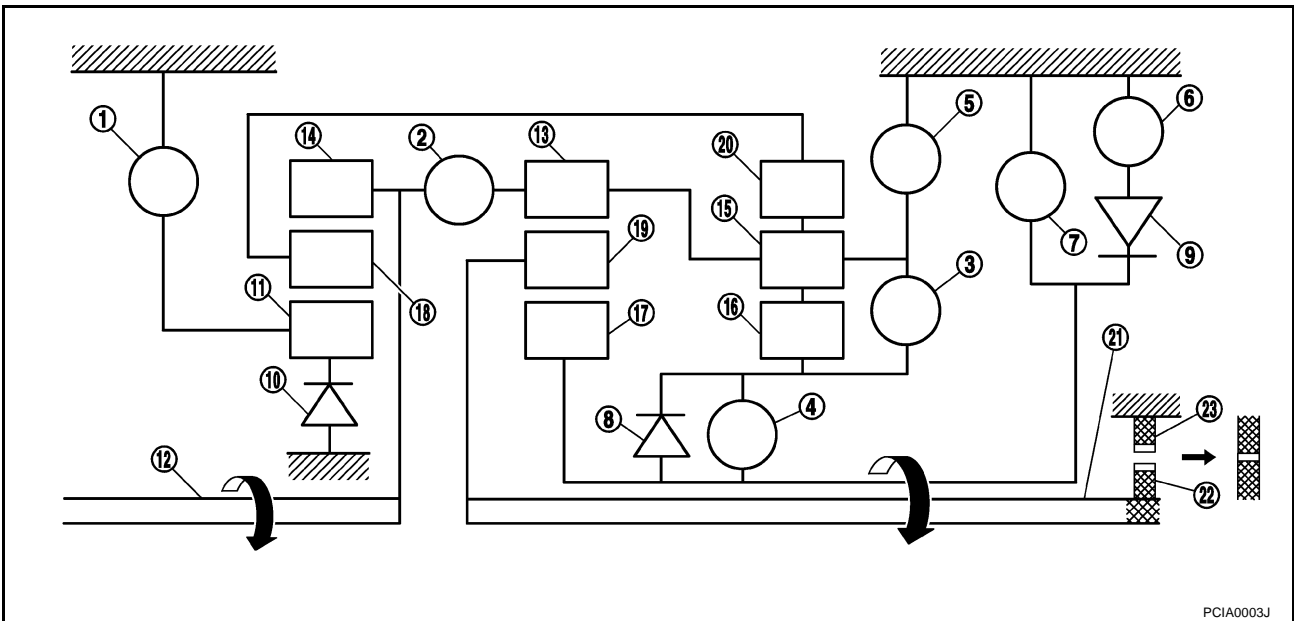
## POWER TRANSMISSION

### “N” Position

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

### “P” Position

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

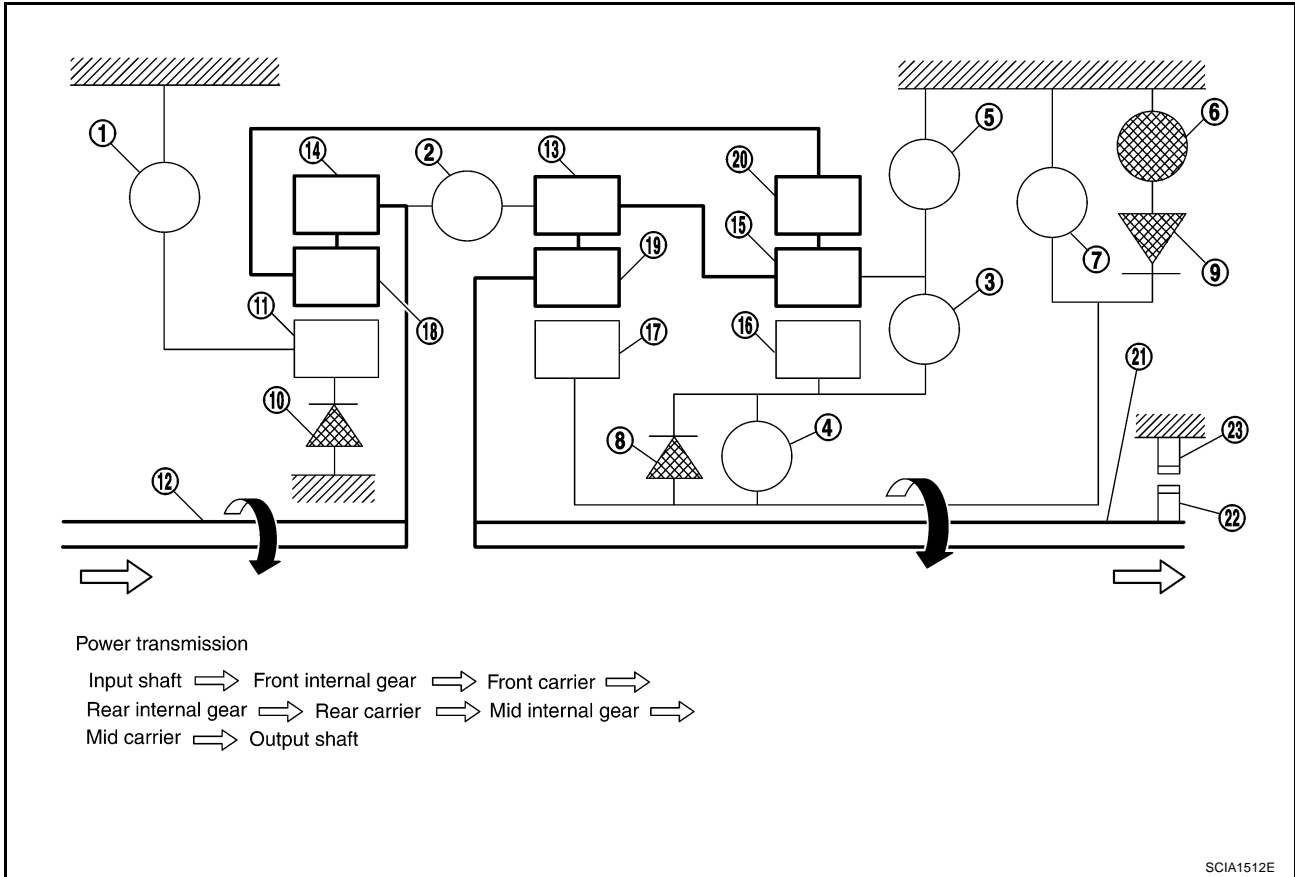


- |                                |                         |                           |
|--------------------------------|-------------------------|---------------------------|
| 1. Front brake                 | 2. Input clutch         | 3. Direct clutch          |
| 4. High and low reverse clutch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

# A/T CONTROL SYSTEM

## “D”, “3” and “2” Positions 1st Gear

- The forward brake and the forward one-way clutch regulate reverse rotation of the mid sun gear.
- The 1st one-way clutch regulates reverse rotation of the rear sun gear.
- The 3rd one-way clutch regulates reverse rotation of the front sun gear.
- During deceleration, the mid sun gear turns forward, so the forward one-way clutch idles and the engine brake is not activated.



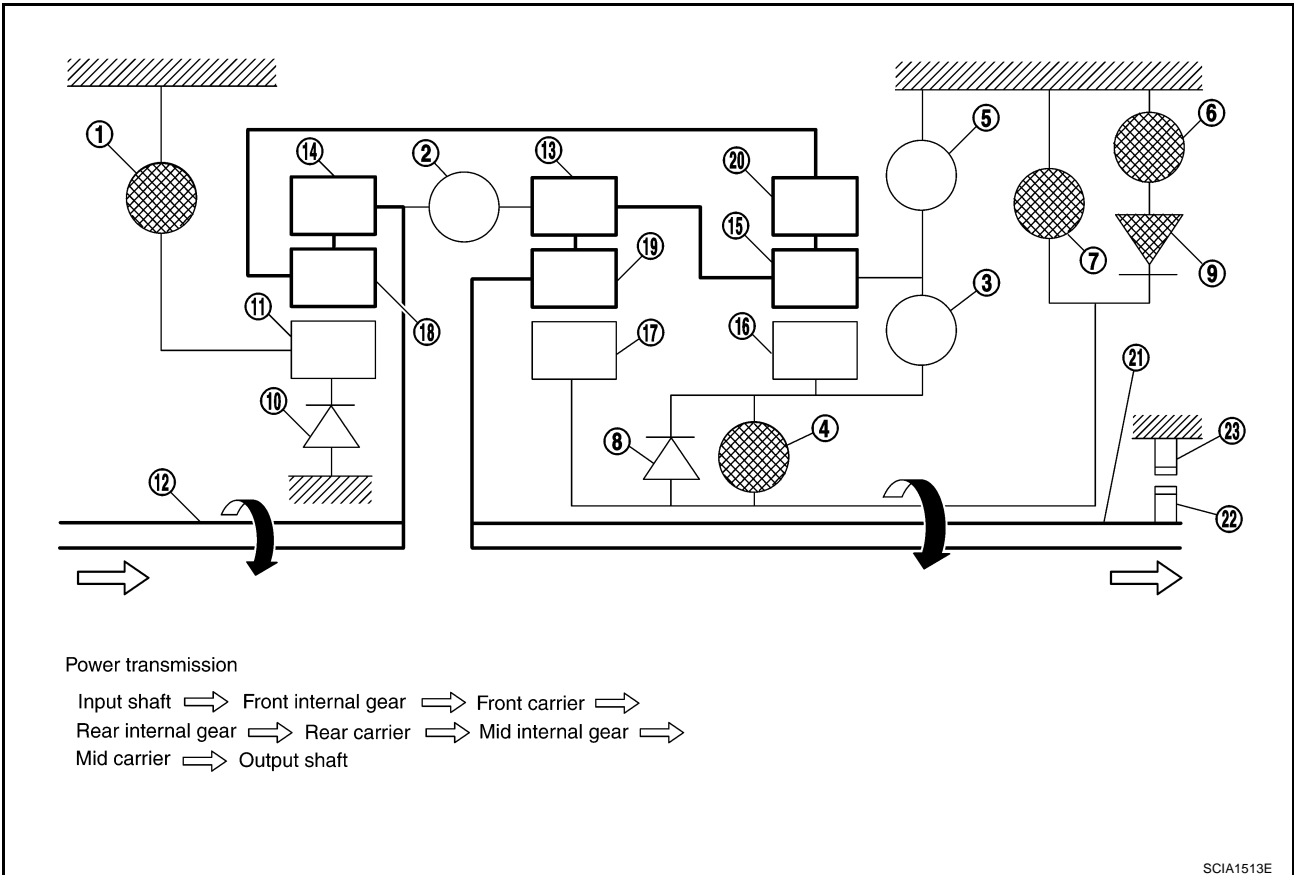
- |                                |                         |                           |
|--------------------------------|-------------------------|---------------------------|
| 1. Front brake                 | 2. Input clutch         | 3. Direct clutch          |
| 4. High and low reverse clutch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



# A/T CONTROL SYSTEM

## "1" Position 1st Gear

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

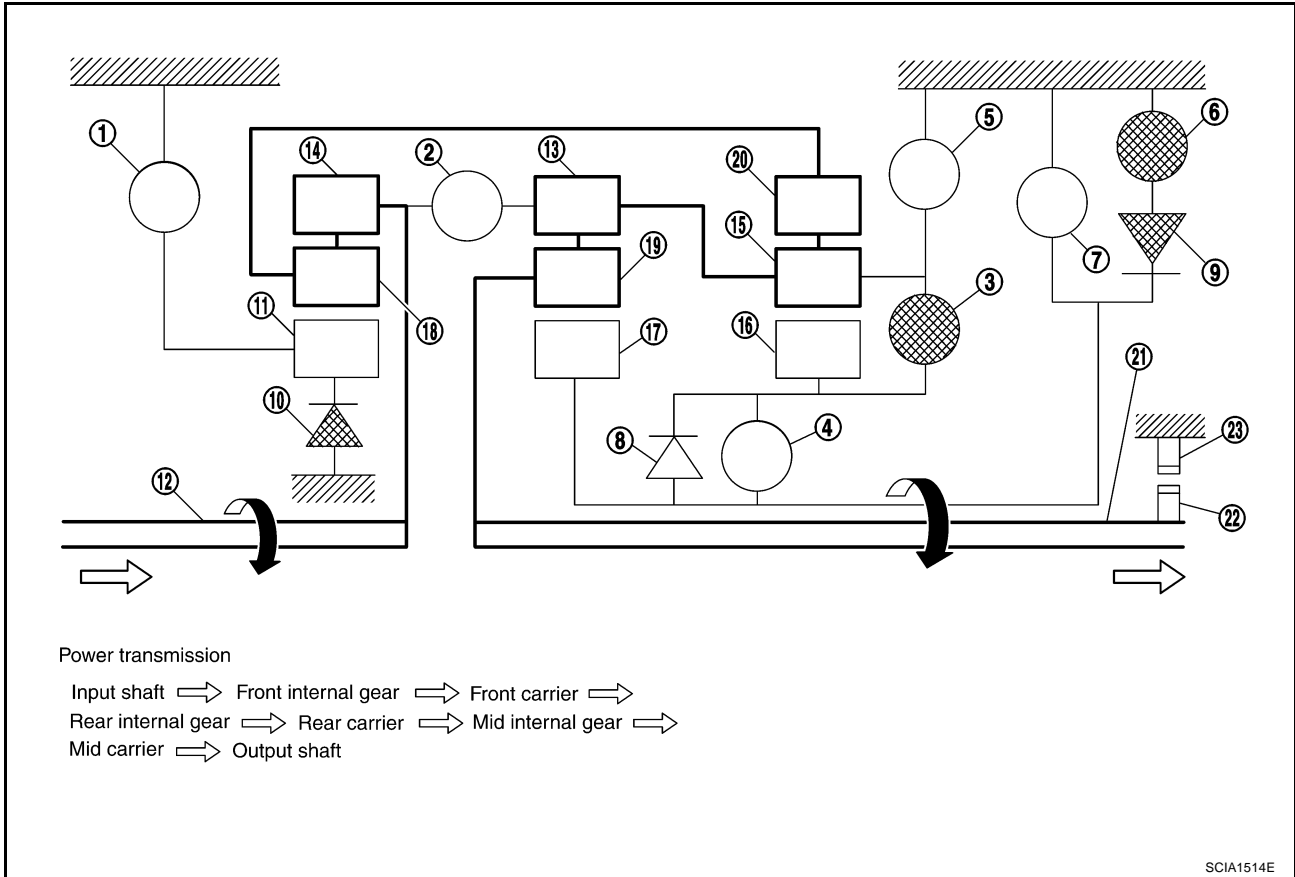


- |                                |                         |                           |
|--------------------------------|-------------------------|---------------------------|
| 1. Front brake                 | 2. Input clutch         | 3. Direct clutch          |
| 4. High and low reverse clutch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

# A/T CONTROL SYSTEM

## “D” and “3” Positions 2nd Gear

- The forward brake and the forward one-way clutch regulate reverse rotation of the mid sun gear.
- The 3rd one-way clutch regulates reverse rotation of the front sun gear.
- The direct clutch is coupled and the rear carrier and rear sun gear are connected.
- During deceleration, the mid sun gear turns forward, so the forward one-way clutch idles and engine brake is not activated.

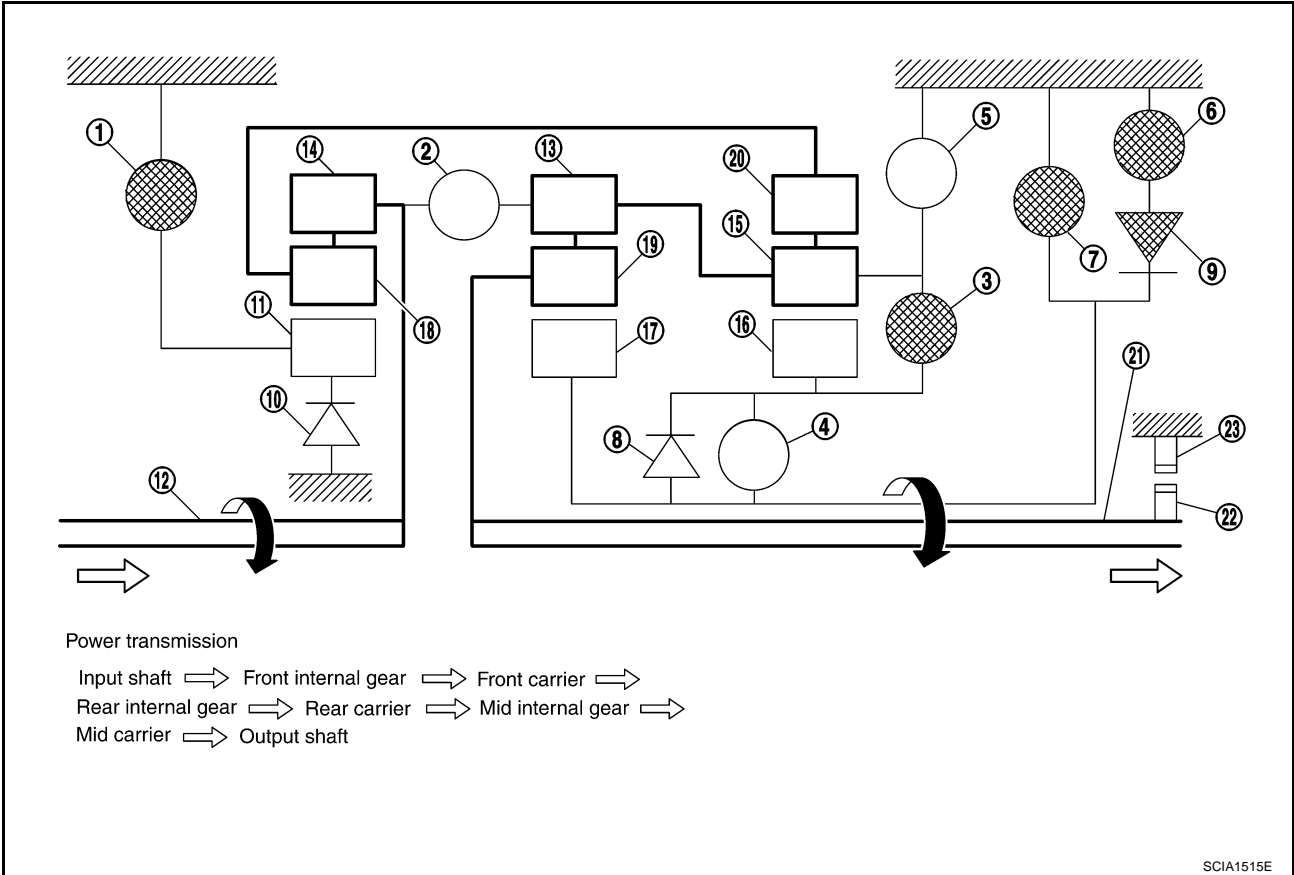


- |                                |                         |                           |
|--------------------------------|-------------------------|---------------------------|
| 1. Front brake                 | 2. Input clutch         | 3. Direct clutch          |
| 4. High and low reverse clutch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

# A/T CONTROL SYSTEM

## “2” and “1” Positions 2nd Gear

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

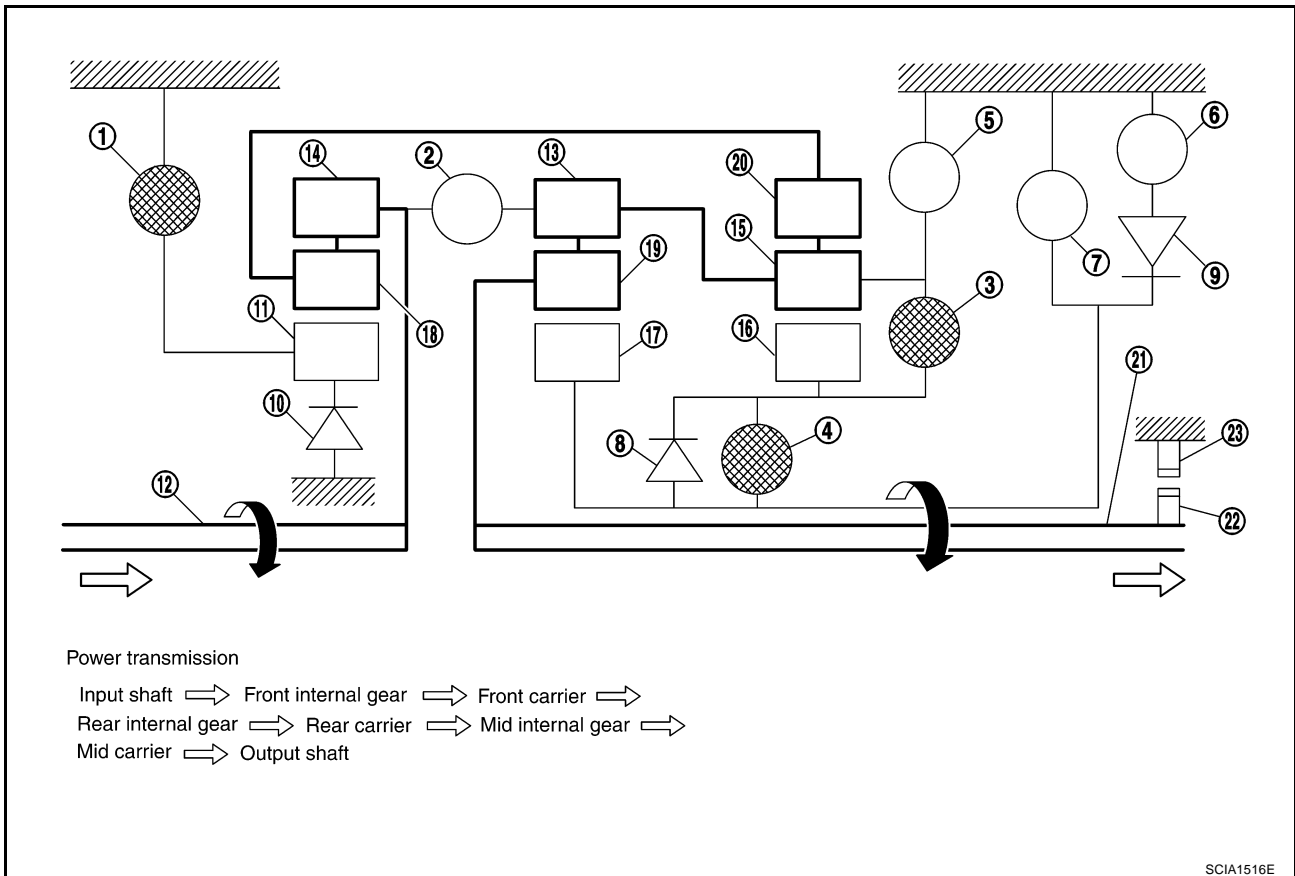


- |                                |                         |                           |
|--------------------------------|-------------------------|---------------------------|
| 1. Front brake                 | 2. Input clutch         | 3. Direct clutch          |
| 4. High and low reverse clutch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

# A/T CONTROL SYSTEM

## “D” and “3” Positions 3rd Gear

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

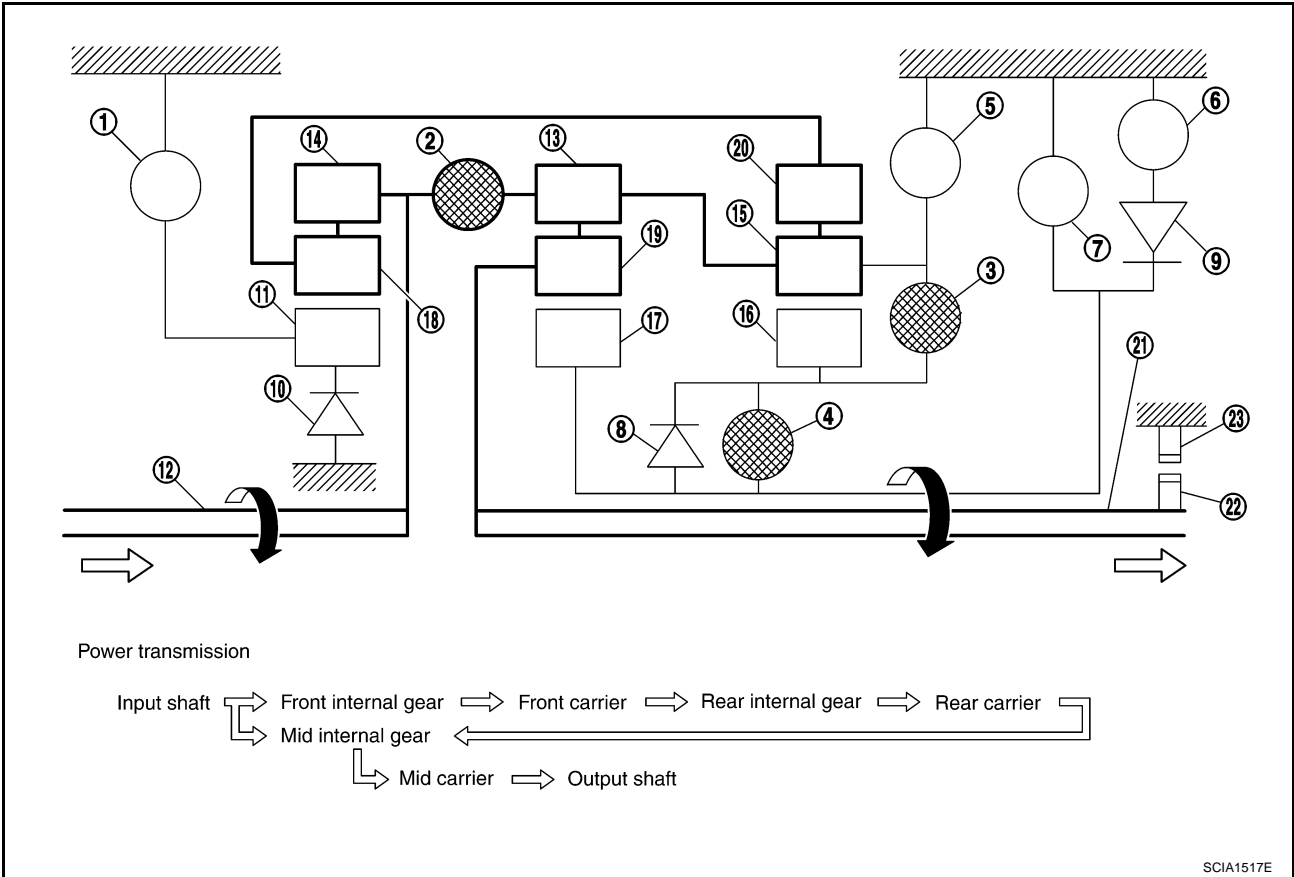


- |                                |                         |                           |
|--------------------------------|-------------------------|---------------------------|
| 1. Front brake                 | 2. Input clutch         | 3. Direct clutch          |
| 4. High and low reverse clutch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

# A/T CONTROL SYSTEM

## “D” Position 4th Gear

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

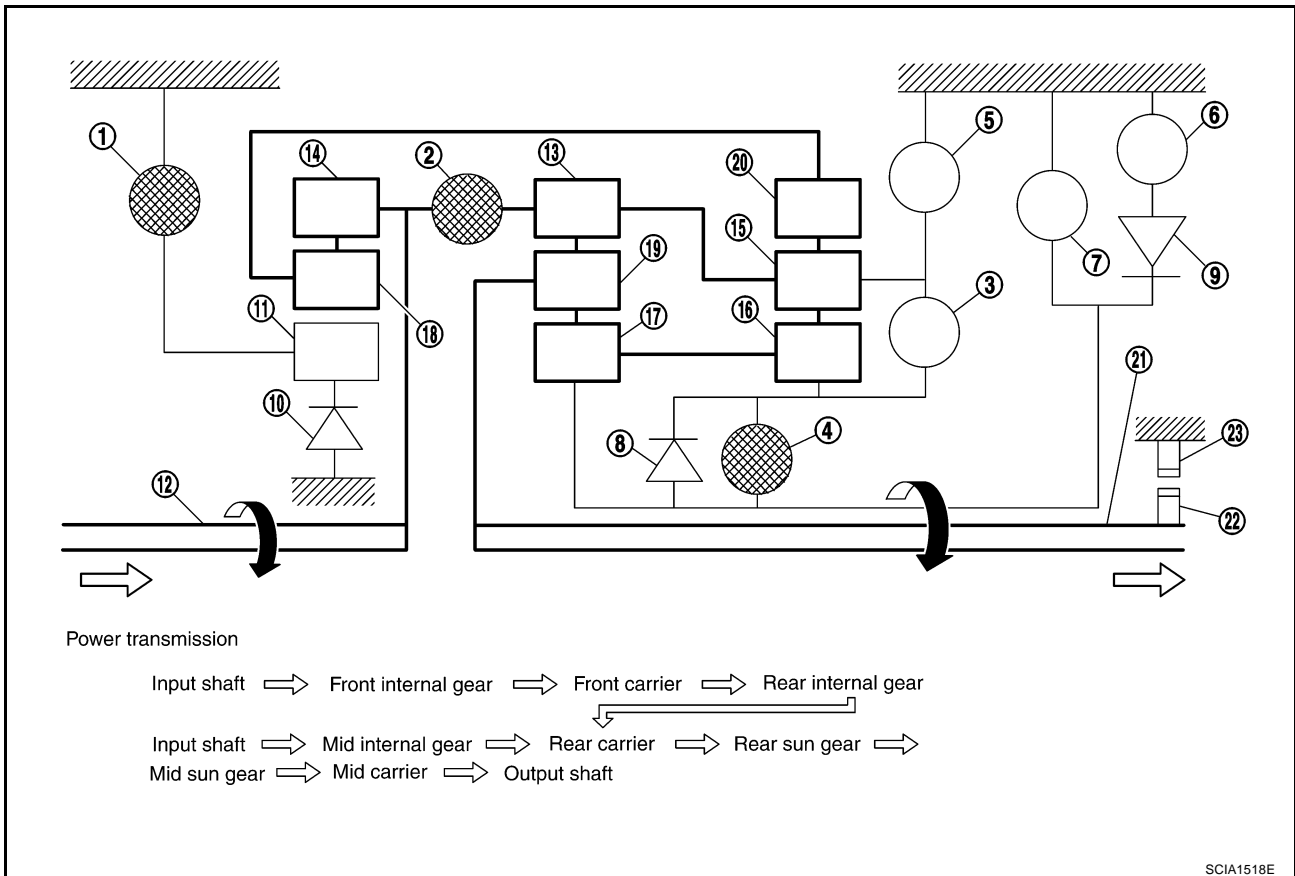


- |                                |                         |                           |
|--------------------------------|-------------------------|---------------------------|
| 1. Front brake                 | 2. Input clutch         | 3. Direct clutch          |
| 4. High and low reverse clutch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

# A/T CONTROL SYSTEM

## “D” Position 5th Gear

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

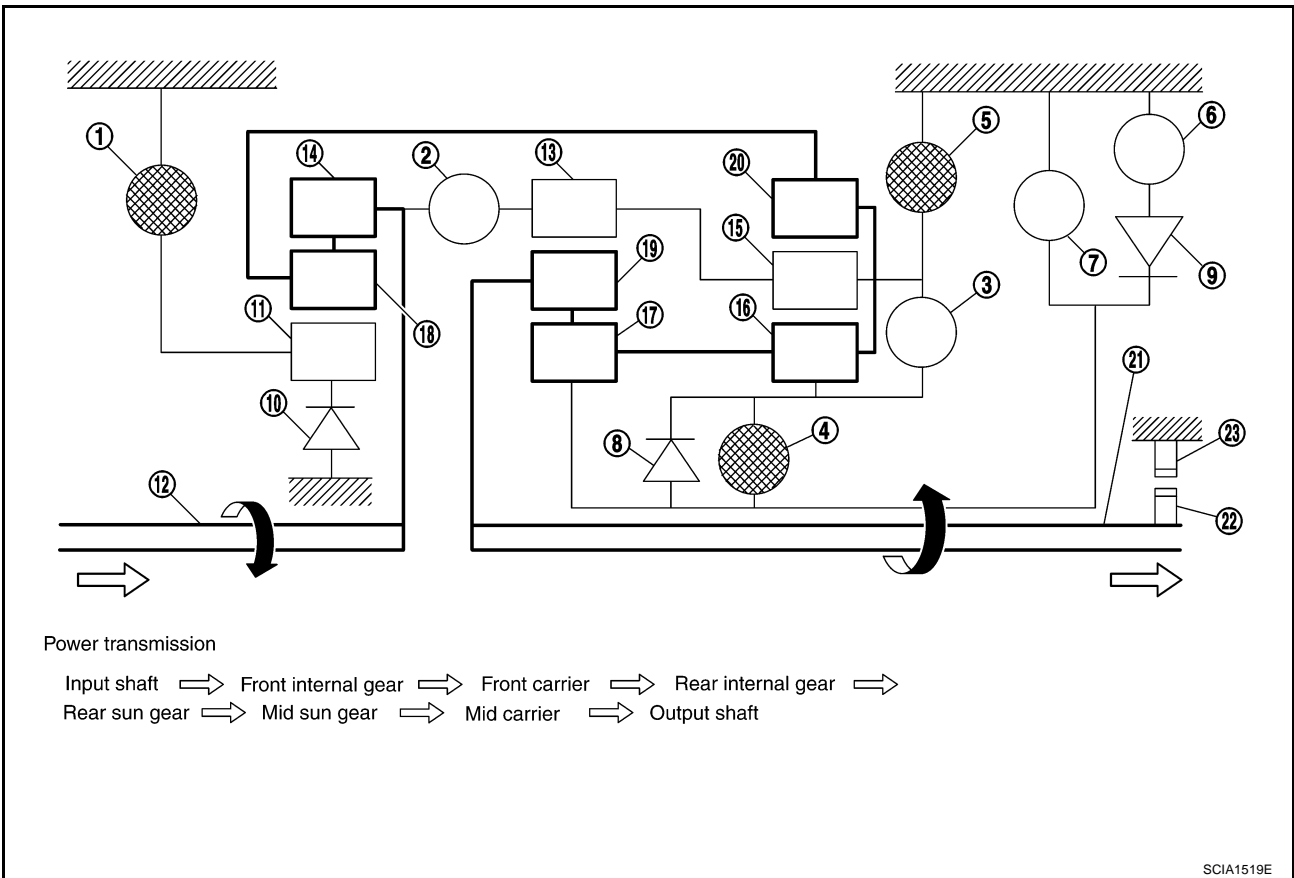


- |                                |                         |                           |
|--------------------------------|-------------------------|---------------------------|
| 1. Front brake                 | 2. Input clutch         | 3. Direct clutch          |
| 4. High and low reverse clutch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

# A/T CONTROL SYSTEM

## “R” position

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



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

# A/T CONTROL SYSTEM

GCS0001G

## TCM Function

The function of the TCM is to:

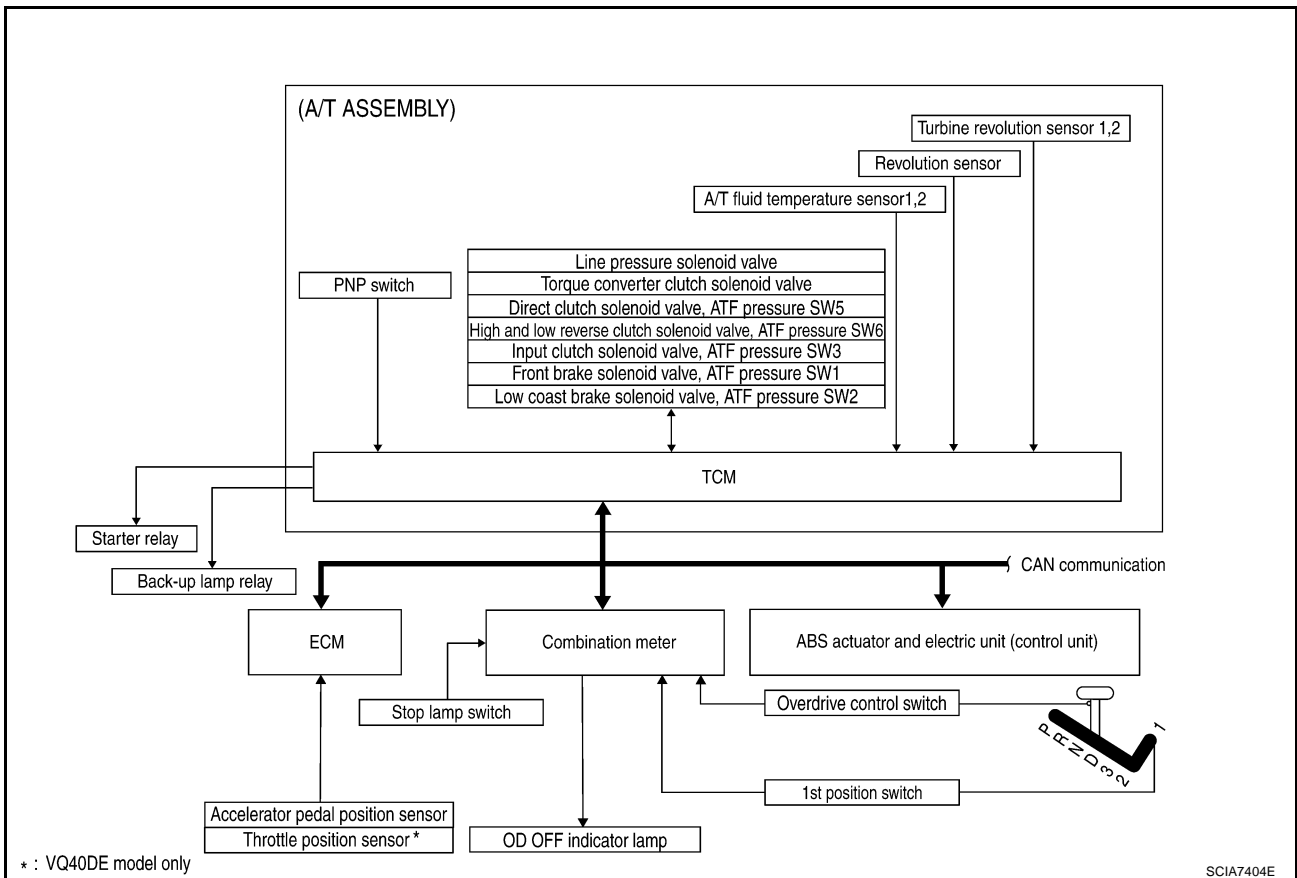
- Receive input signals sent from various switches and sensors.
- Determine required line pressure, shifting point, lock-up operation, and engine brake operation.
- Send required output signals to the respective solenoids.

## CONTROL SYSTEM OUTLINE

The 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
PNP switch Accelerator pedal position signal Closed throttle position signal Wide open throttle position signal Engine speed signal A/T fluid temperature sensor Revolution sensor Vehicle speed signal 1st position switch signal Overdrive control switch signal Stop lamp switch signal Turbine revolution sensor ATF pressure switch	Shift control Line pressure control Lock-up control Engine brake control Timing control Fail-safe control Self-diagnosis CONSULT-II communication line Duet-EA control CAN system	Input clutch solenoid valve Direct clutch solenoid valve Front brake solenoid valve High and low reverse clutch solenoid valve Low coast brake solenoid valve Torque converter clutch solenoid valve Line pressure solenoid valve OD OFF indicator lamp Starter relay Back-up lamp relay

## CONTROL SYSTEM DIAGRAM





# A/T CONTROL SYSTEM

## CAN Communication SYSTEM DESCRIPTION

GCS0001H

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN H line, CAN L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only. For details, refer to [LAN-26, "CAN Communication Unit"](#).

## Input/Output Signal of TCM

GCS0001I

Control item		Line pressure control	Vehicle speed control	Shift control	Lock-up control	Engine brake control	Fail-safe function (*3)	Self-diagnosis function
Input	Accelerator pedal position signal (*5)	X	X	X	X	X	X	X
	Vehicle speed sensor A/T (revolution sensor)	X	X	X	X	X	X	X
	Vehicle speed sensor MTR(*1) (*5)						X	
	Closed throttle position signal(*5)		X (*2)	X	X		X	X (*4)
	Wide open throttle position signal(*5)						X	X (*4)
	Turbine revolution sensor 1		X		X	X	X	X
	Turbine revolution sensor 2 (for 4th speed only)		X		X	X	X	X
	Engine speed signals(*5)	X	X	X	X	X	X	X
	Stop lamp switch signal(*5)		X	X	X			X (*4)
	A/T fluid temperature sensors 1, 2	X	X	X	X		X	X
	ASCD	Operation signal(*5)		X	X	X		
Overdrive cancel signal(*5)			X					
Output	Direct clutch solenoid (ATF pressure switch 5)		X	X			X	X
	Input clutch solenoid (ATF pressure switch 3)		X	X			X	X
	High and low reverse clutch solenoid (ATF pressure switch 6)		X	X			X	X
	Front brake solenoid (ATF pressure switch 1)		X	X			X	X
	Low coast brake solenoid (ATF pressure switch 2)		X	X		X	X	X
	Line pressure solenoid	X	X	X	X	X	X	X
	TCC solenoid				X		X	X
	Self-diagnosis table(*6)							X
	Starter relay						X	X

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

\*2: Spare for accelerator pedal position signal

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

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

\*5: Input by CAN communications.

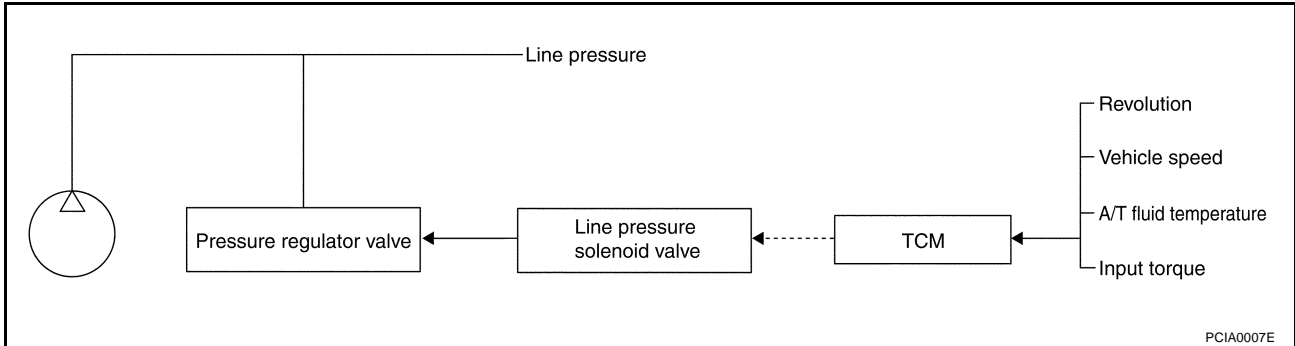
\*6: Output by CAN communications.

# A/T CONTROL SYSTEM

GCS0001J

## Line Pressure Control

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

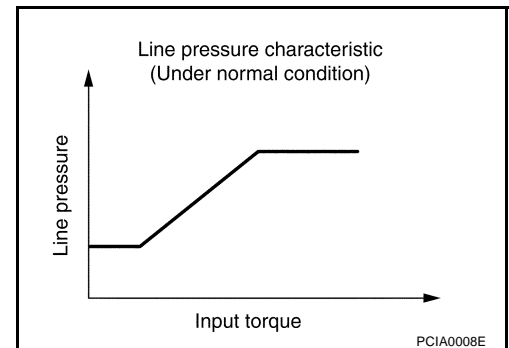


## LINE PRESSURE CONTROL IS BASED ON THE TCM LINE PRESSURE CHARACTERISTIC PATTERN

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

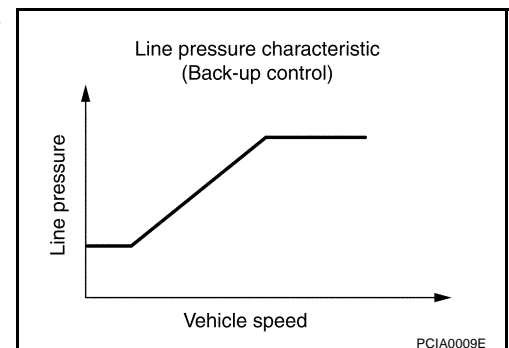
### Normal Control

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



### Back-up Control (Engine Brake)

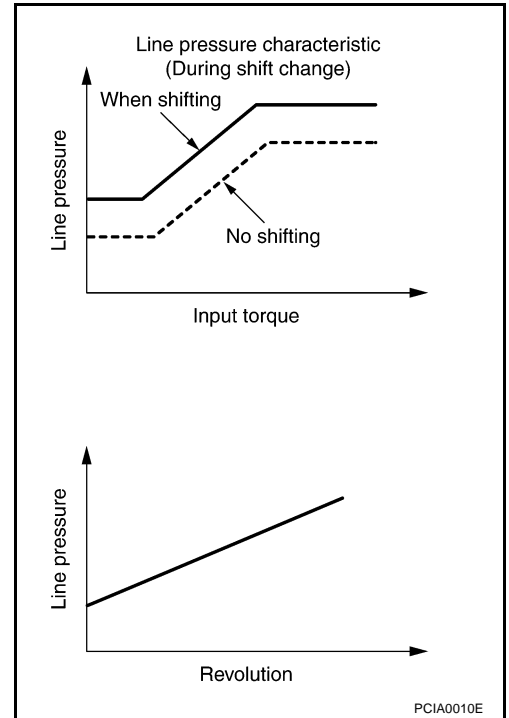
When the select operation is performed during driving and the A/T is shifted down, the line pressure is set according to the vehicle speed.



# A/T CONTROL SYSTEM

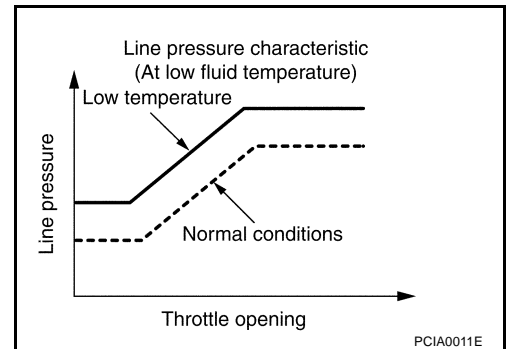
## During Shift Change

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



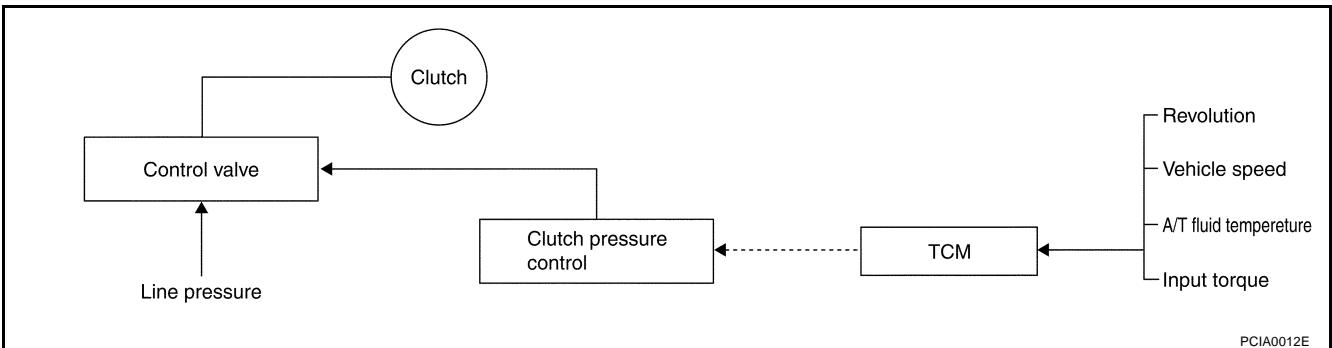
## At Low Fluid Temperature

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



## Shift Control

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.

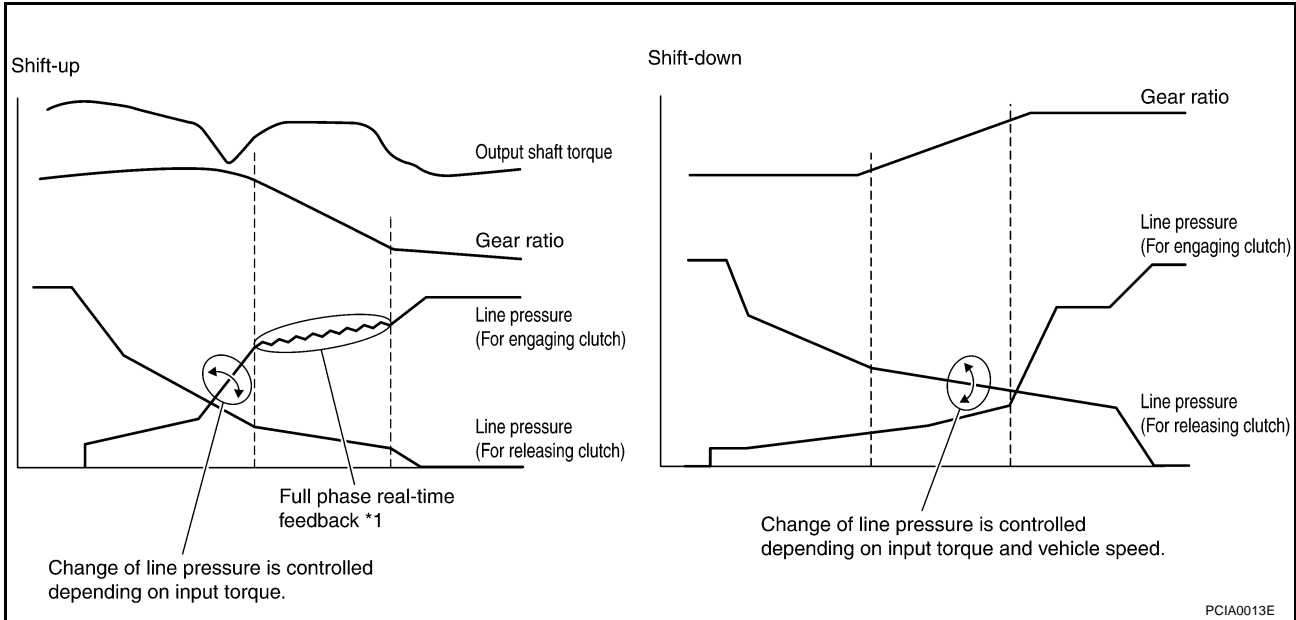


# A/T CONTROL SYSTEM

## SHIFT CHANGE

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

### Shift Change System Diagram



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

## Lock-up Control

GCS0001L

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

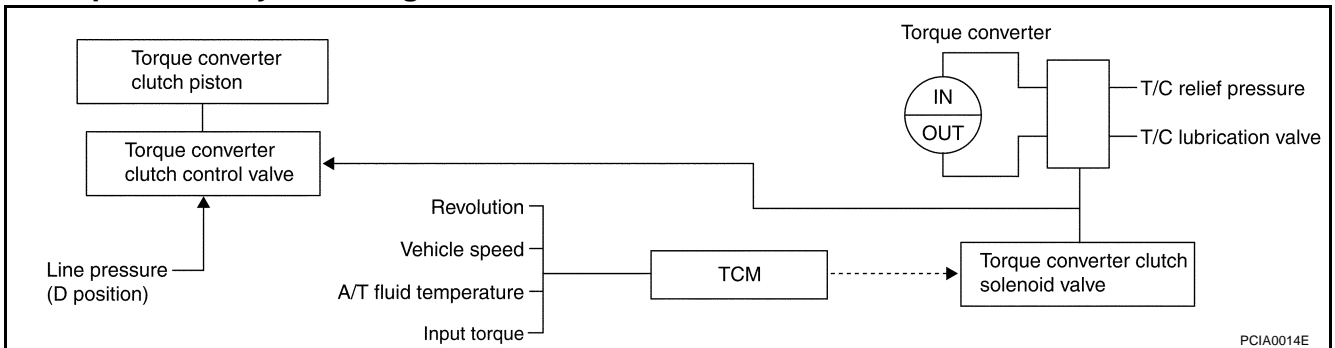
The torque converter clutch control valve operation is controlled by the torque converter clutch solenoid valve, which is controlled by a signal from TCM, and the torque converter clutch control valve engages or releases the torque converter clutch piston.

### Lock-up Operation Condition Table

selector lever	"D" position		"3" position	"2" position
Gear position	5	4	3	2
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

## Lock-up Applied

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

## SMOOTH LOCK-UP CONTROL

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

## Half-clutched State

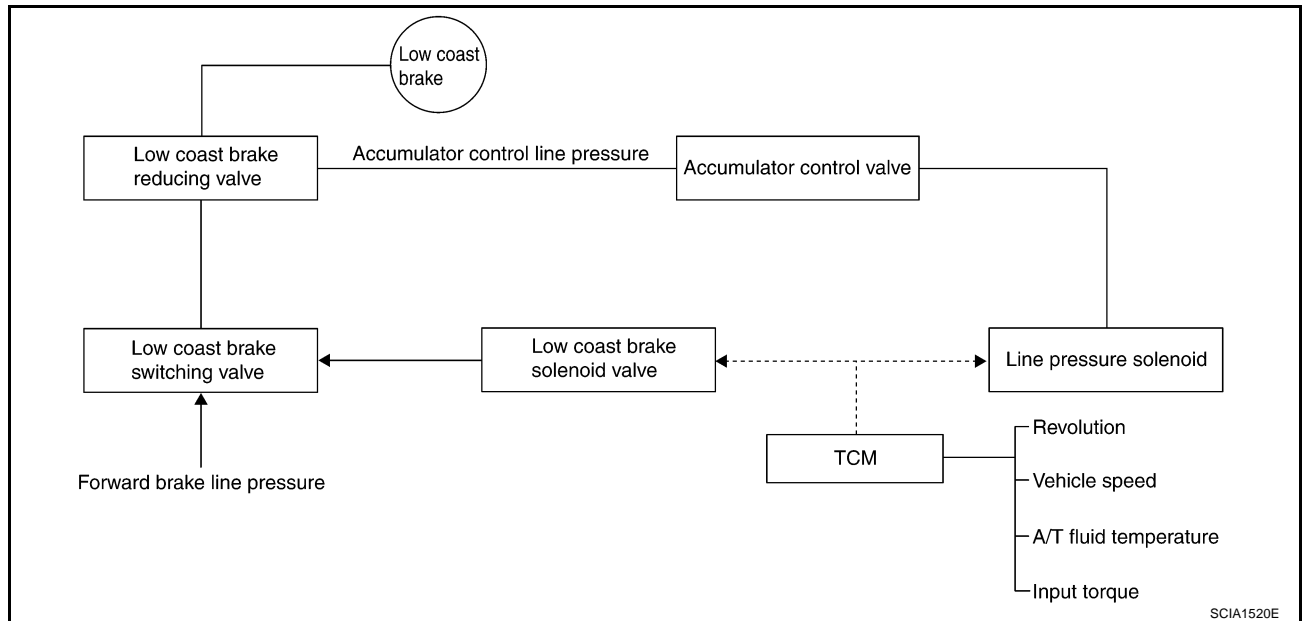
The current output from the TCM to the torque converter clutch solenoid is varied to gradually increase the torque converter clutch solenoid pressure.

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

## Engine Brake Control

GCS0001M

- 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.

# A/T CONTROL SYSTEM

## Control Valve FUNCTION OF CONTROL VALVE

GC5001N

Name	Function
Torque converter regulator valve	In order to prevent the pressure supplied to the torque converter from being excessive, the line pressure is adjusted to the optimum pressure (torque converter operating pressure).
Pressure regulator valve Pressure regulator plug Pressure regulator sleeve	Adjusts the oil discharged from the oil pump to the optimum pressure (line pressure) for the driving state.
Front brake control valve	When the front brake is coupled, adjusts the line pressure to the optimum pressure (front brake pressure) and supplies it to the front brake. (In 1st, 2nd, 3rd, and 5th gears, adjusts the clutch pressure.)
Accumulator control valve	Adjusts the pressure (accumulator control pressure) acting on the accumulator piston and low coast reducing valve to the pressure appropriate to the driving state.
Pilot valve A	Adjusts the line pressure and produces the constant pressure (pilot pressure) required for line pressure control, shift change control, and lock-up control.
Pilot valve B	Adjusts the line pressure and produces the constant pressure (pilot pressure) required for shift change control.
Low coast brake switching valve	During engine braking, supplies the line pressure to the low coast brake reducing valve.
Low coast brake reducing valve	When the low coast brake is coupled, adjusts the line pressure to the optimum pressure (low coast brake pressure) and supplies it to the low coast brake.
N-R accumulator	Produces the stabilizing pressure for when N-R is selected.
Direct clutch piston switching valve	Operates in 4th gear and switches the direct clutch coupling capacity.
High and low reverse clutch control valve	When the high and low reverse clutch is coupled, adjusts the line pressure to the optimum pressure (high and low reverse clutch pressure) and supplies it to the high and low reverse clutch. (In 1st, 3rd, 4th and 5th gears, adjusts the clutch pressure.)
Input clutch control valve	When the input clutch is coupled, adjusts the line pressure to the optimum pressure (input clutch pressure) and supplies it to the input clutch. (In 4th and 5th gears, adjusts the clutch pressure.)
Direct clutch control valve	When the direct clutch is coupled, adjusts the line pressure to the optimum pressure (direct clutch pressure) and supplies it to the direct clutch. (In 2nd, 3rd, and 4th gears, adjusts the clutch pressure.)
TCC control valve TCC control plug TCC control sleeve	Switches the lock-up to operating or released. Also, by performing the lock-up operation transiently, lock-up smoothly.
Torque converter lubrication valve	Operates during lock-up to switch the torque converter, cooling, and lubrication system oil path.
Cool bypass valve	Allows excess oil to bypass cooler circuit without being fed into it.
Line pressure relief valve	Discharges excess oil from line pressure circuit.
N-D accumulator	Produces the stabilizing pressure for when N-D is selected.
Manual valve	Sends line pressure to each circuit according to the select position. The circuits to which the line pressure is not sent drain.

## FUNCTION OF PRESSURE SWITCH

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

# TROUBLE DIAGNOSIS

## TROUBLE DIAGNOSIS

PFP:00004

### DTC Inspection Priority Chart

GCS00010

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

#### NOTE:

If DTC “U1000 CAN COMM CIRCUIT” is displayed with other DTCs, first perform the trouble diagnosis for “DTC U1000 CAN COMMUNICATION LINE”. Refer to [AT-96](#).

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

### Fail-safe

GCS0001P

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 A/T is fixed in 2nd, 4th or 5th (depending on the breakdown position), so the customer should feel “slipping” or “poor acceleration”.

Even when the electronic circuits are normal, under special conditions (for example, when slamming on the brake with the wheels spinning drastically and stopping the tire rotation), the transmission can go into fail-safe mode. If this happens, switch OFF the ignition switch for 10 seconds, then switch it ON again to return to the normal shift pattern. Therefore, the customer's vehicle has returned to normal, so handle according to [AT-38](#).  
“[WORK FLOW](#)”.

### FAIL-SAFE FUNCTION

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

### Vehicle Speed Sensor

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

### Accelerator Pedal Position Sensor

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

### Throttle Position Sensor (VQ40DE Model Only)

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

### PNP Switch

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

### Starter Relay

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

# TROUBLE DIAGNOSIS

## A/T Interlock

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

### NOTE:

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

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

### A/T INTERLOCK COUPLING PATTERN TABLE

●: NG X: OK

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

## A/T 1st Engine Braking

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

## Line Pressure Solenoid

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

## Torque Converter Clutch Solenoid

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

## Low Coast Brake Solenoid

When a malfunction (electrical or functional) occurs, in order to make driving possible. If the solenoid is ON, the A/T is held in 2nd gear. If the solenoid is OFF, the A/T is held in 4th gear. (Engine brake is not applied in 1st and 2nd gear.)

## Input Clutch Solenoid

If a malfunction (electrical or functional) occurs with the solenoid either ON or OFF, the A/T is held in 4th gear 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 4th gear 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 5th gear. If the solenoid is OFF, the A/T 4th gear.

## High and Low Reverse Clutch Solenoid

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

## Turbine Revolution Sensor 1 or 2

The control is the same as if there were no turbine revolution sensors, 5th gear is prohibited.

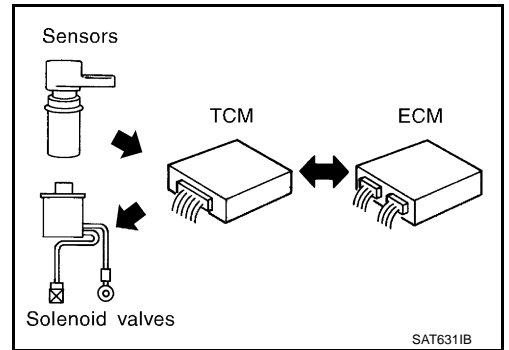


# TROUBLE DIAGNOSIS

## How to Perform Trouble Diagnosis for Quick and Accurate Repair INTRODUCTION

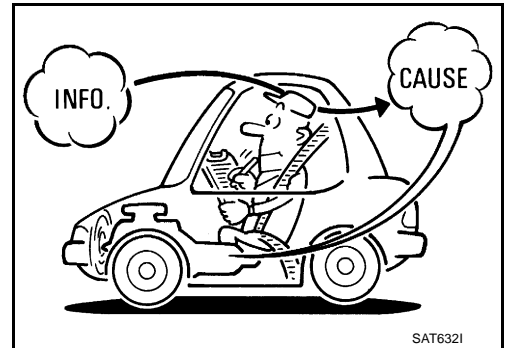
GC50001Q

The TCM receives a signal from the vehicle speed sensor, accelerator pedal position sensor (throttle position sensor) or PNP switch and provides shift control or lock-up control via A/T solenoid valves. 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 a error that occurs intermittently rather than continuously. Most intermittent errors are caused by poor electric connections or improper wiring. In this case, careful checking of suspected circuits may help prevent the replacement of good parts.

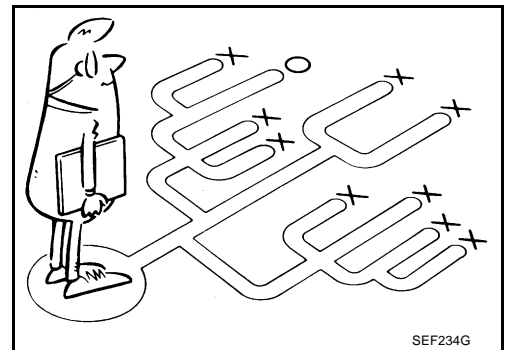
A visual check only may not find the cause of the errors. A road test with CONSULT-II or a circuit tester connected should be performed. Follow the [AT-38, "WORK FLOW"](#) .



Before undertaking actual checks, take a few minutes to talk with a customer who approaches with a driveability complaint. The customer can supply good information about such errors, especially intermittent ones. Find out what symptoms are present and under what conditions they occur. A "DIAGNOSTIC WORKSHEET" as shown on the example (Refer to [AT-39](#) ) should be used.

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

Also check related Service bulletins.



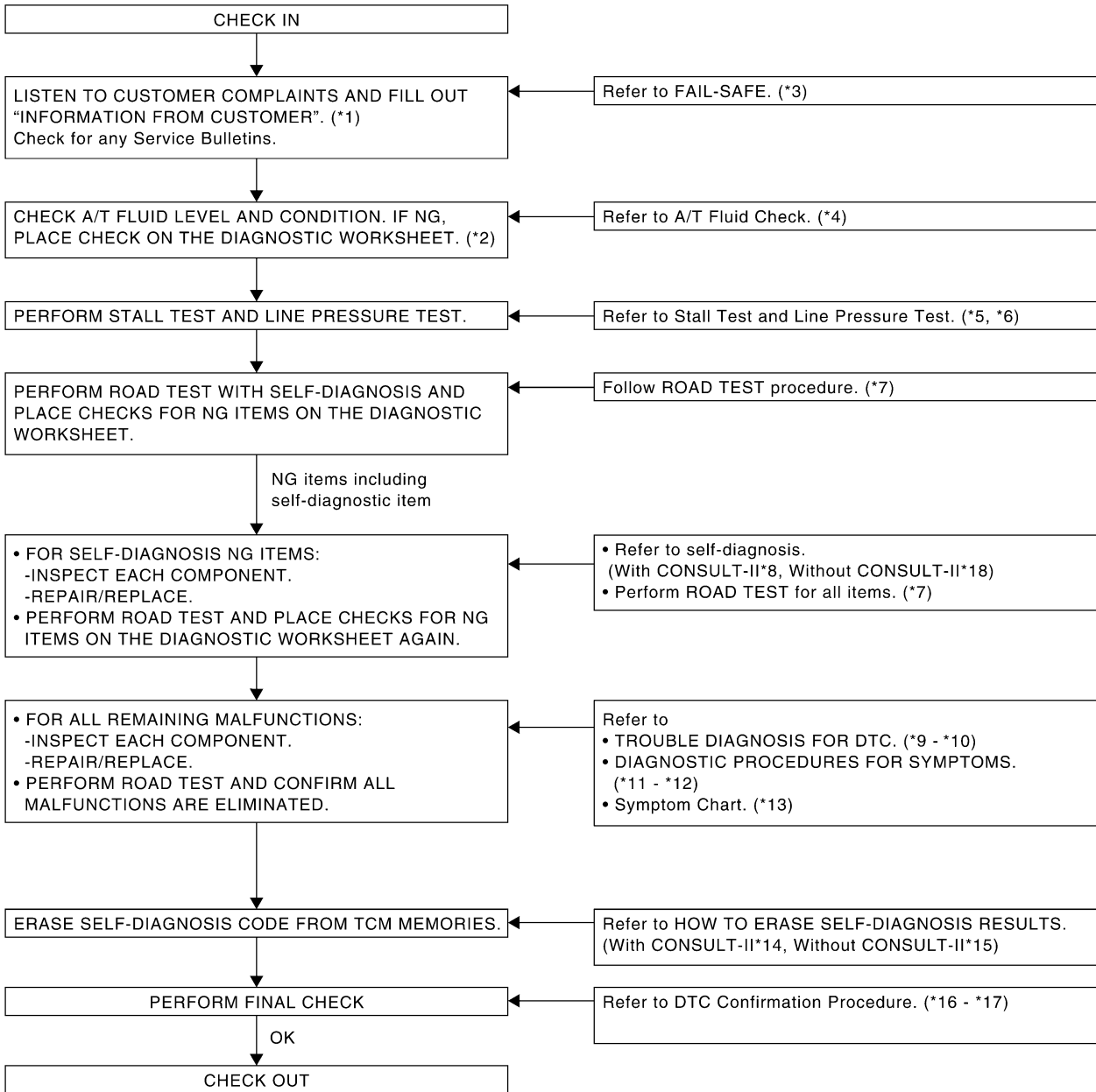
# TROUBLE DIAGNOSIS

## WORK FLOW

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

Make good use of the two sheets provided, [AT-39, "Information from Customer"](#) and [AT-39, "Diagnostic Worksheet Chart"](#), to perform the best troubleshooting possible.

## Work Flow Chart



\*1. [AT-39](#)

\*4. [AT-44](#)

\*7. [AT-47](#)

\*10. [AT-168](#)

\*13. [AT-56](#)

\*16. [AT-96](#)

\*2. [AT-39](#)

\*5. [AT-44](#)

\*8. [AT-85](#)

\*11. [AT-180](#)

\*14. [AT-87](#)

\*17. [AT-168](#)

\*3. [AT-35](#)

\*6. [AT-45](#)

\*9. [AT-96](#)

\*12. [AT-212](#)

\*15. [AT-95](#)

\*18. [AT-94](#)



# TROUBLE DIAGNOSIS

		<input type="checkbox"/> Perform all road tests and enter checks in required inspection items.	<a href="#">AT-47</a>
4	4-1	Check Before Engine Is Started	<a href="#">AT-48</a>
		<input type="checkbox"/> <a href="#">AT-183, "OD OFF Indicator Lamp Does Not Come On"</a> <input type="checkbox"/> Perform self-diagnosis. Enter checks for detected items. <a href="#">AT-85</a> , <a href="#">AT-94</a>	
		<input type="checkbox"/> <a href="#">AT-96, "DTC U1000 CAN COMMUNICATION LINE"</a> <input type="checkbox"/> <a href="#">AT-99, "DTC P0615 START SIGNAL CIRCUIT"</a> <input type="checkbox"/> <a href="#">AT-103, "DTC P0700 TCM"</a> <input type="checkbox"/> <a href="#">AT-104, "DTC P0705 PARK/NEUTRAL POSITION SWITCH"</a> <input type="checkbox"/> <a href="#">AT-108, "DTC P0720 VEHICLE SPEED SENSOR A/T (REVOLUTION SENSOR)"</a> <input type="checkbox"/> <a href="#">AT-113, "DTC P0725 ENGINE SPEED SIGNAL"</a> <input type="checkbox"/> <a href="#">AT-115, "DTC P0740 TORQUE CONVERTER CLUTCH SOLENOID VALVE"</a> <input type="checkbox"/> <a href="#">AT-117, "DTC P0744 A/T TCC S/V FUNCTION (LOCK-UP)"</a> <input type="checkbox"/> <a href="#">AT-119, "DTC P0745 LINE PRESSURE SOLENOID VALVE"</a> <input type="checkbox"/> <a href="#">AT-121, "DTC P1705 THROTTLE POSITION SENSOR"</a> <input type="checkbox"/> <a href="#">AT-124, "DTC P1710 A/T FLUID TEMPERATURE SENSOR CIRCUIT"</a> <input type="checkbox"/> <a href="#">AT-129, "DTC P1716 TURBINE REVOLUTION SENSOR"</a> <input type="checkbox"/> <a href="#">AT-131, "DTC P1721 VEHICLE SPEED SENSOR MTR"</a> <input type="checkbox"/> <a href="#">AT-133, "DTC P1730 A/T INTERLOCK"</a> <input type="checkbox"/> <a href="#">AT-136, "DTC P1731 A/T 1ST ENGINE BRAKING"</a> <input type="checkbox"/> <a href="#">AT-138, "DTC P1752 INPUT CLUTCH SOLENOID VALVE"</a> <input type="checkbox"/> <a href="#">AT-140, "DTC P1754 INPUT CLUTCH SOLENOID VALVE FUNCTION"</a> <input type="checkbox"/> <a href="#">AT-143, "DTC P1757 FRONT BRAKE SOLENOID VALVE"</a> <input type="checkbox"/> <a href="#">AT-145, "DTC P1759 FRONT BRAKE SOLENOID VALVE FUNCTION"</a> <input type="checkbox"/> <a href="#">AT-148, "DTC P1762 DIRECT CLUTCH SOLENOID VALVE"</a> <input type="checkbox"/> <a href="#">AT-150, "DTC P1764 DIRECT CLUTCH SOLENOID VALVE FUNCTION"</a> <input type="checkbox"/> <a href="#">AT-153, "DTC P1767 HIGH AND LOW REVERSE CLUTCH SOLENOID VALVE"</a> <input type="checkbox"/> <a href="#">AT-155, "DTC P1769 HIGH AND LOW REVERSE CLUTCH SOLENOID VALVE FUNCTION"</a> <input type="checkbox"/> <a href="#">AT-158, "DTC P1772 LOW COAST BRAKE SOLENOID VALVE"</a> <input type="checkbox"/> <a href="#">AT-160, "DTC P1774 LOW COAST BRAKE SOLENOID VALVE FUNCTION"</a> <input type="checkbox"/> <a href="#">AT-162, "DTC P1841 ATF PRESSURE SWITCH 1"</a> <input type="checkbox"/> <a href="#">AT-164, "DTC P1843 ATF PRESSURE SWITCH 3"</a> <input type="checkbox"/> <a href="#">AT-166, "DTC P1845 ATF PRESSURE SWITCH 5"</a> <input type="checkbox"/> <a href="#">AT-168, "DTC P1846 ATF PRESSURE SWITCH 6"</a>	
4-2	Check at Idle	<a href="#">AT-48</a>	
		<input type="checkbox"/> <a href="#">AT-183, "Engine Cannot Be Started in "P" or "N" Position"</a> <input type="checkbox"/> <a href="#">AT-184, "In "P" Position, Vehicle Moves When Pushed"</a> <input type="checkbox"/> <a href="#">AT-185, "In "N" Position, Vehicle Moves"</a> <input type="checkbox"/> <a href="#">AT-186, "Large Shock ("N" to "D" Position)"</a> <input type="checkbox"/> <a href="#">AT-188, "Vehicle Does Not Creep Backward in "R" Position"</a> <input type="checkbox"/> <a href="#">AT-190, "Vehicle Does Not Creep Forward in "D" Position"</a>	
4-3	Cruise Test	<a href="#">AT-49</a>	
	Part 1		
		<input type="checkbox"/> <a href="#">AT-192, "Vehicle Cannot Be Started from D1"</a> <input type="checkbox"/> <a href="#">AT-194, "A/T Does Not Shift: D1 → D2"</a> <input type="checkbox"/> <a href="#">AT-196, "A/T Does Not Shift: D2 → D3"</a> <input type="checkbox"/> <a href="#">AT-198, "A/T Does Not Shift: D3 → D4"</a> <input type="checkbox"/> <a href="#">AT-200, "A/T Does Not Shift: D4 → D5"</a> <input type="checkbox"/> <a href="#">AT-202, "A/T Does Not Perform Lock-up"</a> <input type="checkbox"/> <a href="#">AT-203, "A/T Does Not Hold Lock-up Condition"</a> <input type="checkbox"/> <a href="#">AT-205, "Lock-up Is Not Released"</a> <input type="checkbox"/> <a href="#">AT-205, "Engine Speed Does Not Return to Idle"</a>	

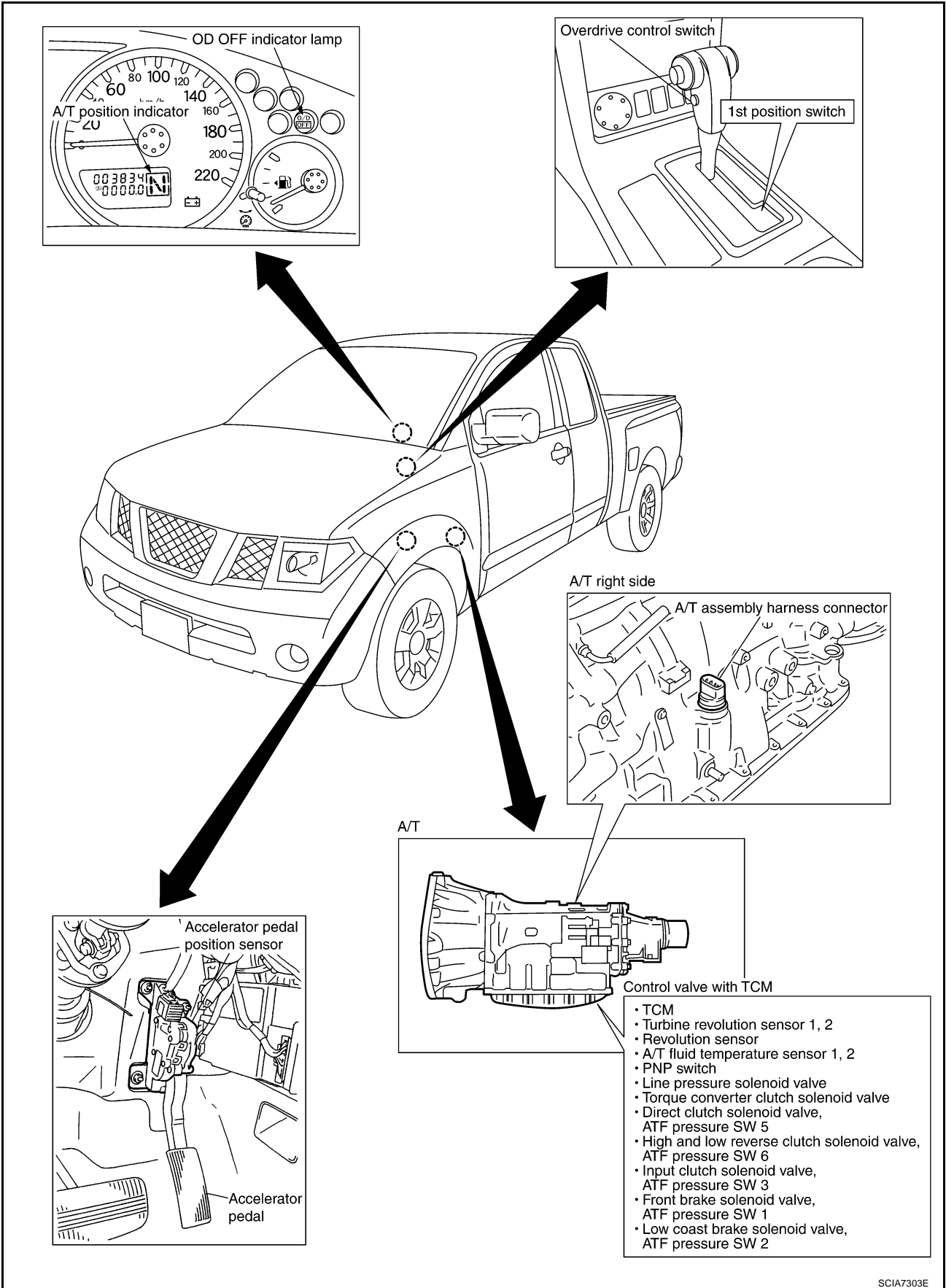
# TROUBLE DIAGNOSIS

4	4-3	Part 2 <input type="checkbox"/> <a href="#">AT-192, "Vehicle Cannot Be Started from D1"</a> <input type="checkbox"/> <a href="#">AT-194, "A/T Does Not Shift: D1 → D2"</a> <input type="checkbox"/> <a href="#">AT-196, "A/T Does Not Shift: D2 → D3"</a> <input type="checkbox"/> <a href="#">AT-198, "A/T Does Not Shift: D3 → D4"</a>	<a href="#">AT-51</a>	A
		Part 3 <input type="checkbox"/> <a href="#">AT-206, "A/T Does Not Shift: 5th Gear → 4th Gear"</a> <input type="checkbox"/> <a href="#">AT-208, "A/T Does Not Shift: 4th Gear → 3rd Gear"</a> <input type="checkbox"/> <a href="#">AT-209, "A/T Does Not Shift: 3rd Gear → 2nd Gear"</a> <input type="checkbox"/> <a href="#">AT-210, "A/T Does Not Shift: 2nd Gear → 1st Gear"</a> <input type="checkbox"/> <a href="#">AT-212, "Vehicle Does Not Decelerate by Engine Brake"</a> <input type="checkbox"/> Perform self-diagnosis. Enter checks for detected items. <a href="#">AT-85</a> , <a href="#">AT-94</a>	<a href="#">AT-52</a>	B
		<input type="checkbox"/> <a href="#">AT-96, "DTC U1000 CAN COMMUNICATION LINE"</a> <input type="checkbox"/> <a href="#">AT-99, "DTC P0615 START SIGNAL CIRCUIT"</a> <input type="checkbox"/> <a href="#">AT-103, "DTC P0700 TCM"</a> <input type="checkbox"/> <a href="#">AT-104, "DTC P0705 PARK/NEUTRAL POSITION SWITCH"</a> <input type="checkbox"/> <a href="#">AT-108, "DTC P0720 VEHICLE SPEED SENSOR A/T (REVOLUTION SENSOR)"</a> <input type="checkbox"/> <a href="#">AT-113, "DTC P0725 ENGINE SPEED SIGNAL"</a> <input type="checkbox"/> <a href="#">AT-115, "DTC P0740 TORQUE CONVERTER CLUTCH SOLENOID VALVE"</a> <input type="checkbox"/> <a href="#">AT-117, "DTC P0744 A/T TCC S/V FUNCTION (LOCK-UP)"</a> <input type="checkbox"/> <a href="#">AT-119, "DTC P0745 LINE PRESSURE SOLENOID VALVE"</a> <input type="checkbox"/> <a href="#">AT-121, "DTC P1705 THROTTLE POSITION SENSOR"</a> <input type="checkbox"/> <a href="#">AT-124, "DTC P1710 A/T FLUID TEMPERATURE SENSOR CIRCUIT"</a> <input type="checkbox"/> <a href="#">AT-129, "DTC P1716 TURBINE REVOLUTION SENSOR"</a> <input type="checkbox"/> <a href="#">AT-131, "DTC P1721 VEHICLE SPEED SENSOR MTR"</a> <input type="checkbox"/> <a href="#">AT-133, "DTC P1730 A/T INTERLOCK"</a> <input type="checkbox"/> <a href="#">AT-136, "DTC P1731 A/T 1ST ENGINE BRAKING"</a> <input type="checkbox"/> <a href="#">AT-138, "DTC P1752 INPUT CLUTCH SOLENOID VALVE"</a> <input type="checkbox"/> <a href="#">AT-140, "DTC P1754 INPUT CLUTCH SOLENOID VALVE FUNCTION"</a> <input type="checkbox"/> <a href="#">AT-143, "DTC P1757 FRONT BRAKE SOLENOID VALVE"</a> <input type="checkbox"/> <a href="#">AT-145, "DTC P1759 FRONT BRAKE SOLENOID VALVE FUNCTION"</a> <input type="checkbox"/> <a href="#">AT-148, "DTC P1762 DIRECT CLUTCH SOLENOID VALVE"</a> <input type="checkbox"/> <a href="#">AT-150, "DTC P1764 DIRECT CLUTCH SOLENOID VALVE FUNCTION"</a> <input type="checkbox"/> <a href="#">AT-153, "DTC P1767 HIGH AND LOW REVERSE CLUTCH SOLENOID VALVE"</a> <input type="checkbox"/> <a href="#">AT-155, "DTC P1769 HIGH AND LOW REVERSE CLUTCH SOLENOID VALVE FUNCTION"</a> <input type="checkbox"/> <a href="#">AT-158, "DTC P1772 LOW COAST BRAKE SOLENOID VALVE"</a> <input type="checkbox"/> <a href="#">AT-160, "DTC P1774 LOW COAST BRAKE SOLENOID VALVE FUNCTION"</a> <input type="checkbox"/> <a href="#">AT-162, "DTC P1841 ATF PRESSURE SWITCH 1"</a> <input type="checkbox"/> <a href="#">AT-164, "DTC P1843 ATF PRESSURE SWITCH 3"</a> <input type="checkbox"/> <a href="#">AT-166, "DTC P1845 ATF PRESSURE SWITCH 5"</a> <input type="checkbox"/> <a href="#">AT-168, "DTC P1846 ATF PRESSURE SWITCH 6"</a>		AT
5	<input type="checkbox"/> Inspect each system for items found to be NG in the self-diagnosis and repair or replace the malfunctioning parts.			E
6	<input type="checkbox"/> Perform all road tests and enter the checks again for the required items.		<a href="#">AT-47</a>	F
7	<input type="checkbox"/> For any remaining NG items, perform the "Diagnosis Procedure" and repair or replace the malfunctioning parts. See the chart for diagnosis by symptoms. (This chart also contains other symptoms and inspection procedures.)		<a href="#">AT-56</a>	G
8	<input type="checkbox"/> Erase the results of the self-diagnostics from TCM.		<a href="#">AT-87</a> <a href="#">AT-95</a>	H

# TROUBLE DIAGNOSIS

## A/T Electrical Parts Location

GC50001R



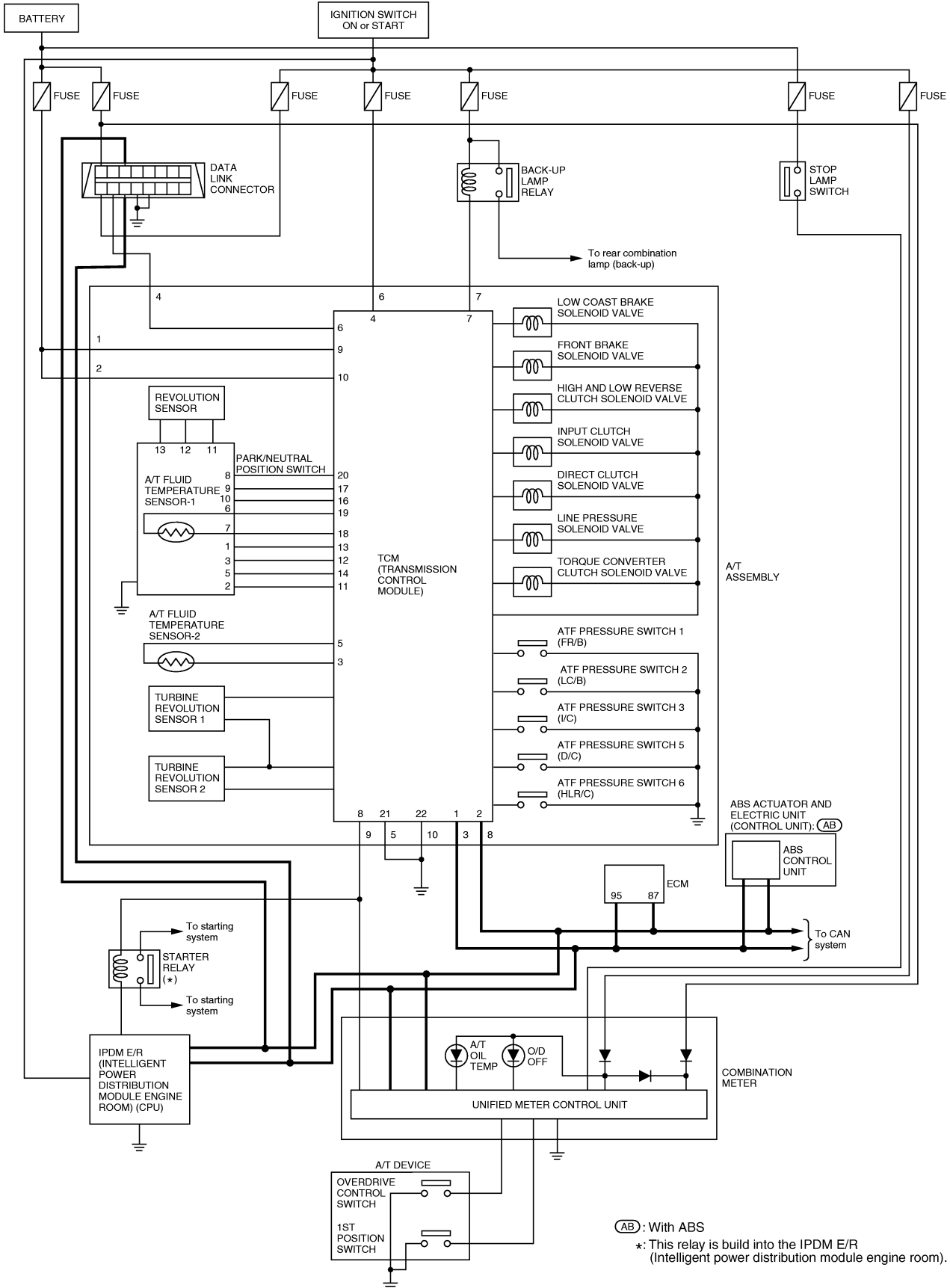
SCIA7303E

# TROUBLE DIAGNOSIS

## Circuit Diagram

GCS0001S

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



(AB) : With ABS  
 \*: This relay is build into the IPDM E/R (Intelligent power distribution module engine room).

MCWA0237E

# TROUBLE DIAGNOSIS

GCS0001T

## Inspections Before Trouble Diagnosis

### A/T FLUID CHECK

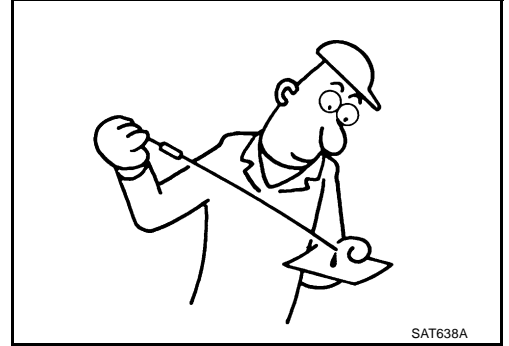
#### A/T Fluid Leakage and A/T Fluid Level Check

Inspect for A/T fluid leakage and check the A/T fluid level. Refer to [AT-11, "Checking A/T Fluid"](#).

#### A/T Fluid Condition Check

Inspect the A/T fluid condition.

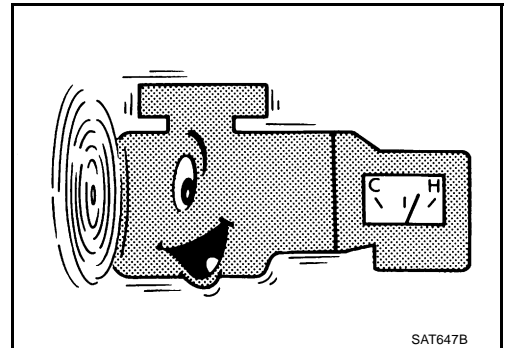
Fluid condition	Conceivable Cause	Required Operation
Varnished (viscous varnish state)	Clutch, brake scorched	Replace the ATF and check the A/T main unit and the vehicle for mal-functions (wire harnesses, cooler pipes, etc.)
Milky white or cloudy	Water in the fluid	Replace the ATF and check for places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



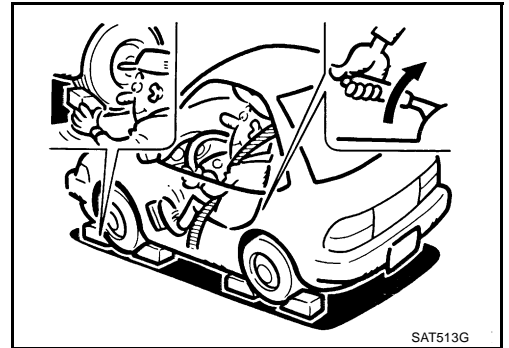
## STALL TEST

### Stall Test Procedure

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



3. Securely engage the parking brake so that the tires do not turn.
4. Engine start, apply foot brake, and place selector lever in "D" position.



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

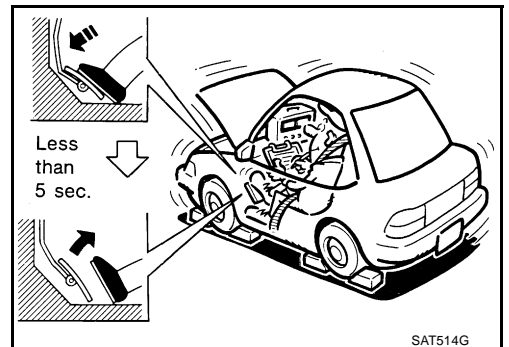
#### CAUTION:

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

#### Stall speed

**YD25DDTi: 2,700 - 3,100 rpm**

**VQ40DE: 2,200 - 2,500 rpm**



7. Move selector lever to the "N" position.



# TROUBLE DIAGNOSIS

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 “3”, “2”, “1” and “R” positions.

### Judgement of Stall Test

	Selector lever position		Expected problem location
	“D”, “3”, “2” and “1”	“R”	
Stall rotation	H	O	<ul style="list-style-type: none"> <li>● Forward brake</li> <li>● Forward one-way clutch</li> <li>● 1st one-way clutch</li> <li>● 3rd one-way clutch</li> </ul>
	O	H	<ul style="list-style-type: none"> <li>● Reverse brake</li> </ul>
	L	L	<ul style="list-style-type: none"> <li>● Engine and torque converter one-way clutch</li> </ul>
	H	H	<ul style="list-style-type: none"> <li>● Line pressure low</li> </ul>

O: Stall speed within standard value position

H: Stall speed higher than standard value

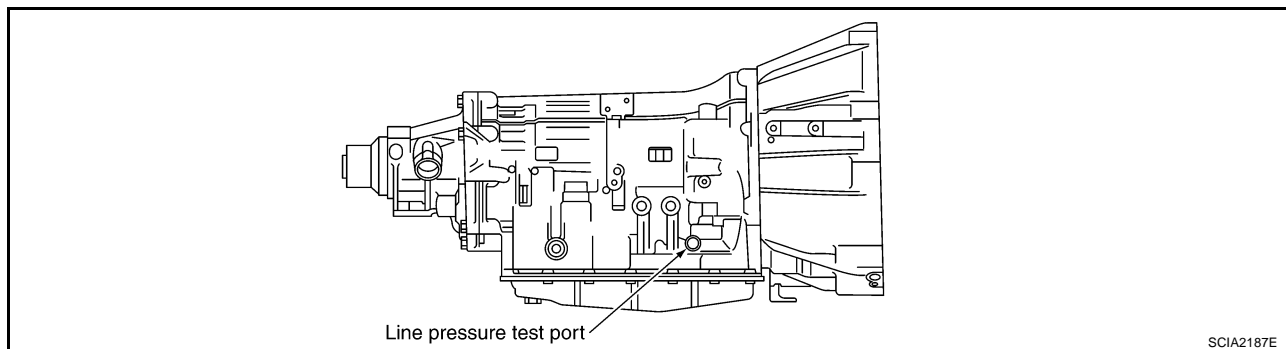
L: Stall speed lower than standard value

### Stall test standard value position

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

## LINE PRESSURE TEST

### Line Pressure Test Port



### Line Pressure Test Procedure

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

**NOTE:**

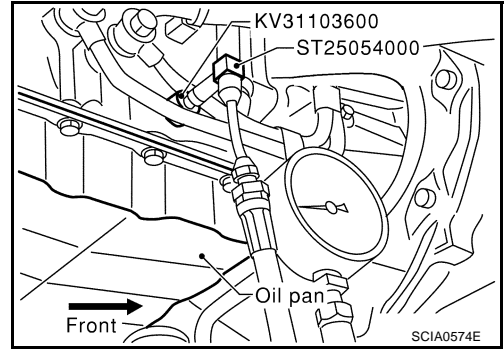
**The A/T fluid temperature rises in range of 50 to 80°C (122 to 176°F) during 10 minutes of driving.**

# TROUBLE DIAGNOSIS

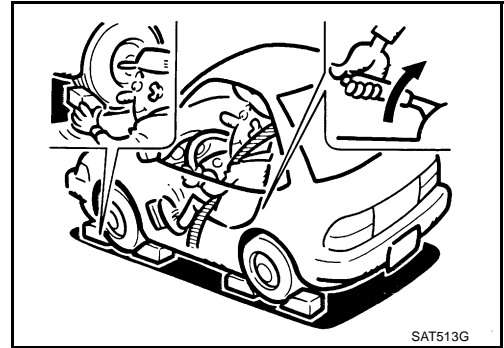
3. After warming up remove the oil pressure detection plug and install the oil pressure gauge (ST2505S001).

**CAUTION:**

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



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



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

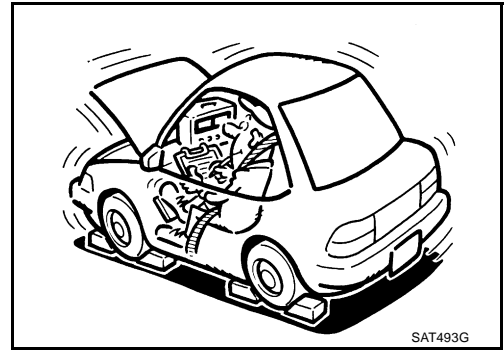
**CAUTION:**

- Keep the brake pedal pressed all the way down during measurement.
- When measuring the line pressure at the stall speed. Refer to [AT-44. "STALL TEST"](#).

6. After the measurements are complete, install the oil pressure detection plug and tighten to the specified torque. Refer to [AT-262. "Components"](#).

**CAUTION:**

- Do not reuse O-ring.
- Apply ATF to O-ring.



## Line Pressure

Engine speed	Line pressure [kPa (bar, kg/cm <sup>2</sup> , psi)]	
	"R" position	"D" position
At idle speed	425 - 465 (4.3 - 4.6, 4.3 - 4.7, 62 - 67)	379 - 428 (3.8 - 4.3, 3.9 - 4.4, 55 - 62)
At stall speed	1,605 - 1,950 (16.0 - 19.5, 16.4 - 19.9, 233 - 283)	1,310 - 1,500 (13.1 - 15.0, 13.4 - 15.3, 190 - 218)

# TROUBLE DIAGNOSIS

## Judgement of Line Pressure Test

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

## ROAD TEST

### Description

- The road test inspects overall performance of A/T and analyzes possible malfunction causes.
- The road test is performed in the following three stages.
  1. Check before engine is started. Refer to [AT-48](#).
  2. Check at idle. Refer to [AT-48](#).
  3. Cruise test.
    - Inspect all the items from Part 1 to Part 3. Refer to [AT-49](#), [AT-51](#), [AT-52](#).
- Before beginning the road test, check the test procedure and inspection items.
- Test all inspection items until the symptom is uncovered. Diagnose NG items when all road tests are complete.

# TROUBLE DIAGNOSIS

---

## Check Before Engine Is Started

GCS0001U

### 1. CHECK OD OFF 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. (Do not start engine.)

Does OD OFF indicator lamp light up for about 2 seconds?

YES >> 1. Turn ignition switch OFF.

2. Perform self-diagnosis and record all NG items on [AT-39, "DIAGNOSTIC WORKSHEET"](#) . Refer to [AT-85, "SELF-DIAGNOSTIC RESULT MODE"](#) , [AT-94, "TCM SELF-DIAGNOSTIC PROCEDURE \(WITHOUT CONSULT-II\)"](#) .

3. Go to [AT-48, "Check at Idle"](#) .

NO >> Stop the road test and go to [AT-183, "OD OFF Indicator Lamp Does Not Come On"](#) .

## Check at Idle

GCS0001V

### 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-183, "Engine Cannot Be Started in "P" or "N" Position"](#) .

### 2. CHECK STARTING THE ENGINE

---

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

Does the engine start in any positions?

YES >> Stop the road test and go to [AT-183, "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 the parking brake released, does it move?

YES >> Enter a check mark at "In "P" Position Vehicle Moves When Pushed" on [AT-39, "DIAGNOSTIC WORKSHEET"](#) , then continue the road test.

NO >> GO TO 4.

# TROUBLE DIAGNOSIS

## 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 "In "N" Position Vehicle Moves" on [AT-39, "DIAGNOSTIC WORKSHEET"](#), then continue the road test.
- NO >> GO TO 5.

## 5. CHECK SHIFT SHOCK

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

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

- YES >> Enter a check mark at "Large Shock ("N" to "D" Position)" on [AT-39, "DIAGNOSTIC WORKSHEET"](#) the diagnosis worksheet, then continue the road test.
- NO >> GO TO 6.

## 6. CHECK "R" POSITION FUNCTIONS

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

Does the vehicle creep backward?

- YES >> GO TO 7.
- NO >> Enter a check mark at "Vehicle Does Not Creep Backward in "R" Position" on [AT-39, "DIAGNOSTIC WORKSHEET"](#), then continue the road test.

## 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 "D" position?

- YES >> Go to [AT-49, "Cruise Test - Part 1"](#), [AT-51, "Cruise Test - Part 2"](#) and [AT-52, "Cruise Test - Part 3"](#).
- NO >> Enter a check mark at "Vehicle Does Not Creep Forward in "D" Position" on [AT-39, "DIAGNOSTIC WORKSHEET"](#), then continue the road test. Go to [AT-49, "Cruise Test - Part 1"](#), [AT-51, "Cruise Test - Part 2"](#) and [AT-52, "Cruise Test - Part 3"](#).

## Cruise Test - Part 1

GCS0001W

### 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 engine.
5. Move selector lever to "D" position.
6. Press accelerator pedal about half-way down to accelerate the vehicle.

Ⓟ **With CONSULT-II**

Read the gear position. Refer to [AT-88, "DATA MONITOR MODE"](#).

Starts from D1 ?

- YES >> GO TO 2.
- NO >> Enter a check mark at "Vehicle Cannot Be Started from D1" on [AT-39, "DIAGNOSTIC WORKSHEET"](#), then continue the road test.

# TROUBLE DIAGNOSIS

---

## 2. CHECK SHIFT-UP D1 → D2

---

Press down accelerator pedal about half-way and inspect if the vehicle shifts up (D1 → D2) at the appropriate speed. Refer to [AT-54, "Vehicle Speed at Which Gear Shifting Occurs"](#) .

④ **With CONSULT-II**

Read the gear position, throttle degree and vehicle speed. Refer to [AT-88, "DATA MONITOR MODE"](#) .

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

YES >> GO TO 3.

NO >> Enter a check mark at "A/T Does Not Shift: D1 → D2" on [AT-39, "DIAGNOSTIC WORKSHEET"](#) , then continue the road test.

---

## 3. CHECK SHIFT-UP D2 → D3

---

Press down accelerator pedal about half-way and inspect if the vehicle shifts up (D2 → D3) at the appropriate speed. Refer to [AT-54, "Vehicle Speed at Which Gear Shifting Occurs"](#) .

④ **With CONSULT-II**

Read the gear position, throttle degree and vehicle speed. Refer to [AT-88, "DATA MONITOR MODE"](#) .

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

YES >> GO TO 4.

NO >> Enter a check mark at "A/T Does Not Shift: D2 → D3" on [AT-39, "DIAGNOSTIC WORKSHEET"](#) , then continue the road test.

---

## 4. CHECK SHIFT-UP D3 → D4

---

Press down accelerator pedal about half-way and inspect if the vehicle shifts up (D3 → D4) at the appropriate speed. Refer to [AT-54, "Vehicle Speed at Which Gear Shifting Occurs"](#) .

④ **With CONSULT-II**

Read the gear position, throttle degree and vehicle speed. Refer to [AT-88, "DATA MONITOR MODE"](#) .

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

YES >> GO TO 5.

NO >> Enter a check mark at "A/T Does Not Shift: D3 → D4" on [AT-39, "DIAGNOSTIC WORKSHEET"](#) , then continue the road test.

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## 5. CHECK SHIFT-UP D4 → D5

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Press down accelerator pedal about half-way and inspect if the vehicle shifts up (D4 → D5) at the appropriate speed. Refer to [AT-54, "Vehicle Speed at Which Gear Shifting Occurs"](#) .

④ **With CONSULT-II**

Read the gear position, throttle degree and vehicle speed. Refer to [AT-88, "DATA MONITOR MODE"](#) .

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

YES >> GO TO 6.

NO >> Enter a check mark at "A/T Does Not Shift: D4 → D5" on [AT-39, "DIAGNOSTIC WORKSHEET"](#) , then continue the road test.

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## 6. CHECK LOCK-UP

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When releasing accelerator pedal (closed throttle position signal: OFF) from D5, check lock-up from D5 to L/U. Refer to [AT-54, "Vehicle Speed at Which Gear Shifting Occurs"](#) .

④ **With CONSULT-II**

Select "TCC SOLENOID" with "MAIN SIGNALS" mode for "A/T". Refer to [AT-82, "CONSULT-II REFERENCE VALUE"](#) .

Does it lock-up?

YES >> GO TO 7.

NO >> Enter a check mark at "A/T Does Not Perform Lock-up" on [AT-39, "DIAGNOSTIC WORKSHEET"](#) , then continue the road test.

# TROUBLE DIAGNOSIS

## 7. CHECK LOCK-UP HOLD

Check hold lock-up.

 **With CONSULT-II**

Select "TCC SOLENOID" with "MAIN SIGNALS" mode for "A/T". Refer to [AT-82, "CONSULT-II REFERENCE VALUE"](#).

Does it maintain lock-up status?

YES >> GO TO 8.

NO >> Enter a check mark at "A/T Does Not Hold Lock-up Condition" on [AT-39, "DIAGNOSTIC WORK-SHEET"](#), then continue the road test.

## 8. CHECK LOCK-UP RELEASE

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

 **With CONSULT-II**

Select "TCC SOLENOID" with "MAIN SIGNALS" mode for "A/T". Refer to [AT-82, "CONSULT-II REFERENCE VALUE"](#).

Does lock-up cancel?

YES >> GO TO 9.

NO >> Enter a check mark at "Lock-up Is Not Released" on [AT-39, "DIAGNOSTIC WORKSHEET"](#), then continue the road test.

## 9. CHECK SHIFT-DOWN D5 → D4

Decelerate by pressing lightly on brake pedal.

 **With CONSULT-II**

Read the gear position and engine speed. Refer to [AT-88, "DATA MONITOR MODE"](#).

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

YES >> 1. Stop the vehicle.

2. Go to [AT-51, "Cruise Test - Part 2"](#).

NO >> Enter a check mark at "Engine Speed Does Not Return to Idle" on [AT-39, "DIAGNOSTIC WORK-SHEET"](#), then continue the road test. Go to [AT-51, "Cruise Test - Part 2"](#).

## Cruise Test - Part 2

GCS0001X

### 1. CHECK STARTING FROM D1

1. Move selector lever to "D" position.

2. Accelerate at half throttle.

 **With CONSULT-II**

Read the gear position. Refer to [AT-88, "DATA MONITOR MODE"](#).

Does it start from D1 ?

YES >> GO TO 2.

NO >> Enter a check mark at "Vehicle Cannot Be Started from D1" on [AT-39, "DIAGNOSTIC WORK-SHEET"](#), then continue the road test.

### 2. CHECK SHIFT-UP D1 → D2

Press 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-54, "Vehicle Speed at Which Gear Shifting Occurs"](#).

 **With CONSULT-II**

Read the gear position, throttle degree and vehicle speed. Refer to [AT-88, "DATA MONITOR MODE"](#).

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

YES >> GO TO 3.

NO >> Enter a check mark at "A/T Does Not Shift: D1 → D2" on [AT-39, "DIAGNOSTIC WORKSHEET"](#), then continue the road test.

## TROUBLE DIAGNOSIS

### 3. CHECK SHIFT-UP D<sub>2</sub> → D<sub>3</sub>

---

Press accelerator pedal down all the way and inspect whether or not the A/T shifts up (D<sub>2</sub> → D<sub>3</sub>) at the correct speed. Refer to [AT-54, "Vehicle Speed at Which Gear Shifting Occurs"](#) .

 **With CONSULT-II**

Read the gear position, throttle degree and vehicle speed. Refer to [AT-88, "DATA MONITOR MODE"](#) .

Does the A/T shift-up D<sub>2</sub> → D<sub>3</sub> at the correct speed?

YES >> GO TO 4.

NO >> Enter a check mark at "A/T Does Not Shift: D<sub>2</sub> → D<sub>3</sub>" on [AT-39, "DIAGNOSTIC WORKSHEET"](#) , then continue the road test.

### 4. CHECK SHIFT-UP D<sub>3</sub> → D<sub>4</sub> AND ENGINE BRAKE

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When the A/T changes speed D<sub>3</sub> → D<sub>4</sub> , return accelerator pedal.

 **With CONSULT-II**

Read the gear position. Refer to [AT-88, "DATA MONITOR MODE"](#) .

Does the A/T shift-up D<sub>3</sub> → D<sub>4</sub> and apply the engine brake?

YES >> 1. Stop the vehicle.

2. Go to [AT-52, "Cruise Test - Part 3"](#) .

NO >> Enter a check mark at "A/T Does Not Shift: D<sub>3</sub> → D<sub>4</sub>" on [AT-39, "DIAGNOSTIC WORKSHEET"](#) , then continue the road test. Go to [AT-52, "Cruise Test - Part 3"](#) .

### Cruise Test - Part 3

GCS0001Y

#### 1. CHECK SHIFT-DOWN

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1. Push overdrive control switch. (OD OFF indicator lamp is off.)
2. Confirm gear selector lever is in "D" position.
3. Accelerate vehicle using half throttle to D<sub>5</sub> .
4. Release accelerator pedal.
5. Push overdrive control switch. (OD OFF indicator lamp is on.) while driving in D<sub>5</sub> .

 **With CONSULT-II**

Read the gear position. Refer to [AT-88, "DATA MONITOR MODE"](#) .

Does A/T shift from D<sub>5</sub> to D<sub>4</sub> (OD OFF)?

YES >> GO TO 2.

NO >> Enter a check mark at "A/T does not shift: 5th gear → 4th gear" on the [AT-39, "DIAGNOSTIC WORKSHEET"](#) , then continue the road test.

#### 2. CHECK SHIFT-DOWN

---

During D<sub>4</sub> driving, is downshift from "D" → "3" → "2" → "1" performed?

 **With CONSULT-II**

Read the gear position. Refer to [AT-88, "DATA MONITOR MODE"](#) .

Is downshifting correctly performed?

YES >> GO TO 3.

NO >> Enter a check mark at "A/T does not shift" at the corresponding position (4th → 3rd, 3rd → 2nd, 2nd → 1st) on the [AT-39, "DIAGNOSTIC WORKSHEET"](#) , then continue the road test.



# TROUBLE DIAGNOSIS

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## 3. CHECK ENGINE BRAKE

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Check engine brake.

Does engine braking effectively reduce speed in 11 position?

YES >> 1. Stop the vehicle.

2. Perform self-diagnosis. Refer to [AT-85, "SELF-DIAGNOSTIC RESULT MODE"](#) , [AT-94, "Diagnostic Procedure Without CONSULT-II"](#) .

NO >> Enter a check mark at "Vehicle Does Not Decelerate by Engine Brake" on the [AT-39, "DIAGNOSTIC WORKSHEET"](#) , then continue trouble diagnosis.

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# TROUBLE DIAGNOSIS

## Vehicle Speed at Which Gear Shifting Occurs 2WD MODELS

GCS0001Z

Engine model		YD25DDTi							
Tire size	Throttle position	Vehicle speed [km/h (MPH)]							
		D1 → D2	D2 → D3	D3 → D4	D4 → D5	D5 → D4	D4 → D3	D3 → D2	D2 → D1
255/70 R16 255/65 R17	Full throttle	41 - 45 (26 - 28)	66 - 72 (41 - 45)	103 - 113 (64 - 71)	148 - 164 (93 - 103)	144 - 160 (90 - 100)	92 - 102 (58 - 64)	53 - 59 (33 - 37)	23 - 25 (14 - 16)
	Half throttle	34 - 38 (21 - 24)	55 - 61 (34 - 38)	86 - 96 (54 - 60)	118 - 130 (74 - 81)	88 - 98 (55 - 61)	60 - 66 (38 - 41)	39 - 43 (24 - 27)	10 - 11 (6 - 7)

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

Engine model		VQ40DE							
Tire size	Throttle position	Vehicle speed [km/h (MPH)]							
		D1 → D2	D2 → D3	D3 → D4	D4 → D5	D5 → D4	D4 → D3	D3 → D2	D2 → D1
255/70 R16 255/65 R17	Full throttle	61 - 67 (38 - 42)	99 - 109 (62 - 68)	153 - 169 (96 - 106)	234 - 258 (146 - 161)	230 - 254 (144 - 159)	142 - 158 (89 - 97)	87 - 97 (54 - 61)	42 - 46 (26 - 29)
	Half throttle	49 - 55 (31 - 34)	81 - 89 (51 - 56)	123 - 137 (76 - 86)	149 - 165 (93 - 103)	115 - 127 (72 - 79)	70 - 78 (44 - 49)	50 - 56 (31 - 35)	12 - 14 (8 - 9)

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

## 4WD MODELS

Engine model		YD25DDTi							
Tire size	Throttle position	Vehicle speed [km/h (MPH)]							
		D1 → D2	D2 → D3	D3 → D4	D4 → D5	D5 → D4	D4 → D3	D3 → D2	D2 → D1
235/70 R16	Full throttle	37 - 41 (23 - 26)	60 - 66 (38 - 41)	94 - 104 (59 - 65)	136 - 150 (85 - 94)	132 - 146 (83 - 91)	84 - 92 (53 - 58)	48 - 54 (30 - 34)	21 - 23 (13 - 14)
	Half throttle	31 - 35 (19 - 22)	50 - 56 (31 - 35)	79 - 87 (49 - 54)	113 - 125 (71 - 78)	79 - 87 (49 - 54)	55 - 61 (34 - 38)	36 - 40 (23 - 25)	10 - 11 (6 - 7)
255/70 R16 255/65 R17	Full throttle	38 - 42 (24 - 26)	62 - 68 (39 - 43)	97 - 107 (61 - 67)	141 - 155 (88 - 97)	137 - 151 (86 - 94)	87 - 97 (54 - 61)	50 - 56 (31 - 35)	22 - 24 (14 - 15)
	Half throttle	32 - 36 (20 - 23)	52 - 58 (33 - 36)	82 - 90 (51 - 56)	117 - 129 (73 - 80)	83 - 91 (52 - 57)	57 - 63 (35 - 39)	37 - 41 (23 - 26)	10 - 11 (6 - 7)

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

Engine model		VQ40DE							
Tire size	Throttle position	Vehicle speed [km/h (MPH)]							
		D1 → D2	D2 → D3	D3 → D4	D4 → D5	D5 → D4	D4 → D3	D3 → D2	D2 → D1
235/70 R16	Full throttle	54 - 60 (34 - 38)	88 - 98 (55 - 61)	136 - 150 (85 - 94)	208 - 230 (130 - 144)	204 - 226 (128 - 141)	126 - 140 (79 - 88)	77 - 85 (48 - 53)	36 - 40 (23 - 25)
	Half throttle	44 - 48 (28 - 30)	71 - 79 (44 - 49)	110 - 122 (69 - 76)	133 - 147 (83 - 92)	103 - 113 (64 - 71)	63 - 69 (39 - 43)	46 - 50 (29 - 31)	12 - 14 (8 - 9)
255/70 R16 255/65 R17	Full throttle	58 - 64 (36 - 40)	94 - 104 (59 - 65)	144 - 160 (90 - 100)	221 - 245 (138 - 153)	218 - 240 (136 - 150)	135 - 149 (84 - 93)	83 - 91 (52 - 57)	40 - 44 (25 - 28)
	Half throttle	47 - 51 (29 - 32)	76 - 84 (48 - 53)	117 - 129 (73 - 81)	141 - 155 (88 - 97)	108 - 120 (68 - 75)	67 - 75 (42 - 47)	48 - 54 (30 - 34)	12 - 14 (8 - 9)

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

# TROUBLE DIAGNOSIS

## Vehicle Speed at Which Lock-up Occurs/Releases

GCS00020

### 2WD MODELS

Engine model		YD25DDTi	
Tire size	Throttle position	Vehicle speed [km/h (MPH)]	
		Lock-up ON	Lock-up OFF
255/70 R16 255/65 R17	Closed throttle	73 - 81 (46 - 51)	70 - 78 (44 - 49)
	Half throttle	141 - 155 (88 - 97)	130 - 144 (81 - 90)

- 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		VQ40DE	
Tire size	Throttle position	Vehicle speed [km/h (MPH)]	
		Lock-up "ON"	Lock-up "OFF"
255/70 R16 255/65 R17	Closed throttle	68 - 76 (43 - 48)	66 - 72 (41 - 45)
	Half throttle	188 - 208 (118 - 130)	147 - 163 (92 - 102)

- 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.

### 4WD MODELS

Engine model		YD25DDTi	
Tire size	Throttle position	Vehicle speed [km/h (MPH)]	
		Lock-up ON	Lock-up OFF
235/70 R16	Closed throttle	67 - 75 (42 - 47)	65 - 71 (41 - 44)
	Half throttle	129 - 143 (81 - 89)	119 - 131 (74 - 82)
255/70 R16 255/65 R17	Closed throttle	69 - 77 (43 - 48)	66 - 74 (41 - 46)
	Half throttle	134 - 148 (84 - 93)	123 - 135 (77 - 84)

- 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		VQ40DE	
Tire size	Throttle position	Vehicle speed [km/h (MPH)]	
		Lock-up "ON"	Lock-up "OFF"
235/70 R16	Closed throttle	61 - 67 (38 - 42)	58 - 64 (36 - 40)
	Half throttle	167 - 185 (104 - 116)	131 - 145 (82 - 91)
255/70 R16 255/65 R17	Closed throttle	65 - 71 (41 - 44)	62 - 68 (39 - 43)
	Half throttle	178 - 196 (111 - 123)	139 - 154 (87 - 96)

- 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

## Symptom Chart

GCS00021

- The diagnostic item numbers show the sequence for inspection. Inspect in order from item 1.
- Overhaul and inspect inside the A/T only if A/T fluid condition is NG. Refer to [AT-44, "A/T Fluid Condition Check"](#) .

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
1	Shift Shock	Large shock. ("N"→"D" position) Refer to <a href="#">AT-186, "Large Shock ("N" to "D" Position)"</a> .	ON vehicle	1. Engine idle speed	<a href="#">EC-1027</a> (for YD25DDTi engine), <a href="#">EC-65</a> (for VQ40DE engine type 1*) or <a href="#">EC-608</a> (for VQ40DE engine type 2*)
				2. Engine speed signal	<a href="#">AT-113</a>
				3. Accelerator pedal position sensor	<a href="#">AT-121</a>
				4. Control cable adjustment	<a href="#">AT-217</a>
				5. A/T fluid temperature sensor	<a href="#">AT-124</a>
				6. ATF pressure switch 1 and front brake solenoid valve	<a href="#">AT-162,</a> <a href="#">AT-143</a>
				7. CAN communication line	<a href="#">AT-96</a>
				8. A/T fluid level and state	<a href="#">AT-44</a>
				9. Line pressure test	<a href="#">AT-45</a>
				10. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	11. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-13, "Cross-sectional View (YD25DDTi Models for 2WD)"</a> , <a href="#">AT-14, "Cross-sectional View (VQ40DE Models for 2WD)"</a> , <a href="#">AT-15, "Cross-sectional View (YD25DDTi Models for 4WD)"</a> or <a href="#">AT-16, "Cross-sectional View (VQ40DE Models for 4WD)"</a> .)	<a href="#">AT-282</a>
2	Shock is too large when changing D1 →D2 .	ON vehicle	1. Accelerator pedal position sensor	<a href="#">AT-121</a>	
			2. Control cable adjustment	<a href="#">AT-217</a>	
			3. ATF pressure switch 5 and direct clutch solenoid valve	<a href="#">AT-166,</a> <a href="#">AT-148</a>	
			4. CAN communication line	<a href="#">AT-96</a>	
			5. Engine speed signal	<a href="#">AT-113</a>	
			6. Turbine revolution sensor	<a href="#">AT-129</a>	
			7. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-108,</a> <a href="#">AT-131</a>	
			8. A/T fluid level and state	<a href="#">AT-44</a>	
			9. Control valve with TCM	<a href="#">AT-224</a>	
		OFF vehicle	10. Direct clutch	<a href="#">AT-320</a>	

## TROUBLE DIAGNOSIS

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
3		Shock is too large when changing D2 →D3 .	ON vehicle	1. Accelerator pedal position sensor	<a href="#">AT-121</a>
				2. Control cable adjustment	<a href="#">AT-217</a>
				3. ATF pressure switch 6 and high and low reverse clutch solenoid valve	<a href="#">AT-168,</a> <a href="#">AT-153</a>
				4. CAN communication line	<a href="#">AT-96</a>
				5. Engine speed signal	<a href="#">AT-113</a>
				6. Turbine revolution sensor	<a href="#">AT-129</a>
				7. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-108,</a> <a href="#">AT-131</a>
				8. A/T fluid level and state	<a href="#">AT-44</a>
				9. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	10. High and low reverse clutch	<a href="#">AT-318</a>
4	Shift Shock	Shock is too large when changing D3 →D4 .	ON vehicle	1. Accelerator pedal position sensor	<a href="#">AT-121</a>
				2. Control cable adjustment	<a href="#">AT-217</a>
				3. ATF pressure switch 3 and input clutch solenoid valve	<a href="#">AT-164,</a> <a href="#">AT-138</a>
				4. CAN communication line	<a href="#">AT-96</a>
				5. Engine speed signal	<a href="#">AT-113</a>
				6. Turbine revolution sensor	<a href="#">AT-129</a>
				7. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-108,</a> <a href="#">AT-131</a>
				8. A/T fluid level and state	<a href="#">AT-44</a>
				9. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	10. Input clutch	<a href="#">AT-306</a>
5		Shock is too large when changing D4 →D5 .	ON vehicle	1. Accelerator pedal position sensor	<a href="#">AT-121</a>
				2. Control cable adjustment	<a href="#">AT-217</a>
				3. ATF pressure switch 1 and front brake solenoid valve	<a href="#">AT-162,</a> <a href="#">AT-143</a>
				4. CAN communication line	<a href="#">AT-96</a>
				5. Engine speed signal	<a href="#">AT-113</a>
				6. Turbine revolution sensor	<a href="#">AT-129</a>
				7. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-108,</a> <a href="#">AT-131</a>
				8. A/T fluid level and state	<a href="#">AT-44</a>
				9. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	10. Front brake (brake band)	<a href="#">AT-262</a>
				11. Input clutch	<a href="#">AT-306</a>

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## TROUBLE DIAGNOSIS

No.	Items	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	<a href="#">AT-121</a>
				2. Control cable adjustment	<a href="#">AT-217</a>
				3. CAN communication line	<a href="#">AT-96</a>
				4. Engine speed signal	<a href="#">AT-113</a>
				5. Turbine revolution sensor	<a href="#">AT-129</a>
				6. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-108,</a> <a href="#">AT-131</a>
				7. A/T fluid level and state	<a href="#">AT-44</a>
				8. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	9. Front brake (brake band)	<a href="#">AT-262</a>
				10. Input clutch	<a href="#">AT-306</a>
				11. High and low reverse clutch	<a href="#">AT-318</a>
				12. Direct clutch	<a href="#">AT-320</a>
7	Shift Shock	Shock is too large for upshift when accelerator pedal is released.	ON vehicle	1. Accelerator pedal position sensor	<a href="#">AT-121</a>
				2. Control cable adjustment	<a href="#">AT-217</a>
				3. Engine speed signal	<a href="#">AT-113</a>
				4. CAN communication line	<a href="#">AT-96</a>
				5. Turbine revolution sensor	<a href="#">AT-129</a>
				6. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-108,</a> <a href="#">AT-131</a>
				7. A/T fluid level and state	<a href="#">AT-44</a>
				8. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	9. Front brake (brake band)	<a href="#">AT-262</a>
				10. Input clutch	<a href="#">AT-306</a>
				11. High and low reverse clutch	<a href="#">AT-318</a>
				12. Direct clutch	<a href="#">AT-320</a>
8		Shock is too large for lock-up.	ON vehicle	1. Accelerator pedal position sensor	<a href="#">AT-121</a>
				2. Control cable adjustment	<a href="#">AT-217</a>
				3. Engine speed signal	<a href="#">AT-113</a>
				4. CAN communication line	<a href="#">AT-96</a>
				5. Turbine revolution sensor	<a href="#">AT-129</a>
				6. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-108,</a> <a href="#">AT-131</a>
				7. Torque converter clutch solenoid valve	<a href="#">AT-115</a>
				8. A/T fluid level and state	<a href="#">AT-44</a>
				9. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	10. Torque converter	<a href="#">AT-282</a>

## TROUBLE DIAGNOSIS

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
9	Shift Shock	Shock is too large during engine brake.	ON vehicle	1. Accelerator pedal position sensor	<a href="#">AT-121</a>
				2. Control cable adjustment	<a href="#">AT-217</a>
				3. CAN communication line	<a href="#">AT-96</a>
				4. A/T fluid level and state	<a href="#">AT-44</a>
				5. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	6. Front brake (brake band)	<a href="#">AT-262</a>
				7. Input clutch	<a href="#">AT-306</a>
				8. High and low reverse clutch	<a href="#">AT-318</a>
				9. Direct clutch	<a href="#">AT-320</a>
10	No Up Shift	Gear does not change from D1 →D2 . Refer to <a href="#">AT-194</a> , " <a href="#">A/T Does Not Shift: D1 → D2</a> ".	ON vehicle	1. A/T fluid level and state	<a href="#">AT-44</a>
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-108</a> , <a href="#">AT-131</a>
				3. ATF pressure switch 5 and direct clutch solenoid valve	<a href="#">AT-166</a> , <a href="#">AT-148</a>
				4. Line pressure test	<a href="#">AT-45</a>
				5. CAN communication line	<a href="#">AT-96</a>
				6. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	7. Direct clutch	<a href="#">AT-320</a>
11	No Up Shift	Gear does not change from D2 →D3 . Refer to <a href="#">AT-196</a> , " <a href="#">A/T Does Not Shift: D2 → D3</a> ".	ON vehicle	1. A/T fluid level and state	<a href="#">AT-44</a>
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-108</a> , <a href="#">AT-131</a>
				3. ATF pressure switch 6 and high and low reverse clutch solenoid valve	<a href="#">AT-168</a> , <a href="#">AT-153</a>
				4. Line pressure test	<a href="#">AT-45</a>
				5. CAN communication line	<a href="#">AT-96</a>
				6. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	7. High and low reverse clutch	<a href="#">AT-318</a>
12	No Up Shift	Gear does not change from D3 →D4 . Refer to <a href="#">AT-198</a> , " <a href="#">A/T Does Not Shift: D3 → D4</a> ".	ON vehicle	1. A/T fluid level and state	<a href="#">AT-44</a>
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-108</a> , <a href="#">AT-131</a>
				3. ATF pressure switch 3 and input clutch solenoid valve	<a href="#">AT-164</a> , <a href="#">AT-138</a>
				4. ATF pressure switch 1 and front brake solenoid valve	<a href="#">AT-162</a> , <a href="#">AT-143</a>
				5. Line pressure test	<a href="#">AT-45</a>
				6. CAN communication line	<a href="#">AT-96</a>
				7. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	8. Input clutch	<a href="#">AT-306</a>

## TROUBLE DIAGNOSIS

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
13	No Up Shift	Gear does not change from D4 →D5 . Refer to <a href="#">AT-200, "A/T Does Not Shift: D4 → D5"</a> .	ON vehicle	1. A/T fluid level and state	<a href="#">AT-44</a>
				2. Overdrive control switch	<a href="#">AT-178</a>
				3. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-108, AT-131</a>
				4. ATF pressure switch 1 and front brake solenoid valve	<a href="#">AT-162, AT-143</a>
				5. ATF pressure switch 5 and direct clutch solenoid valve	<a href="#">AT-166, AT-148</a>
				6. Turbine revolution sensor	<a href="#">AT-129</a>
				7. Line pressure test	<a href="#">AT-45</a>
				8. CAN communication line	<a href="#">AT-96</a>
				9. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	10. Front brake (brake band)	<a href="#">AT-282</a>
				11. Input clutch	<a href="#">AT-306</a>
14	No Down Shift	In "D" position, does not downshift to 4th gear. Refer to <a href="#">AT-206, "A/T Does Not Shift: 5th Gear → 4th Gear"</a> .	ON vehicle	1. A/T fluid level and state	<a href="#">AT-44</a>
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-108, AT-131</a>
				3. ATF pressure switch 1 and front brake solenoid valve	<a href="#">AT-162, AT-143</a>
				4. ATF pressure switch 5 and direct clutch solenoid valve	<a href="#">AT-166, AT-148</a>
				5. CAN communication line	<a href="#">AT-96</a>
				6. Line pressure test	<a href="#">AT-45</a>
				7. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	8. Front brake (brake band)	<a href="#">AT-282</a>
				9. Input clutch	<a href="#">AT-306</a>
15	No Down Shift	In "D" or "3" position, does not downshift to 3rd gear. Refer to <a href="#">AT-208, "A/T Does Not Shift: 4th Gear → 3rd Gear"</a> .	ON vehicle	1. A/T fluid level and state	<a href="#">AT-44</a>
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-108, AT-131</a>
				3. ATF pressure switch 3 and input clutch solenoid valve	<a href="#">AT-164, AT-138</a>
				4. ATF pressure switch 1 and front brake solenoid valve	<a href="#">AT-162, AT-143</a>
				5. CAN communication line	<a href="#">AT-96</a>
				6. Line pressure test	<a href="#">AT-45</a>
				7. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	8. Input clutch	<a href="#">AT-306</a>



## TROUBLE DIAGNOSIS

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
16	No Down Shift	In "D" or "2" position, does not downshift to 2nd gear. Refer to <a href="#">AT-209, "A/T Does Not Shift: 3rd Gear → 2nd Gear"</a> .	ON vehicle	1. A/T fluid level and state	<a href="#">AT-44</a>
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-108, AT-131</a>
				3. ATF pressure switch 6 and high and low reverse clutch solenoid valve	<a href="#">AT-168, AT-153</a>
				4. CAN communication line	<a href="#">AT-96</a>
				5. Line pressure test	<a href="#">AT-45</a>
				6. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	7. High and low reverse clutch	<a href="#">AT-318</a>
17	No Down Shift	In "D" or "1" position, does not downshift to 1st gear. Refer to <a href="#">AT-210, "A/T Does Not Shift: 2nd Gear → 1st Gear"</a> .	ON vehicle	1. A/T fluid level and state	<a href="#">AT-44</a>
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-108, AT-131</a>
				3. ATF pressure switch 5 and direct clutch solenoid valve	<a href="#">AT-166, AT-148</a>
				4. CAN communication line	<a href="#">AT-96</a>
				5. Line pressure test	<a href="#">AT-45</a>
				6. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	7. Direct clutch	<a href="#">AT-320</a>
18	Slips/Will Not Engage	When "D" position, remains in 1st gear.	ON vehicle	1. A/T fluid level and state	<a href="#">AT-44</a>
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-108, AT-131</a>
				3. Direct clutch solenoid valve	<a href="#">AT-148</a>
				4. Line pressure test	<a href="#">AT-45</a>
				5. CAN communication line	<a href="#">AT-96</a>
				6. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	7. 3rd one-way clutch	<a href="#">AT-304</a>
				8. 1st one-way clutch	<a href="#">AT-312</a>
				9. Gear system	<a href="#">AT-262</a>
				10. Reverse brake	<a href="#">AT-282</a>
				11. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-13, "Cross-sectional View (YD25DDTi Models for 2WD)"</a> , <a href="#">AT-14, "Cross-sectional View (VQ40DE Models for 2WD)"</a> , <a href="#">AT-15, "Cross-sectional View (YD25DDTi Models for 4WD)"</a> or <a href="#">AT-16, "Cross-sectional View (VQ40DE Models for 4WD)"</a> .)	<a href="#">AT-282</a>
				12. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-13, "Cross-sectional View (YD25DDTi Models for 2WD)"</a> , <a href="#">AT-14, "Cross-sectional View (VQ40DE Models for 2WD)"</a> , <a href="#">AT-15, "Cross-sectional View (YD25DDTi Models for 4WD)"</a> or <a href="#">AT-16, "Cross-sectional View (VQ40DE Models for 4WD)"</a> .)	<a href="#">AT-282</a>

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No.	Items	Symptom	Condition	Diagnostic Item	Reference page
19		When "D" position, remains in 2nd gear.	ON vehicle	1. A/T fluid level and state	<a href="#">AT-44</a>
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-108</a> , <a href="#">AT-131</a>
				3. Low coast brake solenoid valve	<a href="#">AT-158</a>
				4. Line pressure test	<a href="#">AT-45</a>
				5. CAN communication line	<a href="#">AT-96</a>
				6. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	7. 3rd one-way clutch	<a href="#">AT-304</a>
				8. Gear system	<a href="#">AT-262</a>
				9. Direct clutch	<a href="#">AT-320</a>
				10. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-13</a> . " <a href="#">Cross-sectional View (YD25DDTi Models for 2WD)</a> ", <a href="#">AT-14</a> . " <a href="#">Cross-sectional View (VQ40DE Models for 2WD)</a> ", <a href="#">AT-15</a> . " <a href="#">Cross-sectional View (YD25DDTi Models for 4WD)</a> " or <a href="#">AT-16</a> . " <a href="#">Cross-sectional View (VQ40DE Models for 4WD)</a> ".)	<a href="#">AT-282</a>
20	Slips/Will Not Engage	When "D" position, remains in 3rd gear.	ON vehicle	1. A/T fluid level and state	<a href="#">AT-44</a>
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-108</a> , <a href="#">AT-131</a>
				3. Line pressure test	<a href="#">AT-45</a>
				4. CAN communication line	<a href="#">AT-96</a>
				5. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	6. 3rd one-way clutch	<a href="#">AT-304</a>
				7. Gear system	<a href="#">AT-262</a>
				8. High and low reverse clutch	<a href="#">AT-318</a>
				9. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-13</a> . " <a href="#">Cross-sectional View (YD25DDTi Models for 2WD)</a> ", <a href="#">AT-14</a> . " <a href="#">Cross-sectional View (VQ40DE Models for 2WD)</a> ", <a href="#">AT-15</a> . " <a href="#">Cross-sectional View (YD25DDTi Models for 4WD)</a> " or <a href="#">AT-16</a> . " <a href="#">Cross-sectional View (VQ40DE Models for 4WD)</a> ".)	<a href="#">AT-282</a>
				10. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-13</a> . " <a href="#">Cross-sectional View (YD25DDTi Models for 2WD)</a> ", <a href="#">AT-14</a> . " <a href="#">Cross-sectional View (VQ40DE Models for 2WD)</a> ", <a href="#">AT-15</a> . " <a href="#">Cross-sectional View (YD25DDTi Models for 4WD)</a> " or <a href="#">AT-16</a> . " <a href="#">Cross-sectional View (VQ40DE Models for 4WD)</a> ".)	<a href="#">AT-282</a>

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No.	Items	Symptom	Condition	Diagnostic Item	Reference page
21	Slips/Will Not Engage	When "D" position, remains in 4th gear.	ON vehicle	1. A/T fluid level and state	<a href="#">AT-44</a>
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-108, AT-131</a>
				3. ATF pressure switch 3 and input clutch solenoid valve	<a href="#">AT-164, AT-138</a>
				4. ATF pressure switch 5 and direct clutch solenoid valve	<a href="#">AT-166, AT-148</a>
				5. ATF pressure switch 6 and high and low reverse clutch solenoid valve	<a href="#">AT-168, AT-153</a>
				6. Low coast brake solenoid valve	<a href="#">AT-158</a>
				7. Front brake solenoid valve	<a href="#">AT-143</a>
				8. Line pressure test	<a href="#">AT-45</a>
				9. CAN communication line	<a href="#">AT-96</a>
				10. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	11. Input clutch	<a href="#">AT-306</a>
				12. Gear system	<a href="#">AT-262</a>
				13. High and low reverse clutch	<a href="#">AT-318</a>
				14. Direct clutch	<a href="#">AT-320</a>
22		When "D" position, remains in 5th gear.	ON vehicle	1. A/T fluid level and state	<a href="#">AT-44</a>
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-108, AT-131</a>
				3. ATF pressure switch 1 and front brake solenoid valve	<a href="#">AT-162, AT-143</a>
				4. Line pressure test	<a href="#">AT-45</a>
				5. CAN communication line	<a href="#">AT-96</a>
				6. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	7. Front brake (brake band)	<a href="#">AT-282</a>
				8. Input clutch	<a href="#">AT-306</a>
				9. Gear system	<a href="#">AT-262</a>
				10. High and low reverse clutch	<a href="#">AT-318</a>

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No.	Items	Symptom	Condition	Diagnostic Item	Reference page
23	Slips/Will Not Engage	Vehicle cannot be started from D1 . Refer to <a href="#">AT-192, "Vehicle Cannot Be Started from D1"</a> .	ON vehicle	1. A/T fluid level and state	<a href="#">AT-44</a>
				2. Accelerator pedal position sensor	<a href="#">AT-121</a>
				3. Line pressure test	<a href="#">AT-45</a>
				4. CAN communication line	<a href="#">AT-96</a>
				5. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	6. Torque converter	<a href="#">AT-282</a>
				7. Oil pump assembly	<a href="#">AT-301</a>
				8. 3rd one-way clutch	<a href="#">AT-304</a>
				9. 1st one-way clutch	<a href="#">AT-312</a>
				10. Gear system	<a href="#">AT-262</a>
				11. Reverse brake	<a href="#">AT-282</a>
				12. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-13, "Cross-sectional View (YD25DDTi Models for 2WD)"</a> , <a href="#">AT-14, "Cross-sectional View (VQ40DE Models for 2WD)"</a> , <a href="#">AT-15, "Cross-sectional View (YD25DDTi Models for 4WD)"</a> or <a href="#">AT-16, "Cross-sectional View (VQ40DE Models for 4WD)"</a> .)	<a href="#">AT-282</a>
				13. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-13, "Cross-sectional View (YD25DDTi Models for 2WD)"</a> , <a href="#">AT-14, "Cross-sectional View (VQ40DE Models for 2WD)"</a> , <a href="#">AT-15, "Cross-sectional View (YD25DDTi Models for 4WD)"</a> or <a href="#">AT-16, "Cross-sectional View (VQ40DE Models for 4WD)"</a> .)	<a href="#">AT-282</a>
24		Does not lock-up. Refer to <a href="#">AT-202, "A/T Does Not Perform Lock-up"</a> .	ON vehicle	1. A/T fluid level and state	<a href="#">AT-44</a>
				2. Line pressure test	<a href="#">AT-45</a>
				3. Engine speed signal	<a href="#">AT-113</a>
				4. Turbine revolution sensor	<a href="#">AT-129</a>
				5. Torque converter clutch solenoid valve	<a href="#">AT-115</a>
				6. CAN communication line	<a href="#">AT-96</a>
				7. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	8. Torque converter	<a href="#">AT-282</a>
				9. Oil pump assembly	<a href="#">AT-301</a>

## TROUBLE DIAGNOSIS

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
25		Does not hold lock-up condition. Refer to <a href="#">AT-203, "A/T Does Not Hold Lock-up Condition"</a> .	ON vehicle	1. A/T fluid level and state	<a href="#">AT-44</a>
				2. Line pressure test	<a href="#">AT-45</a>
				3. Engine speed signal	<a href="#">AT-113</a>
				4. Turbine revolution sensor	<a href="#">AT-129</a>
				5. Torque converter clutch solenoid valve	<a href="#">AT-115</a>
				6. CAN communication line	<a href="#">AT-96</a>
				7. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	8. Torque converter	<a href="#">AT-282</a>
				9. Oil pump assembly	<a href="#">AT-301</a>
26	Slips/Will Not Engage	Lock-up is not released. Refer to <a href="#">AT-205, "Lock-up Is Not Released"</a> .	ON vehicle	1. A/T fluid level and state	<a href="#">AT-44</a>
				2. Line pressure test	<a href="#">AT-45</a>
				3. Engine speed signal	<a href="#">AT-113</a>
				4. Turbine revolution sensor	<a href="#">AT-129</a>
				5. Torque converter clutch solenoid valve	<a href="#">AT-115</a>
				6. CAN communication line	<a href="#">AT-96</a>
				7. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	8. Torque converter	<a href="#">AT-282</a>
				9. Oil pump assembly	<a href="#">AT-301</a>
27		No shock at all or the clutch slips when vehicle changes speed D1 →D2 .	ON vehicle	1. A/T fluid level and state	<a href="#">AT-44</a>
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-108, AT-131</a>
				3. ATF pressure switch 5 and direct clutch solenoid valve	<a href="#">AT-166, AT-148</a>
				4. CAN communication line	<a href="#">AT-96</a>
				5. Line pressure test	<a href="#">AT-45</a>
				6. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	7. Torque converter	<a href="#">AT-282</a>
				8. Oil pump assembly	<a href="#">AT-301</a>
				9. 3rd one-way clutch	<a href="#">AT-304</a>
				10. Gear system	<a href="#">AT-262</a>
				11. Direct clutch	<a href="#">AT-320</a>
				12. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-13, "Cross-sectional View (YD25DDTi Models for 2WD)"</a> , <a href="#">AT-14, "Cross-sectional View (VQ40DE Models for 2WD)"</a> , <a href="#">AT-15, "Cross-sectional View (YD25DDTi Models for 4WD)"</a> or <a href="#">AT-16, "Cross-sectional View (VQ40DE Models for 4WD)"</a> .)	<a href="#">AT-282</a>

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No.	Items	Symptom	Condition	Diagnostic Item	Reference page
28	Slips/Will Not Engage	No shock at all or the clutch slips when vehicle changes speed D2 →D3 .	ON vehicle	1. A/T fluid level and state	<a href="#">AT-44</a>
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-108</a> , <a href="#">AT-131</a>
				3. ATF pressure switch 6 and high and low reverse clutch solenoid valve	<a href="#">AT-168</a> , <a href="#">AT-153</a>
				4. CAN communication line	<a href="#">AT-96</a>
				5. Line pressure test	<a href="#">AT-45</a>
				6. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	7. Torque converter	<a href="#">AT-282</a>
				8. Oil pump assembly	<a href="#">AT-301</a>
				9. 3rd one-way clutch	<a href="#">AT-304</a>
				10. Gear system	<a href="#">AT-262</a>
				11. High and low reverse clutch	<a href="#">AT-318</a>
				12. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-13</a> , " <a href="#">Cross-sectional View (YD25DDTi Models for 2WD)</a> ", <a href="#">AT-14</a> , " <a href="#">Cross-sectional View (VQ40DE Models for 2WD)</a> ", <a href="#">AT-15</a> , " <a href="#">Cross-sectional View (YD25DDTi Models for 4WD)</a> " or <a href="#">AT-16</a> , " <a href="#">Cross-sectional View (VQ40DE Models for 4WD)</a> ". )	<a href="#">AT-282</a>
				13. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-13</a> , " <a href="#">Cross-sectional View (YD25DDTi Models for 2WD)</a> ", <a href="#">AT-14</a> , " <a href="#">Cross-sectional View (VQ40DE Models for 2WD)</a> ", <a href="#">AT-15</a> , " <a href="#">Cross-sectional View (YD25DDTi Models for 4WD)</a> " or <a href="#">AT-16</a> , " <a href="#">Cross-sectional View (VQ40DE Models for 4WD)</a> ". )	<a href="#">AT-282</a>
29	No shock at all or the clutch slips when vehicle changes speed D3 →D4 .	ON vehicle	1. A/T fluid level and state	<a href="#">AT-44</a>	
			2. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-108</a> , <a href="#">AT-131</a>	
			3. ATF pressure switch 3 and input clutch solenoid valve	<a href="#">AT-164</a> , <a href="#">AT-138</a>	
			4. ATF pressure switch 1 and front brake solenoid valve	<a href="#">AT-162</a> , <a href="#">AT-143</a>	
			5. CAN communication line	<a href="#">AT-96</a>	
			6. Line pressure test	<a href="#">AT-45</a>	
			7. Control valve with TCM	<a href="#">AT-224</a>	
		OFF vehicle	8. Torque converter	<a href="#">AT-282</a>	
			9. Oil pump assembly	<a href="#">AT-301</a>	
			10. Input clutch	<a href="#">AT-306</a>	
			11. Gear system	<a href="#">AT-262</a>	
			12. High and low reverse clutch	<a href="#">AT-318</a>	
			13. Direct clutch	<a href="#">AT-320</a>	

# TROUBLE DIAGNOSIS

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
30	Slips/Will Not Engage	No shock at all or the clutch slips when vehicle changes speed D4 →D5 .	ON vehicle	1. A/T fluid level and state	<a href="#">AT-44</a>
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-108, AT-131</a>
				3. ATF pressure switch 1 and front brake solenoid valve	<a href="#">AT-162, AT-143</a>
				4. ATF pressure switch 5 and direct clutch solenoid valve	<a href="#">AT-166, AT-148</a>
				5. CAN communication line	<a href="#">AT-96</a>
				6. Line pressure test	<a href="#">AT-45</a>
				7. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	8. Torque converter	<a href="#">AT-282</a>
				9. Oil pump assembly	<a href="#">AT-301</a>
				10. Front brake (brake band)	<a href="#">AT-282</a>
				11. Input clutch	<a href="#">AT-306</a>
				12. Gear system	<a href="#">AT-262</a>
				13. High and low reverse clutch	<a href="#">AT-318</a>
31	Slips/Will Not Engage	When you press the accelerator pedal and shift speed D5 →D4 the engine idles or the A/T slips.	ON vehicle	1. A/T fluid level and state	<a href="#">AT-44</a>
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-108, AT-131</a>
				3. ATF pressure switch 1 and front brake solenoid valve	<a href="#">AT-162, AT-143</a>
				4. ATF pressure switch 5 and direct clutch solenoid valve	<a href="#">AT-166, AT-148</a>
				5. CAN communication line	<a href="#">AT-96</a>
				6. Line pressure test	<a href="#">AT-45</a>
				7. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	8. Torque converter	<a href="#">AT-282</a>
				9. Oil pump assembly	<a href="#">AT-301</a>
				10. Input clutch	<a href="#">AT-306</a>
				11. Gear system	<a href="#">AT-262</a>
				12. High and low reverse clutch	<a href="#">AT-318</a>
				13. Direct clutch	<a href="#">AT-320</a>

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No.	Items	Symptom	Condition	Diagnostic Item	Reference page
32	Slips/Will Not Engage	When you press the accelerator pedal and shift speed D4 →D3 the engine idles or the A/T slips.	ON vehicle	1. A/T fluid level and state	<a href="#">AT-44</a>
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-108</a> , <a href="#">AT-131</a>
				3. ATF pressure switch 3 and input clutch solenoid valve	<a href="#">AT-164</a> , <a href="#">AT-138</a>
				4. ATF pressure switch 1 and front brake solenoid valve	<a href="#">AT-162</a> , <a href="#">AT-143</a>
				5. CAN communication line	<a href="#">AT-96</a>
				6. Line pressure test	<a href="#">AT-45</a>
				7. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	8. Torque converter	<a href="#">AT-282</a>
				9. Oil pump assembly	<a href="#">AT-301</a>
				10. 3rd one-way clutch	<a href="#">AT-304</a>
				11. Gear system	<a href="#">AT-262</a>
				12. High and low reverse clutch	<a href="#">AT-318</a>
				13. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-13</a> , " <a href="#">Cross-sectional View (YD25DDTi Models for 2WD)</a> ", <a href="#">AT-14</a> , " <a href="#">Cross-sectional View (VQ40DE Models for 2WD)</a> ", <a href="#">AT-15</a> , " <a href="#">Cross-sectional View (YD25DDTi Models for 4WD)</a> " or <a href="#">AT-16</a> , " <a href="#">Cross-sectional View (VQ40DE Models for 4WD)</a> ".)	<a href="#">AT-282</a>
				14. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-13</a> , " <a href="#">Cross-sectional View (YD25DDTi Models for 2WD)</a> ", <a href="#">AT-14</a> , " <a href="#">Cross-sectional View (VQ40DE Models for 2WD)</a> ", <a href="#">AT-15</a> , " <a href="#">Cross-sectional View (YD25DDTi Models for 4WD)</a> " or <a href="#">AT-16</a> , " <a href="#">Cross-sectional View (VQ40DE Models for 4WD)</a> ".)	<a href="#">AT-282</a>
33	When you press the accelerator pedal and shift speed D3 →D2 the engine idles or the A/T slips.	ON vehicle	1. A/T fluid level and state	<a href="#">AT-44</a>	
			2. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-108</a> , <a href="#">AT-131</a>	
			3. ATF pressure switch 6 and high and low reverse clutch solenoid valve	<a href="#">AT-168</a> , <a href="#">AT-153</a>	
			4. ATF pressure switch 5 and direct clutch solenoid valve	<a href="#">AT-166</a> , <a href="#">AT-148</a>	
			5. CAN communication line	<a href="#">AT-96</a>	
			6. Line pressure test	<a href="#">AT-45</a>	
			7. Control valve with TCM	<a href="#">AT-224</a>	
		OFF vehicle	8. Torque converter	<a href="#">AT-282</a>	
			9. Oil pump assembly	<a href="#">AT-301</a>	
			10. 3rd one-way clutch	<a href="#">AT-304</a>	
			11. Gear system	<a href="#">AT-262</a>	
			12. Direct clutch	<a href="#">AT-320</a>	
			13. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-13</a> , " <a href="#">Cross-sectional View (YD25DDTi Models for 2WD)</a> ", <a href="#">AT-14</a> , " <a href="#">Cross-sectional View (VQ40DE Models for 2WD)</a> ", <a href="#">AT-15</a> , " <a href="#">Cross-sectional View (YD25DDTi Models for 4WD)</a> " or <a href="#">AT-16</a> , " <a href="#">Cross-sectional View (VQ40DE Models for 4WD)</a> ".)	<a href="#">AT-282</a>	



# TROUBLE DIAGNOSIS

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
34	Slips/Will Not Engage	When you press the accelerator pedal and shift speed D2 →D1 the engine idles or the A/T slips.	ON vehicle	1. A/T fluid level and state	<a href="#">AT-44</a>
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-108, AT-131</a>
				3. ATF pressure switch 5 and direct clutch solenoid valve	<a href="#">AT-166, AT-148</a>
				4. CAN communication line	<a href="#">AT-96</a>
				5. Line pressure test	<a href="#">AT-45</a>
				6. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	7. Torque converter	<a href="#">AT-282</a>
				8. Oil pump assembly	<a href="#">AT-301</a>
				9. 3rd one-way clutch	<a href="#">AT-304</a>
				10. 1st one-way clutch	<a href="#">AT-312</a>
				11. Gear system	<a href="#">AT-262</a>
				12. Reverse brake	<a href="#">AT-282</a>
				13. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-13, "Cross-sectional View (YD25DDTi Models for 2WD)"</a> , <a href="#">AT-14, "Cross-sectional View (VQ40DE Models for 2WD)"</a> , <a href="#">AT-15, "Cross-sectional View (YD25DDTi Models for 4WD)"</a> or <a href="#">AT-16, "Cross-sectional View (VQ40DE Models for 4WD)"</a> .)	<a href="#">AT-282</a>
				14. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-13, "Cross-sectional View (YD25DDTi Models for 2WD)"</a> , <a href="#">AT-14, "Cross-sectional View (VQ40DE Models for 2WD)"</a> , <a href="#">AT-15, "Cross-sectional View (YD25DDTi Models for 4WD)"</a> or <a href="#">AT-16, "Cross-sectional View (VQ40DE Models for 4WD)"</a> .)	<a href="#">AT-282</a>

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## TROUBLE DIAGNOSIS

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
35	Slips/Will Not Engage	With selector lever in "D" position, acceleration is extremely poor.	ON vehicle	1. A/T fluid level and state	<a href="#">AT-44</a>
				2. Line pressure test	<a href="#">AT-45</a>
				3. Accelerator pedal position sensor	<a href="#">AT-121</a>
				4. CAN communication line	<a href="#">AT-96</a>
				5. PNP switch	<a href="#">AT-104</a>
				6. Control cable adjustment	<a href="#">AT-217</a>
				7. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	8. Torque converter	<a href="#">AT-282</a>
				9. Oil pump assembly	<a href="#">AT-301</a>
				10. 1st one-way clutch	<a href="#">AT-312</a>
				11. Gear system	<a href="#">AT-262</a>
				12. Reverse brake	<a href="#">AT-282</a>
				13. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-13</a> , " <a href="#">Cross-sectional View (YD25DDTi Models for 2WD)</a> ", <a href="#">AT-14</a> , " <a href="#">Cross-sectional View (VQ40DE Models for 2WD)</a> ", <a href="#">AT-15</a> , " <a href="#">Cross-sectional View (YD25DDTi Models for 4WD)</a> " or <a href="#">AT-16</a> , " <a href="#">Cross-sectional View (VQ40DE Models for 4WD)</a> ".)	<a href="#">AT-282</a>
				14. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-13</a> , " <a href="#">Cross-sectional View (YD25DDTi Models for 2WD)</a> ", <a href="#">AT-14</a> , " <a href="#">Cross-sectional View (VQ40DE Models for 2WD)</a> ", <a href="#">AT-15</a> , " <a href="#">Cross-sectional View (YD25DDTi Models for 4WD)</a> " or <a href="#">AT-16</a> , " <a href="#">Cross-sectional View (VQ40DE Models for 4WD)</a> ".)	<a href="#">AT-282</a>
36		With selector lever in "R" position, acceleration is extremely poor.	ON vehicle	1. A/T fluid level and state	<a href="#">AT-44</a>
				2. Line pressure test	<a href="#">AT-45</a>
				3. Accelerator pedal position sensor	<a href="#">AT-121</a>
				4. ATF pressure switch 6 and high and low reverse clutch solenoid valve	<a href="#">AT-168</a> , <a href="#">AT-153</a>
				5. CAN communication line	<a href="#">AT-96</a>
				6. PNP switch	<a href="#">AT-104</a>
				7. Control cable adjustment	<a href="#">AT-217</a>
				8. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	9. Gear system	<a href="#">AT-262</a>
				10. Output shaft	<a href="#">AT-282</a>
				11. Reverse brake	<a href="#">AT-282</a>

## TROUBLE DIAGNOSIS

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
37	Slips/Will Not Engage	While starting off by accelerating in 1st, engine races or slip-page occurs.	ON vehicle	1. A/T fluid level and state	<a href="#">AT-44</a>
				2. Line pressure test	<a href="#">AT-45</a>
				3. Accelerator pedal position sensor	<a href="#">AT-121</a>
				4. CAN communication line	<a href="#">AT-96</a>
				5. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	6. Torque converter	<a href="#">AT-282</a>
				7. Oil pump assembly	<a href="#">AT-301</a>
				8. 3rd one-way clutch	<a href="#">AT-304</a>
				9. 1st one-way clutch	<a href="#">AT-312</a>
				10. Gear system	<a href="#">AT-262</a>
				11. Reverse brake	<a href="#">AT-282</a>
				12. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-13</a> , " <a href="#">Cross-sectional View (YD25DDTi Models for 2WD)</a> ", <a href="#">AT-14</a> , " <a href="#">Cross-sectional View (VQ40DE Models for 2WD)</a> ", <a href="#">AT-15</a> , " <a href="#">Cross-sectional View (YD25DDTi Models for 4WD)</a> " or <a href="#">AT-16</a> , " <a href="#">Cross-sectional View (VQ40DE Models for 4WD)</a> ".)	<a href="#">AT-282</a>
				13. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-13</a> , " <a href="#">Cross-sectional View (YD25DDTi Models for 2WD)</a> ", <a href="#">AT-14</a> , " <a href="#">Cross-sectional View (VQ40DE Models for 2WD)</a> ", <a href="#">AT-15</a> , " <a href="#">Cross-sectional View (YD25DDTi Models for 4WD)</a> " or <a href="#">AT-16</a> , " <a href="#">Cross-sectional View (VQ40DE Models for 4WD)</a> ".)	<a href="#">AT-282</a>
38	While accelerating in 2nd, engine races or slippage occurs.	ON vehicle	1. A/T fluid level and state	<a href="#">AT-44</a>	
			2. Line pressure test	<a href="#">AT-45</a>	
			3. Accelerator pedal position sensor	<a href="#">AT-121</a>	
			4. CAN communication line	<a href="#">AT-96</a>	
			5. ATF pressure switch 5 and direct clutch solenoid valve	<a href="#">AT-166</a> , <a href="#">AT-148</a>	
			6. Control valve with TCM	<a href="#">AT-224</a>	
		OFF vehicle	7. Torque converter	<a href="#">AT-282</a>	
			8. Oil pump assembly	<a href="#">AT-301</a>	
			9. 3rd one-way clutch	<a href="#">AT-304</a>	
			10. Gear system	<a href="#">AT-262</a>	
			11. Direct clutch	<a href="#">AT-320</a>	
			12. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-13</a> , " <a href="#">Cross-sectional View (YD25DDTi Models for 2WD)</a> ", <a href="#">AT-14</a> , " <a href="#">Cross-sectional View (VQ40DE Models for 2WD)</a> ", <a href="#">AT-15</a> , " <a href="#">Cross-sectional View (YD25DDTi Models for 4WD)</a> ", <a href="#">AT-16</a> , " <a href="#">Cross-sectional View (VQ40DE Models for 4WD)</a> ".)	<a href="#">AT-282</a>	

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## TROUBLE DIAGNOSIS

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
39	Slips/Will Not Engage	While accelerating in 3rd, engine races or slippage occurs.	ON vehicle	1. A/T fluid level and state	<a href="#">AT-44</a>
				2. Line pressure test	<a href="#">AT-45</a>
				3. Accelerator pedal position sensor	<a href="#">AT-121</a>
				4. CAN communication line	<a href="#">AT-96</a>
				5. ATF pressure switch 6 and high and low reverse clutch solenoid valve	<a href="#">AT-168</a> , <a href="#">AT-153</a>
				6. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	7. Torque converter	<a href="#">AT-282</a>
				8. Oil pump assembly	<a href="#">AT-301</a>
				9. 3rd one-way clutch	<a href="#">AT-304</a>
				10. Gear system	<a href="#">AT-262</a>
				11. High and low reverse clutch	<a href="#">AT-318</a>
				12. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-13</a> , " <a href="#">Cross-sectional View (YD25DDTi Models for 2WD)</a> ", <a href="#">AT-14</a> , " <a href="#">Cross-sectional View (VQ40DE Models for 2WD)</a> ", <a href="#">AT-15</a> , " <a href="#">Cross-sectional View (YD25DDTi Models for 4WD)</a> ", <a href="#">AT-16</a> , " <a href="#">Cross-sectional View (VQ40DE Models for 4WD)</a> ".)	<a href="#">AT-282</a>
				13. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-13</a> , " <a href="#">Cross-sectional View (YD25DDTi Models for 2WD)</a> ", <a href="#">AT-14</a> , " <a href="#">Cross-sectional View (VQ40DE Models for 2WD)</a> ", <a href="#">AT-15</a> , " <a href="#">Cross-sectional View (YD25DDTi Models for 4WD)</a> ", <a href="#">AT-16</a> , " <a href="#">Cross-sectional View (VQ40DE Models for 4WD)</a> ".)	<a href="#">AT-282</a>
40		While accelerating in 4th, engine races or slippage occurs.	ON vehicle	1. A/T fluid level and state	<a href="#">AT-44</a>
				2. Line pressure test	<a href="#">AT-45</a>
				3. Accelerator pedal position sensor	<a href="#">AT-121</a>
				4. CAN communication line	<a href="#">AT-96</a>
				5. ATF pressure switch 3 and input clutch solenoid valve	<a href="#">AT-164</a> , <a href="#">AT-138</a>
				6. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	7. Torque converter	<a href="#">AT-282</a>
				8. Oil pump assembly	<a href="#">AT-301</a>
				9. Input clutch	<a href="#">AT-306</a>
				10. Gear system	<a href="#">AT-262</a>
				11. High and low reverse clutch	<a href="#">AT-318</a>
				12. Direct clutch	<a href="#">AT-320</a>

## TROUBLE DIAGNOSIS

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
41	Slips/Will Not Engage	While accelerating in 5th, engine races or slippage occurs.	ON vehicle	1. A/T fluid level and state	<a href="#">AT-44</a>
				2. Line pressure test	<a href="#">AT-45</a>
				3. Accelerator pedal position sensor	<a href="#">AT-121</a>
				4. CAN communication line	<a href="#">AT-96</a>
				5. ATF pressure switch 1 and front brake solenoid valve	<a href="#">AT-162,</a> <a href="#">AT-143</a>
				6. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	7. Torque converter	<a href="#">AT-282</a>
				8. Oil pump assembly	<a href="#">AT-301</a>
				9. Front brake (brake band)	<a href="#">AT-282</a>
				10. Input clutch	<a href="#">AT-306</a>
				11. Gear system	<a href="#">AT-262</a>
				12. High and low reverse clutch	<a href="#">AT-318</a>
42		Slips at lock-up.	ON vehicle	1. A/T fluid level and state	<a href="#">AT-44</a>
				2. Line pressure test	<a href="#">AT-45</a>
				3. Engine speed signal	<a href="#">AT-113</a>
				4. Turbine revolution sensor	<a href="#">AT-129</a>
				5. Torque converter clutch solenoid valve	<a href="#">AT-115</a>
				6. CAN communication line	<a href="#">AT-96</a>
				7. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	8. Torque converter	<a href="#">AT-282</a>
				9. Oil pump assembly	<a href="#">AT-301</a>

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## TROUBLE DIAGNOSIS

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
43	Slips/Will Not Engage	No creep at all. Refer to <a href="#">AT-188. "Vehicle Does Not Creep Backward in "R" Position"</a> , <a href="#">AT-190. "Vehicle Does Not Creep Forward in "D" Position"</a>	ON vehicle	1. A/T fluid level and state	<a href="#">AT-44</a>
				2. Line pressure test	<a href="#">AT-45</a>
				3. Accelerator pedal position sensor	<a href="#">AT-121</a>
				4. ATF pressure switch 5 and direct clutch solenoid valve	<a href="#">AT-166, AT-148</a>
				5. PNP switch	<a href="#">AT-104</a>
				6. CAN communication line	<a href="#">AT-96</a>
				7. Control cable adjustment	<a href="#">AT-217</a>
				8. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	9. Torque converter	<a href="#">AT-282</a>
				10. Oil pump assembly	<a href="#">AT-301</a>
				11. 1st one-way clutch	<a href="#">AT-312</a>
				12. Gear system	<a href="#">AT-262</a>
				13. Reverse brake	<a href="#">AT-282</a>
				14. Direct clutch	<a href="#">AT-320</a>
				15. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-13. "Cross-sectional View (YD25DDTi Models for 2WD)"</a> , <a href="#">AT-14. "Cross-sectional View (VQ40DE Models for 2WD)"</a> , <a href="#">AT-15. "Cross-sectional View (YD25DDTi Models for 4WD)"</a> or <a href="#">AT-16. "Cross-sectional View (VQ40DE Models for 4WD)"</a> .)	<a href="#">AT-282</a>
				16. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-13. "Cross-sectional View (YD25DDTi Models for 2WD)"</a> , <a href="#">AT-14. "Cross-sectional View (VQ40DE Models for 2WD)"</a> , <a href="#">AT-15. "Cross-sectional View (YD25DDTi Models for 4WD)"</a> or <a href="#">AT-16. "Cross-sectional View (VQ40DE Models for 4WD)"</a> .)	<a href="#">AT-282</a>
44	Vehicle cannot run in all positions.	ON vehicle	1. A/T fluid level and state	<a href="#">AT-44</a>	
			2. Line pressure test	<a href="#">AT-45</a>	
			3. PNP switch	<a href="#">AT-104</a>	
			4. Control cable adjustment	<a href="#">AT-217</a>	
			5. Control valve with TCM	<a href="#">AT-224</a>	
		OFF vehicle	6. Oil pump assembly	<a href="#">AT-301</a>	
			7. Gear system	<a href="#">AT-262</a>	
			8. Output shaft	<a href="#">AT-282</a>	

## TROUBLE DIAGNOSIS

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
45	Slips/Will Not Engage	With selector lever in "D" position, driving is not possible.	ON vehicle	1. A/T fluid level and state	<a href="#">AT-44</a>
				2. Line pressure test	<a href="#">AT-45</a>
				3. PNP switch	<a href="#">AT-104</a>
				4. Control cable adjustment	<a href="#">AT-217</a>
				5. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	6. Torque converter	<a href="#">AT-282</a>
				7. Oil pump assembly	<a href="#">AT-301</a>
				8. 1st one-way clutch	<a href="#">AT-312</a>
				9. Gear system	<a href="#">AT-262</a>
				10. Reverse brake	<a href="#">AT-282</a>
				11. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-13</a> , " <a href="#">Cross-sectional View (YD25DDTi Models for 2WD)</a> ", <a href="#">AT-14</a> , " <a href="#">Cross-sectional View (VQ40DE Models for 2WD)</a> ", <a href="#">AT-15</a> , " <a href="#">Cross-sectional View (YD25DDTi Models for 4WD)</a> " or <a href="#">AT-16</a> , " <a href="#">Cross-sectional View (VQ40DE Models for 4WD)</a> ".)	<a href="#">AT-282</a>
				12. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-13</a> , " <a href="#">Cross-sectional View (YD25DDTi Models for 2WD)</a> ", <a href="#">AT-14</a> , " <a href="#">Cross-sectional View (VQ40DE Models for 2WD)</a> ", <a href="#">AT-15</a> , " <a href="#">Cross-sectional View (YD25DDTi Models for 4WD)</a> " or <a href="#">AT-16</a> , " <a href="#">Cross-sectional View (VQ40DE Models for 4WD)</a> ".)	<a href="#">AT-282</a>
46		With selector lever in "R" position, driving is not possible.	ON vehicle	1. A/T fluid level and state	<a href="#">AT-44</a>
				2. Line pressure test	<a href="#">AT-45</a>
				3. PNP switch	<a href="#">AT-104</a>
				4. Control cable adjustment	<a href="#">AT-217</a>
				5. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	6. Gear system	<a href="#">AT-262</a>
				7. Output shaft	<a href="#">AT-282</a>
				8. Reverse brake	<a href="#">AT-282</a>
47	Others	Shift point is high in "D" position.	ON vehicle	1. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-108</a> , <a href="#">AT-131</a>
				2. Accelerator pedal position sensor	<a href="#">AT-121</a>
				3. CAN communication line	<a href="#">AT-96</a>
				4. A/T fluid temperature sensor	<a href="#">AT-124</a>
				5. Control valve with TCM	<a href="#">AT-224</a>
48		Shift point is low in "D" position.	ON vehicle	1. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-108</a> , <a href="#">AT-131</a>
				2. Accelerator pedal position sensor	<a href="#">AT-121</a>
				3. CAN communication line	<a href="#">AT-96</a>
				4. Control valve with TCM	<a href="#">AT-224</a>

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No.	Items	Symptom	Condition	Diagnostic Item	Reference page
49	Others	Judder occurs during lock-up.	ON vehicle	1. A/T fluid level and state	<a href="#">AT-44</a>
				2. Engine speed signal	<a href="#">AT-113</a>
				3. Turbine revolution sensor	<a href="#">AT-129</a>
				4. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-108</a> , <a href="#">AT-131</a>
				5. Accelerator pedal position sensor	<a href="#">AT-121</a>
				6. CAN communication line	<a href="#">AT-96</a>
				7. Torque converter clutch solenoid valve	<a href="#">AT-115</a>
				8. Control valve with TCM	<a href="#">AT-224</a>
		OFF vehicle	9. Torque converter	<a href="#">AT-282</a>	
50	Others	Strange noise in "R" position.	ON vehicle	1. A/T fluid level and state	<a href="#">AT-44</a>
				2. Engine speed signal	<a href="#">AT-113</a>
				3. CAN communication line	<a href="#">AT-96</a>
				4. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	5. Torque converter	<a href="#">AT-282</a>
				6. Oil pump assembly	<a href="#">AT-301</a>
				7. Gear system	<a href="#">AT-262</a>
				8. High and low reverse clutch	<a href="#">AT-318</a>
				9. Reverse brake	<a href="#">AT-282</a>
51	Others	Strange noise in "N" position.	ON vehicle	1. A/T fluid level and state	<a href="#">AT-44</a>
				2. Engine speed signal	<a href="#">AT-113</a>
				3. CAN communication line	<a href="#">AT-96</a>
				4. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	5. Torque converter	<a href="#">AT-282</a>
				6. Oil pump assembly	<a href="#">AT-301</a>
				7. Gear system	<a href="#">AT-262</a>
52	Others	Strange noise in "D" position.	ON vehicle	1. A/T fluid level and state	<a href="#">AT-44</a>
				2. Engine speed signal	<a href="#">AT-113</a>
				3. CAN communication line	<a href="#">AT-96</a>
				4. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	5. Torque converter	<a href="#">AT-282</a>
				6. Oil pump assembly	<a href="#">AT-301</a>
				7. Gear system	<a href="#">AT-262</a>
				8. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-13</a> , " <a href="#">Cross-sectional View (YD25DDTi Models for 2WD)</a> ", <a href="#">AT-14</a> , " <a href="#">Cross-sectional View (VQ40DE Models for 2WD)</a> ", <a href="#">AT-15</a> , " <a href="#">Cross-sectional View (YD25DDTi Models for 4WD)</a> " or <a href="#">AT-16</a> , " <a href="#">Cross-sectional View (VQ40DE Models for 4WD)</a> ".)	<a href="#">AT-282</a>



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No.	Items	Symptom	Condition	Diagnostic Item	Reference page
53		Vehicle does not decelerate by engine brake. Refer to <a href="#">AT-212</a> . " <a href="#">Vehicle Does Not Decelerate by Engine Brake</a> ".	ON vehicle	1. PNP switch	<a href="#">AT-104</a>
				2. A/T fluid level and state	<a href="#">AT-44</a>
				3. Control cable adjustment	<a href="#">AT-217</a>
				4. 1st position switch	<a href="#">AT-176</a>
				5. ATF pressure switch 5	<a href="#">AT-166</a>
				6. CAN communication line	<a href="#">AT-96</a>
				7. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	8. Input clutch	<a href="#">AT-306</a>
				9. High and low reverse clutch	<a href="#">AT-318</a>
				10. Direct clutch	<a href="#">AT-320</a>
54	Others	Engine brake does not work operate in "2" position.	ON vehicle	1. PNP switch	<a href="#">AT-104</a>
				2. A/T fluid level and state	<a href="#">AT-44</a>
				3. Control cable adjustment	<a href="#">AT-217</a>
				4. ATF pressure switch 6	<a href="#">AT-168</a>
				5. CAN communication line	<a href="#">AT-96</a>
				6. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	7. Front brake (brake band)	<a href="#">AT-282</a>
				8. Input clutch	<a href="#">AT-306</a>
				9. High and low reverse clutch	<a href="#">AT-318</a>
				10. Direct clutch	<a href="#">AT-320</a>
55		Engine brake does not work operate in "1" position.	ON vehicle	1. PNP switch	<a href="#">AT-104</a>
				2. A/T fluid level and state	<a href="#">AT-44</a>
				3. Control cable adjustment	<a href="#">AT-217</a>
				4. 1st position switch	<a href="#">AT-176</a>
				5. ATF pressure switch 5	<a href="#">AT-166</a>
				6. CAN communication line	<a href="#">AT-96</a>
				7. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	8. Input clutch	<a href="#">AT-306</a>
				9. High and low reverse clutch	<a href="#">AT-318</a>
				10. Direct clutch	<a href="#">AT-320</a>

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## TROUBLE DIAGNOSIS

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
56	Others	Maximum speed low.	ON vehicle	1. A/T fluid level and state	<a href="#">AT-44</a>
				2. Line pressure test	<a href="#">AT-45</a>
				3. Accelerator pedal position sensor	<a href="#">AT-121</a>
				4. CAN communication line	<a href="#">AT-96</a>
				5. Direct clutch solenoid valve	<a href="#">AT-148</a>
				6. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	7. Torque converter	<a href="#">AT-282</a>
				8. Oil pump assembly	<a href="#">AT-301</a>
				9. Input clutch	<a href="#">AT-306</a>
				10. Gear system	<a href="#">AT-262</a>
				11. High and low reverse clutch	<a href="#">AT-318</a>
				12. Direct clutch	<a href="#">AT-320</a>
				13. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-13</a> , " <a href="#">Cross-sectional View (YD25DDTi Models for 2WD)</a> ", <a href="#">AT-14</a> , " <a href="#">Cross-sectional View (VQ40DE Models for 2WD)</a> ", <a href="#">AT-15</a> , " <a href="#">Cross-sectional View (YD25DDTi Models for 4WD)</a> " or <a href="#">AT-16</a> , " <a href="#">Cross-sectional View (VQ40DE Models for 4WD)</a> ".)	<a href="#">AT-282</a>
				14. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-13</a> , " <a href="#">Cross-sectional View (YD25DDTi Models for 2WD)</a> ", <a href="#">AT-14</a> , " <a href="#">Cross-sectional View (VQ40DE Models for 2WD)</a> ", <a href="#">AT-15</a> , " <a href="#">Cross-sectional View (YD25DDTi Models for 4WD)</a> " or <a href="#">AT-16</a> , " <a href="#">Cross-sectional View (VQ40DE Models for 4WD)</a> ".)	<a href="#">AT-282</a>
57		Extremely large creep.	ON vehicle	1. Engine idle speed	<a href="#">EC-1027</a> (for YD25DDTi engine), <a href="#">EC-65</a> (for VQ40DE engine type 1*) or <a href="#">EC-608</a> (for VQ40DE engine type 2*)
				2. CAN communication line	<a href="#">AT-96</a>
				3. ATF pressure switch 5	<a href="#">AT-166</a>
			OFF vehicle	4. Torque converter	<a href="#">AT-282</a>

## TROUBLE DIAGNOSIS

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
58		With selector lever in "P" position, vehicle does not enter parking condition or, with selector lever in another position, parking condition is not cancelled. Refer to <a href="#">AT-184, "In "P" Position, Vehicle Moves When Pushed"</a> .	ON vehicle	1. PNP switch	<a href="#">AT-104</a>
				2. Control cable adjustment	<a href="#">AT-217</a>
			OFF vehicle	3. Parking pawl components	<a href="#">AT-244</a> (2WD models) or <a href="#">AT-282</a> (4WD models)
59		Vehicle runs with A/T in "P" position.	ON vehicle	1. PNP switch	<a href="#">AT-104</a>
				2. A/T fluid level and state	<a href="#">AT-44</a>
				3. Control cable adjustment	<a href="#">AT-217</a>
				4. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	5. Parking pawl components	<a href="#">AT-244</a> (2WD models) or <a href="#">AT-282</a> (4WD models)
				6. Gear system	<a href="#">AT-262</a>
60	Others	Vehicle runs with A/T in "N" position. Refer to <a href="#">AT-185, "In "N" Position, Vehicle Moves"</a> .	ON vehicle	1. PNP switch	<a href="#">AT-104</a>
				2. A/T fluid level and state	<a href="#">AT-44</a>
				3. Control cable adjustment	<a href="#">AT-217</a>
				4. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	5. Input clutch	<a href="#">AT-306</a>
				6. Gear system	<a href="#">AT-262</a>
				7. Direct clutch	<a href="#">AT-320</a>
				8. Reverse brake	<a href="#">AT-282</a>
				9. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-13, "Cross-sectional View (YD25DDTi Models for 2WD)"</a> , <a href="#">AT-14, "Cross-sectional View (VQ40DE Models for 2WD)"</a> , <a href="#">AT-15, "Cross-sectional View (YD25DDTi Models for 4WD)"</a> or <a href="#">AT-16, "Cross-sectional View (VQ40DE Models for 4WD)"</a> .)	<a href="#">AT-282</a>
				10. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to <a href="#">AT-13, "Cross-sectional View (YD25DDTi Models for 2WD)"</a> , <a href="#">AT-14, "Cross-sectional View (VQ40DE Models for 2WD)"</a> , <a href="#">AT-15, "Cross-sectional View (YD25DDTi Models for 4WD)"</a> or <a href="#">AT-16, "Cross-sectional View (VQ40DE Models for 4WD)"</a> .)	<a href="#">AT-282</a>
61		Engine does not start in "N" or "P" position. Refer to <a href="#">AT-183, "Engine Cannot Be Started in "P" or "N" Position"</a> .	ON vehicle	1. Ignition switch and starter	<a href="#">PG-4, SC-30</a>
				2. Control cable adjustment	<a href="#">AT-217</a>
				3. PNP switch	<a href="#">AT-104</a>

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## TROUBLE DIAGNOSIS

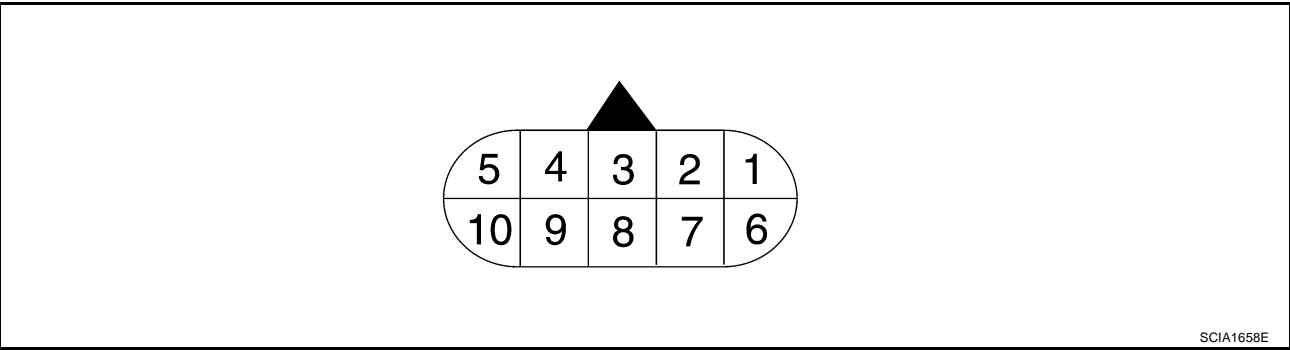
No.	Items	Symptom	Condition	Diagnostic Item	Reference page
62		Engine starts in positions other than "N" or "P".	ON vehicle	1. Ignition switch and starter	<a href="#">PG-4, SC-30</a>
				2. Control cable adjustment	<a href="#">AT-217</a>
				3. PNP switch	<a href="#">AT-104</a>
63		Engine stall.	ON vehicle	1. A/T fluid level and state	<a href="#">AT-44</a>
				2. Engine speed signal	<a href="#">AT-113</a>
				3. Turbine revolution sensor	<a href="#">AT-129</a>
				4. Torque converter clutch solenoid valve	<a href="#">AT-115</a>
				5. CAN communication line	<a href="#">AT-96</a>
				6. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	7. Torque converter	<a href="#">AT-282</a>
64	Others	Engine stalls when selector lever shifted "N"→"D", "R".	ON vehicle	1. A/T fluid level and state	<a href="#">AT-44</a>
				2. Engine speed signal	<a href="#">AT-113</a>
				3. Turbine revolution sensor	<a href="#">AT-129</a>
				4. Torque converter clutch solenoid valve	<a href="#">AT-115</a>
				5. CAN communication line	<a href="#">AT-96</a>
				6. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	7. Torque converter	<a href="#">AT-282</a>
65		Engine speed does not return to idle. Refer to <a href="#">AT-205</a> , " <a href="#">Engine Speed Does Not Return to Idle</a> ".	ON vehicle	1. A/T fluid level and state	<a href="#">AT-44</a>
				2. ATF pressure switch 5 and direct clutch solenoid valve	<a href="#">AT-166</a> , <a href="#">AT-148</a>
				3. ATF pressure switch 1 and front brake solenoid valve	<a href="#">AT-162</a> , <a href="#">AT-143</a>
				4. Accelerator pedal position sensor	<a href="#">AT-121</a>
				5. Vehicle speed sensor A/T and vehicle speed sensor MTR	<a href="#">AT-108</a> , <a href="#">AT-131</a>
				6. CAN communication line	<a href="#">AT-96</a>
				7. Control valve with TCM	<a href="#">AT-224</a>
			OFF vehicle	8. Front brake (brake band)	<a href="#">AT-282</a>
				9. Direct clutch	<a href="#">AT-320</a>

\*: Refer to [EC-15](#), "[APPLICATION NOTICE](#)".

# TROUBLE DIAGNOSIS

## TCM Input/Output Signal Reference Values A/T ASSEMBLY HARNESS CONNECTOR TERMINAL LAYOUT







GCS00022



SCIA1658E

### TCM INSPECTION TABLE

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

Terminal	Wire color	Item	Condition	Data (Approx.)	
1	SB	Power supply (Memory back-up)	Always	Battery voltage	
2	R	Power supply (Memory back-up)	Always	Battery voltage	
3	L	CAN-H	-	-	
4	GR	K-line (CONSULT-II signal)	The terminal is connected to the data link connector for CONSULT-II.	-	
5	B	Ground	Always	0 V	
6	Y	Power supply		-	Battery voltage
				-	0 V
7	LG	Back-up lamp relay		Selector lever in "R" position.	0 V
				Selector lever in other positions.	Battery voltage
8	P	CAN-L	-	-	
9	BR	Starter relay		Selector lever in "N" or "P" position.	Battery voltage
				Selector lever in other positions.	0 V
10	B	Ground	Always	0 V	

# TROUBLE DIAGNOSIS

## CONSULT-II Function (A/T)

GCS00023

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

### FUNCTION

Diagnostic test mode	Function	Reference page
Self-diagnostic results	Self-diagnostic results can be read and erased quickly.	<a href="#">AT-85</a>
Data monitor	Input/Output data in the TCM can be read.	<a href="#">AT-88</a>
CAN diagnostic support monitor	The results of transmit/receive diagnosis of CAN communication can be read.	<a href="#">AT-91</a>
Function test	Conducted by CONSULT-II instead of a technician to determine whether each system is "OK" or "NG".	—
DTC work support	Select the operating condition to confirm Diagnostic Trouble Codes.	<a href="#">AT-91</a>
ECU part number	TCM part number can be read.	—

### CONSULT-II REFERENCE VALUE

#### NOTICE:

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

Item name	Condition	Display value (Approx.)
VHCL/S SE-A/T	During driving	Approximately matches the speedometer reading.
VHCL/S SE-MTR		
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
ENGINE SPEED	Engine running	Closely matches the tachometer reading.
TURBINE REV	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		3.3 - 2.5 - 0.7 V
TCC SOLENOID	When perform lock-up	0.4 - 0.6 A
LINE PRES SOL	During driving	0.2 - 0.6 A
FR/B SOLENOID	Front brake engaged. Refer to <a href="#">AT-18</a> .	0.6 - 0.8 A
	Front brake disengaged. Refer to <a href="#">AT-18</a> .	0 - 0.05 A

## TROUBLE DIAGNOSIS

Item name	Condition	Display value (Approx.)	
I/C SOLENOID	Input clutch disengaged. Refer to <a href="#">AT-18</a> .	0.6 - 0.8 A	A
	Input clutch engaged. Refer to <a href="#">AT-18</a> .	0 - 0.05 A	
D/C SOLENOID	Direct clutch disengaged. Refer to <a href="#">AT-18</a> .	0.6 - 0.8 A	B
	Direct clutch engaged. Refer to <a href="#">AT-18</a> .	0 - 0.05 A	
HLR/C SOL	High and low reverse clutch disengaged. Refer to <a href="#">AT-18</a> .	0.6 - 0.8 A	AT
	High and low reverse clutch engaged. Refer to <a href="#">AT-18</a> .	0 - 0.05 A	
STARTER RELAY	Selector lever in "N" or "P" position.	ON	
	Selector lever in other positions.	OFF	D
SLCT LVR POSI	Selector lever in "N" or "P" position.	N/P	
	Selector lever in "R" position.	R	E
	Selector lever in "D" position.	D	
	Selector lever in "3" position.	3	
	Selector lever in "2" position.	2	F
	Selector lever in "1" position.	1	
ON OFF SOL	Low coast brake engaged. Refer to <a href="#">AT-18</a> .	ON	
	Low coast brake disengaged. Refer to <a href="#">AT-18</a> .	OFF	G
ATF PRES SW 1	Front brake engaged. Refer to <a href="#">AT-18</a> .	ON	
	Front brake disengaged. Refer to <a href="#">AT-18</a> .	OFF	H
ATF PRES SW 2	Low coast brake engaged. Refer to <a href="#">AT-18</a> .	ON	
	Low coast brake disengaged. Refer to <a href="#">AT-18</a> .	OFF	I
ATF PRES SW 3	Input clutch engaged. Refer to <a href="#">AT-18</a> .	ON	
	Input clutch disengaged. Refer to <a href="#">AT-18</a> .	OFF	J
ATF PRES SW 5	Direct clutch engaged. Refer to <a href="#">AT-18</a> .	ON	
	Direct clutch disengaged. Refer to <a href="#">AT-18</a> .	OFF	K
ATF PRES SW 6	High and low reverse clutch engaged. Refer to <a href="#">AT-18</a> .	ON	
	High and low reverse clutch disengaged. Refer to <a href="#">AT-18</a> .	OFF	L
1 POSITION SW	Selector lever in "1" position.	ON	
	Selector lever in other positions.	OFF	M
OD CONT SW	Holding overdrive control switch.	ON	
	Releasing overdrive control switch.	OFF	
GEAR	During driving	1, 2, 3, 4, 5	

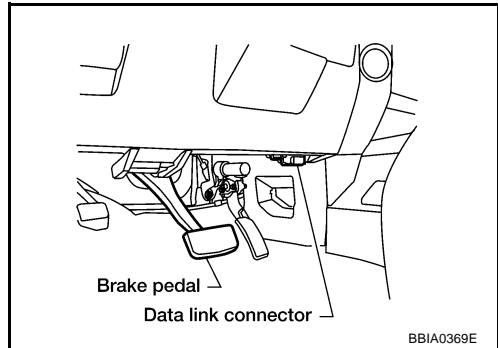
# TROUBLE DIAGNOSIS

## CONSULT-II SETTING PROCEDURE

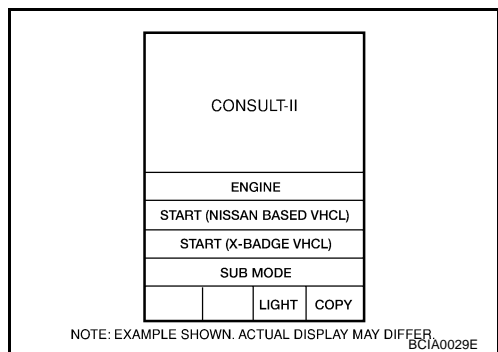
### CAUTION:

If CONSULT-II is used with no connection of CONSULT-II CONVERTER, malfunctions might be detected in self-diagnosis depending on control unit which carry out CAN communication.

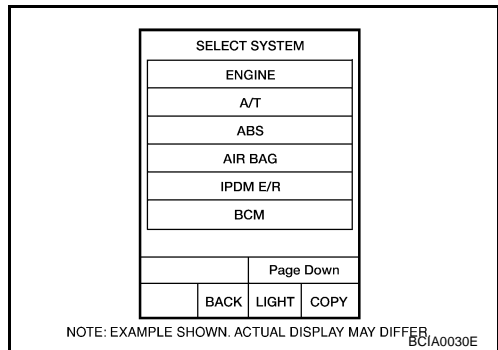
- For details, refer to the separate "CONSULT-II Operations Manual".
1. Turn ignition switch OFF.
  2. Connect CONSULT-II and CONSULT-II CONVERTER to data link connector, which is located in instrument lower panel on driver side.
  3. Turn ignition switch ON. (Do not start engine.)



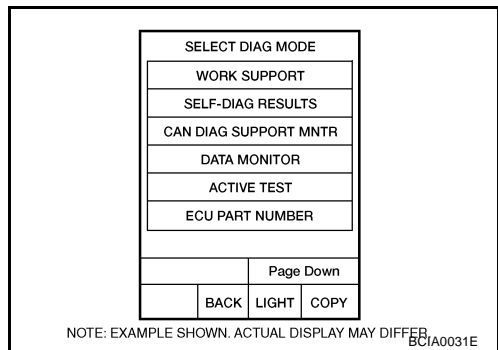
4. Touch "START (NISSAN BASED VHCL)".



5. Touch "A/T".  
If "A/T" is not indicated, go to [GI-47, "CONSULT-II Data Link Connector \(DLC\) Circuit"](#).



6. Perform each diagnostic test mode according to each service procedure.





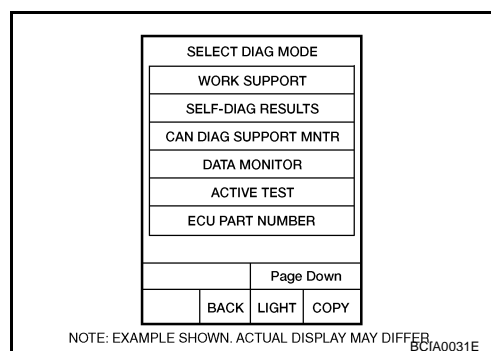
# TROUBLE DIAGNOSIS

## SELF-DIAGNOSTIC RESULT MODE

### Operation Procedure

After performing self-diagnosis, place check marks for results on the [AT-39, "DIAGNOSTIC WORKSHEET"](#). Reference pages are provided following the items.

1. Perform [AT-84, "CONSULT-II SETTING PROCEDURE"](#).
2. Touch "SELF-DIAG RESULTS".  
Display shows malfunction experienced since the last erasing operation.



### Display Items List

X: Applicable, —: Not applicable

Items (CONSULT-II screen terms)	Malfunction is detected when...	TCM self-diagnosis	Reference page
		DTC	
CAN COMM CIRCUIT	<ul style="list-style-type: none"> <li>● When a malfunction is detected in CAN communications</li> </ul>	U1000	<a href="#">AT-96</a>
STARTER RELAY/ CIRC	<ul style="list-style-type: none"> <li>● If this signal is ON other than in "P" or "N" position, this is judged to be a malfunction. (And if it is OFF in "P" or "N" position, this too is judged to be a malfunction.)</li> </ul>	P0615	<a href="#">AT-99</a>
TCM	<ul style="list-style-type: none"> <li>● TCM is malfunctioning.</li> </ul>	P0700	<a href="#">AT-103</a>
PNP SW/CIRC	<ul style="list-style-type: none"> <li>● PNP switch 1-4 signals input with impossible pattern</li> <li>● "P" position is detected from "N" position without any other position being detected in between.</li> </ul>	P0705	<a href="#">AT-104</a>
VEH SPD SEN/CIR AT	<ul style="list-style-type: none"> <li>● Signal from vehicle speed sensor A/T (Revolution sensor) not input due to cut line or the like</li> <li>● Unexpected signal input during running</li> <li>● After ignition switch is turned ON, unexpected signal input from vehicle speed sensor MTR before the vehicle starts moving</li> </ul>	P0720	<a href="#">AT-108</a>
ENGINE SPEED SIG	<ul style="list-style-type: none"> <li>● TCM does not receive the CAN communication signal from the ECM.</li> </ul>	P0725	<a href="#">AT-113</a>
TCC SOLENOID/CIRC	<ul style="list-style-type: none"> <li>● Normal voltage not applied to solenoid due to cut line, short, or the like</li> </ul>	P0740	<a href="#">AT-115</a>
A/T TCC S/V FNCTN	<ul style="list-style-type: none"> <li>● A/T cannot perform lock-up even if electrical circuit is good.</li> <li>● TCM detects as irregular by comparing difference value with slip rotation.</li> </ul>	P0744	<a href="#">AT-117</a>
L/PRESS SOL/CIRC	<ul style="list-style-type: none"> <li>● Normal voltage not applied to solenoid due to cut line, short, or the like</li> <li>● TCM detects as irregular by comparing target value with monitor value.</li> </ul>	P0745	<a href="#">AT-119</a>
TP SEN/CIRC A/T	<ul style="list-style-type: none"> <li>● TCM does not receive the proper accelerator pedal position signals (input by CAN communication) from ECM.</li> </ul>	P1705	<a href="#">AT-121</a>
ATF TEMP SEN/CIRC	<ul style="list-style-type: none"> <li>● During running, the ATF temperature sensor signal voltage is excessively high or low</li> </ul>	P1710	<a href="#">AT-124</a>
TURBINE REV S/CIRC	<ul style="list-style-type: none"> <li>● TCM does not receive the proper voltage signal from the sensor.</li> <li>● TCM detects an irregularity only at position of 4th gear for turbine revolution sensor 2.</li> </ul>	P1716	<a href="#">AT-129</a>

## TROUBLE DIAGNOSIS

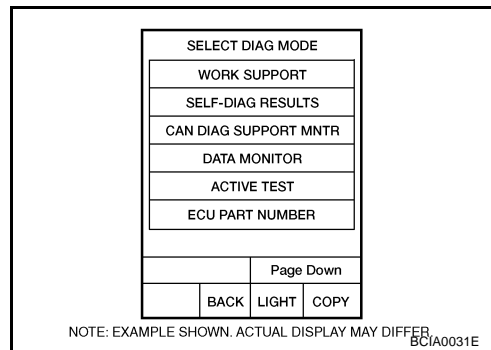
Items (CONSULT-II screen terms)	Malfunction is detected when...	TCM self-diagnosis	Reference page
		DTC	
VEH SPD SE/CIR-MTR	<ul style="list-style-type: none"> <li>● Signal (CAN communication) from vehicle speed sensor MTR not input due to cut line or the like</li> <li>● Unexpected signal input during running</li> </ul>	P1721	<a href="#">AT-131</a>
A/T INTERLOCK	<ul style="list-style-type: none"> <li>● Except during shift change, the gear position and ATF pressure switch states are monitored and comparative judgement made.</li> </ul>	P1730	<a href="#">AT-133</a>
A/T 1ST E/BRAKING	<ul style="list-style-type: none"> <li>● Each ATF pressure switch and solenoid current is monitored and if a pattern is detected having engine braking 1st gear other than in the "1" position, a malfunction is detected.</li> </ul>	P1731	<a href="#">AT-136</a>
I/C SOLENOID/CIRC	<ul style="list-style-type: none"> <li>● Normal voltage not applied to solenoid due to functional malfunction, cut line, short, or the like</li> <li>● TCM detects as irregular by comparing target value with monitor value.</li> </ul>	P1752	<a href="#">AT-138</a>
I/C SOLENOID FNCTN	<ul style="list-style-type: none"> <li>● TCM detects that actual gear ratio is irregular, and relation between gear position and condition of ATF pressure switch 3 is irregular during depressing accelerator pedal. (Other than during shift change)</li> <li>● TCM detects that relation between gear position and condition of ATF pressure switch 3 is irregular during releasing accelerator pedal. (Other than during shift change)</li> </ul>	P1754	<a href="#">AT-140</a>
FR/B SOLENOID/CIRC	<ul style="list-style-type: none"> <li>● Normal voltage not applied to solenoid due to functional malfunction, cut line, short, or the like</li> <li>● TCM detects as irregular by comparing target value with monitor value.</li> </ul>	P1757	<a href="#">AT-143</a>
FR/B SOLENOID FNCT	<ul style="list-style-type: none"> <li>● TCM detects that actual gear ratio is irregular, and relation between gear position and condition of ATF pressure switch 1 is irregular during depressing accelerator pedal. (Other than during shift change)</li> <li>● TCM detects that relation between gear position and condition of ATF pressure switch 1 is irregular during releasing accelerator pedal. (Other than during shift change)</li> </ul>	P1759	<a href="#">AT-145</a>
D/C SOLENOID/CIRC	<ul style="list-style-type: none"> <li>● Normal voltage not applied to solenoid due to cut line, short, or the like</li> <li>● TCM detects as irregular by comparing target value with monitor value.</li> </ul>	P1762	<a href="#">AT-148</a>
D/C SOLENOID FNCTN	<ul style="list-style-type: none"> <li>● TCM detects that actual gear ratio is irregular, and relation between gear position and condition of ATF pressure switch 5 is irregular during depressing accelerator pedal. (Other than during shift change)</li> <li>● TCM detects that relation between gear position and condition of ATF pressure switch 5 is irregular during releasing accelerator pedal. (Other than during shift change)</li> </ul>	P1764	<a href="#">AT-150</a>
HLR/C SOL/CIRC	<ul style="list-style-type: none"> <li>● Normal voltage not applied to solenoid due to functional malfunction, cut line, short, or the like</li> <li>● TCM detects as irregular by comparing target value with monitor value.</li> </ul>	P1767	<a href="#">AT-153</a>
HLR/C SOL FNCTN	<ul style="list-style-type: none"> <li>● TCM detects that actual gear ratio is irregular, and relation between gear position and condition of ATF pressure switch 6 is irregular during depressing accelerator pedal. (Other than during shift change)</li> <li>● TCM detects that relation between gear position and condition of ATF pressure switch 6 is irregular during releasing accelerator pedal. (Other than during shift change)</li> </ul>	P1769	<a href="#">AT-155</a>

# TROUBLE DIAGNOSIS

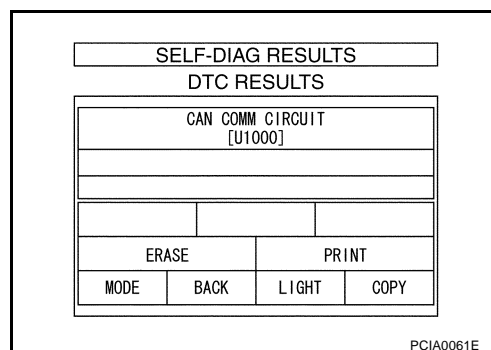
Items (CONSULT-II screen terms)	Malfunction is detected when...	TCM self-diagnosis	Reference page
		DTC	
LC/B SOLENOID/CIRC	<ul style="list-style-type: none"> <li>Normal voltage not applied to solenoid due to functional malfunction, cut line, short, or the like</li> </ul>	P1772	<a href="#">AT-158</a>
LC/B SOLENOID FNCT	<ul style="list-style-type: none"> <li>TCM detects an improper voltage drop when it tries to operate the solenoid valve.</li> <li>Condition of ATF pressure switch 2 is different from monitor value, and relation between gear position and actual gear ratio is irregular.</li> </ul>	P1774	<a href="#">AT-160</a>
ATF PRES SW 1/CIRC	<ul style="list-style-type: none"> <li>TCM detects that actual gear ratio is normal, and relation between gear position and condition of ATF pressure switch 1 is irregular during depressing accelerator pedal. (Other than during shift change)</li> </ul>	P1841	<a href="#">AT-162</a>
ATF PRES SW 3/CIRC	<ul style="list-style-type: none"> <li>TCM detects that actual gear ratio is normal, and relation between gear position and condition of ATF pressure switch 3 is irregular during depressing accelerator pedal. (Other than during shift change)</li> </ul>	P1843	<a href="#">AT-164</a>
ATF PRES SW 5/CIRC	<ul style="list-style-type: none"> <li>TCM detects that actual gear ratio is normal, and relation between gear position and condition of ATF pressure switch 5 is irregular during depressing accelerator pedal. (Other than during shift change)</li> </ul>	P1845	<a href="#">AT-166</a>
ATF PRES SW 6/CIRC	<ul style="list-style-type: none"> <li>TCM detects that actual gear ratio is normal, and relation between gear position and condition of ATF pressure switch 6 is irregular during depressing accelerator pedal. (Other than during shift change)</li> </ul>	P1846	<a href="#">AT-168</a>
NO DTC IS DETECTED FURTHER TESTING MAY BE REQUIRED	<ul style="list-style-type: none"> <li>No NG item has been detected.</li> </ul>	X	—

## How to Erase Self-diagnostic Results

- Perform [AT-84, "CONSULT-II SETTING PROCEDURE"](#).
- Touch "SELF-DIAG RESULTS".



- Touch "ERASE". (The self-diagnostic results will be erased.)



# TROUBLE DIAGNOSIS

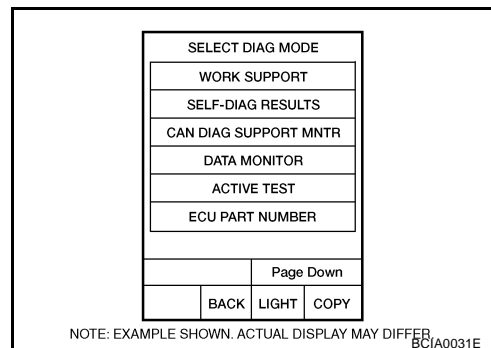
## DATA MONITOR MODE

### Operation Procedure

1. Perform [AT-84, "CONSULT-II SETTING PROCEDURE"](#).
2. Touch "DATA MONITOR".

#### NOTE:

When malfunction is detected, CONSULT-II performs "REAL-TIME DIAGNOSIS". Also, any malfunction detected while in this mode will be displayed at real time.



### Display Items List

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

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

# TROUBLE DIAGNOSIS

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

A  
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# TROUBLE DIAGNOSIS

Monitored item (Unit)	Monitor Item Selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
I/C SOL MON (A)	—	—	▼	
FR/B SOL MON (A)	—	—	▼	
D/C SOL MON (A)	—	—	▼	
HLR/C SOL MON (A)	—	—	▼	
ONOFF SOL MON (ON/OFF)	—	—	▼	LC/B solenoid
P POSI IND (ON/OFF)	—	—	▼	
R POSI IND (ON/OFF)	—	—	▼	
N POSI IND (ON/OFF)	—	—	▼	
D POSI IND (ON/OFF)	—	—	▼	
4TH POSI IND (ON/OFF)	—	—	▼	
3RD POSI IND (ON/OFF)	—	—	▼	
2ND POSI IND (ON/OFF)	—	—	▼	
1ST POSI IND (ON/OFF)	—	—	▼	
MANU MODE IND (ON/OFF)	—	—	▼	Not mounted but displayed.
POWER M LAMP (ON/OFF)	—	—	▼	
F-SAFE IND/L (ON/OFF)	—	—	▼	
ATF WARN LAMP (ON/OFF)	—	—	▼	
BACK-UP LAMP (ON/OFF)	—	—	▼	
STARTER RELAY (ON/OFF)	—	—	▼	
PNP SW3 MON (ON/OFF)	—	—	▼	
C/V CLB ID1	—	—	▼	
C/V CLB ID2	—	—	▼	
C/V CLB ID3	—	—	▼	
UNIT CLB ID1	—	—	▼	
UNIT CLB ID2	—	—	▼	
UNIT CLB ID3	—	—	▼	
TRGT GR RATIO	—	—	▼	
TRGT PRES TCC (kPa)	—	—	▼	
TRGT PRES L/P (kPa)	—	—	▼	
TRGT PRES I/C (kPa)	—	—	▼	
TRGT PRE FR/B (kPa)	—	—	▼	
TRGT PRES D/C (kPa)	—	—	▼	
TRG PRE HLR/C (kPa)	—	—	▼	
SHIFT PATTERN	—	—	▼	
DRV CST JUDGE	—	—	▼	

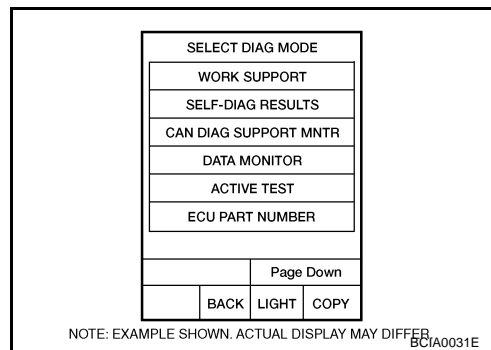
# TROUBLE DIAGNOSIS

Monitored item (Unit)	Monitor Item Selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
START RLY MON	—	—	▼	
NEXT GR POSI	—	—	▼	
SHIFT MODE	—	—	▼	
MANU GR POSI	—	—	▼	
VEHICLE SPEED (km/h)	—	X	▼	Vehicle speed recognized by TCM.
Voltage (V)	—	—	▼	Displays the value measured by the voltage probe.
Frequency (Hz)	—	—	▼	The value measured by the pulse probe is displayed.
DUTY-HI (high) (%)	—	—	▼	
DUTY-LOW (low) (%)	—	—	▼	
PLS WIDTH-HI (ms)	—	—	▼	
PLS WIDTH-LOW (ms)	—	—	▼	

## CAN DIAGNOSTIC SUPPORT MONITOR MODE

### Operation Procedure

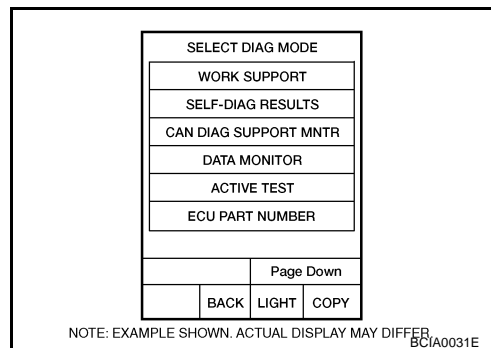
1. Perform [AT-84, "CONSULT-II SETTING PROCEDURE"](#) .
2. Touch "CAN DIAG SUPPORT MNTR". Refer to [LAN-15, "CAN Diagnostic Support Monitor"](#) .



## DTC WORK SUPPORT MODE

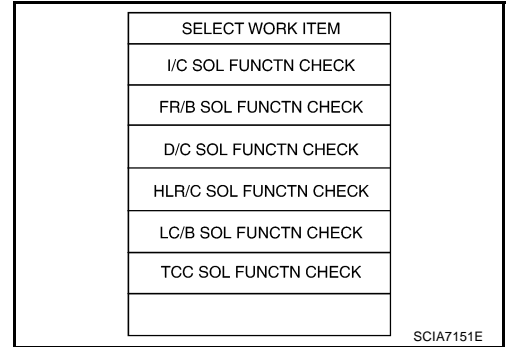
### Operation Procedure

1. Perform [AT-84, "CONSULT-II SETTING PROCEDURE"](#) .
2. Touch "DTC WORK SUPPORT".

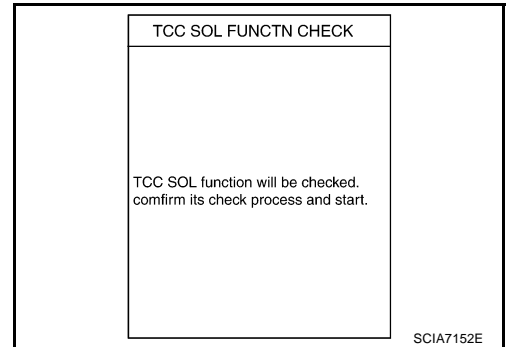


# TROUBLE DIAGNOSIS

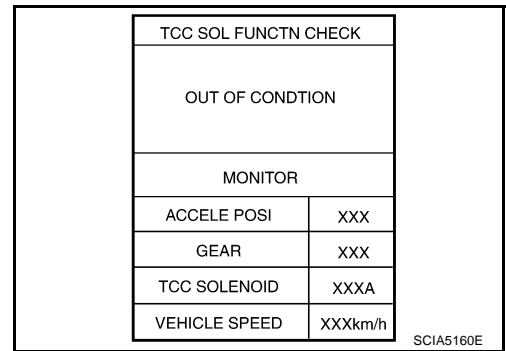
3. Touch select item menu.



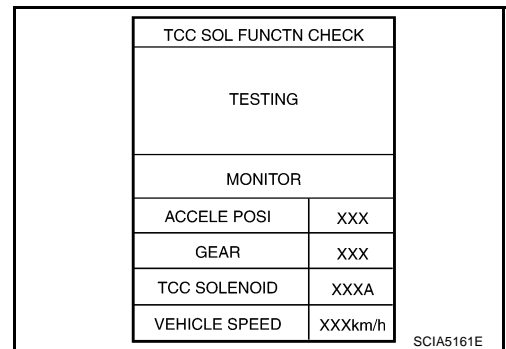
4. Touch "START".



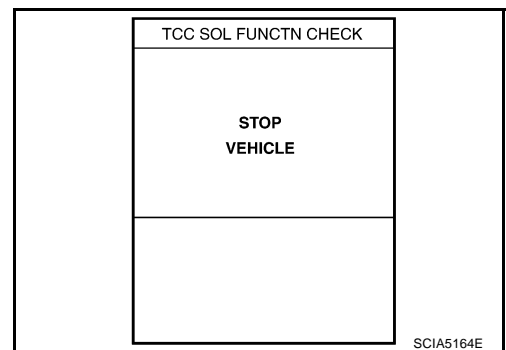
5. Perform driving test according to "DTC Confirmation Procedure" in "TROUBLE DIAGNOSIS FOR DTC".



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



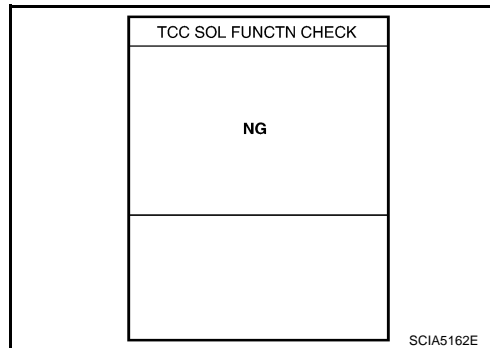
6. Stop vehicle.





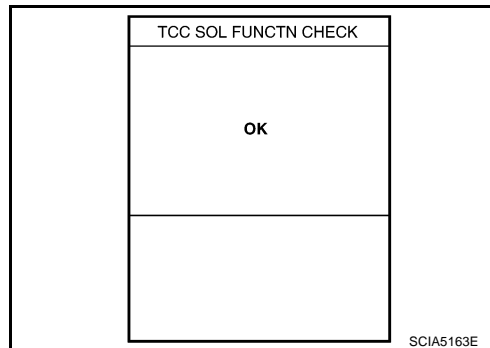
# TROUBLE DIAGNOSIS

- If “NG” appears on the screen, malfunction may exist. Go to “Diagnostic Procedure”.



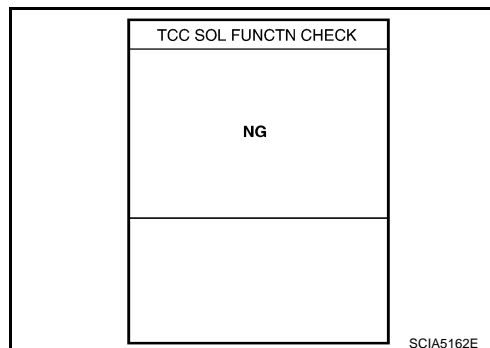
A  
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D

7. Perform test drive to check gear shift feeling in accordance with instructions displayed.
8. Touch “YES” or “NO”.
9. CONSULT-II procedure is ended.



E  
F  
G

- If “NG” appears on the screen, a malfunction may exist. Go to “Diagnostic Procedure”.



H  
I  
J  
K

## Display Items List

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

L  
M

\*: Do not use, but displayed.

# TROUBLE DIAGNOSIS

GCS00024

## Diagnostic Procedure Without CONSULT-II

### ⊗ TCM SELF-DIAGNOSTIC PROCEDURE (WITHOUT CONSULT-II)

#### Description

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

#### Diagnostic Procedure

### 1. CHECK OD OFF 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 OD OFF indicator lamp come on for about 2 seconds?

YES >> GO TO 2.

NO >> Go to [AT-183, "OD OFF Indicator Lamp Does Not Come On"](#) .

### 2. JUDGEMENT 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 selector lever from "D" to "3" position.
9. Release brake pedal. (Stop lamp switch signal OFF.)
10. Move selector lever from "3" to "2" position.
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 OD OFF indicator lamp. Refer to [AT-95, "Judgement Self-diagnosis Code"](#) .

If the system does not go into self-diagnosis. Refer to [AT-104, "DTC P0705 PARK/NEUTRAL POSITION SWITCH"](#) , [AT-174, "CLOSED THROTTLE POSITION AND WIDE OPEN THROTTLE POSITION CIRCUIT"](#) , [AT-175, "BRAKE SIGNAL CIRCUIT"](#) .

>> DIAGNOSIS END

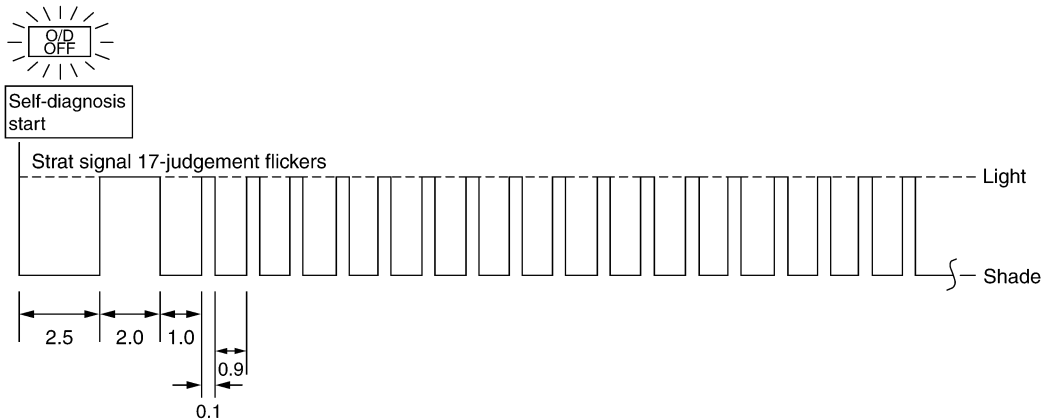
# TROUBLE DIAGNOSIS

## Judgement Self-diagnosis Code

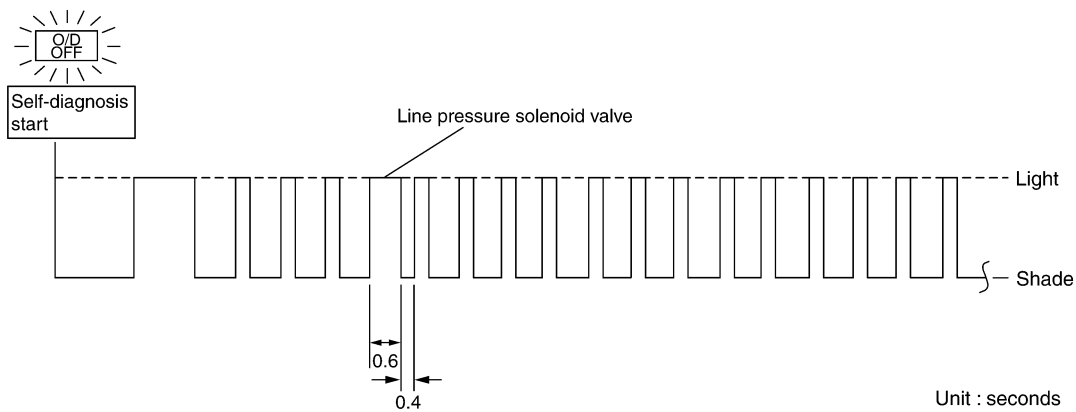
If there is a malfunction, the lamp lights up for the time corresponding to the suspect circuit.

No.	Malfunctioning item	No.	Malfunctioning item
1.	Revolution sensor <a href="#">AT-108</a>	10.	A/T fluid temperature sensor <a href="#">AT-124</a>
2.	Direct clutch solenoid valve <a href="#">AT-148</a> , <a href="#">AT-150</a>	11.	Turbine revolution sensor <a href="#">AT-129</a>
3.	Torque converter clutch solenoid valve <a href="#">AT-115</a> , <a href="#">AT-117</a>	12.	A/T interlock <a href="#">AT-133</a>
4.	Line pressure solenoid valve <a href="#">AT-119</a>	13.	A/T 1st engine braking <a href="#">AT-136</a>
5.	Input clutch solenoid valve <a href="#">AT-138</a> , <a href="#">AT-140</a>	14.	Start signal <a href="#">AT-99</a>
6.	Front brake solenoid valve <a href="#">AT-143</a> , <a href="#">AT-145</a>	15.	Accelerator pedal position sensor <a href="#">AT-121</a>
7.	Low coast brake solenoid valve <a href="#">AT-158</a> , <a href="#">AT-160</a>	16.	Engine speed signal <a href="#">AT-113</a>
8.	High and low reverse clutch solenoid valve <a href="#">AT-153</a> , <a href="#">AT-155</a>	17.	CAN communication line <a href="#">AT-96</a>
9.	PNP switch <a href="#">AT-104</a>		

All circuits that can be confirmed by self-diagnosis are OK.



Example: No.4 Line pressure solenoid valve



SCIA6862E

## Erase Self-diagnosis

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

# DTC U1000 CAN COMMUNICATION LINE

## DTC U1000 CAN COMMUNICATION LINE

PF:23710

### Description

GCS00025

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

GCS00026

Diagnostic trouble code "U1000 CAN COMM CIRCUIT" with CONSULT-II or 17th judgement flicker without CONSULT-II is detected when TCM cannot communicate to other control units.

### Possible Cause

GCS00027

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

### DTC Confirmation Procedure

GCS00028

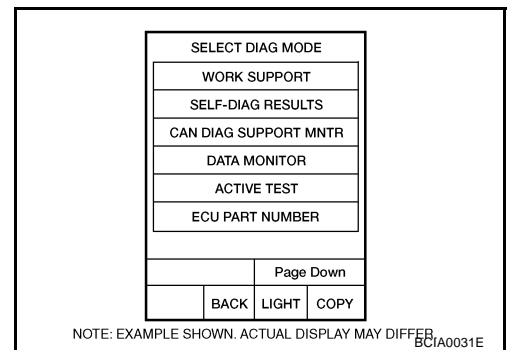
#### NOTE:

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.

#### ① WITH CONSULT-II

1. Turn ignition switch ON. (Do not start engine.)
2. Select "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Start engine and wait for at least 6 seconds.
4. If DTC is detected, go to [AT-98, "Diagnostic Procedure"](#).



#### ② WITHOUT CONSULT-II




1. Start engine and wait for at least 6 seconds.
2. Perform self-diagnosis. Refer to [AT-94, "Diagnostic Procedure Without CONSULT-II"](#).
3. If DTC is detected, go to [AT-98, "Diagnostic Procedure"](#).

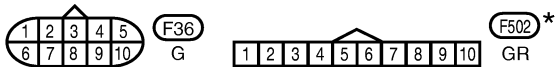
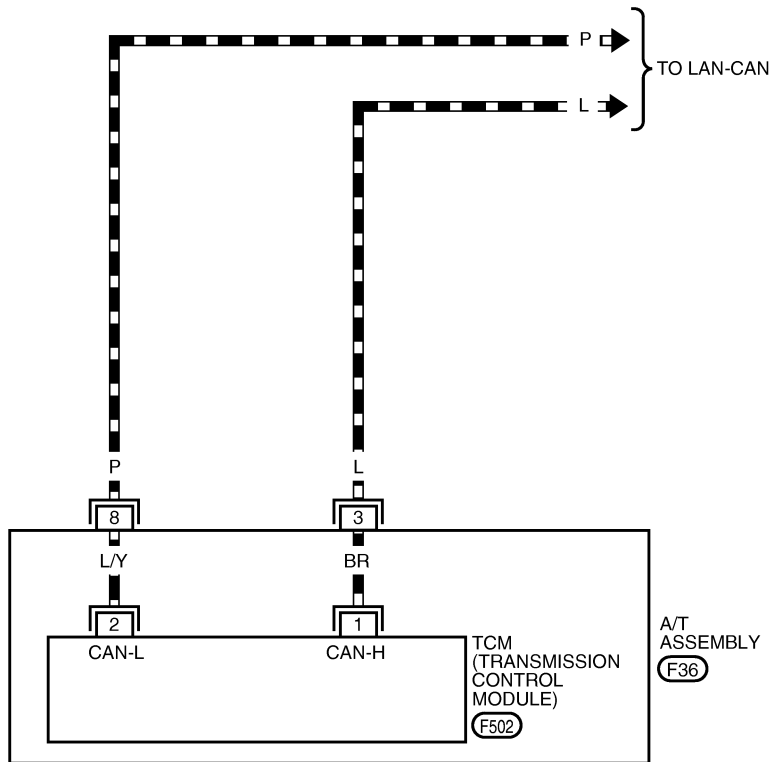
# DTC U1000 CAN COMMUNICATION LINE

## Wiring Diagram — AT — CAN

GCS00029

### AT-CAN-01

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



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

MCWA0194E

# DTC U1000 CAN COMMUNICATION LINE

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

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

## Diagnostic Procedure

GCS0002A

### 1. CHECK CAN COMMUNICATION CIRCUIT

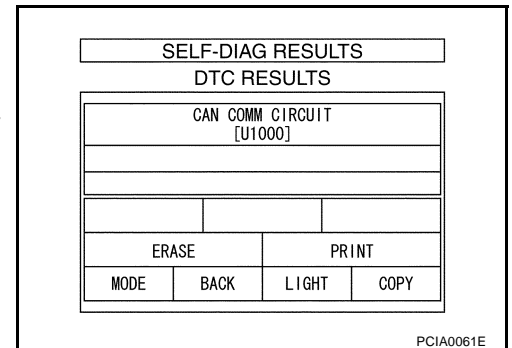
#### ④ With CONSULT-II

1. Turn ignition switch ON and start engine.
2. Select "SELF-DIAG RESULTS" mode for "A/T" with CONSULT-II.

Is any malfunction of the "U1000 CAN COMM CIRCUIT" indicated?

YES >> Print out CONSULT-II screen, Go to LAN section. Refer to [LAN-3, "Precautions When Using CONSULT-II"](#) .

NO >> **INSPECTION END**



# DTC P0615 START SIGNAL CIRCUIT

## DTC P0615 START SIGNAL CIRCUIT

PF:25230

### Description

GCS0002B

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

### CONSULT-II Reference Value

GCS0002C

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

### On Board Diagnosis Logic

GCS0002D

Diagnostic trouble code "P0615 STARTER RELAY/CIRC" with CONSULT-II or 14th judgement flicker without CONSULT-II 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

GCS0002E

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

### DTC Confirmation Procedure

GCS0002F

#### CAUTION:

Always drive vehicle at a safe speed.

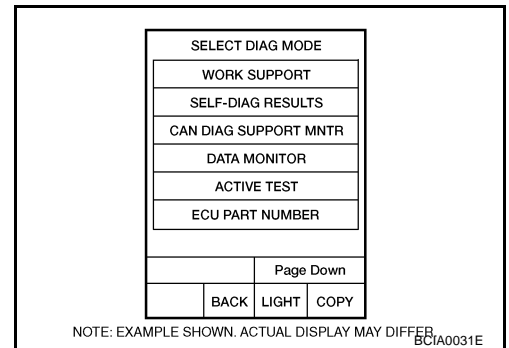
#### NOTE:

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

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

#### WITH CONSULT-II

1. Turn ignition switch ON. (Do not start engine.)
2. Select "SELECTION FROM MENU" in "DATA MONITOR" mode for "A/T" with CONSULT-II and check monitor "STARTER RELAY" ON/OFF.
3. Start engine.
4. Drive vehicle for at least 2 consecutive seconds.
5. If DTC is detected, go to [AT-101, "Diagnostic Procedure"](#).



#### WITHOUT CONSULT-II

1. Start engine.
2. Drive vehicle for at least 2 consecutive seconds.
3. Perform self-diagnosis. Refer to [AT-94, "Diagnostic Procedure Without CONSULT-II"](#).
4. If DTC is detected, go to [AT-101, "Diagnostic Procedure"](#).

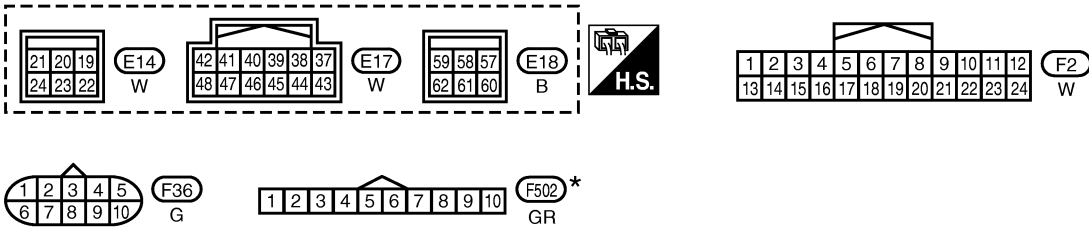
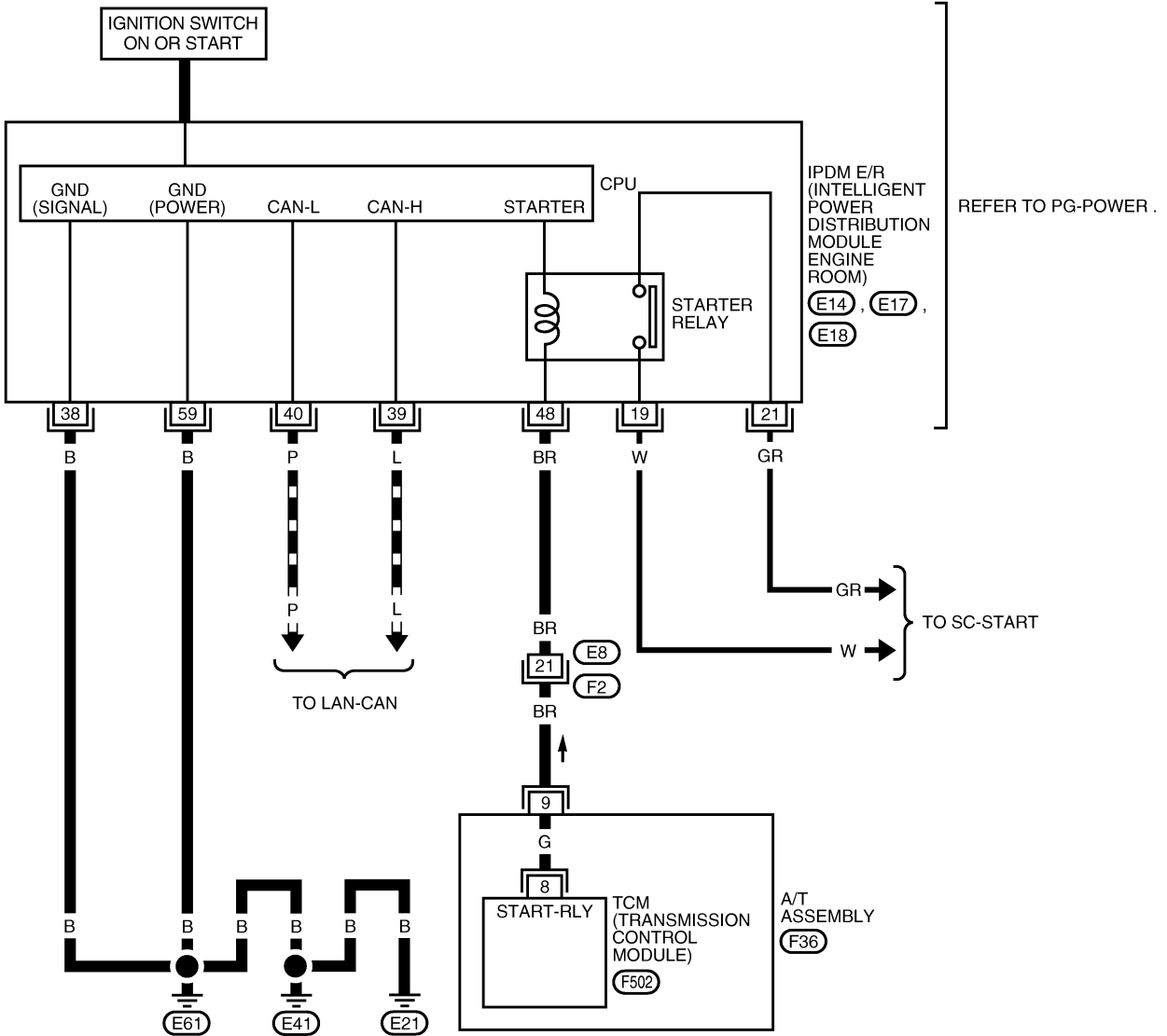
# DTC P0615 START SIGNAL CIRCUIT

GCS0002G

## Wiring Diagram — AT — STSIG

AT-STSIG-01

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




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

MCWA0195E



# DTC P0615 START SIGNAL CIRCUIT

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

Terminal	Wire color	Item	Condition	Data (Approx.)
9	BR	Starter relay	 Selector lever in "N" or "P" position.	Battery voltage
			Selector lever in other positions.	0 V

## Diagnostic Procedure

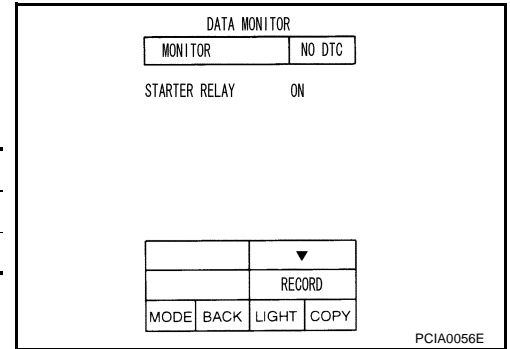
GCS0002H

### 1. CHECK STARTER RELAY

#### Ⓟ With CONSULT-II

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

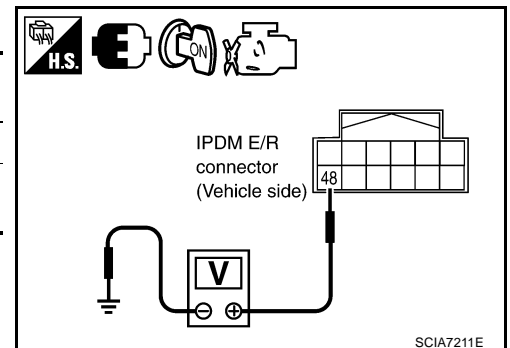
Item name	Condition	Display value
STARTER RELAY	Selector lever in "N" or "P" position.	ON
	Selector lever in other positions.	OFF



#### ⓧ Without CONSULT-II

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

Item	Connector	Terminal	Shift position	Voltage (Approx.)	
Starter relay	E17	48	Ground	"N" or "P"	Battery voltage
				"R", "D", "3", "2" or "1"	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

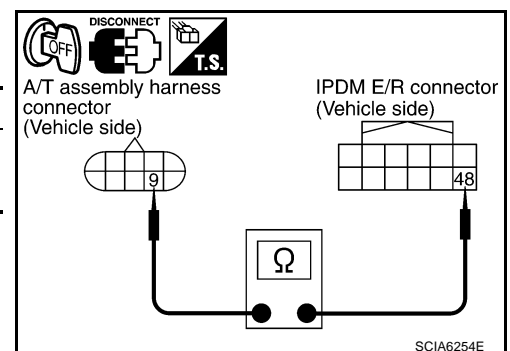
- Turn ignition switch OFF.
- Disconnect A/T assembly harness connector and IPDM E/R connector.
- Check continuity between A/T assembly harness connector and IPDM E/R connector.

Item	Connector	Terminal	Continuity
A/T assembly harness connector	F36	9	Yes
IPDM E/R connector	E17	48	

- 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.



# DTC P0615 START SIGNAL CIRCUIT

## 3. CHECK TERMINAL CORD ASSEMBLY

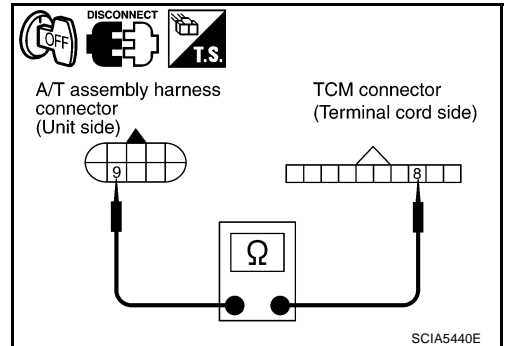
1. Remove control valve with TCM. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Disconnect A/T assembly harness connector and TCM connector.
3. Check continuity between A/T assembly harness connector terminal and TCM connector terminal.

Item	Connector	Terminal	Continuity
A/T assembly harness connector	F36	9	Yes
TCM connector	F502	8	

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

### OK or NG

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



## 4. DETECT MALFUNCTIONING ITEM

Check the following.

- Starter relay, Refer to [SC-30, "STARTING SYSTEM"](#) .
- IPDM E/R, Refer to [PG-14, "IPDM E/R \(INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM\)"](#) .

### OK or NG

- OK >> Replace control valve with TCM. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .  
NG >> Repair or replace damaged parts.

## 5. CHECK DTC

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

### OK or NG

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

# DTC P0700 TCM

## DTC P0700 TCM

PPF:31036

### Description

GCS0002I

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

### On Board Diagnosis Logic

GCS0002J

Diagnostic trouble code "P0700 TCM" with CONSULT-II is detected when TCM is malfunctioning.

### Possible Cause

GCS0002K

TCM

### DTC Confirmation Procedure

GCS0002L

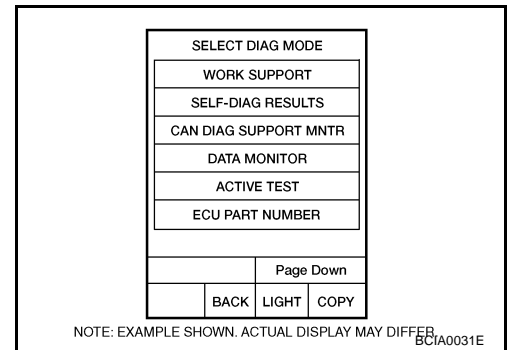
#### NOTE:

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

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

#### WITH CONSULT-II

1. Turn ignition switch ON. (Do not start engine.)
2. Select "ECU INPUT SIGNALS" or "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Start engine.
4. Run engine for at least 2 consecutive seconds at idle speed.
5. If DTC is detected, go to [AT-103, "Diagnostic Procedure"](#).



## Diagnostic Procedure

GCS0002M

### 1. CHECK DTC

#### With CONSULT-II

1. Turn ignition switch ON. (Do not start engine.)
2. Select "SELF DIAG RESULTS" mode for "A/T" with CONSULT-II.
3. Touch "ERASE".
4. Turn ignition switch OFF and wait at least 10 seconds.
5. Perform [AT-103, "DTC Confirmation Procedure"](#).

Is the "P0700 TCM" displayed again?

YES >> Replace control valve with TCM. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#).

NO >> **INSPECTION END**

# DTC P0705 PARK/NEUTRAL POSITION SWITCH

## DTC P0705 PARK/NEUTRAL POSITION SWITCH

PFP:32006

### Description

GCS0002N

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

### CONSULT-II Reference Value

GCS0002O

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

### On Board Diagnosis Logic

GCS0002P

Diagnostic trouble code "P0705 PNP SW/CIRC" with CONSULT-II or 9th judgement flicker without CONSULT-II is detected under the following conditions.

- When TCM does not receive the correct voltage signal from PNP switches 1, 2, 3 and 4 based on the gear position.
- When no other positions but "P" position is detected from "N" position.

### Possible Cause

GCS0002Q

- Harness or connectors  
(PNP switches 1, 2, 3 and 4 and TCM circuit is open or shorted.)
- PNP switches 1, 2, 3 and 4

### DTC Confirmation Procedure

GCS0002R

#### CAUTION:

Always drive vehicle at a safe speed.

#### NOTE:

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

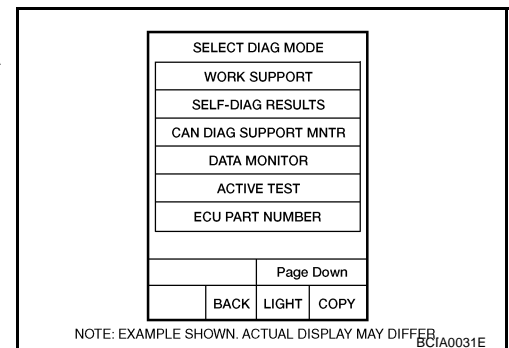
After the repair, perform the following procedure to confirm the malfunction is eliminated.

#### WITH CONSULT-II

1. Turn ignition switch ON. (Do not start engine.)
2. Select "ECU INPUT SIGNALS" or "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Touch "START".
4. Start engine.
5. Drive vehicle and maintain the following conditions for at least 2 consecutive seconds.

**ACCELE POSI: More than 1.0/8**

6. If DTC is detected, go to [AT-106, "Diagnostic Procedure"](#) .



#### WITHOUT CONSULT-II

1. Start engine.
2. Drive vehicle and maintain the following conditions for at least 2 consecutive seconds.  
**Accelerator opening: More than 1.0/8**
3. Perform self-diagnosis. Refer to [AT-94, "Diagnostic Procedure Without CONSULT-II"](#) .
4. If DTC is detected, go to [AT-106, "Diagnostic Procedure"](#) .

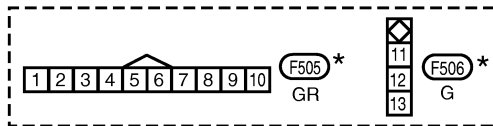
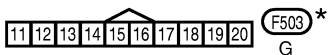
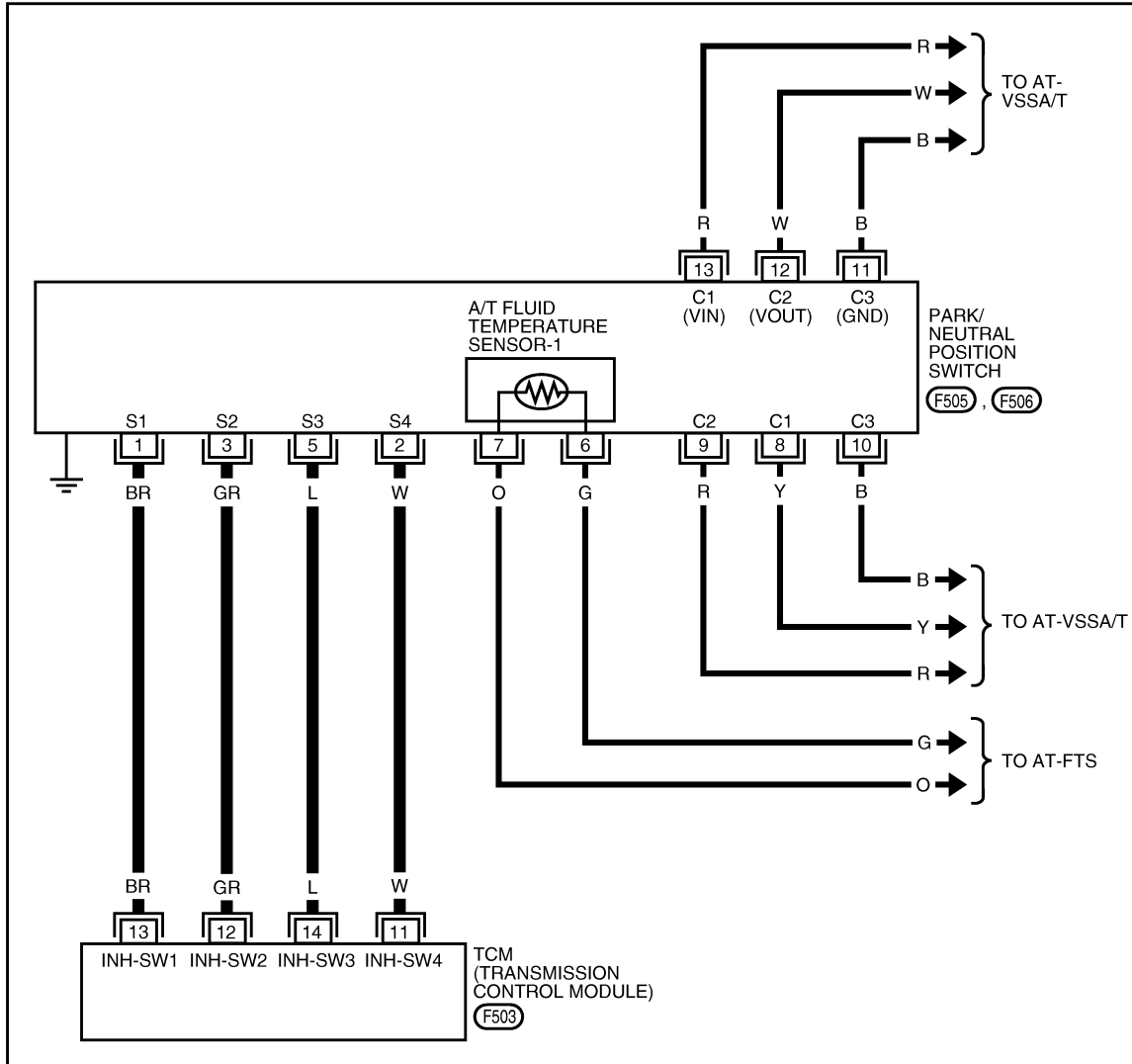
# DTC P0705 PARK/NEUTRAL POSITION SWITCH

## Wiring Diagram — AT — PNP/SW

GCS0002S

### AT-PNP/SW-01

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



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

MCWA0196E

# DTC P0705 PARK/NEUTRAL POSITION SWITCH

GCS0002T

## Diagnostic Procedure

### 1. CHECK PNP SW CIRCUIT

#### With CONSULT-II

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

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

DATA MONITOR			
MONITOR		NO DTC	
ATF PRES SW 2	xxx		
ATF PRES SW 3	xxx		
ATF PRES SW 5	xxx		
ATF PRES SW 6	xxx		
SLCT LVR POSI	xxx		
		RECORD	
MODE	BACK	LIGHT	COPY

SCIA5296E

#### 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-170, "MAIN POWER SUPPLY AND GROUND CIRCUIT"](#).

#### OK or NG

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

### 3. DETECT MALFUNCTIONING ITEM

Check the following.

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

#### OK or NG

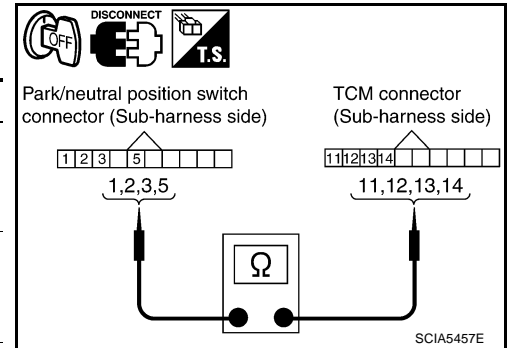
- OK >> GO TO 4.  
NG >> Repair or replace damaged parts.

# DTC P0705 PARK/NEUTRAL POSITION SWITCH

## 4. CHECK SUB-HARNESS

1. Remove control valve with TCM. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Disconnect park/neutral position switch connector and TCM connector.
3. Check continuity between park/neutral position switch connector terminals and TCM connector terminals.

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



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

### OK or NG

- OK >> Replace control valve with TCM. Refer to [AT-224, "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-104, "DTC Confirmation Procedure"](#) .

### OK or NG

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

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

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

PFP:32702

### Description

GCS0002U

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

### CONSULT-II Reference Value

GCS0002V

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

### On Board Diagnosis Logic

GCS0002W

Diagnostic trouble code "P0720 VEH SPD SEN/CIR AT" with CONSULT-II or 1st judgement flicker without CONSULT-II is detected under the following conditions.

- When TCM does not receive the proper voltage signal from the sensor.
- After ignition switch is turned ON, irregular signal input from vehicle speed sensor MTR before the vehicle starts moving.

### Possible Cause

GCS0002X

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

### DTC Confirmation Procedure

GCS0002Y

#### CAUTION:

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

#### NOTE:

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

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

#### WITH CONSULT-II

1. Turn ignition switch ON. (Do not start engine.)
2. Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Touch "START".
4. Start engine.
5. 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-111, "Diagnostic Procedure"](#).  
If the check result is OK, go to following step.
6. Select "DATA MONITOR" mode for "A/T" with CONSULT-II.
7. 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-111, "Diagnostic Procedure"](#).

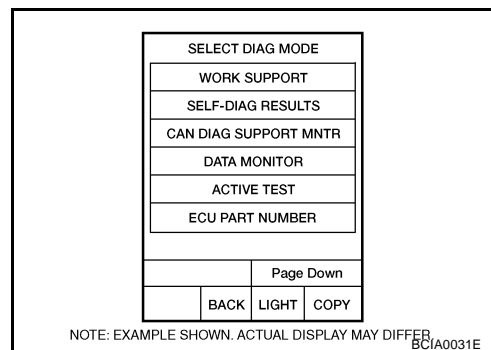
If the check result is OK, go to following step.

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

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

**ACCELE POSI: More than 1.0/8**

**SLCT LVR POSI: "D" position**





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

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

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

A

### **WITHOUT CONSULT-II**

1. Start engine. B
2. Drive vehicle and maintain the following conditions for at least 5 consecutive seconds.  
**Vehicle speed: 30 km/h (19 MPH) or more**  
**Accelerator opening: More than 1.0/8**  
**Selector lever position: "D" position**  
**Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.** AT
3. Perform self-diagnosis. Refer to [AT-94, "Diagnostic Procedure Without CONSULT-II"](#) . D
4. If DTC is detected, go to [AT-111, "Diagnostic Procedure"](#) . E

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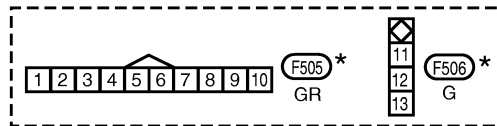
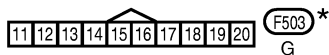
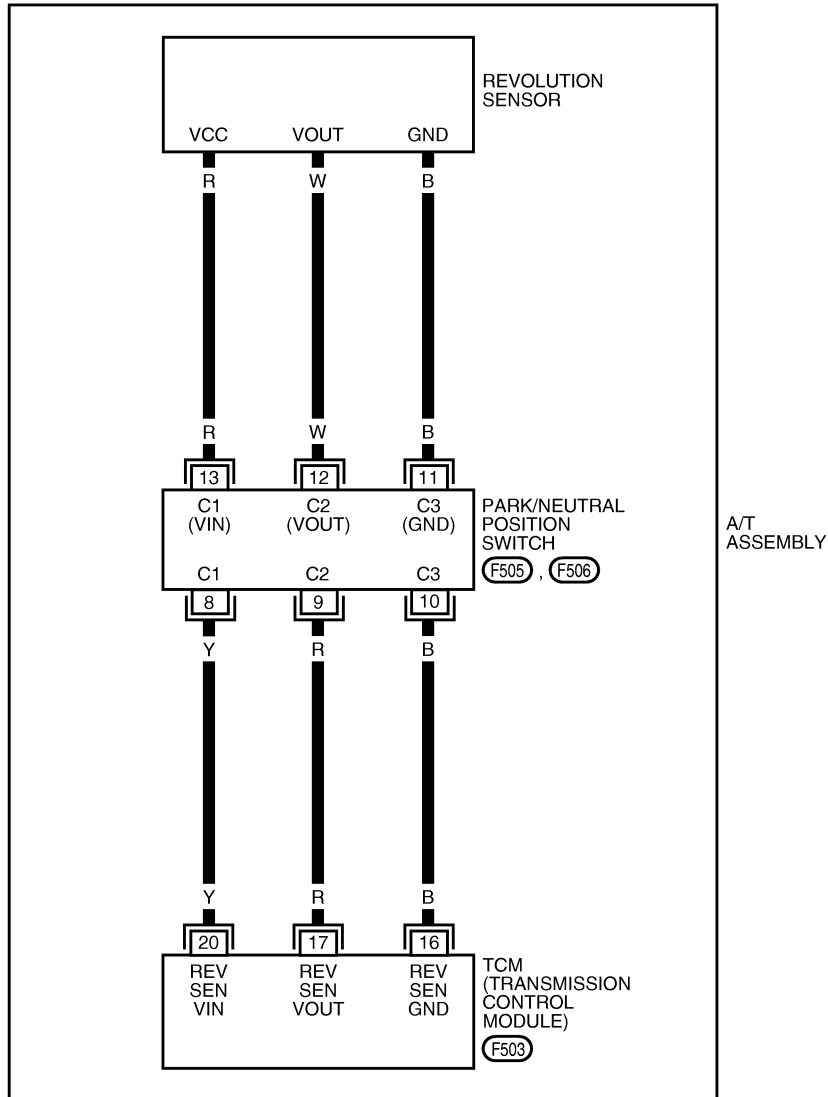
# DTC P0720 VEHICLE SPEED SENSOR A/T (REVOLUTION SENSOR)

## Wiring Diagram — AT — VSSA/T

GCS0002Z

### AT-VSSA/T-01

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



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

MCWA0197E

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

## Diagnostic Procedure

GCS00030

### 1. CHECK INPUT SIGNAL

#### With CONSULT-II

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

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

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

SCIA2148E

#### 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-170, "MAIN POWER SUPPLY AND GROUND CIRCUIT"](#).

#### OK or NG

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

### 3. DETECT MALFUNCTIONING ITEM

Check the following.

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

#### OK or NG

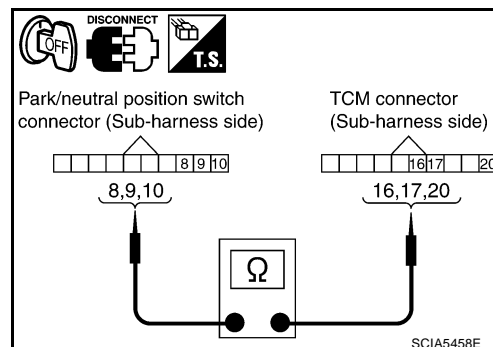
- OK >> GO TO 4.
- NG >> Repair or replace damaged parts.

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

## 4. CHECK SUB-HARNESS

1. Remove control valve with TCM. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Disconnect park/neutral position switch connector and TCM connector.
3. Check continuity between park/neutral position switch connector terminals and TCM connector terminals.

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



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 REVOLUTION SENSOR AND CHECK DTC

1. Replace revolution sensor. Refer to [AT-244, "REMOVAL AND INSTALLATION"](#) (2WD models), [AT-282, "DISASSEMBLY"](#) , [AT-262, "Components"](#) (4WD models).
2. Perform [AT-108, "DTC Confirmation Procedure"](#) .

### OK or NG

OK >> **INSPECTION END**

NG >> Replace control valve with TCM. Refer to [AT-224, "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**

NG >> GO TO 2.

# DTC P0725 ENGINE SPEED SIGNAL

## DTC P0725 ENGINE SPEED SIGNAL

PPF:24825

### Description

GCS00031

The engine speed signal is sent from ECM to TCM.

### CONSULT-II Reference Value

GCS00032

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

### On Board Diagnosis Logic

GCS00033

Diagnostic trouble code "P0725 ENGINE SPEED SIG" with CONSULT-II or 16th judgement flicker without CONSULT-II is detected when TCM does not receive the ignition signal from ECM during engine cranking or running.

### Possible Cause

GCS00034

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

### DTC Confirmation Procedure

GCS00035

#### CAUTION:

Always drive vehicle at a safe speed.

#### NOTE:

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

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

#### WITH CONSULT-II

1. Turn ignition switch ON. (Do not start engine.)
2. Select "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Touch "START".
4. Start engine.
5. 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**

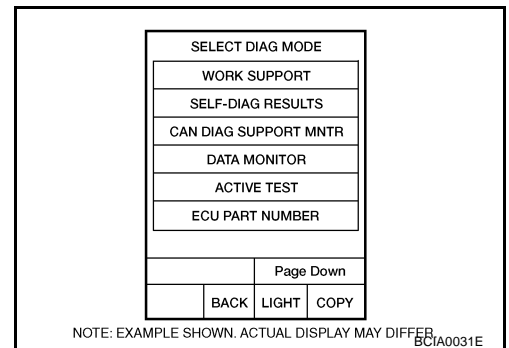
**ACCELE POSI: More than 1.0/8**

**SLCT LVR POSI: "D" position**

6. If DTC is detected, go to [AT-114, "Diagnostic Procedure"](#).

#### WITHOUT CONSULT-II

1. Start engine.
2. Drive vehicle and maintain the following conditions for at least 10 consecutive seconds.  
**Vehicle speed: 10 km/h (6 MPH) or more**  
**Accelerator opening: More than 1.0/8**  
**Selector lever position: "D" position**
3. Perform self-diagnosis. Refer to [AT-94, "Diagnostic Procedure Without CONSULT-II"](#).
4. If DTC is detected, go to [AT-114, "Diagnostic Procedure"](#).



# DTC P0725 ENGINE SPEED SIGNAL

GCS00036

## Diagnostic Procedure

### 1. CHECK CAN COMMUNICATION LINE

Perform self-diagnosis. Refer to [AT-85, "SELF-DIAGNOSTIC RESULT MODE"](#) , [AT-94, "Diagnostic Procedure Without CONSULT-II"](#) .

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

- YES >> Check CAN communication line. Refer to [AT-96, "DTC U1000 CAN COMMUNICATION LINE"](#) .
- NO >> GO TO 2.

### 2. CHECK INPUT SIGNAL

#### With CONSULT-II

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

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

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

PCIA0041E

OK or NG

- OK >> GO TO 3.
- NG >> Perform self-diagnosis for "ENGINE" with CONSULT-II.
  - Refer to [EC-1050, "SELF-DIAGNOSTIC MODE"](#) (for YD2DDTi engine), [EC-111, "SELF-DIAG RESULTS MODE"](#) (for VQ40DE engine type 1\*), [EC-654, "SELF-DIAG RESULTS MODE"](#) (for VQ40DE engine type 2\*).
  - \*: Refer to [EC-15, "APPLICATION NOTICE"](#) .

### 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-170, "MAIN POWER SUPPLY AND GROUND CIRCUIT"](#) .

OK or NG

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

### 5. DETECT MALFUNCTIONING ITEM

Check the following.

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

OK or NG

- OK >> Replace control valve with TCM. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .
- NG >> Repair or replace damaged parts.

# DTC P0740 TORQUE CONVERTER CLUTCH SOLENOID VALVE

## DTC P0740 TORQUE CONVERTER CLUTCH SOLENOID VALVE

PFP:31940

### Description

GCS00037

- The torque converter clutch solenoid valve is activated, with the gear in D5 by the TCM in response to signals sent from the vehicle speed sensor and accelerator pedal position sensor (throttle position sensor). Torque converter clutch piston operation will then be controlled.
- Lock-up operation, however, is prohibited when A/T fluid temperature is too low.
- When the accelerator pedal is depressed (less than 1.0/8) in lock-up condition, the engine speed should not change abruptly. If there is a big jump in engine speed, there is no lock-up.

### CONSULT-II Reference Value

GCS00038

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

### On Board Diagnosis Logic

GCS00039

Diagnostic trouble code "P0740 TCC SOLENOID/CIRC" with CONSULT-II or 3rd judgement flicker without CONSULT-II is detected under the following conditions.

- When TCM detects an improper voltage drop when it tries to operate the solenoid valve.
- When TCM detects as irregular by comparing target value with monitor value.

### Possible Cause

GCS0003A

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

### DTC Confirmation Procedure

GCS0003B

#### CAUTION:

Always drive vehicle at a safe speed.

#### NOTE:

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

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

#### WITH CONSULT-II

1. Turn ignition switch ON. (Do not start engine.)
2. Select "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Touch "START".
4. Start engine.
5. 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**

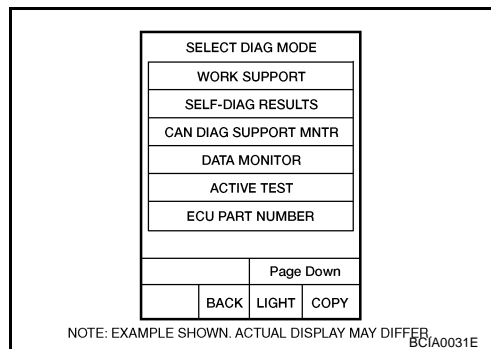
**SLCT LVR POSI: "D" position**

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

6. If DTC is detected go to [AT-116, "Diagnostic Procedure"](#).

#### WITHOUT CONSULT-II

1. Start engine.
2. Drive vehicle and maintain the following conditions for at least 5 consecutive seconds.  
**Vehicle speed: 80 km/h (50 MPH) or more**  
**Accelerator opening: 0.5/8 - 1.0/8**  
**Selector lever position: "D" position**  
**Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.**
3. Perform self-diagnosis. Refer to [AT-94, "Diagnostic Procedure Without CONSULT-II"](#).



# DTC P0740 TORQUE CONVERTER CLUTCH SOLENOID VALVE

4. If DTC is detected, go to [AT-116, "Diagnostic Procedure"](#) .

## Diagnostic Procedure

GCS0003C

### 1. CHECK INPUT SIGNAL

#### With CONSULT-II

1. Turn ignition switch ON. (Do not start engine.)
2. Select "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Start engine.
4. Read the value of "TCC SOLENOID" while driving.

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

#### OK or NG

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

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

SCIA4793E

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

Check TCM power supply and ground circuit. Refer to [AT-170, "MAIN POWER SUPPLY AND GROUND CIRCUIT"](#) .

#### OK or NG

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

### 3. DETECT MALFUNCTIONING ITEM

Check the following.

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

#### OK or NG

- OK >> Replace control valve with TCM. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .  
NG >> Repair or replace damaged parts.

### 4. CHECK DTC

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

#### OK or NG

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



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

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

PPF:31940

### Description

GCS0003D

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

### CONSULT-II Reference Value

GCS0003E

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

### On Board Diagnosis Logic

GCS0003F

Diagnostic trouble code "P0744 A/T TCC S/V FNCTN" with CONSULT-II or 3rd judgement flicker without CONSULT-II is detected under the following conditions.

- When A/T cannot perform lock-up even if electrical circuit is good.
- When TCM detects as irregular by comparing difference value with slip rotation.

### Possible Cause

GCS0003G

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

### DTC Confirmation Procedure

GCS0003H

#### CAUTION:

Always drive vehicle at a safe speed.

#### NOTE:

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

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

#### WITH CONSULT-II

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

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

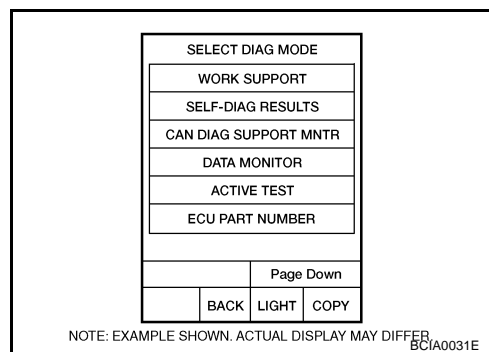
**TCC SOLENOID: 0.4 - 0.6 A**

**SLCT LVR POSI: "D" position**

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

**GEAR: "5" position**

- For shift schedule, refer to [AT-55, "Vehicle Speed at Which Lock-up Occurs/Releases"](#) .
  - If "TESTING" does not appear on CONSULT-II for a long time, select "SELF-DIAG RESULTS". In case a DTC other than P0744 is shown, refer to applicable "TROUBLE DIAGNOSIS FOR DTC".
3. Make sure that "OK" is displayed. (If "NG" is displayed, refer to [AT-118, "Diagnostic Procedure"](#) .)  
Refer to shift schedule [AT-55, "Vehicle Speed at Which Lock-up Occurs/Releases"](#) .



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

## ⊗ WITHOUT CONSULT-II

1. Start engine.
2. Drive vehicle and maintain the following conditions for at least 30 consecutive seconds.  
**Vehicle speed: 80 km/h (50 MPH) or more**  
**Accelerator opening: More than 1.0/8**  
**Selector lever position: "D" position**  
**Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.**
  - For shift schedule, refer to [AT-55, "Vehicle Speed at Which Lock-up Occurs/Releases"](#) .
3. Perform self-diagnosis. Refer to [AT-94, "Diagnostic Procedure Without CONSULT-II"](#) .
4. If DTC is detected go to [AT-118, "Diagnostic Procedure"](#) .

## Diagnostic Procedure

GCS0003I

### 1. CHECK INPUT SIGNAL

#### Ⓟ With CONSULT-II

1. Turn ignition switch ON. (Do not start engine.)
2. Select "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Start engine.
4. Read the value of "TCC SOLENOID" while driving.

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

#### OK or NG

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

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

SCIA4793E

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

Check TCM power supply and ground circuit. Refer to [AT-170, "MAIN POWER SUPPLY AND GROUND CIRCUIT"](#) .

#### OK or NG

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

### 3. DETECT MALFUNCTIONING ITEM

Check the following.

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

#### OK or NG

- OK >> Replace control valve with TCM. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .  
NG >> Repair or replace damaged parts.

### 4. CHECK DTC

Perform [AT-117, "DTC Confirmation Procedure"](#) .

#### OK or NG

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

# DTC P0745 LINE PRESSURE SOLENOID VALVE

## DTC P0745 LINE PRESSURE SOLENOID VALVE

PPF:31940

### Description

GCS0003J

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

### CONSULT-II Reference Value

GCS0003K

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

### On Board Diagnosis Logic

GCS0003L

Diagnostic trouble code "P0745 L/PRESS SOL/CIRC" with CONSULT-II or 4th judgement flicker without CONSULT-II is detected under the following conditions.

- When TCM detects an improper voltage drop when it tries to operate the solenoid valve.
- When TCM detects as irregular by comparing target value with monitor value.

### Possible Cause

GCS0003M

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

### DTC Confirmation Procedure

GCS0003N

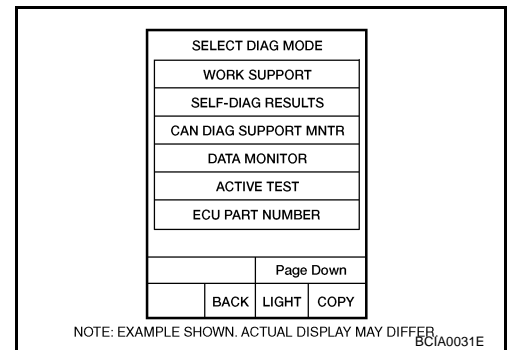
#### NOTE:

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

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

#### WITH CONSULT-II

1. Turn ignition switch ON. (Do not start engine.)
2. Select "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Touch "START".
4. Start engine and wait at least 5 second.
5. If DTC is detected, go to [AT-120, "Diagnostic Procedure"](#).



#### WITHOUT CONSULT-II

1. Start engine and wait at least 5 second.
2. Perform self-diagnosis. Refer to [AT-94, "Diagnostic Procedure Without CONSULT-II"](#).
3. If DTC is detected, go to [AT-120, "Diagnostic Procedure"](#).

# DTC P0745 LINE PRESSURE SOLENOID VALVE

GCS00030

## Diagnostic Procedure

### 1. CHECK INPUT SIGNAL

#### With CONSULT-II

1. Turn ignition switch ON. (Do not start engine.)
2. Select "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Start engine.
4. Read the value of "LINE PRES SOL" while driving.

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

#### OK or NG

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

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

SCIA4793E

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

Check TCM power supply and ground circuit. Refer to [AT-170, "MAIN POWER SUPPLY AND GROUND CIRCUIT"](#).

#### OK or NG

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

### 3. DETECT MALFUNCTIONING ITEM

Check the following.

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

#### OK or NG

- OK >> Replace control valve with TCM. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#).
- NG >> Repair or replace damaged parts.

### 4. CHECK DTC

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

#### OK or NG

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

# DTC P1705 THROTTLE POSITION SENSOR

## DTC P1705 THROTTLE POSITION SENSOR

PPF:22620

### Description

GCS0003P

The accelerator pedal position sensor sends a signal to ECM, and ECM sends signals to TCM with CAN communication.

### CONSULT-II Reference Value

GCS0003Q

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

### On Board Diagnosis Logic

GCS0003R

Diagnostic trouble code "P1705 TP SEN/CIRC A/T" with CONSULT-II or 15th judgement flicker without CONSULT-II is detected when TCM does not receive the proper accelerator pedal position signals (input by CAN communication) from ECM.

### Possible Cause

GCS0003S

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

### DTC Confirmation Procedure

GCS0003T

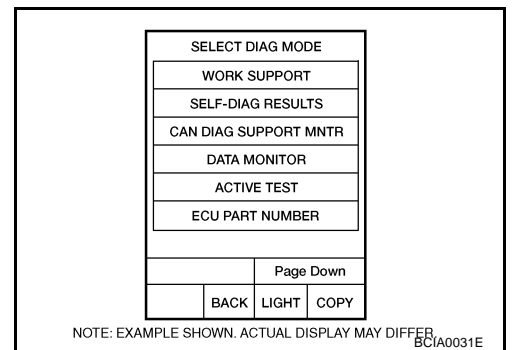
#### NOTE:

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

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

#### Ⓟ WITH CONSULT-II

1. Turn ignition switch ON. (Do not start engine.)
2. Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Touch "START".
4. Start engine and let it idle for 1 second.
5. If DTC is detected, go to [AT-122, "Diagnostic Procedure"](#).



#### ⓧ WITHOUT CONSULT-II

1. Start engine and let it idle for 1 second.
2. Perform self-diagnosis. Refer to [AT-94, "Diagnostic Procedure Without CONSULT-II"](#).
3. If DTC is detected, go to [AT-122, "Diagnostic Procedure"](#).

# DTC P1705 THROTTLE POSITION SENSOR

GC50003U

## Diagnostic Procedure

### 1. CHECK CAN COMMUNICATION LINE

Perform self-diagnosis. Refer to [AT-85, "SELF-DIAGNOSTIC RESULT MODE"](#) , [AT-94, "Diagnostic Procedure Without CONSULT-II"](#) .

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

YES >> Check CAN communication line. Refer to [AT-96, "DTC U1000 CAN COMMUNICATION LINE"](#) .

NO >> GO TO 2.

### 2. CHECK DTC WITH TCM

#### With CONSULT-II

1. Turn ignition switch ON. (Do not start engine.)
2. Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Depress accelerator pedal and read the value of "ACCELE POSI".

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

4. Select "SELF-DIAG RESULTS" mode for "A/T" with CONSULT-II. Refer to [AT-85, "SELF-DIAGNOSTIC RESULT MODE"](#) .

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

▽	
RECORD	
MODE	BACK
LIGHT	COPY

PCIA0070E

OK or NG

OK >> GO TO 4.

NG >> GO TO 3.

### 3. CHECK DTC WITH ECM

#### With CONSULT-II

1. Turn ignition switch ON. (Do not start engine.)
2. Select "SELF-DIAG RESULTS" mode for "ENGINE" with CONSULT-II. Refer to [EC-1047, "CONSULT-II Function \(ENGINE\)"](#) (for YD25DDTi engine), [EC-108, "CONSULT-II Function \(ENGINE\)"](#) (for VQ40DE engine type 1\*), [EC-651, "CONSULT-II Function \(ENGINE\)"](#) (for VQ40DE engine type 2\*).

\*: Refer to [EC-15, "APPLICATION NOTICE"](#) .

OK or NG

OK >> GO TO 4.

NG >> Check the DTC detected item.

- Refer to [EC-1047, "CONSULT-II Function \(ENGINE\)"](#) (for YD25DDTi engine), [EC-108, "CONSULT-II Function \(ENGINE\)"](#) (for VQ40DE engine type 1\*), [EC-651, "CONSULT-II Function \(ENGINE\)"](#) (for VQ40DE engine type 2\*).
- \*: Refer to [EC-15, "APPLICATION NOTICE"](#) .
- If CAN communication line is detected, go to [AT-96, "DTC U1000 CAN COMMUNICATION LINE"](#) .

SELECT SYSTEM	
ENGINE	
A/T	
ABS	
AIR BAG	
IPDM E/R	
BCM	

Page Down	
BACK	LIGHT
COPY	

NOTE: EXAMPLE SHOWN. ACTUAL DISPLAY MAY DIFFER. BCIA0030E

### 4. CHECK DTC

Perform [AT-121, "DTC Confirmation Procedure"](#) .

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 5.

# DTC P1705 THROTTLE POSITION SENSOR

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## 5. CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

---

Check TCM power supply and ground circuit. Refer to [AT-170, "MAIN POWER SUPPLY AND GROUND CIRCUIT"](#).

OK or NG

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

---

## 6. DETECT MALFUNCTIONING ITEM

---

Check the following.

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

OK or NG

- OK >> Replace control valve with TCM. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#).
- NG >> Repair or replace damaged parts.

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

# DTC P1710 A/T FLUID TEMPERATURE SENSOR CIRCUIT

## DTC P1710 A/T FLUID TEMPERATURE SENSOR CIRCUIT

PF3:31940

### Description

GCS0003V

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

### CONSULT-II Reference Value

GCS0003W

Item name	Conditio °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

GCS0003X

Diagnostic trouble code "P1710 ATF TEMP SEN/CIRC" with CONSULT-II or 10th judgement flicker without CONSULT-II is detected when TCM receives an excessively low or high voltage from the sensor.

### Possible Cause

GCS0003Y

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

### DTC Confirmation Procedure

GCS0003Z

#### CAUTION:

Always drive vehicle at a safe speed.

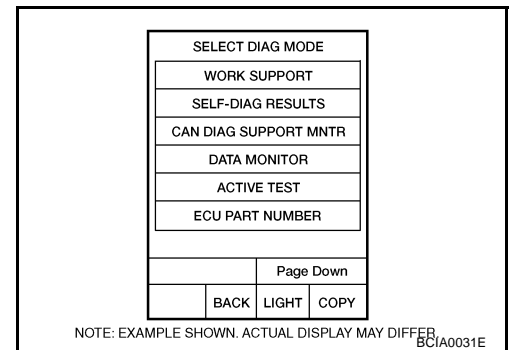
#### NOTE:

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

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

#### WITH CONSULT-II

1. Turn ignition switch ON. (Do not start engine.)
2. Select "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Touch "START".
4. Start engine
5. 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**
6. If DTC is detected, go to [AT-126, "Diagnostic Procedure"](#).



#### WITHOUT CONSULT-II

1. Start engine
2. Drive vehicle and maintain the following conditions for at least 10 minutes (Total). (It is not necessary to maintain continuously.)  
**Vehicle speed: 10 km/h (6 MPH) or more**  
**Accelerator opening: More than 1.0/8**  
**Selector lever position: "D" position**
3. Perform self-diagnosis. Refer to [AT-94, "Diagnostic Procedure Without CONSULT-II"](#).
4. If DTC is detected, go to [AT-126, "Diagnostic Procedure"](#).



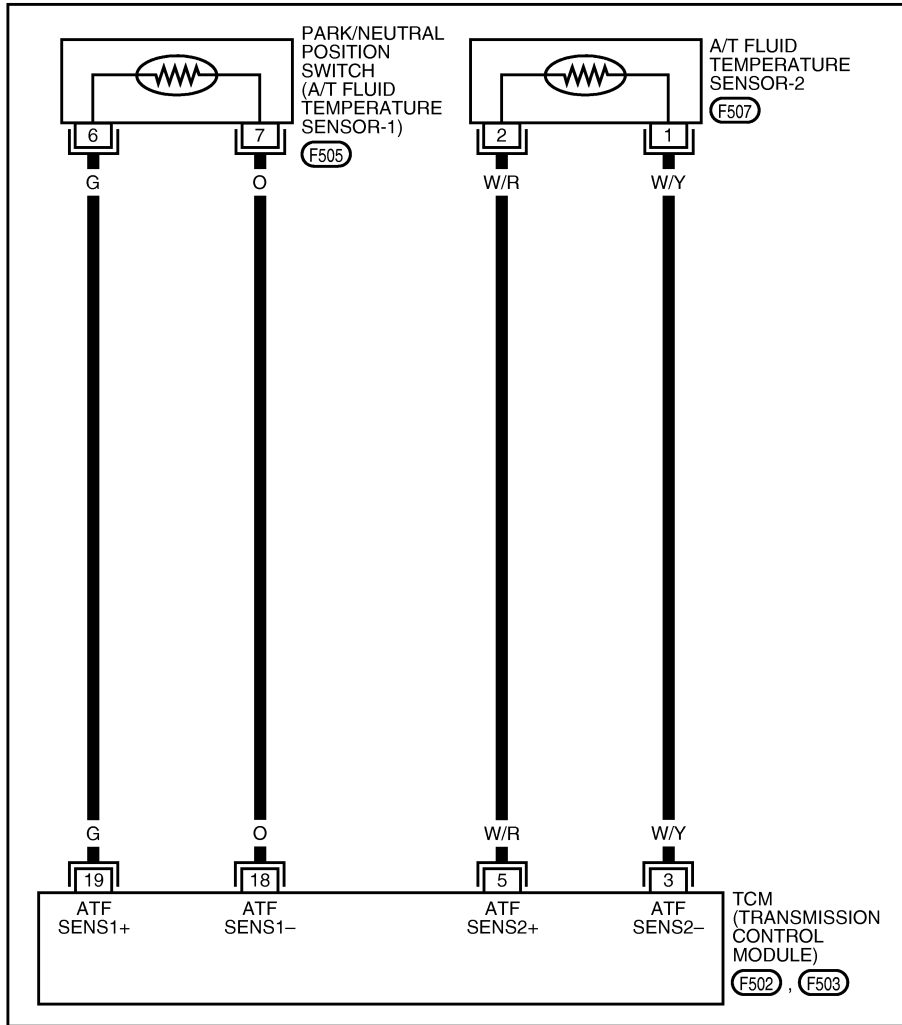
# DTC P1710 A/T FLUID TEMPERATURE SENSOR CIRCUIT

## Wiring Diagram — AT — FTS

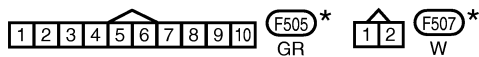
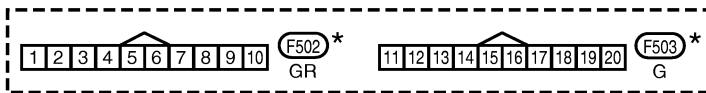
GCS00040

### AT-FTS-01

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



A/T ASSEMBLY



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

MCWA0231E

# DTC P1710 A/T FLUID TEMPERATURE SENSOR CIRCUIT

GCS00041

## Diagnostic Procedure

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

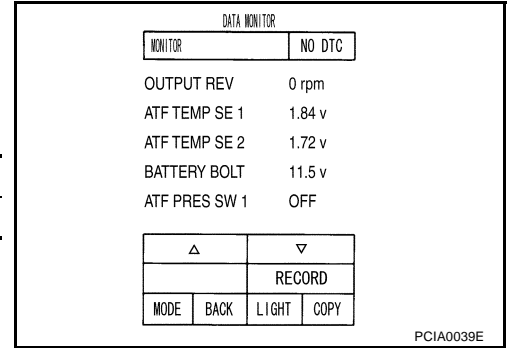
#### With CONSULT-II

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

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

#### OK or NG

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



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

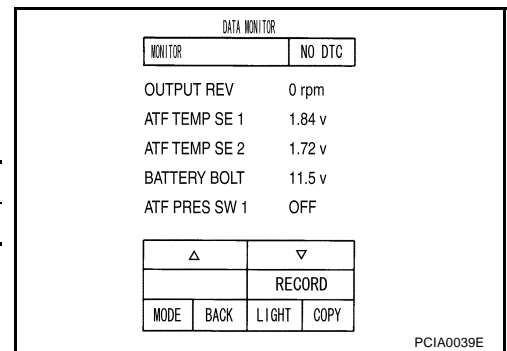
#### With CONSULT-II

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

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

#### OK or NG

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



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

Check [AT-128, "A/T FLUID TEMPERATURE SENSOR 1"](#).

#### OK or NG

- OK >> GO TO 4.  
NG >> Replace control valve with TCM. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#).

### 4. CHECK SUB-HARNESS

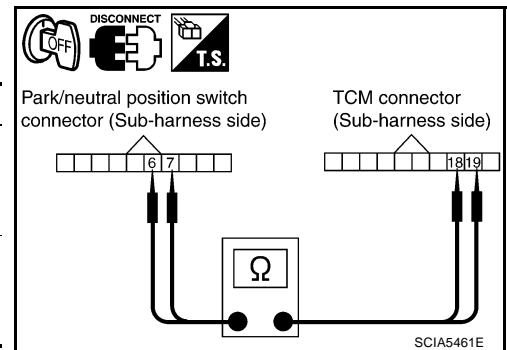
- Disconnect park/neutral position switch connector and TCM connector.
- Check continuity between park/neutral position switch connector terminals and TCM connector terminals.

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

- 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.



# DTC P1710 A/T FLUID TEMPERATURE SENSOR CIRCUIT

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

Check [AT-128, "A/T FLUID TEMPERATURE SENSOR 2"](#) .

OK or NG

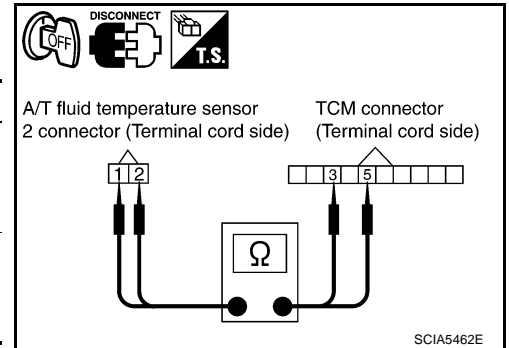
OK >> GO TO 6.

NG >> Replace A/T fluid temperature sensor 2. Refer to [AT-233, "A/T FLUID TEMPERATURE SENSOR 2 REMOVAL AND INSTALLATION"](#) .

## 6. CHECK TERMINAL CORD ASSEMBLY

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

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



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

OK or NG

OK >> GO TO 7.

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

## 7. CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

1. Check TCM power supply and ground circuit. Refer to [AT-170, "MAIN POWER SUPPLY AND GROUND CIRCUIT"](#) .
2. Reinstall any part removed.

OK or NG

OK >> Replace control valve with TCM. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .

NG >> Repair or replace damaged parts.

## 8. CHECK DTC

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

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 1.

# DTC P1710 A/T FLUID TEMPERATURE SENSOR CIRCUIT

GCS00042

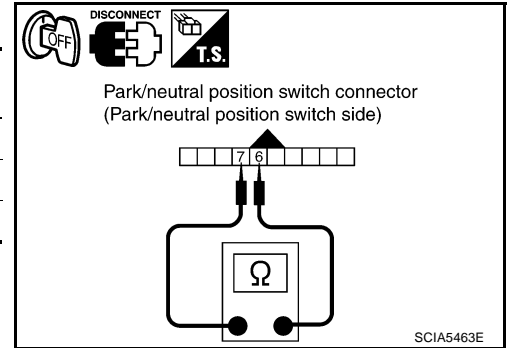
## Component Inspection

### A/T FLUID TEMPERATURE SENSOR 1

1. Remove control valve with TCM. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Check resistance between terminals.

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

3. If NG, replace control valve with TCM. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .

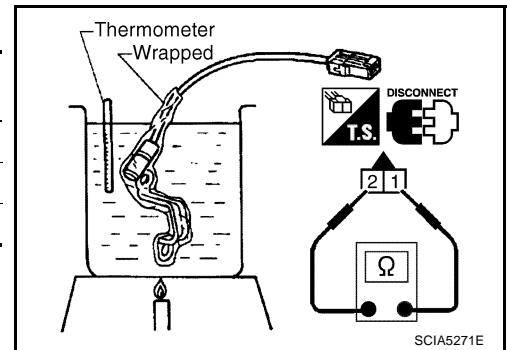


### A/T FLUID TEMPERATURE SENSOR 2

1. Remove A/T fluid temperature sensor 2. Refer to [AT-233, "A/T FLUID TEMPERATURE SENSOR 2 REMOVAL AND INSTALLATION"](#) .
2. Check resistance between terminals.

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

3. If NG, replace A/T fluid temperature sensor 2. Refer to [AT-233, "A/T FLUID TEMPERATURE SENSOR 2 REMOVAL AND INSTALLATION"](#) .



# DTC P1716 TURBINE REVOLUTION SENSOR

## DTC P1716 TURBINE REVOLUTION SENSOR

PF3:31935

### Description

GCS00043

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

### CONSULT-II Reference Value

GCS00044

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

### On Board Diagnosis Logic

GCS00045

Diagnostic trouble code "P1716 TURBINE REV S/CIRC" with CONSULT-II or 11th judgement flicker without CONSULT-II is detected under the following conditions.

- When TCM does not receive the proper voltage signal from the sensor.
- When TCM detects an irregularity only at position of 4th gear for turbine revolution sensor 2.

### Possible Cause

GCS00046

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

### DTC Confirmation Procedure

GCS00047

#### CAUTION:

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

#### NOTE:

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

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

#### Ⓟ WITH CONSULT-II

1. Turn ignition switch ON. (Do not start engine.)
2. Select "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Touch "START".
4. Start engine.
5. 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**

**ENGINE SPEED: 1,500 rpm or more**

**ACCELE POSI: More than 0.5/8**

**SLCT LVR POSI: "D" position**

**GEAR (Turbine revolution sensor 1): "4" or "5" position**

**GEAR (Turbine revolution sensor 2): All positions**

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

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

#### ⓧ WITHOUT CONSULT-II

1. Start engine.
2. Drive vehicle and maintain the following conditions for at least 5 consecutive seconds.

**Vehicle speed: 40 km/h (25 MPH) or more**

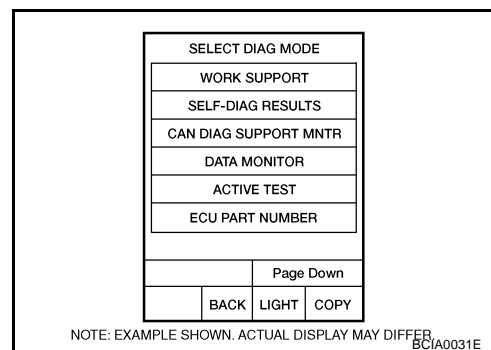
**Engine speed: 1,500 rpm or more**

**Accelerator opening: More than 0.5/8**

**Selector lever position: "D" position**

**Gear position (Turbine revolution sensor 1): "4" or "5" position**

**Gear position (Turbine revolution sensor 2): All positions**



# DTC P1716 TURBINE REVOLUTION SENSOR

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

3. Perform self-diagnosis. Refer to [AT-94, "Diagnostic Procedure Without CONSULT-II"](#) .
4. If DTC is detected, go to [AT-130, "Diagnostic Procedure"](#) .

## Diagnostic Procedure

GCS00048

### 1. CHECK INPUT SIGNAL

#### With CONSULT-II

1. Start engine.
2. Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Start vehicle and read the value of "TURBINE REV".

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

#### OK or NG

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

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

PCIA0041E

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

Check TCM power supply and ground circuit. Refer to [AT-170, "MAIN POWER SUPPLY AND GROUND CIRCUIT"](#) .

#### OK or NG

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

### 3. DETECT MALFUNCTIONING ITEM

Check the following.

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

#### OK or NG

- OK >> Replace control valve with TCM. Refer to [AT-224, "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.

# DTC P1721 VEHICLE SPEED SENSOR MTR

## DTC P1721 VEHICLE SPEED SENSOR MTR

PPF:24814

### Description

GCS00049

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

### CONSULT-II Reference Value

GCS0004A

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

### On Board Diagnosis Logic

GCS0004B

Diagnostic trouble code "P1721 VEH SPD SE/CIR-MTR" with CONSULT-II is detected when TCM does not receive the proper vehicle speed sensor MTR signal (input by CAN communication) from combination meter.

### Possible Cause

GCS0004C

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

### DTC Confirmation Procedure

GCS0004D

#### CAUTION:

Always drive vehicle at a safe speed.

#### NOTE:

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

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

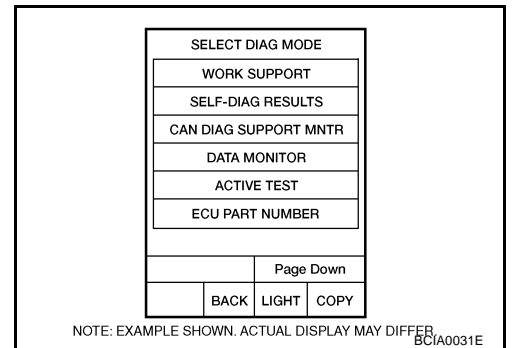
#### WITH CONSULT-II

1. Turn ignition switch ON. (Do not start engine.)
2. Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Touch "START".
4. Start engine.
5. Drive vehicle and maintain the following conditions for at least 5 consecutive seconds.

**ACCELE POSI: 1.0/8 or less**

**VHCL/S SE-MTR: 30 km/h (17 MPH) or more**

6. If DTC is detected, go to [AT-132, "Diagnostic Procedure"](#).



# DTC P1721 VEHICLE SPEED SENSOR MTR

GCS0004E

## Diagnostic Procedure

### 1. CHECK CAN COMMUNICATION LINE

Perform self-diagnosis. Refer to [AT-85, "SELF-DIAGNOSTIC RESULT MODE"](#) , [AT-94, "Diagnostic Procedure Without CONSULT-II"](#) .

Is malfunction in the CAN communication indicated in the result?

YES >> Check CAN communication line. Refer to [AT-96, "DTC U1000 CAN COMMUNICATION LINE"](#) .

NO >> GO TO 2.

### 2. CHECK INPUT SIGNAL

 With CONSULT-II

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

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

OK or NG

OK >> GO TO 4.

NG >> GO TO 3.

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

SCIA2148E

### 3. CHECK COMBINATION METER

Check combination meter. Refer to [DI-4, "COMBINATION METERS"](#) .

OK or NG

OK >> GO TO 4.

NG >> Repair or replace damaged parts.

### 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-170, "MAIN POWER SUPPLY AND GROUND CIRCUIT"](#) .

OK or NG

OK >> GO TO 6.

NG >> Repair or replace damaged parts.

### 6. DETECT MALFUNCTIONING ITEM

Check the following.

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

OK or NG

OK >> Replace control valve with TCM. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .

NG >> Repair or replace damaged parts.



# DTC P1730 A/T INTERLOCK

## DTC P1730 A/T INTERLOCK

PPF:00000

### Description

GCS0004F

Fail-safe function to detect interlock conditions.

### On Board Diagnosis Logic

GCS0004G

- Diagnostic trouble code “P1730 A/T INTERLOCK” with CONSULT-II or 12th judgement flicker without CONSULT-II is detected when TCM does not receive the proper voltage signal from the sensor and switch.
- TCM monitors and compares gear position and conditions of each ATF pressure switch when gear is steady.

### Possible Cause

GCS0004H

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

### DTC Confirmation Procedure

GCS0004I

#### CAUTION:

Always drive vehicle at a safe speed.

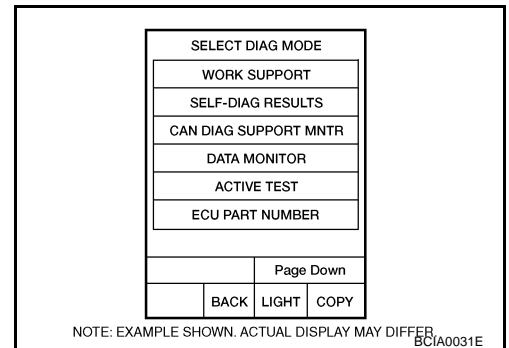
#### NOTE:

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

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

#### WITH CONSULT-II

1. Turn ignition switch ON. (Do not start engine.)
2. Select “MAIN SIGNALS” in “DATA MONITOR” mode for “A/T” with CONSULT-II.
3. Touch “START”.
4. Start engine.
5. Drive vehicle and maintain the following conditions for at least 2 consecutive seconds.  
**SLCT LVR POSI: “D” position**
6. If DTC is detected, go to [AT-134, "Diagnostic Procedure"](#) .



#### WITHOUT CONSULT-II

1. Start engine.
2. Drive vehicle and maintain the following condition for at least 2 consecutive seconds.  
**Selector lever: “D” position**
3. Perform self-diagnosis. Refer to [AT-94, "Diagnostic Procedure Without CONSULT-II"](#) .
4. If DTC is detected, go to [AT-134, "Diagnostic Procedure"](#) .

# DTC P1730 A/T INTERLOCK

GCS0004J

## Judgement of A/T Interlock

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

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

### NOTE:

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

## A/T INTERLOCK COUPLING PATTERN TABLE

●: NG, X: OK

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

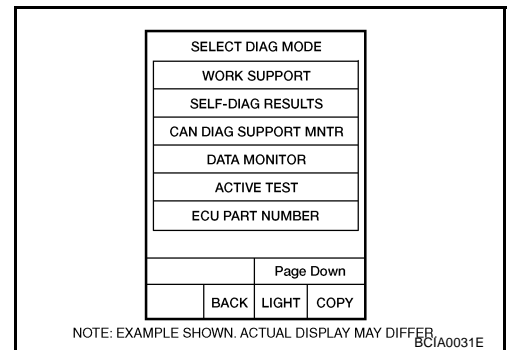
## Diagnostic Procedure

GCS0004K

### 1. CHECK SELF-DIAGNOSTIC RESULTS

#### ④ With CONSULT-II

1. Drive vehicle.
2. Stop vehicle and turn ignition switch OFF.
3. Turn ignition switch ON. (Do not start engine.)
4. Select "SELF-DIAG RESULTS" mode for "A/T" with CONSULT-II.



#### ⊗ Without CONSULT-II

1. Drive vehicle.
2. Stop vehicle and turn ignition switch OFF.
3. Turn ignition switch ON. (Do not start engine.)
4. Perform self-diagnosis. Refer to [AT-94, "Diagnostic Procedure Without CONSULT-II"](#).

#### OK or NG

- OK >> GO TO 2.  
 NG >> Check low coast brake solenoid valve circuit and function. Refer to [AT-158, "DTC P1772 LOW COAST BRAKE SOLENOID VALVE"](#), [AT-160, "DTC P1774 LOW COAST BRAKE SOLENOID VALVE FUNCTION"](#).

### 2. CHECK DTC

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

#### OK or NG

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

# DTC P1730 A/T INTERLOCK

---

## 3. CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

---

Check TCM power supply and ground circuit. Refer to [AT-170, "MAIN POWER SUPPLY AND GROUND CIRCUIT"](#) .

OK or NG

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

---

## 4. DETECT MALFUNCTIONING ITEM

---

Check the following.

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

OK or NG

- OK >> Replace control valve with TCM. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .
- NG >> Repair or replace damaged parts.

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

# DTC P1731 A/T 1ST ENGINE BRAKING

## DTC P1731 A/T 1ST ENGINE BRAKING

PFP:00000

### Description

GCS0004L

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

### CONSULT-II Reference Value

GCS0004M

Item name	Condition	Display value
ON OFF SOL	Low coast brake engaged. Refer to <a href="#">AT-18</a> .	ON
	Low coast brake disengaged. Refer to <a href="#">AT-18</a> .	OFF
ATF PRES SW 2	Low coast brake engaged. Refer to <a href="#">AT-18</a> .	ON
	Low coast brake disengaged. Refer to <a href="#">AT-18</a> .	OFF

### On Board Diagnosis Logic

GCS0004N

Diagnostic trouble code "P1731 A/T 1ST E/BRAKING" with CONSULT-II or 13th judgement flicker without CONSULT-II is detected under the following conditions.

- When TCM does not receive the proper voltage signal from the sensor.
- When TCM monitors each ATF pressure switch and solenoid monitor value, and detects as irregular when engine brake of 1st gear acts other than at "1" position.

### Possible Cause

GCS0004O

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

### DTC Confirmation Procedure

GCS0004P

#### CAUTION:

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

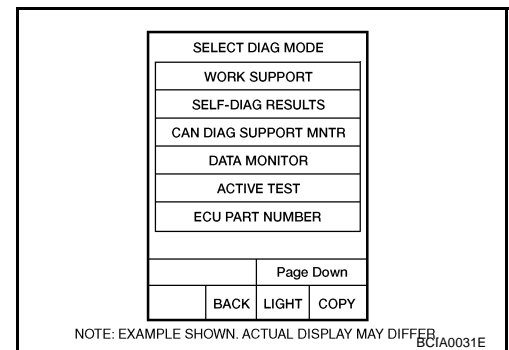
#### NOTE:

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.

#### ④ WITH CONSULT-II

1. Turn ignition switch ON. (Do not start engine.)
2. Select "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Touch "START".
4. Start engine.
5. Drive vehicle and maintain the following conditions for at least 2 consecutive seconds.  
**ENGINE SPEED: 1,200 rpm or more**  
**SLCT LVR POSI: "1" position**  
**GEAR: "1" position**
6. If DTC is detected, go to [AT-137, "Diagnostic Procedure"](#) .



#### ⊗ WITHOUT CONSULT-II

1. Start engine.
2. Drive vehicle and maintain the following conditions for at least 2 consecutive seconds.  
**Engine speed: 1,200 rpm or more**  
**Selector lever position: "1" position**  
**Gear position: "1" position**
3. Perform self-diagnosis. Refer to [AT-94, "Diagnostic Procedure Without CONSULT-II"](#) .
4. If DTC is detected, go to [AT-137, "Diagnostic Procedure"](#) .

# DTC P1731 A/T 1ST ENGINE BRAKING

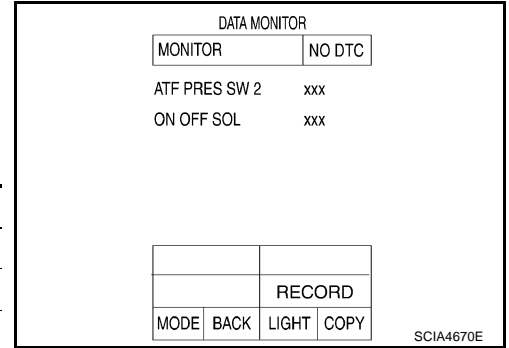
## Diagnostic Procedure

GCS0004Q

### 1. CHECK INPUT SIGNALS

#### With CONSULT-II

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



Item name	Condition	Display value
ON OFF SOL	Low coast brake engaged. Refer to <a href="#">AT-18</a> .	ON
	Low coast brake disengaged. Refer to <a href="#">AT-18</a> .	OFF
ATF PRES SW 2	Low coast brake engaged. Refer to <a href="#">AT-18</a> .	ON
	Low coast brake disengaged. Refer to <a href="#">AT-18</a> .	OFF

#### OK or NG

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

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

Check TCM power supply and ground circuit. Refer to [AT-170, "MAIN POWER SUPPLY AND GROUND CIRCUIT"](#) .

#### OK or NG

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

### 3. DETECT MALFUNCTIONING ITEM

Check the following.

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

#### OK or NG

- OK >> Replace control valve with TCM. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .  
NG >> Repair or replace damaged parts.

### 4. CHECK DTC

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

#### OK or NG

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

# DTC P1752 INPUT CLUTCH SOLENOID VALVE

## DTC P1752 INPUT CLUTCH SOLENOID VALVE

PFP:31940

### Description

GCS0004R

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

### CONSULT-II Reference Value

GCS0004S

Item name	Condition	Display value (Approx.)
I/C SOLENOID	Input clutch disengaged. Refer to <a href="#">AT-18</a> .	0.6 - 0.8 A
	Input clutch engaged. Refer to <a href="#">AT-18</a> .	0 - 0.05 A

### On Board Diagnosis Logic

GCS0004T

Diagnostic trouble code "P1752 I/C SOLENOID/CIRC" with CONSULT-II or 5th judgement flicker without CONSULT-II is detected under the following conditions.

- When TCM detects an improper voltage drop when it tries to operate the solenoid valve.
- When TCM detects as irregular by comparing target value with monitor value.

### Possible Cause

GCS0004U

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

### DTC Confirmation Procedure

GCS0004V

#### CAUTION:

Always drive vehicle at a safe speed.

#### NOTE:

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

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

#### WITH CONSULT-II

1. Turn ignition switch ON. (Do not start engine.)
2. Select "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Touch "START".
4. Start engine.
5. 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**

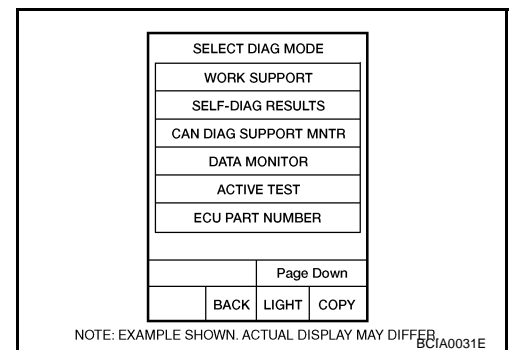
**GEAR: "3" ⇒ "4" (I/C ON/OFF)**

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

6. If DTC is detected go to [AT-139, "Diagnostic Procedure"](#) .

#### WITHOUT CONSULT-II

1. Start engine.
2. Drive vehicle and maintain the following conditions for at least 5 consecutive seconds.  
**Accelerator opening: 1.5/8 - 2.0/8**  
**Selector lever position: "D" position**  
**Gear position: "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.**
3. Perform self-diagnosis. Refer to [AT-94, "Diagnostic Procedure Without CONSULT-II"](#) .
4. If DTC is detected, go to [AT-139, "Diagnostic Procedure"](#) .



# DTC P1752 INPUT CLUTCH SOLENOID VALVE

GCS0004W

## Diagnostic Procedure

### 1. CHECK INPUT SIGNAL

#### With CONSULT-II

1. Turn ignition switch ON. (Do not start engine.)
2. Select "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Start engine.
4. Read the value of "I/C SOLENOID" while driving.

Item name	Condition	Display value (Approx.)
I/C SOLENOID	Input clutch disengaged. Refer to <a href="#">AT-18</a> .	0.6 - 0.8 A
	Input clutch engaged. Refer to <a href="#">AT-18</a> .	0 - 0.05 A

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

SCIA4793E

#### OK or NG

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

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

Check TCM power supply and ground circuit. Refer to [AT-170, "MAIN POWER SUPPLY AND GROUND CIRCUIT"](#) .

#### OK or NG

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

### 3. DETECT MALFUNCTIONING ITEM

Check the following.

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

#### OK or NG

- OK >> Replace control valve with TCM. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .  
NG >> Repair or replace damaged parts.

### 4. CHECK DTC

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

#### OK or NG

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

# DTC P1754 INPUT CLUTCH SOLENOID VALVE FUNCTION

## DTC P1754 INPUT CLUTCH SOLENOID VALVE FUNCTION

PF3:31940

### Description

GCS0004X

- Input clutch solenoid valve is controlled by TCM in response to signals sent from PNP switch, vehicle speed sensor and accelerator pedal position sensor (throttle position sensor). Gears will then be shifted to the optimum position.
- This is not only caused by electrical malfunction (circuits open or shorted) but also by mechanical malfunction such as control valve sticking, improper solenoid valve operation.

### CONSULT-II Reference Value

GCS0004Y

Item name	Condition	Display value (Approx.)
I/C SOLENOID	Input clutch disengaged. Refer to <a href="#">AT-18</a> .	0.6 - 0.8 A
	Input clutch engaged. Refer to <a href="#">AT-18</a> .	0 - 0.05 A
ATF PRES SW 3	Input clutch engaged. Refer to <a href="#">AT-18</a> .	ON
	Input clutch disengaged. Refer to <a href="#">AT-18</a> .	OFF

### On Board Diagnosis Logic

GCS0004Z

Diagnostic trouble code "P1754 I/C SOLENOID FNCTN" with CONSULT-II or 5th judgement flicker without CONSULT-II is detected under the following conditions.

- When TCM detects that actual gear ratio is irregular, and relation between gear position and condition of ATF pressure switch 3 is irregular during depressing accelerator pedal. (Other than during shift change)
- When TCM detects that relation between gear position and condition of ATF pressure switch 3 is irregular during releasing accelerator pedal. (Other than during shift change)

### Possible Cause

GCS00050

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

### DTC Confirmation Procedure

GCS00051

#### CAUTION:

Always drive vehicle at a safe speed.

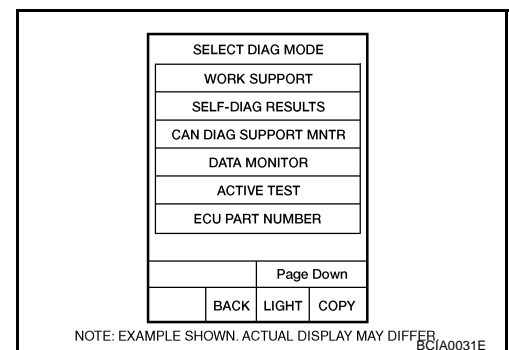
#### NOTE:

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

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

#### ④ WITH CONSULT-II

1. Start engine.
2. Accelerate vehicle to maintain the following conditions.  
**ACCELE 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.**
3. Perform step 2 again.
4. Turn ignition switch OFF, then perform step 1 to 3 again.
5. Check "SELF-DIAG RESULTS" mode for "A/T" with CONSULT-II. If DTC (P1754) is detected, go to [AT-141, "Diagnostic Procedure"](#) .  
If DTC (P1752) is detected, go to [AT-139, "Diagnostic Procedure"](#) .  
If DTC (P1843) is detected, go to [AT-165, "Diagnostic Procedure"](#) .





# DTC P1754 INPUT CLUTCH SOLENOID VALVE FUNCTION

## ⊗ WITHOUT CONSULT-II

1. Start engine.
2. Accelerate vehicle to maintain the following conditions.  
**Accelerator opening: 1.5/8 - 2.0/8**  
**Selector lever position: "D" position**  
**Gear position: "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.**
3. Perform step 2 again.
4. Turn ignition switch OFF position, then perform step 1 to 3 again.
5. Perform self-diagnosis. Refer to [AT-94, "Diagnostic Procedure Without CONSULT-II"](#) .
6. If DTC is detected, go to [AT-141, "Diagnostic Procedure"](#) .

## Diagnostic Procedure

GCS00052

### 1. CHECK INPUT SIGNALS

#### 📱 With CONSULT-II

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

DATA MONITOR			
MONITOR	NO DTC		
I/C SOLENOID	XXX A		
ATF PRES SW 3	OFF		
		RECORD	
MODE	BACK	LIGHT	COPY

SCIA4795E

Item name	Condition	Display value (Approx.)
I/C SOLENOID	Input clutch disengaged. Refer to <a href="#">AT-18</a> .	0.6 - 0.8 A
	Input clutch engaged. Refer to <a href="#">AT-18</a> .	0 - 0.05 A
ATF PRES SW 3	Input clutch engaged. Refer to <a href="#">AT-18</a> .	ON
	Input clutch disengaged. Refer to <a href="#">AT-18</a> .	OFF

#### OK or NG

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

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

Check TCM power supply and ground circuit. Refer to [AT-170, "MAIN POWER SUPPLY AND GROUND CIRCUIT"](#) .

#### OK or NG

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

### 3. DETECT MALFUNCTIONING ITEM

Check the following.

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

#### OK or NG

- OK >> Replace control valve with TCM. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .  
 NG >> Repair or replace damaged parts.

## DTC P1754 INPUT CLUTCH SOLENOID VALVE FUNCTION

---

### 4. CHECK DTC

---

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

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 2.

# DTC P1757 FRONT BRAKE SOLENOID VALVE

## DTC P1757 FRONT BRAKE SOLENOID VALVE

PPF:31940

### Description

GCS00053

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

### CONSULT-II Reference Value

GCS00054

Item name	Condition	Display value (Approx.)
FR/B SOLENOID	Front brake engaged. Refer to <a href="#">AT-18</a> .	0.6 - 0.8 A
	Front brake disengaged. Refer to <a href="#">AT-18</a> .	0 - 0.05 A

### On Board Diagnosis Logic

GCS00055

Diagnostic trouble code "P1757 FR/B SOLENOID/CIRC" with CONSULT-II or 6th judgement flicker without CONSULT-II is detected under the following conditions.

- When TCM detects an improper voltage drop when it tries to operate the solenoid valve.
- When TCM detects as irregular by comparing target value with monitor value.

### Possible Cause

GCS00056

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

### DTC Confirmation Procedure

GCS00057

#### 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.

#### ① WITH CONSULT-II

1. Turn ignition switch ON. (Do not start engine.)
2. Select "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Touch "START".
4. Start engine.
5. 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.**

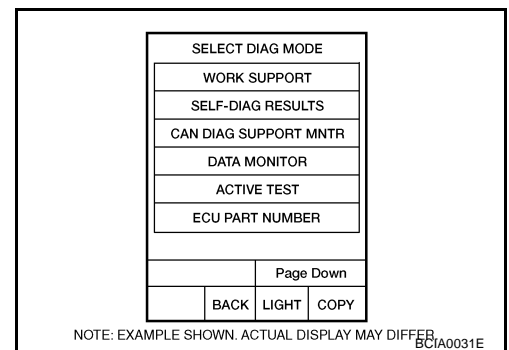
6. If DTC is detected go to [AT-144, "Diagnostic Procedure"](#) .

#### ② WITHOUT CONSULT-II

1. Start engine.
2. Drive vehicle and maintain the following conditions for at least 5 consecutive seconds.  
**Accelerator opening: 1.5/8 - 2.0/8**  
**Selector lever position: "D" position**  
**Gear position: "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.**

3. Perform self-diagnosis. Refer to [AT-94, "Diagnostic Procedure Without CONSULT-II"](#) .

4. If DTC is detected, go to [AT-144, "Diagnostic Procedure"](#) .



# DTC P1757 FRONT BRAKE SOLENOID VALVE

GCS00058

## Diagnostic Procedure

### 1. CHECK INPUT SIGNAL

#### With CONSULT-II

1. Turn ignition switch ON. (Do not start engine.)
2. Select "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Start engine.
4. Read the value of "FR/B SOLENOID" while driving.

Item name	Condition	Display value (Approx.)
FR/B SOLENOID	Front brake engaged. Refer to <a href="#">AT-18</a> .	0.6 - 0.8 A
	Front brake disengaged. Refer to <a href="#">AT-18</a> .	0 - 0.05 A

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

SCIA4793E

#### OK or NG

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

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

Check TCM power supply and ground circuit. Refer to [AT-170, "MAIN POWER SUPPLY AND GROUND CIRCUIT"](#) .

#### OK or NG

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

### 3. DETECT MALFUNCTIONING ITEM

Check the following.

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

#### OK or NG

- OK >> Replace control valve with TCM. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .  
NG >> Repair or replace damaged parts.

### 4. CHECK DTC

Perform [AT-143, "DTC Confirmation Procedure"](#) .

#### OK or NG

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

# DTC P1759 FRONT BRAKE SOLENOID VALVE FUNCTION

## DTC P1759 FRONT BRAKE SOLENOID VALVE FUNCTION

PFP:31940

### Description

GCS00059

- Front brake solenoid valve is controlled by TCM in response to signals sent from PNP switch, vehicle speed sensor and accelerator pedal position sensor (throttle position sensor). Gears will then be shifted to the optimum position.
- This is not only caused by electrical malfunction (circuits open or shorted) but also by mechanical malfunction such as control valve sticking, improper solenoid valve operation.

### CONSULT-II Reference Value

GCS0005A

Item name	Condition	Display value (Approx.)
FR/B SOLENOID	Front brake engaged. Refer to <a href="#">AT-18</a> .	0.6 - 0.8 A
	Front brake disengaged. Refer to <a href="#">AT-18</a> .	0 - 0.05 A
ATF PRES SW 1	Front brake engaged. Refer to <a href="#">AT-18</a> .	ON
	Front brake disengaged. Refer to <a href="#">AT-18</a> .	OFF

### On Board Diagnosis Logic

GCS0005B

Diagnostic trouble code "P1759 FR/B SOLENOID FNCT" with CONSULT-II or 6th judgement flicker without CONSULT-II is detected under the following conditions.

- When TCM detects that actual gear ratio is irregular, and relation between gear position and condition of ATF pressure switch 1 is irregular during depressing accelerator pedal. (Other than during shift change)
- When TCM detects that relation between gear position and condition of ATF pressure switch 1 is irregular during releasing accelerator pedal. (Other than during shift change)

### Possible Cause

GCS0005C

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

### DTC Confirmation Procedure

GCS0005D

#### CAUTION:

Always drive vehicle at a safe speed.

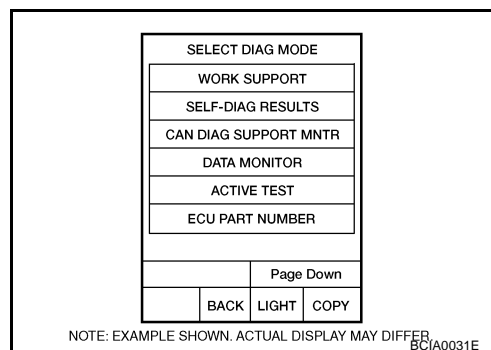
#### NOTE:

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

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

#### WITH CONSULT-II

1. Start engine.
2. Accelerate vehicle to maintain the following conditions.  
**ACCELE POSI: 1.5/8 - 2.0/8**  
**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.**
3. Perform step 2 again.
4. Turn ignition switch OFF, then perform step 1 to 3 again.
5. Check "SELF-DIAG RESULTS" mode for "AT" with CONSULT-II. If DTC (P1759) is detected, go to [AT-146, "Diagnostic Procedure"](#) .  
If DTC (P1757) is detected, go to [AT-144, "Diagnostic Procedure"](#) .  
If DTC (P1841) is detected, go to [AT-163, "Diagnostic Procedure"](#) .



# DTC P1759 FRONT BRAKE SOLENOID VALVE FUNCTION

## ⊗ WITHOUT CONSULT-II

1. Start engine.
2. Accelerate vehicle to maintain the following conditions.  
**Accelerator opening: 1.5/8 - 2.0/8**  
**Selector lever position: "D" position**  
**Gear position: "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.**
3. Perform step 2 again.
4. Turn ignition switch OFF position, then perform step 1 to 3 again.
5. Perform self-diagnosis. Refer to [AT-94, "Diagnostic Procedure Without CONSULT-II"](#) .
6. If DTC is detected, go to [AT-146, "Diagnostic Procedure"](#) .

## Diagnostic Procedure

GCS0005E

### 1. CHECK INPUT SIGNALS

#### Ⓜ With CONSULT-II

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

DATA MONITOR			
MONITOR	NO DTC		
ATF PRES SW 1	OFF		
FR/B SOLENOID	XXX A		
		RECORD	
MODE	BACK	LIGHT	COPY

SCIA4796E

Item name	Condition	Display value (Approx.)
FR/B SOLENOID	Front brake engaged. Refer to <a href="#">AT-18</a> .	0.6 - 0.8 A
	Front brake disengaged. Refer to <a href="#">AT-18</a> .	0 - 0.05 A
ATF PRES SW 1	Front brake engaged. Refer to <a href="#">AT-18</a> .	ON
	Front brake disengaged. Refer to <a href="#">AT-18</a> .	OFF

#### OK or NG

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

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

Check TCM power supply and ground circuit. Refer to [AT-170, "MAIN POWER SUPPLY AND GROUND CIRCUIT"](#) .

#### OK or NG

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

### 3. DETECT MALFUNCTIONING ITEM

Check the following.

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

#### OK or NG

- OK >> Replace control valve with TCM. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .  
 NG >> Repair or replace damaged parts.

# DTC P1759 FRONT BRAKE SOLENOID VALVE FUNCTION

---

## 4. CHECK DTC

---

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

OK or NG

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

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

# DTC P1762 DIRECT CLUTCH SOLENOID VALVE

## DTC P1762 DIRECT CLUTCH SOLENOID VALVE

PFP:31940

### Description

GCS0005F

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

### CONSULT-II Reference Value

GCS0005G

Item name	Condition	Display value (Approx.)
D/C SOLENOID	Direct clutch disengaged. Refer to <a href="#">AT-18</a> .	0.6 - 0.8 A
	Direct clutch engaged. Refer to <a href="#">AT-18</a> .	0 - 0.05 A

### On Board Diagnosis Logic

GCS0005H

Diagnostic trouble code "P1762 D/C SOLENOID/CIRC" with CONSULT-II or 2nd judgement flicker without CONSULT-II is detected under the following conditions.

- When TCM detects an improper voltage drop when it tries to operate the solenoid valve.
- When TCM detects as irregular by comparing target value with monitor value.

### Possible Cause

GCS0005I

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

### DTC Confirmation Procedure

GCS0005J

#### CAUTION:

Always drive vehicle at a safe speed.

#### NOTE:

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

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

#### ④ WITH CONSULT-II

1. Turn ignition switch ON. (Do not start engine.)
2. Select "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Touch "START".
4. Start engine.
5. 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**

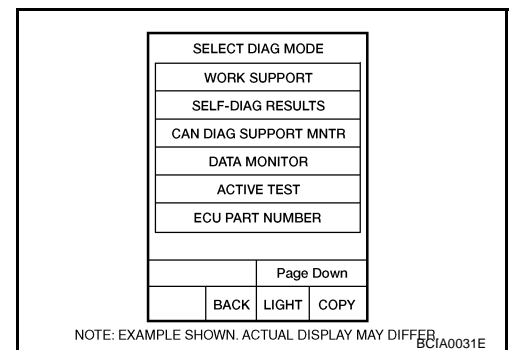
**GEAR: "1" ⇒ "2" (D/C ON/OFF)**

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

6. If DTC is detected, go to [AT-149, "Diagnostic Procedure"](#) .

#### ⊗ WITHOUT CONSULT-II

1. Start engine.
2. Drive vehicle and maintain the following conditions for at least 5 consecutive seconds.  
**Accelerator opening: 1.5/8 - 2.0/8**  
**Selector lever position: "D" position**  
**Gear position: "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.**
3. Perform self-diagnosis. Refer to [AT-94, "Diagnostic Procedure Without CONSULT-II"](#) .
4. If DTC is detected, go to [AT-149, "Diagnostic Procedure"](#) .





# DTC P1762 DIRECT CLUTCH SOLENOID VALVE

GCS0005K

## Diagnostic Procedure

### 1. CHECK INPUT SIGNAL

#### With CONSULT-II

1. Turn ignition switch ON. (Do not start engine.)
2. Select "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Start engine.
4. Read the value of "D/C SOLENOID" while driving.

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

SCIA4793E

Item name	Condition	Display value (Approx.)
D/C SOLENOID	Direct clutch disengaged. Refer to <a href="#">AT-18</a> .	0.6 - 0.8 A
	Direct clutch engaged. Refer to <a href="#">AT-18</a> .	0 - 0.05 A

#### OK or NG

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

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

Check TCM power supply and ground circuit. Refer to [AT-170, "MAIN POWER SUPPLY AND GROUND CIRCUIT"](#) .

#### OK or NG

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

### 3. DETECT MALFUNCTIONING ITEM

Check the following.

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

#### OK or NG

- OK >> Replace control valve with TCM. Refer to [AT-224, "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.

# DTC P1764 DIRECT CLUTCH SOLENOID VALVE FUNCTION

## DTC P1764 DIRECT CLUTCH SOLENOID VALVE FUNCTION

PF3:31940

### Description

GCS0005L

- Direct clutch solenoid valve is controlled by TCM in response to signals sent from PNP switch, vehicle speed sensor and accelerator pedal position sensor (throttle position sensor). Gears will then be shifted to the optimum position.
- This is not only caused by electrical malfunction (circuits open or shorted) but also by mechanical malfunction such as control valve sticking, improper solenoid valve operation.

### CONSULT-II Reference Value

GCS0005M

Item name	Condition	Display value (Approx.)
D/C SOLENOID	Direct clutch disengaged. Refer to <a href="#">AT-18</a> .	0.6 - 0.8 A
	Direct clutch engaged. Refer to <a href="#">AT-18</a> .	0 - 0.05 A
ATF PRES SW 5	Direct clutch engaged. Refer to <a href="#">AT-18</a> .	ON
	Direct clutch disengaged. Refer to <a href="#">AT-18</a> .	OFF

### On Board Diagnosis Logic

GCS0005N

Diagnostic trouble code "P1764 D/C SOLENOID FNCTN" with CONSULT-II or 2nd judgement flicker without CONSULT-II is detected under the following conditions.

- When TCM detects that actual gear ratio is irregular, and relation between gear position and condition of ATF pressure switch 5 is irregular during depressing accelerator pedal. (Other than during shift change)
- When TCM detects that relation between gear position and condition of ATF pressure switch 5 is irregular during releasing accelerator pedal. (Other than during shift change)

### Possible Cause

GCS0005O

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

### DTC Confirmation Procedure

GCS0005P

#### CAUTION:

Always drive vehicle at a safe speed.

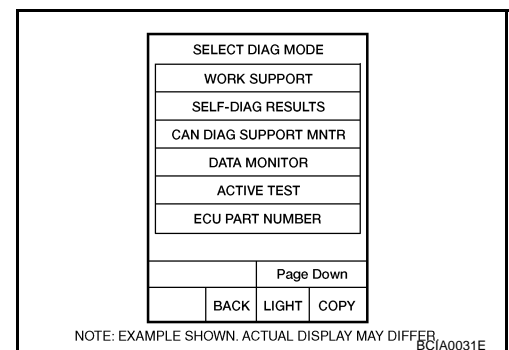
#### NOTE:

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

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

#### WITH CONSULT-II

1. Start engine.
2. Accelerate vehicle to maintain the following conditions.  
**ACCELE POSI: 1.5/8 - 2.0/8**  
**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.**
3. Perform step 2 again.
4. Turn ignition switch OFF, then perform step 1 to 3 again.
5. Check "SELF-DIAG RESULTS" mode for "A/T" with CONSULT-II. If DTC (P1764) is detected, go to [AT-151, "Diagnostic Procedure"](#) .  
If DTC (P1762) is detected, go to [AT-149, "Diagnostic Procedure"](#) .  
If DTC (P1845) is detected, go to [AT-167, "Diagnostic Procedure"](#) .



# DTC P1764 DIRECT CLUTCH SOLENOID VALVE FUNCTION

## ⊗ WITHOUT CONSULT-II

1. Start engine.
2. Accelerate vehicle to maintain the following conditions.  
**Accelerator opening: 1.5/8 - 2.0/8**  
**Selector lever position: "D" position**  
**Gear position: "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.**
3. Perform step 2 again.
4. Turn ignition switch OFF position, then perform step 1 to 3 again.
5. Perform self-diagnosis. Refer to [AT-94, "Diagnostic Procedure Without CONSULT-II"](#) .
6. If DTC is detected, go to [AT-151, "Diagnostic Procedure"](#) .

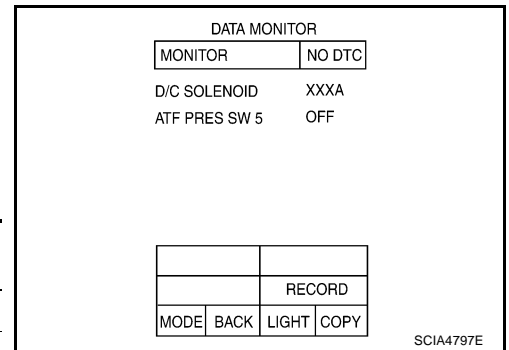
## Diagnostic Procedure

GCS0005Q

### 1. CHECK INPUT SIGNALS

#### 📱 With CONSULT-II

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



Item name	Condition	Display value (Approx.)
D/C SOLENOID	Direct clutch disengaged. Refer to <a href="#">AT-18</a> .	0.6 - 0.8 A
	Direct clutch engaged. Refer to <a href="#">AT-18</a> .	0 - 0.05 A
ATF PRES SW 5	Direct clutch engaged. Refer to <a href="#">AT-18</a> .	ON
	Direct clutch disengaged. Refer to <a href="#">AT-18</a> .	OFF

#### OK or NG

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

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

Check TCM power supply and ground circuit. Refer to [AT-170, "MAIN POWER SUPPLY AND GROUND CIRCUIT"](#) .

#### OK or NG

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

### 3. DETECT MALFUNCTIONING ITEM

Check the following.

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

#### OK or NG

- OK >> Replace control valve with TCM. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .  
 NG >> Repair or replace damaged parts.

## DTC P1764 DIRECT CLUTCH SOLENOID VALVE FUNCTION

---

### 4. CHECK DTC

---

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

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 2.

# DTC P1767 HIGH AND LOW REVERSE CLUTCH SOLENOID VALVE

## DTC P1767 HIGH AND LOW REVERSE CLUTCH SOLENOID VALVE

PFP:31940

### Description

GCS0005R

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

### CONSULT-II Reference Value

GCS0005S

Item name	Condition	Display value (Approx.)
HLR/C SOL	High and low reverse clutch disengaged. Refer to <a href="#">AT-18</a> .	0.6 - 0.8 A
	High and low reverse clutch engaged. Refer to <a href="#">AT-18</a> .	0 - 0.05 A

### On Board Diagnosis Logic

GCS0005T

Diagnostic trouble code "P1767 HLR/C SOL/CIRC" with CONSULT-II or 8th judgement flicker without CONSULT-II is detected under the following conditions.

- When TCM detects an improper voltage drop when it tries to operate the solenoid valve.
- When TCM detects as irregular by comparing target value with monitor value.

### Possible Cause

GCS0005U

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

### DTC Confirmation Procedure

GCS0005V

#### CAUTION:

Always drive vehicle at a safe speed.

#### NOTE:

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

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

#### WITH CONSULT-II

1. Turn ignition switch ON. (Do not start engine.)
2. Select "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Touch "START".
4. Start engine.
5. 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.**

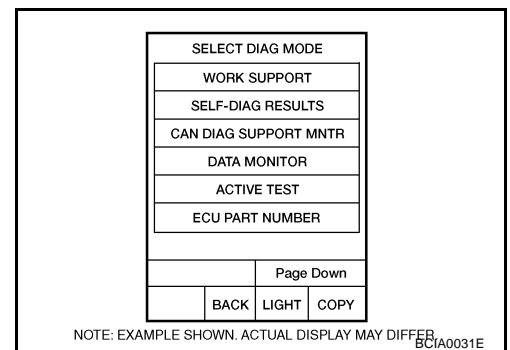
6. If DTC is detected, go to [AT-154, "Diagnostic Procedure"](#).

#### WITHOUT CONSULT-II

1. Start engine.
2. Drive vehicle and maintain the following conditions for at least 5 consecutive seconds.  
**Accelerator opening: 1.5/8 - 2.0/8**  
**Selector lever position: "D" position**  
**Gear position: "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.**

3. Perform self-diagnosis. Refer to [AT-94, "Diagnostic Procedure Without CONSULT-II"](#).

4. If DTC is detected, go to [AT-154, "Diagnostic Procedure"](#).



# DTC P1767 HIGH AND LOW REVERSE CLUTCH SOLENOID VALVE

GCS0005W

## Diagnostic Procedure

### 1. CHECK INPUT SIGNAL

#### With CONSULT-II

1. Turn ignition switch ON. (Do not start engine.)
2. Select "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Start engine.
4. Read the value of "HLR/C SOLENOID" while driving.

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

SCIA4793E

Item name	Condition	Display value (Approx.)
HLR/C SOL	High and low reverse clutch disengaged. Refer to <a href="#">AT-18</a> .	0.6 - 0.8 A
	High and low reverse clutch engaged. Refer to <a href="#">AT-18</a> .	0 - 0.05 A

#### OK or NG

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

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

Check TCM power supply and ground circuit. Refer to [AT-170, "MAIN POWER SUPPLY AND GROUND CIRCUIT"](#) .

#### OK or NG

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

### 3. DETECT MALFUNCTIONING ITEM

Check the following.

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

#### OK or NG

- OK >> Replace control valve with TCM. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .  
NG >> Repair or replace damaged parts.

### 4. CHECK DTC

Perform [AT-153, "DTC Confirmation Procedure"](#) .

#### OK or NG

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

# DTC P1769 HIGH AND LOW REVERSE CLUTCH SOLENOID VALVE FUNCTION

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

PPF:31940

### Description

GCS0005X

- High and low reverse clutch solenoid valve is controlled by TCM in response to signals sent from PNP switch, vehicle speed sensor and accelerator pedal position sensor (throttle position sensor). Gears will then be shifted to the optimum position.
- This is not only caused by electrical malfunction (circuits open or shorted) but also by mechanical malfunction such as control valve sticking, improper solenoid valve operation.

### CONSULT-II Reference Value

GCS0005Y

Item name	Condition	Display value (Approx.)
HLR/C SOL	High and low reverse clutch disengaged. Refer to <a href="#">AT-18</a> .	0.6 - 0.8 A
	High and low reverse clutch engaged. Refer to <a href="#">AT-18</a> .	0 - 0.05 A
ATF PRES SW 6	High and low reverse clutch engaged. Refer to <a href="#">AT-18</a> .	ON
	High and low reverse clutch disengaged. Refer to <a href="#">AT-18</a> .	OFF

### On Board Diagnosis Logic

GCS0005Z

Diagnostic trouble code "P1769 HLR/C SOL FNCTN" with CONSULT-II or 8th judgement flicker without CONSULT-II is detected under the following conditions.

- When TCM detects that actual gear ratio is irregular, and relation between gear position and condition of ATF pressure switch 6 is irregular during depressing accelerator pedal. (Other than during shift change)
- When TCM detects that relation between gear position and condition of ATF pressure switch 6 is irregular during releasing accelerator pedal. (Other than during shift change)

### Possible Cause

GCS00060

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

### DTC Confirmation Procedure

GCS00061

#### CAUTION:

Always drive vehicle at a safe speed.

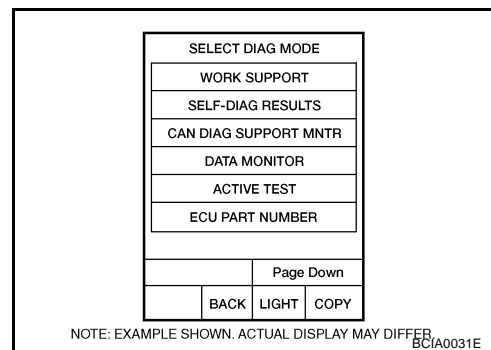
#### NOTE:

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

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

#### WITH CONSULT-II

1. Start engine.
2. Accelerate vehicle to maintain the following conditions.  
**ACCELE POSI: 1.5/8 - 2.0/8**  
**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.**
3. Perform step 2 again.
4. Turn ignition switch OFF, then perform step 1 to 3 again.
5. Check "SELF-DIAG RESULTS" mode for "A/T" with CONSULT-II. If DTC (P1769) is detected, go to [AT-156, "Diagnostic Procedure"](#) .  
If DTC (P1767) is detected, go to [AT-154, "Diagnostic Procedure"](#) .  
If DTC (P1846) is detected, go to [AT-169, "Diagnostic Procedure"](#) .



# DTC P1769 HIGH AND LOW REVERSE CLUTCH SOLENOID VALVE FUNCTION

## ⊗ WITHOUT CONSULT-II

1. Start engine.
2. Accelerate vehicle to maintain the following conditions.  
**Accelerator opening: 1.5/8 - 2.0/8**  
**Selector lever position: "D" position**  
**Gear position: "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.**
3. Perform step 2 again.
4. Turn ignition switch OFF position, then perform step 1 to 3 again.
5. Perform self-diagnosis. Refer to [AT-94, "Diagnostic Procedure Without CONSULT-II"](#) .
6. If DTC is detected, go to [AT-156, "Diagnostic Procedure"](#) .

## Diagnostic Procedure

GCS00062

### 1. CHECK INPUT SIGNALS

#### Ⓜ With CONSULT-II

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

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

SCIA4798E

Item name	Condition	Display value (Approx.)
HLR/C SOL	High and low reverse clutch disengaged. Refer to <a href="#">AT-18</a> .	0.6 - 0.8 A
	High and low reverse clutch engaged. Refer to <a href="#">AT-18</a> .	0 - 0.05 A
ATF PRES SW 6	High and low reverse clutch engaged. Refer to <a href="#">AT-18</a> .	ON
	High and low reverse clutch disengaged. Refer to <a href="#">AT-18</a> .	OFF

#### OK or NG

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

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

Check TCM power supply and ground circuit. Refer to [AT-170, "MAIN POWER SUPPLY AND GROUND CIRCUIT"](#) .

#### OK or NG

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

### 3. DETECT MALFUNCTIONING ITEM

Check the following.

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

#### OK or NG

- OK >> Replace control valve with TCM. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .  
 NG >> Repair or replace damaged parts.



# DTC P1769 HIGH AND LOW REVERSE CLUTCH SOLENOID VALVE FUNCTION

## 4. CHECK DTC

Perform [AT-155, "DTC Confirmation Procedure"](#) .

OK or NG

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

A

B

AT

D

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M

# DTC P1772 LOW COAST BRAKE SOLENOID VALVE

## DTC P1772 LOW COAST BRAKE SOLENOID VALVE

PFP:31940

### Description

GCS00063

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

### CONSULT-II Reference Value

GCS00064

Item name	Condition	Display value
ON OFF SOL	Low coast brake engaged. Refer to <a href="#">AT-18</a> .	ON
	Low coast brake disengaged. Refer to <a href="#">AT-18</a> .	OFF

### On Board Diagnosis Logic

GCS00065

Diagnostic trouble code "P1772 LC/B SOLENOID/CIRC" with CONSULT-II or 7th judgement flicker without CONSULT-II is detected when TCM detects an improper voltage drop when it tries to operate the solenoid valve.

### Possible Cause

GCS00066

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

### DTC Confirmation Procedure

GCS00067

#### CAUTION:

Always drive vehicle at a safe speed.

#### NOTE:

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

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

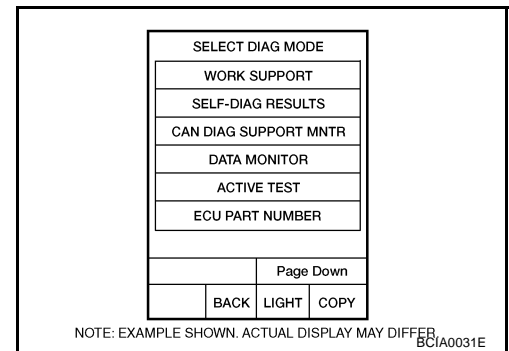
#### ④ WITH CONSULT-II

1. Turn ignition switch ON. (Do not start engine.)
2. Select "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Touch "START".
4. Start engine.
5. Drive vehicle and maintain the following conditions for at least 5 consecutive seconds.

**SLCT LVR POSI: "1" or "2" position**

**GEAR: "1" or "2" (LC/B ON/OFF)**

6. If DTC is detected, go to [AT-159, "Diagnostic Procedure"](#) .



#### ⊗ WITHOUT CONSULT-II

1. Start engine.
2. Drive vehicle and maintain the following conditions for at least 5 consecutive seconds.  
**Selector lever position: "1" or "2" position**  
**Gear position: "1" or "2" (LC/B ON/OFF)**  
**Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.**
3. Perform self-diagnosis. Refer to [AT-94, "Diagnostic Procedure Without CONSULT-II"](#) .
4. If DTC is detected, go to [AT-159, "Diagnostic Procedure"](#) .

# DTC P1772 LOW COAST BRAKE SOLENOID VALVE

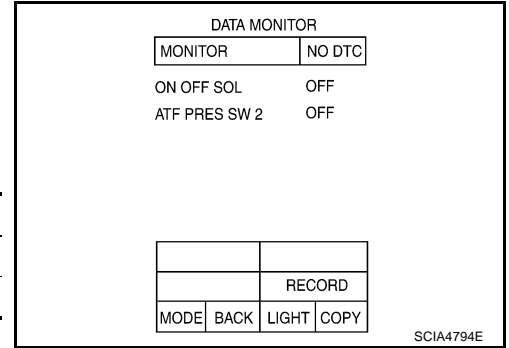
## Diagnostic Procedure

GCS00068

### 1. CHECK INPUT SIGNAL

#### With CONSULT-II

1. Turn ignition switch ON. (Do not start engine.)
2. Select "SELECTION FROM MENU" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Start engine.
4. Read the value of "ON OFF SOL" while driving.



Item name	Condition	Display value
ON OFF SOL	Low coast brake engaged. Refer to <a href="#">AT-18</a> .	ON
	Low coast brake disengaged. Refer to <a href="#">AT-18</a> .	OFF

#### OK or NG

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

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

Check TCM power supply and ground circuit. Refer to [AT-170, "MAIN POWER SUPPLY AND GROUND CIRCUIT"](#) .

#### OK or NG

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

### 3. DETECT MALFUNCTIONING ITEM

Check the following.

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

#### OK or NG

- OK >> Replace control valve with TCM. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .  
NG >> Repair or replace damaged parts.

### 4. CHECK DTC

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

#### OK or NG

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

# DTC P1774 LOW COAST BRAKE SOLENOID VALVE FUNCTION

## DTC P1774 LOW COAST BRAKE SOLENOID VALVE FUNCTION

PFP:31940

### Description

GCS00069

- Low coast brake solenoid valve is turned ON or OFF by TCM in response to signals sent from PNP switch, vehicle speed sensor and accelerator pedal position sensor (throttle position sensor). Gears will then be shifted to the optimum position.
- This is not only caused by electrical malfunction (circuits open or shorted) but also by mechanical malfunction such as control valve sticking, improper solenoid valve operation.

### CONSULT-II Reference Value

GCS0006A

Item name	Condition	Display value
ON OFF SOL	Low coast brake engaged. Refer to <a href="#">AT-18</a> .	ON
	Low coast brake disengaged. Refer to <a href="#">AT-18</a> .	OFF
ATF PRES SW 2	Low coast brake engaged. Refer to <a href="#">AT-18</a> .	ON
	Low coast brake disengaged. Refer to <a href="#">AT-18</a> .	OFF

### On Board Diagnosis Logic

GCS0006B

Diagnostic trouble code "P1774 LC/B SOLENOID FNCT" with CONSULT-II or 7th judgement flicker without CONSULT-II is detected under the following conditions.

- When TCM detects that actual gear ratio is irregular, and relation between gear position and condition of ATF pressure switch 2 is irregular during depressing accelerator pedal. (Other than during shift change)
- When TCM detects that relation between gear position and condition of ATF pressure switch 2 is irregular during releasing accelerator pedal. (Other than during shift change)

### Possible Cause

GCS0006C

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

### DTC Confirmation Procedure

GCS0006D

#### CAUTION:

Always drive vehicle at a safe speed.

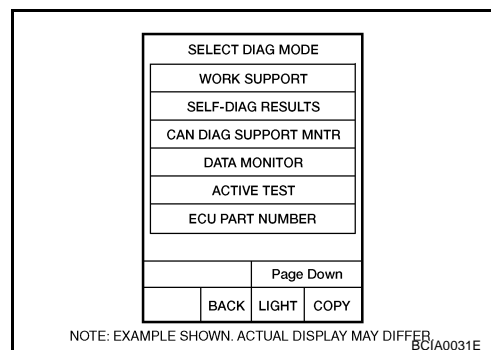
#### NOTE:

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

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

#### ④ WITH CONSULT-II

1. Start engine.
2. Accelerate vehicle to maintain the following conditions.  
**SLCT LVR POSI: "1" or "2" position**  
**GEAR: "1" or "2" (LC/B ON/OFF)**
3. Perform step 2 again.
4. Turn ignition switch OFF, then perform step 1 to 3 again.
5. Check "SELF-DIAG RESULTS" mode for "A/T" with CONSULT-II. If DTC (P1774) is detected, go to [AT-161, "Diagnostic Procedure"](#) .  
If DTC (P1772) is detected, go to [AT-159, "Diagnostic Procedure"](#) .



# DTC P1774 LOW COAST BRAKE SOLENOID VALVE FUNCTION

## ⊗ WITHOUT CONSULT-II

1. Start engine.
2. Accelerate vehicle to maintain the following conditions.  
**Selector lever position: "1" or "2" position**  
**Gear position: "1" or "2" (LC/B ON/OFF)**
3. Perform step 2 again.
4. Turn ignition switch OFF position, then perform step 1 to 3 again.
5. Perform self-diagnosis. Refer to [AT-94, "Diagnostic Procedure Without CONSULT-II"](#).
6. If DTC is detected, go to [AT-161, "Diagnostic Procedure"](#).

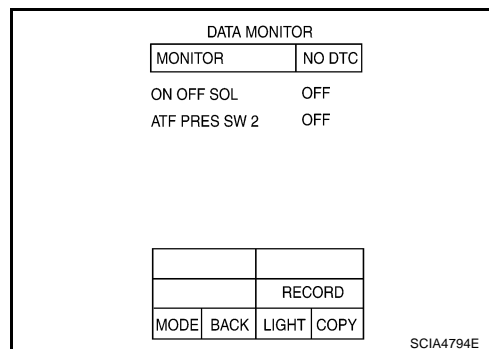
## Diagnostic Procedure

GCS0006E

### 1. CHECK INPUT SIGNALS

#### Ⓜ With CONSULT-II

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



Item name	Condition	Display value
ON OFF SOL	Low coast brake engaged. Refer to <a href="#">AT-18</a> .	ON
	Low coast brake disengaged. Refer to <a href="#">AT-18</a> .	OFF
ATF PRES SW 2	Low coast brake engaged. Refer to <a href="#">AT-18</a> .	ON
	Low coast brake disengaged. Refer to <a href="#">AT-18</a> .	OFF

#### OK or NG

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

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

Check TCM power supply and ground circuit. Refer to [AT-170, "MAIN POWER SUPPLY AND GROUND CIRCUIT"](#).

#### OK or NG

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

### 3. DETECT MALFUNCTIONING ITEM

Check the following.

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

#### OK or NG

- OK >> Replace control valve with TCM. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#).
- NG >> Repair or replace damaged parts.

### 4. CHECK DTC

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

#### OK or NG

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

# DTC P1841 ATF PRESSURE SWITCH 1

## DTC P1841 ATF PRESSURE SWITCH 1

PFP:25240

### Description

GCS0006F

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

### CONSULT-II Reference Value

GCS0006G

Item name	Condition	Display value
ATF PRES SW 1	Front brake engaged. Refer to <a href="#">AT-18</a> .	ON
	Front brake disengaged. Refer to <a href="#">AT-18</a> .	OFF

### On Board Diagnosis Logic

GCS0006H

Diagnostic trouble code "P1841 ATF PRES SW 1/CIRC" with CONSULT-II is detected when TCM detects that actual gear ratio is normal, and relation between gear position and condition of ATF pressure switch 1 is irregular during depressing accelerator pedal. (Other than during shift change)

### Possible Cause

GCS0006I

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

### DTC Confirmation Procedure

GCS0006J

#### CAUTION:

Always drive vehicle at a safe speed.

#### NOTE:

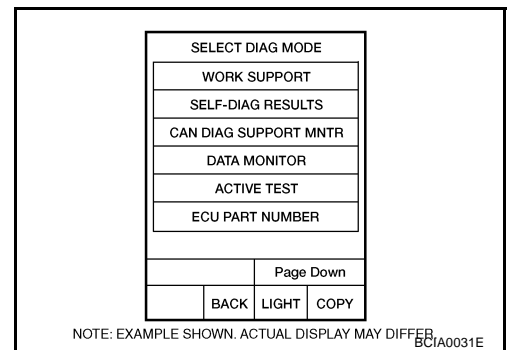
If "DTC Confirmation Procedure" has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

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

#### WITH CONSULT-II

1. Start engine.
2. Accelerate vehicle to maintain the following conditions.  
**ACCELE POSI: 1.5/8 - 2.0/8**  
**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.**
3. Perform step 2 again.
4. Turn ignition switch OFF, then perform step 1 to 3 again.
5. Check "SELF-DIAG RESULTS" mode for "A/T" with CONSULT-II.

If DTC (P1841) is detected, go to [AT-163, "Diagnostic Procedure"](#) .  
If DTC (P1757) is detected, go to [AT-144, "Diagnostic Procedure"](#) .



# DTC P1841 ATF PRESSURE SWITCH 1

## Diagnostic Procedure

GCS0006K

### 1. CHECK INPUT SIGNAL

#### With CONSULT-II

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

Item name	Condition	Display value
ATF PRES SW 1	Front brake engaged. Refer to <a href="#">AT-18</a> .	ON
	Front brake disengaged. Refer to <a href="#">AT-18</a> .	OFF

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

△	▽		
RECORD			
MODE	BACK	LIGHT	COPY

PCIA0067E

#### 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-170, "MAIN POWER SUPPLY AND GROUND CIRCUIT"](#) .

#### OK or NG

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

### 3. DETECT MALFUNCTIONING ITEM

Check the following.

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

#### OK or NG

- OK >> Replace control valve with TCM. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .  
NG >> Repair or replace damaged parts.

### 4. CHECK DTC

Perform [AT-162, "DTC Confirmation Procedure"](#) .

#### OK or NG

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

# DTC P1843 ATF PRESSURE SWITCH 3

## DTC P1843 ATF PRESSURE SWITCH 3

PFP:25240

### Description

GCS0006L

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

### CONSULT-II Reference Value

GCS0006M

Item name	Condition	Display value
ATF PRES SW 3	Input clutch engaged. Refer to <a href="#">AT-18</a> .	ON
	Input clutch disengaged. Refer to <a href="#">AT-18</a> .	OFF

### On Board Diagnosis Logic

GCS0006N

Diagnostic trouble code "P1843 ATF PRES SW 3/CIRC" with CONSULT-II is detected when TCM detects that actual gear ratio is normal, and relation between gear position and condition of ATF pressure switch 3 is irregular during depressing accelerator pedal. (Other than during shift change)

### Possible Cause

GCS0006O

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

### DTC Confirmation Procedure

GCS0006P

#### CAUTION:

Always drive vehicle at a safe speed.

#### NOTE:

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

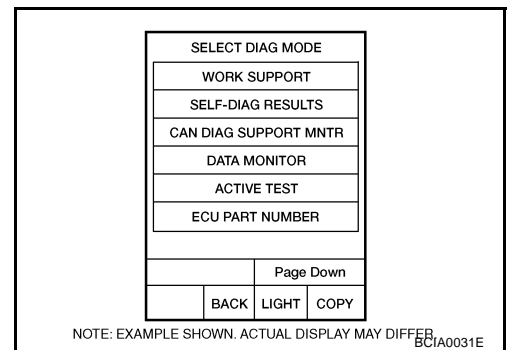
After the repair, perform the following procedure to confirm the malfunction is eliminated.

#### WITH CONSULT-II

1. Start engine.
2. Accelerate vehicle to maintain the following conditions.  
**ACCELE POSI: 1.5/8 - 2.0/8**  
**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.**
3. Perform step 2 again.
4. Turn ignition switch OFF, then perform step 1 to 3 again.
5. Check "SELF-DIAG RESULTS" mode for "A/T" with CONSULT-II.

If DTC (P1843) is detected, go to [AT-165, "Diagnostic Procedure"](#) .

If DTC (P1752) is detected, go to [AT-139, "Diagnostic Procedure"](#) .





# DTC P1843 ATF PRESSURE SWITCH 3

## Diagnostic Procedure

GC50006Q

### 1. CHECK INPUT SIGNAL

#### With CONSULT-II

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

Item name	Condition	Display value
ATF PRES SW 3	Input clutch engaged. Refer to <a href="#">AT-18</a> .	ON
	Input clutch disengaged. Refer to <a href="#">AT-18</a> .	OFF

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

△	▽		
RECORD			
MODE	BACK	LIGHT	COPY

PCIA0067E

#### 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-170, "MAIN POWER SUPPLY AND GROUND CIRCUIT"](#) .

#### OK or NG

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

### 3. DETECT MALFUNCTIONING ITEM

Check the following.

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

#### OK or NG

- OK >> Replace control valve with TCM. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .  
NG >> Repair or replace damaged parts.

### 4. CHECK DTC

Perform [AT-164, "DTC Confirmation Procedure"](#) .

#### OK or NG

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

# DTC P1845 ATF PRESSURE SWITCH 5

## DTC P1845 ATF PRESSURE SWITCH 5

PFP:25240

### Description

GCS0006R

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

### CONSULT-II Reference Value

GCS0006S

Item name	Condition	Display value
ATF PRES SW 5	Direct clutch engaged. Refer to <a href="#">AT-18</a> .	ON
	Direct clutch disengaged. Refer to <a href="#">AT-18</a> .	OFF

### On Board Diagnosis Logic

GCS0006T

Diagnostic trouble code "P1845 ATF PRES SW 5/CIRC" with CONSULT-II is detected when TCM detects that actual gear ratio is normal, and relation between gear position and condition of ATF pressure switch 5 is irregular during depressing accelerator pedal. (Other than during shift change)

### Possible Cause

GCS0006U

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

### DTC Confirmation Procedure

GCS0006V

#### CAUTION:

Always drive vehicle at a safe speed.

#### NOTE:

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

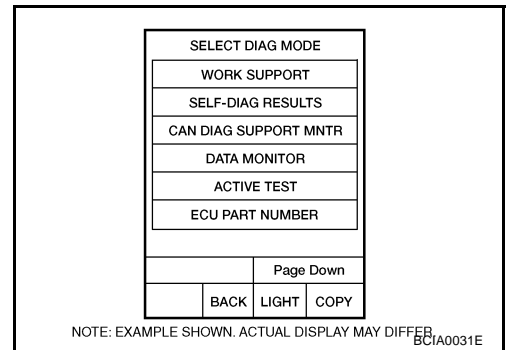
After the repair, perform the following procedure to confirm the malfunction is eliminated.

#### WITH CONSULT-II

1. Start engine.
2. Accelerate vehicle to maintain the following conditions.  
**ACCELE POSI: 1.5/8 - 2.0/8**  
**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.**
3. Perform step 2 again.
4. Turn ignition switch OFF, then perform step 1 to 3 again.
5. Check "SELF-DIAG RESULTS" mode for "A/T" with CONSULT-II.

If DTC (P1845) is detected, go to [AT-167, "Diagnostic Procedure"](#) .

If DTC (P1762) is detected, go to [AT-149, "Diagnostic Procedure"](#) .



# DTC P1845 ATF PRESSURE SWITCH 5

GCS0006W

## Diagnostic Procedure

### 1. CHECK INPUT SIGNAL

#### With CONSULT-II

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

Item name	Condition	Display value
ATF PRES SW 5	Direct clutch engaged. Refer to <a href="#">AT-18</a> .	ON
	Direct clutch disengaged. Refer to <a href="#">AT-18</a> .	OFF

#### OK or NG

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

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

△	▽		
RECORD			
MODE	BACK	LIGHT	COPY

PCIA0067E

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

Check TCM power supply and ground circuit. Refer to [AT-170, "MAIN POWER SUPPLY AND GROUND CIRCUIT"](#) .

#### OK or NG

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

### 3. DETECT MALFUNCTIONING ITEM

Check the following.

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

#### OK or NG

- OK >> Replace control valve with TCM. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .  
NG >> Repair or replace damaged parts.

### 4. CHECK DTC

Perform [AT-166, "DTC Confirmation Procedure"](#) .

#### OK or NG

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

# DTC P1846 ATF PRESSURE SWITCH 6

## DTC P1846 ATF PRESSURE SWITCH 6

PFP:25240

### Description

GCS0006X

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

### CONSULT-II Reference Value

GCS0006Y

Item name	Condition	Display value
ATF PRES SW 6	High and low reverse clutch engaged. Refer to <a href="#">AT-18</a> .	ON
	High and low reverse clutch disengaged. Refer to <a href="#">AT-18</a> .	OFF

### On Board Diagnosis Logic

GCS0006Z

Diagnostic trouble code "P1846 ATF PRES SW 6/CIRC" with CONSULT-II is detected when TCM detects that actual gear ratio is normal, and relation between gear position and condition of ATF pressure switch 6 is irregular during depressing accelerator pedal. (Other than during shift change)

### Possible Cause

GCS00070

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

### DTC Confirmation Procedure

GCS00071

#### CAUTION:

Always drive vehicle at a safe speed.

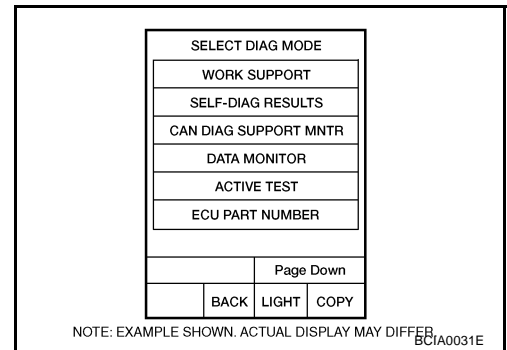
#### NOTE:

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

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

#### WITH CONSULT-II

1. Start engine.
2. Accelerate vehicle to maintain the following conditions.  
**ACCELE POSI: 1.5/8 - 2.0/8**  
**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.**
3. Perform step 2 again.
4. Turn ignition switch OFF, then perform step 1 to 3 again.
5. Check "SELF-DIAG RESULTS" mode for "A/T" with CONSULT-II.  
If DTC (P1846) is detected, go to [AT-169, "Diagnostic Procedure"](#) .  
If DTC (P1767) is detected, go to [AT-154, "Diagnostic Procedure"](#) .



# DTC P1846 ATF PRESSURE SWITCH 6

GCS00072

## Diagnostic Procedure

### 1. CHECK INPUT SIGNAL

#### With CONSULT-II

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

Item name	Condition	Display value
ATF PRES SW 6	High and low reverse clutch engaged. Refer to <a href="#">AT-18</a> .	ON
	High and low reverse clutch disengaged. Refer to <a href="#">AT-18</a> .	OFF

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

△	▽		
RECORD			
MODE	BACK	LIGHT	COPY

PCIA0067E

#### 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-170, "MAIN POWER SUPPLY AND GROUND CIRCUIT"](#) .

#### OK or NG

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

### 3. DETECT MALFUNCTIONING ITEM

Check the following.

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

#### OK or NG

- OK >> Replace control valve with TCM. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .  
NG >> Repair or replace damaged parts.

### 4. CHECK DTC

Perform [AT-168, "DTC Confirmation Procedure"](#) .

#### OK or NG

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

# MAIN POWER SUPPLY AND GROUND CIRCUIT

## MAIN POWER SUPPLY AND GROUND CIRCUIT

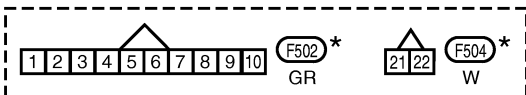
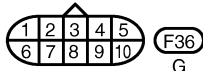
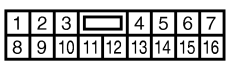
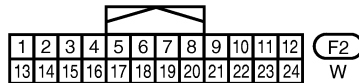
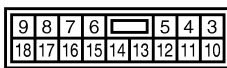
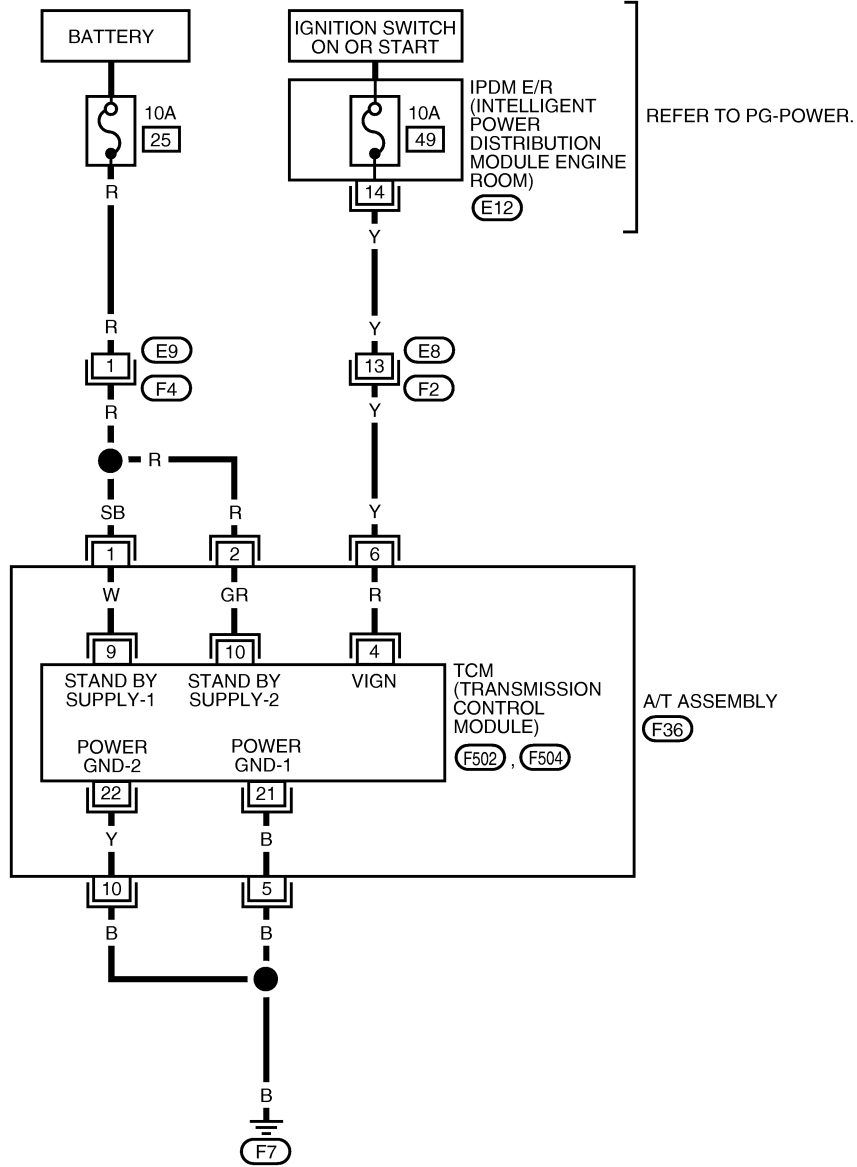
PF00:00100

### Wiring Diagram — AT — MAIN

GCS00073

### AT-MAIN-01

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





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

MCWA0226E

# MAIN POWER SUPPLY AND GROUND CIRCUIT

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

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

## Diagnostic Procedure

GCS00074

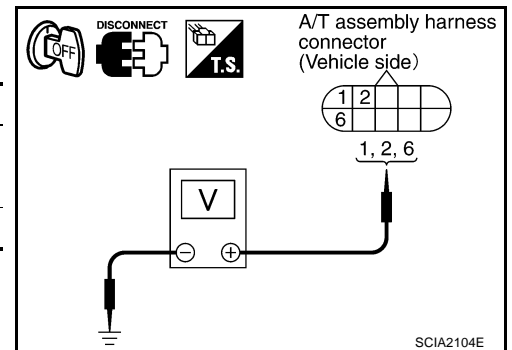
### 1. CHECK TCM POWER SOURCE STEP 1

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

Item	Connector	Terminal	Voltage
TCM	F36	1 - Ground	Battery voltage
		2 - Ground	Battery voltage
		6 - Ground	0 V

#### OK or NG

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



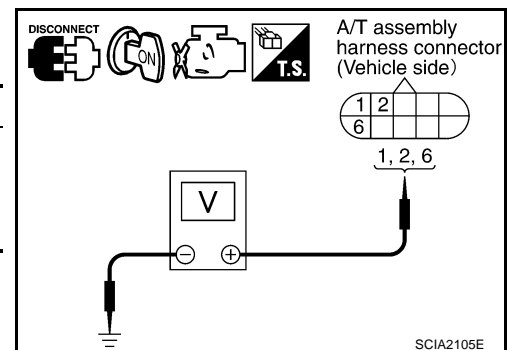
### 2. CHECK TCM POWER SOURCE STEP 2

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

Item	Connector	Terminal	Voltage
TCM	F36	1 - Ground	Battery voltage
		2 - Ground	Battery voltage
		6 - Ground	Battery voltage

#### OK or NG

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



# MAIN POWER SUPPLY AND GROUND CIRCUIT

## 3. DETECT MALFUNCTIONING ITEM

Check the following.

- Harness for short or open between battery and A/T assembly harness connector F36 terminals 1, 2
- Harness for short or open between ignition switch and A/T assembly harness connector F36 terminal 6
- 10 A fuse (No. 25, located in fuse and fusible link block) and 10 A fuse (No. 49, located in IPDM E/R)
- Ignition switch, Refer to [PG-4, "POWER SUPPLY ROUTING CIRCUIT"](#) .

OK or NG

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

## 4. CHECK TCM GROUND CIRCUIT

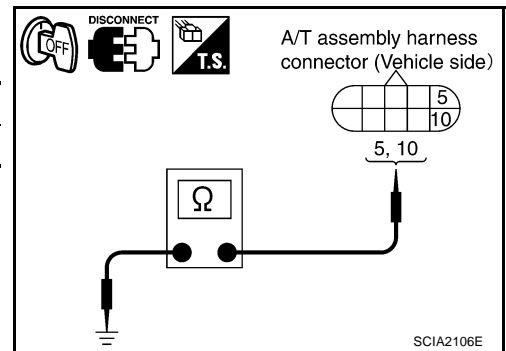
1. Turn ignition switch OFF.
2. Disconnect A/T assembly harness connector.
3. Check continuity between A/T assembly harness connector terminals and ground.

Item	Connector	Terminal	Continuity
TCM	F36	5, 10 - Ground	Yes

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

OK or NG

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



## 5. DETECT MALFUNCTIONING ITEM

Check the following.

- 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, "SELF-DIAGNOSTIC RESULT MODE"](#) .

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, "SELF-DIAGNOSTIC RESULT MODE"](#) .

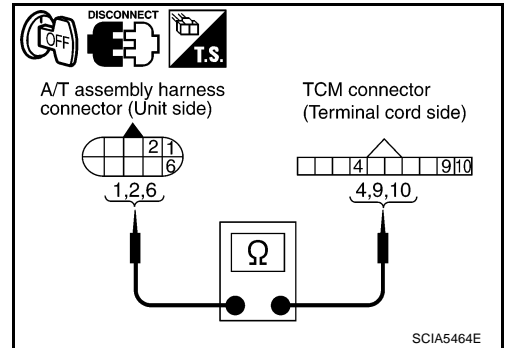


# MAIN POWER SUPPLY AND GROUND CIRCUIT

## 7. CHECK TERMINAL CORD ASSEMBLY

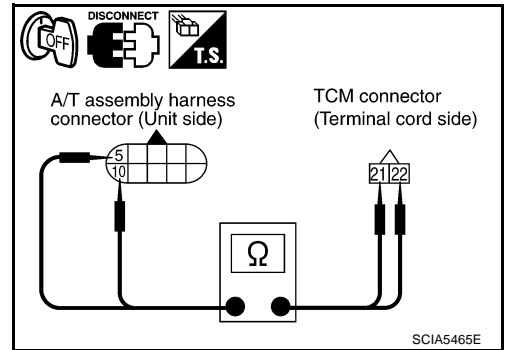
1. Remove control valve with TCM. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Disconnect A/T assembly harness connector and TCM connector.
3. Check continuity between A/T assembly harness connector terminals and TCM connector terminals.

Item	Connector	Terminal	Continuity
A/T assembly harness connector	F36	1	Yes
TCM connector	F502	9	
A/T assembly harness connector	F36	2	Yes
TCM connector	F502	10	
A/T assembly harness connector	F36	6	Yes
TCM connector	F502	4	



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

Item	Connector	Terminal	Continuity
A/T assembly harness connector	F36	5	Yes
TCM connector	F504	21	
A/T assembly harness connector	F36	10	Yes
TCM connector	F504	22	



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

- OK >> Replace control valve with TCM. Refer to [AT-224, "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

## CLOSED THROTTLE POSITION AND WIDE OPEN THROTTLE POSITION CIRCUIT

PFP:18002

### CONSULT-II Reference Value

GCS00075

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

### Diagnostic Procedure

GCS00076

#### 1. CHECK CAN COMMUNICATION LINE

Perform self-diagnosis. Refer to [AT-85, "SELF-DIAGNOSTIC RESULT MODE"](#) , [AT-94, "Diagnostic Procedure Without CONSULT-II"](#) .

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

- YES >> Check CAN communication line. Refer to [AT-96, "DTC U1000 CAN COMMUNICATION LINE"](#) .  
 NO >> GO TO 2.

#### 2. CHECK THROTTLE POSITION SIGNAL CIRCUIT

##### With CONSULT-II

- Turn ignition switch ON. (Do not start engine.)
- Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
- Depress accelerator pedal and read the value of "CLSD THL POS" and "W/O THL POS".

Accelerator pedal operation	Item name	
	CLSD THL POS	W/O THL POS
Released	ON	OFF
Fully depressed	OFF	ON

DATA MONITOR			
MONITOR		NO DTC	
ACCELE POSI	0.0/8		
THROTTLE POSI	0.0/8		
CLSD THL POS	ON		
W/O THL POS	OFF		
BRAKE SW	OFF		
		▽	
RECORD			
MODE	BACK	LIGHT	COPY

PCIA0070E

#### OK or NG

OK >> **INSPECTION END**

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

- Perform self-diagnosis for "ENGINE" with CONSULT-II. Refer to [EC-1050, "SELF-DIAGNOSTIC MODE"](#) (for YD25DDTi engine), [EC-111, "SELF-DIAG RESULTS MODE"](#) (for VQ40DE engine type 1\*), [EC-654, "SELF-DIAG RESULTS MODE"](#) (for VQ40DE engine type 2\*).  
 \*: Refer to [EC-15, "APPLICATION NOTICE"](#) .
- 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

## BRAKE SIGNAL CIRCUIT

PPF:25320

### CONSULT-II Reference Value

GCS00077

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

### Diagnostic Procedure

GCS00078

#### 1. CHECK CAN COMMUNICATION LINE

Perform self-diagnosis. Refer to [AT-85, "SELF-DIAGNOSTIC RESULT MODE"](#) , [AT-94, "Diagnostic Procedure Without CONSULT-II"](#) .

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

- YES >> Check CAN communication line. Refer to [AT-96, "DTC U1000 CAN COMMUNICATION LINE"](#) .  
 NO >> GO TO 2.

#### 2. CHECK STOP LAMP SWITCH CIRCUIT

##### With CONSULT-II

- Turn ignition switch ON. (Do not start engine.)
- Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
- Read the ON/OFF switching action of "BRAKE SW".

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

DATA MONITOR	
MONITOR	NO DTC
ACCELE POSI	0.0/8
THROTTLE POSI	0.0/8
CLSD THL POS	ON
W/O THL POS	OFF
BRAKE SW	OFF
▼	
RECORD	
MODE	BACK
LIGHT	COPY

PCIA0070E

OK or NG

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

#### 3. CHECK STOP LAMP SWITCH

Check continuity between stop lamp switch harness connector E109 terminals 1 and 2. Refer to [AT-180, "Wiring Diagram — AT — NON-DTC"](#) .

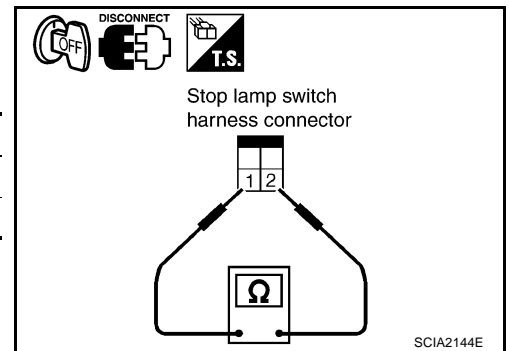
Condition	Continuity
When brake pedal is depressed	Yes
When brake pedal is released	No

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

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

NG >> Repair or replace stop lamp switch.



# 1ST POSITION SWITCH

## 1ST POSITION SWITCH

PFP:31918

### CONSULT-II Reference Value

GCS00079

Item name	Condition	Display value
1 POSITION SW	Selector lever in "1" position.	ON
	Selector lever in other positions.	OFF

### Diagnostic Procedure

GCS0007A

#### 1. CHECK CAN COMMUNICATION LINE

Perform self-diagnosis. Refer to [AT-85, "SELF-DIAGNOSTIC RESULT MODE"](#) .

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

- YES >> Check CAN communication line. Refer to [AT-96, "DTC U1000 CAN COMMUNICATION LINE"](#) .  
 NO >> GO TO 2.

#### 2. CHECK 1ST POSITION SWITCH CIRCUIT

##### With CONSULT-II

- Turn ignition switch ON.
- Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
- Read out "1 POSITION SW".  
Check the signal of the overdrive control switch is indicated properly.

DATA MONITOR	
MONITOR	NO DTC
PNP SW 1	OFF
PNP SW 2	OFF
PNP SW 3	OFF
PNP SW 4	OFF
1 POSITION SW	OFF
OD CONT SW	OFF
POWERSHIFT SW	OFF
HOLD SW	OFF
MANU MODE SW	OFF

Page Up	Page Down
RECORD	
MODE	BACK
LIGHT	COPY

SCIA7305E

Item name	Condition	Display value
1 POSITION SW	Selector lever in "1" position.	ON
	Selector lever in other positions.	OFF

##### Without CONSULT-II

- Turn ignition switch ON. (Do not start engine)
- Check voltage between A/T control device connector terminal and ground. Refer to [AT-180, "Wiring Diagram — AT — NONDTC"](#) .

Item	Connector	Terminal	Condition	Data (Approx.)
A/T device	M79	9 - Ground	Selector lever in "1" position.	0 V
			Selector lever in other positions.	Battery voltage

##### OK or NG

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

#### 3. CHECK 1ST POSITION SWITCH

- Turn ignition switch OFF.
- Disconnect A/T control device connector.
- Check continuity between A/T control device connector M79 terminals 9 and 10.

Condition	Continuity
Selector lever in "1" position.	Yes
Selector lever in other positions.	No

##### OK or NG

- OK >> GO TO 4.  
 NG >> Repair or replace 1st position switch.

# 1ST POSITION SWITCH

---

## 4. DETECT MALFUNCTIONING ITEM

---

Check the following. If any items are damaged, repair or replace damaged parts.

- Harness for short or open between combination meter connector M23 terminal 18 and A/T control device connector M79 terminal 9.
- Harness for short or open between A/T control device connector M79 terminal 10 and ground.

OK or NG

OK >> GO TO 5.

NG >> Repair or replace damaged parts.

---

## 5. CHECK COMBINATION METER

---

Check the combination meter. Refer to [DI-18, "HOW TO PERFORM TROUBLE DIAGNOSIS"](#) .

OK or NG

OK >> **INSPECTION END**

NO >> Repair or replace damaged parts.

A

B

AT

D

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L

M

# OVERDRIVE CONTROL SWITCH

## OVERDRIVE CONTROL SWITCH

PFP:25130

### CONSULT-II Reference Value

GCS0007B

Item name	Condition	Display value
OD CONT SW	Holding overdrive control switch	ON
	Releasing overdrive control switch	OFF

## Diagnostic Procedure

GCS0007C

### 1. CHECK CAN COMMUNICATION LINE

Perform self-diagnosis. Refer to [AT-85, "SELF-DIAGNOSTIC RESULT MODE"](#) .

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

- YES >> Check CAN communication line. Refer to [AT-96, "DTC U1000 CAN COMMUNICATION LINE"](#) .  
 NO >> GO TO 2.

### 2. CHECK OVERDRIVE CONTROL SWITCH CIRCUIT

#### With CONSULT-II

- Turn ignition switch ON.
- Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
- Read out "OD CONT SW".  
Check the signal of the overdrive control switch is indicated properly.

DATA MONITOR	
MONITOR	NO DTC
PNP SW 1	OFF
PNP SW 2	OFF
PNP SW 3	OFF
PNP SW 4	OFF
1 POSITION SW	OFF
OD CONT SW	OFF
POWERSHIFT SW	OFF
HOLD SW	OFF
MANU MODE SW	OFF

Page Up	Page Down
RECORD	
MODE	BACK
LIGHT	COPY

SCIA7305E

Item name	Condition	Display value
OD CONT SW	Holding overdrive control switch	ON
	Releasing overdrive control switch	OFF

#### Without CONSULT-II

- Turn ignition switch ON. (Do not start engine)
- Check voltage between A/T control device connector terminal and ground. Refer to [AT-180, "Wiring Diagram — AT — NONDTC"](#) .

Item	Connector	Terminal	Condition	Data (Approx.)
A/T device	M79	7 - Ground	Releasing overdrive control switch	Battery voltage
			Holding overdrive control switch	0V

#### OK or NG

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

### 3. CHECK OVERDRIVE CONTROL SWITCH

- Turn ignition switch OFF.
- Disconnect A/T control device connector.
- Check continuity between A/T control device connector M79 terminals 7 and 8.

Condition	Continuity
Holding overdrive control switch	Yes
Releasing overdrive control switch	No

#### OK or NG

- OK >> GO TO 4.  
 NG >> Repair or replace overdrive control switch.

# OVERDRIVE CONTROL SWITCH

---

## 4. DETECT MALFUNCTIONING ITEM

---

Check the following. If any items are damaged, repair or replace damaged parts.

- Harness for short or open between combination meter connector M23 terminal 20 and A/T control device connector M79 terminal 7.
- Harness for short or open between A/T control device connector M79 terminal 8 and ground.

OK or NG

OK >> GO TO 5.

NG >> Repair or replace damaged parts.

---

## 5. CHECK COMBINATION METER

---

Check the combination meter. Refer to [DI-18, "HOW TO PERFORM TROUBLE DIAGNOSIS"](#) .

OK or NG

OK >> **INSPECTION END**

NO >> Repair or replace damaged parts.

A

B

AT

D

E

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M

# TROUBLE DIAGNOSIS FOR SYMPTOMS

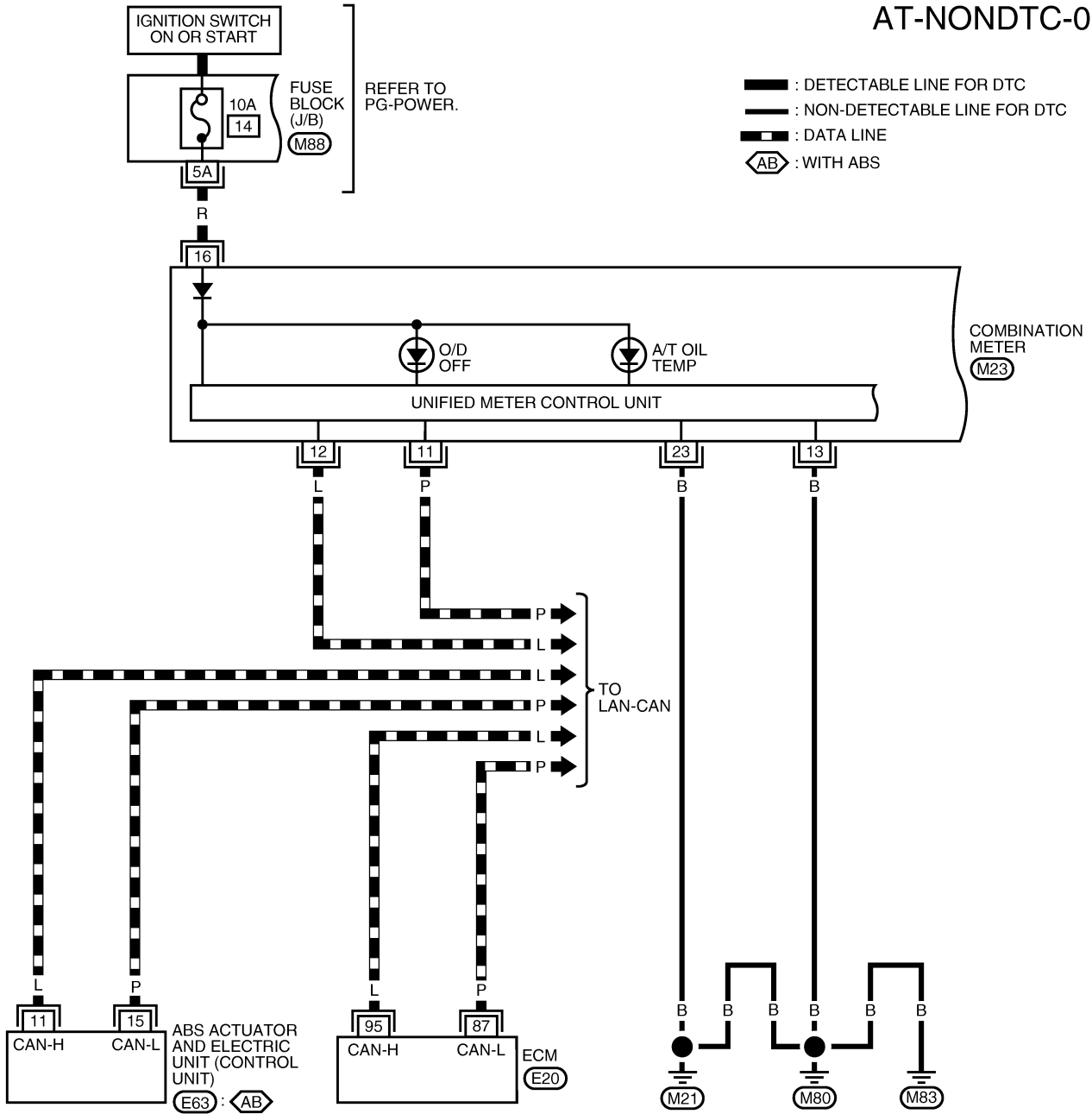
PFP:00007

## TROUBLE DIAGNOSIS FOR SYMPTOMS

### Wiring Diagram — AT — NONDTC

GCS0007D

#### AT-NONDTC-01



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

(M23) W

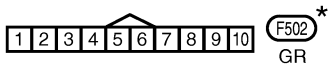
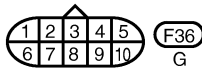
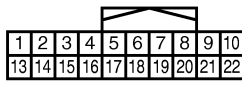
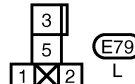
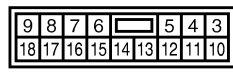
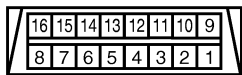
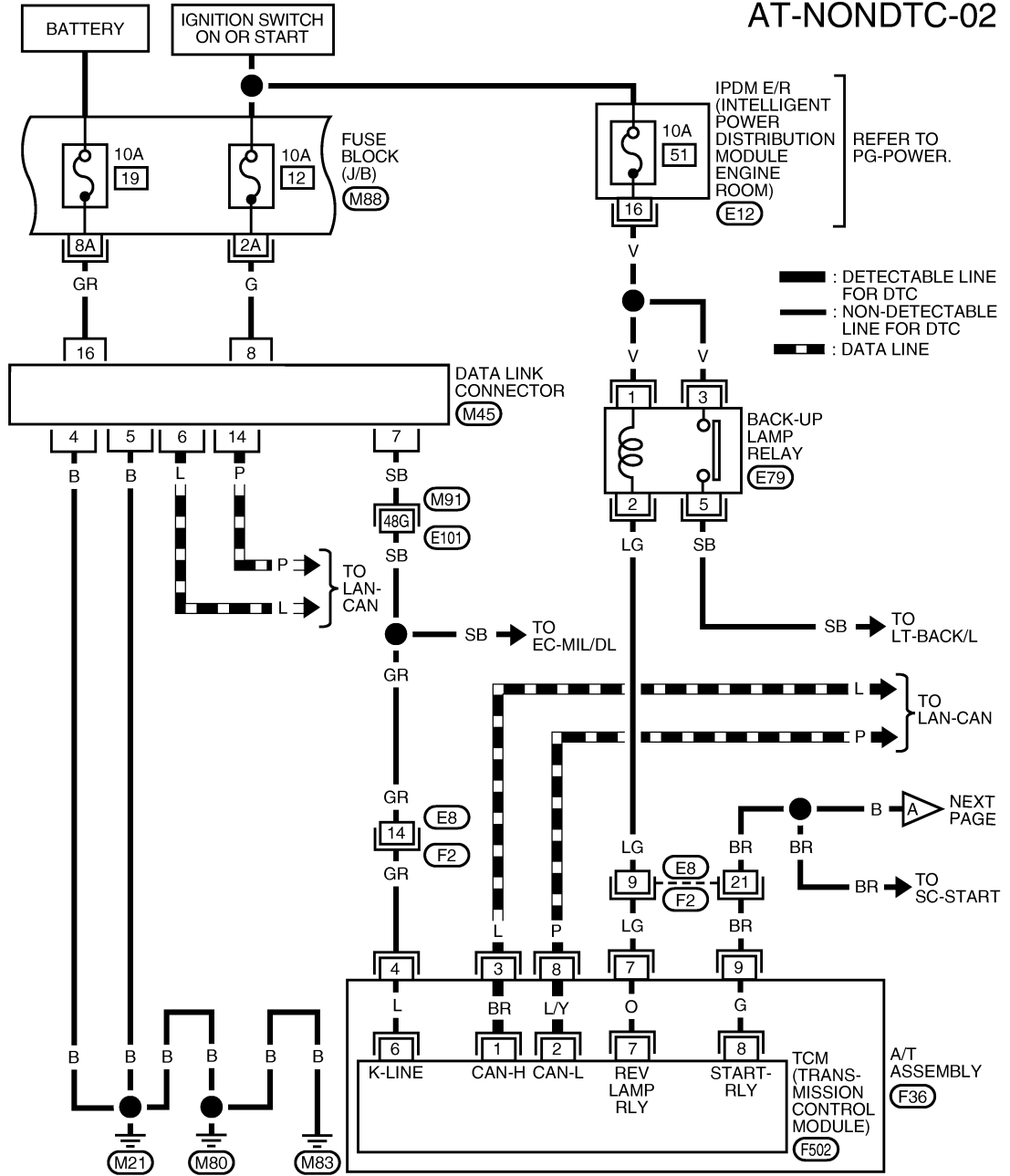
REFER TO THE FOLLOWING.

- (E20), (E63) - ELECTRICAL UNITS
- (M88) - FUSE BLOCK - JUNCTION BOX (J/B)



# TROUBLE DIAGNOSIS FOR SYMPTOMS

AT-NONDTC-02



REFER TO THE FOLLOWING.

(M91) - SUPER MULTIPLE JUNCTION (SMJ)

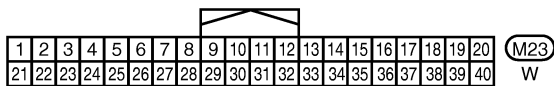
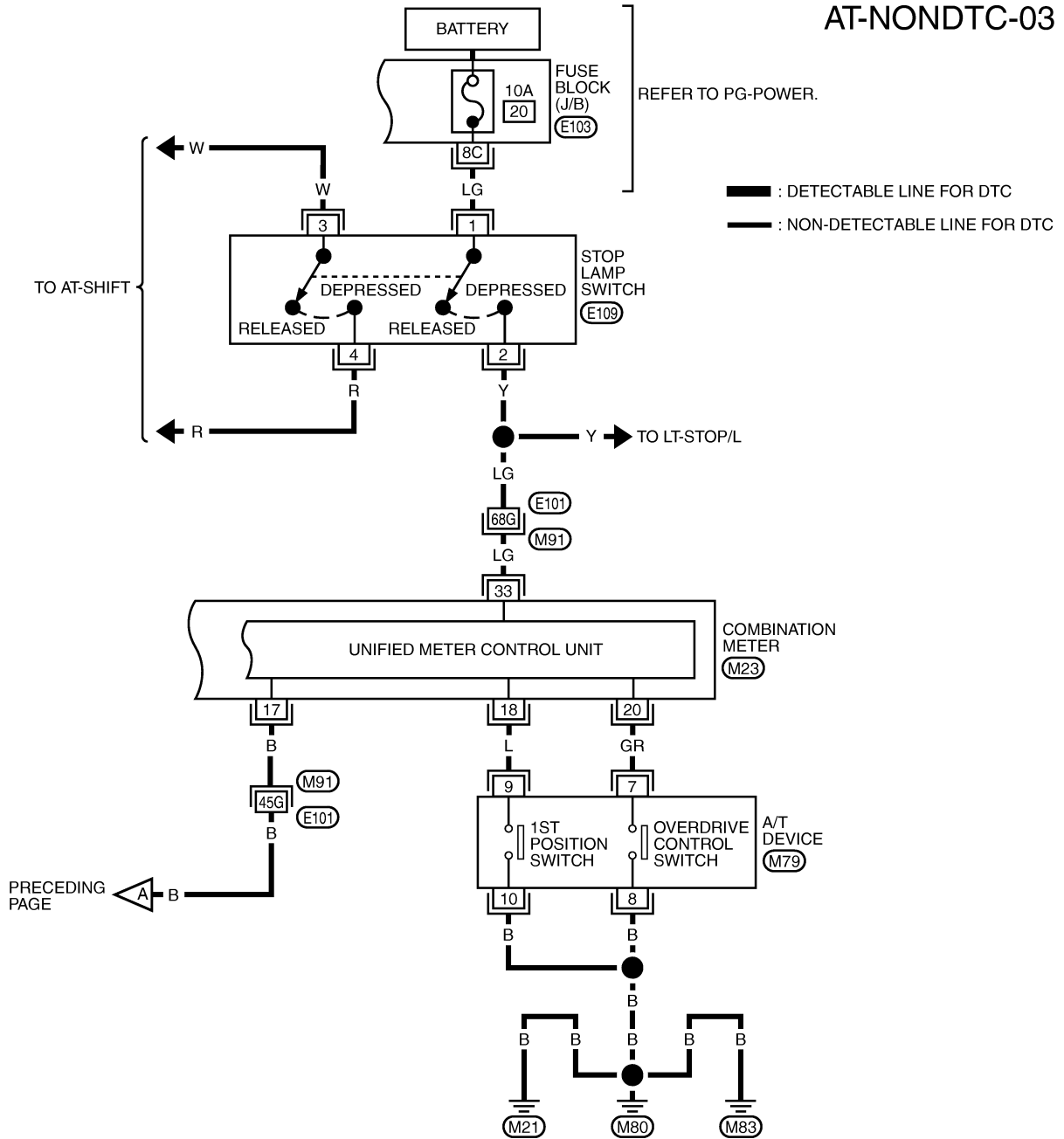
(M88) - FUSE BLOCK - JUNCTION BOX (J/B)

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

MCWA0207E

# TROUBLE DIAGNOSIS FOR SYMPTOMS

AT-NONDTC-03





REFER TO THE FOLLOWING.

(M91) - SUPER MULTIPLE JUNCTION (SMJ)

(E103) - FUSE BLOCK - JUNCTION BOX (J/B)

# TROUBLE DIAGNOSIS FOR SYMPTOMS

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

Terminal	Wire color	Item	Condition	Data (Approx.)
3	L	CAN-H	-	-
4	GR	K-line (CONSULT-II signal)	The terminal is connected to the data link connector for CONSULT-II.	
7	LG	Back-up lamp relay	 Selector lever in "R" position.	0 V
			Selector lever in other positions.	Battery voltage
8	P	CAN-L	-	-
9	BR	Starter relay	 Selector lever in "N" or "P" position.	Battery voltage
			Selector lever in other positions.	0 V

## OD OFF Indicator Lamp Does Not Come On

GCS0007E

### SYMPTOM:

OD OFF indicator lamp does not come on for about 2 seconds when turning ignition switch ON.

### DIAGNOSTIC PROCEDURE

#### 1. CHECK CAN COMMUNICATION LINE

Perform self-diagnosis. Refer to [AT-85, "SELF-DIAGNOSTIC RESULT MODE"](#) , [AT-94, "Diagnostic Procedure Without CONSULT-II"](#) .

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

- YES >> Check CAN communication line. Refer to [AT-96, "DTC U1000 CAN COMMUNICATION LINE"](#) .  
 NO >> GO TO 2.

#### 2. CHECK OD OFF INDICATOR LAMP CIRCUIT

Check combination meter. Refer to [DI-4, "COMBINATION METERS"](#) .

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-170, "MAIN POWER SUPPLY AND GROUND CIRCUIT"](#) .

OK or NG

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

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

GCS0007F

### SYMPTOM:

- Engine cannot be started with selector lever in "P" or "N" position.
- Engine can be started with selector lever in "R", "D", "3", "2" or "1" position.

### DIAGNOSTIC PROCEDURE

#### 1. CHECK SELF-DIAGNOSIS RESULTS

Perform self-diagnosis. Refer to [AT-85, "SELF-DIAGNOSTIC RESULT MODE"](#) , [AT-94, "Diagnostic Procedure Without CONSULT-II"](#) .

Do the self-diagnosis results indicate PNP switch?

- YES >> Check malfunctioning system. Refer to [AT-104, "DTC P0705 PARK/NEUTRAL POSITION SWITCH"](#) .  
 NO >> GO TO 2.

# TROUBLE DIAGNOSIS FOR SYMPTOMS

---

## 2. CHECK CONTROL CABLE

---

Check control cable. Refer to [AT-217, "Checking of A/T Position"](#) .

OK or NG

OK >> GO TO 3.

NG >> Adjust control cable. Refer to [AT-217, "Adjustment of A/T Position"](#) .

---

## 3. CHECK STARTING SYSTEM

---

Check starting system. Refer to [SC-30, "STARTING SYSTEM"](#) .

OK or NG

OK >> **INSPECTION END**

NG >> Repair or replace damaged parts.

### In "P" Position, Vehicle Moves When Pushed SYMPTOM:

GCS0007G

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

### DIAGNOSTIC PROCEDURE

---

#### 1. CHECK PNP SWITCH CIRCUIT

---

Perform self-diagnosis. Refer to [AT-85, "SELF-DIAGNOSTIC RESULT MODE"](#) , [AT-94, "Diagnostic Procedure Without CONSULT-II"](#) .

Do the self-diagnosis results indicate PNP switch?

YES >> Check malfunctioning system. Refer to [AT-104, "DTC P0705 PARK/NEUTRAL POSITION SWITCH"](#) .

NO >> GO TO 2.

---

#### 2. CHECK CONTROL CABLE

---

Check control cable. Refer to [AT-217, "Checking of A/T Position"](#) .

OK or NG

OK >> GO TO 3.

NG >> Adjust control cable. Refer to [AT-217, "Adjustment of A/T Position"](#) .

---

#### 3. CHECK PARKING COMPONENTS

---

Check parking components. Refer to [AT-236, "Parking Components \(2WD Models Only\)"](#) (2WD models), [AT-282, "DISASSEMBLY"](#) (4WD 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-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .

2. Check A/T fluid condition. Refer to [AT-44, "A/T Fluid Condition Check"](#) .

OK or NG

OK >> **INSPECTION END**

NG >> Check malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-56, "Symptom Chart"](#) (Symptom No.58)

# TROUBLE DIAGNOSIS FOR SYMPTOMS

GCS0007H

## In "N" Position, Vehicle Moves

### SYMPTOM:

Vehicle moves forward or backward when selecting "N" position.

### DIAGNOSTIC PROCEDURE

#### 1. CHECK PNP SWITCH CIRCUIT

Perform self-diagnosis. Refer to [AT-85, "SELF-DIAGNOSTIC RESULT MODE"](#) , [AT-94, "Diagnostic Procedure Without CONSULT-II"](#) .

Do the self-diagnostic results indicate PNP switch?

YES >> Check malfunctioning system. Refer to [AT-104, "DTC P0705 PARK/NEUTRAL POSITION SWITCH"](#) .

NO >> GO TO 2.

#### 2. CHECK CONTROL CABLE

Check control cable. Refer to [AT-217, "Checking of A/T Position"](#) .

OK or NG

OK >> GO TO 3.

NG >> Adjust control cable. Refer to [AT-217, "Adjustment of A/T Position"](#) .

#### 3. CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to [AT-11, "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-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .

2. Check A/T fluid condition. Refer to [AT-44, "A/T Fluid Condition Check"](#) .

OK or NG

OK >> GO TO 5.

NG >> Check malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-56, "Symptom Chart"](#) (Symptom No.60).

#### 5. CHECK SYMPTOM

Check again. Refer to [AT-48, "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-81, "TCM Input/Output Signal Reference Values"](#) .

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.

# TROUBLE DIAGNOSIS FOR SYMPTOMS

GCS00071

## Large Shock (“N” to “D” Position)

### SYMPTOM:

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

### DIAGNOSTIC PROCEDURE

#### 1. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis. Refer to [AT-85, "SELF-DIAGNOSTIC RESULT MODE"](#) , [AT-94, "Diagnostic Procedure Without CONSULT-II"](#) .

Is any malfunction detected by self-diagnostic results?

- YES >> Check malfunctioning system. Refer to [AT-85, "SELF-DIAGNOSTIC RESULT MODE"](#) , [AT-95, "Judgement Self-diagnosis Code"](#) .
- NO >> GO TO 2.

#### 2. CHECK ENGINE IDLE SPEED

Check engine idle speed. Refer to [EC-1027, "Basic Inspection"](#) (for YD25DDTi engine), [EC-69, "Idle Speed and Ignition Timing Check"](#) (for VQ40DE engine type 1\*), [EC-612, "Idle Speed and Ignition Timing Check"](#) (for VQ40DE engine type 2\*).

\*: Refer to [EC-15, "APPLICATION NOTICE"](#) .

OK or NG

- OK >> GO TO 3.
- NG >> Adjust engine idle speed.
- Refer to [EC-1027, "Basic Inspection"](#) (for YD25DDTi engine), [EC-65, "Basic Inspection"](#) (for VQ40DE engine type 1\*), [EC-608, "Basic Inspection"](#) (for VQ40DE engine type 2\*).
- \*: Refer to [EC-15, "APPLICATION NOTICE"](#) .

#### 3. CHECK CONTROL CABLE

Check control cable. Refer to [AT-217, "Checking of A/T Position"](#) .

OK or NG

- OK >> GO TO 4.
- NG >> Adjust control cable. Refer to [AT-217, "Adjustment of A/T Position"](#) .

#### 4. CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to [AT-11, "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-45, "LINE PRESSURE TEST"](#) .

OK or NG

- OK >> GO TO 8.
- NG - 1 >> Line pressure high: GO TO 6.
- NG - 2 >> Line pressure low: GO TO 7.

# TROUBLE DIAGNOSIS FOR SYMPTOMS

## 6. DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Disassemble A/T. Refer to [AT-282, "DISASSEMBLY"](#) .
3. Check the following.
  - Oil pump assembly. Refer to [AT-301, "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-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Disassemble A/T. Refer to [AT-282, "DISASSEMBLY"](#) .
3. Check the following.
  - Oil pump assembly. Refer to [AT-301, "Oil Pump"](#) .
  - Power train system. Refer to [AT-282, "DISASSEMBLY"](#) .
  - Transmission case. Refer to [AT-282, "DISASSEMBLY"](#) .

OK or NG

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

## 8. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Check A/T fluid condition. Refer to [AT-44, "A/T Fluid Condition Check"](#) .

OK or NG

- OK >> GO TO 10.
- NG >> GO TO 9.

## 9. DETECT MALFUNCTIONING ITEM

Check malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-56, "Symptom Chart"](#) (Symptom No.1).

OK or NG

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

## 10. CHECK SYMPTOM

Check again. Refer to [AT-48, "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-81, "TCM Input/Output Signal Reference Values"](#) .
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.

# TROUBLE DIAGNOSIS FOR SYMPTOMS

GCS0007J

---

## Vehicle Does Not Creep Backward in “R” Position

### SYMPTOM:

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

### DIAGNOSTIC PROCEDURE

#### 1. CHECK SELF-DIAGNOSTIC RESULTS

---

Perform self-diagnosis. Refer to [AT-85, "SELF-DIAGNOSTIC RESULT MODE"](#) , [AT-94, "Diagnostic Procedure Without CONSULT-II"](#) .

Is any malfunction detected by self-diagnostic results?

- YES >> Check malfunctioning system. Refer to [AT-85, "SELF-DIAGNOSTIC RESULT MODE"](#) , [AT-95, "Judgement Self-diagnosis Code"](#)
- NO >> GO TO 2.

#### 2. CHECK CONTROL CABLE

---

Check control cable. Refer to [AT-217, "Checking of A/T Position"](#) .

OK or NG

- OK >> GO TO 3.
- NG >> Adjust control cable. Refer to [AT-217, "Adjustment of A/T Position"](#) .

#### 3. CHECK A/T FLUID LEVEL

---

Check A/T fluid level. Refer to [AT-11, "Checking A/T Fluid"](#) .

OK or NG

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

#### 4. CHECK STALL TEST

---

Check stall revolution with selector lever in “1” and “R” positions. Refer to [AT-44, "STALL TEST"](#) .

OK or NG

- OK >> GO TO 6.
- OK in “1” position, NG in “R” position>>GO TO 5.
- NG in both “1” and “R” positions>>GO TO 8.

#### 5. DETECT MALFUNCTIONING ITEM

---

1. Disassemble A/T. Refer to [AT-282, "DISASSEMBLY"](#) .
2. Check the following items:
  - Reverse brake. Refer to [AT-282, "DISASSEMBLY"](#) .

OK or NG

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

#### 6. CHECK LINE PRESSURE

---

Check line pressure with the engine idling. Refer to [AT-45, "LINE PRESSURE TEST"](#) .

OK or NG

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



# TROUBLE DIAGNOSIS FOR SYMPTOMS

## 7. DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Disassemble A/T. Refer to [AT-282, "DISASSEMBLY"](#) .
3. Check the following.
  - Oil pump assembly. Refer to [AT-301, "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-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Disassemble A/T. Refer to [AT-282, "DISASSEMBLY"](#) .
3. Check the following.
  - Oil pump assembly. Refer to [AT-301, "Oil Pump"](#) .
  - Power train system. Refer to [AT-282, "DISASSEMBLY"](#) .
  - Transmission case. Refer to [AT-282, "DISASSEMBLY"](#) .

OK or NG

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

## 9. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Check A/T fluid condition. Refer to [AT-44, "A/T Fluid Condition Check"](#) .

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-56, "Symptom Chart"](#) (Symptom No.43).

OK or NG

- OK >> GO TO 11.
- NG >> Repair or replace damaged parts.

## 11. CHECK SYMPTOM

Check again. Refer to [AT-48, "Check at Idle"](#) .

OK or NG

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

## 12. CHECK TCM

1. Check TCM input/output signals. Refer to [AT-81, "TCM Input/Output Signal Reference Values"](#) .
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.

# TROUBLE DIAGNOSIS FOR SYMPTOMS

---

## 13. DETECT MALFUNCTIONING ITEM

---

Check malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-56, "Symptom Chart"](#) (Symptom No.43).

OK or NG

OK >> GO TO 11.

NG >> Repair or replace damaged parts.

### Vehicle Does Not Creep Forward in "D" Position SYMPTOM:

GCS0007K

Vehicle does not creep forward when selecting "D" position.

### DIAGNOSTIC PROCEDURE

#### 1. CHECK SELF-DIAGNOSTIC RESULTS

---

Perform self-diagnosis. Refer to [AT-85, "SELF-DIAGNOSTIC RESULT MODE"](#) , [AT-94, "Diagnostic Procedure Without CONSULT-II"](#) .

Is any malfunction detected by self-diagnostic results?

YES >> Check malfunctioning system. Refer to [AT-85, "SELF-DIAGNOSTIC RESULT MODE"](#) , [AT-95, "Judgement Self-diagnosis Code"](#) .

NO >> GO TO 2.

#### 2. CHECK CONTROL CABLE

---

Check control cable. Refer to [AT-217, "Checking of A/T Position"](#) .

OK or NG

OK >> GO TO 3.

NG >> Adjust control cable. Refer to [AT-217, "Adjustment of A/T Position"](#) .

#### 3. CHECK A/T FLUID LEVEL

---

Check A/T fluid level. Refer to [AT-11, "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-44, "STALL TEST"](#) .

OK or NG

OK >> GO TO 5.

NG >> GO TO 7.

#### 5. CHECK LINE PRESSURE

---

Check line pressure at idle with selector lever in "D" position. Refer to [AT-45, "LINE PRESSURE TEST"](#) .

OK or NG

OK >> GO TO 8.

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

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

# TROUBLE DIAGNOSIS FOR SYMPTOMS

## 6. DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Disassemble A/T. Refer to [AT-282, "DISASSEMBLY"](#) .
3. Check the following items:
  - Oil pump assembly. Refer to [AT-301, "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-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Disassemble A/T. Refer to [AT-282, "DISASSEMBLY"](#) .
3. Check the following.
  - Oil pump assembly. Refer to [AT-301, "Oil Pump"](#) .
  - Power train system. Refer to [AT-282, "DISASSEMBLY"](#) .
  - Transmission case. Refer to [AT-282, "DISASSEMBLY"](#) .

OK or NG

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

## 8. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Check A/T fluid condition. Refer to [AT-44, "A/T Fluid Condition Check"](#) .

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-56, "Symptom Chart"](#) (Symptom No.43).

OK or NG

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

## 10. CHECK SYMPTOM

Check again. Refer to [AT-48, "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-81, "TCM Input/Output Signal Reference Values"](#) .
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.

# TROUBLE DIAGNOSIS FOR SYMPTOMS

---

## 12. DETECT MALFUNCTIONING ITEM

---

Check malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-56, "Symptom Chart"](#) (Symptom No.43).

OK or NG

OK >> GO TO 10.

NG >> Repair or replace damaged parts.

### Vehicle Cannot Be Started from D1 SYMPTOM:

GCS0007L

Vehicle cannot be started from D1 on "Cruise Test - Part 1" and "Cruise Test - Part 2".

### DIAGNOSTIC PROCEDURE

#### 1. CONFIRM THE SYMPTOM

---

Check if vehicle creeps in "R" position.

OK or NG

OK >> GO TO 2.

NG >> Refer to [AT-188, "Vehicle Does Not Creep Backward in "R" Position"](#) .

#### 2. CHECK SELF-DIAGNOSTIC RESULTS

---

Perform self-diagnosis. Refer to [AT-85, "SELF-DIAGNOSTIC RESULT MODE"](#) , [AT-94, "Diagnostic Procedure Without CONSULT-II"](#) .

Is any malfunction detected by self-diagnostic results?

YES >> Check malfunctioning system. Refer to [AT-85, "SELF-DIAGNOSTIC RESULT MODE"](#) , [AT-95, "Judgement Self-diagnosis Code"](#) .

NO >> GO TO 3.

#### 3. CHECK ACCELERATOR PEDAL POSITION SENSOR

---

Check accelerator pedal position sensor. Refer to [AT-121, "DTC P1705 THROTTLE POSITION SENSOR"](#) .

OK or NG

OK >> GO TO 4.

NG >> Repair or replace accelerator pedal position sensor.

#### 4. CHECK A/T FLUID LEVEL

---

Check A/T fluid level. Refer to [AT-11, "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-45, "LINE PRESSURE TEST"](#) .

OK or NG

OK >> GO TO 8.

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

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

# TROUBLE DIAGNOSIS FOR SYMPTOMS

## 6. DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Disassemble A/T. Refer to [AT-282, "DISASSEMBLY"](#) .
3. Check the following.
  - Oil pump assembly. Refer to [AT-301, "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-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Disassemble A/T. Refer to [AT-282, "DISASSEMBLY"](#) .
3. Check the following.
  - Oil pump assembly. Refer to [AT-301, "Oil Pump"](#) .
  - Power train system. Refer to [AT-282, "DISASSEMBLY"](#) .
  - Transmission case. Refer to [AT-282, "DISASSEMBLY"](#) .

OK or NG

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

## 8. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Check A/T fluid condition. Refer to [AT-44, "A/T Fluid Condition Check"](#) .

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-56, "Symptom Chart"](#) (Symptom No.23).

OK or NG

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

## 10. CHECK SYMPTOM

Check again. Refer to [AT-49, "Cruise Test - Part 1"](#) , [AT-51, "Cruise Test - Part 2"](#) .

OK or NG

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

## 11. CHECK TCM

1. Check TCM input/output signals. Refer to [AT-81, "TCM Input/Output Signal Reference Values"](#) .
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.

# TROUBLE DIAGNOSIS FOR SYMPTOMS

---

## 12. DETECT MALFUNCTIONING ITEM

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Check malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-56, "Symptom Chart"](#) (Symptom No.23).

OK or NG

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

### **A/T Does Not Shift: D1 → D2**

GC50007M

#### **SYMPTOM:**

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

#### **DIAGNOSTIC PROCEDURE**

### 1. CONFIRM THE SYMPTOM

---

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

OK or NG

- OK >> GO TO 2.
- NG >> Refer to [AT-190, "Vehicle Does Not Creep Forward in "D" Position"](#) , [AT-192, "Vehicle Cannot Be Started from D1"](#) .

### 2. CHECK SELF-DIAGNOSTIC RESULTS

---

Perform self-diagnosis. Refer to [AT-85, "SELF-DIAGNOSTIC RESULT MODE"](#) , [AT-94, "Diagnostic Procedure Without CONSULT-II"](#) .

Is any malfunction detected by self-diagnostic results?

- YES >> Check malfunctioning system. Refer to [AT-85, "SELF-DIAGNOSTIC RESULT MODE"](#) , [AT-95, "Judgement Self-diagnosis Code"](#) .
- NO >> GO TO 3.

### 3. CHECK A/T FLUID LEVEL

---

Check A/T fluid level. Refer to [AT-11, "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-45, "LINE PRESSURE TEST"](#) .

OK or NG

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

### 5. DETECT MALFUNCTIONING ITEM

---

1. Check control valve with TCM. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Disassemble A/T. Refer to [AT-282, "DISASSEMBLY"](#) .
3. Check the following.
  - Oil pump assembly. Refer to [AT-301, "Oil Pump"](#) .

OK or NG

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

# TROUBLE DIAGNOSIS FOR SYMPTOMS

## 6. DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Disassemble A/T. Refer to [AT-282, "DISASSEMBLY"](#) .
3. Check the following.
  - Oil pump assembly. Refer to [AT-301, "Oil Pump"](#) .
  - Power train system. Refer to [AT-282, "DISASSEMBLY"](#) .
  - Transmission case. Refer to [AT-282, "DISASSEMBLY"](#) .

### OK or NG

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

## 7. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Check A/T fluid condition. Refer to [AT-44, "A/T Fluid Condition Check"](#) .

### 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-56, "Symptom Chart"](#) (Symptom No.10).

### OK or NG

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

## 9. CHECK SYMPTOM

Check again. Refer to [AT-49, "Cruise Test - Part 1"](#) , [AT-51, "Cruise Test - Part 2"](#) .

### OK or NG

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

## 10. CHECK TCM

1. Check TCM input/output signals. Refer to [AT-81, "TCM Input/Output Signal Reference Values"](#) .
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-56, "Symptom Chart"](#) (Symptom No.10).

### OK or NG

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

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# TROUBLE DIAGNOSIS FOR SYMPTOMS

GC50007N

## A/T Does Not Shift: D2 → D3

### SYMPTOM:

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

### DIAGNOSTIC PROCEDURE

#### 1. CONFIRM THE SYMPTOM

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

##### OK or NG

OK >> GO TO 2.

NG >> Refer to [AT-190, "Vehicle Does Not Creep Forward in "D" Position"](#) , [AT-192, "Vehicle Cannot Be Started from D1"](#) .

#### 2. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis. Refer to [AT-85, "SELF-DIAGNOSTIC RESULT MODE"](#) , [AT-94, "Diagnostic Procedure Without CONSULT-II"](#) .

Is any malfunction detected by self-diagnostic results?

YES >> Check malfunctioning system. Refer to [AT-85, "SELF-DIAGNOSTIC RESULT MODE"](#) , [AT-95, "Judgement Self-diagnosis Code"](#) .

NO >> GO TO 3.

#### 3. CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to [AT-11, "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-45, "LINE PRESSURE TEST"](#) .

##### OK or NG

OK >> GO TO 7.

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

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

#### 5. DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .

2. Disassemble A/T. Refer to [AT-282, "DISASSEMBLY"](#) .

3. Check the following.

- Oil pump assembly. Refer to [AT-301, "Oil Pump"](#) .

##### OK or NG

OK >> GO TO 7.

NG >> Repair or replace damaged parts.



# TROUBLE DIAGNOSIS FOR SYMPTOMS

## 6. DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Disassemble A/T. Refer to [AT-282, "DISASSEMBLY"](#) .
3. Check the following.
  - Oil pump assembly. Refer to [AT-301, "Oil Pump"](#) .
  - Power train system. Refer to [AT-282, "DISASSEMBLY"](#) .
  - Transmission case. Refer to [AT-282, "DISASSEMBLY"](#) .

### OK or NG

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

## 7. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Check A/T fluid condition. Refer to [AT-44, "A/T Fluid Condition Check"](#) .

### 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-56, "Symptom Chart"](#) (Symptom No.11).

### OK or NG

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

## 9. CHECK SYMPTOM

Check again. Refer to [AT-49, "Cruise Test - Part 1"](#) , [AT-51, "Cruise Test - Part 2"](#) .

### OK or NG

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

## 10. CHECK TCM

1. Check TCM input/output signals. Refer to [AT-81, "TCM Input/Output Signal Reference Values"](#) .
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-56, "Symptom Chart"](#) (Symptom No.11).

### OK or NG

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

# TROUBLE DIAGNOSIS FOR SYMPTOMS

GCS00070

## A/T Does Not Shift: D3 → D4

### SYMPTOM:

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

### DIAGNOSTIC PROCEDURE

#### 1. CONFIRM THE SYMPTOM

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

##### OK or NG

OK >> GO TO 2.

NG >> Refer to [AT-190, "Vehicle Does Not Creep Forward in "D" Position"](#) , [AT-192, "Vehicle Cannot Be Started from D1"](#) .

#### 2. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis. Refer to [AT-85, "SELF-DIAGNOSTIC RESULT MODE"](#) , [AT-94, "Diagnostic Procedure Without CONSULT-II"](#) .

Is any malfunction detected by self-diagnostic results?

YES >> Check malfunctioning system. Refer to [AT-85, "SELF-DIAGNOSTIC RESULT MODE"](#) , [AT-95, "Judgement Self-diagnosis Code"](#) .

NO >> GO TO 3.

#### 3. CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to [AT-11, "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-45, "LINE PRESSURE TEST"](#) .

##### OK or NG

OK >> GO TO 7.

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

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

#### 5. DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .

2. Disassemble A/T. Refer to [AT-282, "DISASSEMBLY"](#) .

3. Check the following.

- Oil pump assembly. Refer to [AT-301, "Oil Pump"](#) .

##### OK or NG

OK >> GO TO 7.

NG >> Repair or replace damaged parts.

# TROUBLE DIAGNOSIS FOR SYMPTOMS

## 6. DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Disassemble A/T. Refer to [AT-282, "DISASSEMBLY"](#) .
3. Check the following.
  - Oil pump assembly. Refer to [AT-301, "Oil Pump"](#) .
  - Power train system. Refer to [AT-282, "DISASSEMBLY"](#) .
  - Transmission case. Refer to [AT-282, "DISASSEMBLY"](#) .

### OK or NG

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

## 7. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Check A/T fluid condition. Refer to [AT-44, "A/T Fluid Condition Check"](#) .

### 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-56, "Symptom Chart"](#) (Symptom No.12).

### OK or NG

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

## 9. CHECK SYMPTOM

Check again. Refer to [AT-49, "Cruise Test - Part 1"](#) , [AT-51, "Cruise Test - Part 2"](#) .

### OK or NG

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

## 10. CHECK TCM

1. Check TCM input/output signals. Refer to [AT-81, "TCM Input/Output Signal Reference Values"](#) .
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-56, "Symptom Chart"](#) (Symptom No.12).

### OK or NG

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

# TROUBLE DIAGNOSIS FOR SYMPTOMS

GCS0007P

## A/T Does Not Shift: D4 → D5

### SYMPTOM:

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

### DIAGNOSTIC PROCEDURE

#### 1. CONFIRM THE SYMPTOM

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

##### OK or NG

OK >> GO TO 2.

NG >> Refer to [AT-190, "Vehicle Does Not Creep Forward in "D" Position"](#) , [AT-192, "Vehicle Cannot Be Started from D1"](#) .

#### 2. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis. Refer to [AT-85, "SELF-DIAGNOSTIC RESULT MODE"](#) , [AT-94, "Diagnostic Procedure Without CONSULT-II"](#) .

Is any malfunction detected by self-diagnostic results?

YES >> Check malfunctioning system. Refer to [AT-85, "SELF-DIAGNOSTIC RESULT MODE"](#) , [AT-95, "Judgement Self-diagnosis Code"](#) .

NO >> GO TO 3.

#### 3. CHECK OVERDRIVE CONTROL SWITCH CIRCUIT

Check overdrive control switch circuit. Refer to [AT-178, "OVERDRIVE CONTROL SWITCH"](#) .

##### OK or NG

OK >> GO TO 4.

NG >> Repair or replace damaged parts.

#### 4. CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to [AT-11, "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-45, "LINE PRESSURE TEST"](#) .

##### OK or NG

OK >> GO TO 8.

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

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

#### 6. DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .

2. Disassemble A/T. Refer to [AT-282, "DISASSEMBLY"](#) .

3. Check the following.

– Oil pump assembly. Refer to [AT-301, "Oil Pump"](#) .

##### OK or NG

OK >> GO TO 8.

NG >> Repair or replace damaged parts.

# TROUBLE DIAGNOSIS FOR SYMPTOMS

## 7. DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Disassemble A/T. Refer to [AT-282, "DISASSEMBLY"](#) .
3. Check the following.
  - Oil pump assembly. Refer to [AT-301, "Oil Pump"](#) .
  - Power train system. Refer to [AT-282, "DISASSEMBLY"](#) .
  - Transmission case. Refer to [AT-282, "DISASSEMBLY"](#) .

### OK or NG

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

## 8. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Check A/T fluid condition. Refer to [AT-44, "A/T Fluid Condition Check"](#) .

### 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-56, "Symptom Chart"](#) (Symptom No.13).

### OK or NG

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

## 10. CHECK SYMPTOM

Check again. Refer to [AT-49, "Cruise Test - Part 1"](#) .

### OK or NG

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

## 11. CHECK TCM

1. Check TCM input/output signals. Refer to [AT-81, "TCM Input/Output Signal Reference Values"](#) .
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-56, "Symptom Chart"](#) (Symptom No.13).

### OK or NG

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

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# TROUBLE DIAGNOSIS FOR SYMPTOMS

GCS0007Q

## A/T Does Not Perform Lock-up

### SYMPTOM:

A/T does not perform lock-up at the specified speed.

### DIAGNOSTIC PROCEDURE

#### 1. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis. Refer to [AT-85, "SELF-DIAGNOSTIC RESULT MODE"](#) , [AT-94, "Diagnostic Procedure Without CONSULT-II"](#) .

Is any malfunction detected by self-diagnostic results?

- YES >> Check malfunctioning system. Refer to [AT-85, "SELF-DIAGNOSTIC RESULT MODE"](#) , [AT-95, "Judgement Self-diagnosis Code"](#) .
- NO >> GO TO 2.

#### 2. CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to [AT-11, "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-45, "LINE PRESSURE TEST"](#) .

OK or NG

- OK >> GO TO 6.
- NG - 1 >> Line pressure high. GO TO 4.
- NG - 2 >> Line pressure low. GO TO 5.

#### 4. DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Disassemble A/T. Refer to [AT-282, "DISASSEMBLY"](#) .
3. Check the following.
  - Oil pump assembly. Refer to [AT-301, "Oil Pump"](#) .

OK or NG

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

#### 5. DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Disassemble A/T. Refer to [AT-282, "DISASSEMBLY"](#) .
3. Check the following.
  - Oil pump assembly. Refer to [AT-301, "Oil Pump"](#) .
  - Power train system. Refer to [AT-282, "DISASSEMBLY"](#) .
  - Transmission case. Refer to [AT-282, "DISASSEMBLY"](#) .

OK or NG

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

# TROUBLE DIAGNOSIS FOR SYMPTOMS

## 6. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Check A/T fluid condition. Refer to [AT-44, "A/T Fluid Condition Check"](#) .

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-56, "Symptom Chart"](#) (Symptom No.24).

OK or NG

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

## 8. CHECK SYMPTOM

Check again. Refer to [AT-49, "Cruise Test - Part 1"](#) .

OK or NG

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

## 9. CHECK TCM

1. Check TCM input/output signals. Refer to [AT-81, "TCM Input/Output Signal Reference Values"](#) .
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-56, "Symptom Chart"](#) (Symptom No.24).

OK or NG

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

## A/T Does Not Hold Lock-up Condition

GCS0007R

### SYMPTOM:

The lock-up condition cannot be maintained for more than 30 seconds.

### DIAGNOSTIC PROCEDURE

#### 1. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis. Refer to [AT-85, "SELF-DIAGNOSTIC RESULT MODE"](#) , [AT-94, "Diagnostic Procedure Without CONSULT-II"](#) .

Is any malfunction detected by self-diagnostic results?

- YES >> Check malfunctioning system. Refer to [AT-85, "SELF-DIAGNOSTIC RESULT MODE"](#) , [AT-95, "Judgement Self-diagnosis Code"](#) .
- NO >> GO TO 2.

# TROUBLE DIAGNOSIS FOR SYMPTOMS

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## 2. CHECK A/T FLUID LEVEL

---

Check A/T fluid level. Refer to [AT-11, "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-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Check A/T fluid condition. Refer to [AT-44, "A/T Fluid Condition Check"](#) .

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-56, "Symptom Chart"](#) (Symptom No.25).

OK or NG

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

## 5. CHECK SYMPTOM

---

Check again. Refer to [AT-49, "Cruise Test - Part 1"](#) .

OK or NG

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

## 6. CHECK TCM

---

1. Check TCM input/output signals. Refer to [AT-81, "TCM Input/Output Signal Reference Values"](#) .
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-56, "Symptom Chart"](#) (Symptom No.25).

OK or NG

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



# TROUBLE DIAGNOSIS FOR SYMPTOMS

## Lock-up Is Not Released

GCS0007S

### SYMPTOM:

The lock-up condition cannot be cancelled even after releasing accelerator pedal.

### DIAGNOSTIC PROCEDURE

#### 1. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis. Refer to [AT-85, "SELF-DIAGNOSTIC RESULT MODE"](#) , [AT-94, "Diagnostic Procedure Without CONSULT-II"](#) .

Is any malfunction detected by self-diagnostic results?

YES >> Check malfunctioning system. Refer to [AT-85, "SELF-DIAGNOSTIC RESULT MODE"](#) , [AT-95, "Judgement Self-diagnosis Code"](#) .

NO >> GO TO 2.

#### 2. CHECK SYMPTOM

Check again. Refer to [AT-49, "Cruise Test - Part 1"](#) .

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 3.

#### 3. CHECK TCM

1. Check TCM input/output signals. Refer to [AT-81, "TCM Input/Output Signal Reference Values"](#) .

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

GCS0007T

### 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-11, "Checking A/T Fluid"](#) .

OK or NG

OK >> GO TO 2.

NG >> Refill ATF.

#### 2. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis. Refer to [AT-85, "SELF-DIAGNOSTIC RESULT MODE"](#) , [AT-94, "Diagnostic Procedure Without CONSULT-II"](#) .

Is any malfunction detected by self-diagnostic results?

YES >> Check malfunctioning system. Refer to [AT-85, "SELF-DIAGNOSTIC RESULT MODE"](#) , [AT-95, "Judgement Self-diagnosis Code"](#) .

NO >> GO TO 3.

# TROUBLE DIAGNOSIS FOR SYMPTOMS

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## 3. CHECK A/T FLUID CONDITION

---

1. Remove oil pan. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Check A/T fluid condition. Refer to [AT-44, "A/T Fluid Condition Check"](#) .

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-56, "Symptom Chart"](#) (Symptom No.65).

OK or NG

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

---

## 5. CHECK SYMPTOM

---

Check again. Refer to [AT-49, "Cruise Test - Part 1"](#) .

OK or NG

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

---

## 6. CHECK TCM

---

1. Check TCM input/output signals. Refer to [AT-81, "TCM Input/Output Signal Reference Values"](#) .
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-56, "Symptom Chart"](#) (Symptom No.65).

OK or NG

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

### **A/T Does Not Shift: 5th Gear → 4th Gear**

**SYMPTOM:**

GCS0007U

When shifted from D5 to D4 position, does not downshift from 5th to 4th gear.

### **DIAGNOSTIC PROCEDURE**

---

#### **1. CHECK SELF-DIAGNOSIS RESULTS**

---

Perform self-diagnosis. Refer to [AT-85, "SELF-DIAGNOSTIC RESULT MODE"](#) , [AT-94, "Diagnostic Procedure Without CONSULT-II"](#) .

Is any malfunction detected by self-diagnostic results?

- YES >> Check malfunctioning system. Refer to [AT-85, "SELF-DIAGNOSTIC RESULT MODE"](#) , [AT-95, "Judgement Self-diagnosis Code"](#) .  
NO >> GO TO 2.

# TROUBLE DIAGNOSIS FOR SYMPTOMS

---

## 2. CHECK OVERDRIVE CONTROL SWITCH CIRCUIT

---

Check overdrive control switch circuit. Refer to [AT-178, "OVERDRIVE CONTROL SWITCH"](#) .

OK or NG

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

---

## 3. CHECK A/T FLUID LEVEL

---

Check A/T fluid level. Refer to [AT-11, "Checking A/T Fluid"](#) .

OK or NG

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

---

## 4. CHECK CONTROL CABLE

---

Check control cable. Refer to [AT-217, "Checking of A/T Position"](#) .

OK or NG

- OK >> GO TO 5.
- NG >> Adjust control cable. Refer to [AT-217, "Adjustment of A/T Position"](#) .

---

## 5. CHECK A/T FLUID CONDITION

---

1. Remove oil pan. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Check A/T fluid condition. Refer to [AT-44, "A/T Fluid Condition Check"](#) .

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-56, "Symptom Chart"](#) (Symptom No.14).

OK or NG

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

---

## 7. CHECK SYMPTOM

---

Check again. Refer to [AT-52, "Cruise Test - Part 3"](#) .

OK or NG

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

---

## 8. CHECK TCM

---

1. Check TCM input/output signals. Refer to [AT-81, "TCM Input/Output Signal Reference Values"](#) .
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.

# TROUBLE DIAGNOSIS FOR SYMPTOMS

---

## 9. DETECT MALFUNCTIONING ITEM

---

Check malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-56, "Symptom Chart"](#) (Symptom No.14).

OK or NG

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

### **A/T Does Not Shift: 4th Gear → 3rd Gear** **SYMPTOM:**

GCS0007V

When shifted from D4 to 3<sub>3</sub> position, does not downshift from 4th to 3rd gear.

### **DIAGNOSTIC PROCEDURE**

#### **1. CHECK SELF-DIAGNOSIS RESULTS**

---

Perform self-diagnosis. Refer to [AT-85, "SELF-DIAGNOSTIC RESULT MODE"](#) , [AT-94, "Diagnostic Procedure Without CONSULT-II"](#)

Is any malfunction detected by self-diagnostic results?

- YES >> Check malfunctioning system. Refer to [AT-85, "SELF-DIAGNOSTIC RESULT MODE"](#) , [AT-95, "Judgement Self-diagnosis Code"](#) .
- NO >> GO TO 2.

#### **2. CHECK A/T FLUID LEVEL**

---

Check A/T fluid level. Refer to [AT-11, "Checking A/T Fluid"](#) .

OK or NG

- OK >> GO TO 3.
- NG >> Refill ATF.

#### **3. CHECK CONTROL CABLE**

---

Check control cable. Refer to [AT-217, "Checking of A/T Position"](#) .

OK or NG

- OK >> GO TO 4.
- NG >> Adjust control cable. Refer to [AT-217, "Adjustment of A/T Position"](#) .

#### **4. CHECK A/T FLUID CONDITION**

---

1. Remove oil pan. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Check A/T fluid condition. Refer to [AT-44, "A/T Fluid Condition Check"](#) .

OK or NG

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

## **5. DETECT MALFUNCTIONING ITEM**

---

Check malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-56, "Symptom Chart"](#) (Symptom No.15).

OK or NG

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

## **6. CHECK SYMPTOM**

---

Check again. Refer to [AT-52, "Cruise Test - Part 3"](#) .

OK or NG

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

# TROUBLE DIAGNOSIS FOR SYMPTOMS

## 7. CHECK TCM

1. Check TCM input/output signals. Refer to [AT-81, "TCM Input/Output Signal Reference Values"](#) .
2. If NG, recheck A/T assembly harness connector terminals for damage or loose connection with harness connector.

OK or NG

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

## 8. DETECT MALFUNCTIONING ITEM

Check malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-56, "Symptom Chart"](#) (Symptom No.15).

OK or NG

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

### A/T Does Not Shift: 3rd Gear → 2nd Gear

GCS0007W

#### SYMPTOM:

When shifted from 3<sup>3</sup> to 2<sup>2</sup> position, does not downshift from 3rd to 2nd gear.

#### DIAGNOSTIC PROCEDURE

### 1. CHECK SELF-DIAGNOSIS RESULTS

Perform self-diagnosis. Refer to [AT-85, "SELF-DIAGNOSTIC RESULT MODE"](#) , [AT-94, "Diagnostic Procedure Without CONSULT-II"](#) .

Is any malfunction detected by self-diagnostic results?

- YES >> Check malfunctioning system. Refer to [AT-85, "SELF-DIAGNOSTIC RESULT MODE"](#) , [AT-95, "Judgement Self-diagnosis Code"](#) .  
NO >> GO TO 2.

### 2. CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to [AT-11, "Checking A/T Fluid"](#) .

OK or NG

- OK >> GO TO 3.  
NG >> Refill ATF.

### 3. CHECK CONTROL CABLE

Check control cable. Refer to [AT-217, "Checking of A/T Position"](#) .

OK or NG

- OK >> GO TO 4.  
NG >> Adjust control cable. Refer to [AT-217, "Adjustment of A/T Position"](#) .

### 4. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Check A/T fluid condition. Refer to [AT-44, "A/T Fluid Condition Check"](#) .

OK or NG

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

# TROUBLE DIAGNOSIS FOR SYMPTOMS

---

## 5. DETECT MALFUNCTIONING ITEM

---

Check malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-56, "Symptom Chart"](#) (Symptom No.16).

OK or NG

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

---

## 6. CHECK SYMPTOM

---

Check again. Refer to [AT-52, "Cruise Test - Part 3"](#) .

OK or NG

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

---

## 7. CHECK TCM

---

1. Check TCM input/output signals. Refer to [AT-81, "TCM Input/Output Signal Reference Values"](#) .
2. If NG, recheck A/T assembly harness connector terminals for damage or loose connection with harness connector.

OK or NG

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

---

## 8. DETECT MALFUNCTIONING ITEM

---

Check malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-56, "Symptom Chart"](#) (Symptom No.16).

OK or NG

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

### **A/T Does Not Shift: 2nd Gear → 1st Gear**

GCS0007X

#### **SYMPTOM:**

When shifted from 2<sup>nd</sup> to 1<sup>st</sup> position, does not downshift from 2<sup>nd</sup> to 1<sup>st</sup> gear.

#### **DIAGNOSTIC PROCEDURE**

---

### 1. CHECK SELF-DIAGNOSTIC RESULTS

---

Perform self-diagnosis. Refer to [AT-85, "SELF-DIAGNOSTIC RESULT MODE"](#) , [AT-94, "Diagnostic Procedure Without CONSULT-II"](#)

Is any malfunction detected by self-diagnostic results?

- YES >> Check malfunctioning system. Refer to [AT-85, "SELF-DIAGNOSTIC RESULT MODE"](#) , [AT-95, "Judgement Self-diagnosis Code"](#) .
- NO >> GO TO 2.

---

### 2. CHECK 1ST POSITION SWITCH CIRCUIT

---

Check 1st position switch circuit. Refer to [AT-176, "1ST POSITION SWITCH"](#) .

OK or NG

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

# TROUBLE DIAGNOSIS FOR SYMPTOMS

---

## 3. CHECK A/T FLUID LEVEL

---

Check A/T fluid level. Refer to [AT-11, "Checking A/T Fluid"](#) .

OK or NG

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

---

## 4. CHECK CONTROL CABLE

---

Check control cable. Refer to [AT-217, "Checking of A/T Position"](#) .

OK or NG

- OK >> GO TO 5.
- NG >> Adjust control cable. Refer to [AT-217, "Adjustment of A/T Position"](#) .

---

## 5. CHECK A/T FLUID CONDITION

---

1. Remove oil pan. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Check A/T fluid condition. Refer to [AT-44, "A/T Fluid Condition Check"](#) .

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-56, "Symptom Chart"](#) (Symptom No.17).

OK or NG

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

---

## 7. CHECK SYMPTOM

---

Check again. Refer to [AT-52, "Cruise Test - Part 3"](#) .

OK or NG

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

---

## 8. CHECK TCM

---

1. Check TCM input/output signals. Refer to [AT-81, "TCM Input/Output Signal Reference Values"](#) .
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-56, "Symptom Chart"](#) (Symptom No.17).

OK or NG

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

# TROUBLE DIAGNOSIS FOR SYMPTOMS

GCS0007Y

## Vehicle Does Not Decelerate by Engine Brake

### SYMPTOM:

No engine brake is applied when the gear is shifted from the 22 to 11 gear.

### DIAGNOSTIC PROCEDURE

#### 1. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis. Refer to [AT-85, "SELF-DIAGNOSTIC RESULT MODE"](#) , [AT-94, "Diagnostic Procedure Without CONSULT-II"](#)

Is any malfunction detected by self-diagnostic results?

- YES >> Check malfunctioning system. Refer to [AT-85, "SELF-DIAGNOSTIC RESULT MODE"](#) , [AT-95, "Judgement Self-diagnosis Code"](#) .
- NO >> GO TO 2.

#### 2. CHECK 1ST POSITION SWITCH CIRCUIT

Check 1st position switch circuit. Refer to [AT-176, "1ST POSITION SWITCH"](#) .

OK or NG

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

#### 3. CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to [AT-11, "Checking A/T Fluid"](#) .

OK or NG

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

#### 4. CHECK CONTROL CABLE

Check control cable. Refer to [AT-217, "Checking of A/T Position"](#) .

OK or NG

- OK >> GO TO 5.
- NG >> Adjust control cable. Refer to [AT-217, "Adjustment of A/T Position"](#) .

#### 5. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-224, "Control Valve With TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Check A/T fluid condition. Refer to [AT-44, "A/T Fluid Condition Check"](#) .

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-56, "Symptom Chart"](#) (Symptom No.53).

OK or NG

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

#### 7. CHECK SYMPTOM

Check again. Refer to [AT-52, "Cruise Test - Part 3"](#) .

OK or NG

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



# TROUBLE DIAGNOSIS FOR SYMPTOMS

---

## 8. CHECK TCM

---

1. Check TCM input/output signals. Refer to [AT-81, "TCM Input/Output Signal Reference Values"](#) .
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-56, "Symptom Chart"](#) (Symptom No.53).

OK or NG

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

A

B

AT

D

E

F

G

H

I

J

K

L

M

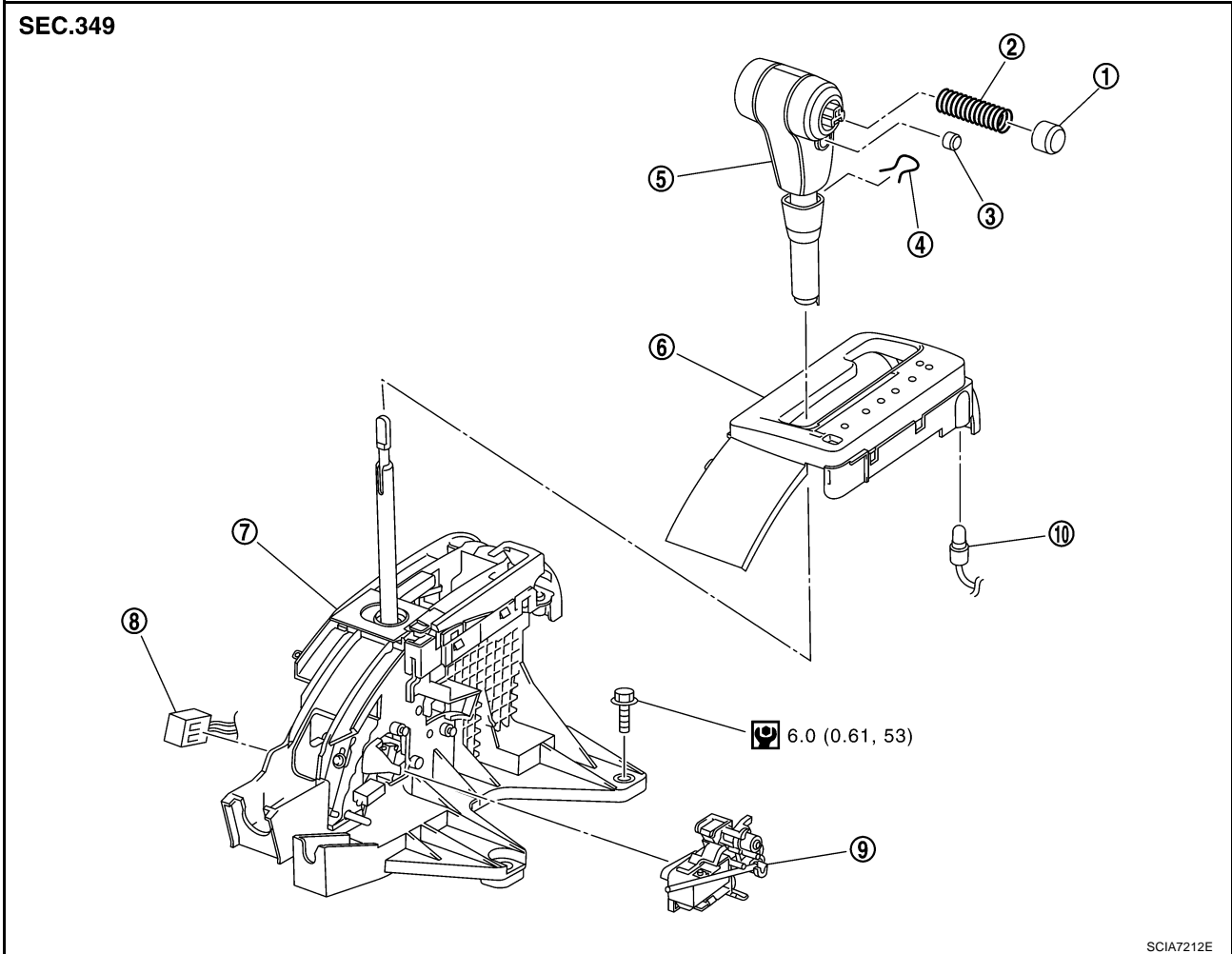
# SHIFT CONTROL SYSTEM

## SHIFT CONTROL SYSTEM

PFP:34901

### Control Device Removal and Installation COMPONENTS

GCS0007Z



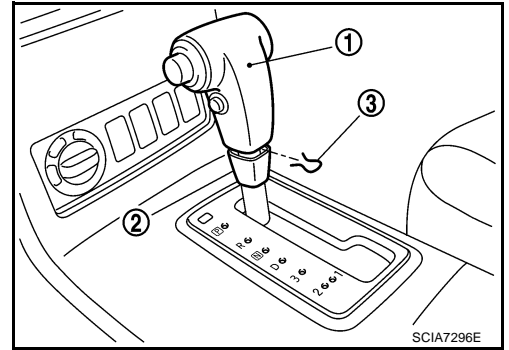
- |                            |                                 |  |
|----------------------------|---------------------------------|--|
| 1. Selector button         | 2. Selector spring              | 3. Overdrive control switch                              |
| 4. Lock pin                | 5. Selector lever knob          | 6. Position indicator plate                              |
| 7. Control device assembly | 8. A/T device harness connector | 9. Shift lock solenoid and park position switch assembly |
| 10. Position lamp          |                                 |  |

Refer to GI section to make sure icons (symbol marks) in the figure. Refer to [GI-10, "Components"](#).

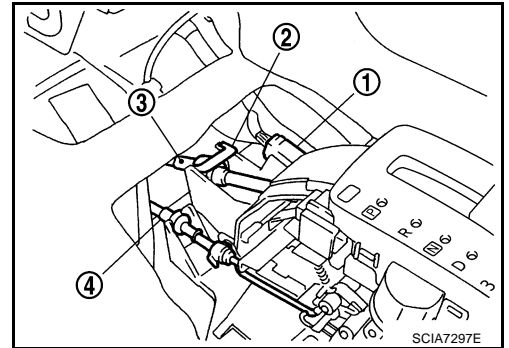
# SHIFT CONTROL SYSTEM

## REMOVAL

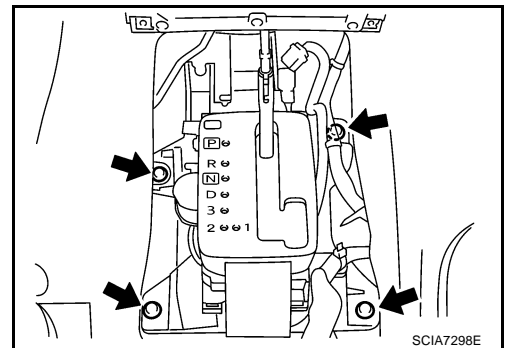
1. Remove knob cover (2) below selector lever knob (1) downward.
2. Pull lock pin (3) out of selector lever knob (1).
3. Remove selector lever knob (1) and knob cover (2).
4. Remove center console. Refer to [IP-16, "CENTER CONSOLE"](#) .



5. Disconnect A/T device harness connector (1).
6. Disconnect key interlock cable (4) from control device assembly. Refer to [AT-222, "Removal and Installation"](#) .
7. Remove lock plate (2) from control cable (3).
8. Disconnect control cable (3) from control device assembly.



9. Remove control device assembly.  
←: Bolt (4)



## INSTALLATION

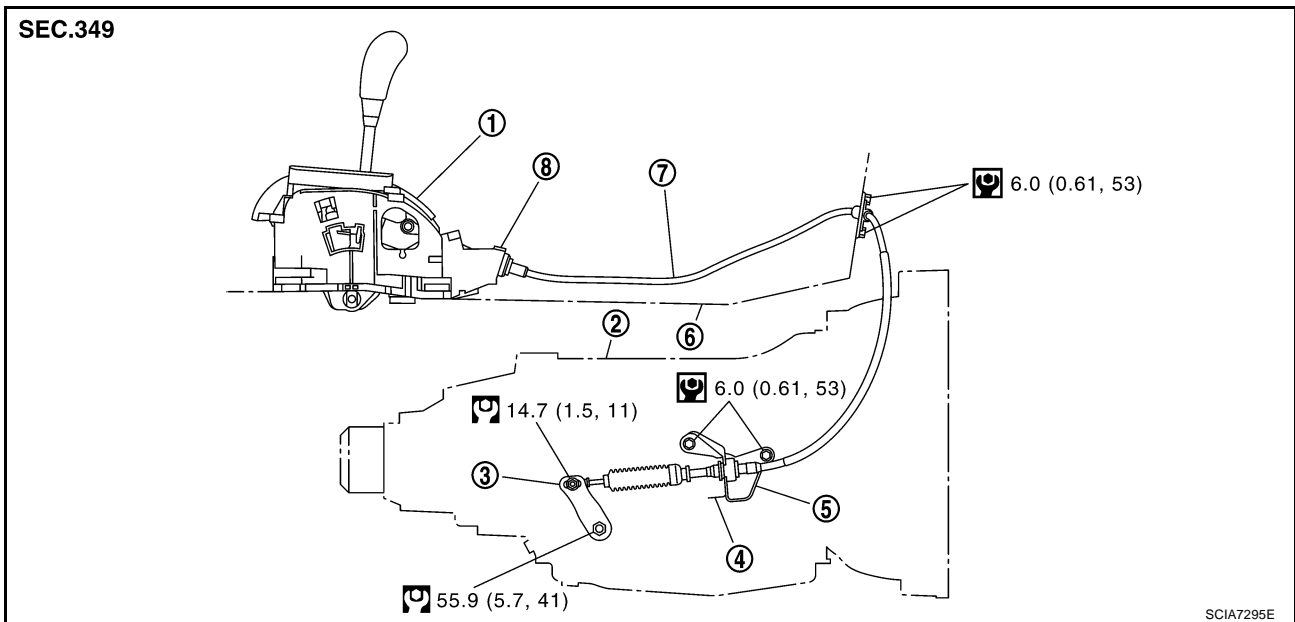
Note the following, and install in the reverse order of removal.

- After installation is completed, adjust and check A/T position. Refer to [AT-217, "Adjustment of A/T Position"](#) and [AT-217, "Checking of A/T Position"](#) .

# SHIFT CONTROL SYSTEM

GCS00080

## Control Cable Removal and Installation COMPONENTS

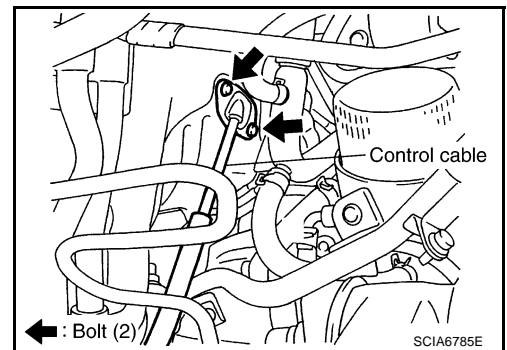
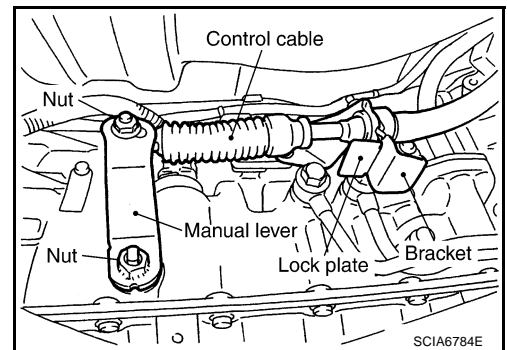


- |                            |                 |                 |
|----------------------------|-----------------|-----------------|
| 1. Control device assembly | 2. A/T assembly | 3. Manual lever |
| 4. Lock plate              | 5. Bracket      | 6. Floor panel  |
| 7. Control cable           | 8. Lock plate   |                 |

Refer to GI section to make sure icons (symbol marks) in the figure. Refer to [GI-10. "Components"](#) .

### REMOVAL

1. Disconnect control cable from control device assembly. Refer to [AT-214. "Control Device Removal and Installation"](#) .
2. Remove control cable from manual lever.
3. Remove lock plate from control cable.
4. Remove control cable from bracket.
5. Remove bracket from A/T assembly.
6. Remove manual lever from A/T assembly.
7. Remove control cable from floor panel.



### INSTALLATION

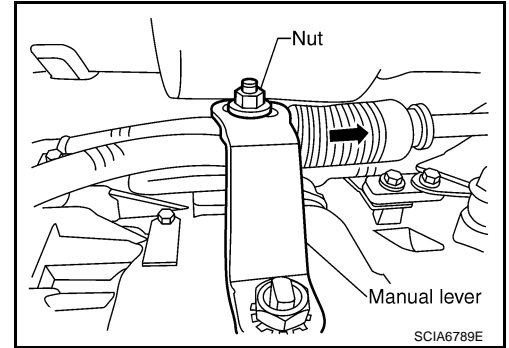
Note the following, and install in the reverse order of removal.

- After installation is completed, adjust and check A/T position. Refer to [AT-217. "Adjustment of A/T Position"](#) and [AT-217. "Checking of A/T Position"](#) .

# SHIFT CONTROL SYSTEM

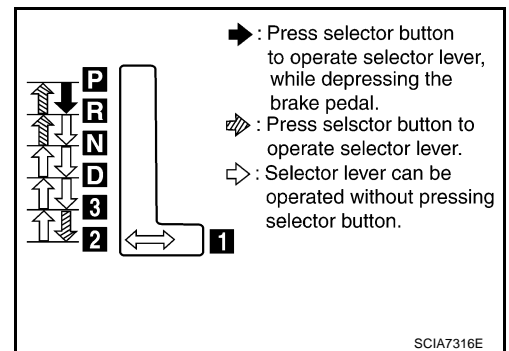
## Adjustment of A/T Position

1. Loosen nut of control cable.
2. Place manual lever and selector lever in "P" position.
3. Push control cable in the direction shown with a force of 9.8 N (1 kg, 2.2 lb), release it. This is in the natural state, tighten nut to the specified torque. Refer to [AT-216. "COMPONENTS"](#) .



## Checking of A/T Position

1. Place selector lever in "P" position, and turn ignition switch ON (Do not start engine).
2. Check selector lever can be shifted to other than "P" position when brake pedal is depressed. Also check selector lever can be shifted from "P" position only when brake pedal is depressed.
3. Move selector lever and check for excessive effort, sticking, noise or rattle.
4. Check 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 selector lever is in matches the position shown by the shift position indicator and the A/T body.
5. The method of operating the selector 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. Check back-up lamps illuminate only when selector lever is placed in the "R" position. Check back-up lamps does not illuminate when selector lever is pushed against "R" position in the "P" or "N" position.
8. Check engine can only be started with selector lever in the "P" and "N" positions.
9. Check A/T is locked completely in "P" position.



# A/T SHIFT LOCK SYSTEM

## A/T SHIFT LOCK SYSTEM

PFP:34950

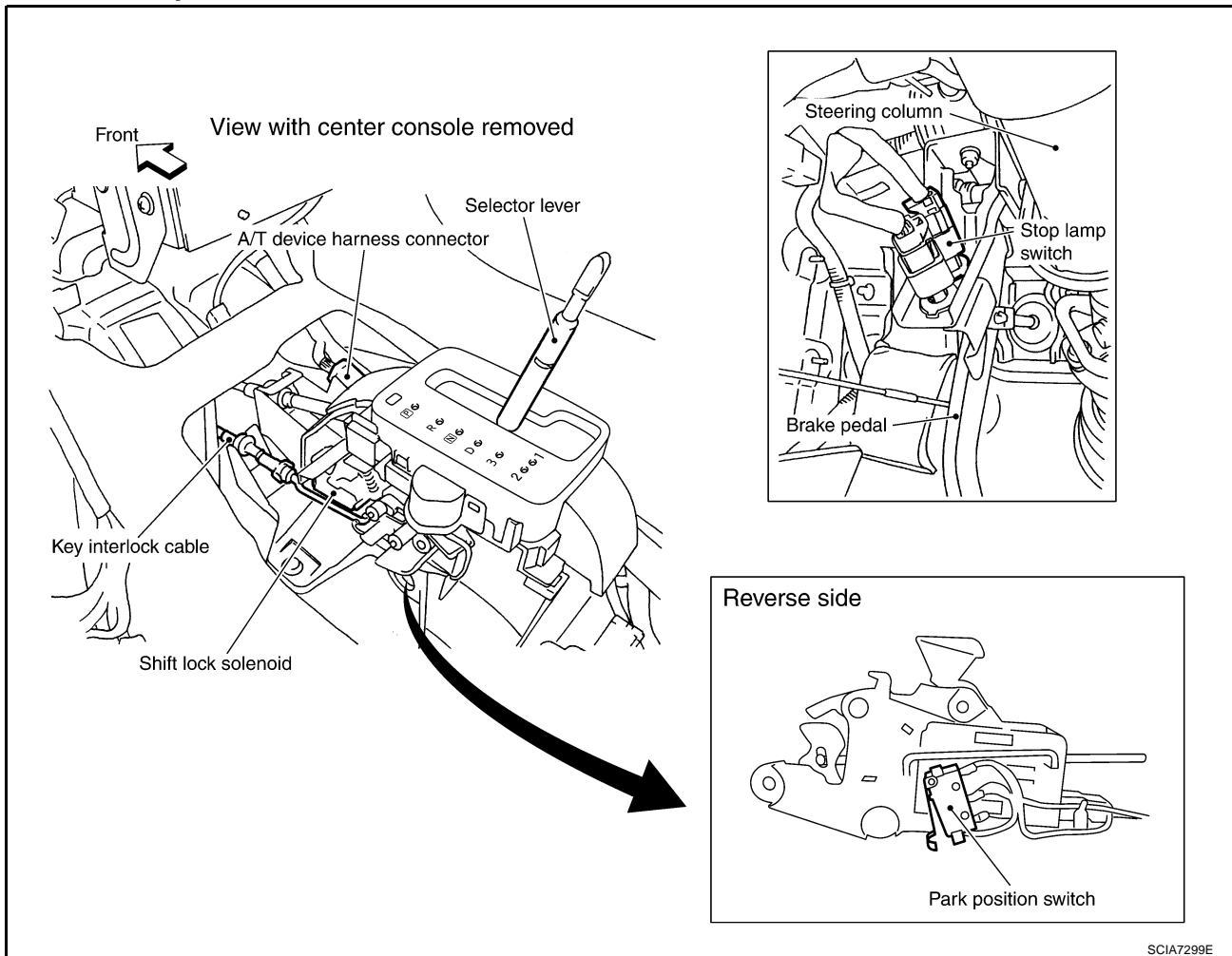
### Description

GCS00083

- The mechanical key interlock mechanism also operates as a shift lock:  
With the ignition switch turned to ON, selector lever cannot be shifted from "P" position to any other position unless brake pedal is depressed.  
With the key removed, selector lever cannot be shifted from "P" position to any other position.  
The key cannot be removed unless selector lever is placed in "P" position.
- The shift lock and key interlock mechanisms are controlled by ON-OFF operation of the shift lock solenoid and by the operation of the rotator and slider located inside the key cylinder, respectively.

### Shift Lock System Electrical Parts Location

GCS00084



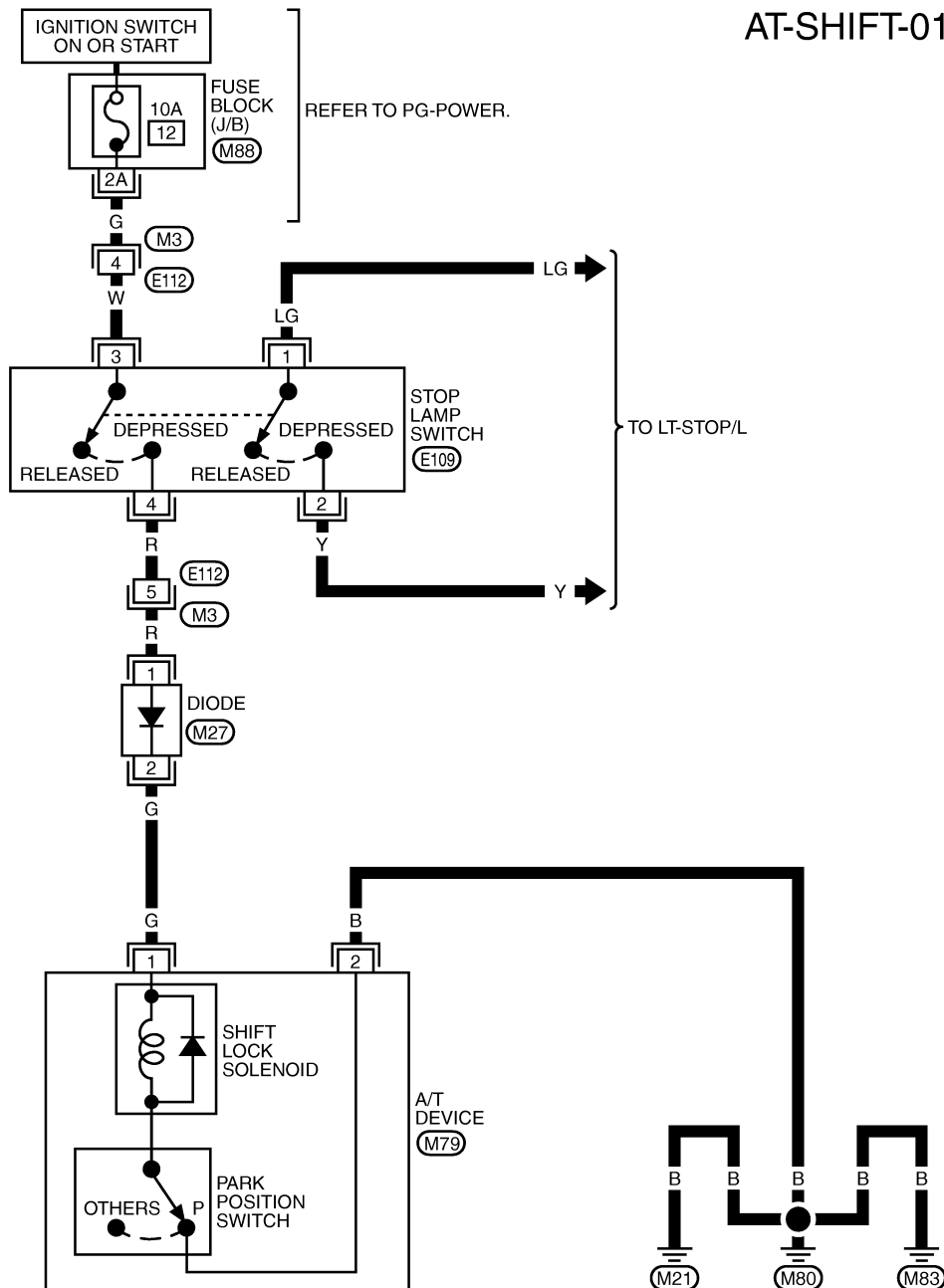
# A/T SHIFT LOCK SYSTEM

## Wiring Diagram — A/T — SHIFT

GCS00085

### AT-SHIFT-01

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



REFER TO THE FOLLOWING.  
 (M88) - FUSE BLOCK -  
 JUNCTION BOX (J/B)

1	2	3	4	5	6	7		
8	9	10	11	12	13	14	15	16

(M3)  
GR

(M27)  
W

9	7	3	1		
10	8	6	5	4	2

(M79)  
W

4	3
2	1

(E109)  
W

# A/T SHIFT LOCK SYSTEM

GCS00086

## Diagnostic Procedure

### SYMPTOM 1:

- Selector lever cannot be moved from “P” position with key in ON position and brake pedal applied.
- Selector lever can be moved from “P” position with key in ON position and brake pedal released.
- Selector lever can be moved from “P” position when key is removed from key cylinder.

### SYMPTOM 2:

- Ignition key cannot be removed when selector lever is set to “P” position.
- Ignition key can be removed when selector lever is set to any position except “P” position.

## 1. CHECK KEY INTERLOCK CABLE

Check key interlock cable for damage.

### OK or NG

OK >> GO TO 2.

NG >> Repair or replace key interlock cable. Refer to [AT-222, "Removal and Installation"](#) .

## 2. CHECK SELECTOR LEVER POSITION

Check selector lever position for damage. Refer to [AT-217, "Checking of A/T Position"](#)

### OK or NG

OK >> GO TO 3.

NG >> Adjust control cable. Refer to [AT-217, "Adjustment of A/T Position"](#) .

## 3. CHECK SHIFT LOCK SOLENOID AND PARK POSITION SWITCH

1. Connect A/T device harness connector.
2. Turn ignition switch ON. (Do not start engine.)
3. Selector lever is set in “P” position.
4. Check operation.

Condition	Brake pedal	Operation
When ignition switch is turned to ON and selector lever is set in “P” position.	Depressed	Yes
	Released	No

### OK or NG

OK >> **INSPECTION END**

NG >> GO TO 4.

## 4. CHECK POWER SOURCE

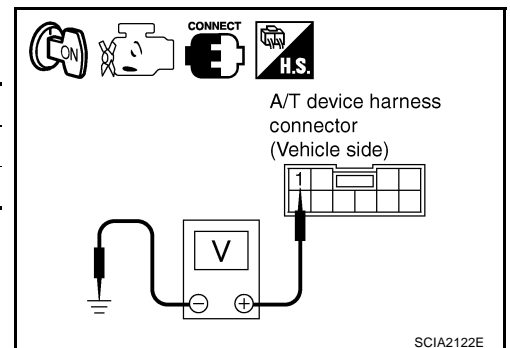
1. Turn ignition switch ON. (Do not start engine.)
2. Check voltage between A/T device harness connector M79 terminal 1 and ground.

Condition	Brake pedal	Data (Approx.)
When ignition switch is turned to ON.	Depressed	Battery voltage
	Released	0 V

### OK or NG

OK >> GO TO 7.

NG >> GO TO 5.



SCIA2122E



# A/T SHIFT LOCK SYSTEM

## 5. CHECK STOP LAMP SWITCH

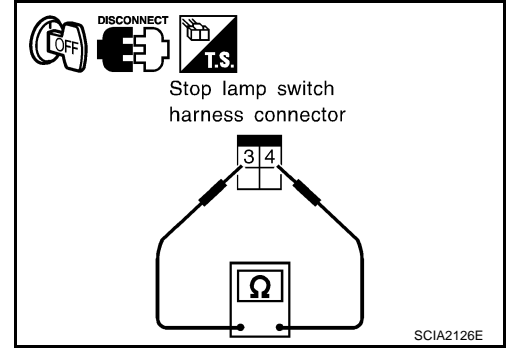
1. Turn ignition switch OFF.
2. Disconnect stop lamp switch harness connector.
3. Check continuity between stop lamp switch harness connector E109 terminals 3 and 4.

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

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

OK or NG

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



## 6. DETECT MALFUNCTIONING ITEM

Check following items. If any items are damaged, repair or replace damaged parts.

- Harness for short or open between ignition switch and stop lamp switch harness connector E109 terminal 3.
- Harness for short or open between stop lamp switch harness connector E109 terminal 4 and A/T device harness connector M79 terminal 1.
- 10 A fuse [No.12, located in fuse block (J/B)].
- Ignition switch.

OK or NG

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

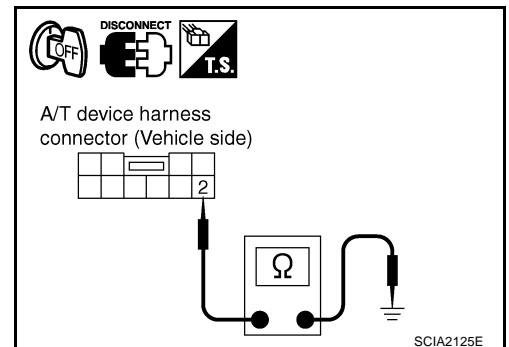
## 7. CHECK GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect A/T device harness connector.
3. Check continuity between A/T device harness connector M79 terminal 2 and ground.

**Continuity should exist.**

OK or NG

- OK >> Replace shift lock solenoid and park position switch assembly.
- NG >> Repair open circuit in harness or connectors.



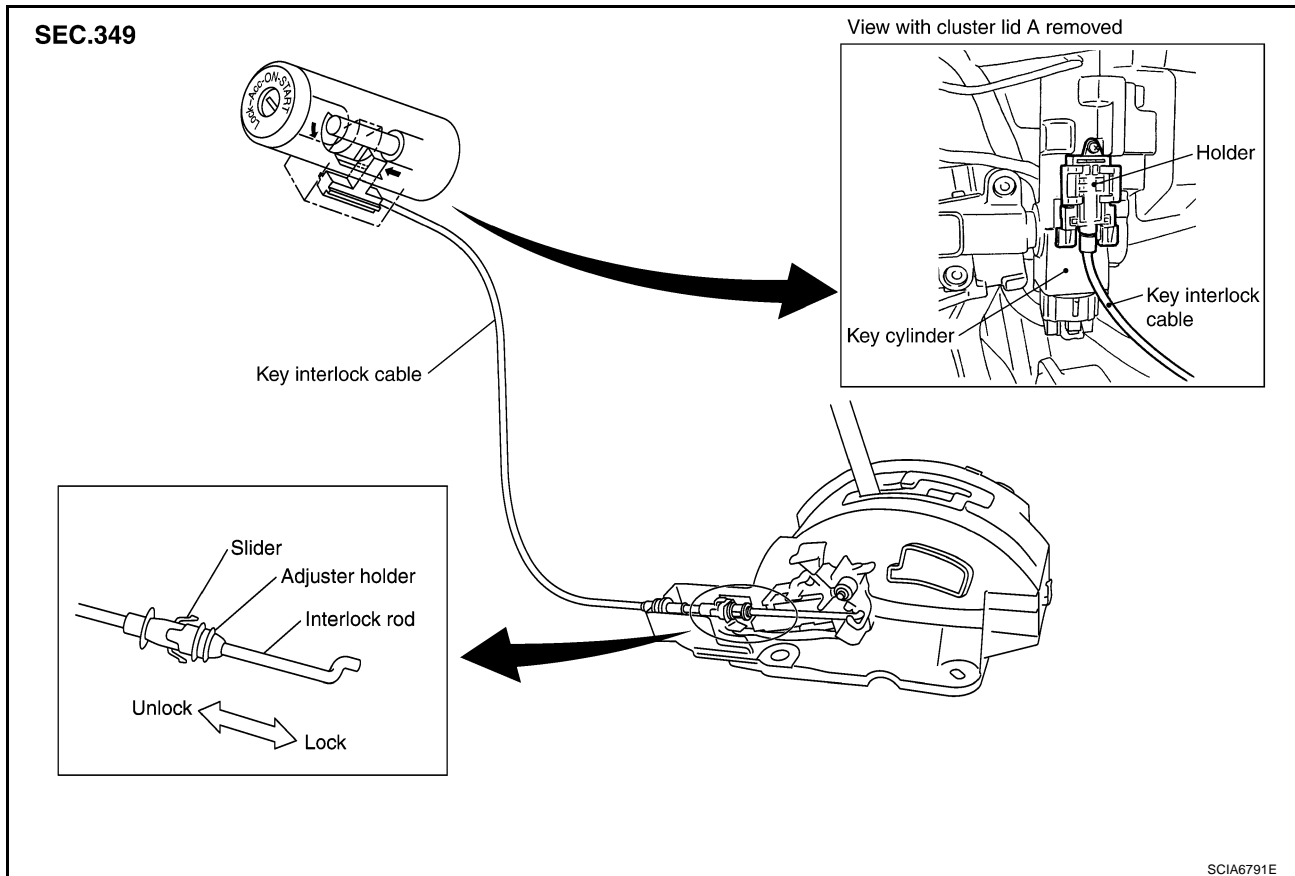
# KEY INTERLOCK CABLE

PFP:34908

GCS00087

## KEY INTERLOCK CABLE

### Removal and Installation COMPONENTS



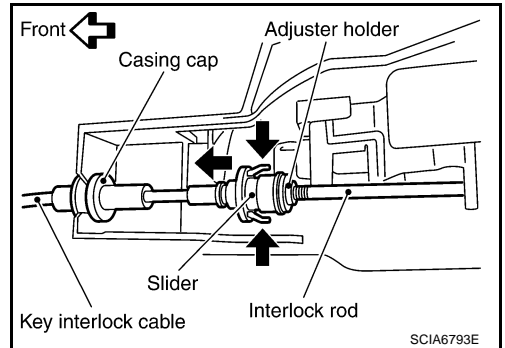
#### CAUTION:

- Install key interlock cable in such a way that it will not be damaged by sharp bends, twists or interference with adjacent parts.
- After installing key interlock cable to control device, make sure that casing cap and bracket are firmly secured in their positions. If casing cap can be removed with an external load of less than 39 N (4.0 kg, 8.8 lb), replace key interlock cable with new one.

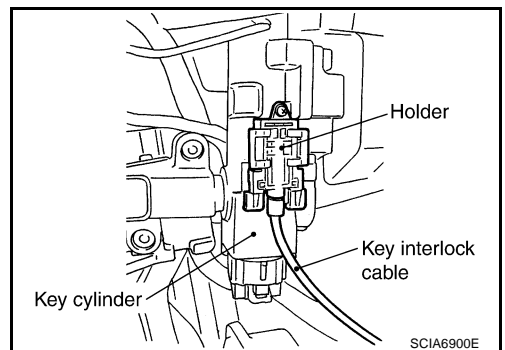
# KEY INTERLOCK CABLE

## REMOVAL

1. Remove center console. Refer to [IP-16, "CENTER CONSOLE"](#) .
2. Remove lower instrument panel RH and cluster lid A. Refer to [IP-12, "LOWER INSTRUMENT PANEL LH"](#) , [IP-15, "LOWER INSTRUMENT PANEL RH AND GLOVE BOX"](#) , [IP-10, "INSTRUMENT PANEL"](#) .
3. Unlock slider by squeezing lock tabs on slider from adjuster holder.
4. Remove casing cap from bracket of control device assembly and remove interlock rod from adjuster holder.

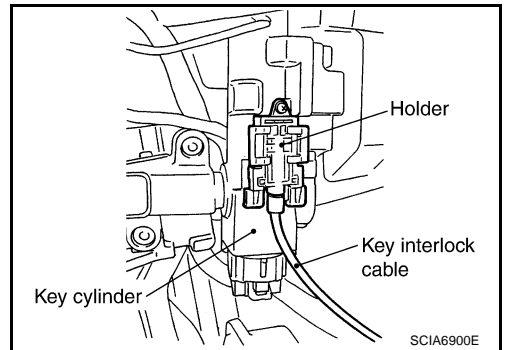


5. Remove holder from key cylinder and remove key interlock cable.



## INSTALLATION

1. Set key interlock cable to key cylinder and install holder.
2. Turn ignition key to lock position.
3. Set selector lever to "P" position.

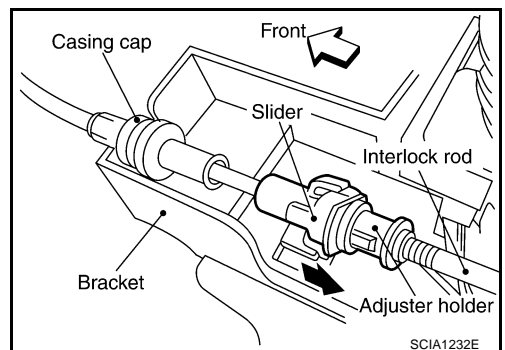


4. Insert interlock rod into adjuster holder.
5. Install casing cap to bracket.
6. Move slider in order to secure adjuster holder to interlock rod.

### CAUTION:

**Do not touch any other areas than slider or apply any force to slider except in the sliding direction.**

7. Install lower instrument panel RH and cluster lid A. Refer to [IP-12, "LOWER INSTRUMENT PANEL LH"](#) , [IP-15, "LOWER INSTRUMENT PANEL RH AND GLOVE BOX"](#) , [IP-10, "INSTRUMENT PANEL"](#) .
8. Install center console. Refer to [IP-16, "CENTER CONSOLE"](#) .

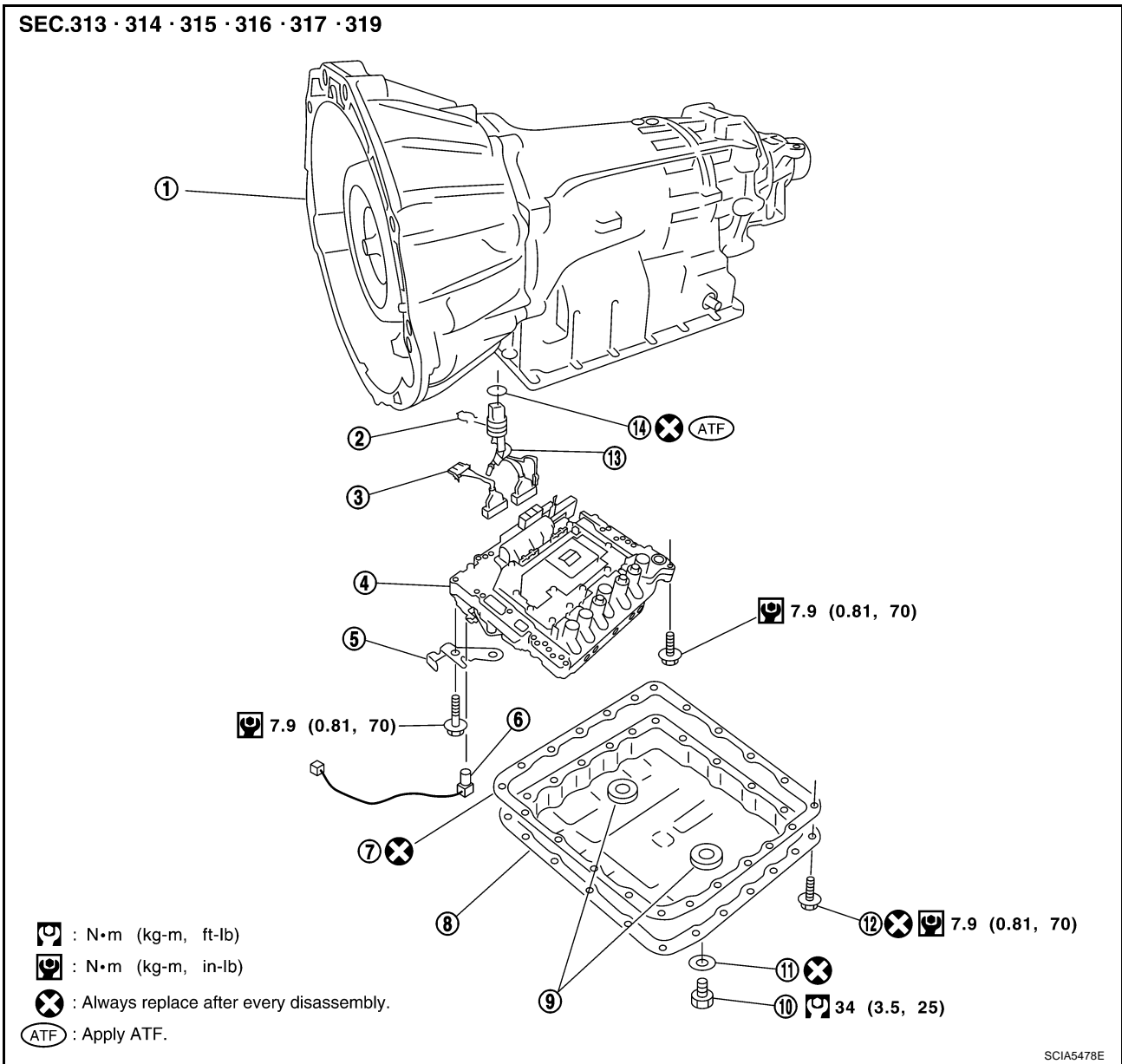


## ON-VEHICLE SERVICE

PFP:00000

### Control Valve With TCM and A/T Fluid Temperature Sensor 2 COMPONENTS

GCS00088



SCIA5478E

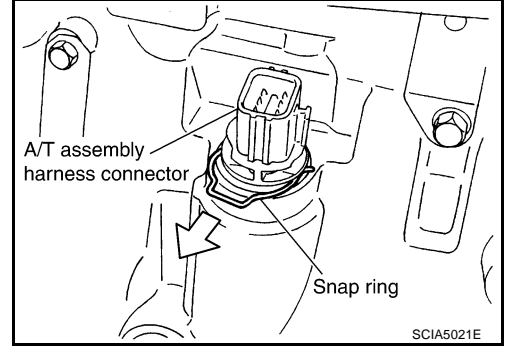
- |                            |                       |                                   |
|----------------------------|-----------------------|-----------------------------------|
| 1. A/T                     | 2. Snap ring          | 3. Sub-harness                    |
| 4. Control valve with TCM  | 5. Bracket            | 6. A/T fluid temperature sensor 2 |
| 7. Oil pan gasket          | 8. Oil pan            | 9. Magnet                         |
| 10. Drain plug             | 11. Drain plug gasket | 12. Oil pan mounting bolt         |
| 13. Terminal cord assembly | 14. O-ring            |                                   |

# ON-VEHICLE SERVICE

## CONTROL VALVE WITH TCM REMOVAL AND INSTALLATION

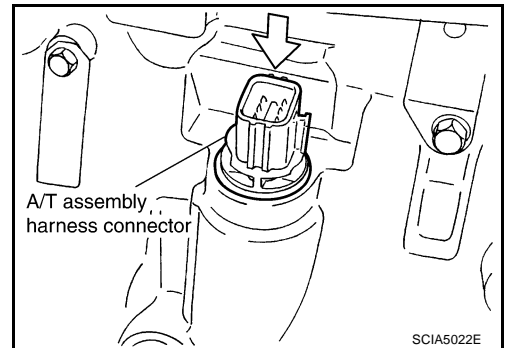
### Removal

1. Disconnect the battery cable from the negative terminal.
2. Drain ATF through drain hole.
3. Remove control cable from A/T assembly. Refer to [AT-216, "COMPONENTS"](#).
4. Disconnect A/T assembly harness connector.
5. Remove snap ring from A/T assembly harness connector.

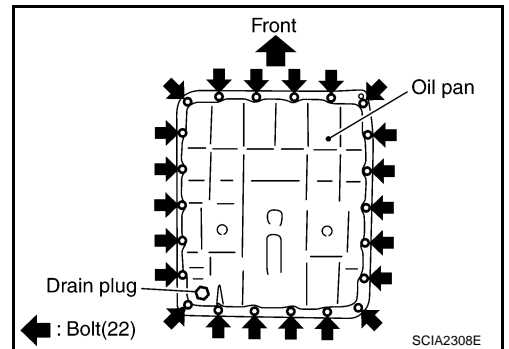


6. Push A/T assembly harness connector.

**CAUTION:**  
Be careful not to damage connector.

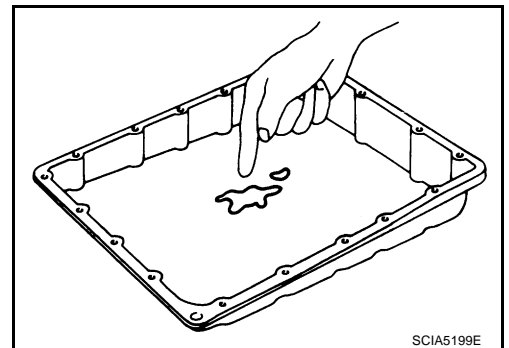


7. Remove oil pan and oil pan gasket.



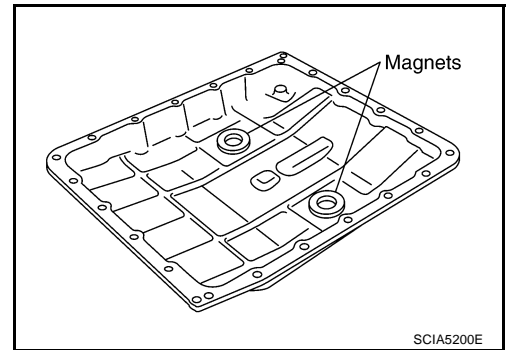
8. Check foreign materials in oil pan to help determine cause of malfunction. If the ATF is very dark, smell burned or contains foreign particles, friction material (clutches, band) may need replacement. A tacky film that will not wipe clean indicates varnish build up. Varnish can cause valves, servo, and clutches to stick and can inhibit pump pressure.

- If friction material is detected, replace radiator after repair of A/T. Refer to [CO-40, "RADIATOR"](#) (for YD25DDTi engine) or [CO-13, "RADIATOR"](#) (for VQ40DE engine).



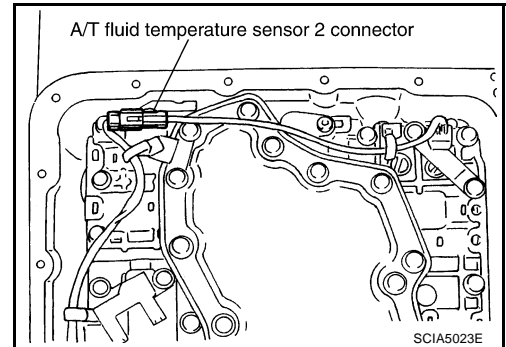
# ON-VEHICLE SERVICE

9. Remove magnets from oil pan.

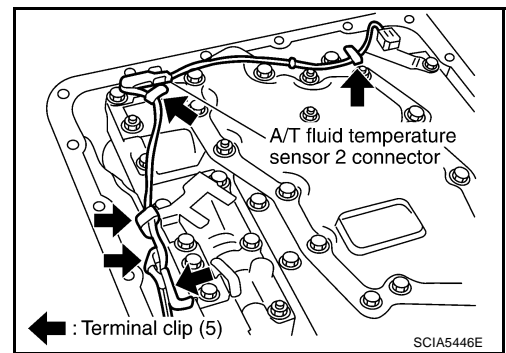


10. Disconnect A/T fluid temperature sensor 2 connector.

**CAUTION:**  
Be careful not to damage connector.

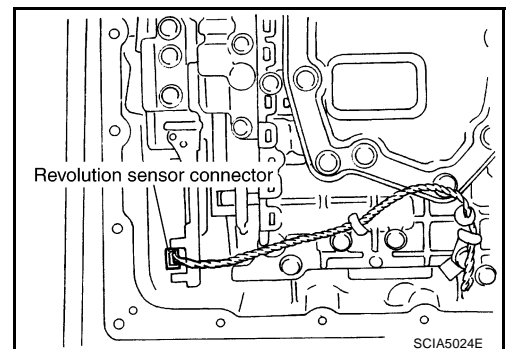


11. Straighten terminal clip to free terminal cord assembly A/T fluid temperature sensor 2 harness.

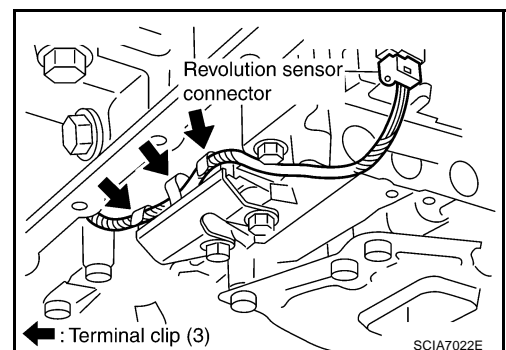


12. Disconnect revolution sensor connector.

**CAUTION:**  
Be careful not to damage connector.



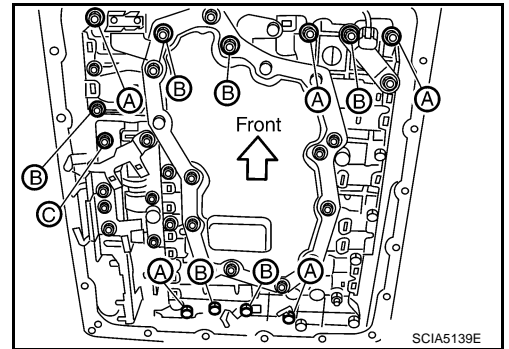
13. Straighten terminal clips to free revolution sensor harness.



# ON-VEHICLE SERVICE

14. Remove bolts A, B and C from control valve with TCM.

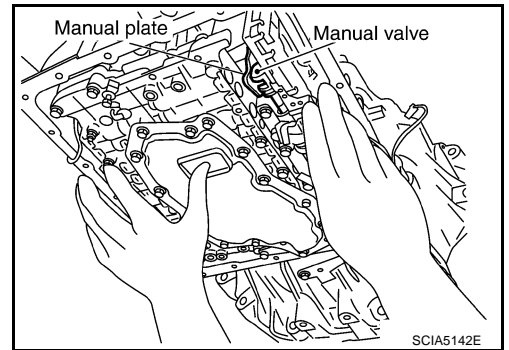
Bolt symbol	Length [mm (in)]	Number of bolts
A	42 (1.65)	5
B	55 (2.17)	6
C	40 (1.57)	1



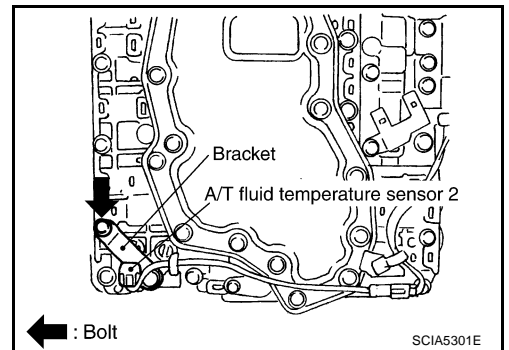
15. Remove control valve with TCM from transmission case.

**CAUTION:**

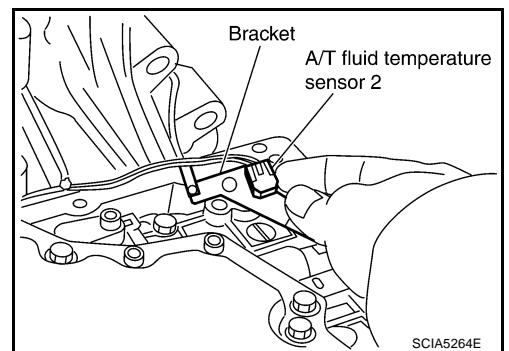
When removing, be careful with the manual valve notch and manual plate height. Remove it vertically.



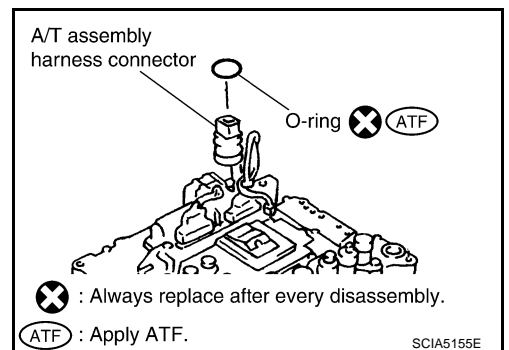
16. Remove A/T fluid temperature sensor 2 with bracket from control valve with TCM.



17. Remove bracket from A/T fluid temperature sensor 2.



18. Remove O-ring from A/T assembly harness connector.

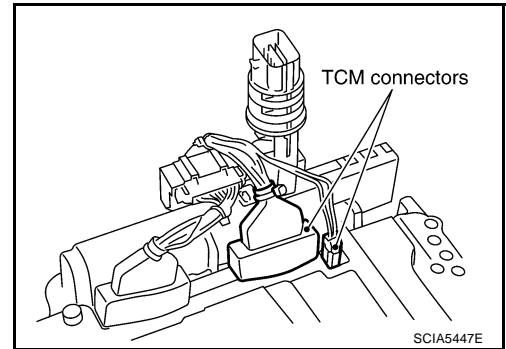


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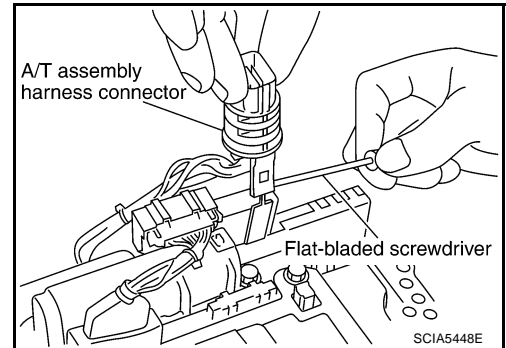
## ON-VEHICLE SERVICE

19. Disconnect TCM connectors.

**CAUTION:**  
Be careful not to damage connectors.

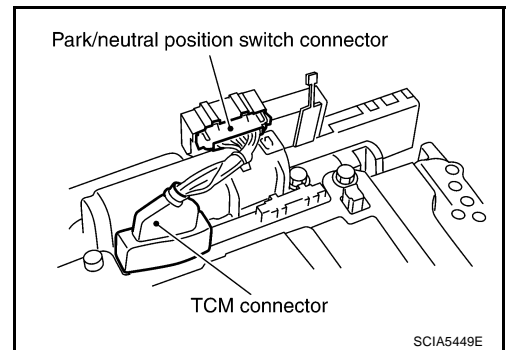


20. Remove A/T assembly harness connector from control valve with TCM using flat-bladed screwdriver.



21. Disconnect TCM connector and park/neutral position switch connector

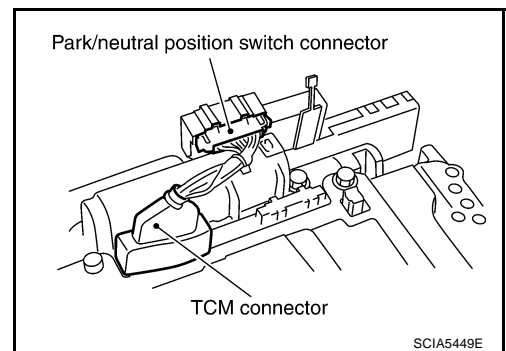
**CAUTION:**  
Be careful not to damage connectors.



### Installation

**CAUTION:**  
After completing installation, check A/T fluid leakage and A/T fluid level. Refer to [AT-11, "Checking A/T Fluid"](#) .

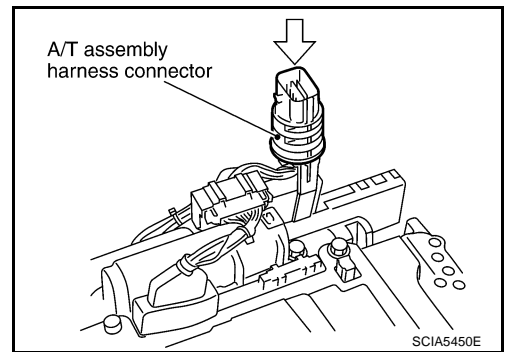
1. Connect TCM connector and park/neutral position switch connector.



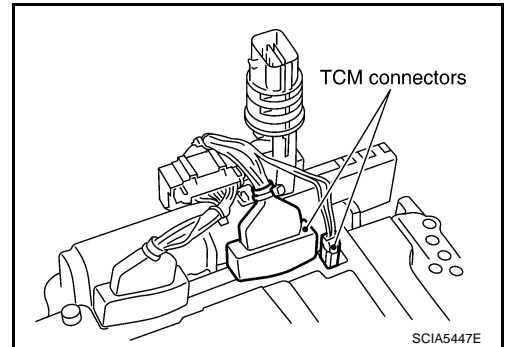


# ON-VEHICLE SERVICE

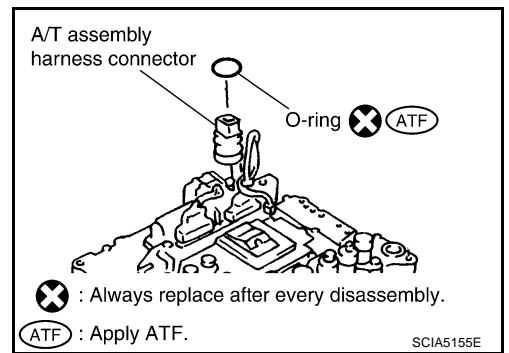
2. Install A/T assembly harness connector to control valve with TCM.



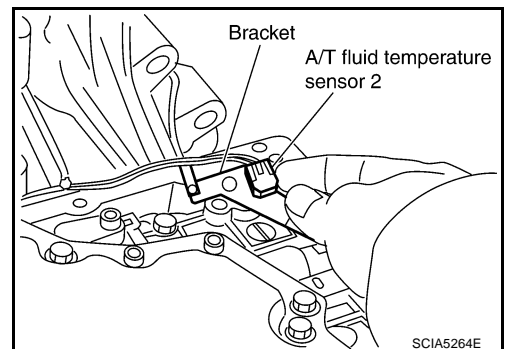
3. Connect TCM connectors.



4. Install O-ring in A/T assembly harness connector.



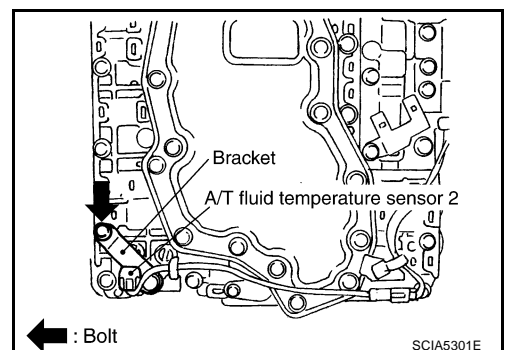
5. Install A/T fluid temperature sensor 2 to bracket.



6. Install A/T fluid temperature sensor 2 (with bracket) in control valve with TCM. Tighten A/T fluid temperature sensor 2 mounting bolt to the specified torque. Refer to [AT-224, "COMPONENTS"](#).

**CAUTION:**

**Adjust bolt hole of bracket to bolt hole of control valve with TCM.**



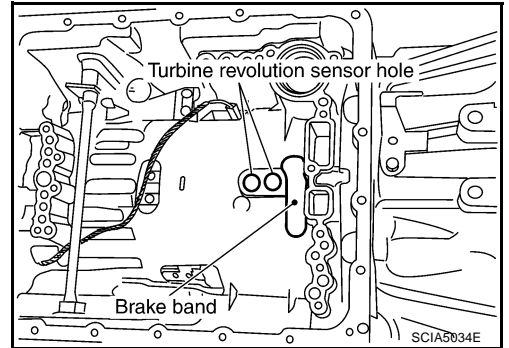
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# ON-VEHICLE SERVICE

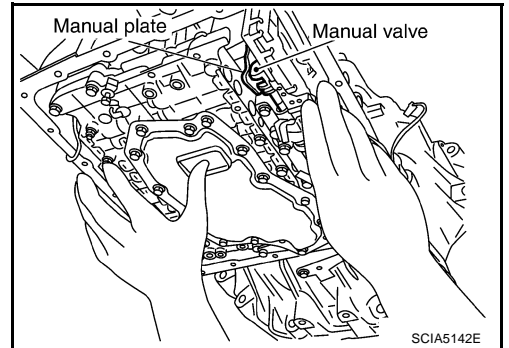
7. Install control valve with TCM in transmission case.

**CAUTION:**

- Make sure that turbine revolution sensor securely installs turbine revolution sensor hole.
- Hang down revolution sensor harness toward outside so as not to disturb installation of control valve with TCM.
- Adjust A/T assembly harness connector of control valve with TCM to terminal hole of transmission case.

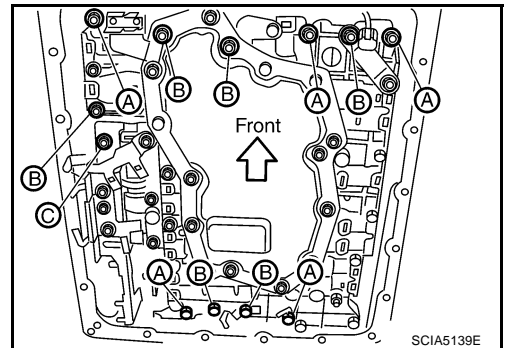


- Assemble it so that manual valve cutout is engaged with manual plate projection.

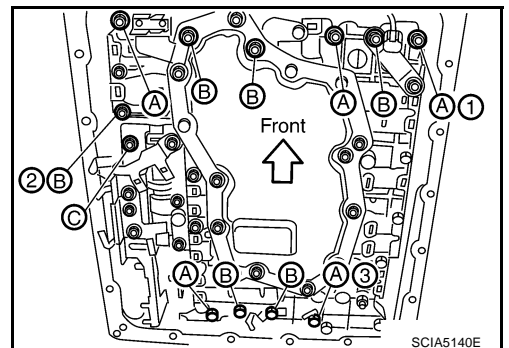


8. Install bolts A, B and C in control valve with TCM.

Bolt symbol	Length [mm (in)]	Number of bolts
A	42 (1.65)	5
B	55 (2.17)	6
C	40 (1.57)	1

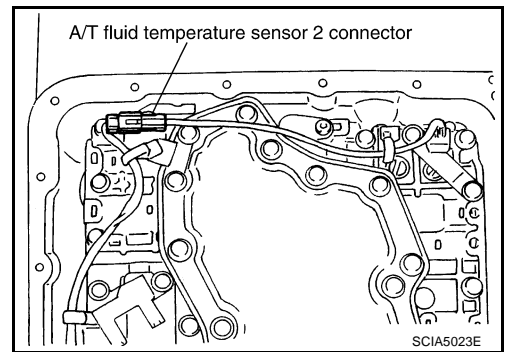


9. Tighten bolt 1, 2 and 3 temporarily to prevent dislocation. After that tighten them in order (1 → 2 → 3), and then tighten other bolts. Tighten control valve with TCM mounting bolts to the specified torque. Refer to [AT-224, "COMPONENTS"](#).

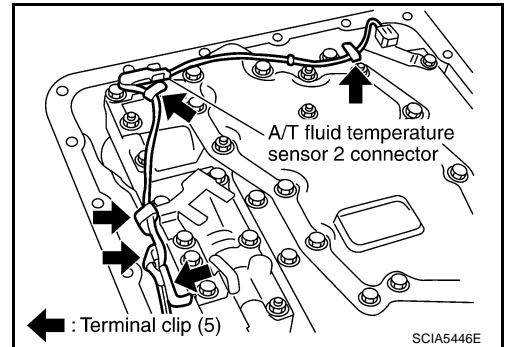


# ON-VEHICLE SERVICE

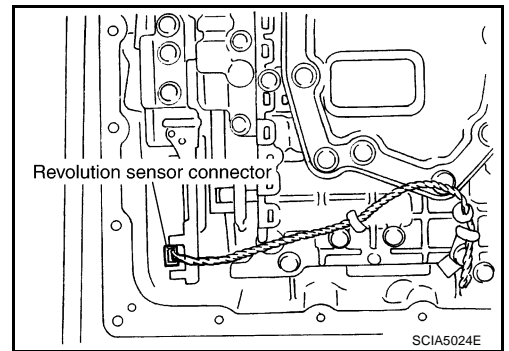
10. Connect A/T fluid temperature sensor 2 connector.



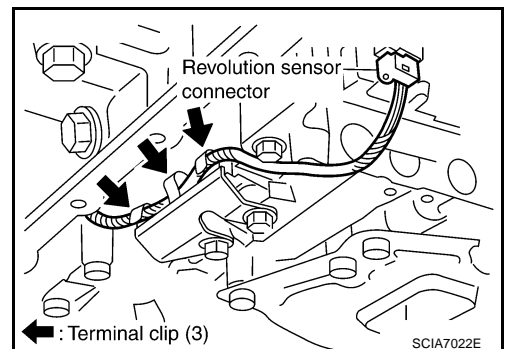
11. Securely fasten terminal cord assembly and A/T fluid temperature sensor 2 harness with terminal clips.



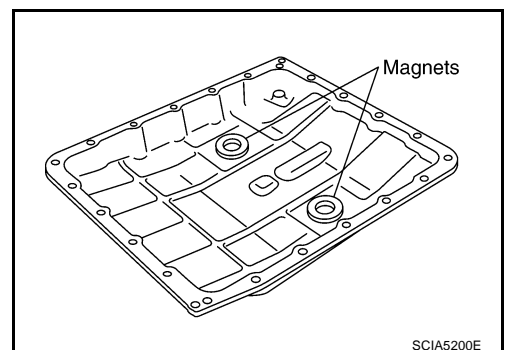
12. Connect revolution sensor connector.



13. Securely fasten revolution sensor harness with terminal clips.



14. Install magnets onto oil pan.



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## ON-VEHICLE SERVICE

15. Install oil pan to transmission case.

a. Install oil pan gasket to oil pan.

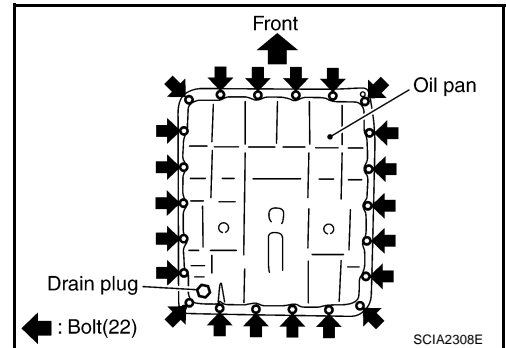
**CAUTION:**

- Do not reuse oil pan gasket.
- Install it in the direction to align hole positions.
- Completely remove all moisture, oil and old gasket, etc. from oil pan gasket mounting surface.

b. Install oil pan (with oil pan gasket) to transmission case.

**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.



c. Tighten oil pan mounting bolts to the specified torque in numerical order shown in the figure after temporarily tightening them. Refer to [AT-224, "COMPONENTS"](#)

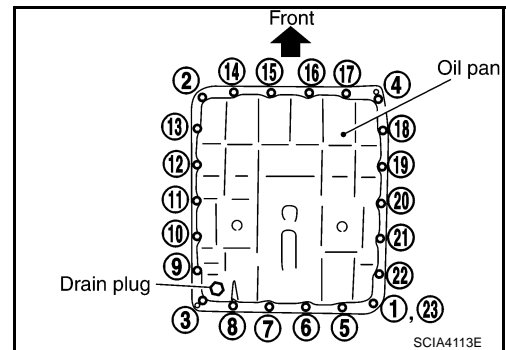
**CAUTION:**

**Do not reuse oil pan mounting bolts.**

16. Install drain plug gasket and drain plug to oil pan, and then tighten drain plug to the specified torque. Refer to [AT-224, "COMPONENTS"](#).

**CAUTION:**

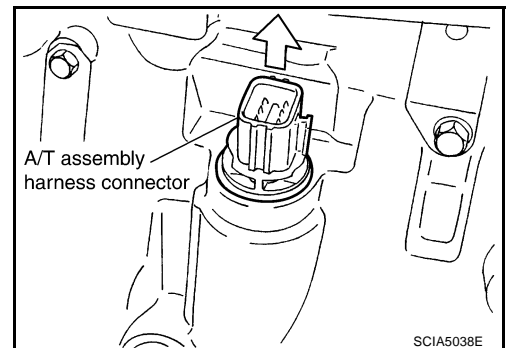
**Do not reuse drain plug gasket.**



17. Pull up A/T assembly harness connector.

**CAUTION:**

**Be careful not to damage connector.**



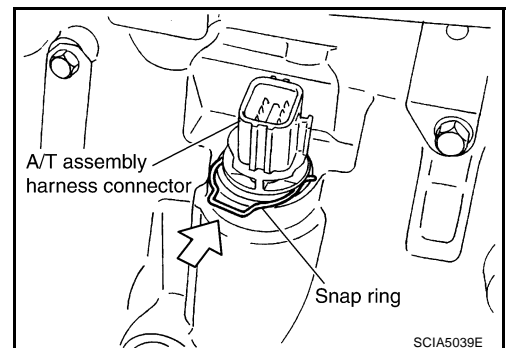
18. Install snap ring to A/T assembly harness connector.

19. Connect A/T assembly harness connector.

20. Install control cable to A/T assembly. Refer to [AT-216, "COMPONENTS"](#).

21. Pour ATF into A/T assembly. Refer to [AT-10, "Changing A/T Fluid"](#).

22. Connect the battery cable from the negative terminal.

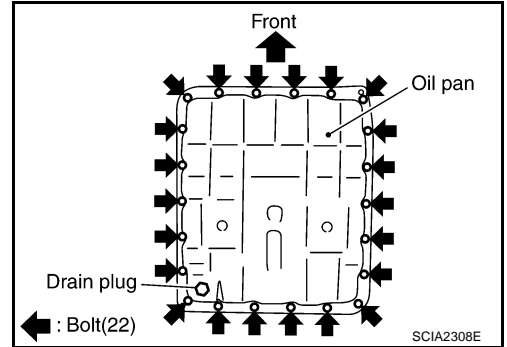


# ON-VEHICLE SERVICE

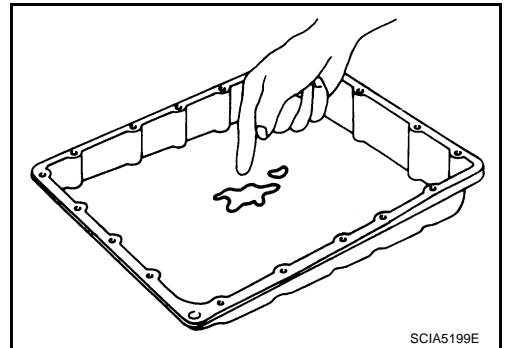
## A/T FLUID TEMPERATURE SENSOR 2 REMOVAL AND INSTALLATION

### Removal

1. Disconnect the battery cable from the negative terminal.
2. Drain ATF through drain hole.
3. Remove oil pan and oil pan gasket.

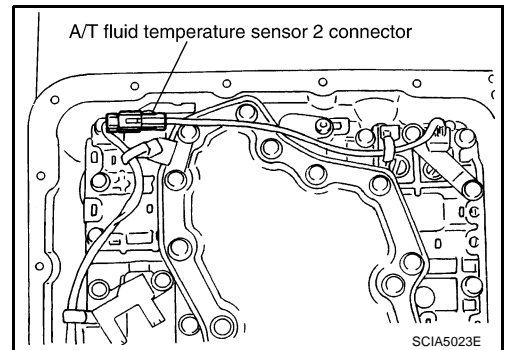


4. Check foreign materials in oil pan to help determine cause of malfunction. If the ATF is very dark, smell burned or contains foreign particles, friction material (clutches, band) may need replacement. A tacky film that will not wipe clean indicates varnish build up. Varnish can cause valves, servo, and clutches to stick and can inhibit pump pressure.
  - If friction material is detected, replace radiator after repair of A/T. Refer to [CO-40, "RADIATOR"](#) (for YD25DDTi engine) or [CO-13, "RADIATOR"](#) (for VQ40DE engine).

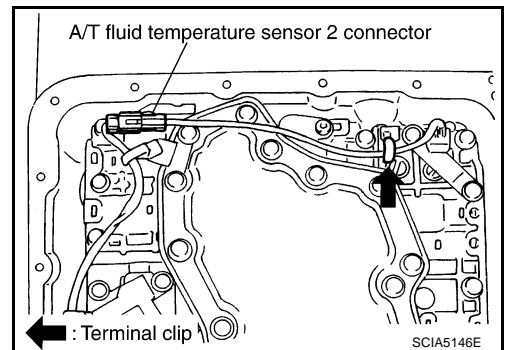


5. Disconnect A/T fluid temperature sensor 2 connector.

**CAUTION:**  
Be careful not to damage connector.

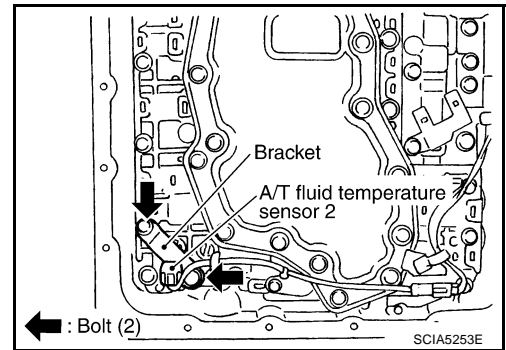


6. Straighten terminal clip to free A/T fluid temperature sensor 2 harness.

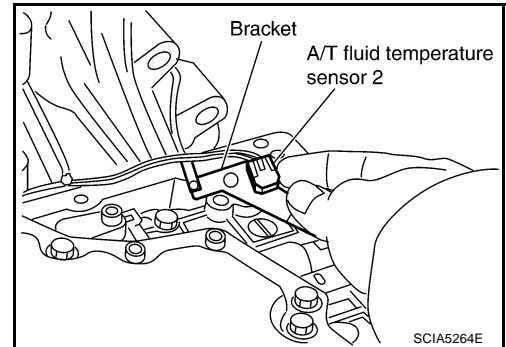


## ON-VEHICLE SERVICE

7. Remove A/T fluid temperature sensor 2 with bracket from control valve with TCM.



8. Remove bracket from A/T fluid temperature sensor 2.

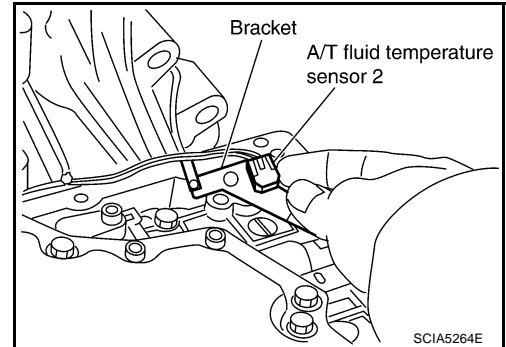


### Installation

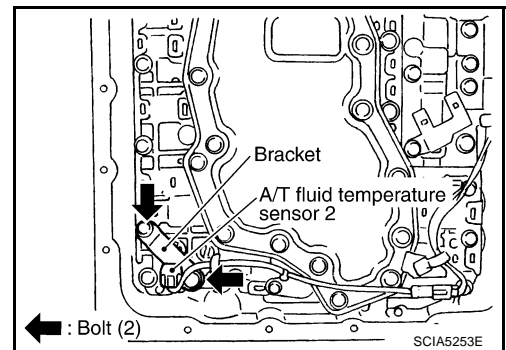
#### **CAUTION:**

After completing installation, check for A/T fluid leakage and A/T fluid level. Refer to [AT-11, "Checking A/T Fluid"](#).

1. Install A/T fluid temperature sensor 2 to bracket.

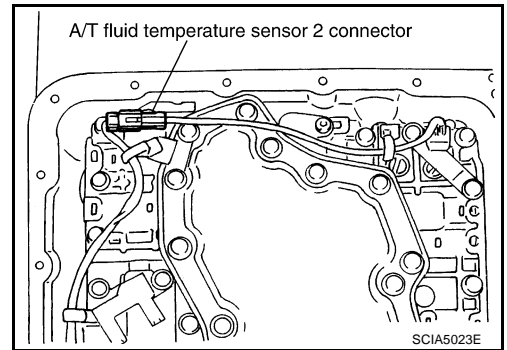


2. Install A/T fluid temperature sensor 2 (with bracket) in control valve with TCM. Tighten A/T fluid temperature sensor 2 mounting bolt to the specified torque. Refer to [AT-224, "COMPONENTS"](#).

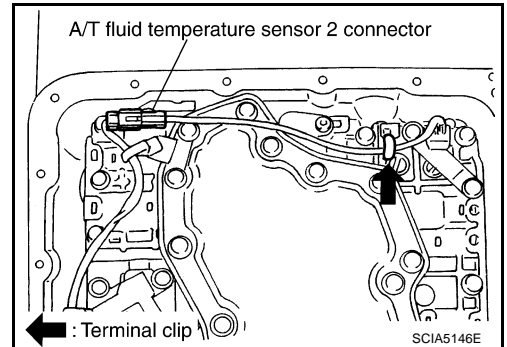


# ON-VEHICLE SERVICE

3. Connect A/T fluid temperature sensor 2 connector.



4. Securely fasten A/T fluid temperature sensor 2 harness with terminal clip.



5. Install oil pan to transmission case.

- a. Install oil pan gasket to oil pan.

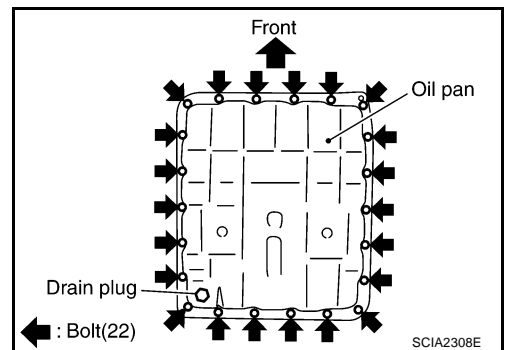
**CAUTION:**

- Do not reuse oil pan gasket.
- Install it in the direction to align hole positions.
- Completely remove all moisture, oil and old gasket, etc. from oil pan gasket mounting surface.

- b. Install oil pan (with oil pan gasket) to transmission case.

**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.



- c. Tighten oil pan mounting bolts to the specified torque in numerical order shown in the figure after temporarily tightening them. Refer to [AT-224, "COMPONENTS"](#).

**CAUTION:**

**Do not reuse oil pan mounting bolts.**

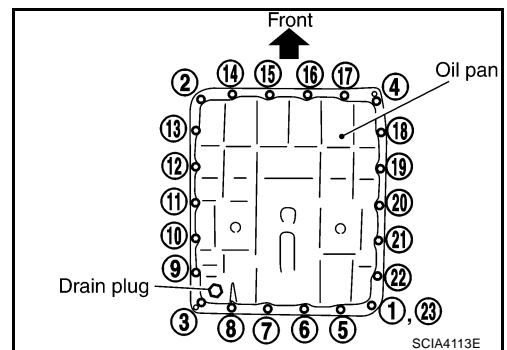
6. Install drain plug gasket and drain plug to oil pan, and then tighten drain plug to the specified torque. Refer to [AT-224, "COMPONENTS"](#).

**CAUTION:**

**Do not reuse drain plug gasket.**

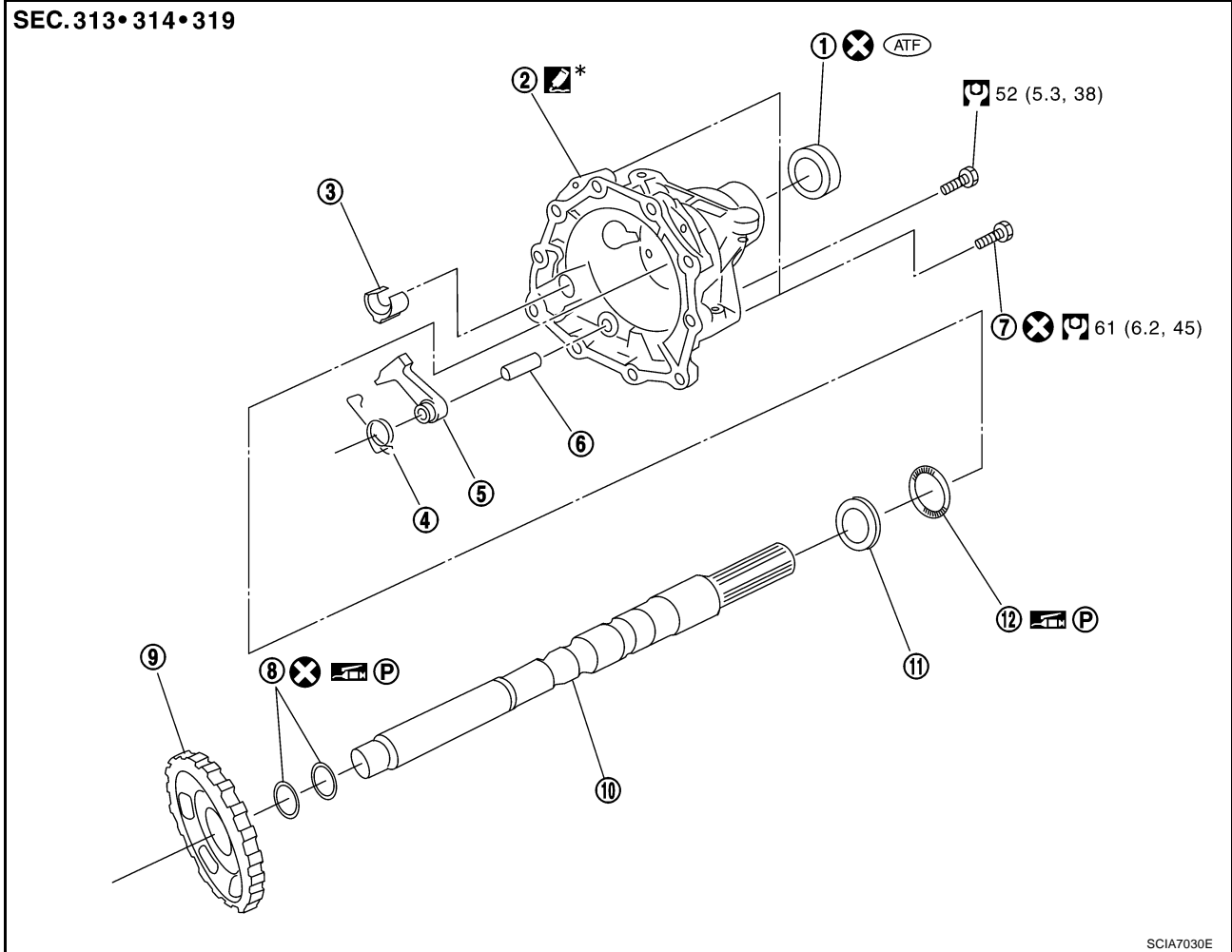
7. Pour ATF into A/T assembly. Refer to [AT-10, "Changing A/T Fluid"](#).

8. Connect the battery cable to the negative terminal.



## Parking Components (2WD Models Only) REMOVAL AND INSTALLATION

### Components



- |                      |                   |                             |
|----------------------|-------------------|-----------------------------|
| 1. Rear oil seal     | 2. Rear extension | 3. Parking actuator support |
| 4. Return spring     | 5. Parking pawl   | 6. Pawl shaft               |
| 7. Self-sealing bolt | 8. Seal ring      | 9. Parking gear             |
| 10. Output shaft     | 11. Bearing race  | 12. Needle bearing          |

Refer to GI section to make sure icons (symbol marks) in the figure. Refer to [GI-10. "Components"](#) .

However, refer to the following symbols for others.

: Apply Anaerobic Liquid Gasket (Loctite 518) or equivalent.

### Removal

1. Drain ATF through drain hole.
2. Remove rear propeller shaft. Refer to [PR-8. "Removal and Installation"](#) .
3. Remove control cable from A/T assembly. Refer to [AT-216. "Control Cable Removal and Installation"](#) .
4. Support A/T assembly using a transmission jack.

#### **CAUTION:**

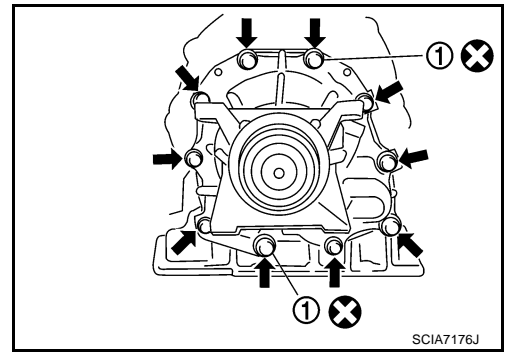
**When setting transmission jack, be careful not to allow it to collide against the drain plug.**

5. Remove A/T cross member. Refer to [AT-254. "Removal and Installation \(YD25DDTi Models\)"](#) (for YD25DDTi engine) or [AT-258. "Removal and Installation \(VQ40DE Models\)"](#) (for VQ40DE engine).
6. Remove engine mounting insulator (rear). Refer to [AT-254. "Removal and Installation \(YD25DDTi Models\)"](#) (for YD25DDTi engine) or [AT-258. "Removal and Installation \(VQ40DE Models\)"](#) (for VQ40DE engine).

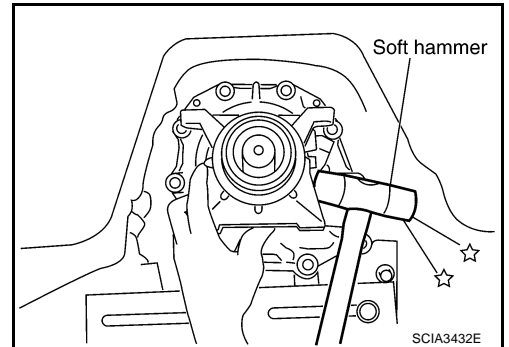


# ON-VEHICLE SERVICE

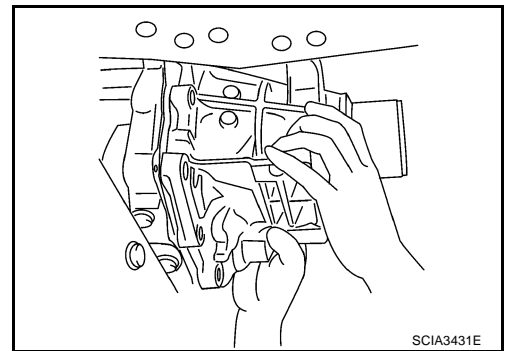
7. Remove tightening bolts for rear extension assembly and transmission case.
- Self-sealing bolt (1)
  - ◄: Bolt (10)



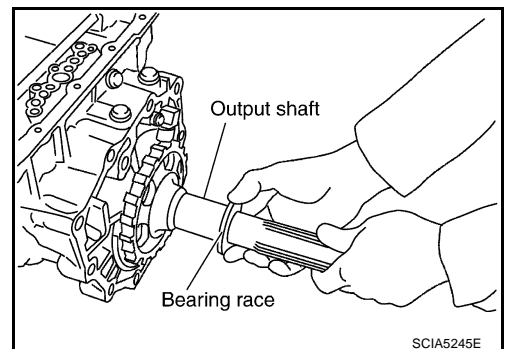
8. Tap rear extension assembly with a soft hammer.



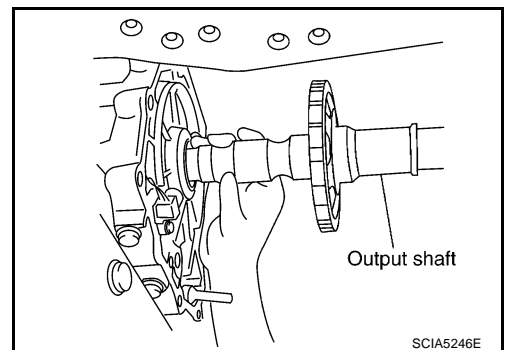
9. Remove rear extension assembly from transmission case. (With needle bearing.)



10. Remove bearing race from output shaft.



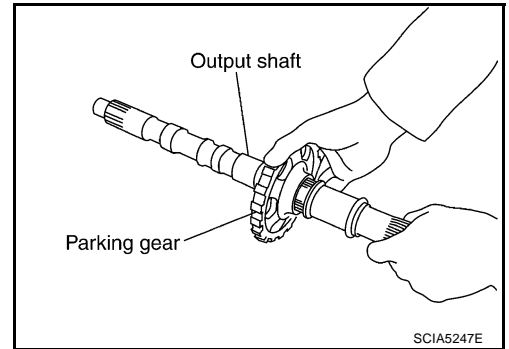
11. Remove output shaft from transmission case by rotating left/right.



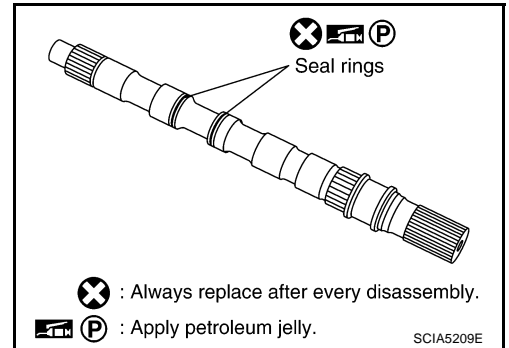
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## ON-VEHICLE SERVICE

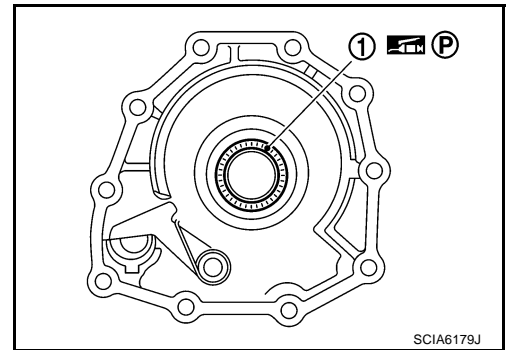
12. Remove parking gear from output shaft.



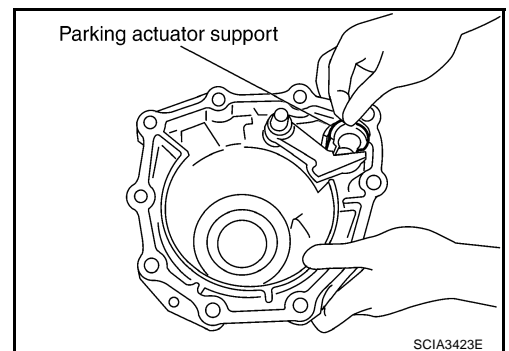
13. Remove seal rings from output shaft.



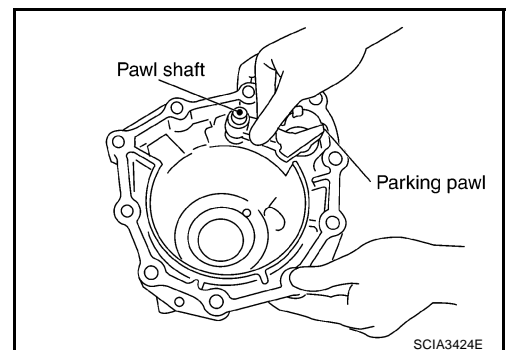
14. Remove needle bearing (1) from rear extension.



15. Remove parking actuator support from rear extension.

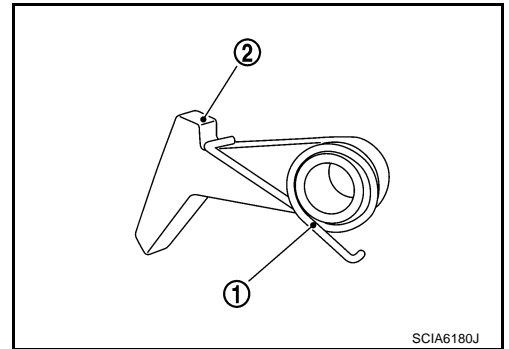


16. Remove parking pawl (with return spring) and pawl shaft from rear extension.



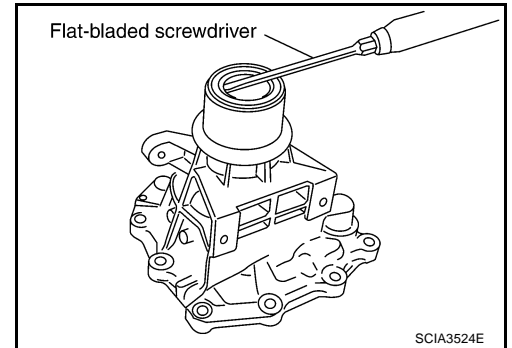
# ON-VEHICLE SERVICE

17. Remove return spring (1) from parking pawl (2).



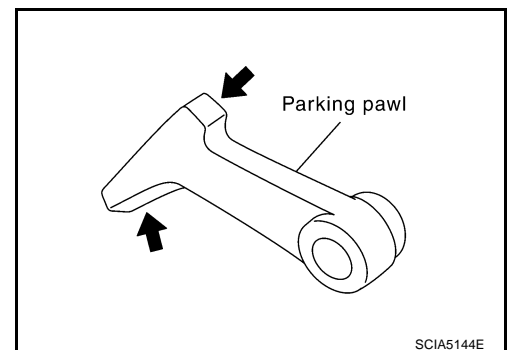
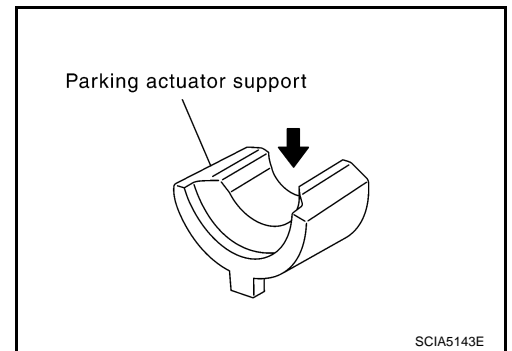
18. Remove rear oil seal from rear extension.

**CAUTION:**  
Be careful not to scratch rear extension.



## Inspection

- If the contact surface on parking actuator support, parking pawl, etc. has excessive wear, abrasion, bend, or any other damage, replace the components.



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# ON-VEHICLE SERVICE

## Installation

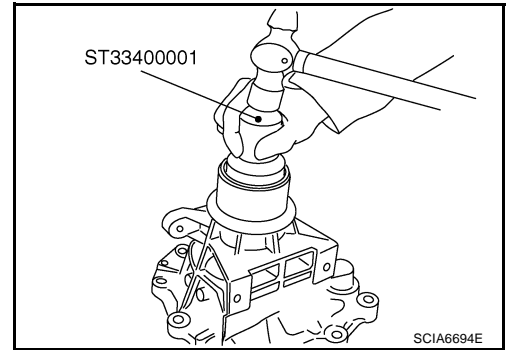
### CAUTION:

After completing installation, check A/T fluid leakage, A/T fluid level and A/T position. Refer to [AT-11](#), "[Checking A/T Fluid](#)", [AT-217](#), "[Checking of A/T Position](#)".

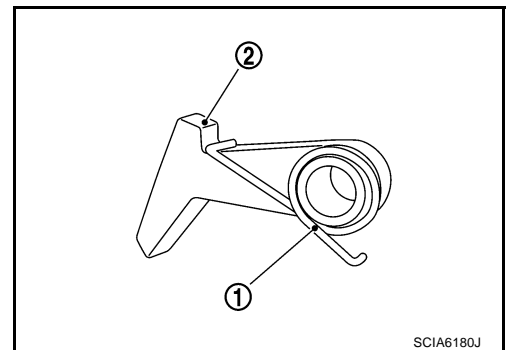
1. As shown in the figure, use a drift to drive rear oil seal into the rear extension until it is flush.

### CAUTION:

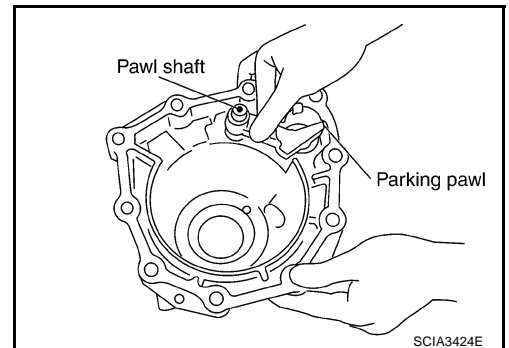
- Apply ATF to rear oil seal.
- Do not reuse rear oil seal.



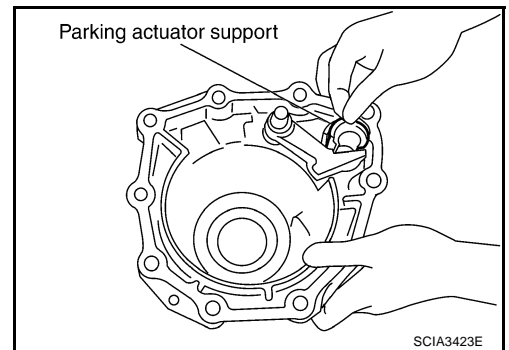
2. Install return spring (1) to parking pawl (2).



3. Install parking pawl (with return spring) and pawl shaft to rear extension.

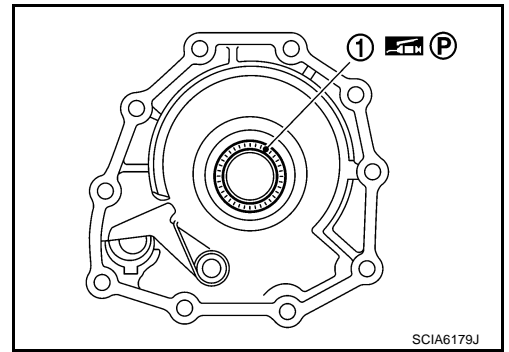


4. Install parking actuator support to rear extension.

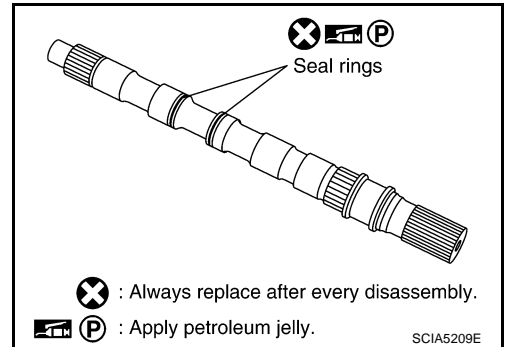


# ON-VEHICLE SERVICE

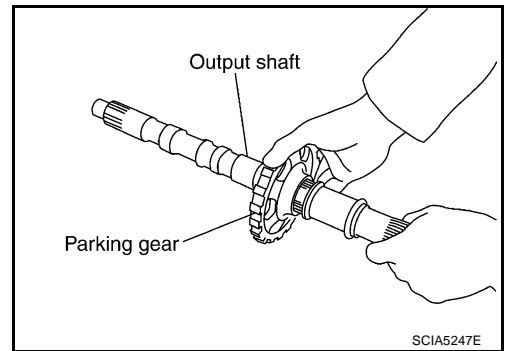
5. Install needle bearing (1) to rear extension.



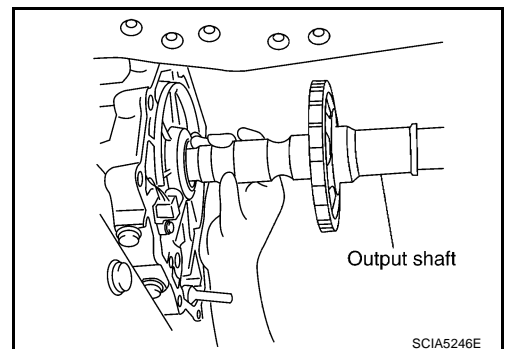
6. Install seal rings to output shaft.



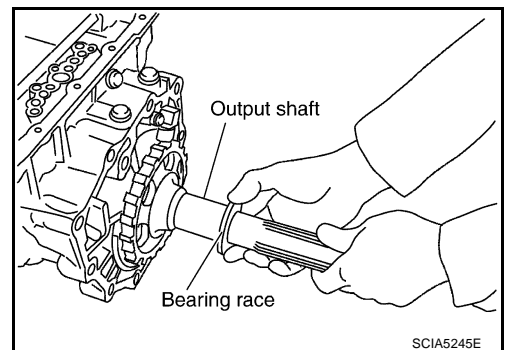
7. Install parking gear to output shaft



8. Install output shaft in transmission case.



9. Install bearing race to output shaft.



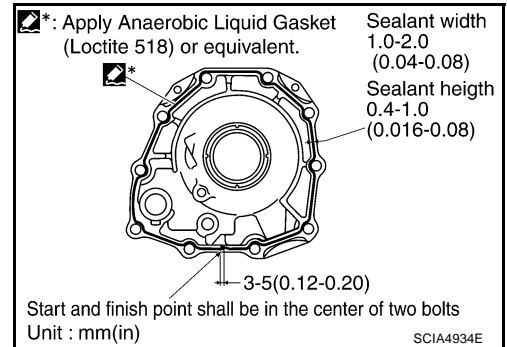
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## ON-VEHICLE SERVICE

10. Apply Anaerobic Liquid Gasket (Loctite 518) or equivalent to rear extension assembly as shown in the figure.

**CAUTION:**

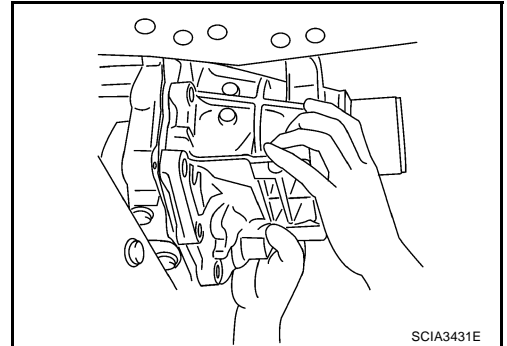
**Completely remove all moisture, oil and old sealant, etc. from the transmission case and rear extension assembly mounting surfaces.**



11. Install rear extension assembly to transmission case. (With needle bearing.)

**CAUTION:**

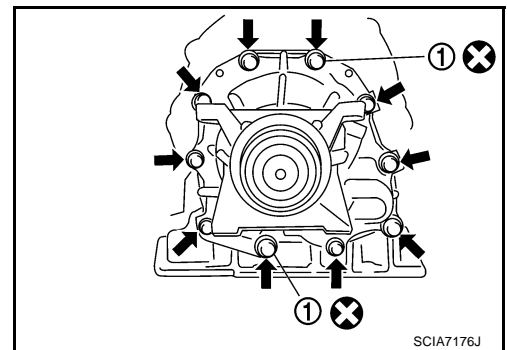
**Insert the tip of parking rod between the parking pawl and the parking actuator support when assembling the rear extension assembly.**



12. Tighten rear extension assembly bolts to the specified torque. Refer to [AT-236, "Components"](#).

- Self-sealing bolt (1)

◄: Bolt (10)



13. Install engine mounting insulator (rear). Refer to [AT-254, "Removal and Installation \(YD25DDTi Models\)"](#) (for YD25DDTi engine) or [AT-258, "Removal and Installation \(VQ40DE Models\)"](#) (for VQ40DE engine).
14. Install A/T cross member. Refer to [AT-254, "Removal and Installation \(YD25DDTi Models\)"](#) (for YD25DDTi engine) or [AT-258, "Removal and Installation \(VQ40DE Models\)"](#) (for VQ40DE engine).
15. Install control cable to A/T assembly. Refer to [AT-216, "Control Cable Removal and Installation"](#).
16. Install rear propeller shaft. Refer to [PR-8, "Removal and Installation"](#).
17. Install drain plug gasket and drain plug to oil pan. Tighten a necessary drain plug with specified torque. Refer to [AT-224, "COMPONENTS"](#).

**CAUTION:**

**Do not reuse drain plug gasket.**

18. Pour ATF into A/T assembly. Refer to [AT-10, "Changing A/T Fluid"](#).

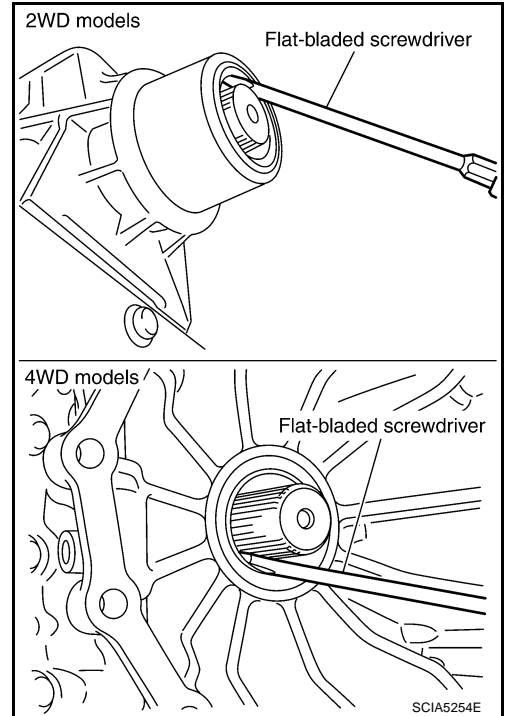
## Rear Oil Seal REMOVAL AND INSTALLATION

### Removal

1. Remove rear propeller shaft. Refer to [PR-8, "Removal and Installation"](#) .
2. Remove front propeller shaft (4WD models). Refer to [PR-4, "Removal and Installation"](#) .
3. Remove transfer assembly from A/T assembly (4WD models). Refer to [TF-116, "Removal and Installation"](#) .
4. Remove rear oil seal using a flat-bladed screwdriver.

**CAUTION:**

Be careful not to scratch rear extension assembly (2WD models) or adapter case assembly (4WD models).



### Installation

**CAUTION:**

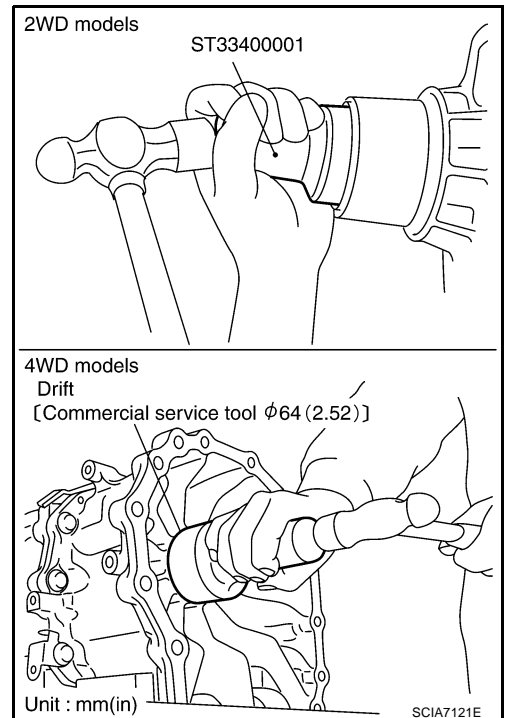
After completing installation, check for A/T fluid leakage and A/T fluid level. Refer to [AT-11, "Checking A/T Fluid"](#) .

1. As shown in the figure, use the drift to drive rear oil seal into rear extension assembly (2WD models) or adapter case assembly (4WD 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 (4WD models). Refer to [TF-116, "Removal and Installation"](#) .
3. Install front propeller shaft (4WD models). Refer to [PR-4, "Removal and Installation"](#) .
4. Install rear propeller shaft. Refer to [PR-8, "Removal and Installation"](#) .

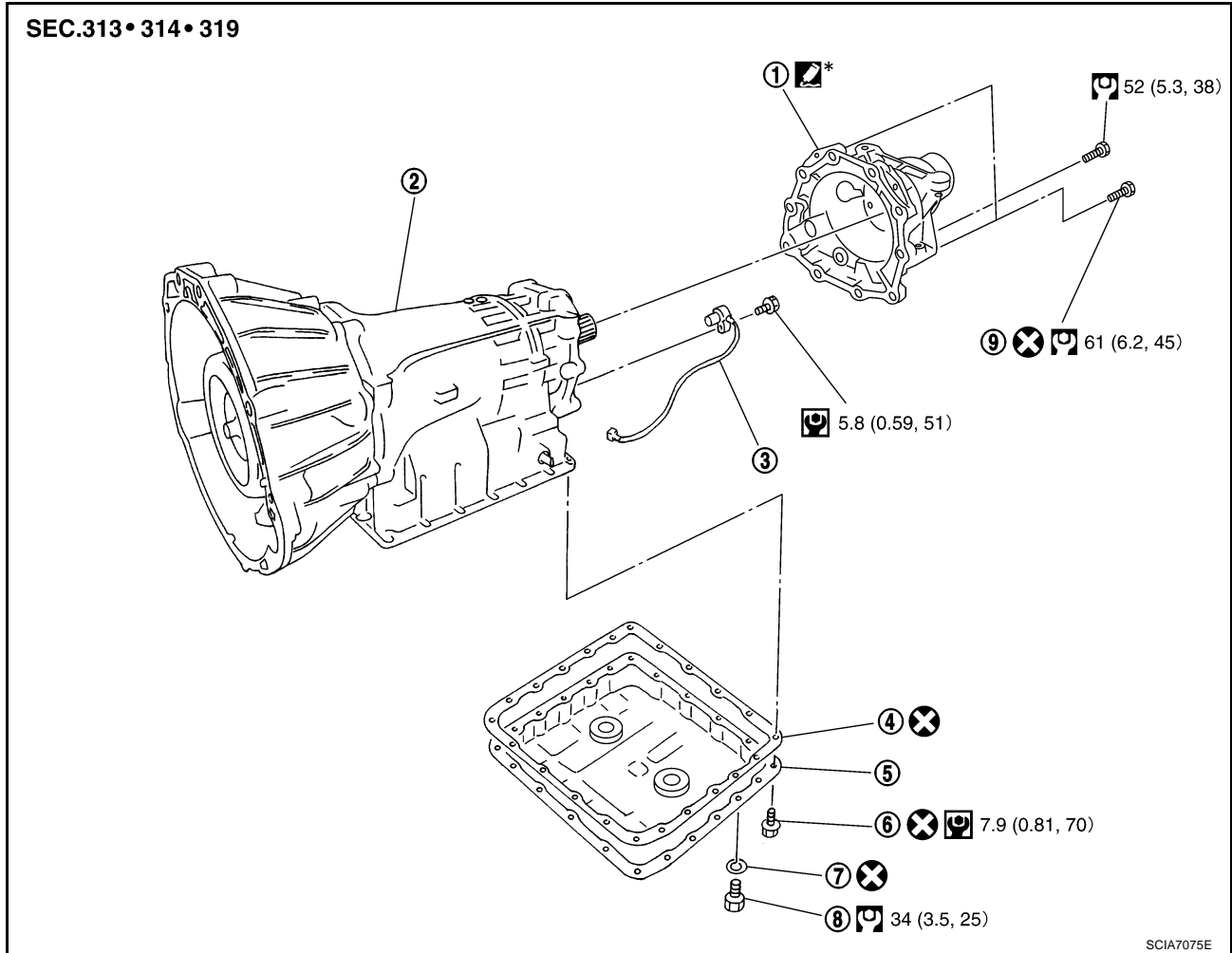


# ON-VEHICLE SERVICE

## Revolution Sensor Components (2WD Models Only) REMOVAL AND INSTALLATION

GCS0008B

### Components



- |                      |               |                          |
|----------------------|---------------|--------------------------|
| 1. Rear extension    | 2. A/T        | 3. Revolution sensor     |
| 4. Oil pan gasket    | 5. Oil pan    | 6. Oil pan mounting bolt |
| 7. Drain plug gasket | 8. Drain plug | 9. Self-sealing bolt     |

Refer to GI section to make sure icons (symbol marks) in the figure. Refer to [GI-10, "Components"](#).

However, refer to the following symbols for others.

: Apply Anaerobic Liquid Gasket (Loctite 518) or equivalent.

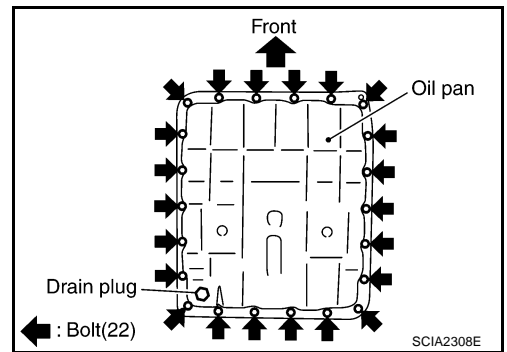
### Removal

1. Disconnect the battery cable from the negative terminal.
2. Drain ATF through drain hole.
3. Remove rear propeller shaft. Refer to [PR-8, "Removal and Installation"](#).
4. Remove control cable from A/T assembly. Refer to [AT-216, "Control Cable Removal and Installation"](#).



# ON-VEHICLE SERVICE

5. Remove oil pan and oil pan gasket.



6. 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 friction material is detected, replace radiator after repair of A/T. Refer to [CO-40, "RADIATOR"](#) (for YD25DDTi engine) or [CO-13, "RADIATOR"](#) (for VQ40DE engine).

7. Support A/T assembly using a transmission jack.

**CAUTION:**

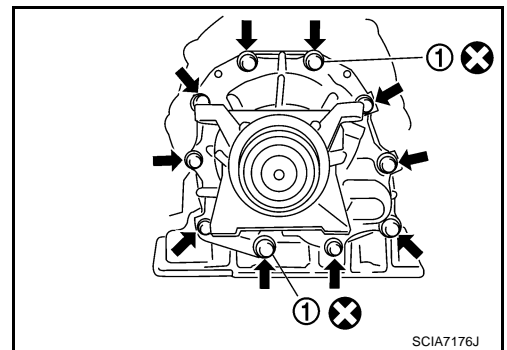
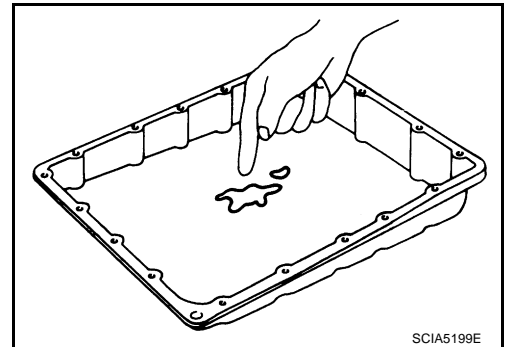
When setting transmission jack, place wooden blocks to prevent from damaging control valve with TCM and transmission case.

8. Remove A/T cross member. Refer to [AT-254, "Removal and Installation \(YD25DDTi Models\)"](#) (for YD25DDTi engine) or [AT-258, "Removal and Installation \(VQ40DE Models\)"](#) (for VQ40DE engine).

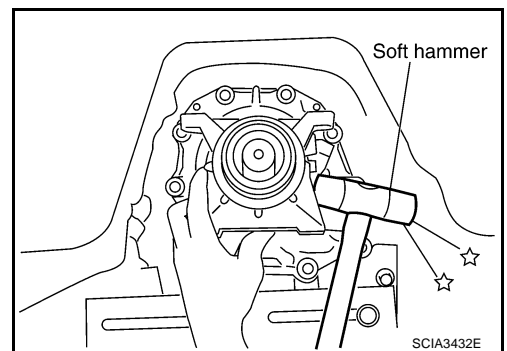
9. Remove tightening bolts for rear extension assembly and transmission case.

- Self-sealing bolt (1)

←: Bolt (10)

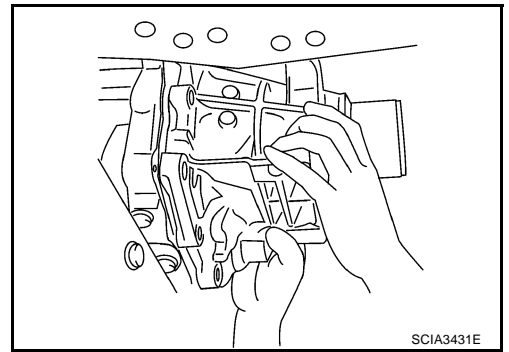


10. Tap rear extension assembly with a soft hammer.



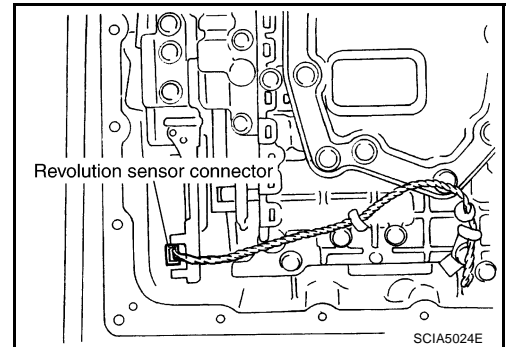
## ON-VEHICLE SERVICE

11. Remove rear extension assembly from transmission case. (With needle bearing.)

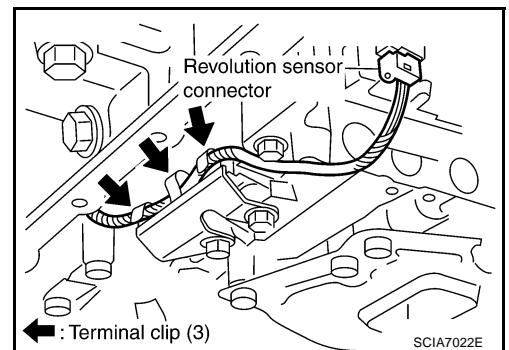


12. Disconnect revolution sensor connector.

**CAUTION:**  
Be careful not to damage connector



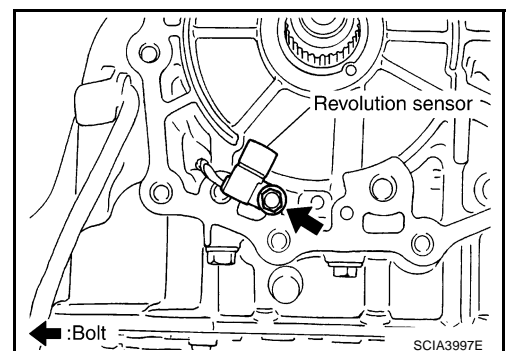
13. Straighten terminal clips to free revolution sensor harness.



14. Remove revolution sensor from transmission case.

**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.



# ON-VEHICLE SERVICE

## Installation

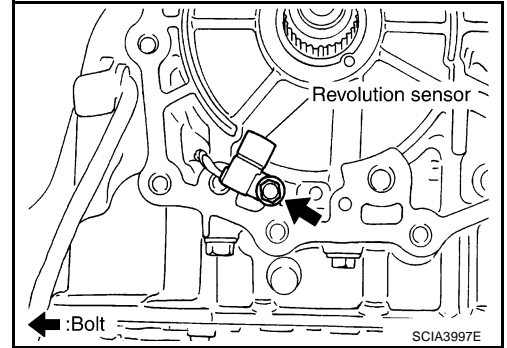
### CAUTION:

After completing installation, check A/T fluid leakage, A/T fluid level and A/T position. Refer to [AT-11, "Checking A/T Fluid"](#) , [AT-217, "Checking of A/T Position"](#) .

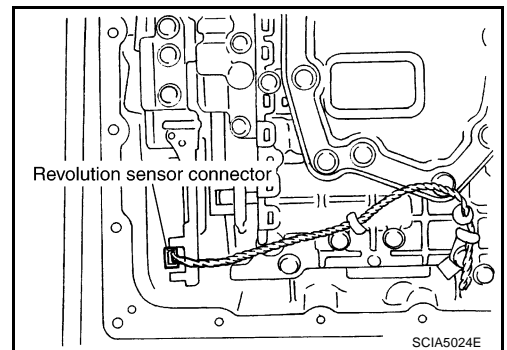
1. Install revolution sensor in transmission case. Tighten a necessary bolt for revolution sensor with specified torque. Refer to [AT-244, "REMOVAL AND INSTALLATION"](#) .

### CAUTION:

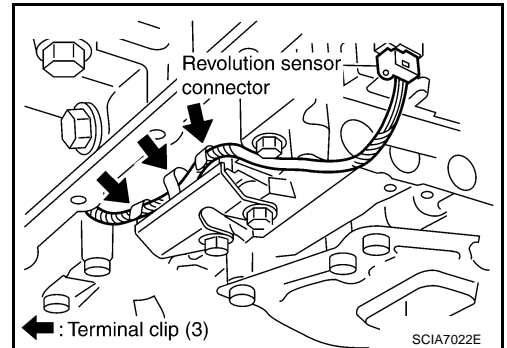
- Do not subject it to impact by dropping or hitting it.
- Do not disassemble.
- Do not allow metal filings, etc. to get on the sensor's front edge magnetic area.
- Do not place in an area affected by magnetism.



2. Connect revolution sensor connector.



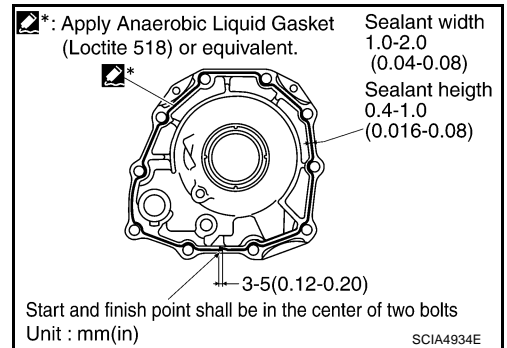
3. Securely fasten revolution sensor harness with clips.



4. Apply Anaerobic Liquid Gasket (Loctite 518) or equivalent 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.

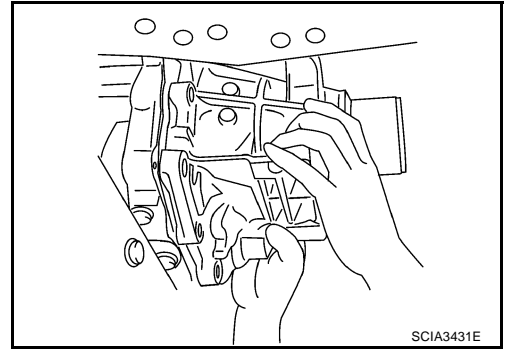


## ON-VEHICLE SERVICE

5. 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.



6. Tighten rear extension assembly bolts to the specified torque. Refer to [AT-244, "Components"](#).

- Self-sealing bolt (1)

←: Bolt (10)

7. Install A/T cross member. Refer to [AT-254, "Removal and Installation \(YD25DDTi Models\)"](#) (for YD25DDTi engine) or [AT-258, "Removal and Installation \(VQ40DE Models\)"](#) (for VQ40DE engine).

8. Install oil pan to transmission case.

- a. Install oil pan gasket to oil pan.

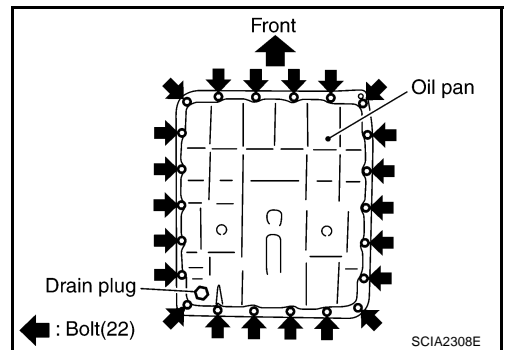
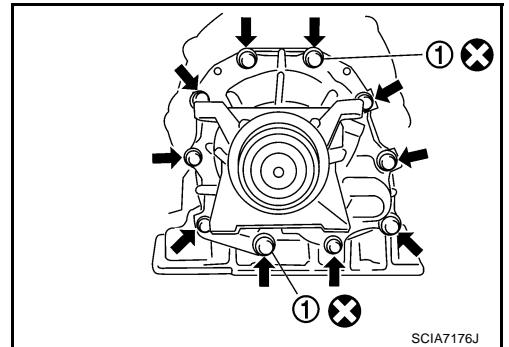
**CAUTION:**

- Do not reuse oil pan gasket.
- Install it in the direction to align hole positions.
- Completely remove all moisture, oil and old gasket, etc. from oil pan gasket mounting surface.

- b. Install oil pan (with oil pan gasket) to transmission case.

**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.



- c. Tighten oil pan mounting bolts to the specified torque in numerical order shown in the figure after temporarily tightening them. Refer to [AT-244, "Components"](#).

**CAUTION:**

Do not reuse oil pan mounting bolts.

9. Install drain plug gasket and drain plug to oil pan, and then tighten drain plug to the specified torque. Refer to [AT-244, "Components"](#).

**CAUTION:**

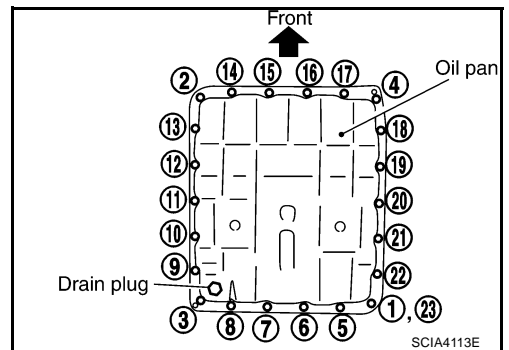
Do not reuse drain plug gasket.

10. Install control cable to A/T assembly. Refer to [AT-216, "Control Cable Removal and Installation"](#).

11. Install rear propeller shaft. Refer to [PR-8, "Removal and Installation"](#).

12. Pour ATF into A/T assembly. Refer to [AT-10, "Changing A/T Fluid"](#).

13. Connect the battery cable to the negative terminal.



# AIR BREATHER HOSE

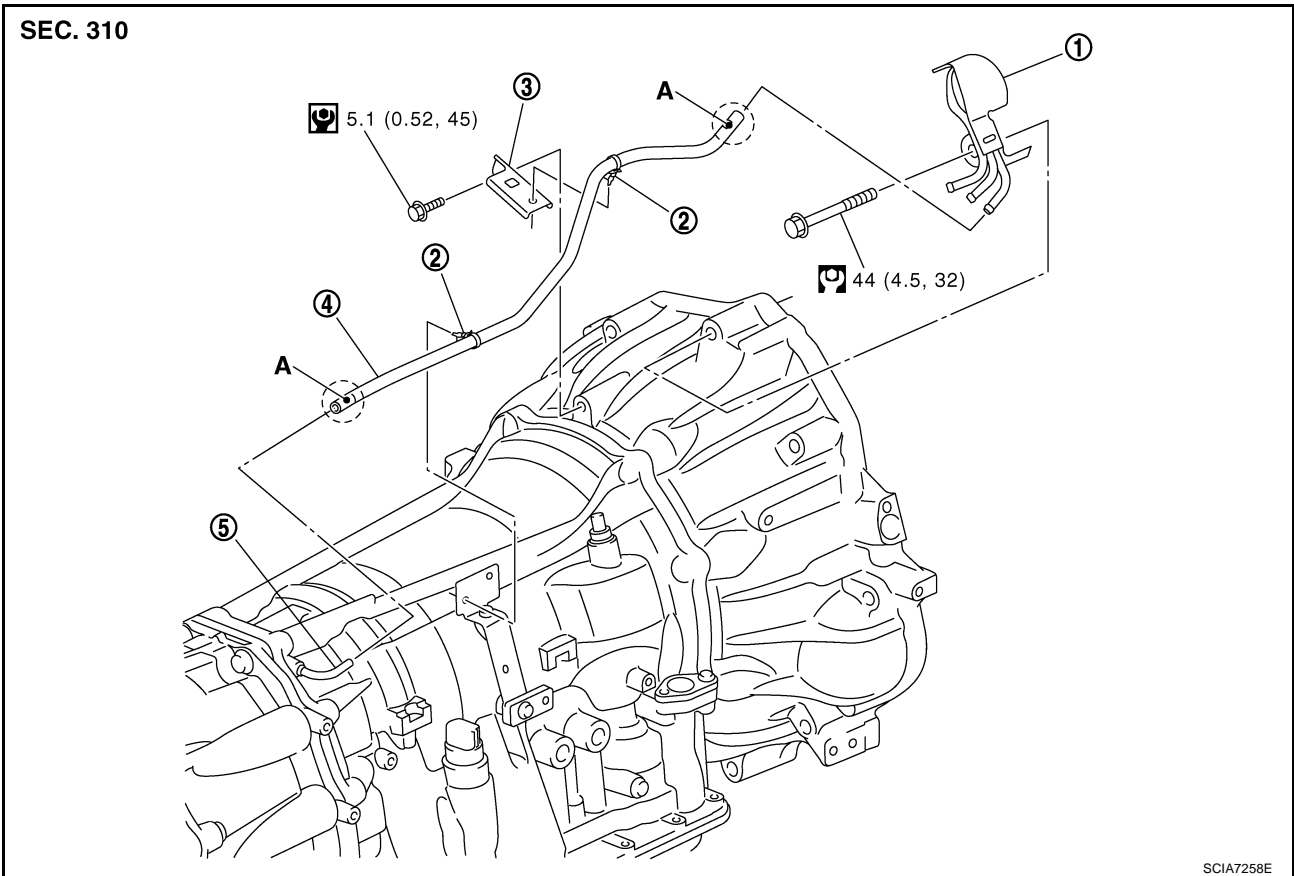
PFP:31098

## AIR BREATHER HOSE

### Removal and Installation YD25DDTI MODELS

GCS0008C

Refer to the figure below for A/T air breather hose removal and installation procedure.



- |                              |                      |            |
|------------------------------|----------------------|------------|
| 1. Air breather tube bracket | 2. Clip              | 3. Bracket |
| 4. A/T air breather hose     | 5. Air breather tube |            |
| A. Paint mark                |                      |            |

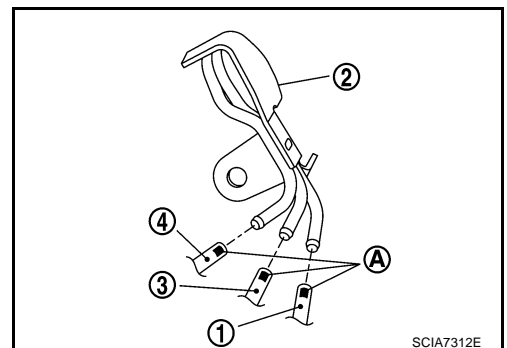
Refer to GI section to make sure icons (symbol marks) in the figure. Refer to [GI-10, "Components"](#).

#### CAUTION:

- When installing A/T air breather hose, do not to crush or block by folding or bending the hose.
- When inserting A/T air breather hose to air breather tube, be sure to insert it fully until its end reaches the tube bend portion.
- Install A/T air breather hose to air breather tube so that the paint mark is facing upward.
- Ensure clips are securely installed to brackets when installing A/T air breather hose to brackets.
- Install A/T air breather hose (1) to A/T breather tube bracket (2) so that the paint mark (A) is facing upward as shown in the figure.

#### NOTE:

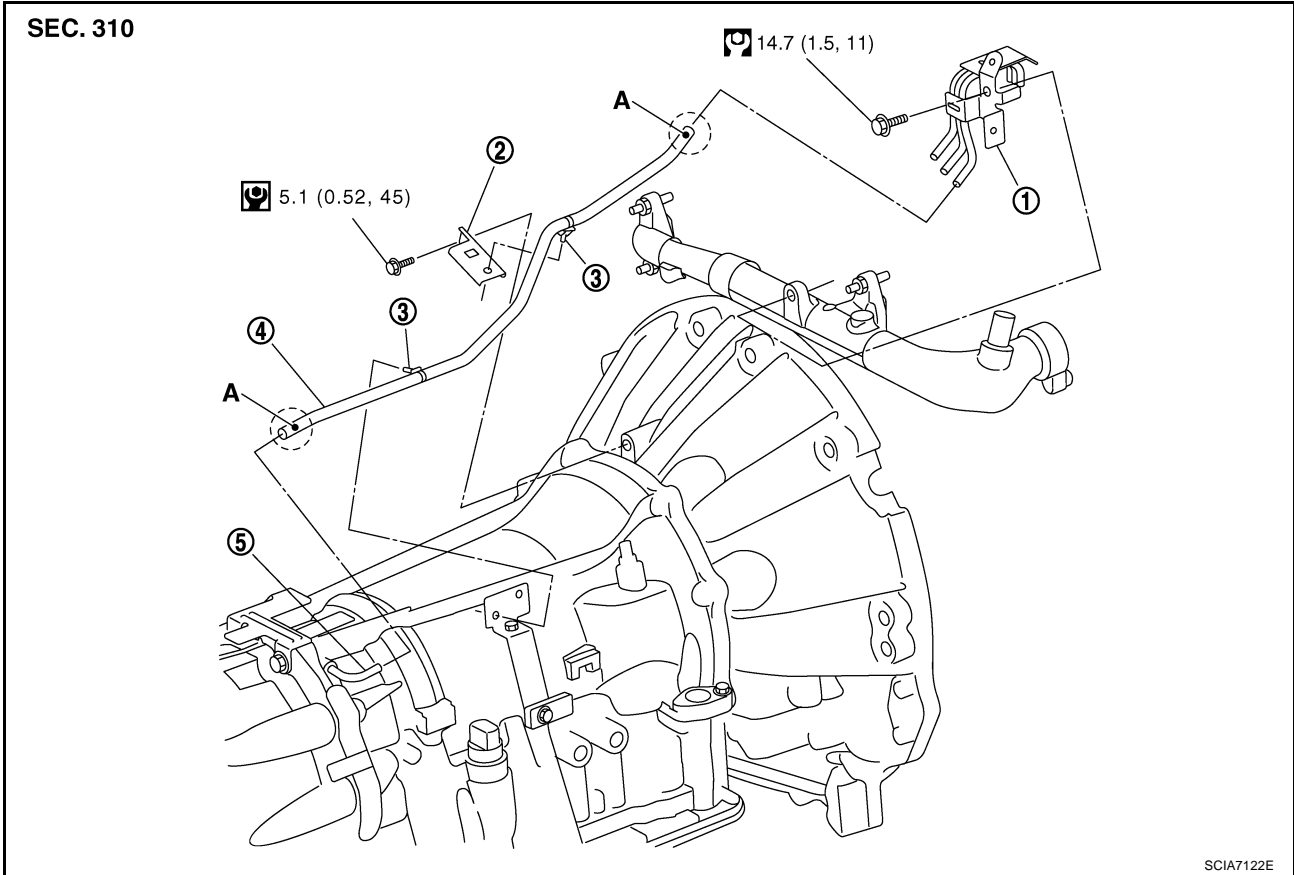
- The paint mark (A) on A/T air breather hose (1) indicates "1".
- The paint mark (A) on transfer control device air breather hose (3) indicates "2". (4WD models)
- The paint mark (A) on transfer air breather hose (4) indicates "3". (4WD models)



# AIR BREATHER HOSE

## VQ40DE MODELS

Refer to the figure below for air breather hose removal and installation procedure.



- |                              |                      |         |
|------------------------------|----------------------|---------|
| 1. Air breather tube bracket | 2. Bracket           | 3. Clip |
| 4. A/T air breather hose     | 5. Air breather tube |         |
| A. Paint mark                |                      |         |

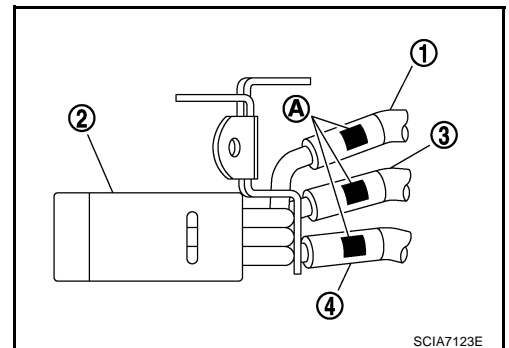
Refer to GI section to make sure icons (symbol marks) in the figure. Refer to [GI-10, "Components"](#).

### CAUTION:

- When installing A/T air breather hose, do not to crush or block by folding or bending the hose.
- When inserting A/T air breather hose to air breather tube, be sure to insert it fully until its end reaches the tube bend portion.
- Install A/T air breather hose to air breather tube so that the paint mark is facing upward.
- Ensure clips are securely installed to brackets when installing A/T air breather hose to brackets.
- Install A/T air breather hose (1) to air breather tube bracket (2) so that the paint mark (A) is facing upward as shown in the figure.

### NOTE:

- The paint mark (A) on A/T air breather hose (1) indicates "1".
- The paint mark (A) on transfer control device air breather hose (3) indicates "2". (4WD models)
- The paint mark (A) on transfer air breather hose (4) indicates "3". (4WD models)



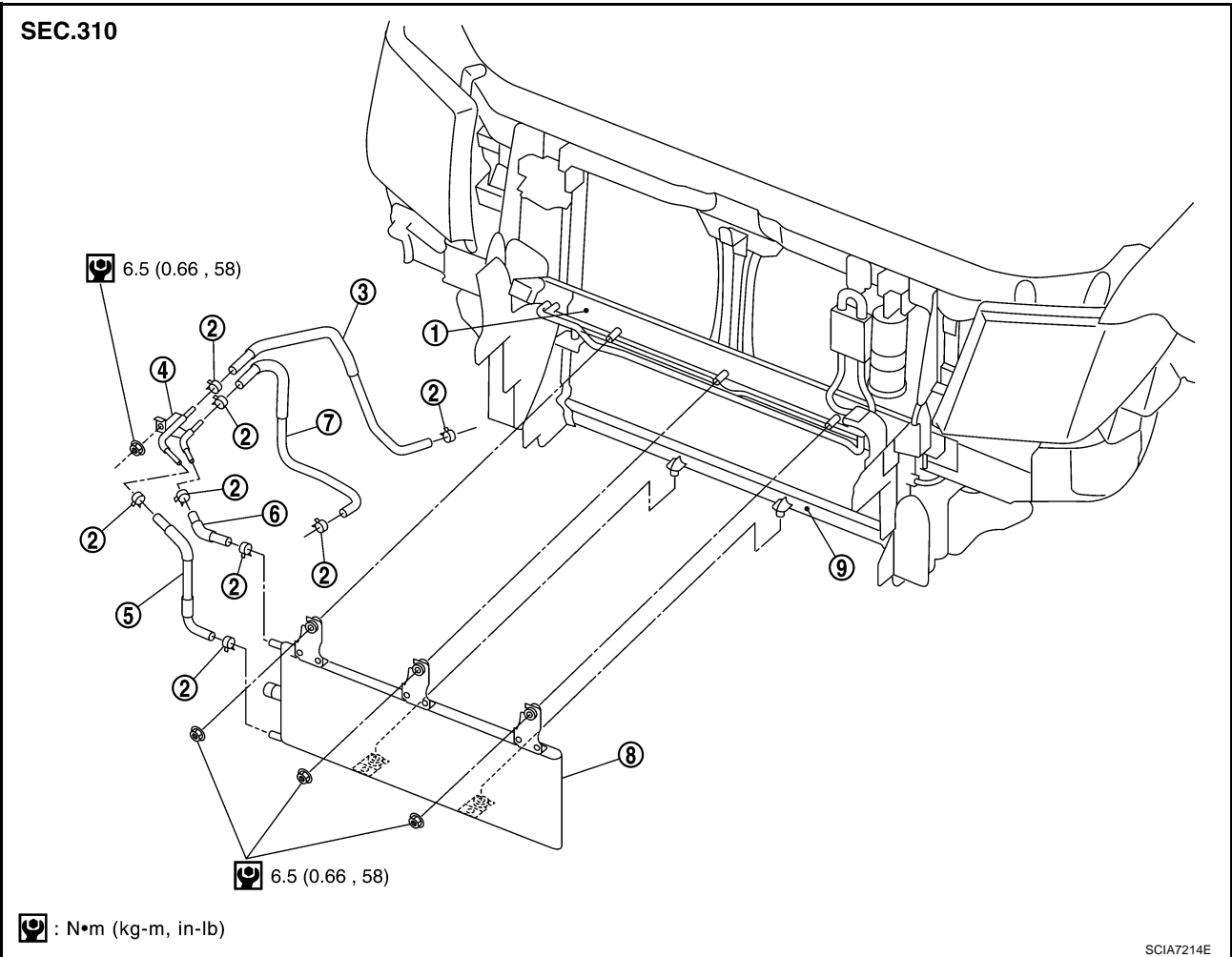
# A/T FLUID COOLER

## A/T FLUID COOLER

PFP:21600

### Removal and Installation COMPONENTS

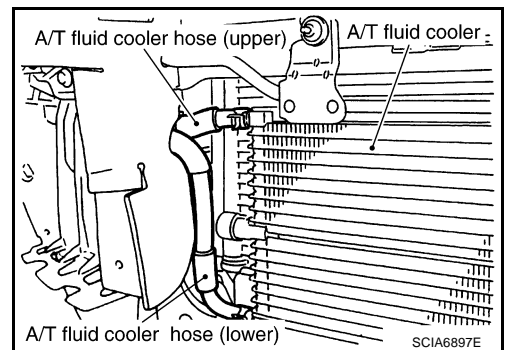
GCS0008D



- |  |                                  |   |
|--|----------------------------------|---|
| 1. Radiator core support lower                           | 2. Hose clamp                    | 3. A/T fluid cooler hose (fluid cooler tube to A/T) |
| 4. Fluid cooler tube                                     | 5. A/T fluid cooler hose (lower) | 6. A/T fluid cooler hose (upper)                    |
| 7. A/T fluid cooler hose (radiator to fluid cooler tube) | 8. A/T fluid cooler              | 9. Radiator   |

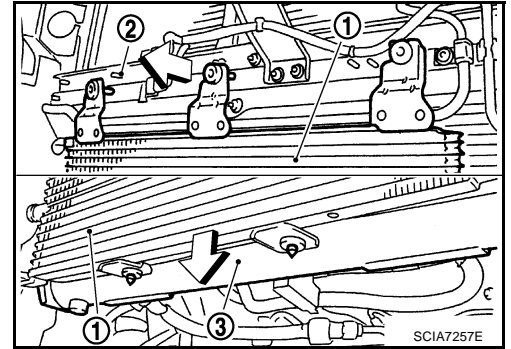
### REMOVAL

1. Remove front bumper. Refer to [EI-15, "Removal and Installation"](#).
2. Remove A/T fluid cooler hose (upper) and A/T fluid cooler hose (lower) from A/T fluid cooler.



## A/T FLUID COOLER

- Pull A/T fluid cooler (1) toward the front of the vehicle to release from radiator core support lower (2), and then slide A/T fluid cooler (1) downward to remove radiator (3).



### INSTALLATION

#### CAUTION:

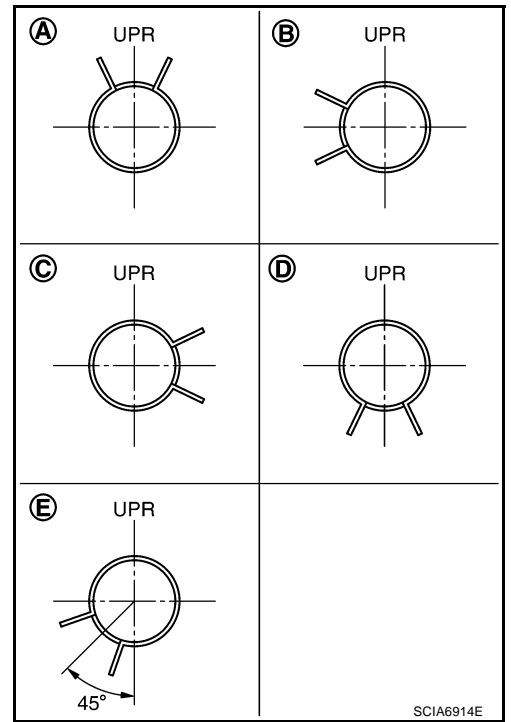
After completing installation, check for A/T fluid leakage and fluid level. Refer to [AT-11, "Checking A/T Fluid"](#).

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

Hose name	Hose end	Paint mark	Position of hose clamp*
A/T fluid cooler hose (fluid cooler tube to A/T)	A/T side	Facing upward	A
	Fluid cooler tube side	Facing to the right of the vehicle	B
A/T fluid cooler hose (lower)	A/T fluid cooler side	Facing upward	B
	Fluid cooler tube side	Facing upward	C
A/T fluid cooler hose (upper)	A/T fluid cooler side	Facing upward	B
	Fluid cooler tube side	Facing upward	A
A/T fluid cooler hose (radiator to fluid cooler tube)	Radiator side	Facing upward	D
	Fluid cooler tube side	Facing upward	E

\*: Refer to the illustrations for the specific position each hose clamp tab.

- The illustrations indicate the view from the hose ends.
- When installing hose clamps center line of each clamp tab should be positioned as shown in the figure.



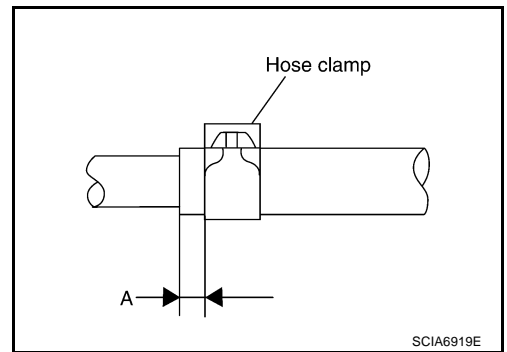


## A/T FLUID COOLER

- Set hose clamps at 5 - 9 mm (0.20 - 0.35 in) from the edge of A/T fluid cooler hose.

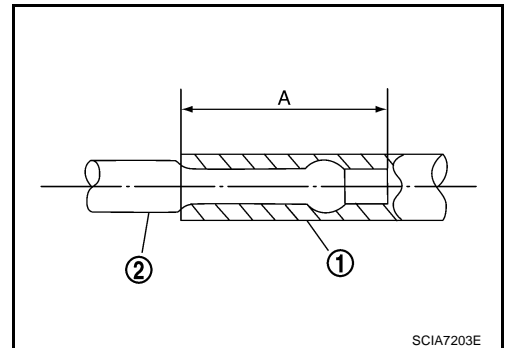
**Distance "A": 5 - 9 mm (0.20 - 0.35 in)**

- Hose clamp should not interfere with the bulge of A/T fluid cooler tube.



- Insert A/T fluid cooler hose (1) 30 - 33 mm (1.18 - 1.30 in) from the end of A/T fluid cooler tube (2).

**Distance "A": 30 - 33 mm (1.18 - 1.30 in)**



A  
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L  
M

# TRANSMISSION ASSEMBLY

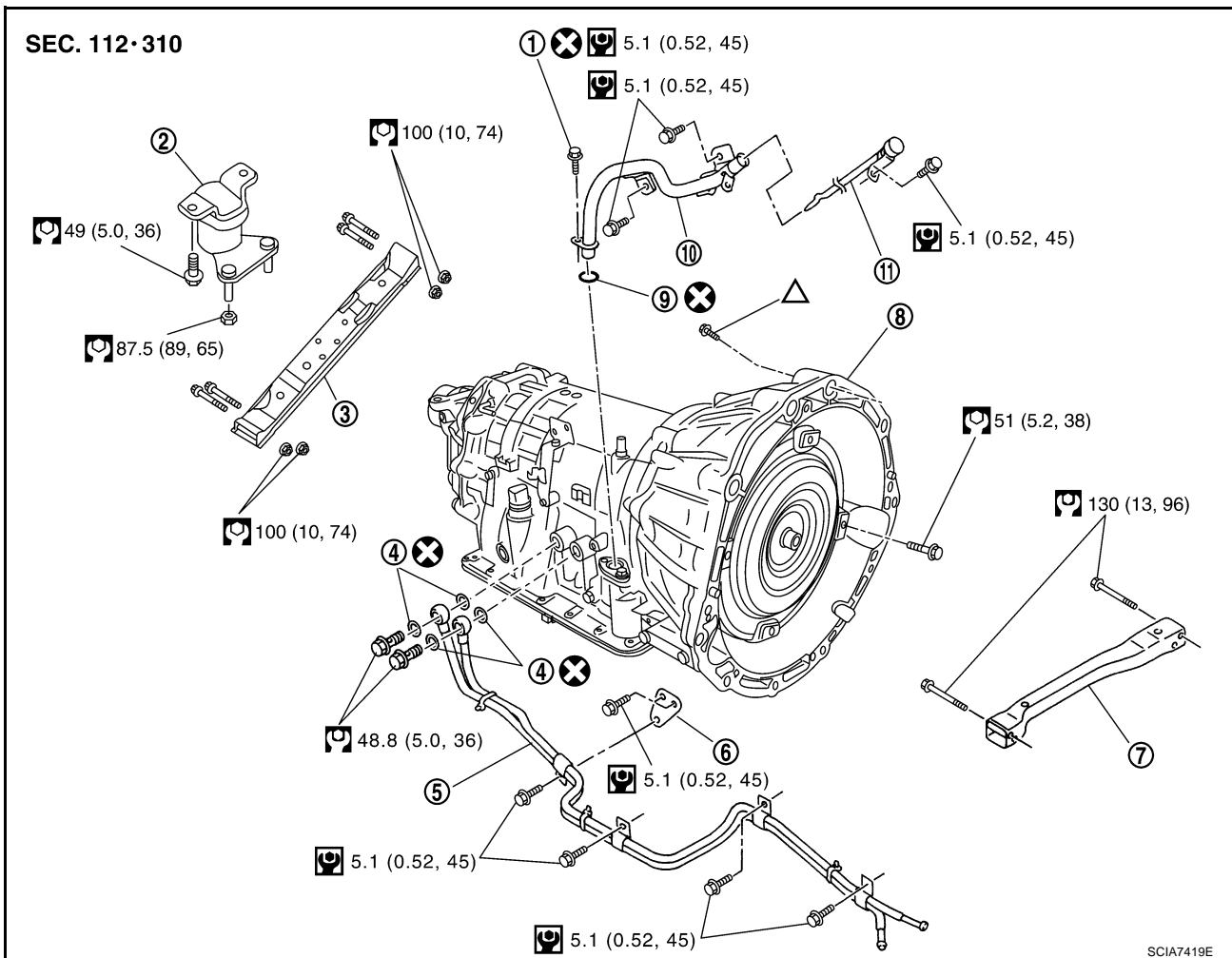
## TRANSMISSION ASSEMBLY

PFP:31020

### Removal and Installation (YD25DDTi Models) COMPONENTS

GCS0008E

#### 2WD models



SCIA7419E

- |                             |                                     |                     |
|-----------------------------|-------------------------------------|---------------------|
| 1. Self-sealing bolt        | 2. Engine mounting insulator (rear) | 3. A/T cross member |
| 4. Copper washer            | 5. Fluid cooler tube                | 6. Bracket          |
| 7. Front cross member       | 8. A/T assembly                     | 9. O-ring           |
| 10. A/T fluid charging pipe | 11. A/T fluid level gauge           |                     |

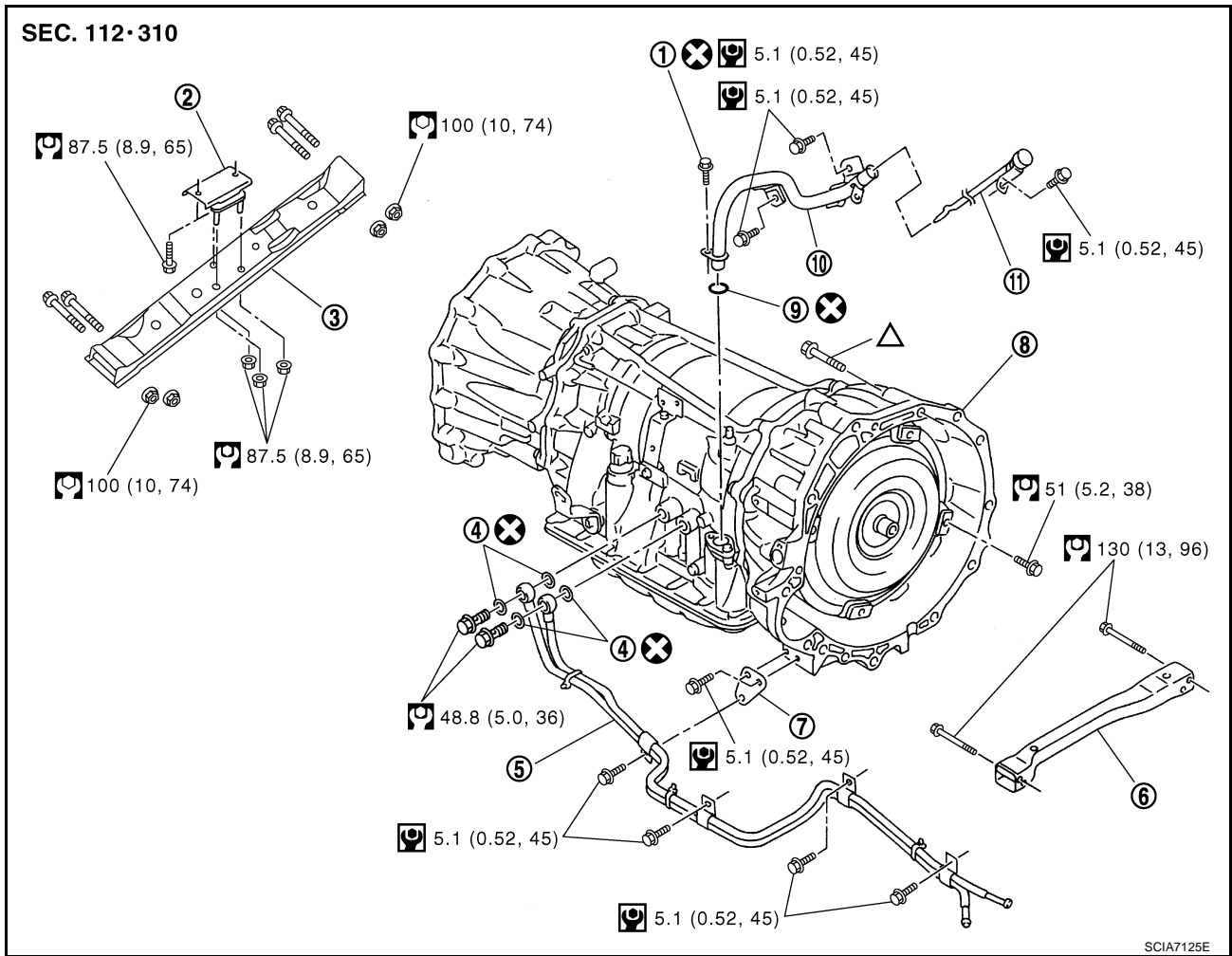
Refer to GI section to make sure icons (symbol marks) in the figure. Refer to [GI-10. "Components"](#).

However, refer to the following symbols for others.

△ : For tightening torque, refer to [AT-257. "INSTALLATION"](#).

# TRANSMISSION ASSEMBLY

## 4WD models



- |                             |                                     |                       |
|-----------------------------|-------------------------------------|-----------------------|
| 1. Self-sealing bolt        | 2. Engine mounting insulator (rear) | 3. A/T cross member   |
| 4. Copper washer            | 5. Fluid cooler tube                | 6. Front cross member |
| 7. Bracket                  | 8. A/T assembly                     | 9. O-ring             |
| 10. A/T fluid charging pipe | 11. A/T fluid level gauge           |                       |

Refer to GI section to make sure icons (symbol marks) in the figure. Refer to [GI-10, "Components"](#).

However, refer to the following symbols for others.

△ : For tightening torque, refer to [AT-257, "INSTALLATION"](#).

## REMOVAL

### CAUTION:

**When removing A/T assembly from engine, first remove the crankshaft position sensor (POS) from A/T assembly.**

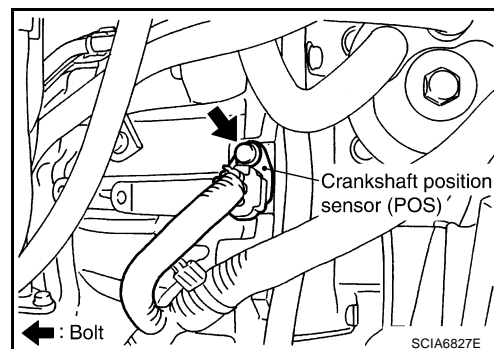
1. Disconnect the battery cable from the negative terminal.
2. Remove engine cover. Refer to [EM-164, "INTAKE MANIFOLD"](#).
3. Remove A/T fluid level gauge.

# TRANSMISSION ASSEMBLY

4. Remove crankshaft position sensor (POS) from the 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.



5. Remove front spoiler center and front engine undercover. Refer to [EI-15, "FRONT BUMPER"](#).
6. Remove front cross member.
7. Remove main muffler. Refer to [EX-3, "Components \(YD Engine Models\)"](#).
8. Remove rear propeller shaft. Refer to [PR-8, "Removal and Installation"](#).
9. Remove front propeller shaft. (4WD models) Refer to [PR-4, "Removal and Installation"](#).
10. Remove starter motor. Refer to [SC-37, "REMOVAL \(YD ENGINE MODELS\)"](#).
11. Remove control cable and bracket. Refer to [AT-216, "Control Cable Removal and Installation"](#).
12. Disconnect fluid cooler tube.
13. Remove A/T fluid charging pipe from A/T assembly.
14. Remove O-ring from A/T fluid charging pipe.
15. Plug up openings such as A/T fluid charging pipe hole, etc.
16. Remove rear plate cover from rear plate.
17. Turn crankshaft to access and remove the four bolts for drive plate and torque converter.

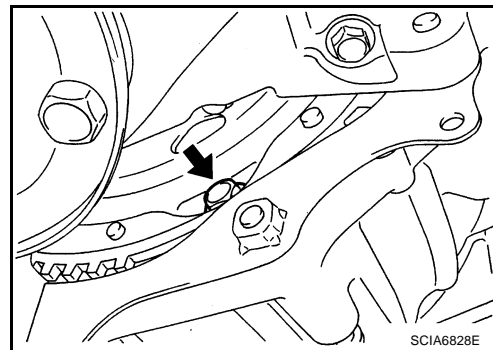
**CAUTION:**

**When turning crankshaft, turn it clockwise as viewed from the front of engine.**

18. Support A/T assembly using a transmission jack.

**CAUTION:**

**When setting transmission jack, be careful not to allow it to collide against drain plug.**



19. Remove protector (fuel tube), and then disconnect fuel tubes. (4WD models) Refer to [FL-19, "FUEL COOLER"](#).

20. Remove A/T cross member.

21. Remove engine mounting insulator (rear) from A/T assembly.

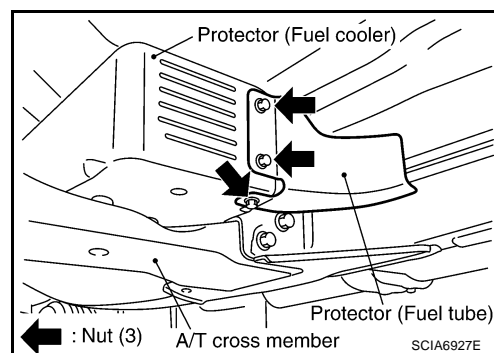
22. Disconnect the following:

- A/T assembly harness connector
- ATP switch connector (4WD models)
- 4LO switch connector (4WD models)
- Wait detection switch connector (4WD models)
- Transfer control device connector (4WD models)

23. Support transfer assembly using a transmission jack. (4WD models)

24. Remove the wiring harness from bracket.

25. Remove bolts fixing A/T assembly to engine assembly.



# TRANSMISSION ASSEMBLY

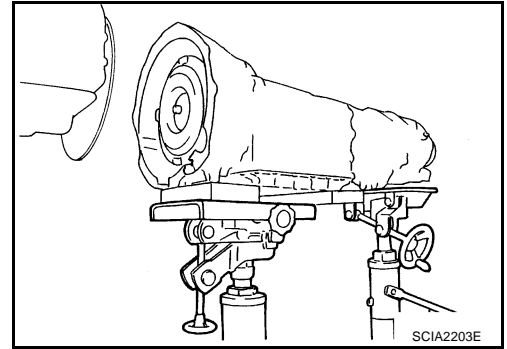
26. Remove A/T assembly from the vehicle.

**CAUTION:**

- Secure torque converter to prevent it from dropping.
- Secure A/T assembly to a transmission jack.

27. Remove A/T air breather hose. Refer to [AT-249, "YD25DDTI MODELS"](#).

28. Remove transfer assembly from A/T assembly. (4WD models)  
Refer to [TF-116, "Removal and Installation"](#).



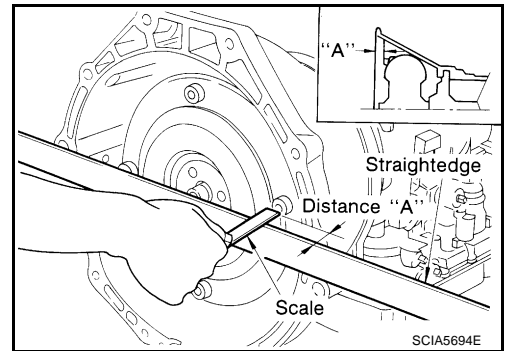
A  
B  
AT

## INSPECTION

### Installation and Inspection of Torque Converter

- After inserting a torque converter to a A/T, be sure to check distance "A" to ensure it is within the reference value limit.

**Distance "A": 25.0 mm (0.98 in) or more**



D  
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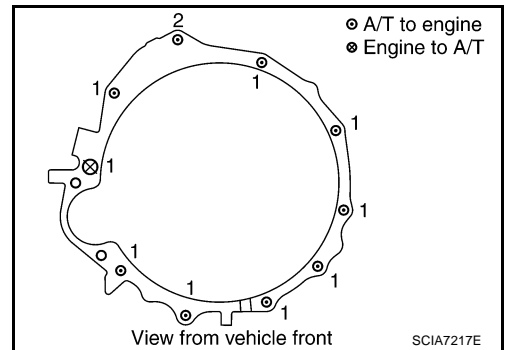
## INSTALLATION

Install the removed parts in the reverse order of the removal, while paying attention to the following work.

- When installing A/T assembly to engine assembly, tighten bolts to the specified torque using sequence shown.

Bolt No.	1	2*
Number of bolts	9	1
Tightening torque N·m (kg·m, ft·lb)	44 (4.5, 32)	

\*: Tightening the bolt with air breather tube bracket.

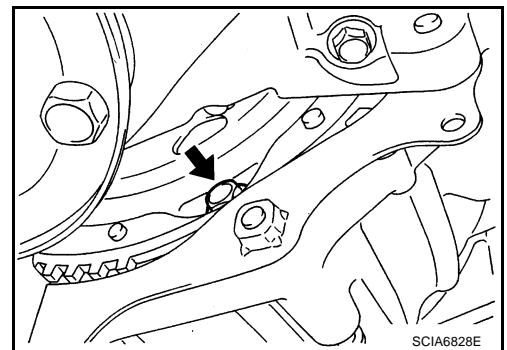


I  
J  
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L  
M

- 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 [AT-254, "COMPONENTS"](#).

**CAUTION:**

- When turning crankshaft, turn it clockwise as viewed from the front of 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-229, "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-180, "Components"](#).
- After completing installation, check A/T fluid leakage, A/T fluid level, and A/T positions of A/T. Refer to [AT-11, "Checking A/T Fluid"](#), [AT-217, "Checking of A/T Position"](#).

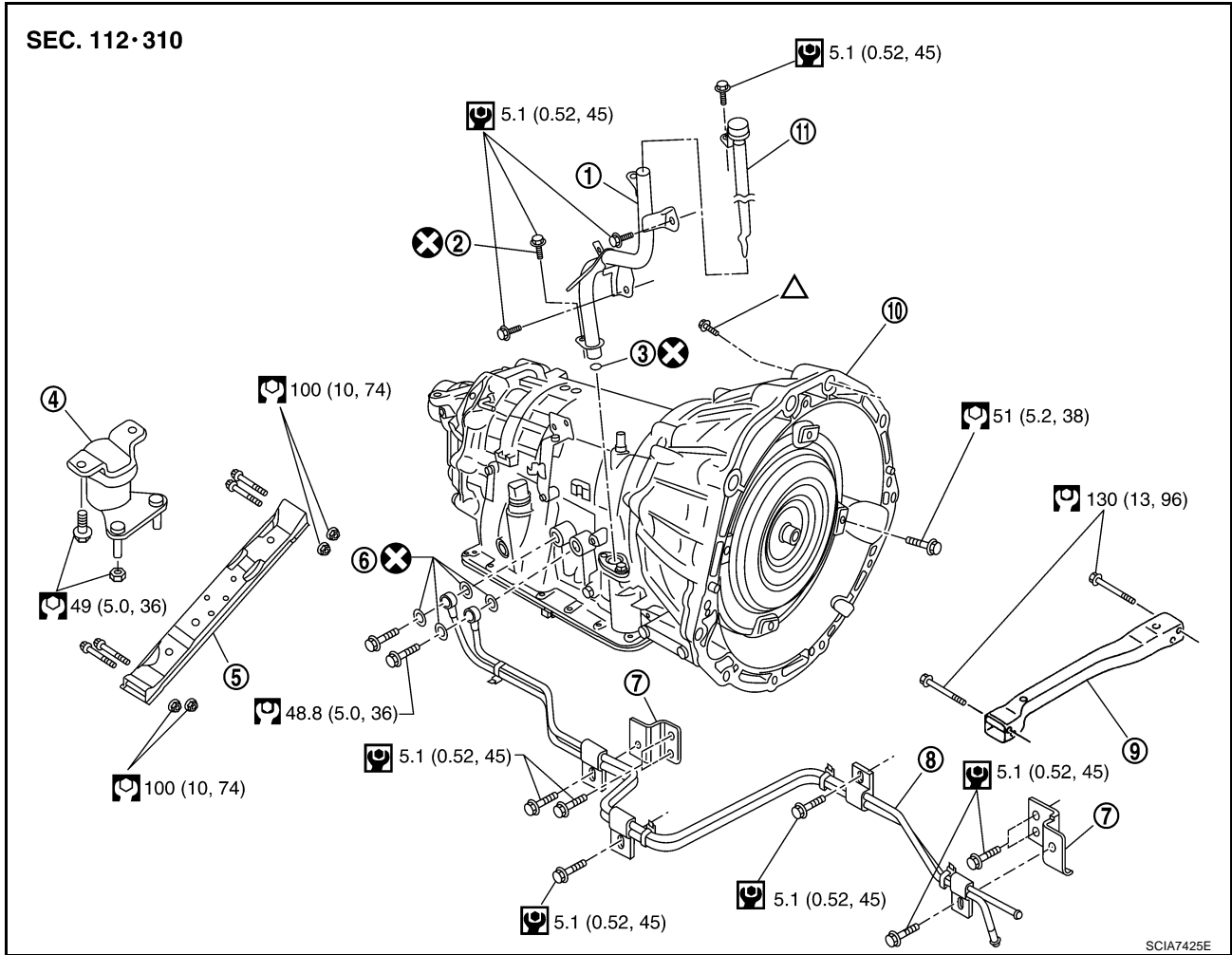


# TRANSMISSION ASSEMBLY

GCS00090

## Removal and Installation (VQ40DE Models) COMPONENTS

### 2WD models



- |                                     |                           |                       |
|-------------------------------------|---------------------------|-----------------------|
| 1. A/T fluid charging pipe          | 2. Self-sealing bolt      | 3. O-ring             |
| 4. Engine mounting insulator (rear) | 5. A/T cross member       | 6. Copper washer      |
| 7. Bracket                          | 8. Fluid cooler tube      | 9. Front cross member |
| 10. A/T assembly                    | 11. A/T fluid level gauge |                       |

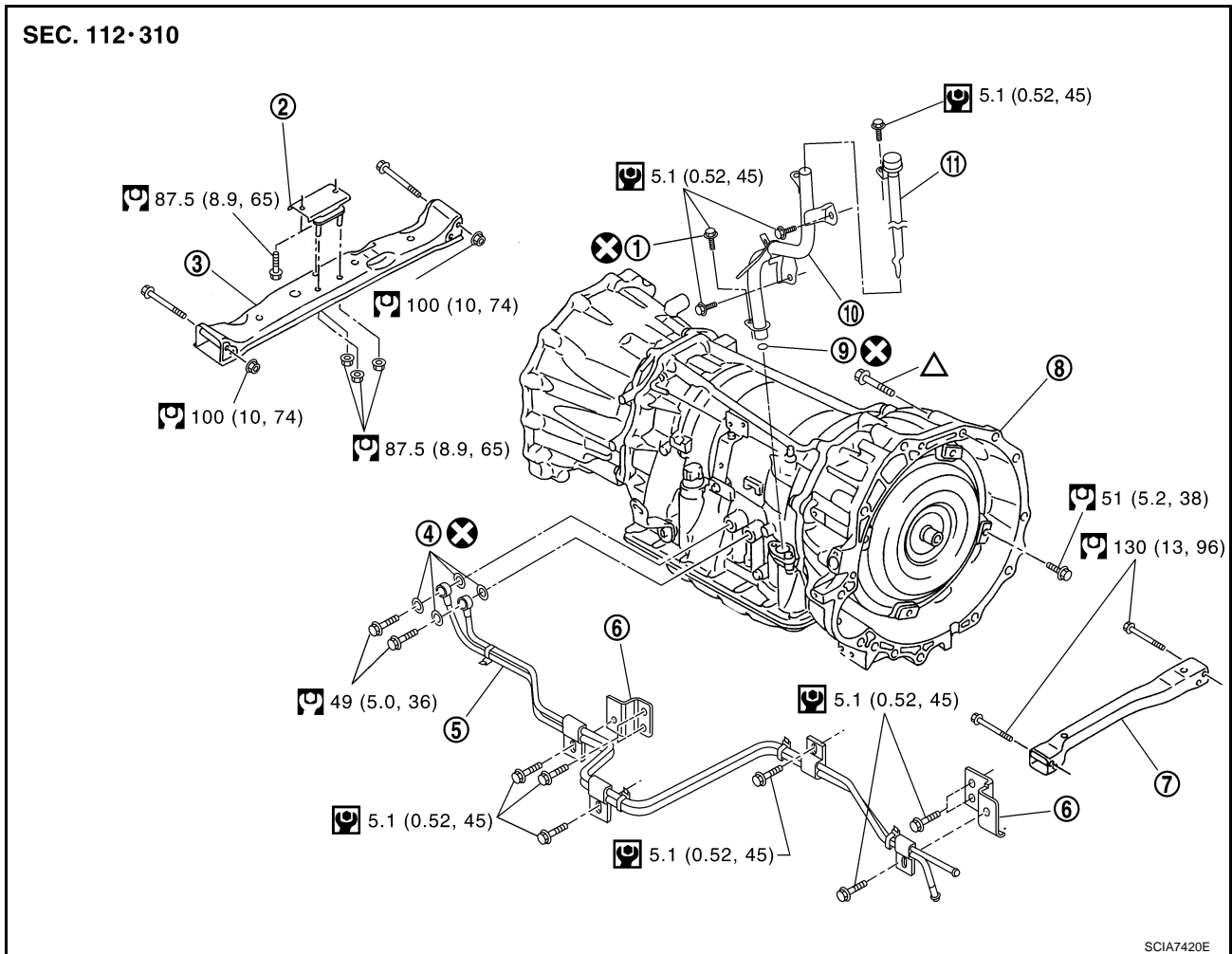
Refer to GI section to make sure icons (symbol marks) in the figure. Refer to [GI-10, "Components"](#).

However, refer to the following symbols for others.

△ : For tightening torque, refer to [AT-261, "INSTALLATION"](#).

# TRANSMISSION ASSEMBLY

4WD models



- |                             |                                     |                     |
|-----------------------------|-------------------------------------|---------------------|
| 1. Self-sealing bolt        | 2. Engine mounting insulator (rear) | 3. A/T cross member |
| 4. Copper washer            | 5. Fluid cooler tube                | 6. Bracket          |
| 7. Front cross member       | 8. A/T assembly                     | 9. O-ring           |
| 10. A/T fluid charging pipe | 11. A/T fluid level gauge           |                     |

Refer to GI section to make sure icons (symbol marks) in the figure. Refer to [GI-10, "Components"](#).

However, refer to the following symbols for others.

△ : For tightening torque, refer to [AT-261, "INSTALLATION"](#).

## REMOVAL

### CAUTION:

When removing the A/T assembly from engine, first remove the crankshaft position sensor (POS) from A/T assembly.

1. Disconnect the battery cable from the negative terminal.
2. Remove A/T fluid level gauge.
3. Remove the LH fender protector.



# TRANSMISSION ASSEMBLY

4. Remove crankshaft position sensor (POS) from the 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.

5. Remove from spoiler center and front engine undercover. Refer to [EI-15, "FRONT BUMPER"](#) .

6. Remove front cross member.

7. Remove starter motor. Refer to [SC-36, "REMOVAL \(VQ ENGINE MODELS\)"](#) .

8. Remove rear propeller shaft. Refer to [PR-8, "Removal and Installation"](#) .

9. Remove front propeller shaft. (4WD models) Refer to [PR-4, "Removal and Installation"](#) .

10. Remove left and right exhaust front tubes. Refer to [EX-2, "Components \(VQ Engine Models\)"](#) .

11. Remove control cable and bracket. Refer to [AT-216, "Control Cable Removal and Installation"](#) .

12. Disconnect fluid cooler tube.

13. Remove rear cover plate.

14. Turn the crankshaft to access and remove the four bolts for drive plate and torque converter.

**CAUTION:**

**When turning the crankshaft, turn it clockwise as viewed from the front of the engine.**

15. Support A/T assembly using a transmission jack.

**CAUTION:**

**When setting transmission jack, be careful not to allow it to collide against drain plug.**

16. Remove A/T cross member.

17. Remove engine mounting insulator (rear) from A/T assembly.

18. Tilt the A/T slightly to gain clearance between the body and the A/T, then disconnect the air breather hoses. Refer to [AT-250, "VQ40DE MODELS"](#) .

19. Disconnect the following:

- A/T assembly harness connector
- Transfer control device connector (4WD models)
- Wait detection switch connector (4WD models)
- ATP switch connector (4WD models)
- 4LO switch connector (4WD models)

20. Support transfer assembly using a transmission jack. (4WD models)

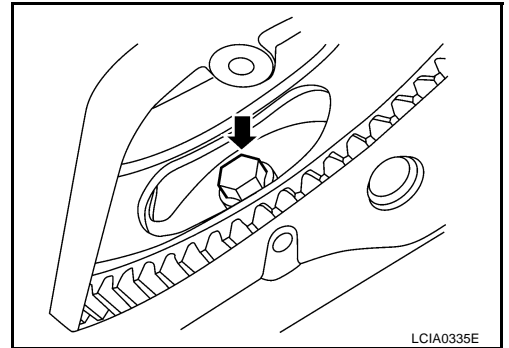
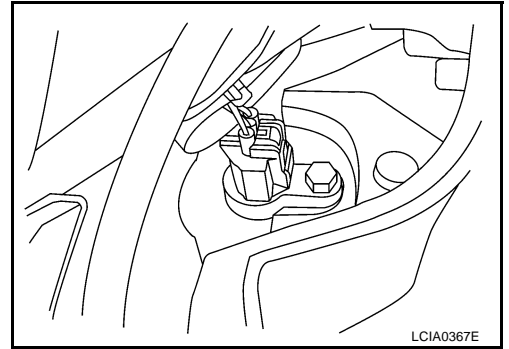
21. Remove the wiring harness from the retainers.

22. Remove A/T fluid charging pipe from A/T assembly.

23. Remove O-ring from A/T fluid charging pipe.

24. Plug up openings such as A/T fluid charging pipe hole, etc.

25. Remove bolts fixing A/T assembly to engine assembly.





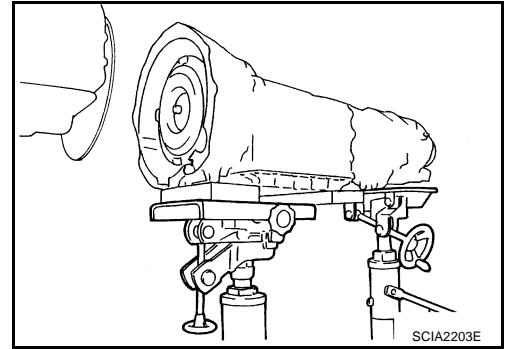
# TRANSMISSION ASSEMBLY

26. Remove A/T assembly with transfer from the vehicle.

**CAUTION:**

- Secure torque converter to prevent it from dropping.
- Secure the A/T assembly to a transmission jack.

27. Remove transfer from A/T assembly. (4WD models) Refer to [TF-116, "Removal and Installation"](#) .



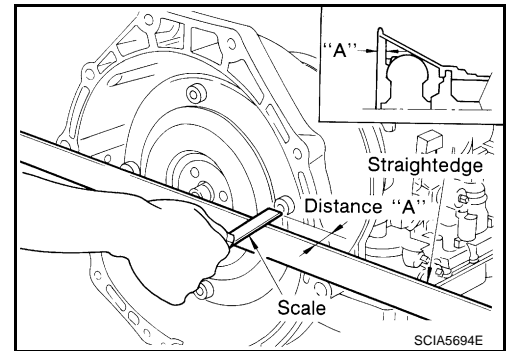
A  
B  
AT

## INSPECTION

### Installation and Inspection of Torque Converter

- After inserting a torque converter to a A/T, be sure to check distance "A" to ensure it is within the reference value limit.

**Distance "A": 25.0 mm (0.98 in) or more**



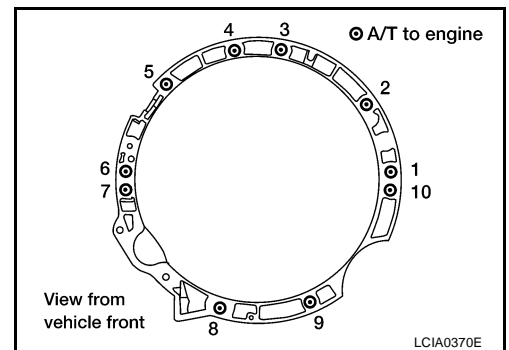
D  
E  
F  
G  
H

## 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 engine assembly, tighten bolts to the specified torque using sequence shown.

**Transmission bolts: 75 N-m (7.7 kg-m, 55 ft-lb)**

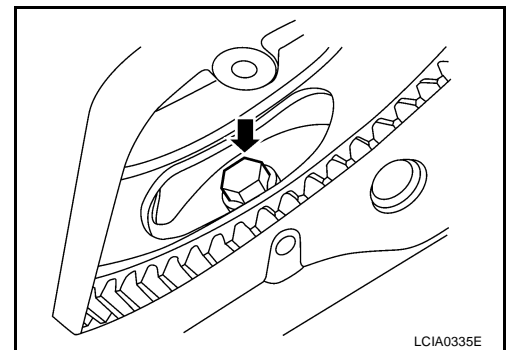


I  
J  
K  
L

- Align the positions of tightening bolts for drive plate with those of the torque converter, and temporarily tighten the bolts, and then tighten the bolts with the specified torque. Refer to [AT-258, "COMPONENTS"](#) .

**CAUTION:**

- When turning crankshaft, turn it clockwise as viewed from the front of 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-62, "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-28, "Components"](#) .
- After completing installation, check A/T fluid leakage, A/T fluid level, and A/T positions of A/T. Refer to [AT-11, "Checking A/T Fluid"](#) , [AT-217, "Checking of A/T Position"](#) .



M

# OVERHAUL

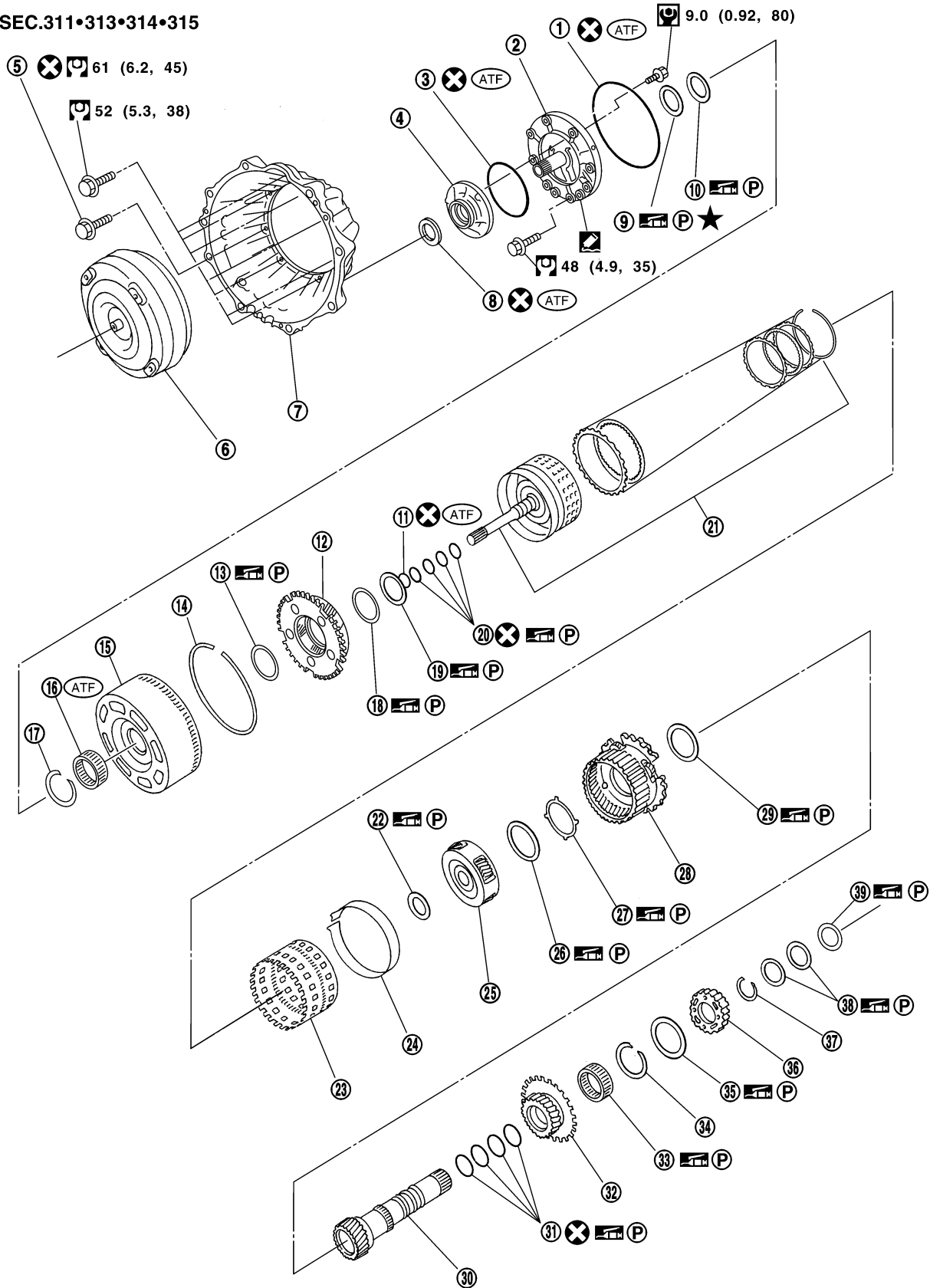
## OVERHAUL Components

PF0:0000

GCS0008F

### YD25DDTi models

SEC.311•313•314•315




SCIA7069E

# OVERHAUL

- 
- |                           |                              |                                     |
|---------------------------|------------------------------|-------------------------------------|
| 1. O-ring                 | 2. Oil pump cover            | 3. O-ring                           |
| 4. Oil pump housing       | 5. Self-sealing bolt         | 6. Torque converter                 |
| 7. Converter housing      | 8. Oil pump housing oil seal | 9. Bearing race                     |
| 10. Needle bearing        | 11. O-ring                   | 12. Front carrier assembly          |
| 13. Needle bearing        | 14. Snap ring                | 15. Front sun gear                  |
| 16. 3rd one-way clutch    | 17. Snap ring                | 18. Bearing race                    |
| 19. Needle bearing        | 20. Seal ring                | 21. Input clutch assembly           |
| 22. Needle bearing        | 23. Rear internal gear       | 24. Brake band                      |
| 25. Mid carrier assembly  | 26. Needle bearing           | 27. Bearing race                    |
| 28. Rear carrier assembly | 29. Needle bearing           | 30. Mid sun gear                    |
| 31. Seal ring             | 32. Rear sun gear            | 33. 1st one-way clutch              |
| 34. Snap ring             | 35. Needle bearing           | 36. High and low reverse clutch hub |
| 37. Snap ring             | 38. Bearing race             | 39. Needle bearing                  |

Refer to GI section to make sure icons (symbol marks) in the figure. Refer to [GI-10. "Components"](#).

However, refer to the following symbols for others.

 Apply Liquid Gasket (Three Bond 1215) or equivalent.

A

B

AT

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K

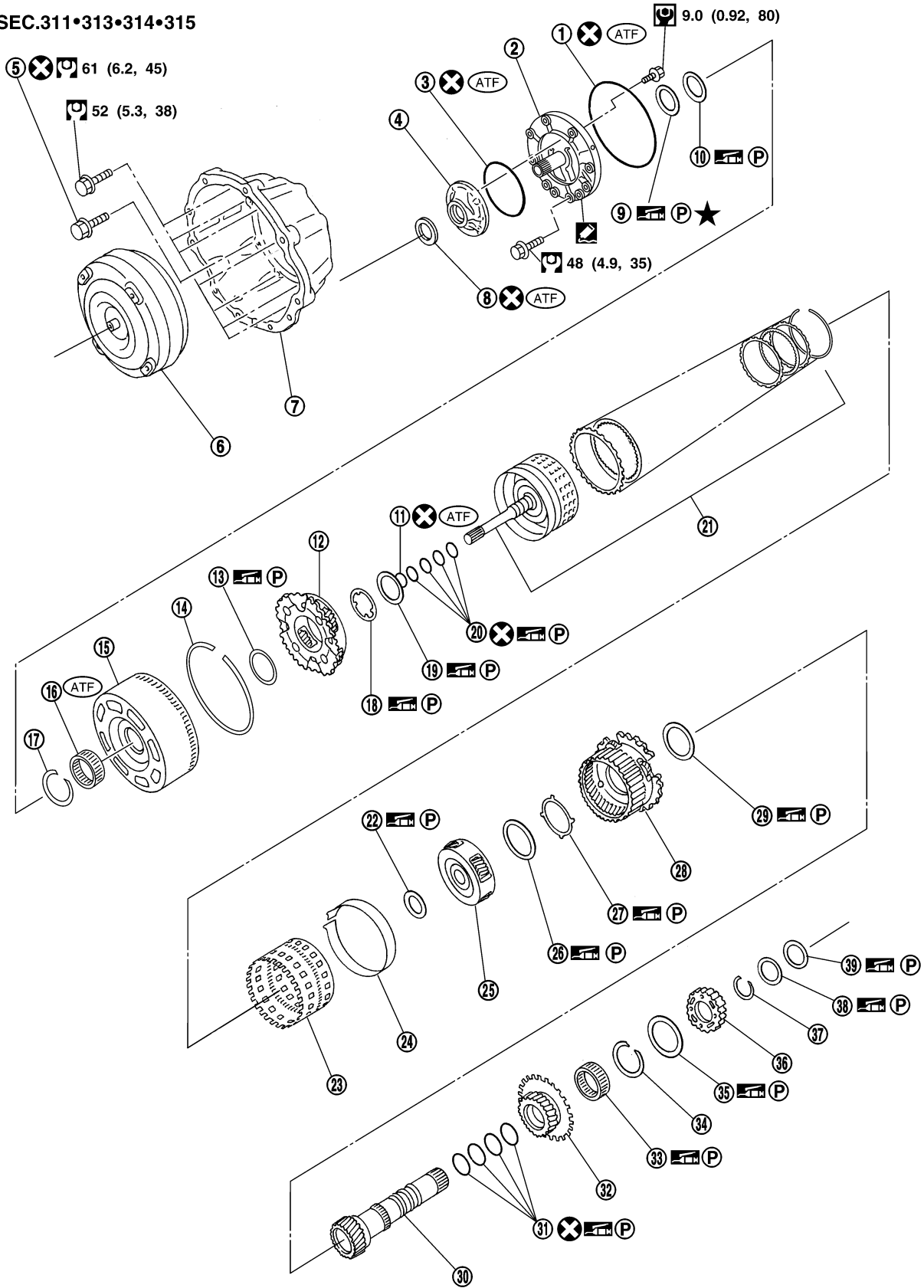
L

M

# OVERHAUL

## VQ40DE models

SEC.311•313•314•315



SCIA7040E


- |                     |                      |                     |
|---------------------|----------------------|---------------------|
| 1. O-ring           | 2. Oil pump cover    | 3. O-ring           |
| 4. Oil pump housing | 5. Self-sealing bolt | 6. Torque converter |

# OVERHAUL

- 
- |                           |                              |                                     |
|---------------------------|------------------------------|-------------------------------------|
| 7. Converter housing      | 8. Oil pump housing oil seal | 9. Bearing race                     |
| 10. Needle bearing        | 11. O-ring                   | 12. Front carrier assembly          |
| 13. Needle bearing        | 14. Snap ring                | 15. Front sun gear                  |
| 16. 3rd one-way clutch    | 17. Snap ring                | 18. Bearing race                    |
| 19. Needle bearing        | 20. Seal ring                | 21. Input clutch assembly           |
| 22. Needle bearing        | 23. Rear internal gear       | 24. Brake band                      |
| 25. Mid carrier assembly  | 26. Needle bearing           | 27. Bearing race                    |
| 28. Rear carrier assembly | 29. Needle bearing           | 30. Mid sun gear                    |
| 31. Seal ring             | 32. Rear sun gear            | 33. 1st one-way clutch              |
| 34. Snap ring             | 35. Needle bearing           | 36. High and low reverse clutch hub |
| 37. Snap ring             | 38. Bearing race             | 39. Needle bearing                  |

Refer to GI section to make sure icons (symbol marks) in the figure. Refer to [GI-10. "Components"](#).

However, refer to the following symbols for others.

 Apply Liquid Gasket (Three Bond 1215) or equivalent.

A

B

AT

D

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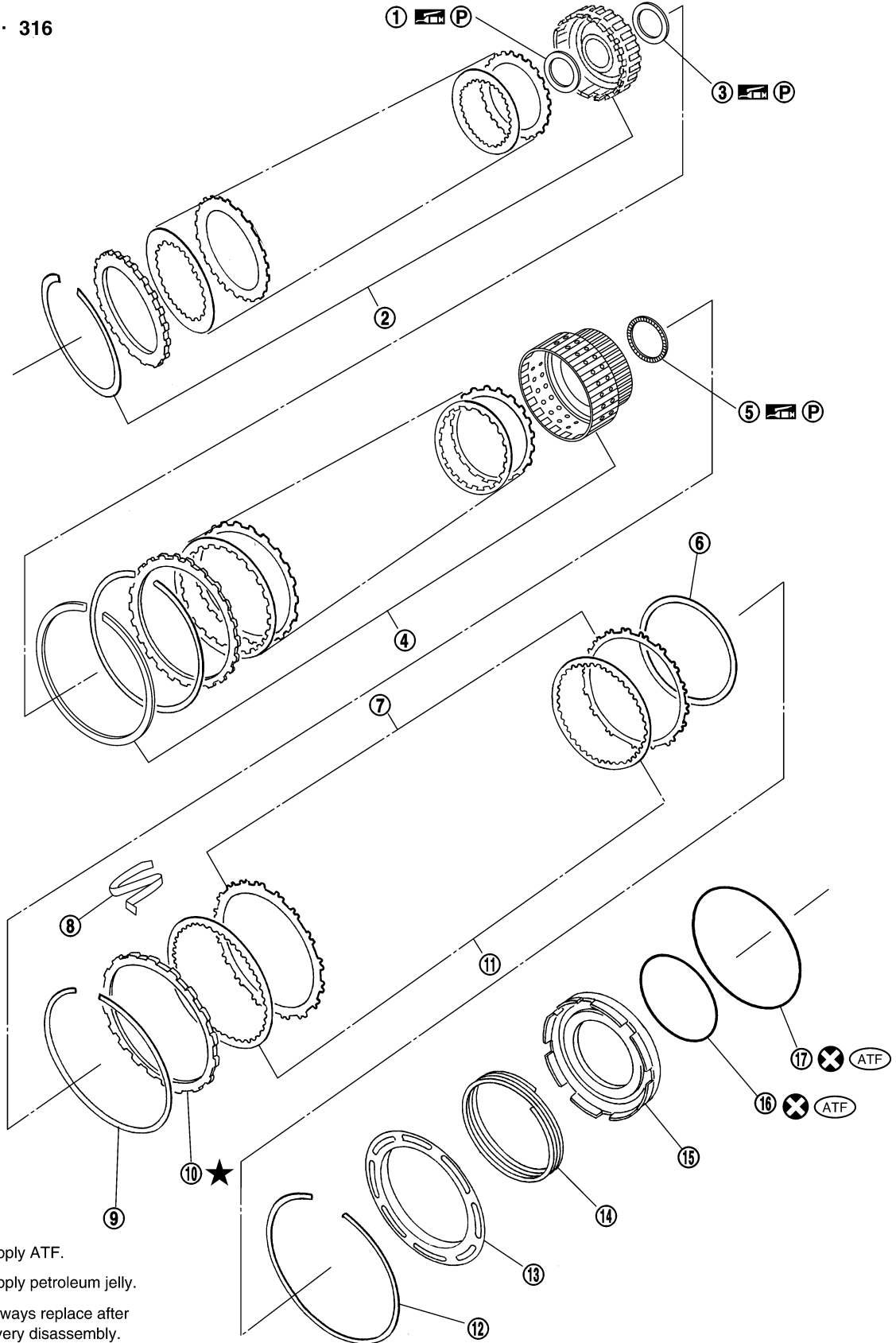
L

M

# OVERHAUL

## YD25DDTi models

SEC.315· 316



- (ATF) : Apply ATF.
- (P) : Apply petroleum jelly.
- (X) : Always replace after every disassembly.
- (★) : Select with proper thickness.

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

# OVERHAUL

- 
- |                                   |                               |                          |
|-----------------------------------|-------------------------------|--------------------------|
| 7. Reverse brake driven plate     | 8. N-spring                   | 9. Snap ring             |
| 10. Reverse brake retaining plate | 11. Reverse brake drive plate | 12. Snap ring            |
| 13. Spring retainer               | 14. Return spring             | 15. Reverse brake piston |
| 16. D-ring                        | 17. D-ring                    |                          |

A

B

**AT**

D

E

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K

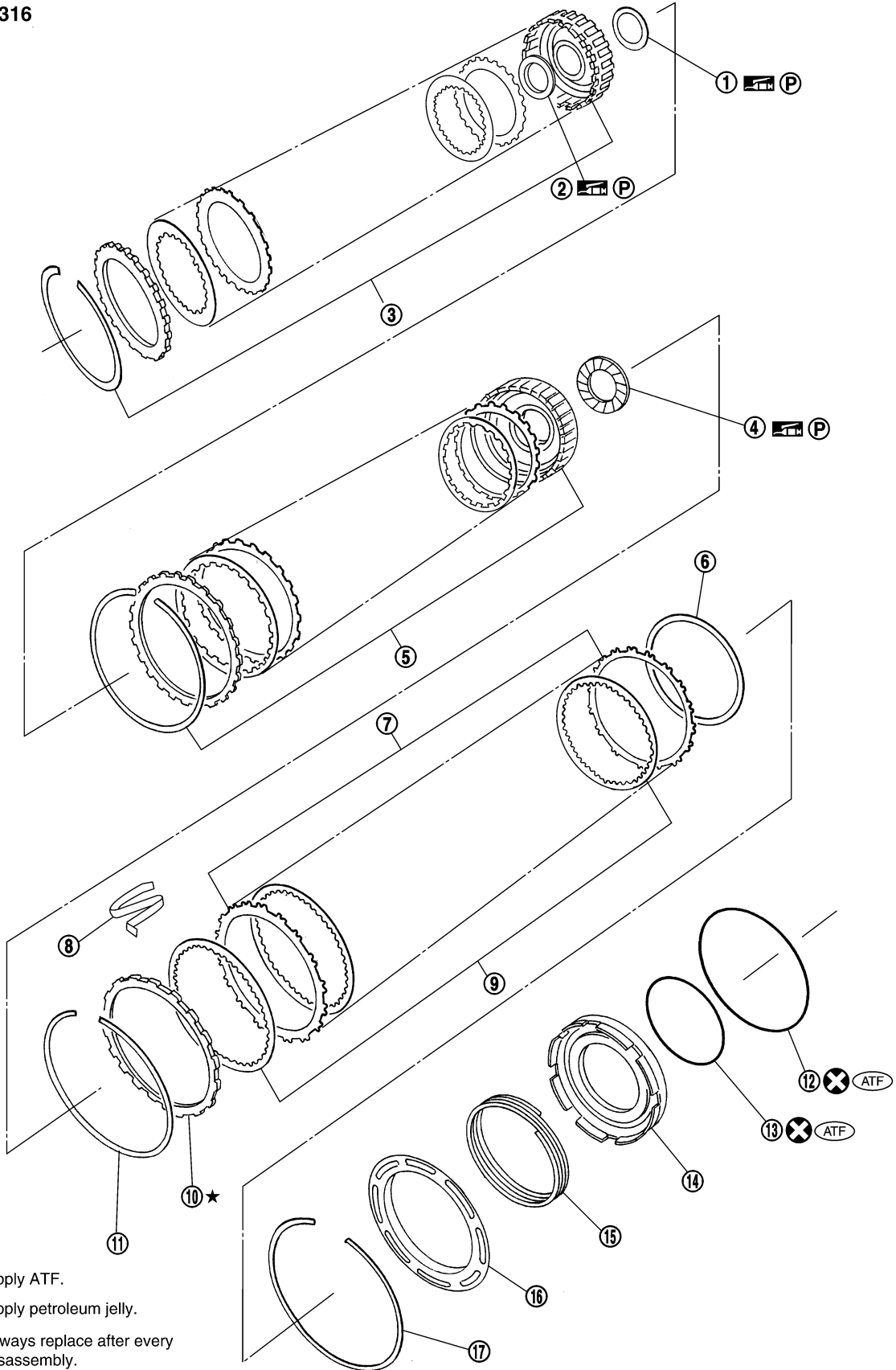
L

M

# OVERHAUL

## VQ40DE models

SEC.315•316



ATF : Apply ATF.

P : Apply petroleum jelly.

X : Always replace after every disassembly.

★ : Select with proper thickness.

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



# OVERHAUL

- 
- |                                   |                          |                              |
|-----------------------------------|--------------------------|------------------------------|
| 7. Reverse brake driven plate     | 8. N-spring              | 9. Reverse brake drive plate |
| 10. Reverse brake retaining plate | 11. Snap ring            | 12. D-ring                   |
| 13. D-ring                        | 14. Reverse brake piston | 15. Return spring            |
| 16. Spring retainer               | 17. Snap ring            |                              |

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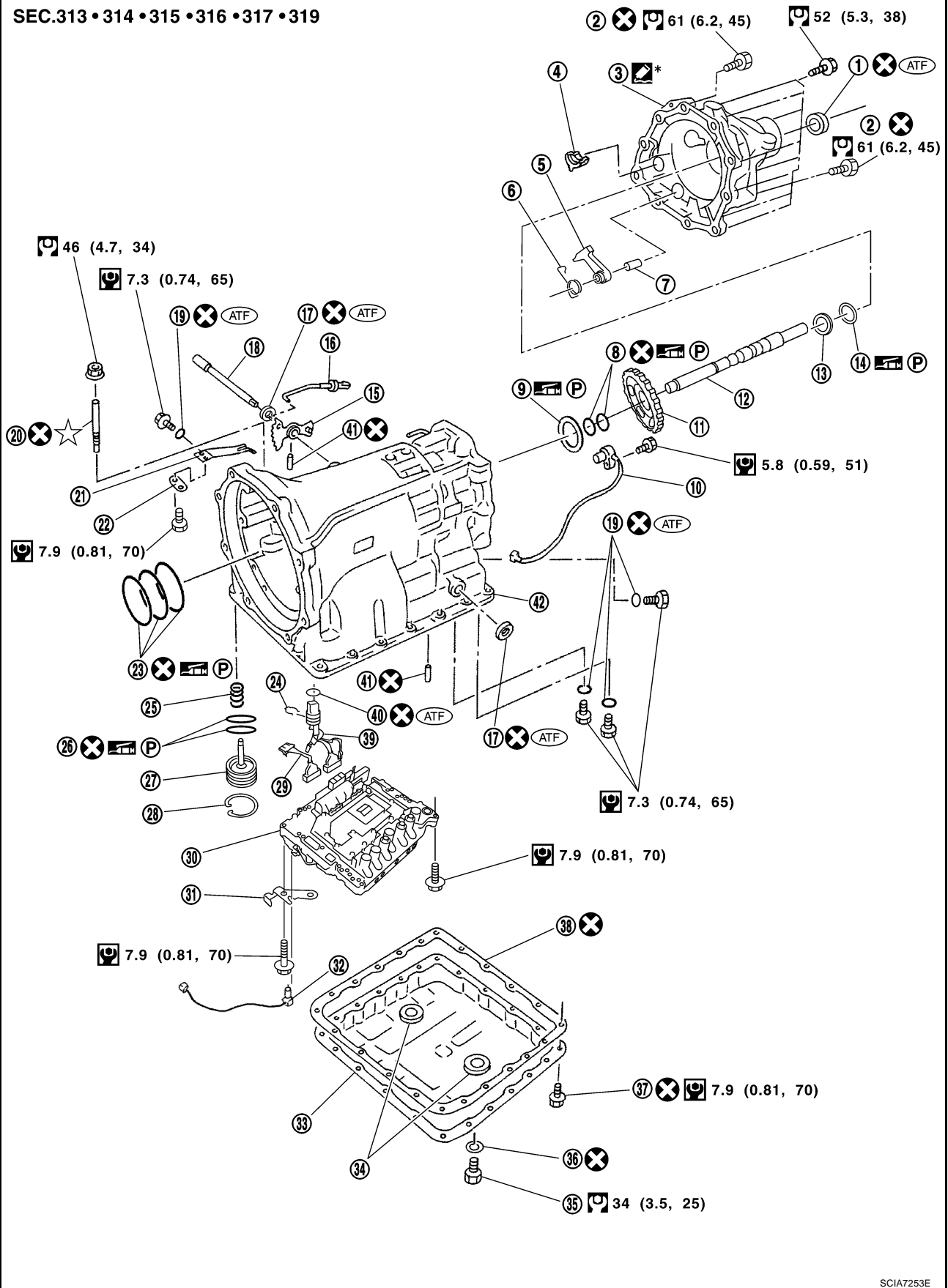
L

M

# OVERHAUL

## 2WD models

SEC.313 • 314 • 315 • 316 • 317 • 319



SCIA7253E

- |                             |                      |                   |
|-----------------------------|----------------------|-------------------|
| 1. Rear oil seal            | 2. Self-sealing bolt | 3. Rear extension |
| 4. Parking actuator support | 5. Parking pawl      | 6. Return spring  |


AT-270

# OVERHAUL

- 
- |                           |                                    |                            |
|---------------------------|------------------------------------|----------------------------|
| 7. Pawl shaft             | 8. Seal ring                       | 9. Needle bearing          |
| 10. Revolution 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. Oil pan                |
| 34. Magnet                | 35. Drain plug                     | 36. Drain plug gasket      |
| 37. Oil pan mounting bolt | 38. Oil pan gasket                 | 39. Terminal cord assembly |
| 40. O-ring                | 41. Retaining pin                  | 42. Transmission case      |

Refer to GI section to make sure icons (symbol marks) in the figure. Refer to [GI-10, "Components"](#).

However, refer to the following symbols for others.

: Apply Anaerobic Liquid Gasket (Loctite 518) or equivalent.

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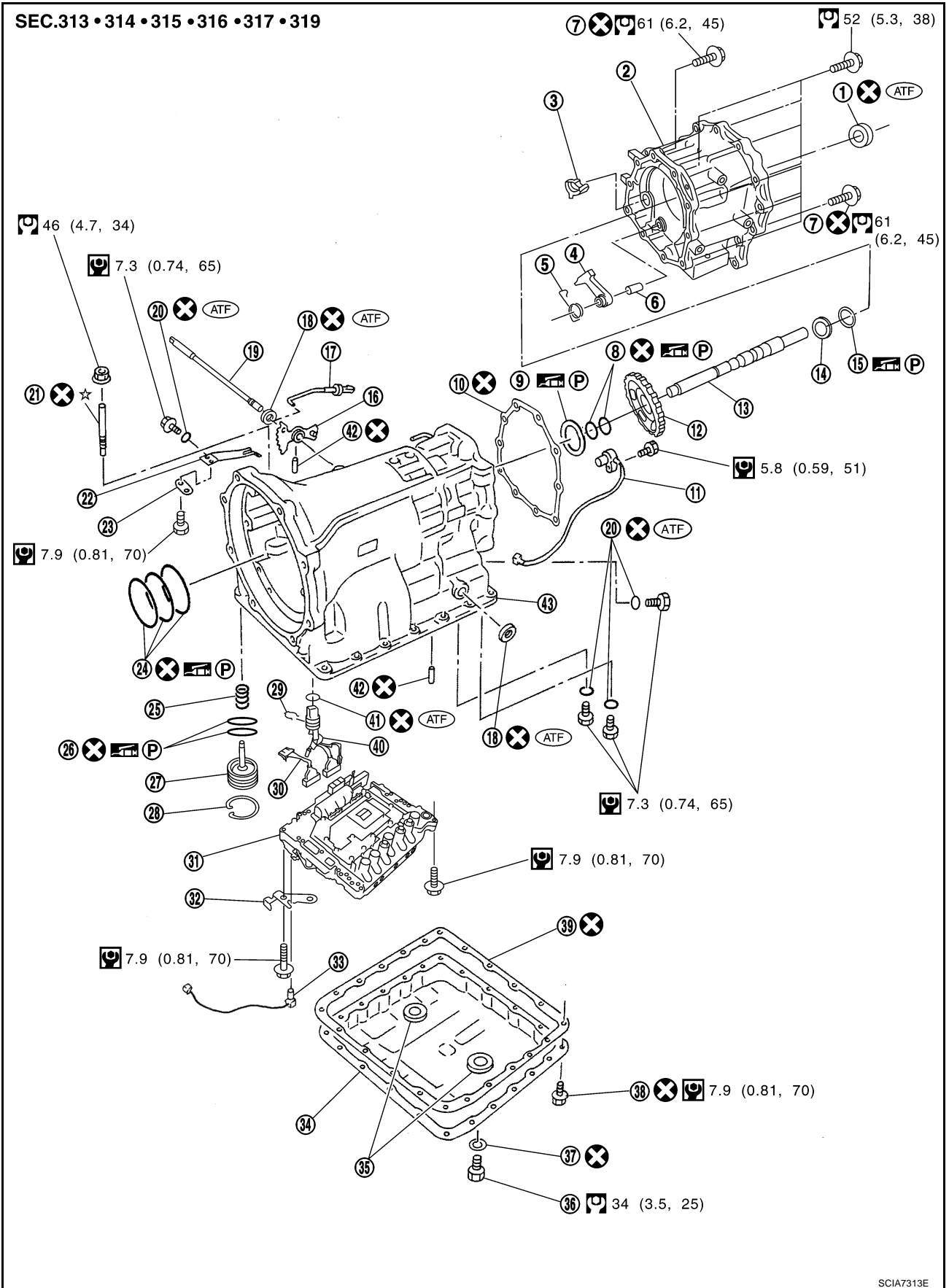
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# OVERHAUL

## YD25DDTi models for 4WD

SEC.313 • 314 • 315 • 316 • 317 • 319



SCIA7313E

- |                  |                  |                             |
|------------------|------------------|-----------------------------|
| 1. Rear oil seal | 2. Adapter case  | 3. Parking actuator support |
| 4. Parking pawl  | 5. Return spring | 6. Pawl shaft               |

# OVERHAUL

- 
- |                            |                           |                                    |    |
|----------------------------|---------------------------|------------------------------------|----|
| 7. Self-sealing bolt       | 8. Seal ring              | 9. Needle bearing                  | A  |
| 10. Gasket                 | 11. Revolution sensor     | 12. Parking gear                   |    |
| 13. Output shaft           | 14. Bearing race          | 15. Needle bearing                 |    |
| 16. Manual plate           | 17. Parking rod           | 18. Manual shaft oil seal          | B  |
| 19. Manual shaft           | 20. O-ring                | 21. Band servo anchor end pin      |    |
| 22. Detent spring          | 23. Spacer                | 24. Seal ring                      |    |
| 25. Return spring          | 26. O-ring                | 27. Servo assembly                 | AT |
| 28. Snap ring              | 29. Snap ring             | 30. Sub-harness                    |    |
| 31. Control valve with TCM | 32. Bracket               | 33. A/T fluid temperature sensor 2 |    |
| 34. Oil pan                | 35. Magnet                | 36. Drain plug                     | D  |
| 37. Drain plug gasket      | 38. Oil pan mounting bolt | 39. Oil pan gasket                 |    |
| 40. Terminal cord assembly | 41. O-ring                | 42. Retaining pin                  | E  |
| 43. Transmission case      |                           |                                    |    |

Refer to GI section to make sure icons (symbol marks) in the figure. Refer to [GI-10. "Components"](#) .

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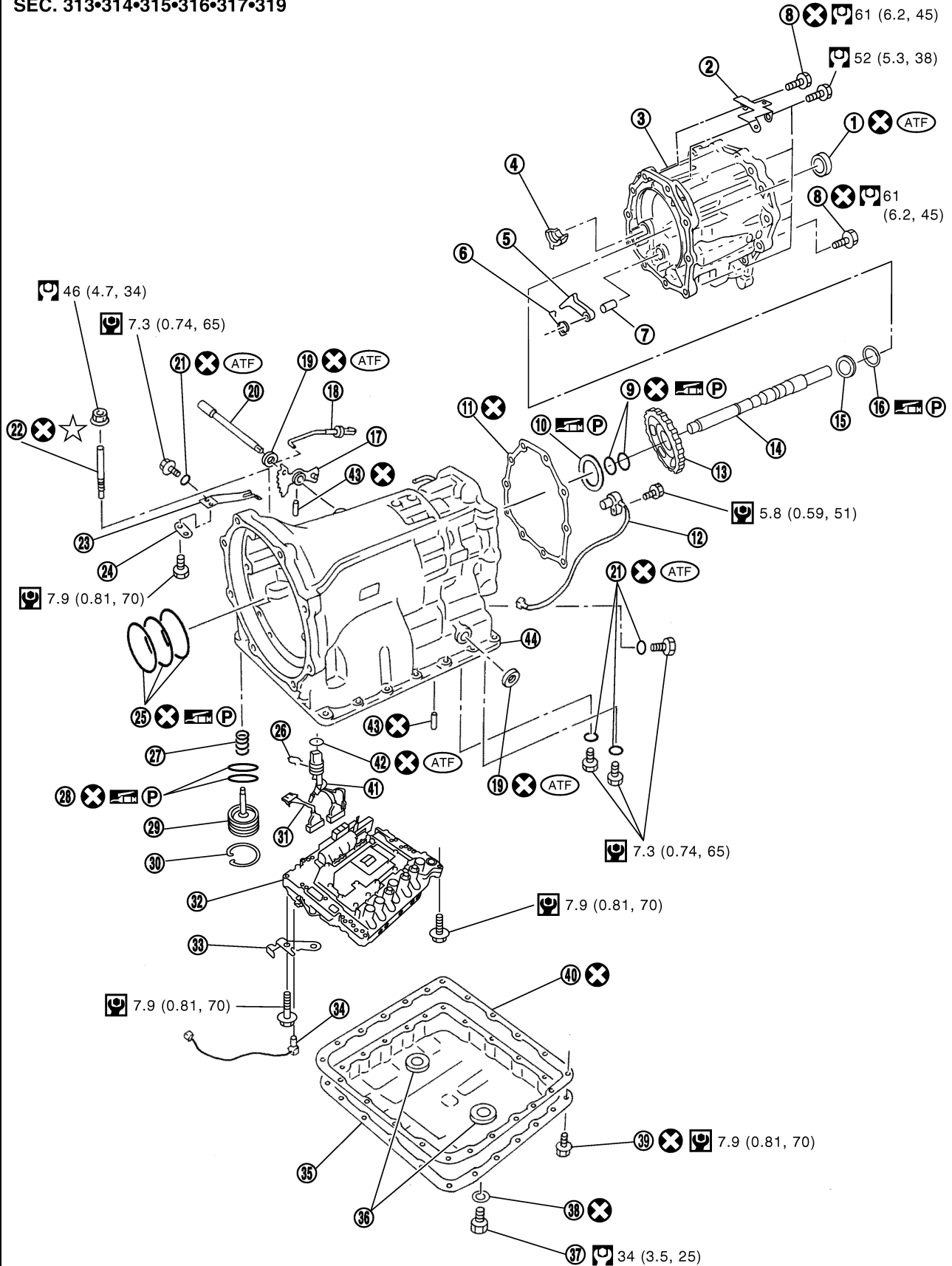
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# OVERHAUL

## VQ40DE models for 4WD

SEC. 313•314•315•316•317•319



SCIA7445E

- |                             |                 |                  |
|-----------------------------|-----------------|------------------|
| 1. Rear oil seal            | 2. Bracket      | 3. Adapter case  |
| 4. Parking actuator support | 5. Parking pawl | 6. Return spring |

# OVERHAUL

- 
- |                                    |                            |                           |
|------------------------------------|----------------------------|---------------------------|
| 7. Pawl shaft                      | 8. Self-sealing bolt       | 9. Seal ring              |
| 10. Needle bearing                 | 11. Gasket                 | 12. Revolution sensor     |
| 13. Parking gear                   | 14. Output shaft           | 15. Bearing race          |
| 16. Needle bearing                 | 17. Manual plate           | 18. Parking rod           |
| 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. Oil pan                | 36. Magnet                |
| 37. Drain plug                     | 38. Drain plug gasket      | 39. Oil pan mounting bolt |
| 40. Oil pan gasket                 | 41. Terminal cord assembly | 42. O-ring                |
| 43. Retaining pin                  | 44. Transmission case      |                           |

Refer to GI section to make sure icons (symbol marks) in the figure. Refer to [GI-10. "Components"](#) .

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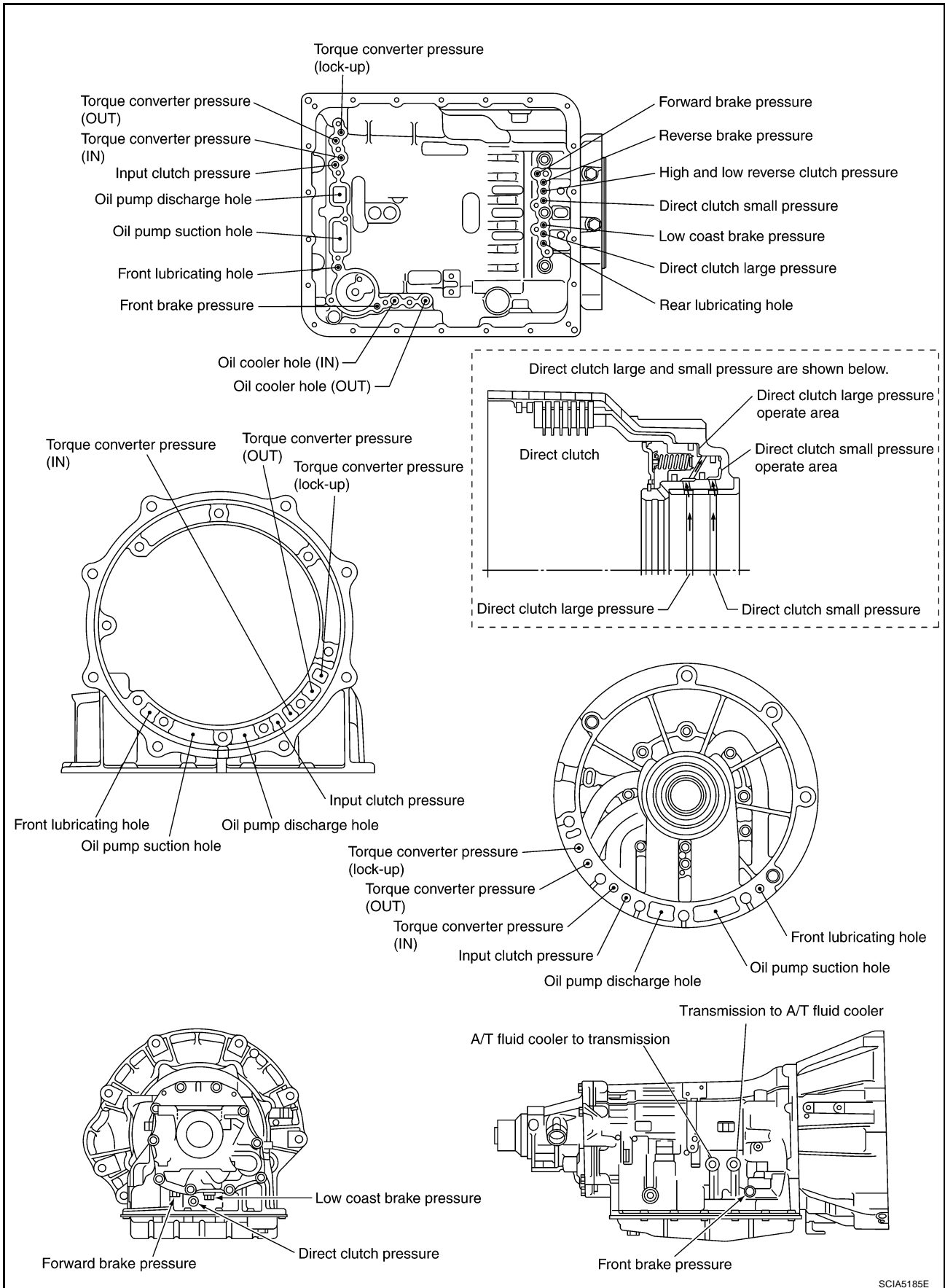
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# OVERHAUL

## Oil Channel

GCS0008G

### 2WD models



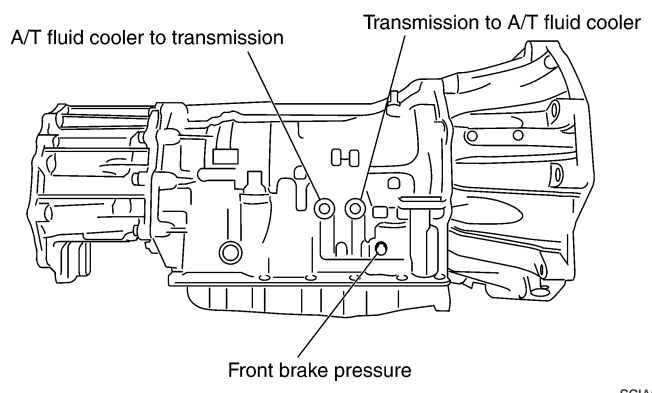
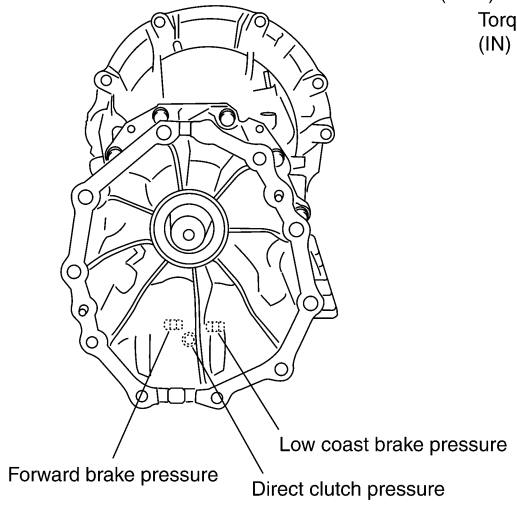
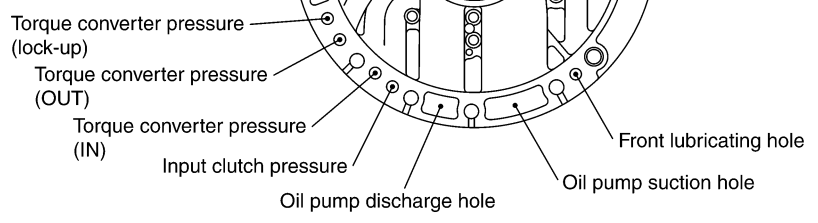
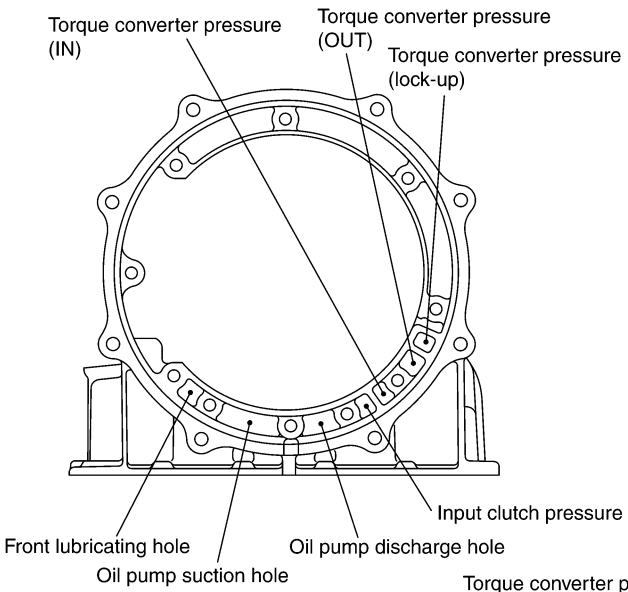
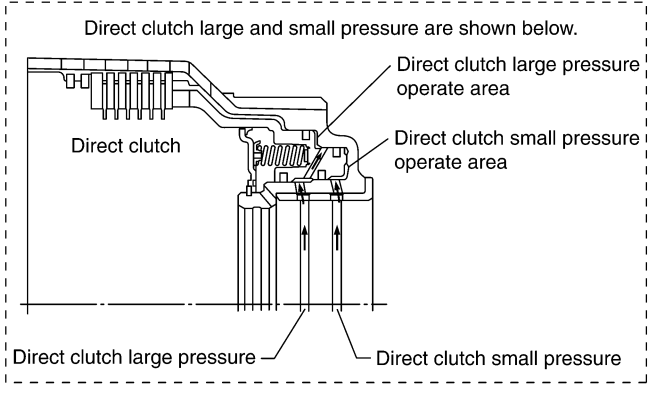
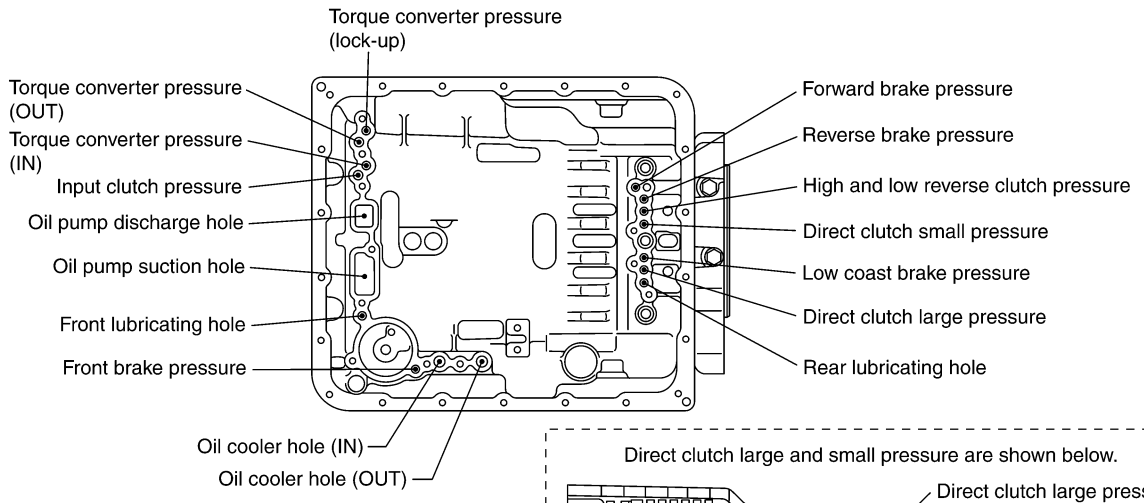
SCIA5185E



# OVERHAUL

## 4WD models

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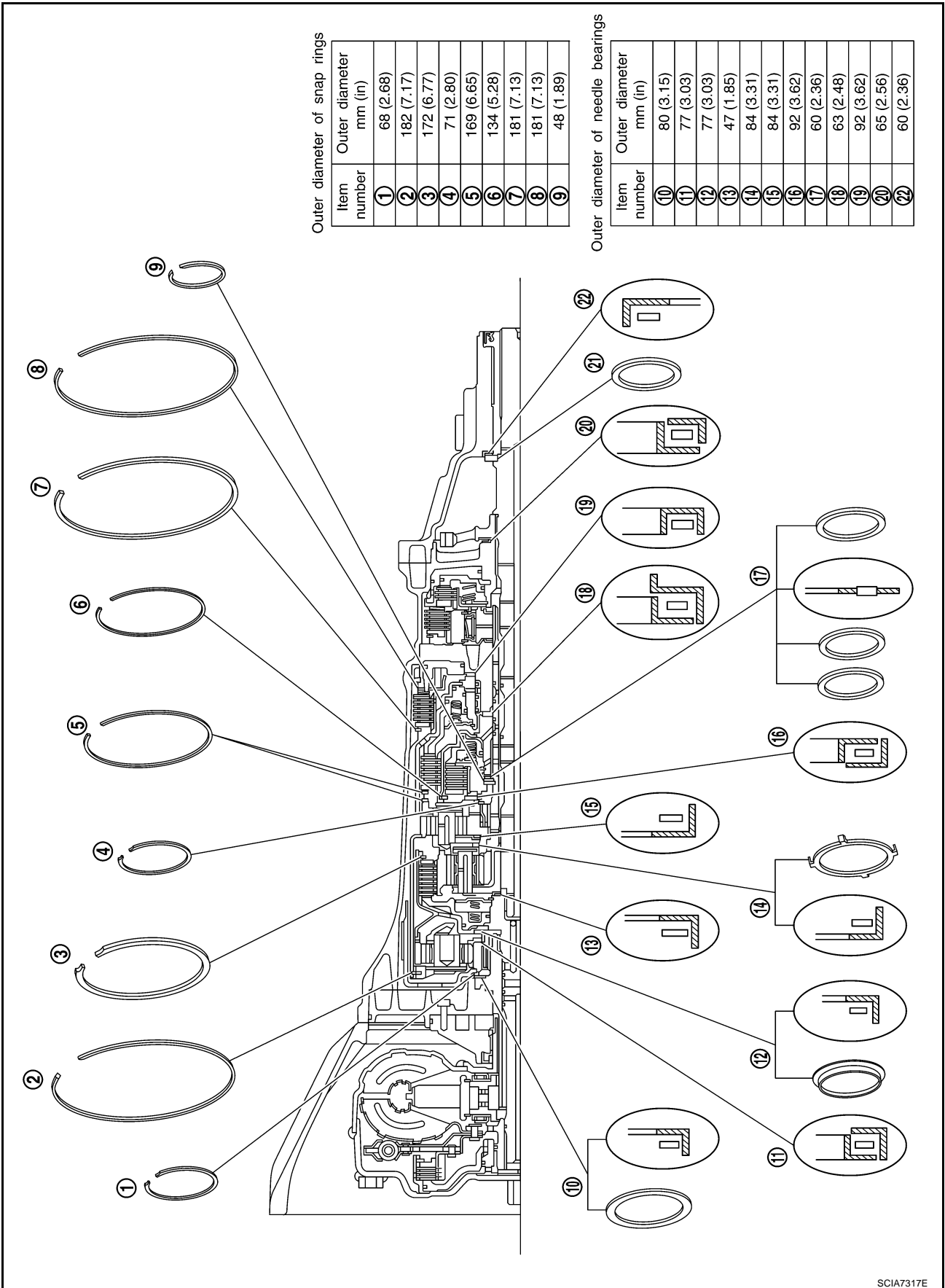
SCIA5189E

# OVERHAUL

## Locations of Adjusting Shims, Needle Bearings, Thrust Washers and Snap Rings

GCS0008H

### YD25DDTi models for 2WD



Outer diameter of snap rings

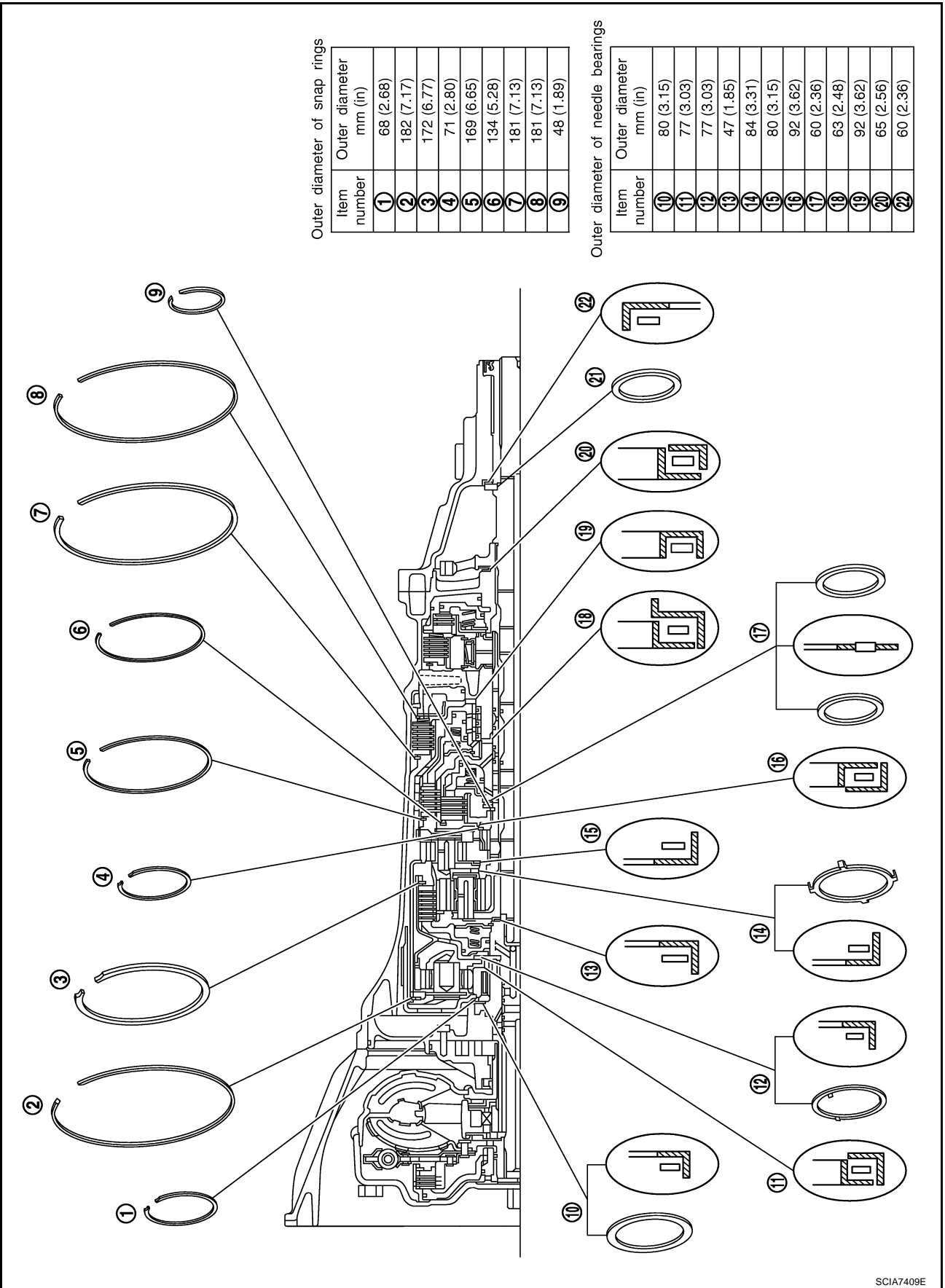
Item number	Outer diameter mm (in)
①	68 (2.68)
②	182 (7.17)
③	172 (6.77)
④	71 (2.80)
⑤	169 (6.65)
⑥	134 (5.28)
⑦	181 (7.13)
⑧	181 (7.13)
⑨	48 (1.89)

Outer diameter of needle bearings

Item number	Outer diameter mm (in)
⑩	80 (3.15)
⑪	77 (3.03)
⑫	77 (3.03)
⑬	47 (1.85)
⑭	84 (3.31)
⑮	84 (3.31)
⑯	92 (3.62)
⑰	60 (2.36)
⑱	63 (2.48)
⑲	92 (3.62)
⑳	65 (2.56)
㉑	60 (2.36)

# OVERHAUL

## VQ40DE models for 2WD



Outer diameter of snap rings

Item number	Outer diameter mm (in)
1	68 (2.68)
2	182 (7.17)
3	172 (6.77)
4	71 (2.80)
5	169 (6.65)
6	134 (5.28)
7	181 (7.13)
8	181 (7.13)
9	48 (1.89)

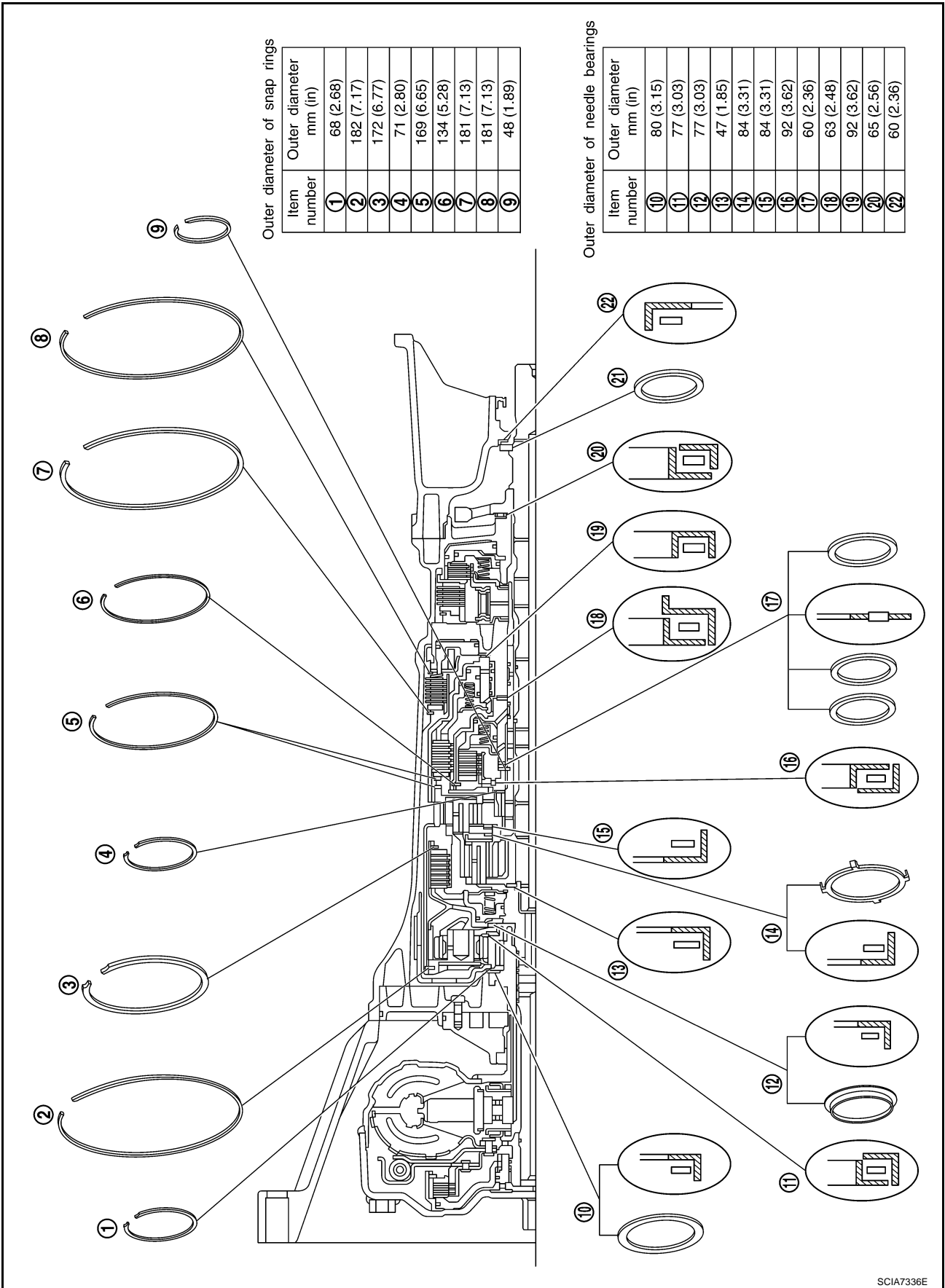
Outer diameter of needle bearings

Item number	Outer diameter mm (in)
10	80 (3.15)
11	77 (3.03)
12	77 (3.03)
13	47 (1.85)
14	84 (3.31)
15	80 (3.15)
16	92 (3.62)
17	60 (2.36)
18	63 (2.48)
19	92 (3.62)
20	65 (2.56)
22	60 (2.36)

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# OVERHAUL

## YD25DDTi models for 4WD



Outer diameter of snap rings

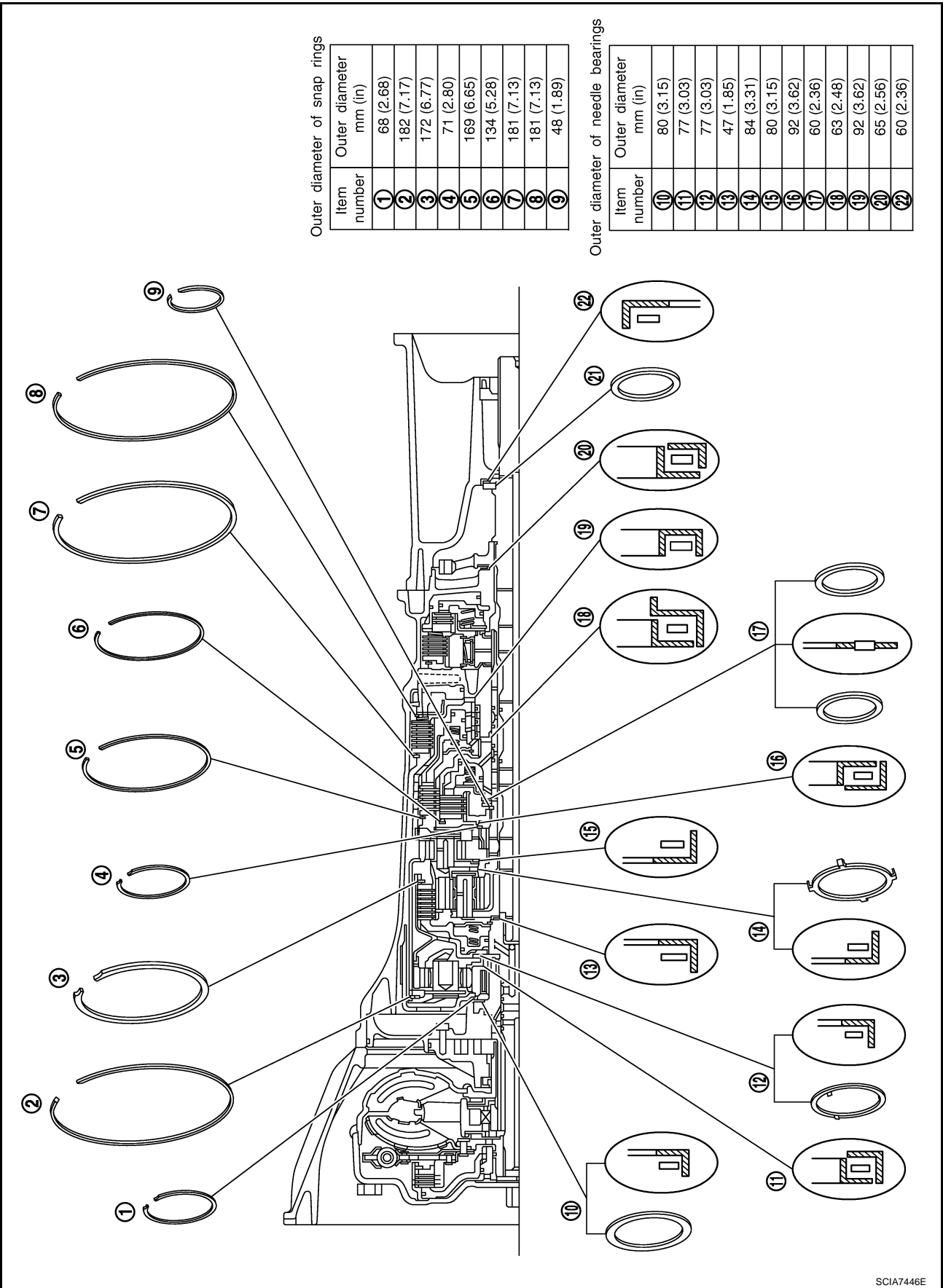
Item number	Outer diameter mm (in)
1	68 (2.68)
2	182 (7.17)
3	172 (6.77)
4	71 (2.80)
5	169 (6.65)
6	134 (5.28)
7	181 (7.13)
8	181 (7.13)
9	48 (1.89)

Outer diameter of needle bearings

Item number	Outer diameter mm (in)
10	80 (3.15)
11	77 (3.03)
12	77 (3.03)
13	47 (1.85)
14	84 (3.31)
15	84 (3.31)
16	92 (3.62)
17	60 (2.36)
18	63 (2.48)
19	92 (3.62)
20	65 (2.56)
22	60 (2.36)

# OVERHAUL

## VQ40DE models for 4WD



Outer diameter of snap rings

Item number	Outer diameter mm (in)
1	68 (2.68)
2	182 (7.17)
3	172 (6.77)
4	71 (2.80)
5	169 (6.65)
6	134 (5.28)
7	181 (7.13)
8	181 (7.13)
9	48 (1.89)

Outer diameter of needle bearings

Item number	Outer diameter mm (in)
10	80 (3.15)
11	77 (3.03)
12	77 (3.03)
13	47 (1.85)
14	84 (3.31)
15	80 (3.15)
16	92 (3.62)
17	60 (2.36)
18	63 (2.48)
19	92 (3.62)
20	65 (2.56)
22	60 (2.36)

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# DISASSEMBLY

## DISASSEMBLY

PFP:31020

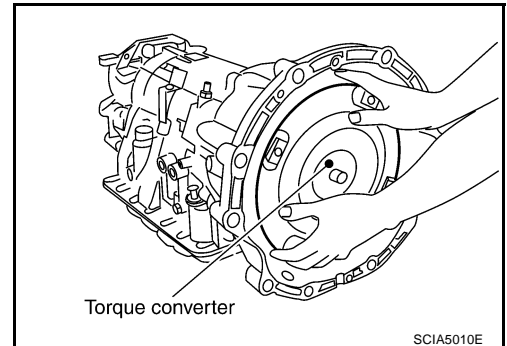
### Disassembly

GCS0008I

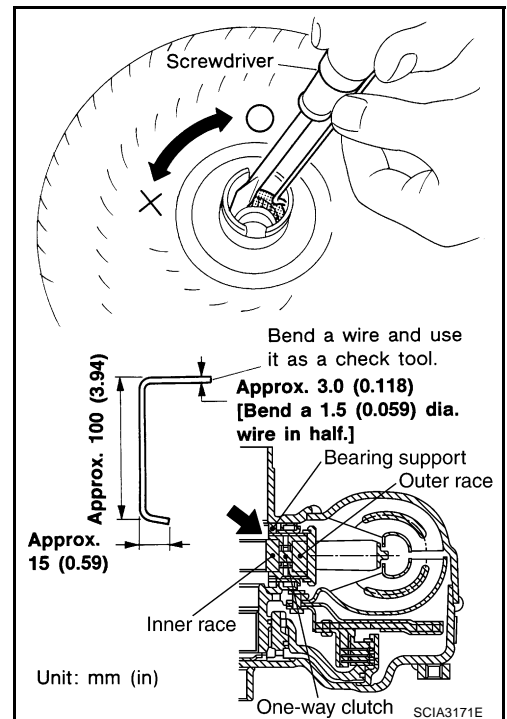
#### CAUTION:

Do not disassemble parts behind drum support. Refer to [AT-13, "Cross-sectional View \(YD25DDTi Models for 2WD\)"](#), [AT-14, "Cross-sectional View \(VQ40DE Models for 2WD\)"](#), [AT-15, "Cross-sectional View \(YD25DDTi Models for 4WD\)"](#) or [AT-16, "Cross-sectional View \(VQ40DE Models for 4WD\)"](#).

1. Drain ATF through drain hole.
2. Remove torque converter by holding it firmly and turing while pulling straight out.



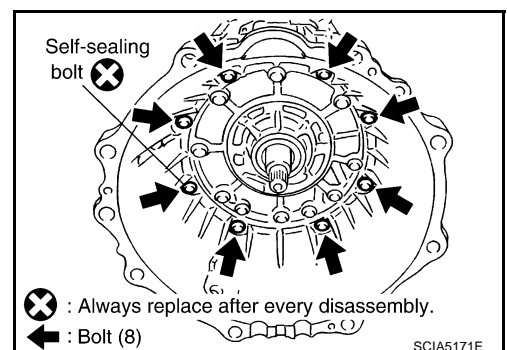
3. Check torque converter one-way clutch using a check tool as shown in the figure.
  - a. Insert a check tool into the groove of bearing support built into one-way clutch outer race.
  - b. When fixing bearing support with a check tool, rotate one-way clutch spline using a screwdriver.
  - c. Make sure that inner race rotates clockwise only. If not, replace torque converter assembly.



4. Remove converter housing from transmission case.

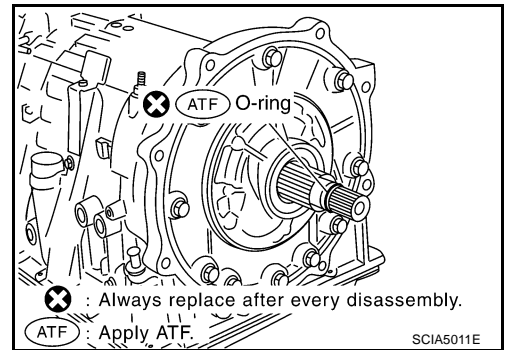
#### CAUTION:

Be careful not to scratch converter housing.

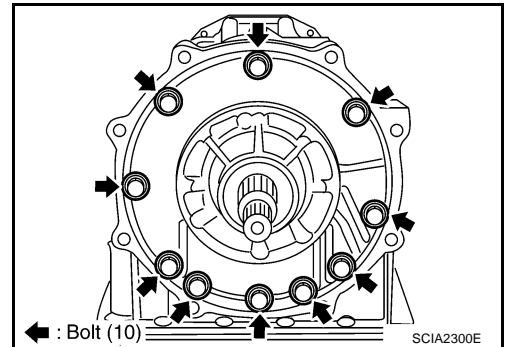


# DISASSEMBLY

5. Remove O-ring from input clutch assembly.



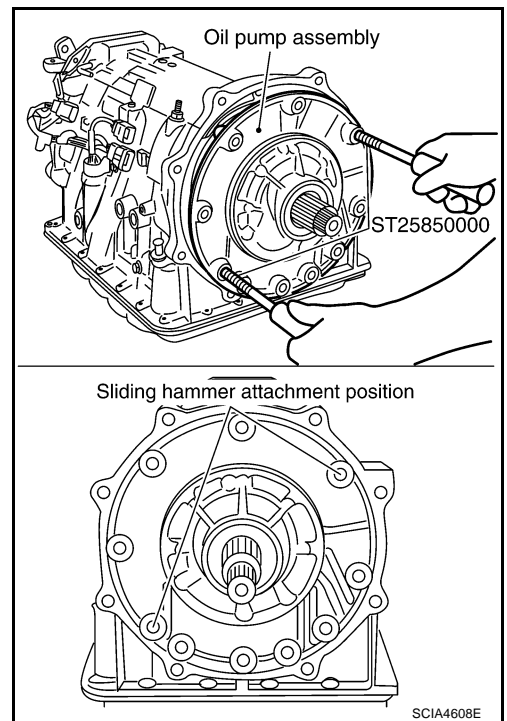
6. Remove tightening bolts for oil pump assembly and transmission case.



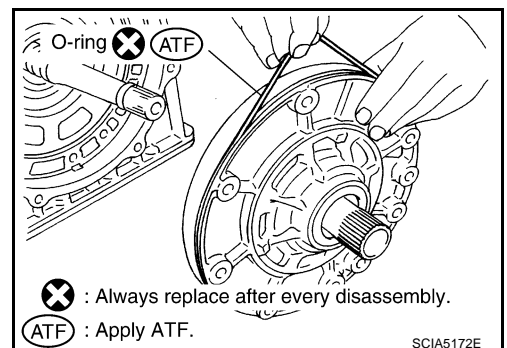
7. Attach the sliding hammers to oil pump assembly and extract it evenly from transmission case.

**CAUTION:**

- Fully tighten the sliding hammer screws.
- Make sure that bearing race is installed to oil pump assembly edge surface.



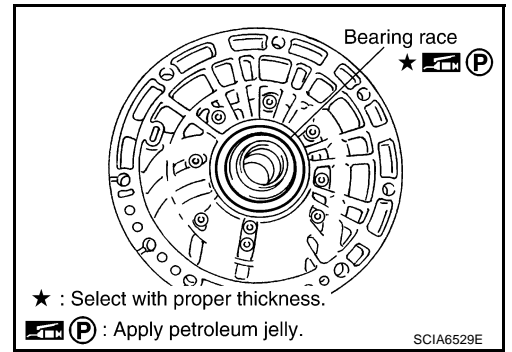
8. Remove O-ring from oil pump assembly.



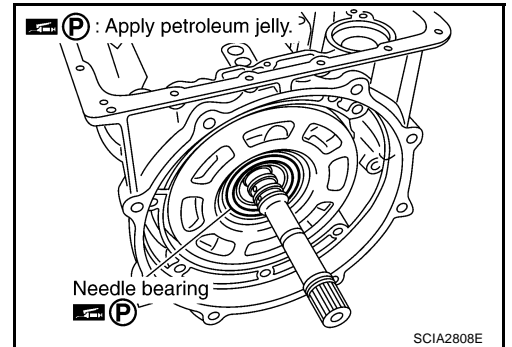
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# DISASSEMBLY

9. Remove bearing race from oil pump assembly.

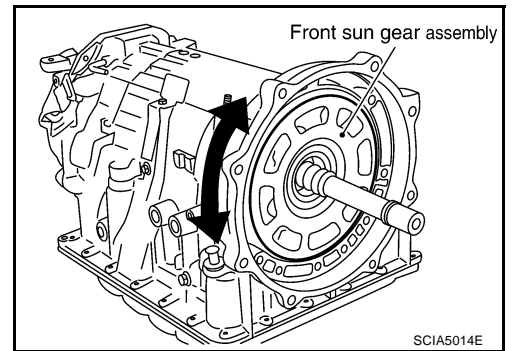


10. Remove needle bearing from front sun gear.

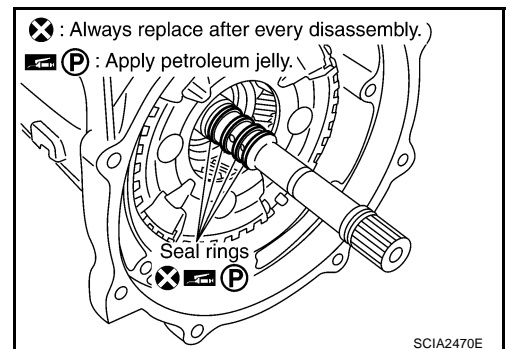


11. Remove front sun gear assembly from front carrier assembly.

**NOTE:**  
Remove front sun gear by rotating left/right.

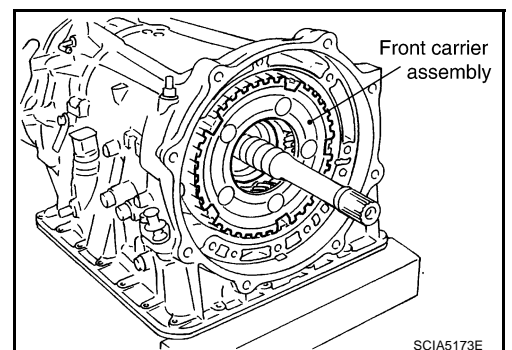


12. Remove seal rings from input clutch assembly.



13. Remove front carrier assembly, input clutch assembly and rear internal gear as a unit.

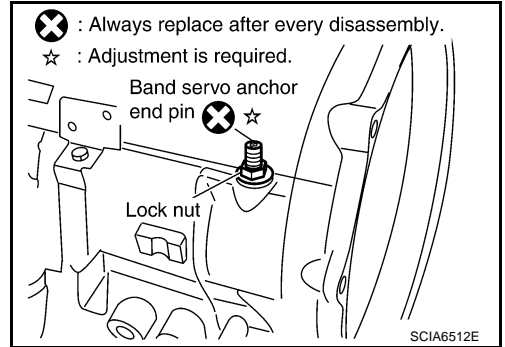
**CAUTION:**  
Be careful to remove it with needle bearing.



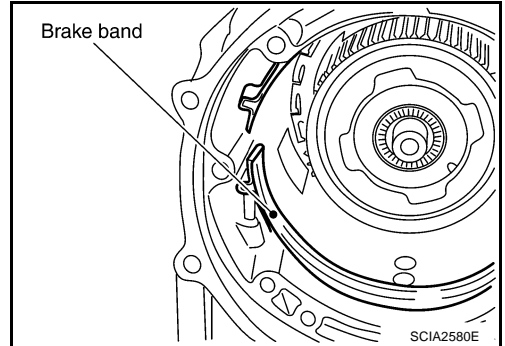


# DISASSEMBLY

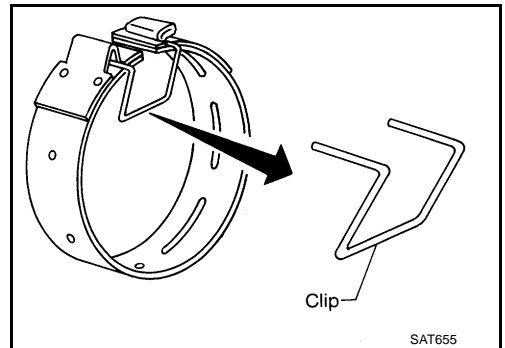
14. Loosen lock nut and remove band servo anchor end pin from transmission case.



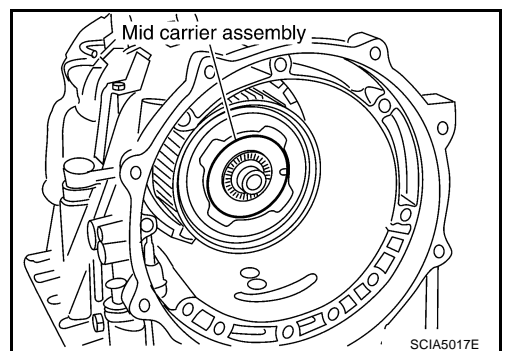
15. Remove brake band from transmission case.



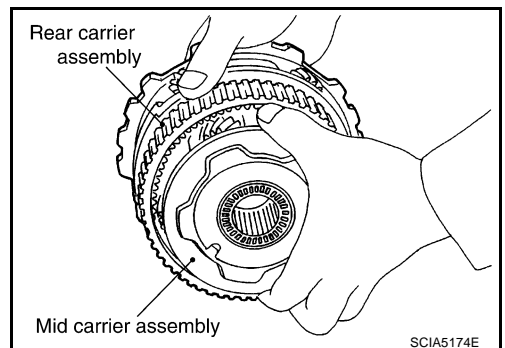
- To prevent brake linings from cracking or peeling, do not stretch the flexible band unnecessarily. When removing brake band, always secure it with a clip as shown in the figure at right. Leave the clip in position after removing the brake band.
- Check brake band facing for damage, cracks, wear or burns.



16. Remove mid carrier assembly and rear carrier assembly as a unit.



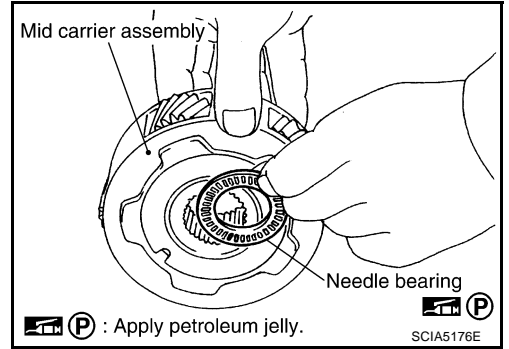
17. Remove mid carrier assembly from rear carrier assembly.



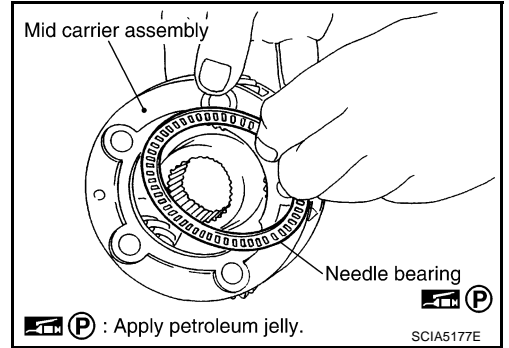
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# DISASSEMBLY

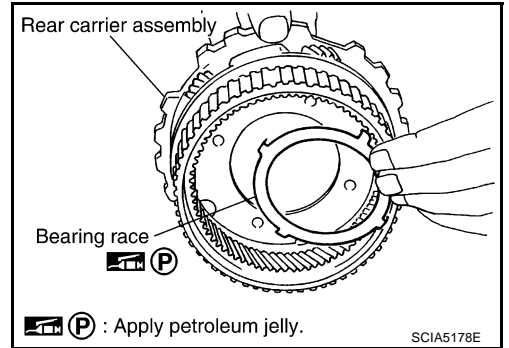
18. Remove needle bearing (front side) from mid carrier assembly.



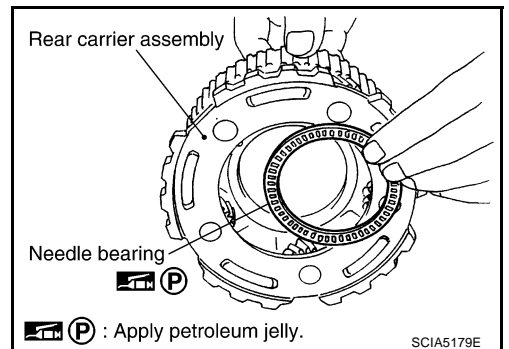
19. Remove needle bearing (rear side) from mid carrier assembly.



20. Remove bearing race from rear carrier assembly.



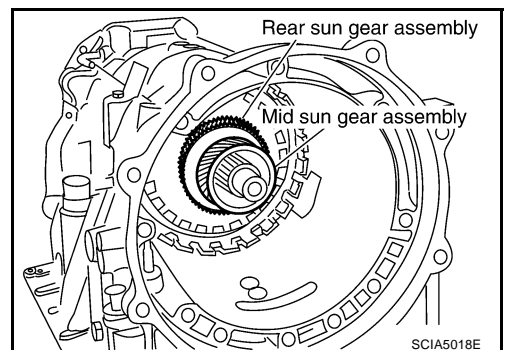
21. Remove needle bearing from rear carrier assembly.



22. Remove mid sun gear assembly, rear sun gear assembly and high and low reverse clutch hub as a unit.

**CAUTION:**

**Be careful to remove them with bearing races and needle bearing.**

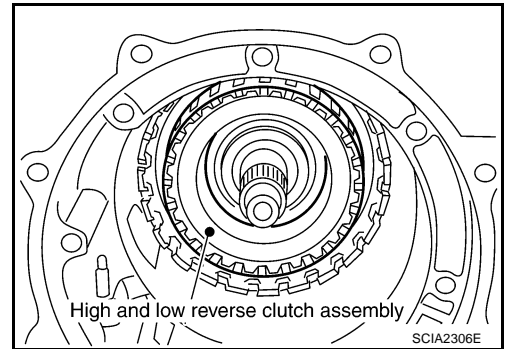


# DISASSEMBLY

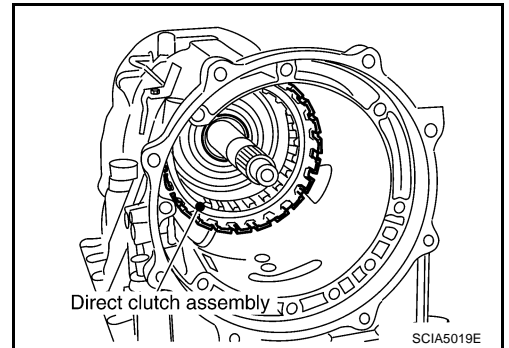
23. Remove high and low reverse clutch assembly from direct clutch assembly.

**CAUTION:**

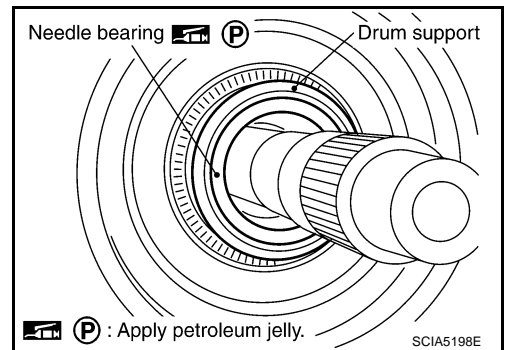
Make sure that needle bearing is installed to high and low reverse clutch assembly edge surface.



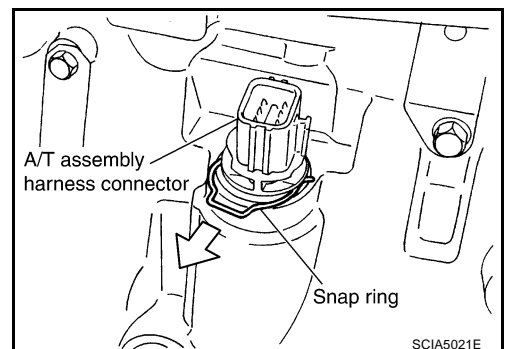
24. Remove direct clutch assembly from reverse brake.



25. Remove needle bearing from drum support.



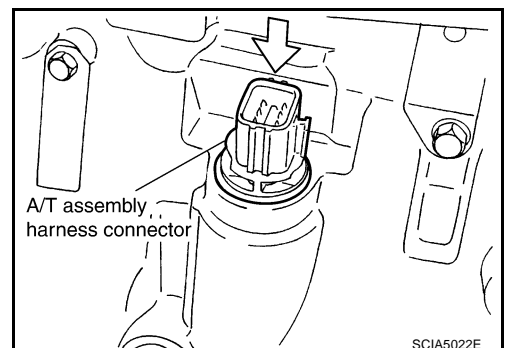
26. Remove snap ring from A/T assembly harness connector.



27. Push A/T assembly harness connector.

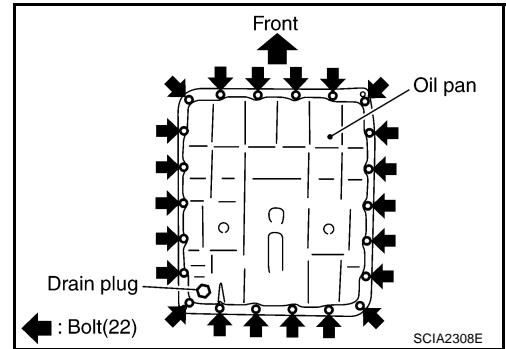
**CAUTION:**

Be careful not to damage connector.



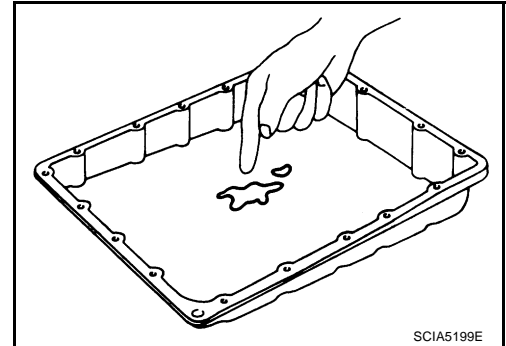
# DISASSEMBLY

28. Remove oil pan and oil pan gasket.

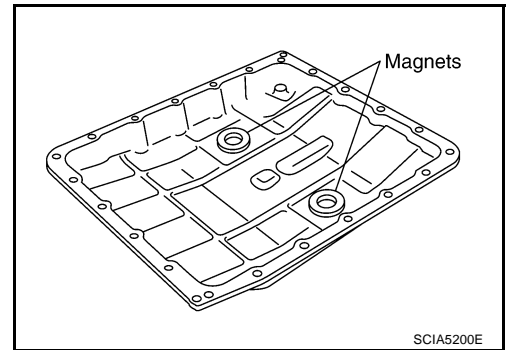


29. Check foreign materials in oil pan to help determine causes of malfunction. If the A/T fluid is very dark, smells burned, or contains foreign particles, the frictional material (clutches, band) may need replacement. A tacky film that will not wipe clean indicates varnish build up. Varnish can cause valves, servo, and clutches to stick and can inhibit pump pressure.

- If friction material is detected, replace radiator after repair of A/T. Refer to [CO-40, "RADIATOR"](#) (for YD25DDTi engine) or [CO-13, "RADIATOR"](#) (for VQ40DE engine).

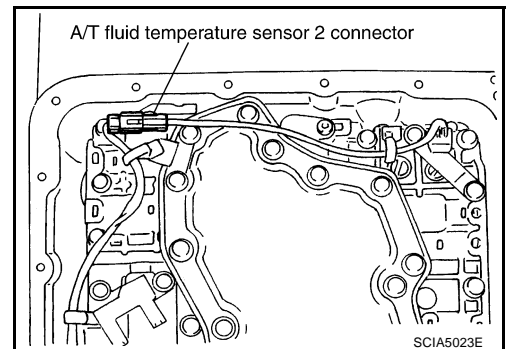


30. Remove magnets from oil pan.

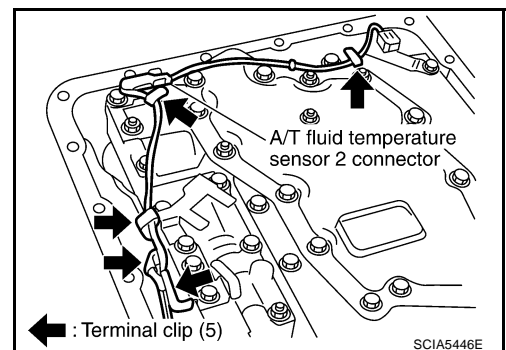


31. Disconnect A/T fluid temperature sensor 2 connector.

- CAUTION:**  
Be careful not to damage connector.



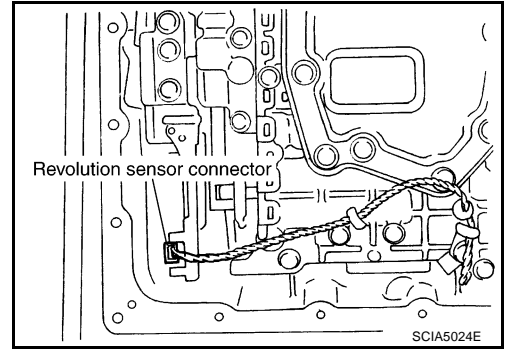
32. Straighten terminal clips to free terminal cord assembly and A/T fluid temperature sensor 2 harness.



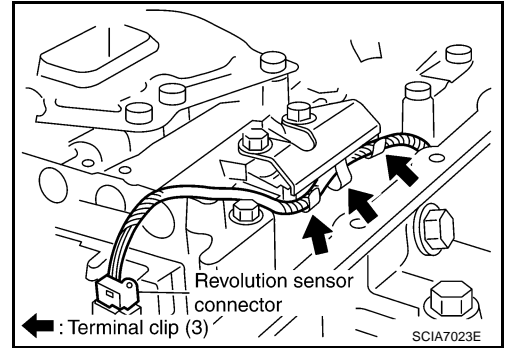
# DISASSEMBLY

33. Disconnect revolution sensor connector.

**CAUTION:**  
Be careful not to damage connector.

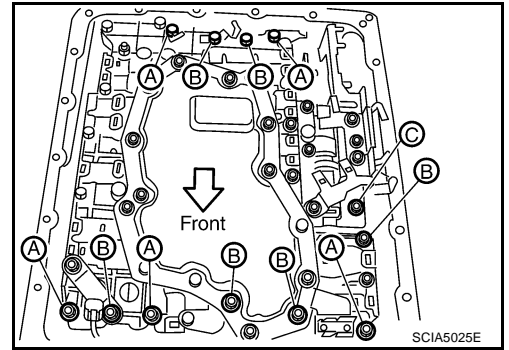


34. Straighten terminal clips to free revolution sensor harness.



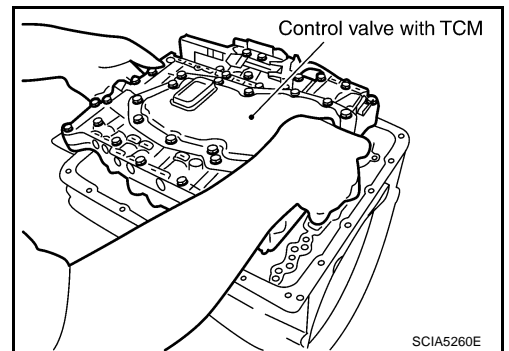
35. Remove bolts A, B and C from control valve with TCM.

Bolt symbol	Length [mm (in)]	Number of bolts
A	42 (1.65)	5
B	55 (2.17)	6
C	40 (1.57)	1

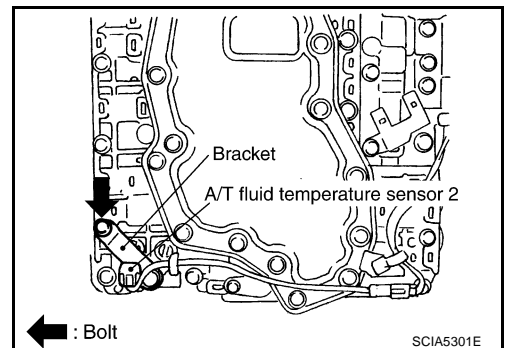


36. Remove control valve with TCM from transmission case.

**CAUTION:**  
When removing, be careful with manual valve notch and manual plate height. Remove it vertically.



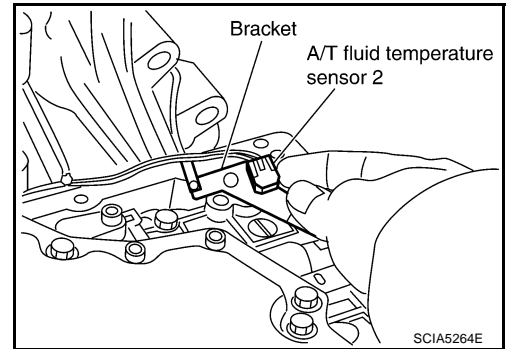
37. Remove A/T fluid temperature sensor 2 with bracket from control valve with TCM.



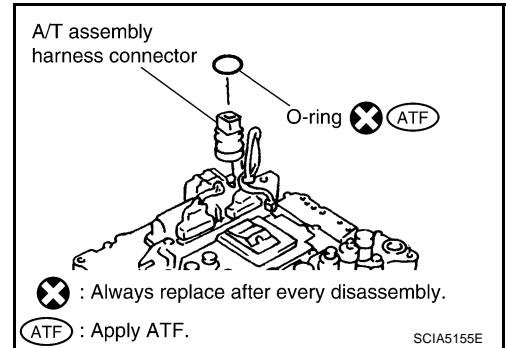
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# DISASSEMBLY

38. Remove bracket from A/T fluid temperature sensor 2.

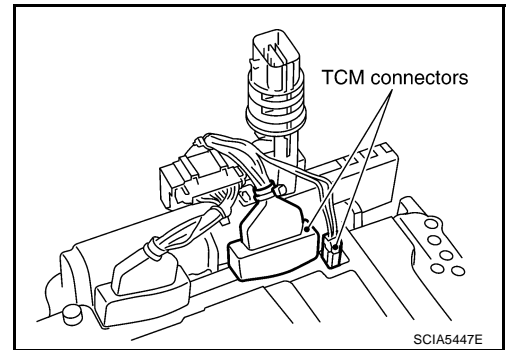


39. Remove O-ring from A/T assembly harness connector.

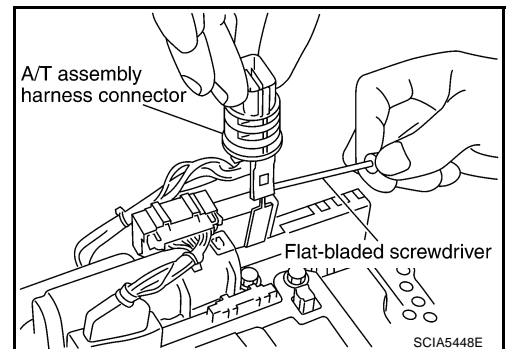


40. Disconnect TCM connectors.

**CAUTION:**  
Be careful not to damage connectors.

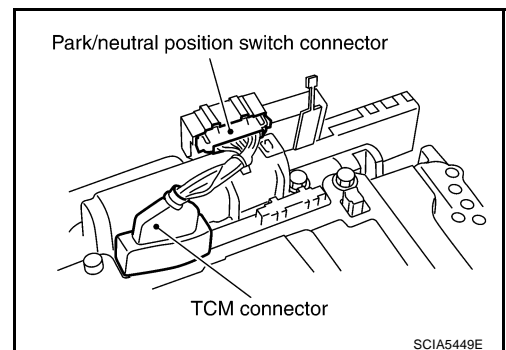


41. Remove A/T assembly harness connector from control valve with TCM using a flat-bladed screwdriver.



42. Disconnect TCM connector and park/neutral position switch connector.

**CAUTION:**  
Be careful not to damage connectors.



## DISASSEMBLY

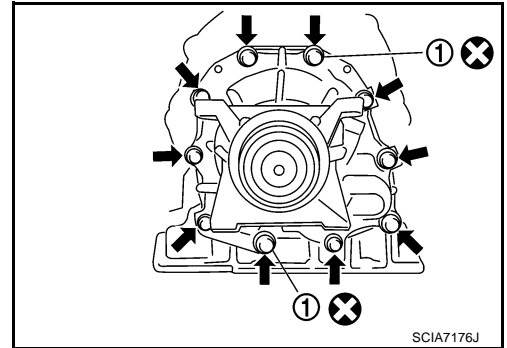
43. Remove rear extension assembly (2WD models) or adapter case assembly (4WD models) according to the following procedures.

a. **2WD models**

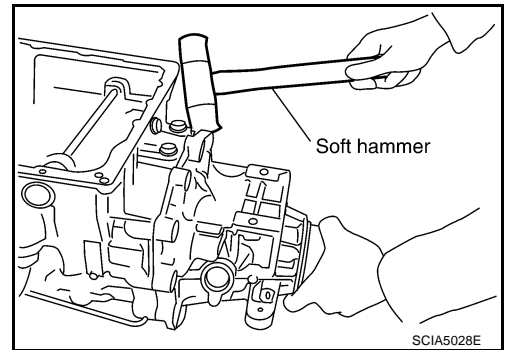
i. Remove tightening bolts for rear extension assembly and transmission case.

● Self-sealing bolt (1)

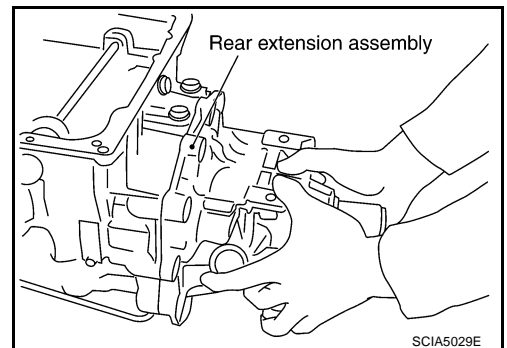
←: Bolt (10)



ii. Tap rear extension assembly with soft hammer.



iii. Remove rear extension assembly from transmission case. (With needle bearing.)

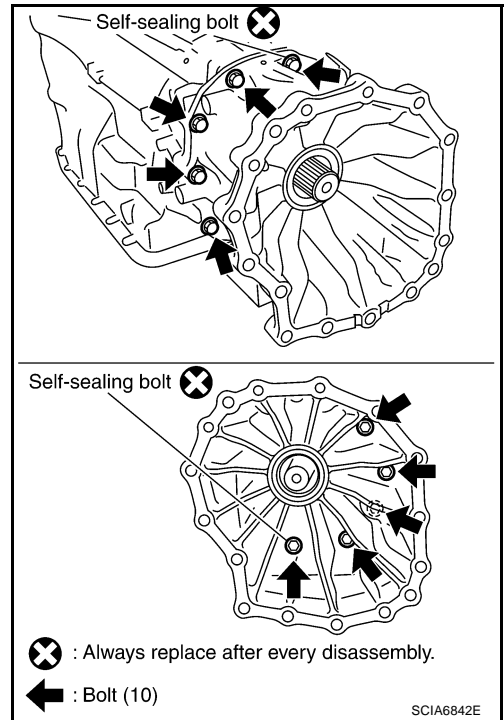


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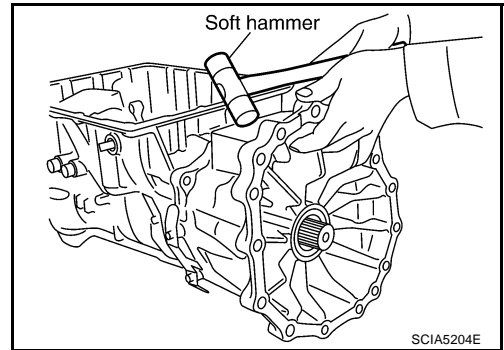
# DISASSEMBLY

## b. YD25DDTi models for 4WD

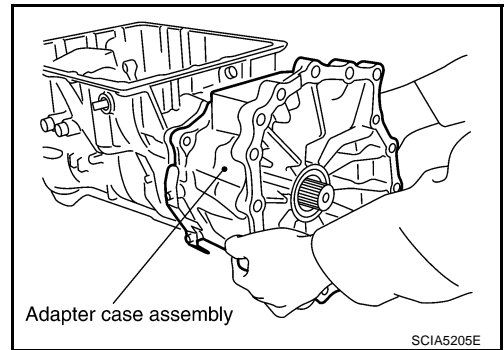
- i. Remove tightening bolts for adapter case assembly and transmission case.



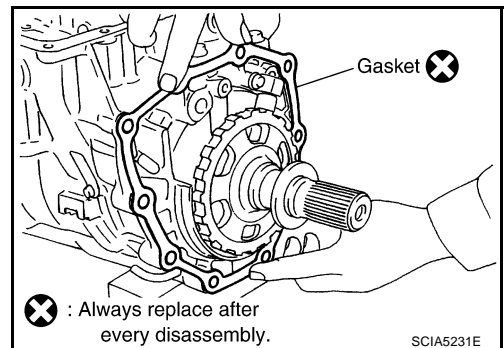
- ii. Tap adapter case assembly using a soft hammer.



- iii. Remove adapter case assembly from transmission case. (With needle bearing)



- iv. Remove gasket from transmission case.

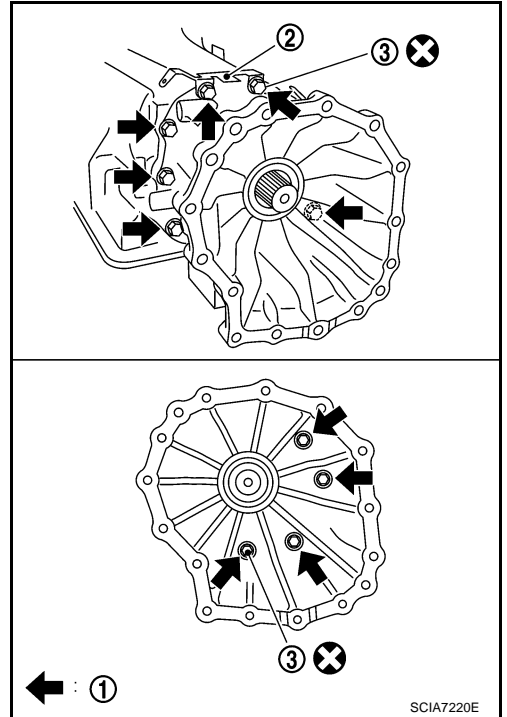




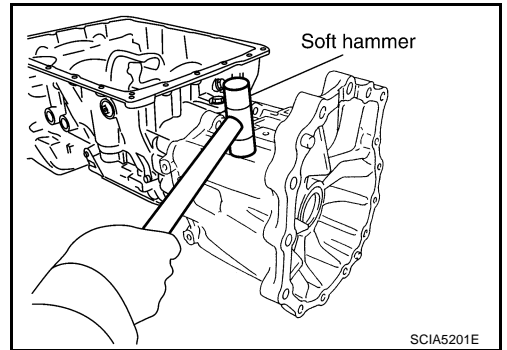
# DISASSEMBLY

c. **VQ40DE models for 4WD**

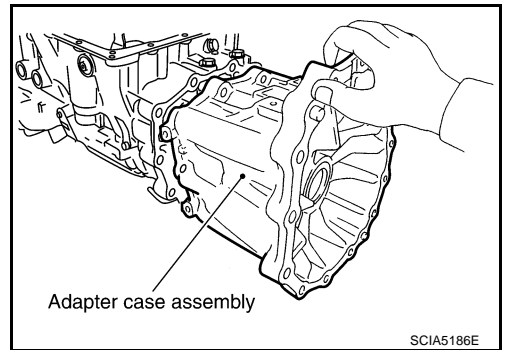
- i. Remove tightening bolts (1) for adapter case assembly and transmission case. [With terminal bracket (2).]
  - Self-sealing bolt (3)



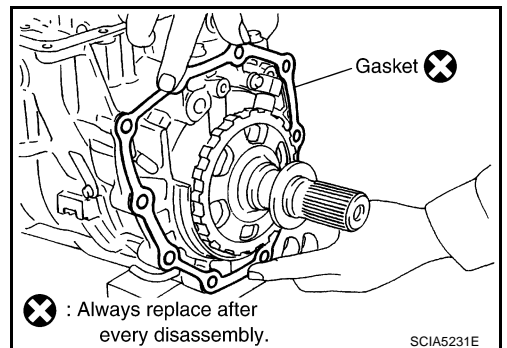
- ii. Tap adapter case assembly with soft hammer.



- iii. Remove adapter case assembly from transmission case. (With needle bearing)



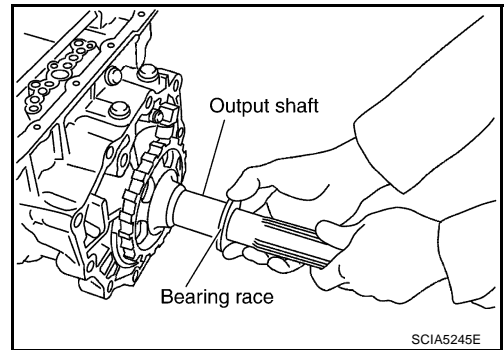
- iv. Remove gasket from transmission case.



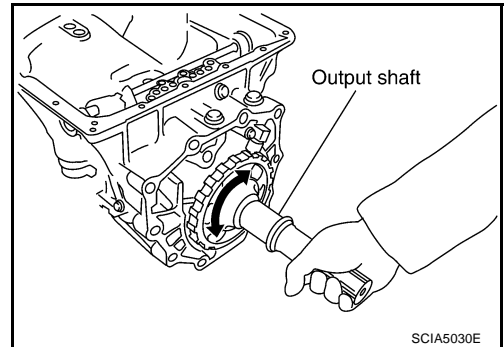
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# DISASSEMBLY

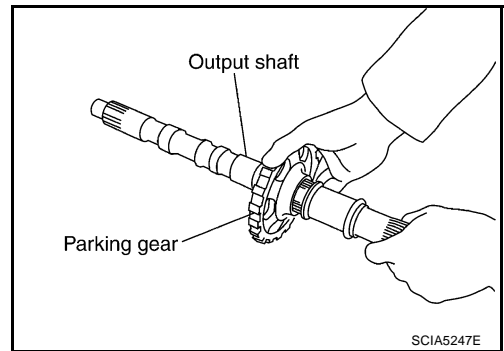
44. Remove bearing race from output shaft.



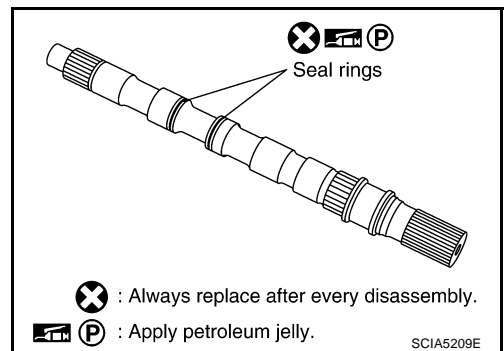
45. Remove output shaft from transmission case by rotating left/right.



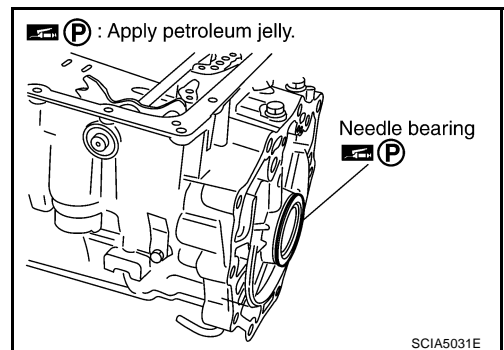
46. Remove parking gear from output shaft.



47. Remove seal rings from output shaft.



48. Remove needle bearing from transmission case.

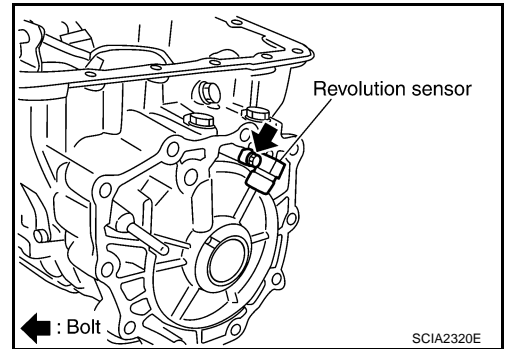


## DISASSEMBLY

49. Remove revolution sensor from transmission case.

**CAUTION:**

- Do not subject it to impact by dropping or hitting it.
- Do not disassemble.
- Do not allow metal filings, etc. to get on sensor's front edge magnetic area.
- Do not place in an area affected by magnetism.



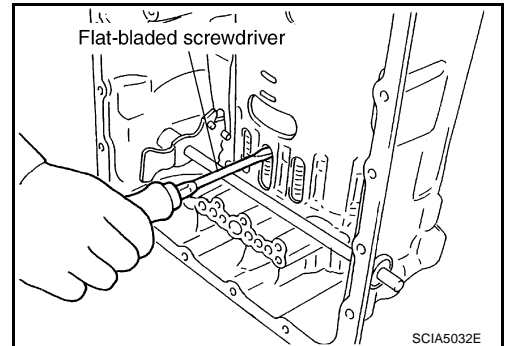
50. Remove reverse brake snap ring (fixing plate) using 2 flat-bladed screwdrivers.

**NOTE:**

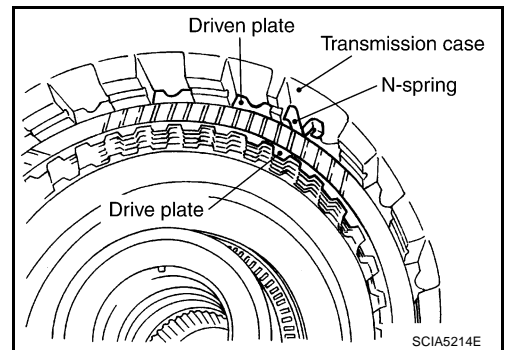
Press out snap ring from transmission case oil pan side gap using a flat-bladed screwdriver, and remove it using another screwdriver.

51. Remove reverse brake retaining plate from transmission case.

- Check facing for burns, cracks or damage. If necessary, replace the plate.

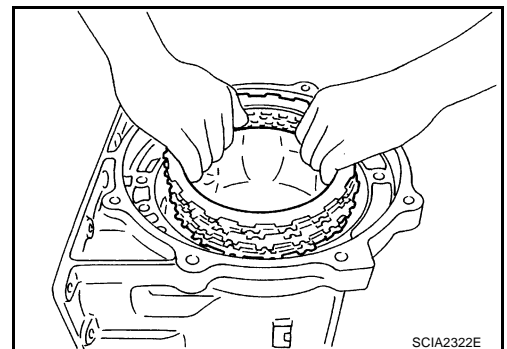


52. Remove N-spring from transmission case.



53. Remove reverse brake drive plates, driven plates and dish plate from transmission case.

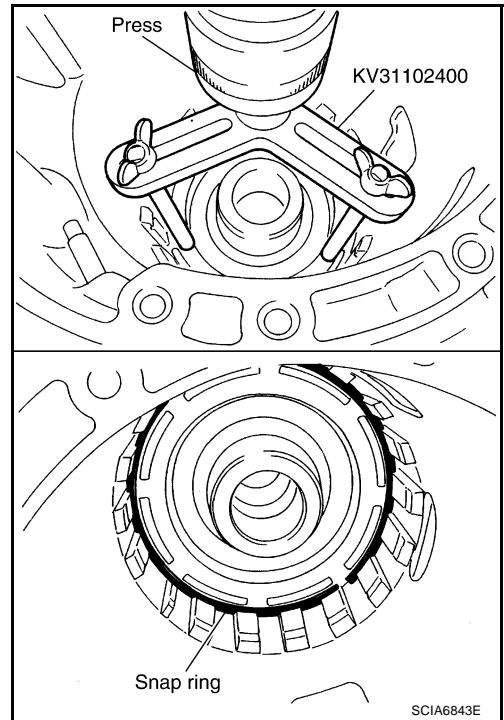
- Check facing for burns, cracks or damage. If necessary, replace the plate.



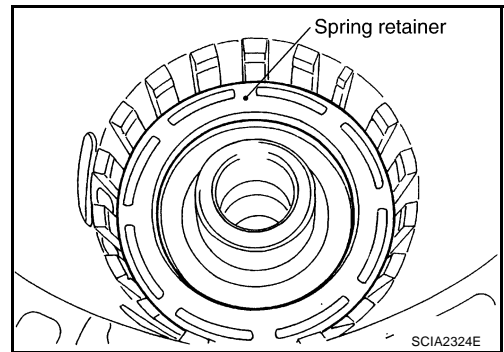
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# DISASSEMBLY

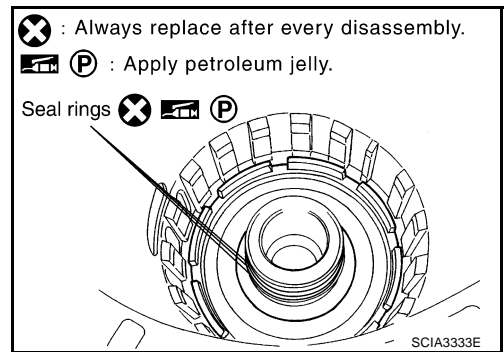
54. Set SST on spring retainer and remove snap ring (fixing spring retainer) from transmission case while compressing return spring.



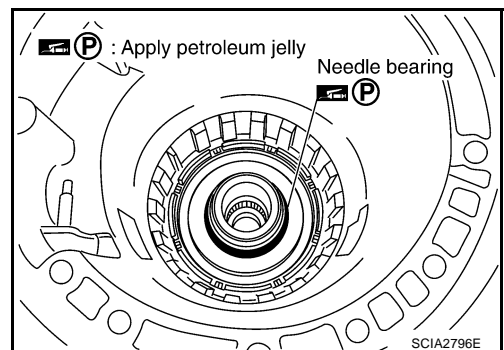
55. Remove spring retainer and return spring from transmission case.



56. Remove seal rings from drum support.



57. Remove needle bearing from drum support edge surface.

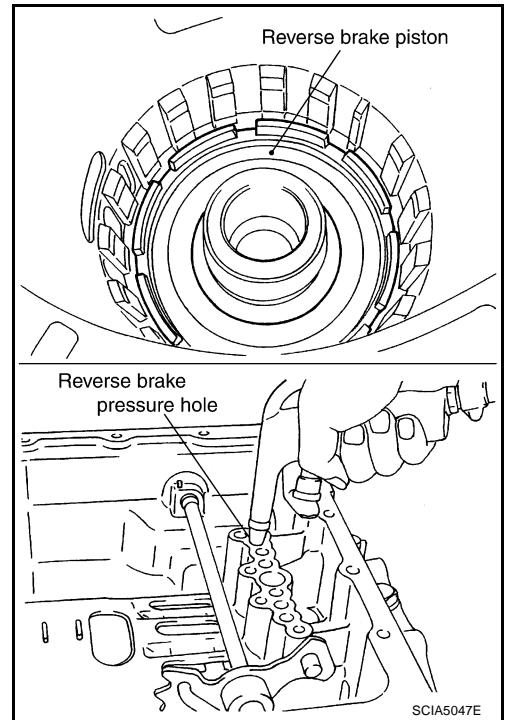


# DISASSEMBLY

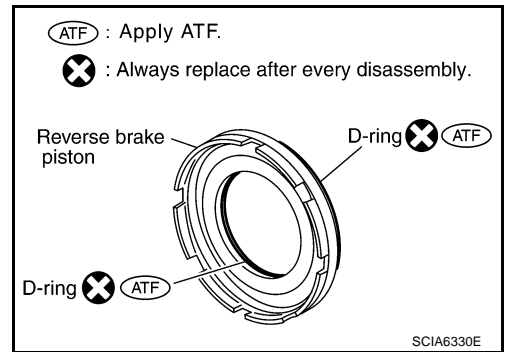
58. Remove reverse brake piston from transmission case with compressed air. Refer to [AT-276, "Oil Channel"](#).

**CAUTION:**

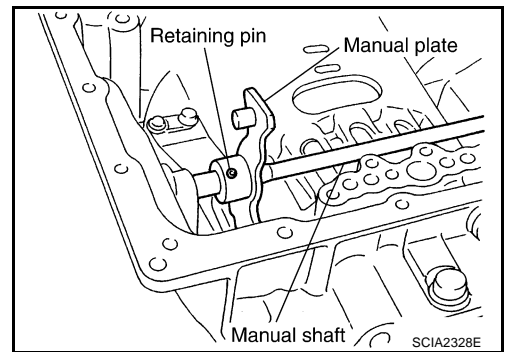
Care should be taken not to abruptly blow air. It makes pistons incline, as the result, it becomes hard to disassemble the pistons.



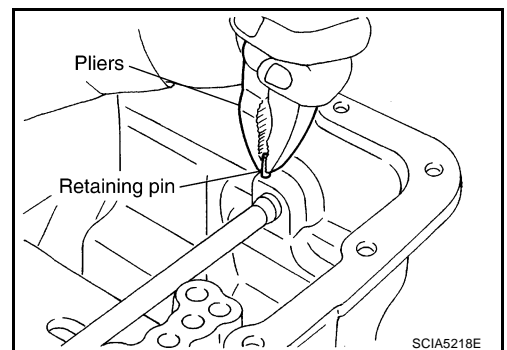
59. Remove D-rings from reverse brake piston.



60. Knock out retaining pin using a pin punch [commercial service tool: 4 mm (0.16 in) dia.].



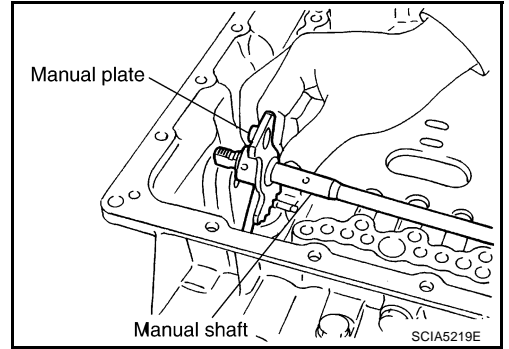
61. Remove manual shaft retaining pin using pair of pliers.



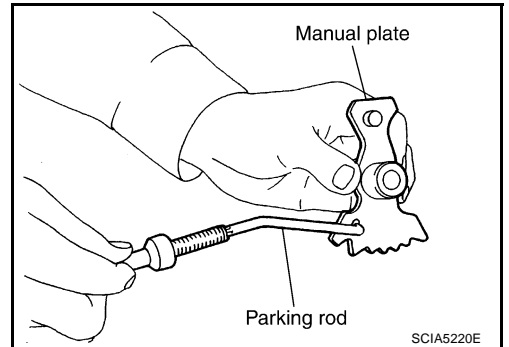
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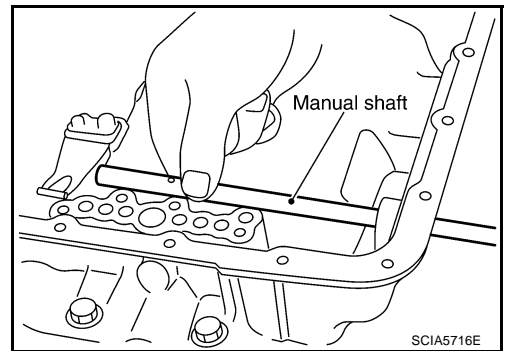
62. Remove manual plate (with parking rod) from manual shaft.



63. Remove parking rod from manual plate.

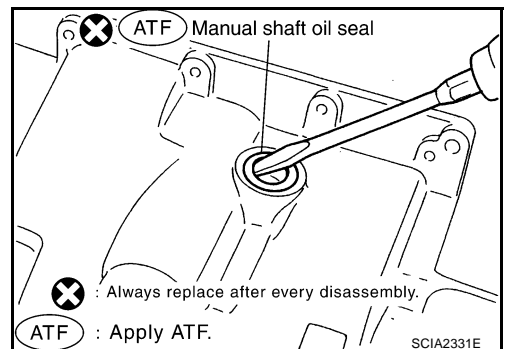


64. Remove manual shaft from transmission case.

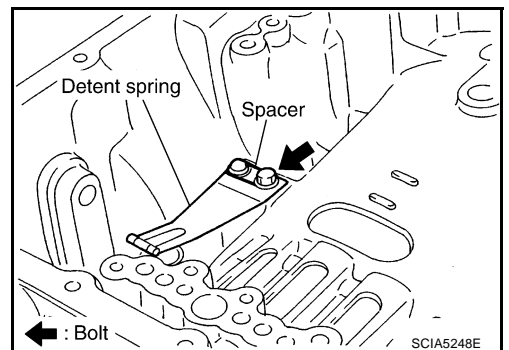


65. Remove manual shaft oil seals using a flat-bladed screwdriver.

**CAUTION:**  
Be careful not to scratch transmission case.

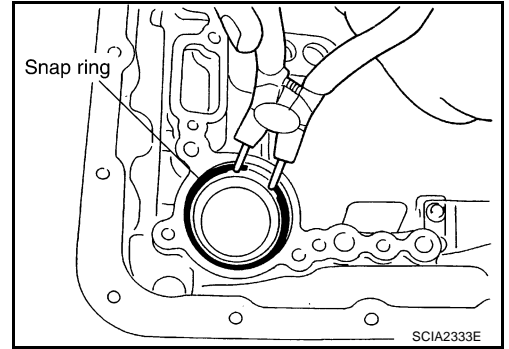


66. Remove detent spring and spacer from transmission case.

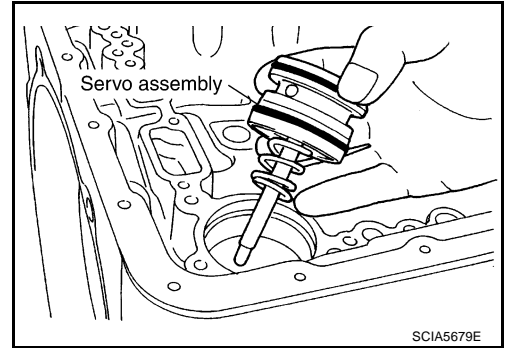


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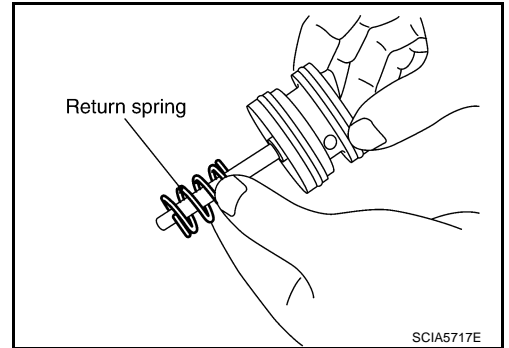
67. Remove snap ring from transmission case using pair of snap ring pliers.



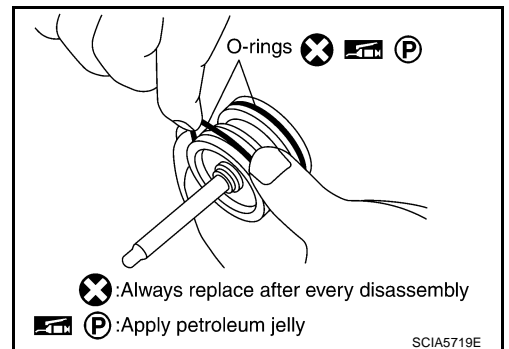
68. Remove servo assembly (with return spring) from transmission case.



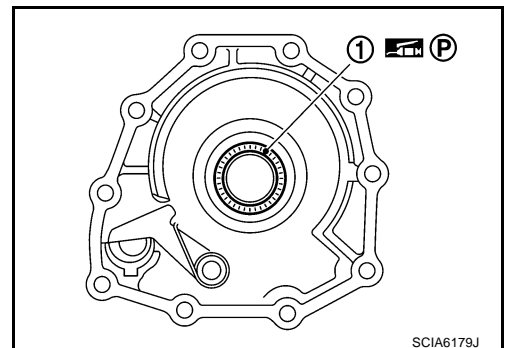
69. Remove return spring from servo assembly.



70. Remove O-rings from servo assembly.



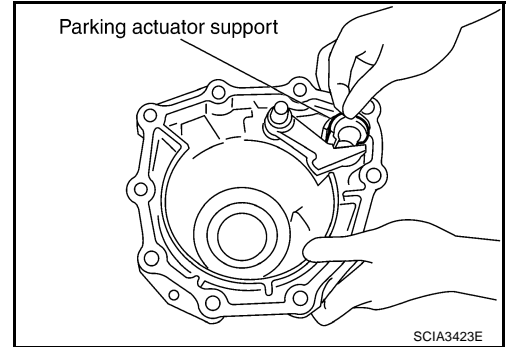
71. Remove needle bearing (1) from rear extension (2WD models) or adapter case (4WD models).



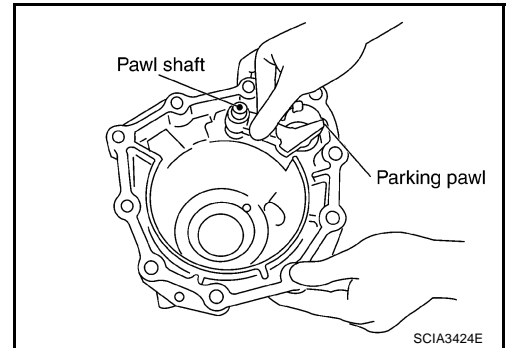
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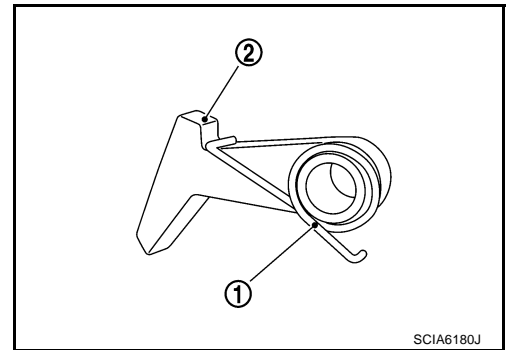
72. Remove parking actuator support from rear extension (2WD models) or adapter case (4WD models).



73. Remove parking pawl (with return spring) and pawl shaft from rear extension (2WD models) or adapter case (4WD models).



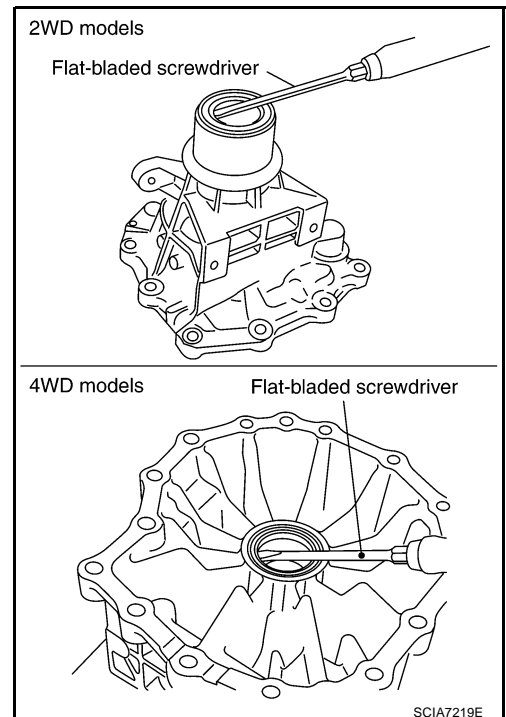
74. Remove return spring (1) from parking pawl (2).



75. Remove rear oil seal from rear extension (2WD models) or adapter case (4WD models).

**CAUTION:**

**Be careful not to scratch rear extension (2WD models) or adapter case (4WD models).**





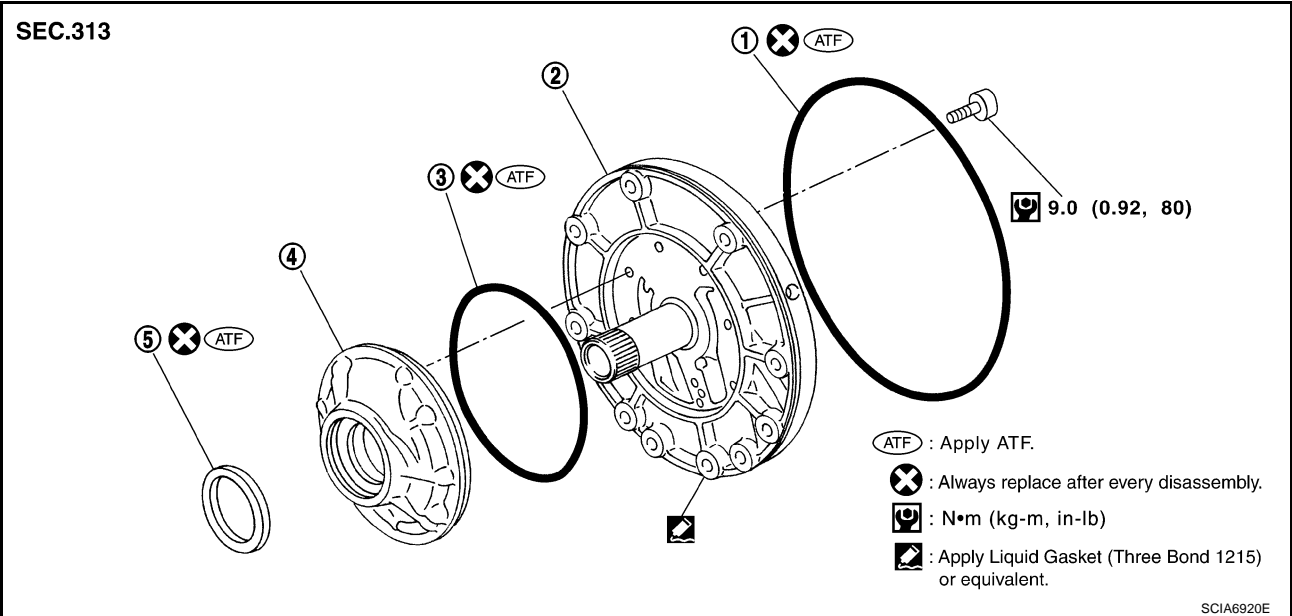
# REPAIR FOR COMPONENT PARTS

## REPAIR FOR COMPONENT PARTS

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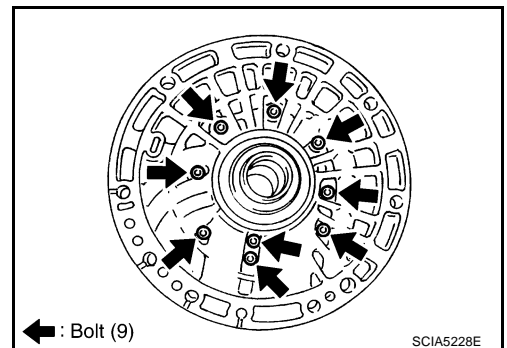
### Oil Pump COMPONENTS

GCS0008J



### DISASSEMBLY

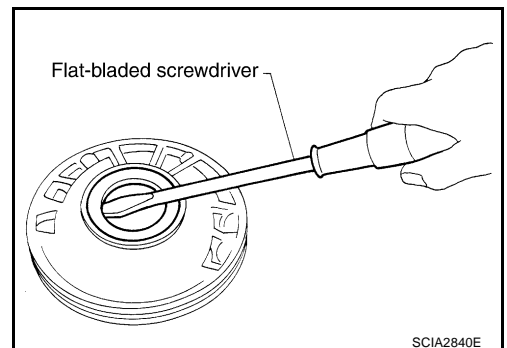
1. Remove oil pump housing from oil pump cover.



2. Remove oil pump housing oil seal using a flat-bladed screwdriver.

**CAUTION:**

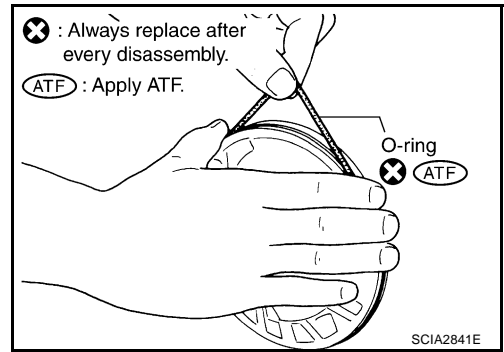
Be careful not to scratch oil pump housing.



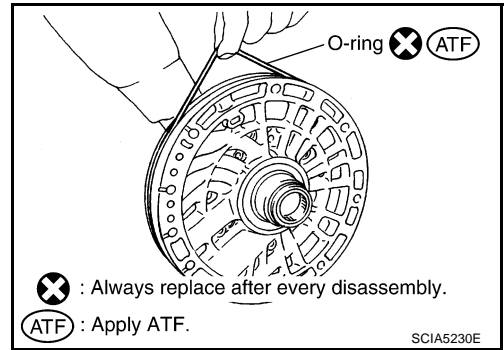
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# REPAIR FOR COMPONENT PARTS

3. Remove O-ring from oil pump housing.



4. Remove O-ring from oil pump cover.

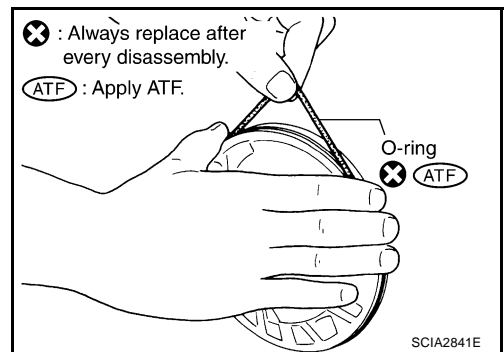


## ASSEMBLY

1. Install O-ring to oil pump cover.



2. Install O-ring to oil pump housing.

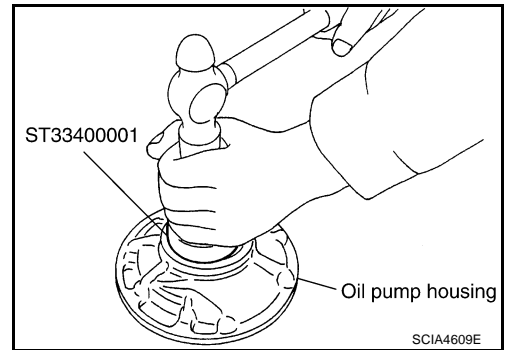


## REPAIR FOR COMPONENT PARTS

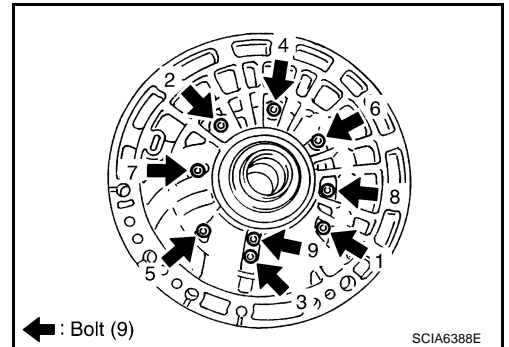
3. Install oil pump housing oil seal to oil pump housing until it is flush using the drift.

**CAUTION:**

- Do not reuse oil seal.
- Apply ATF to oil seal.



4. Install oil pump housing to oil pump cover.
5. Tighten bolts to the specified torque in numerical order shown in the figure after temporarily tightening them. Refer to [AT-301](#), "[COMPONENTS](#)".

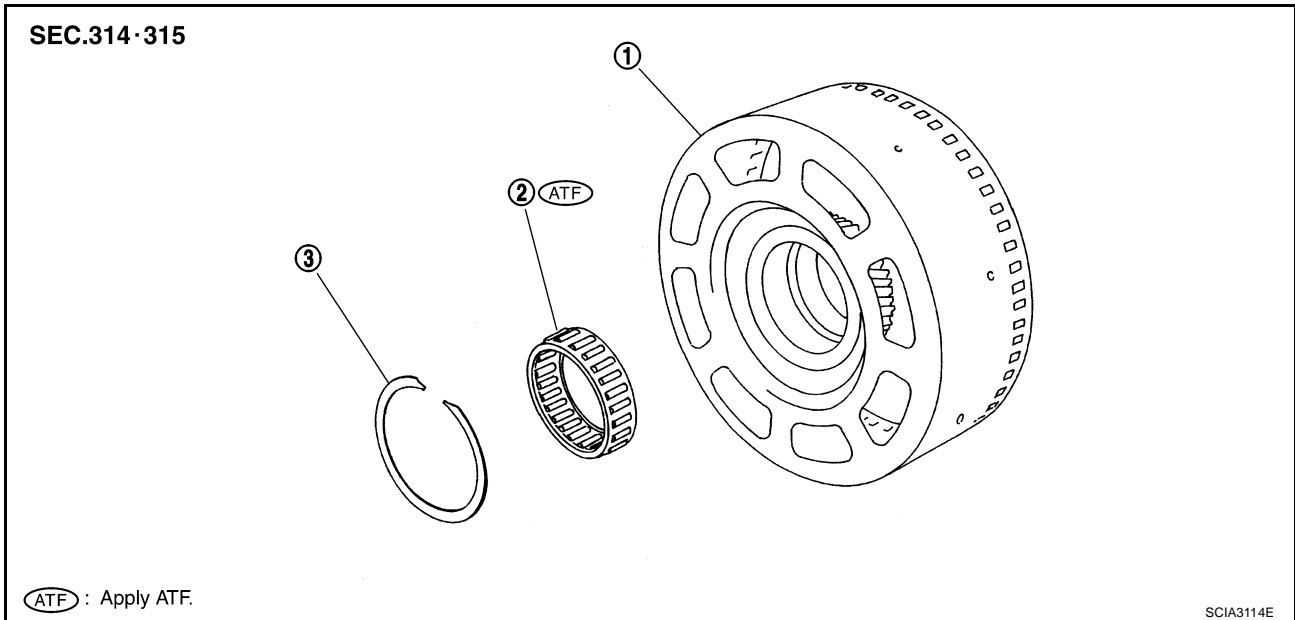


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# REPAIR FOR COMPONENT PARTS

GCS0008K

## Front Sun Gear, 3rd One-way Clutch COMPONENTS



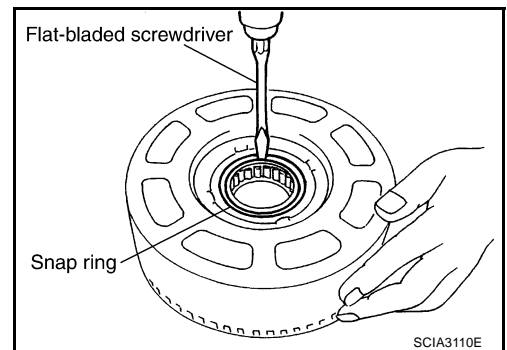
1. Front sun gear

2. 3rd one-way clutch

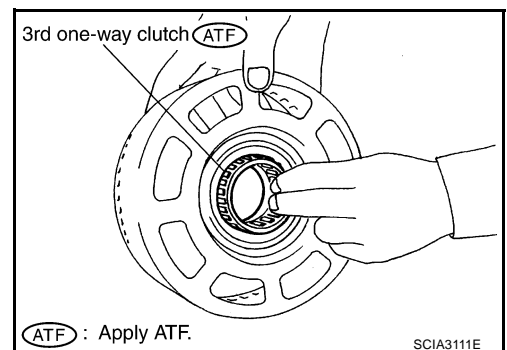
3. Snap ring

### DISASSEMBLY

1. Remove snap ring from front sun gear using a flat-bladed screwdriver



2. Remove 3rd one-way clutch from front sun gear.



# REPAIR FOR COMPONENT PARTS

## INSPECTION

### 3rd One-way Clutch

- Check frictional surface for wear or damage.

**CAUTION:**

If necessary, replace 3rd one-way clutch.

### Front Sun Gear Snap Ring

- Check for deformation, fatigue or damage.

**CAUTION:**

If necessary, replace snap ring.

### Front Sun Gear

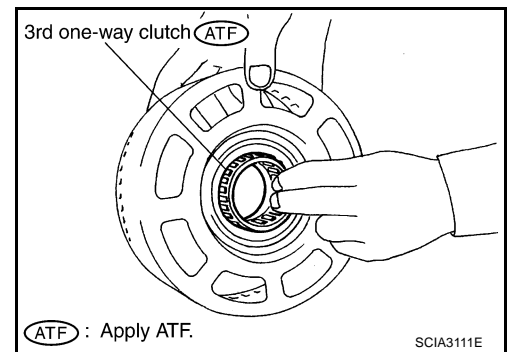
- Check for deformation, fatigue or damage.

**CAUTION:**

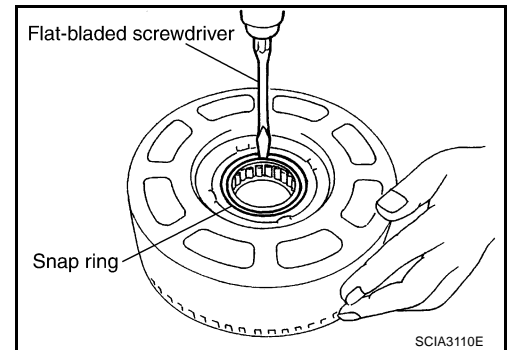
If necessary, replace front sun gear.

## ASSEMBLY

1. Install 3rd one-way clutch in front sun gear.



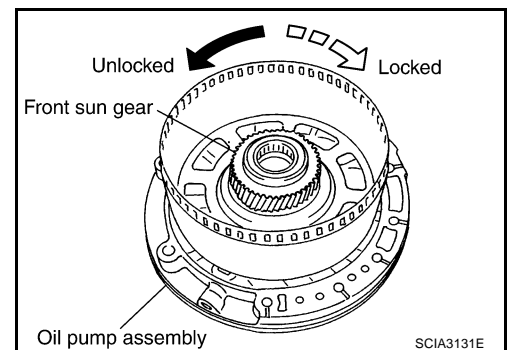
2. Install snap ring in front sun gear using a flat-bladed screwdriver.



3. Check operation of 3rd one-way clutch.
  - a. Hold oil pump assembly and turn front sun gear.
  - b. Check 3rd one-way clutch for correct locking and unlocking directions.

**CAUTION:**

If not as shown in figure, check installation direction of 3rd one-way clutch.



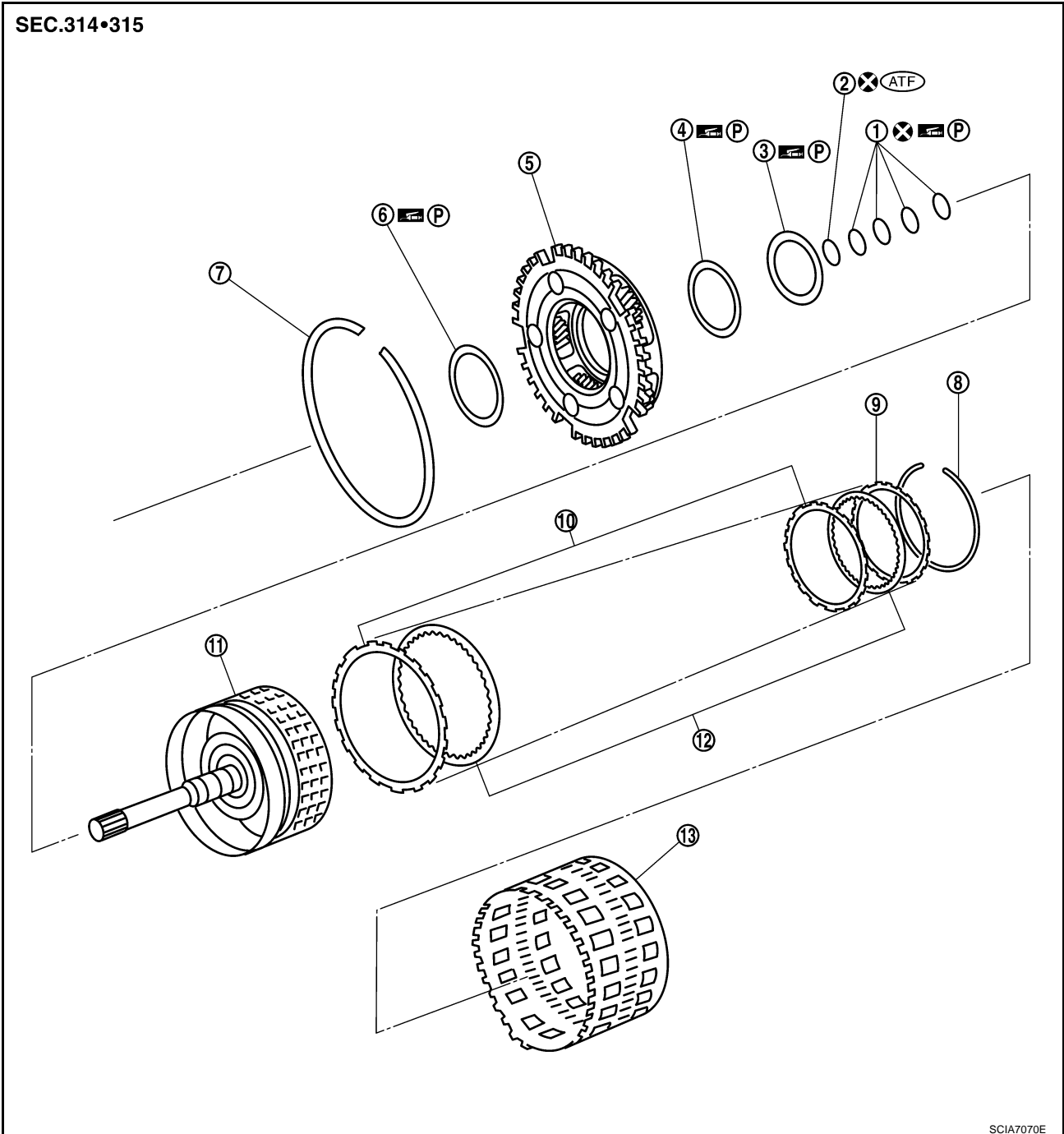
# REPAIR FOR COMPONENT PARTS

## Front Carrier, Input Clutch, Rear Internal Gear COMPONENTS

GCS0008L

YD25DDTi models

SEC.314•315



SCIA7070E

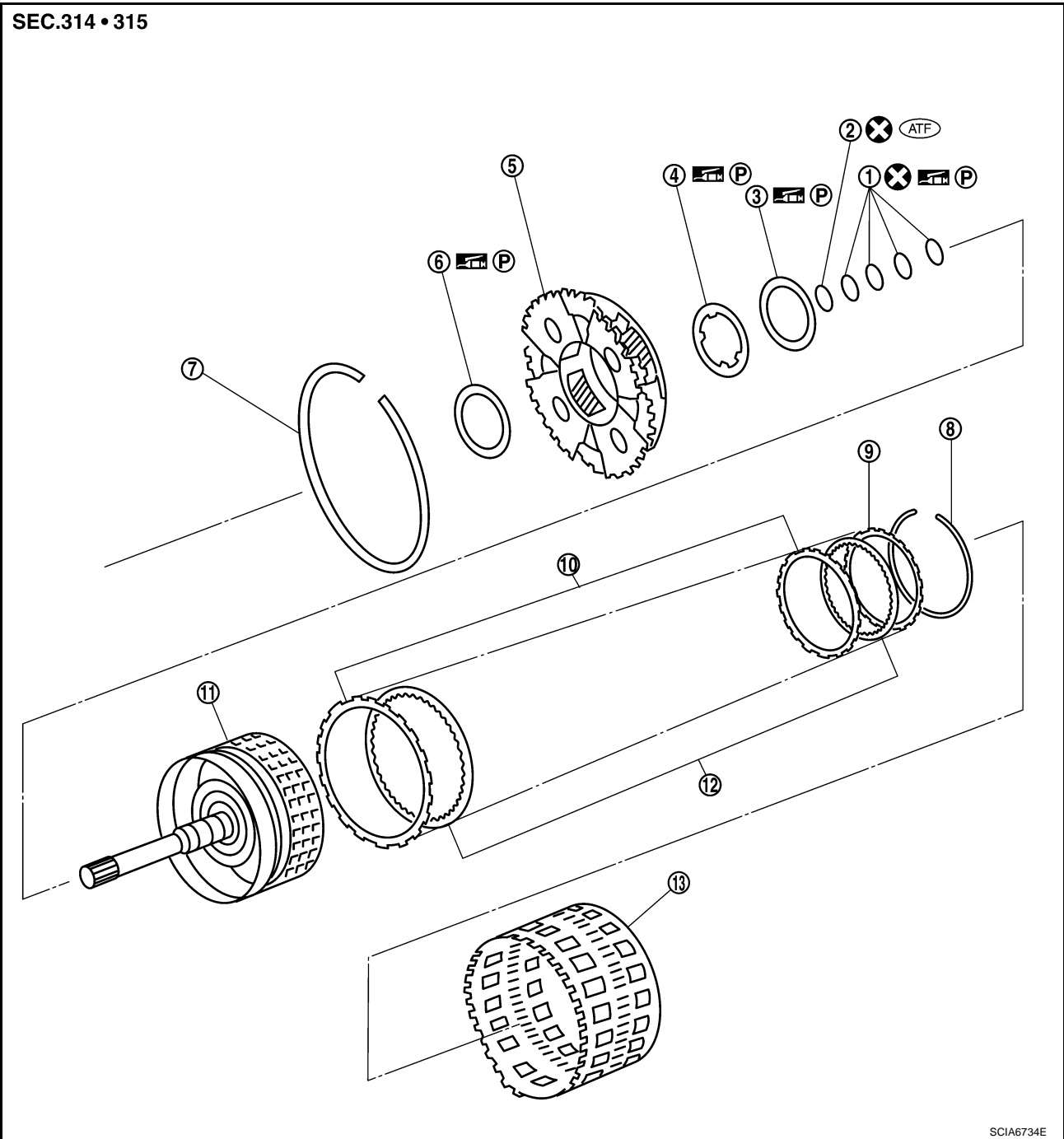
- |                        |                           |                    |
|------------------------|---------------------------|--------------------|
| 1. Seal ring           | 2. O-ring                 | 3. Needle bearing  |
| 4. Bearing race        | 5. Front carrier assembly | 6. Needle bearing  |
| 7. Snap ring           | 8. Snap ring              | 9. Retaining plate |
| 10. Driven plate       | 11. Input clutch drum     | 12. Drive plate    |
| 13. Rear internal gear |                           |                    |

Refer to GI section to make sure icons (symbol marks) in the figure. Refer to [GI-10. "Components"](#) .

# REPAIR FOR COMPONENT PARTS

VQ40DE models

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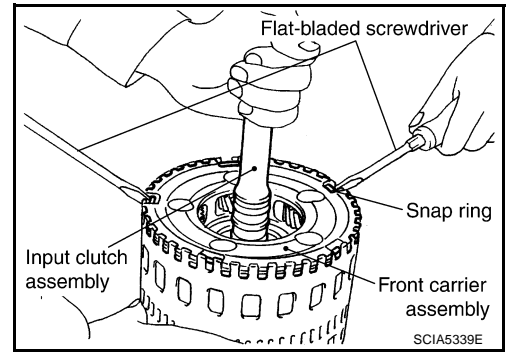
- |                        |                           |                    |
|------------------------|---------------------------|--------------------|
| 1. Seal ring           | 2. O-ring                 | 3. Needle bearing  |
| 4. Bearing race        | 5. Front carrier assembly | 6. Snap ring       |
| 7. Snap ring           | 8. Snap ring              | 9. Retaining plate |
| 10. Driven plate       | 11. Input clutch drum     | 12. Drive plate    |
| 13. Rear internal gear |                           |                    |

Refer to GI section to make sure icons (symbol marks) in the figure. Refer to [GI-10, "Components"](#) .

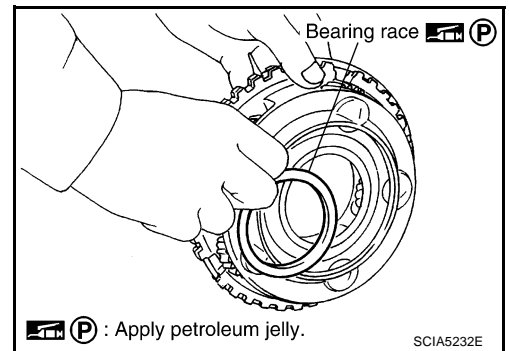
# REPAIR FOR COMPONENT PARTS

## DISASSEMBLY

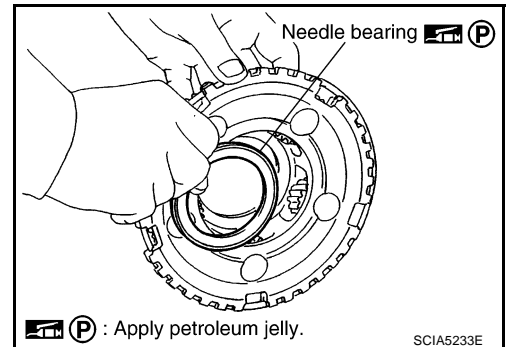
1. Compress snap ring using 2 flat-bladed screwdrivers.
2. Remove front carrier assembly and input clutch assembly from rear internal gear.
3. Remove front carrier assembly from input clutch assembly.



- a. Remove bearing race from front carrier assembly.

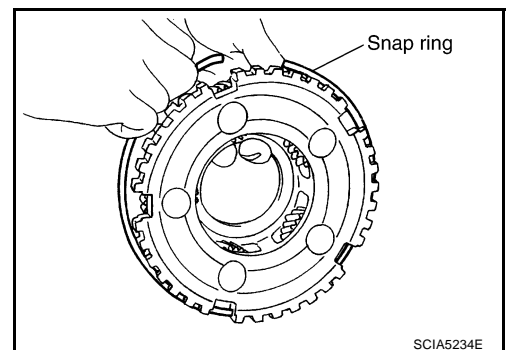


- b. Remove needle bearing from front carrier assembly.



- c. Remove snap ring from front carrier assembly.

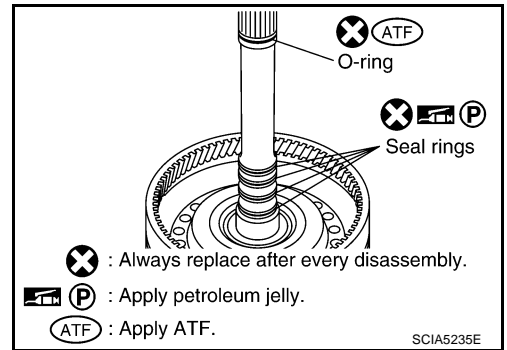
**CAUTION:**  
Do not expand snap ring excessively.



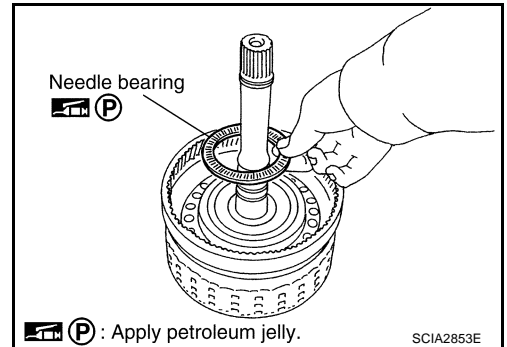


## REPAIR FOR COMPONENT PARTS

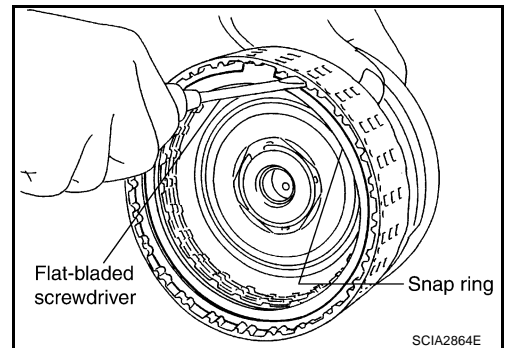
4. Disassemble input clutch assembly.
  - a. Remove O-ring and seal rings from input clutch assembly.



- b. Remove needle bearing from input clutch assembly.



- c. Remove snap ring from input clutch drum using a flat-bladed screwdriver
  - d. Remove retaining plate, drive plates and driven plates from input clutch drum.



### INSPECTION

#### Front Carrier Snap Ring

- Check for deformation, fatigue or damage.

**CAUTION:**

If necessary, replace snap ring.

#### Input Clutch Snap Ring

- Check for deformation, fatigue or damage.

**CAUTION:**

If necessary, replace input clutch assembly.

#### Input Clutch Drum

- Check for deformation, fatigue or damage or burns.

**CAUTION:**

If necessary, replace input clutch assembly.

#### Input Clutch Drive Plates

- Check facing for burns, cracks or damage.

**CAUTION:**

If necessary, replace input clutch assembly.

#### Input Clutch Retaining Plate and Driven Plates

- Check facing for burns, cracks or damage.

# REPAIR FOR COMPONENT PARTS

**CAUTION:**

If necessary, replace input clutch assembly.

## Front Carrier

- Check for deformation, fatigue or damage.

**CAUTION:**

If necessary, replace front carrier assembly.

## Rear Internal Gear

- Check for deformation, fatigue or damage.

**CAUTION:**

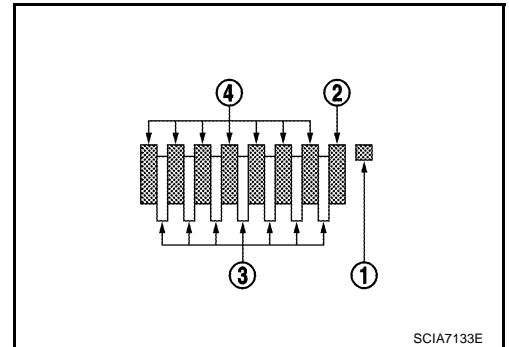
If necessary, replace rear internal gear assembly.

## ASSEMBLY

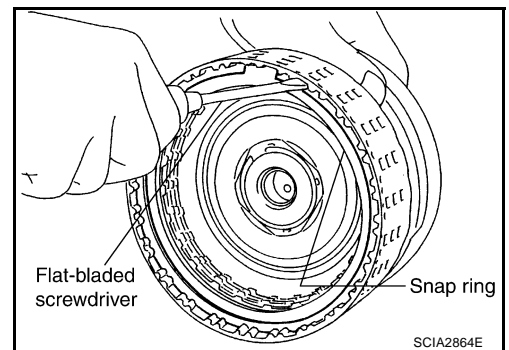
1. Install input clutch.
  - a. Install drive plates, driven plates and retaining plate in input clutch drum.
    - Snap ring (1)
    - Retaining plate (2)
    - Drive plate (3)
    - Driven plate (4)
    - Drive plate/Driven plate: 7/7

**CAUTION:**

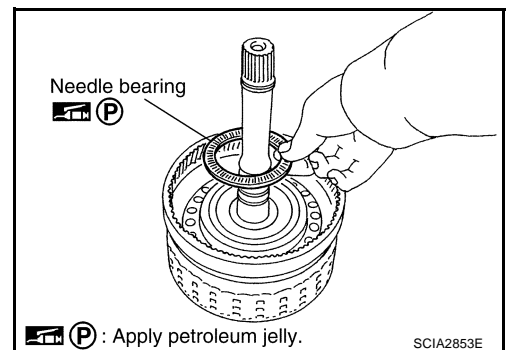
Take care with order of plates.



- b. Install snap ring in input clutch drum using a flat-bladed screwdriver.

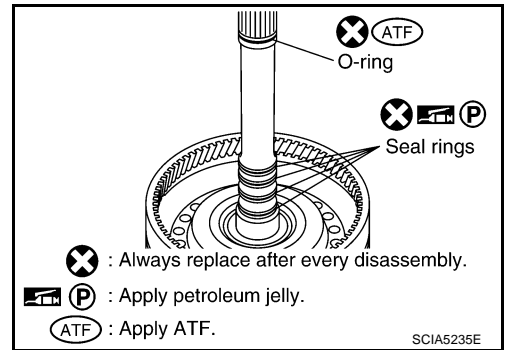


- c. Install needle bearing in input clutch assembly.



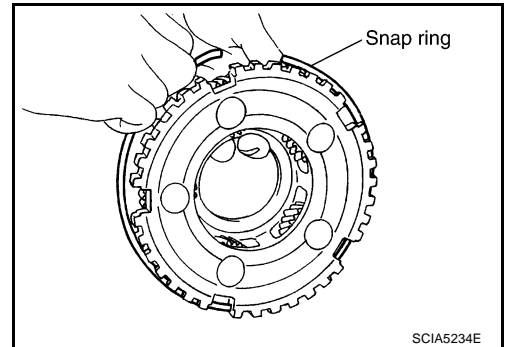
## REPAIR FOR COMPONENT PARTS

- d. Install O-ring and seal rings in input clutch assembly.



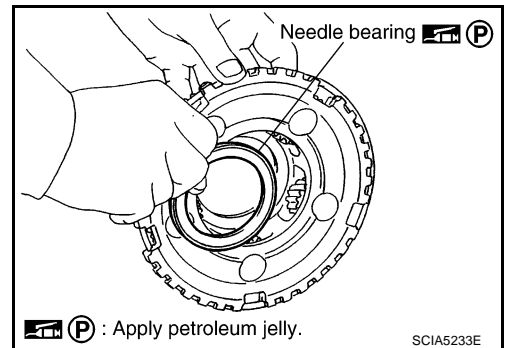
2. Install front carrier assembly.  
a. Install snap ring to front carrier assembly.

**CAUTION:**  
Do not expand snap ring excessively.

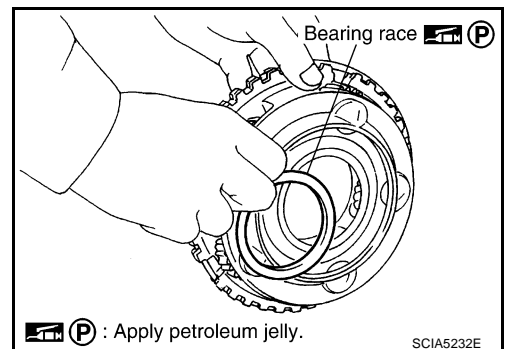


- b. Install needle bearing in front carrier assembly.

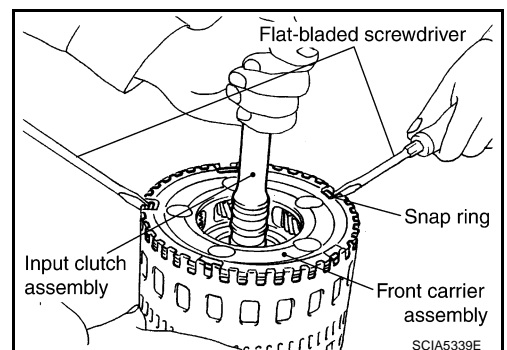
**CAUTION:**  
Take care with the direction of needle bearing. Refer to [AT-278, "Locations of Adjusting Shims, Needle Bearings, Thrust Washers and Snap Rings"](#).



- c. Install bearing race in front carrier assembly.  
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 in rear internal gear.



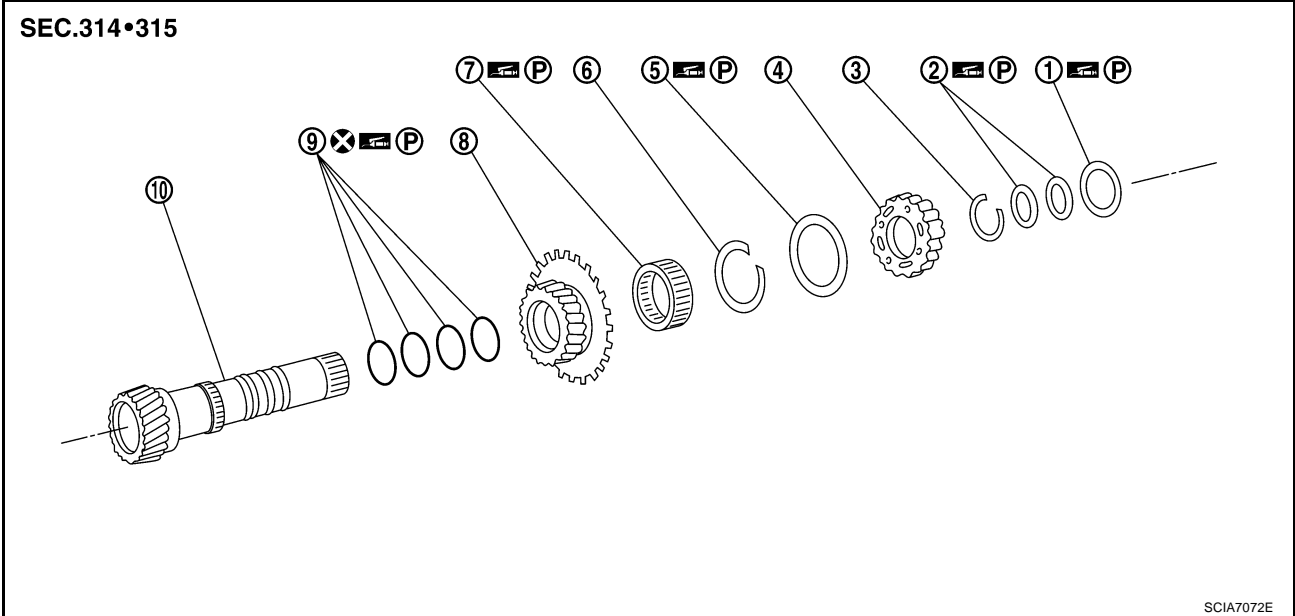
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# REPAIR FOR COMPONENT PARTS

GCS0008M

## Mid Sun Gear, Rear Sun Gear, High and Low Reverse Clutch Hub COMPONENTS

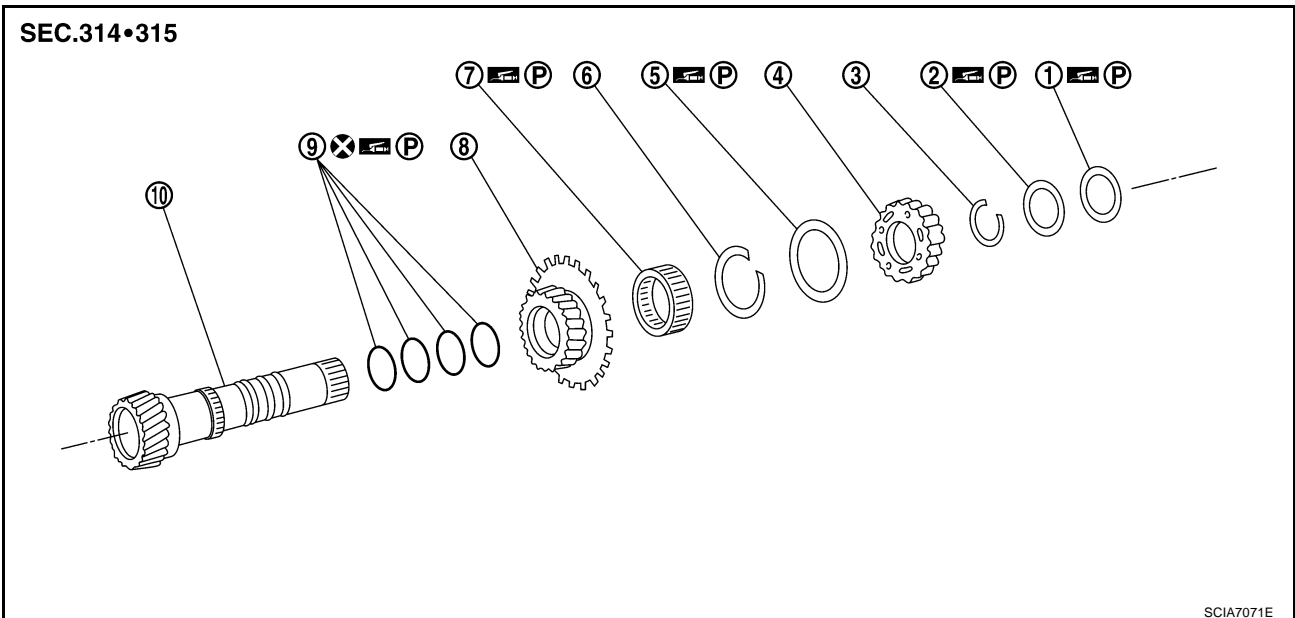
### YD25DDTi models



- |                                    |                   |              |
|------------------------------------|-------------------|--------------|
| 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-10. "Components"](#) .

### VQ40DE models



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

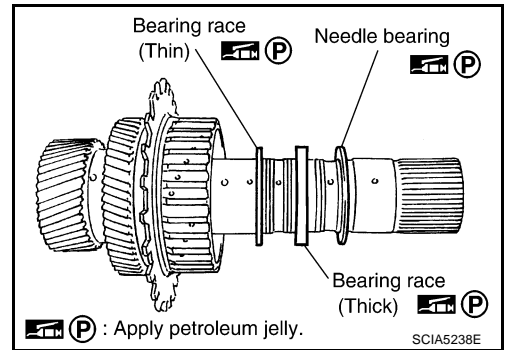
Refer to GI section to make sure icons (symbol marks) in the figure. Refer to [GI-10. "Components"](#) .

# REPAIR FOR COMPONENT PARTS

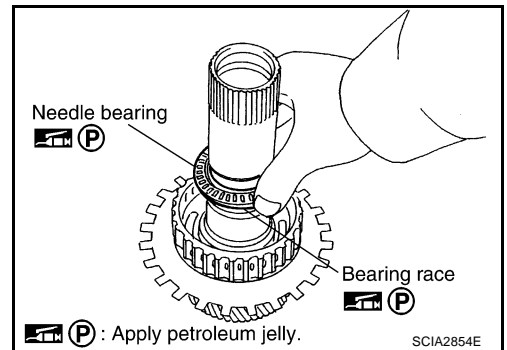
## DISASSEMBLY

1. Remove needle bearing and bearing races from high and low reverse clutch hub.

- YD25DDTi models

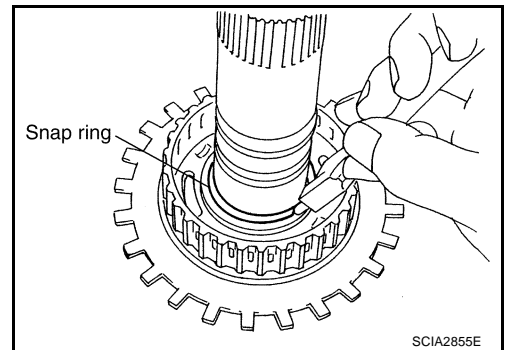


- VQ40DE models

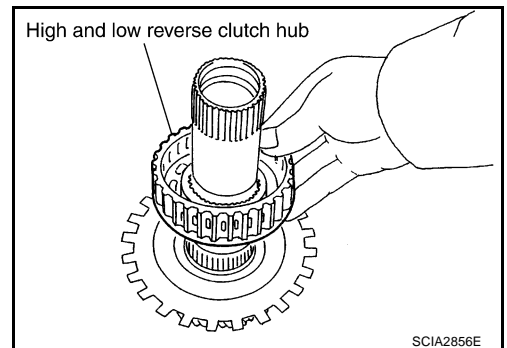


2. Remove snap ring from mid sun gear assembly using pair of snap ring pliers.

**CAUTION:**  
Do not expand snap ring excessively.



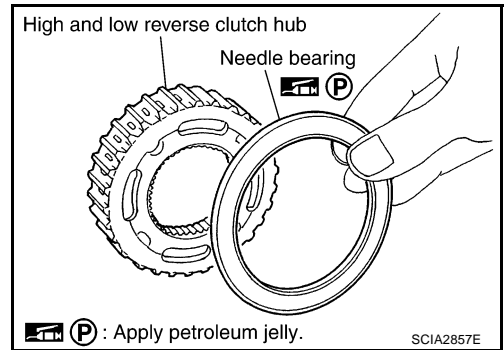
3. Remove high and low reverse clutch hub from mid sun gear assembly.



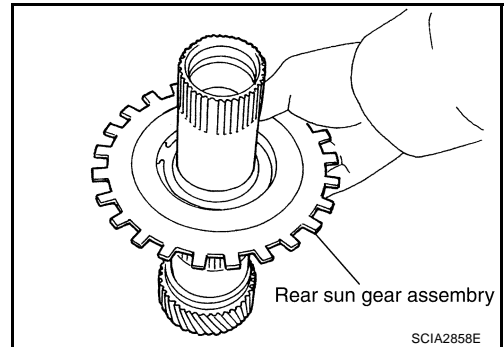
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# REPAIR FOR COMPONENT PARTS

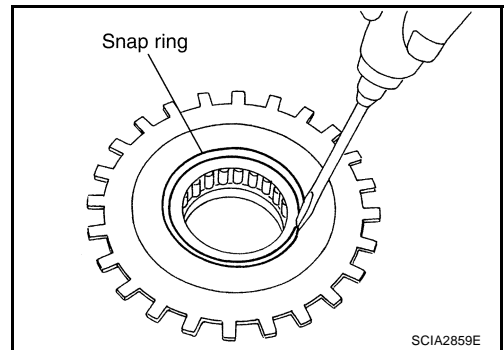
- a. Remove needle bearing from high and low reverse clutch hub.



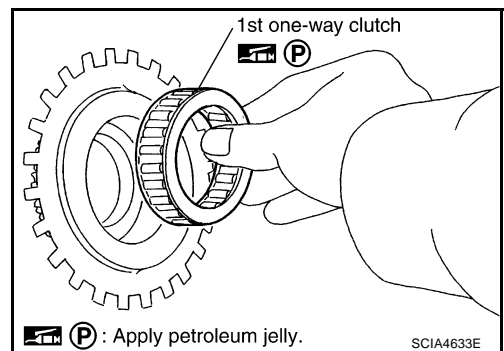
4. Remove rear sun gear assembly from mid sun gear assembly.



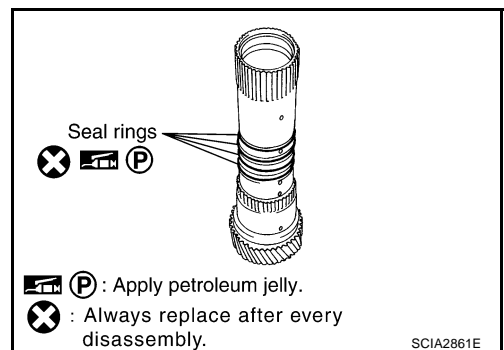
- a. Remove snap ring from rear sun gear using a flat-bladed screwdriver.



- b. Remove 1st one-way clutch from rear sun gear.



5. Remove seal rings from mid sun gear.



# REPAIR FOR COMPONENT PARTS

## INSPECTION

### High and Low Reverse Clutch Hub Snap Ring, Rear Sun Gear Snap Ring

- Check for deformation, fatigue or damage.

**CAUTION:**

If necessary, replace snap ring.

### 1st One-way Clutch

- Check frictional surface for wear or damage.

**CAUTION:**

If necessary, replace 1st one-way clutch.

### Mid Sun Gear

- Check for deformation, fatigue or damage.

**CAUTION:**

If necessary, replace mid sun gear.

### Rear Sun Gear

- Check for deformation, fatigue or damage.

**CAUTION:**

If necessary, replace rear sun gear.

### High and Low Reverse Clutch Hub

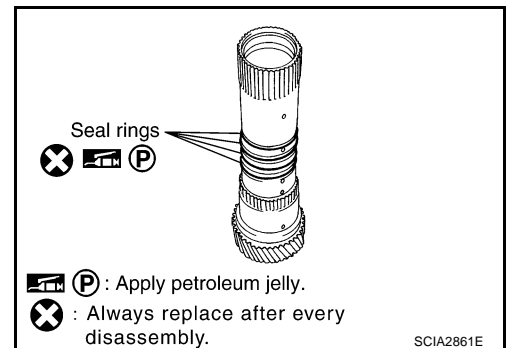
- Check for deformation, fatigue or damage.

**CAUTION:**

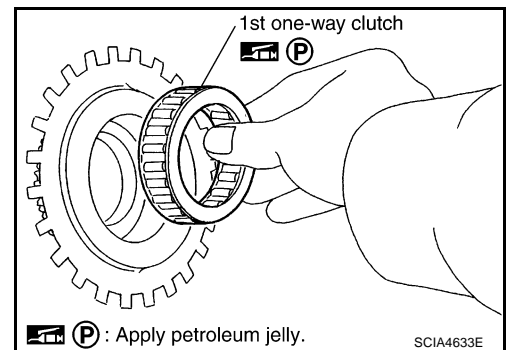
If necessary, replace high and low reverse clutch hub.

## ASSEMBLY

1. Install seal rings to mid sun gear.



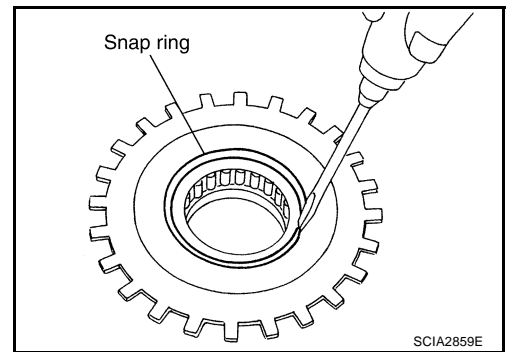
2. Install 1st one-way clutch to rear sun gear.



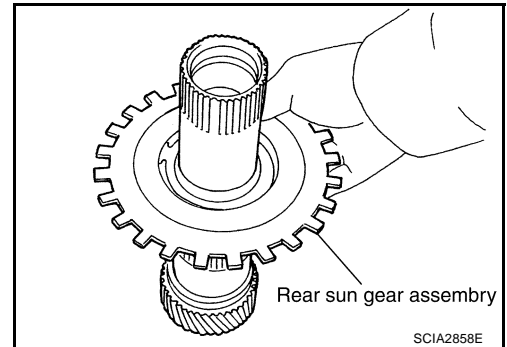
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## REPAIR FOR COMPONENT PARTS

3. Install snap ring to rear sun gear using a flat-bladed screwdriver.



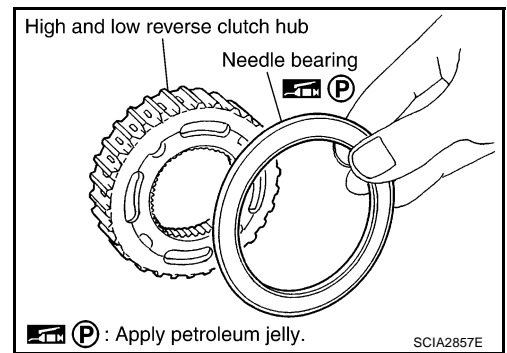
4. Install rear sun gear assembly to mid sun gear assembly.



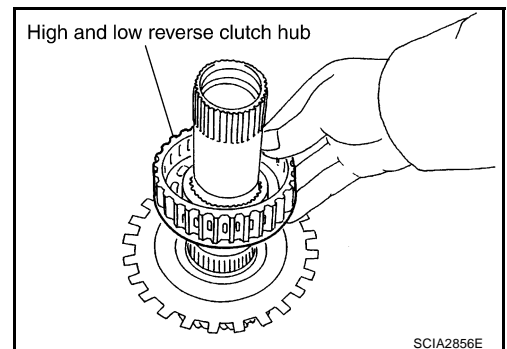
5. Install needle bearing to high and low reverse clutch hub.

**CAUTION:**

Take care with the direction of needle bearing. Refer to [AT-278, "Locations of Adjusting Shims, Needle Bearings, Thrust Washers and Snap Rings"](#).



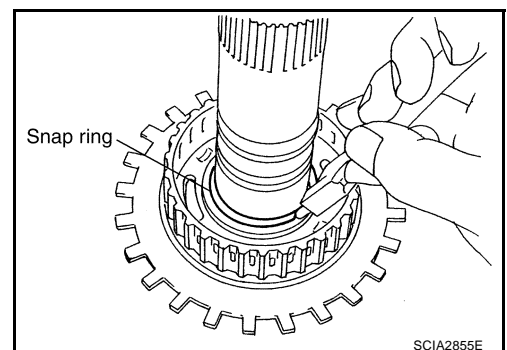
6. Install high and low reverse clutch hub to mid sun gear assembly.



7. Install snap ring to mid sun gear assembly using pair of snap ring pliers.

**CAUTION:**

Do not expand snap ring excessively.



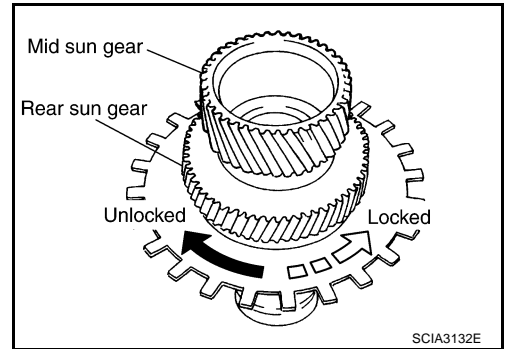


## REPAIR FOR COMPONENT PARTS

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.

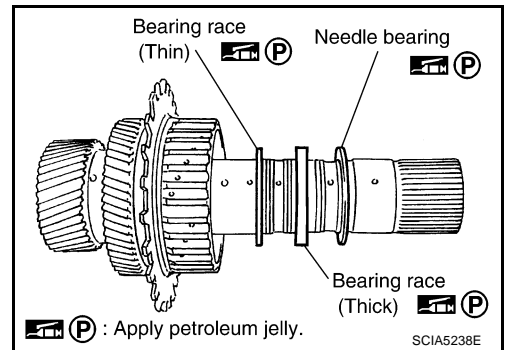


9. Install needle bearing and bearing races to high and low reverses clutch hub.

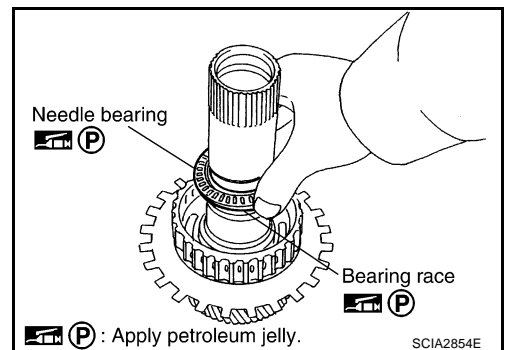
**CAUTION:**

Take care with order of bearing races.

- YD25DDTi models



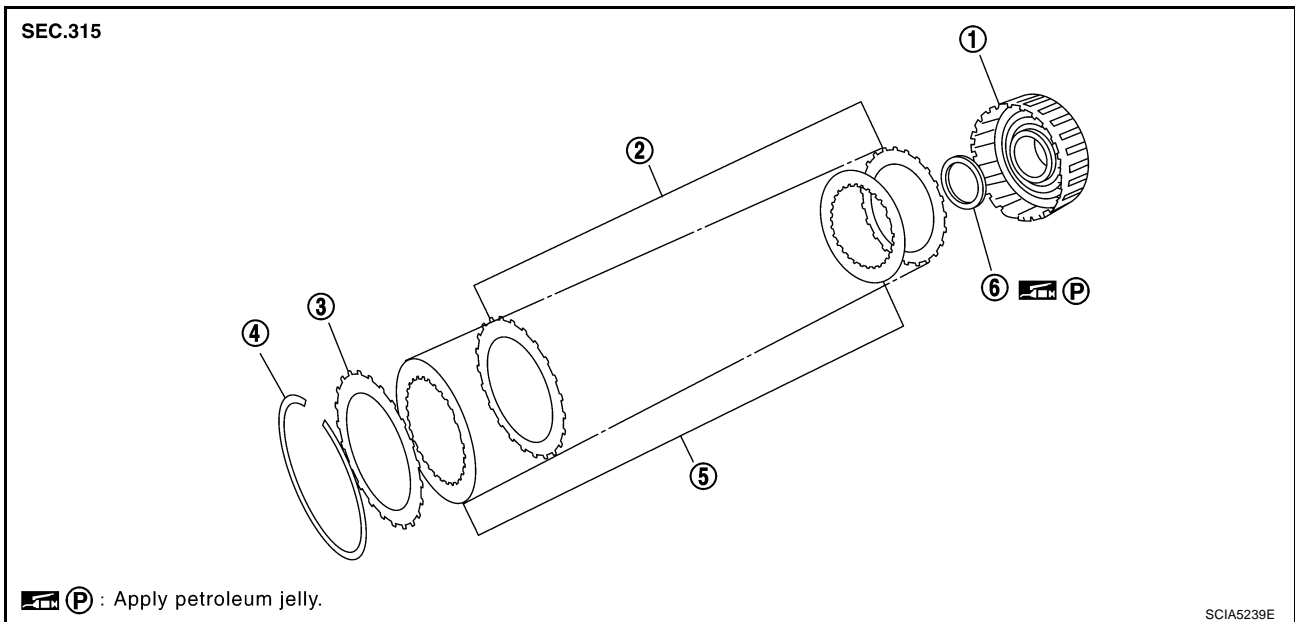
- VQ40DE models



# REPAIR FOR COMPONENT PARTS

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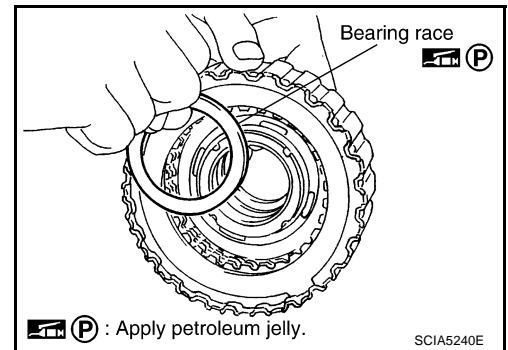
## High and Low Reverse Clutch COMPONENTS



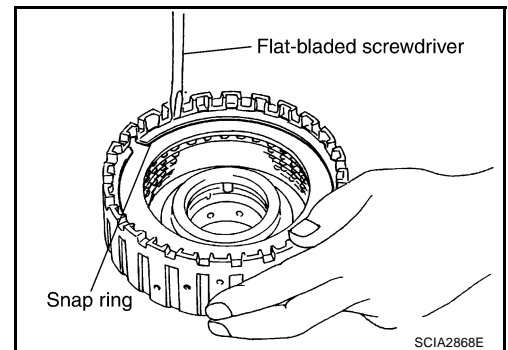
- |                                     |                 |                    |
|-------------------------------------|-----------------|--------------------|
| 1. High and low reverse clutch drum | 2. Driven plate | 3. Retaining plate |
| 4. Snap ring                        | 5. Drive plate  | 6. Bearing race    |

### DISASSEMBLY

1. Remove bearing race from high and low reverse clutch drum.



2. Remove snap ring from high and low reverse clutch drum using a flat-bladed screwdriver.
3. Remove retaining plate, drive plates and driven plates from high and low reverse clutch drum.



### INSPECTION

- Check the following, and replace high and low reverse clutch assembly if necessary.

#### High and Low Reverse Clutch Snap Ring

- Check for deformation, fatigue or damage.

#### High and Low Reverse Clutch Drive Plates

- Check facing for burns, cracks or damage.

# REPAIR FOR COMPONENT PARTS

## High and Low Reverse Clutch Retaining Plate and Driven Plates

- Check facing for burns, cracks or damage.

### ASSEMBLY

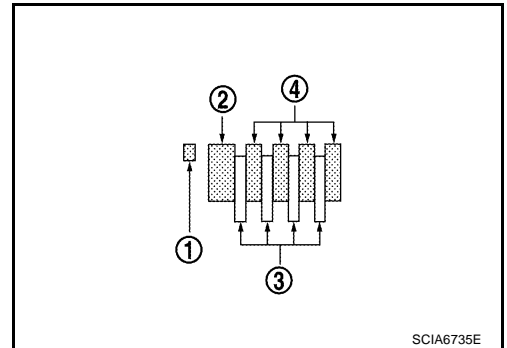
1. Install driven plates, drive plates and retaining plate in high and low reverse clutch drum.

#### CAUTION:

Take care with order of plates.

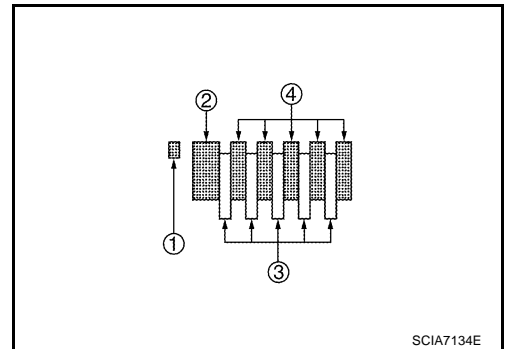
#### ● YD25DDTi models

- Snap ring (1)
- Retaining plate (2)
- Drive plate (3)
- Driven plate (4)
- Drive plate/Driven plate: 4/4

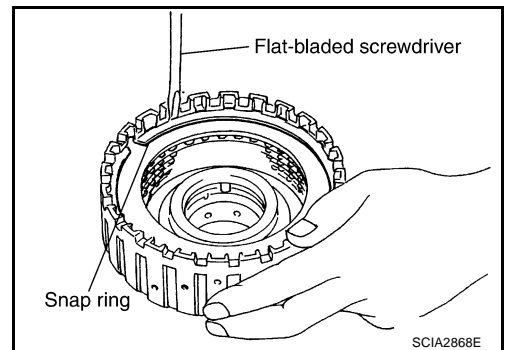


#### ● VQ40DE models

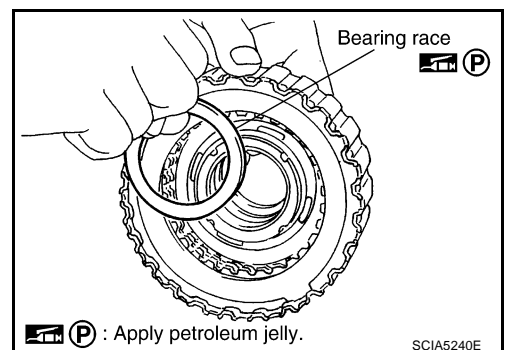
- Snap ring (1)
- Retaining plate (2)
- Drive plate (3)
- Driven plate (4)
- Drive plate/Driven plate: 5/5



2. Install snap ring in high and low reverse clutch drum using a flat-bladed screwdriver.



3. Install bearing race to high and low reverse clutch drum.



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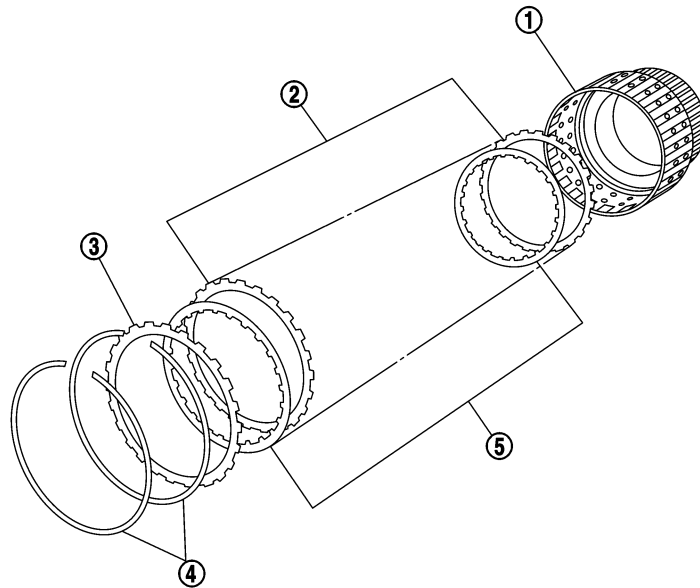
# REPAIR FOR COMPONENT PARTS

## Direct Clutch COMPONENTS

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### YD25DDTi models

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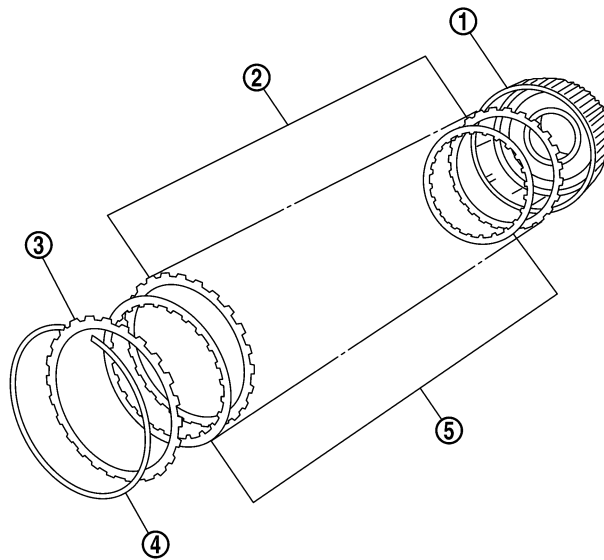


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|-----------------------|-----------------|--------------------|
| 1. Direct clutch drum | 2. Driven plate | 3. Retaining plate |
| 4. Snap ring          | 5. Drive plate  |                    |

### VQ40DE models

SEC.315



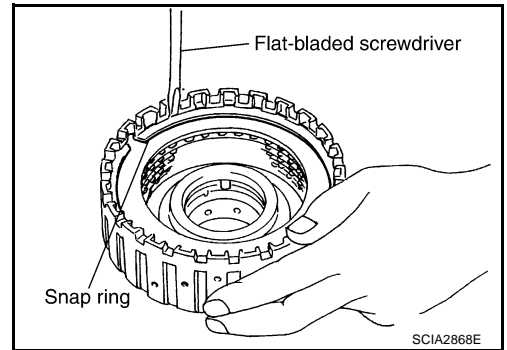
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|-----------------------|-----------------|--------------------|
| 1. Direct clutch drum | 2. Driven plate | 3. Retaining plate |
| 4. Snap ring          | 5. Drive plate  |                    |

# REPAIR FOR COMPONENT PARTS

## DISASSEMBLY

1. Remove snap rings from direct clutch drum using a flat-bladed screwdriver.
2. Remove retaining plate, drive plates and driven plates from direct clutch drum.



## INSPECTION

- Check the following, and replace direct clutch assembly if necessary.

### Direct Clutch Snap Rings

- Check for deformation, fatigue or damage.

### Direct Clutch Drive Plates

- Check facing for burns, cracks or damage.

### Direct Clutch Retaining Plate and Driven Plates

- Check facing for burns, cracks or damage.

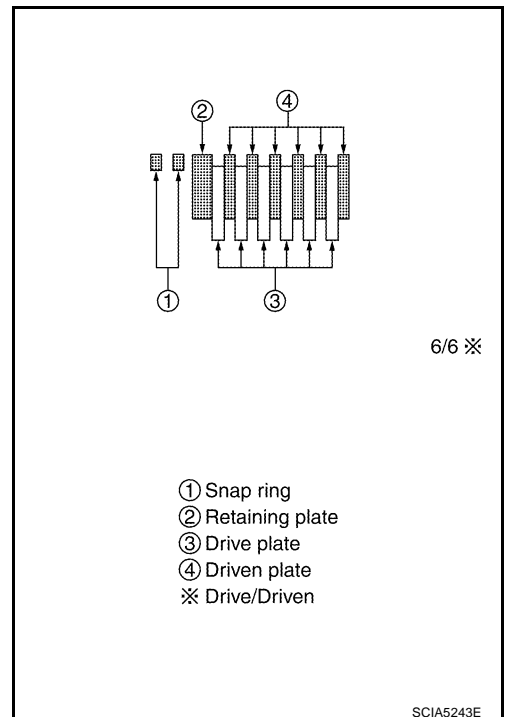
## ASSEMBLY

1. Install driven plates, drive plates and retaining plate in direct clutch drum.

### CAUTION:

Take care with order of plates.

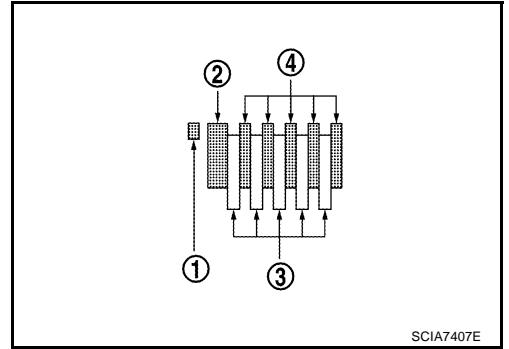
- YD25DDTi models



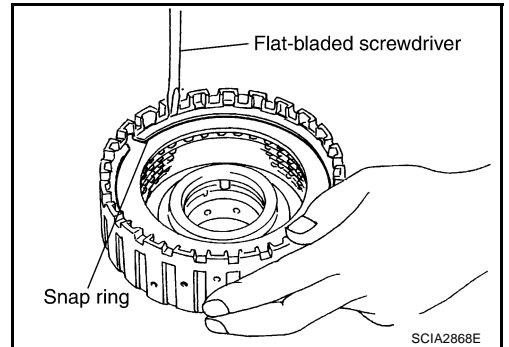
## REPAIR FOR COMPONENT PARTS

- **VQ40DE models**

- Snap ring (1)
- Retaining plate (2)
- Drive plate (3)
- Driven plate (4)
- Drive plate/Driven plate: 5/5



2. Install snap rings in direct clutch drum using a flat-bladed screwdriver.



# ASSEMBLY

## ASSEMBLY

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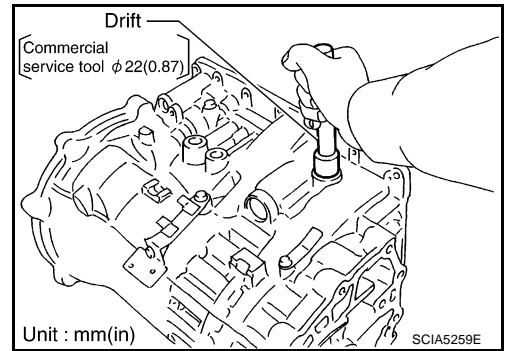
### Assembly (1)

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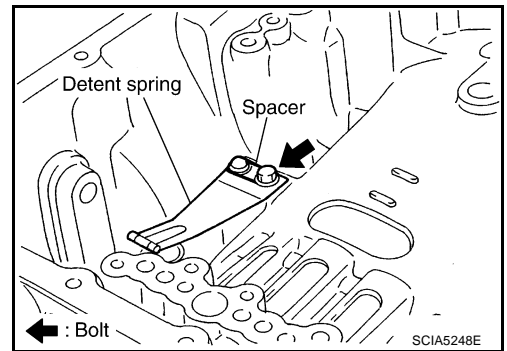
1. As shown in the figure, use a drift [commercial service tool: 22 mm (0.87 in) dia.] to drive manual shaft oil seals into transmission case until it is flush.

**CAUTION:**

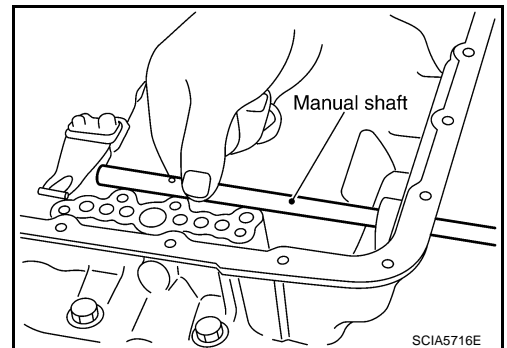
- Apply ATF to manual shaft oil seals.
- Do not reuse manual shaft oil seals.



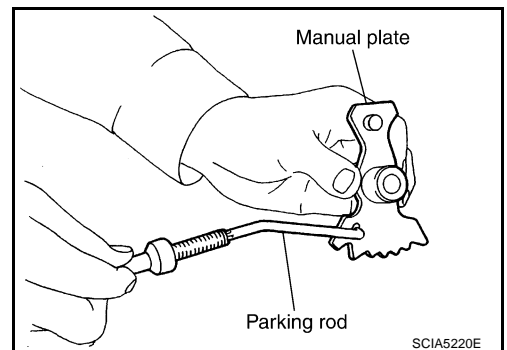
2. Install detent spring and spacer to transmission case and then tighten mounting bolts to the specified torque. Refer to [AT-262](#), "[Components](#)".



3. Install manual shaft to transmission case.



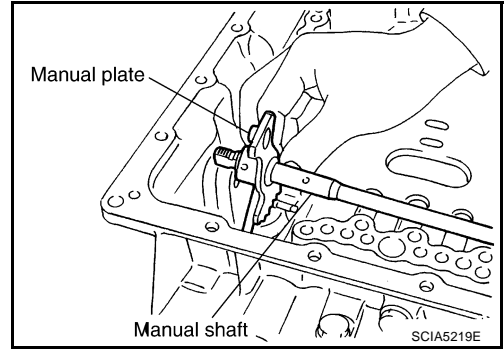
4. Install parking rod to manual plate.



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# ASSEMBLY

5. Install manual plate (with parking rod) to manual shaft.

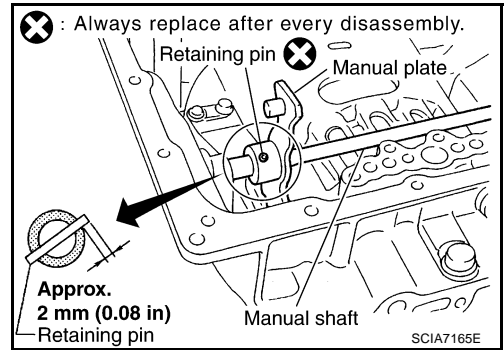


6. Install retaining pin into manual plate and manual shaft.

- a. Fit pinhole of manual plate to pinhole of manual shaft with a pin punch.
- b. Tap retaining pin into manual plate using a hammer.

**CAUTION:**

Drive retaining pin to  $2 \pm 0.5$  mm ( $0.08 \pm 0.020$  in) over manual plate.

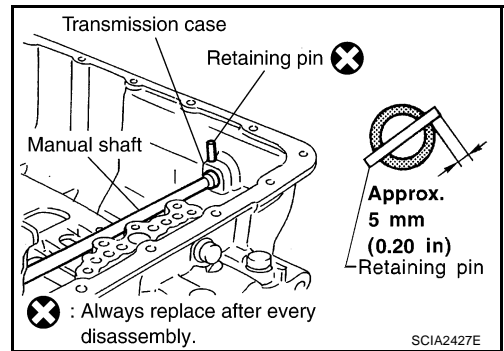


7. Install retaining pin into transmission case and manual shaft.

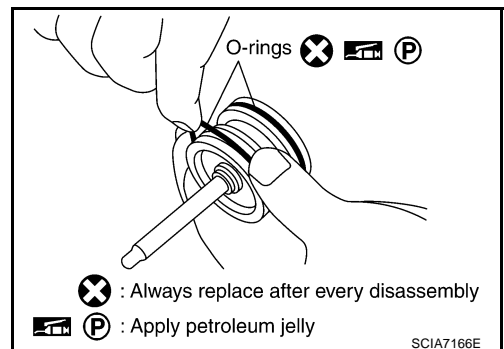
- a. Fit pinhole of transmission case to pinhole of manual shaft with a pin punch.
- b. Tap retaining pin into the transmission case using a hammer.

**CAUTION:**

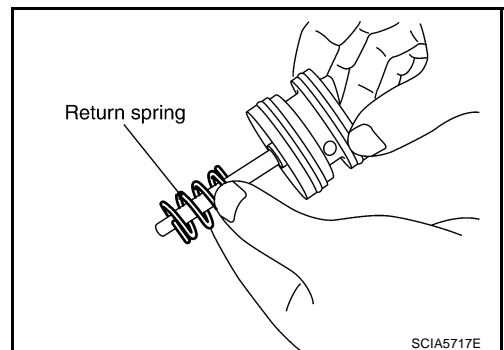
Drive retaining pin to  $5 \pm 1$  mm ( $0.20 \pm 0.04$  in) over transmission case.



8. Install O-rings to servo assembly.



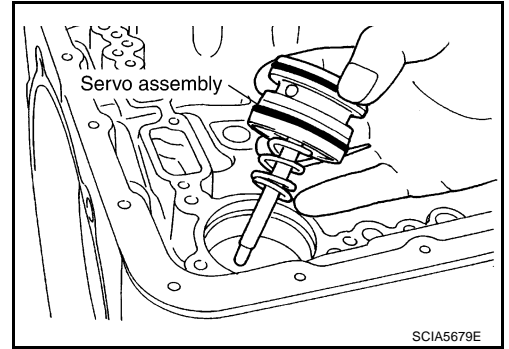
9. Install return spring to servo assembly.



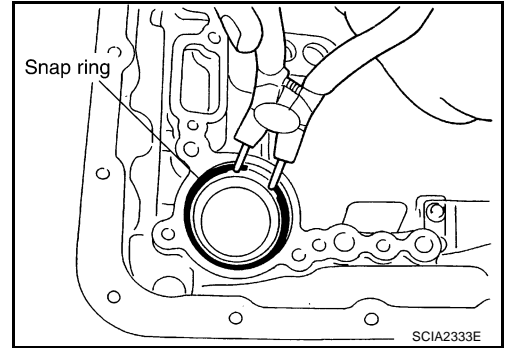


# ASSEMBLY

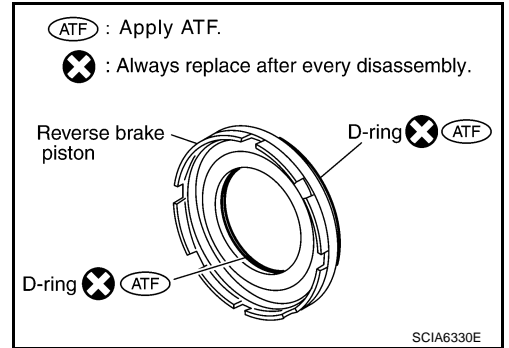
10. Install servo assembly in transmission case.



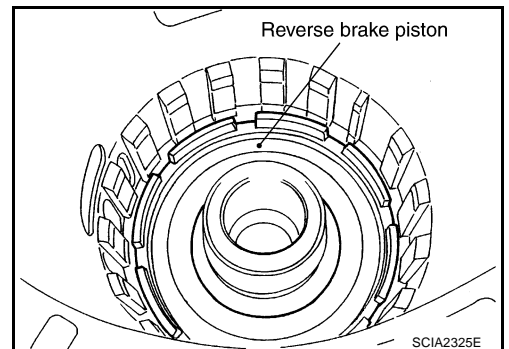
11. Install snap ring to transmission case using pair of snap ring pliers.



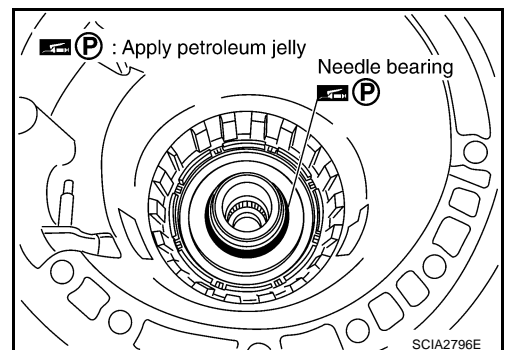
12. Install D-rings in reverse brake piston.



13. Install reverse brake piston in transmission case.



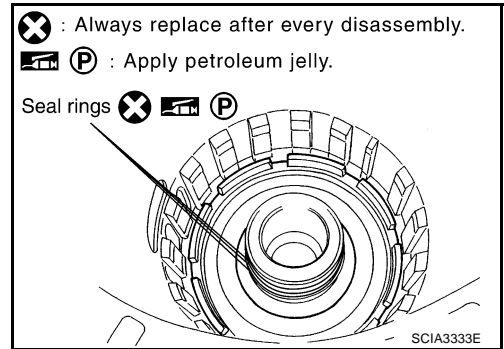
14. Install needle bearing to drum support edge surface.



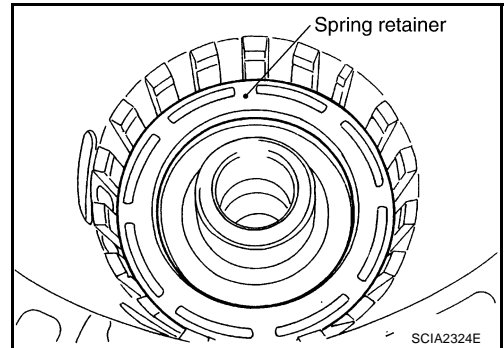
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# ASSEMBLY

15. Install seal rings to drum support.



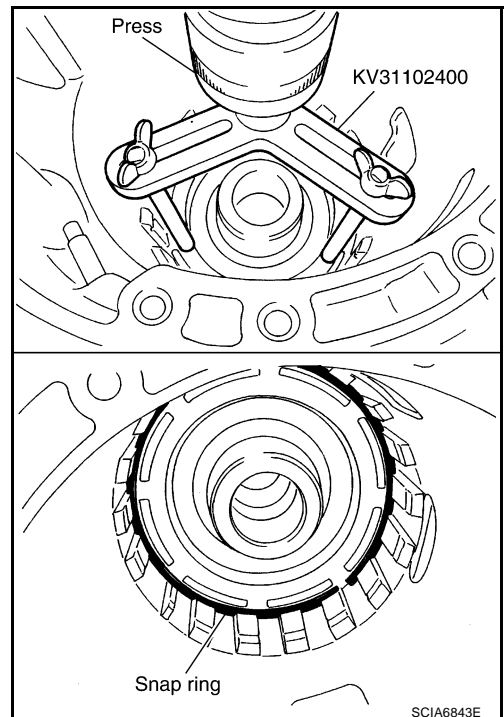
16. Install return spring and spring retainer in transmission case.



17. Set the SST on spring retainer and install snap ring (fixing spring retainer) in transmission case while compressing return spring.

**CAUTION:**

**Securely assemble them using a flat-bladed screwdriver so that snap ring tension is slightly weak.**



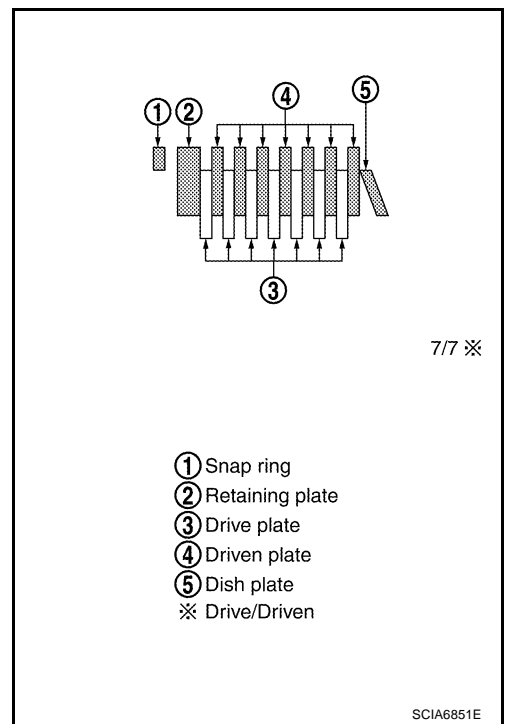
# ASSEMBLY

18. Install reverse brake dish plate, drive plates and driven plates in transmission case.

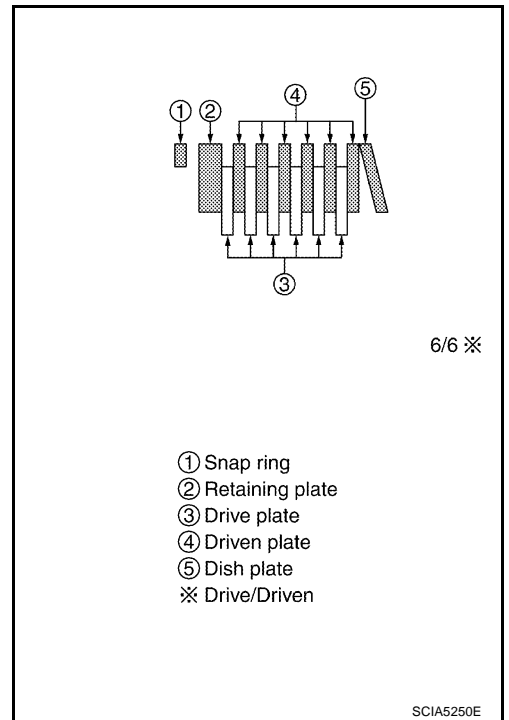
**CAUTION:**

Take care with order and direction of plates.

- YD25DDTi models



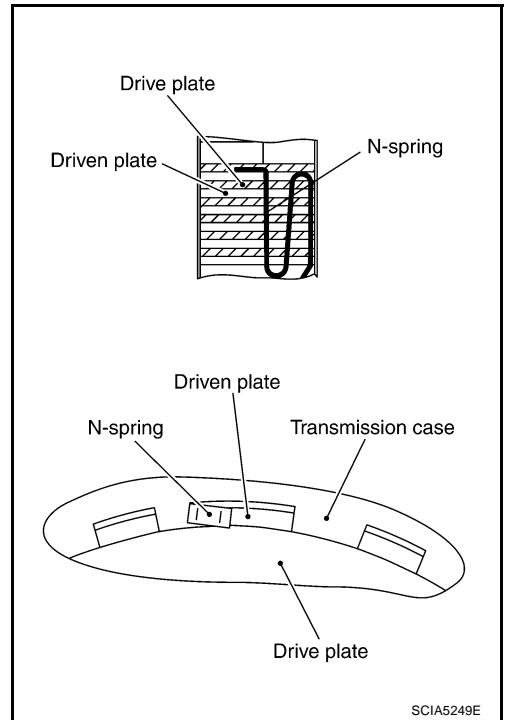
- VQ40DE models



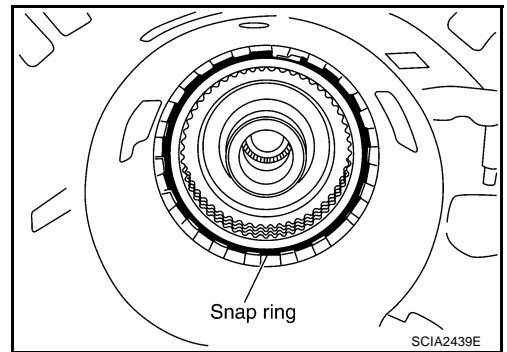
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# ASSEMBLY

19. Assemble N-spring.
20. Install reverse brake retaining plate in transmission case.



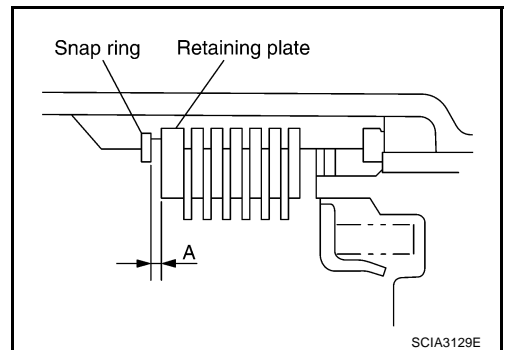
21. Install snap ring in transmission case.



22. Measure clearance between retaining plate and snap ring. If not within specified clearance, select proper retaining plate. Refer to "Parts Information" for retaining plate selection.

**Specified clearance "A"**

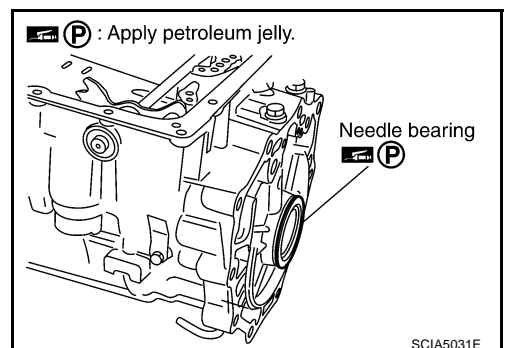
**Standard:** Refer to [AT-350, "Reverse Brake"](#).



23. Install needle bearing to transmission case.

**CAUTION:**

**Take care with the direction of needle bearing. Refer to [AT-278, "Locations of Adjusting Shims, Needle Bearings, Thrust Washers and Snap Rings"](#).**

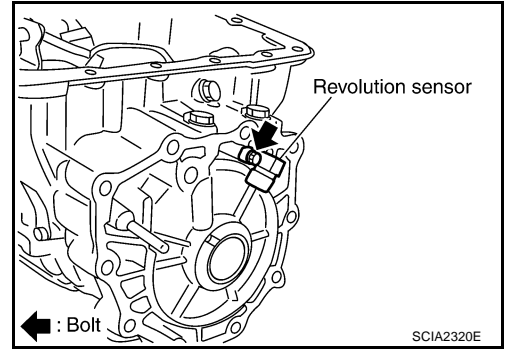


# ASSEMBLY

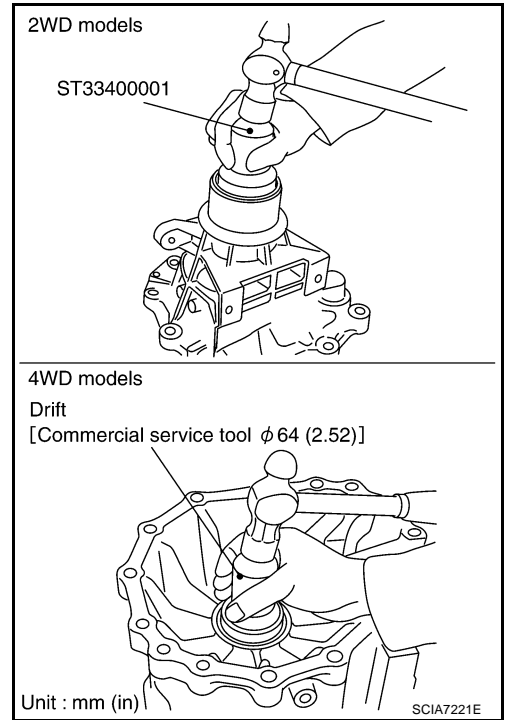
24. Install revolution sensor to transmission case and then tighten mounting bolt to the specified torque. Refer to [AT-262, "Components"](#).

**CAUTION:**

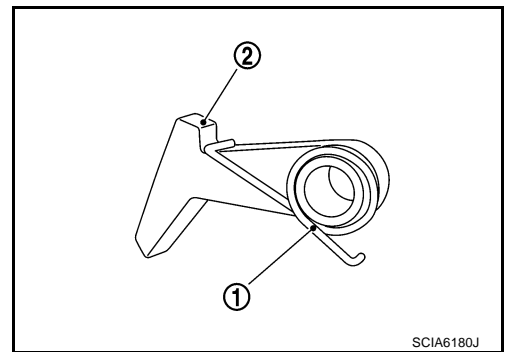
- Do not subject it to impact by dropping or hitting it.
- Do not disassemble.
- Do not allow metal filings, etc. to get on the sensor's front edge magnetic area.
- Do not place in an area affected by magnetism.



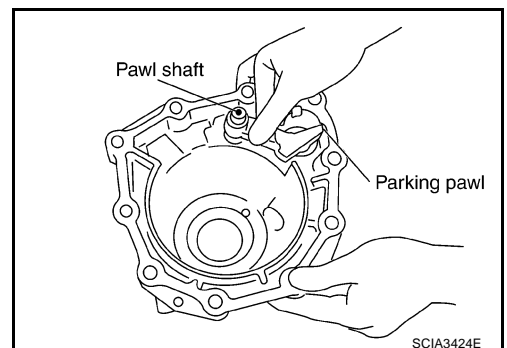
25. As shown in the figure, drive to rear oil seal into rear extension (2WD models) or adapter case (4WD models) until it is flush using a drift.



26. Install return spring (1) to parking pawl (2).



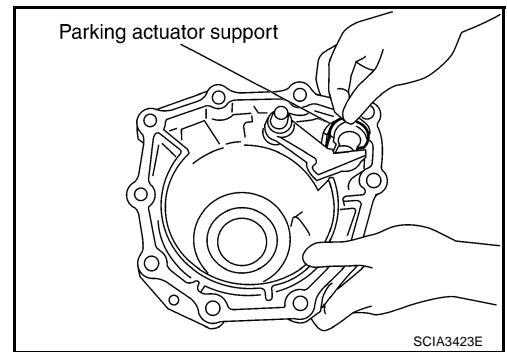
27. Install parking pawl (with return spring) and pawl shaft to rear extension (2WD models) or adapter case (4WD models).



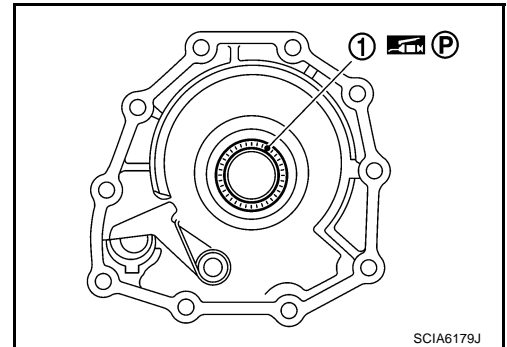
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# ASSEMBLY

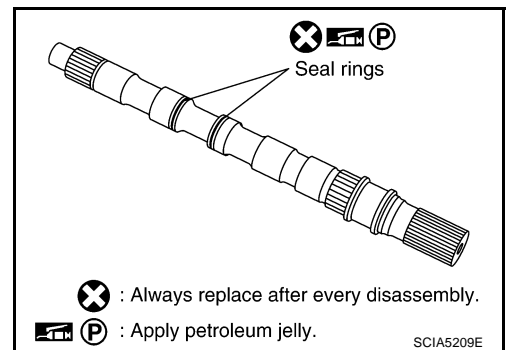
28. Install parking actuator support to rear extension (2WD models) or adapter case (4WD models).



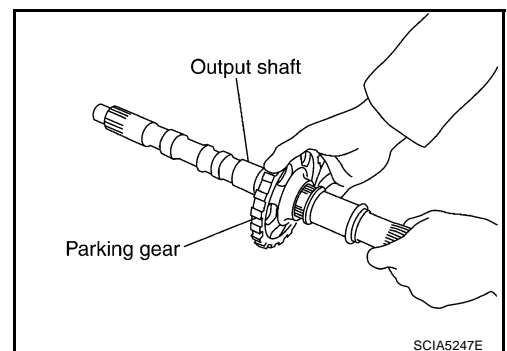
29. Install needle bearing (1) to rear extension (2WD models) or adapter case (4WD models).



30. Install seal rings to output shaft.



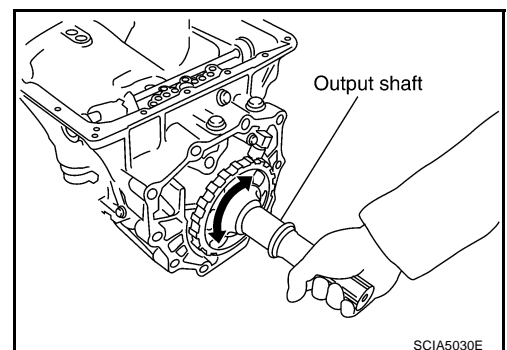
31. Install parking gear to output shaft.



32. Install output shaft in transmission case.

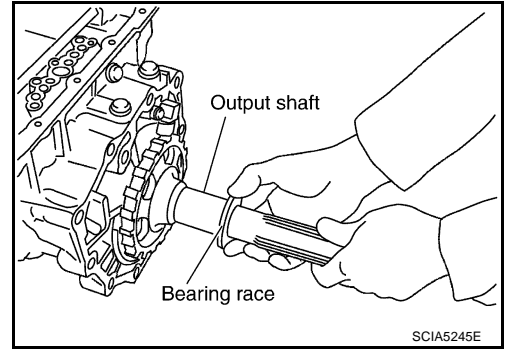
**CAUTION:**

Be careful not to mistake front for rear because both sides look similar. (Thinner end is front side.)



# ASSEMBLY

33. Install bearing race to output shaft.



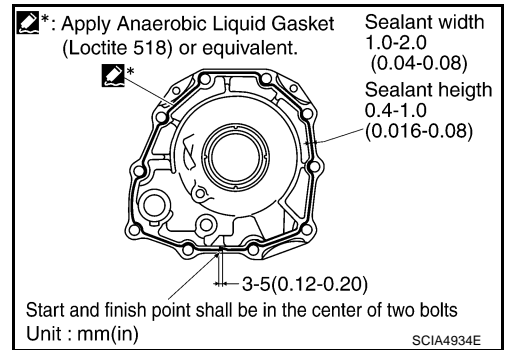
34. Install rear extension assembly (2WD models) or adapter case assembly (4WD models) according to the following procedures.

a. **2WD models**

i. Apply Anaerobic Liquid Gasket (Loctite 518) or equivalent to rear extension assembly as shown in the figure.

**CAUTION:**

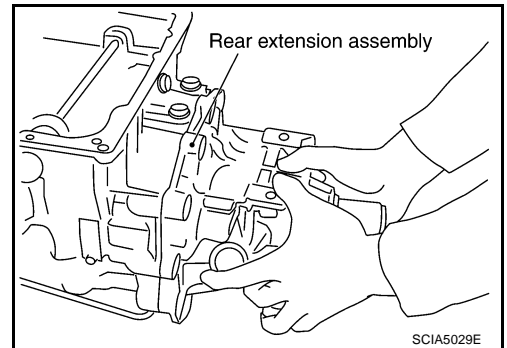
**Completely remove all moisture, oil and old sealant, etc. from the transmission case and rear extension assembly mounting surfaces.**



ii. Install rear extension assembly to transmission case.

**CAUTION:**

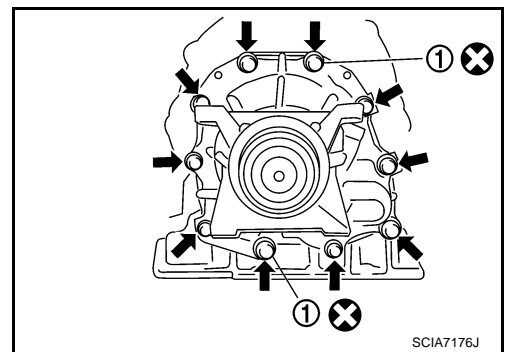
**Insert the tip of parking rod between the parking pawl and the parking actuator support when assembling the rear extension assembly.**



iii. Tighten rear extension assembly mounting bolts to the specified torque. Refer to [AT-262, "Components"](#).

● Self-sealing bolt (1)

◄ Bolt (10)



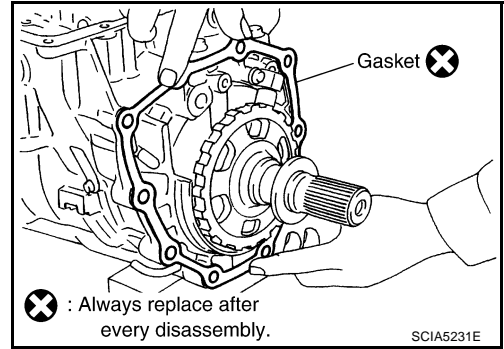
# ASSEMBLY

b. YD25DDTi models for 4WD

- i. Install gasket onto transmission case.

**CAUTION:**

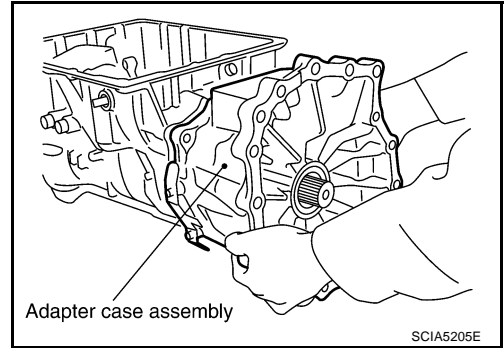
Completely remove all moisture, oil and old gasket, etc. from the transmission case and adapter case assembly mounting surfaces.



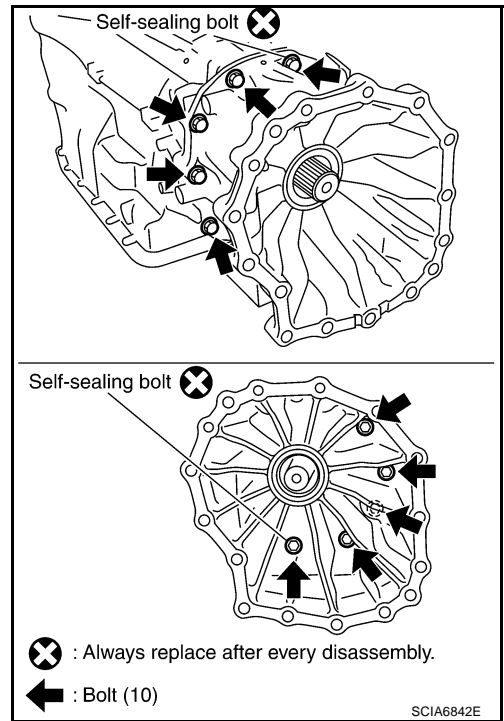
- ii. Install adapter case assembly to transmission case.

**CAUTION:**

Insert the tip of parking rod between parking pawl and parking actuator support when assembling adapter case assembly.



- iii. Tighten adapter case assembly mounting bolts to the specified torque. Refer to [AT-262, "Components"](#).

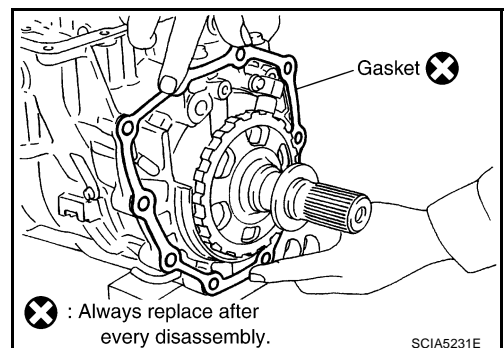


c. VQ40DE models for 4WD

- i. 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.



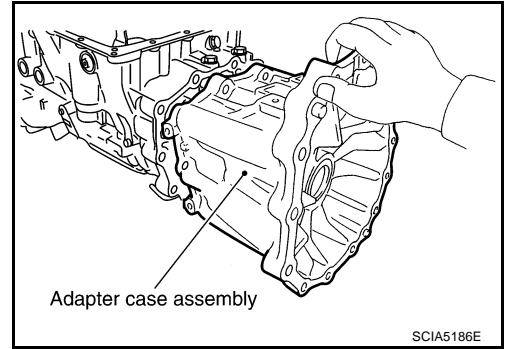


# ASSEMBLY

- ii. Install adapter case assembly to transmission case.

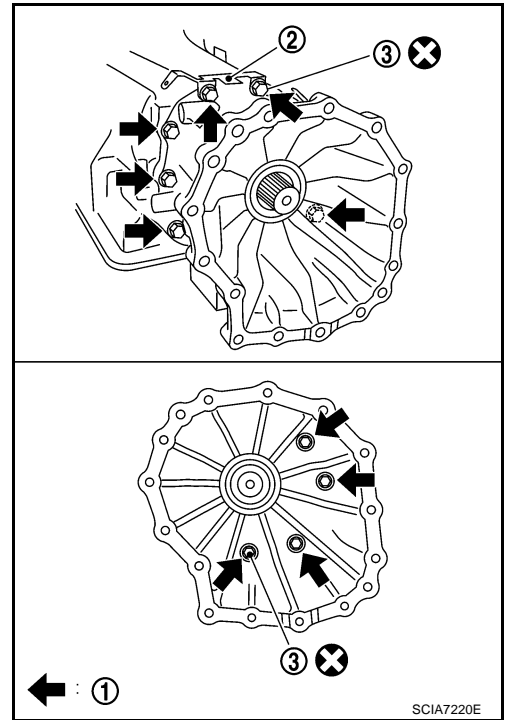
**CAUTION:**

Insert the tip of parking rod between parking pawl and parking actuator support when assembling adapter case assembly.

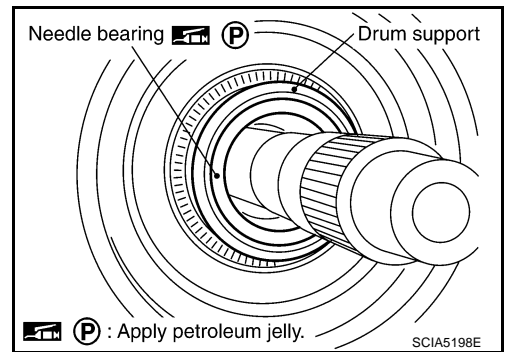


- iii. Tighten adapter case assembly mounting bolts (1) to specified torque [With terminal bracket (2)]. Refer to [AT-262, "Components"](#).

- Self-sealing bolt (3)



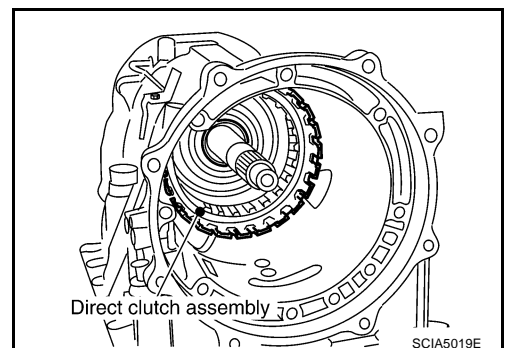
35. Install needle bearing in drum support edge surface.



36. Install direct clutch assembly in reverse brake.

**CAUTION:**

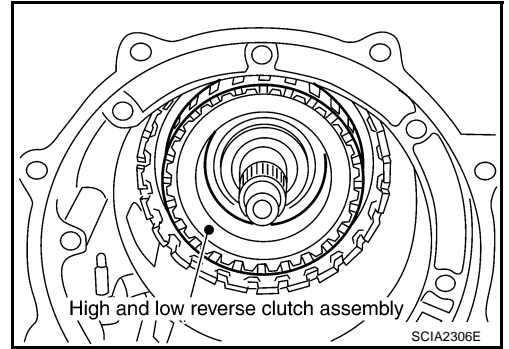
Make sure that drum support edge surface and direct clutch inner boss edge surface come to almost same place.



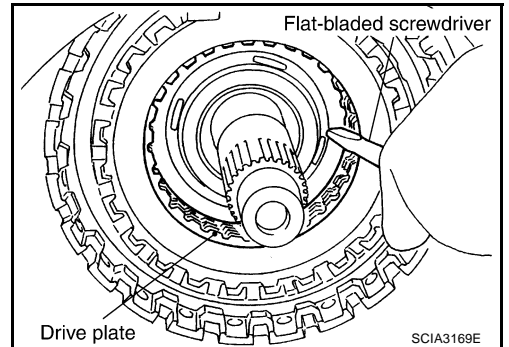
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# ASSEMBLY

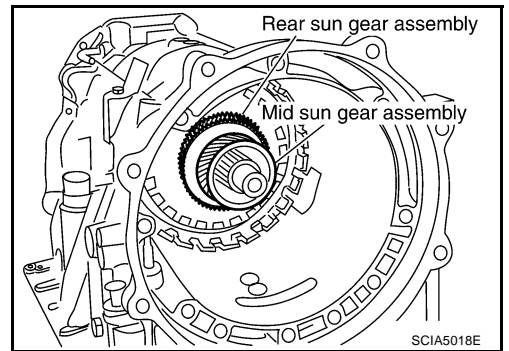
37. Install high and low reverse clutch assembly in direct clutch.



38. Align drive plate using a flat-bladed screwdriver.

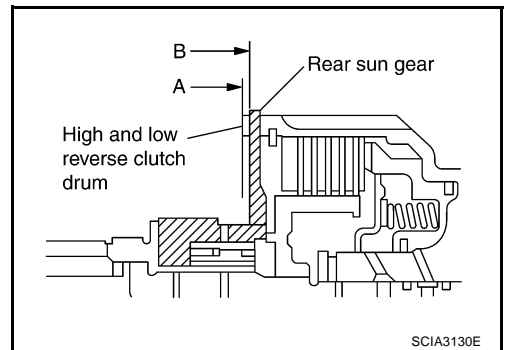


39. Install high and low reverse clutch hub, mid sun gear assembly and rear sun gear assembly as a unit.



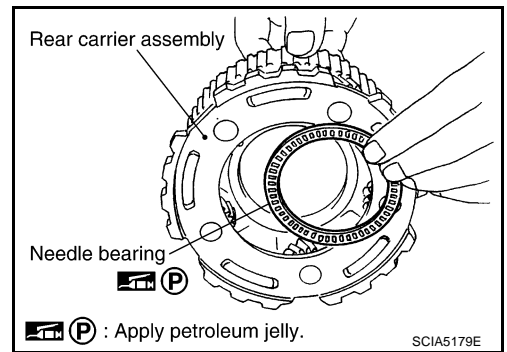
## CAUTION:

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.

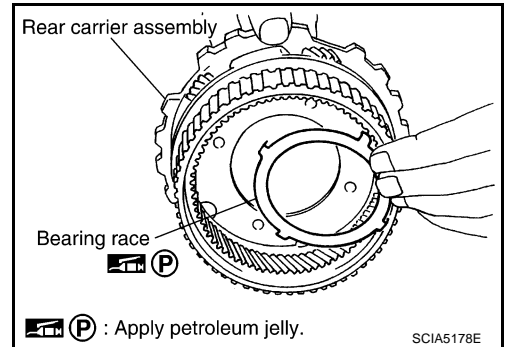


# ASSEMBLY

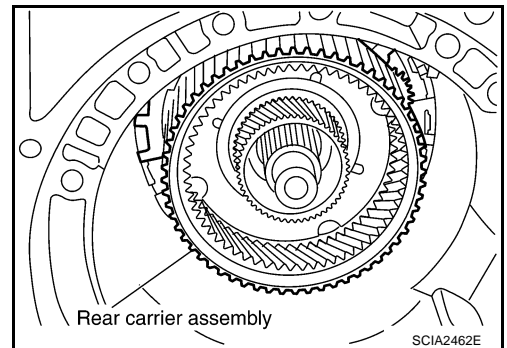
40. Install needle bearing in rear carrier assembly.



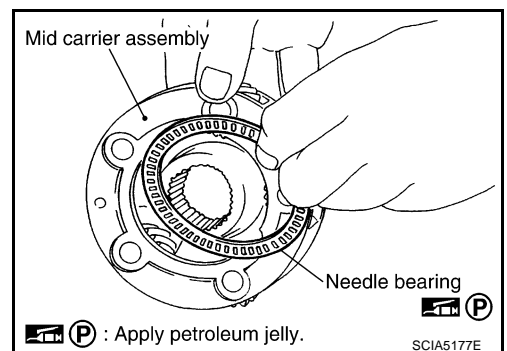
41. Install bearing race in rear carrier assembly.



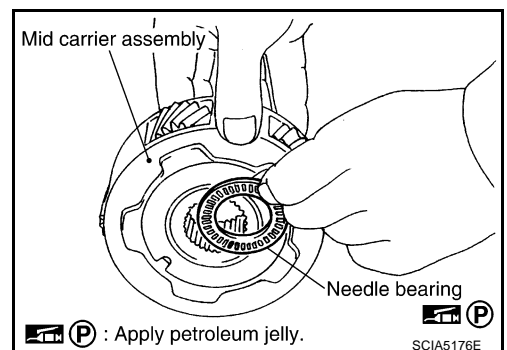
42. Install rear carrier assembly in direct clutch drum.



43. Install needle bearing (rear side) in mid carrier assembly.



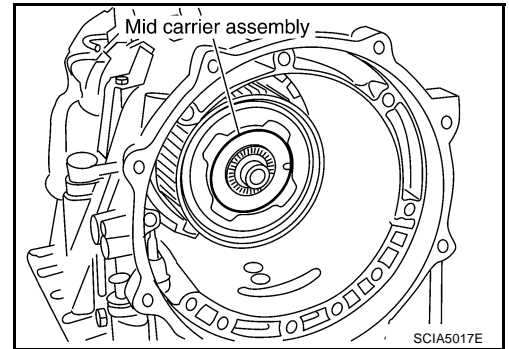
44. Install needle bearing (front side) to mid carrier assembly.



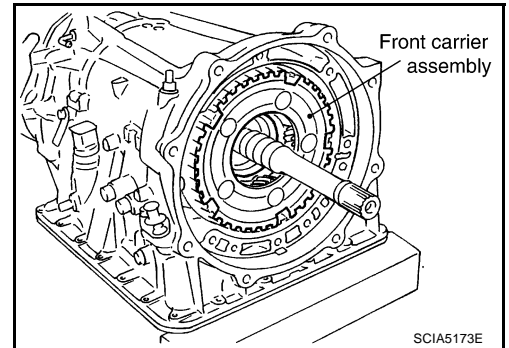
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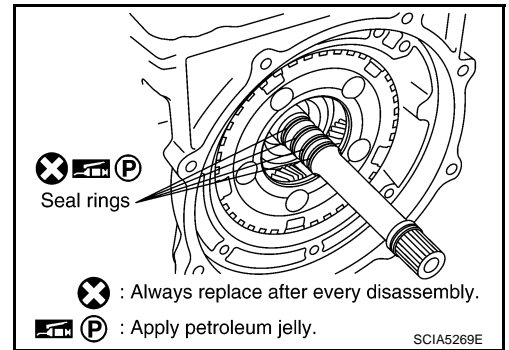
45. Install mid carrier assembly in rear carrier assembly.



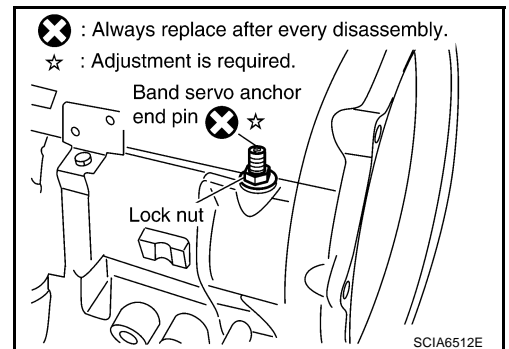
46. Install front carrier assembly, input clutch assembly and rear internal gear as a unit.



47. Install seal rings in input clutch assembly.

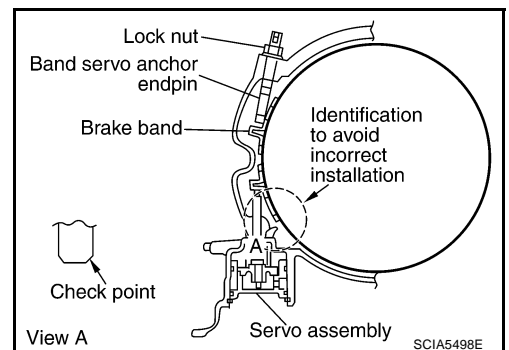


48. Install band servo anchor end pin and lock nut in transmission case.



49. Install brake band in transmission case.

**CAUTION:**  
 Assemble it so that identification to avoid incorrect installation faces servo side.

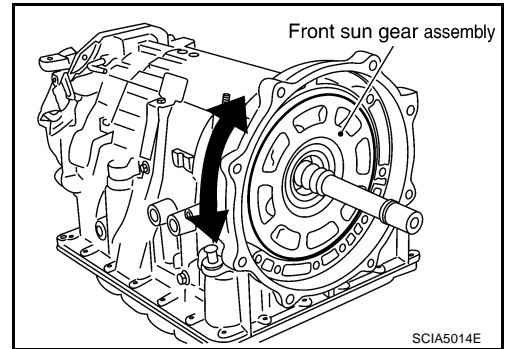


# ASSEMBLY

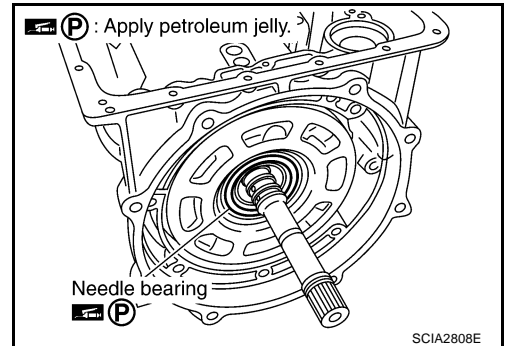
50. Install front sun gear to front carrier assembly.

**CAUTION:**

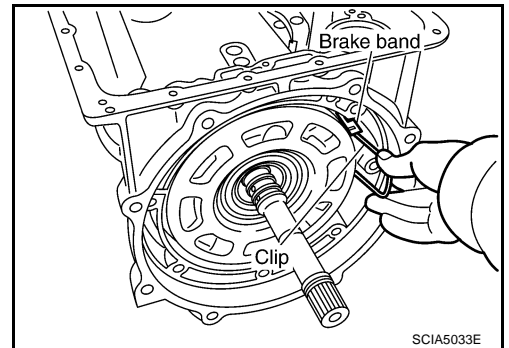
Apply ATF to front sun gear bearing and 3rd one-way clutch end bearing.



51. Install needle bearing to front sun gear.



52. Adjust brake band tilting using a clip so that brake band contacts front sun gear drum evenly.

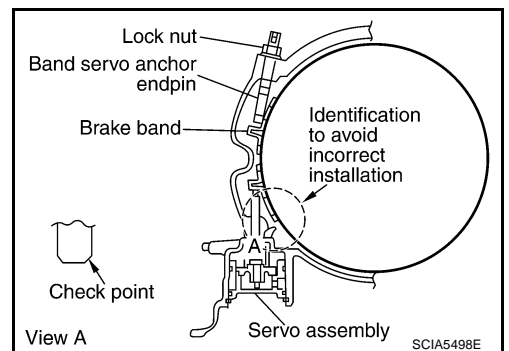


53. Adjust brake band.

- Loosen lock nut.
- Tighten band servo anchor end pin to the specified torque.

 **5.0 N·m (0.51 kg·m, 44 in·lb)**

- Back of band servo anchor end pin three turns.
- Holding band servo anchor end pin, tighten lock nut to the specified torque. Refer to [AT-262, "Components"](#).

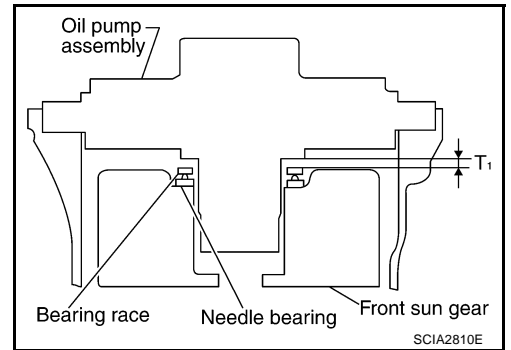


# ASSEMBLY

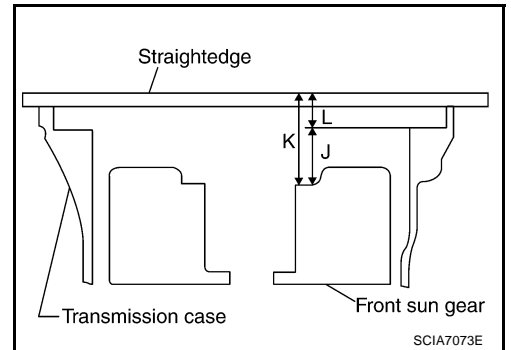
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## Adjustment TOTAL END PLAY

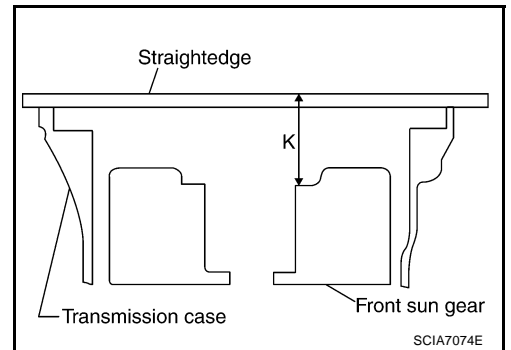
- Measure clearance between front sun gear and bearing race for oil pump cover.
- Select proper thickness of bearing race so that end play is within specifications.



1. Measure dimensions “K” and “L” and then calculate dimension “J”.



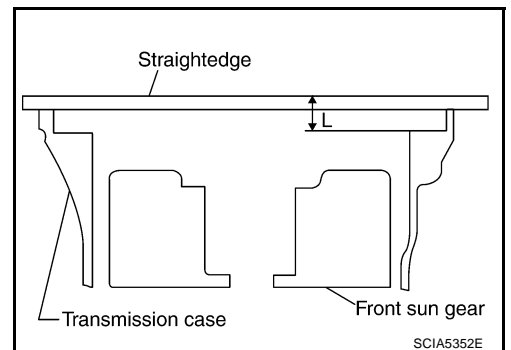
- a. Measure dimension “K”.



- b. Measure dimension “L”.
- c. Calculate dimension “J”.

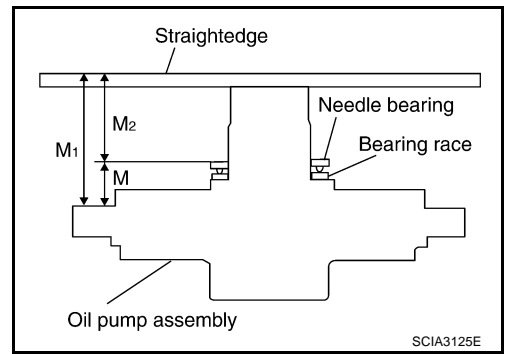
**“J”:** Distance between oil pump fitting surface of transmission case and needle bearing mating surface of front sun gear.

$$J = K - L$$

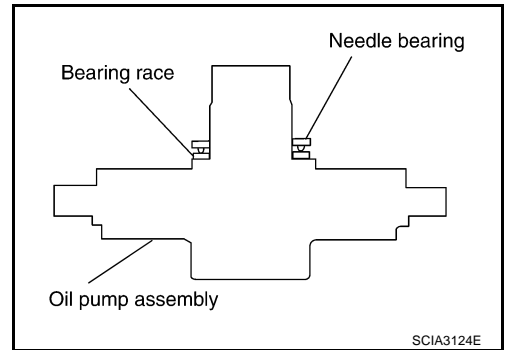


# ASSEMBLY

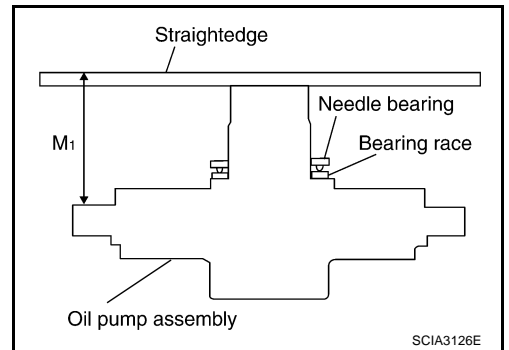
2. Measure dimensions "M1 " and "M2 " and then calculate dimension "M".



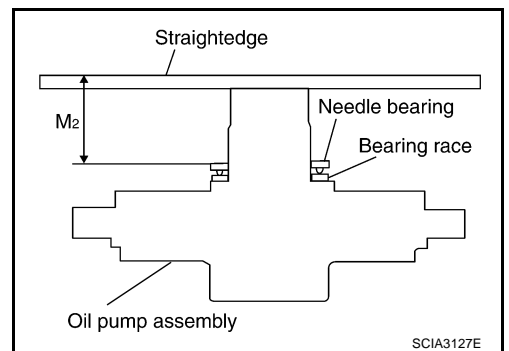
- a. Place bearing race and needle bearing on oil pump assembly.



- b. Measure dimension "M1 ".



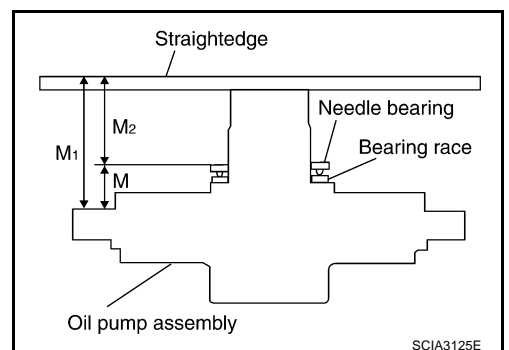
- c. Measure dimension "M2 ".



- d. Calculate dimension "M".

**"M": Distance between transmission case fitting surface of oil pump and needle bearing on oil pump.**

$$M = M1 - M2$$



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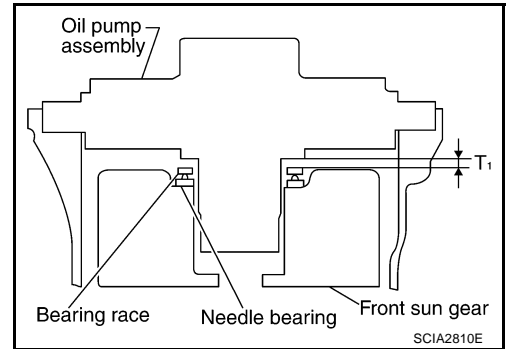
# ASSEMBLY

3. Adjust total end play "T1".

$$T_1 = J - M$$

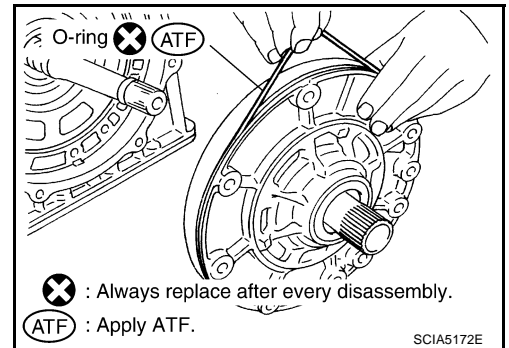
Total end play "T1" Refer to [AT-350, "Total End Play"](#):

- Select proper thickness of bearing race so that total end play is within specifications. Refer to "Parts Information" for bearing race selection.

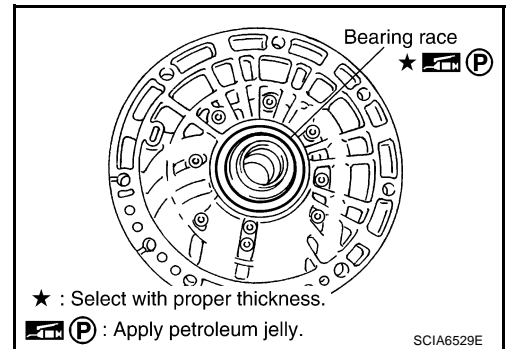


## Assembly (2)

1. Install O-ring to oil pump assembly.

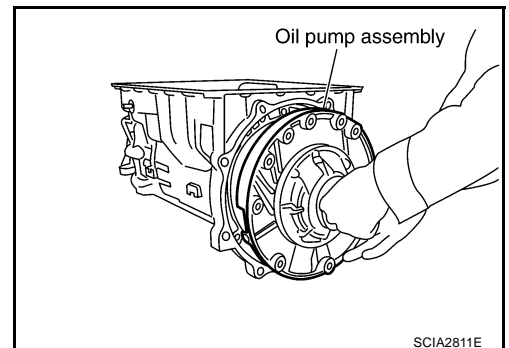


2. Install bearing race to oil pump assembly.



3. Install oil pump assembly in transmission case.

**CAUTION:**  
Apply ATF to oil pump bearing.



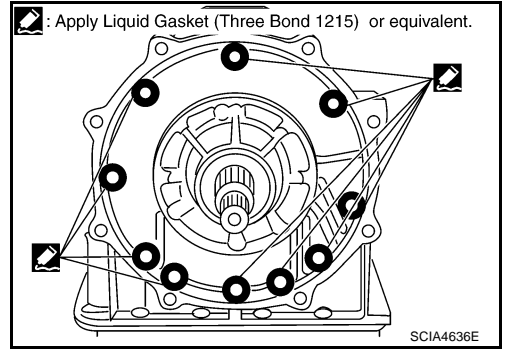


# ASSEMBLY

4. Apply Liquid Gasket (Three Bond 1215) or equivalent to oil pump assembly as shown in the figure.

**CAUTION:**

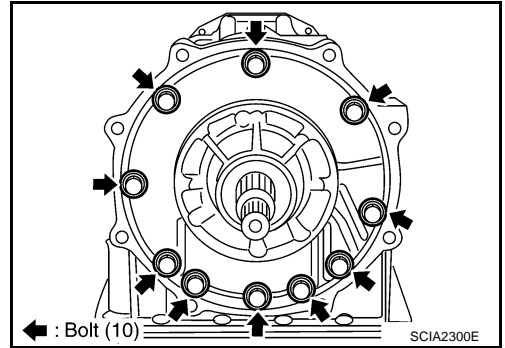
Completely remove all moisture, oil and old sealant, etc. from the oil pump mounting bolts and oil pump mounting bolt mounting surfaces.



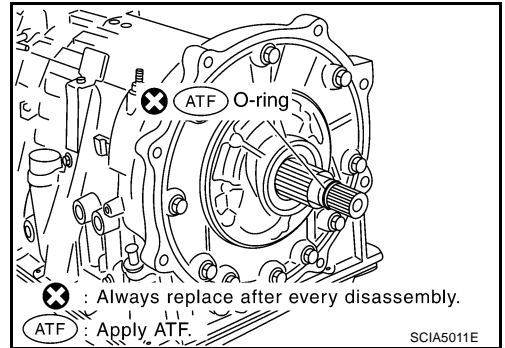
5. Tighten oil pump mounting bolts to the specified torque. Refer to [AT-262. "Components"](#).

**CAUTION:**

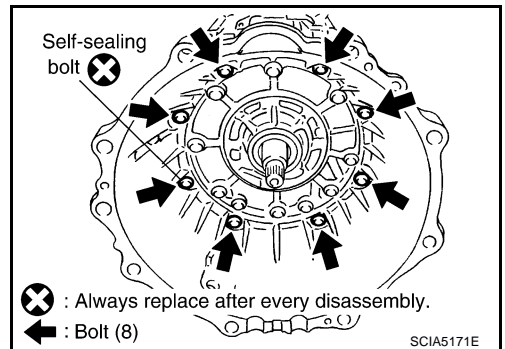
Apply ATF to oil pump bushing.



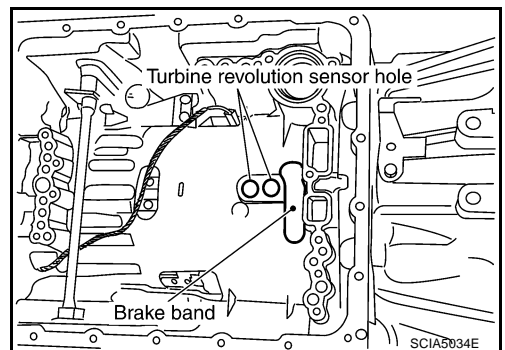
6. Install O-ring to input clutch assembly.



7. Install converter housing to transmission case, and then tighten mounting bolts to the specified torque. Refer to [AT-262. "Components"](#)



8. Make sure that brake band does not close turbine revolution sensor hole.

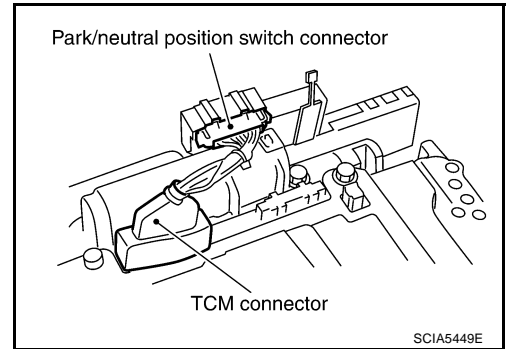


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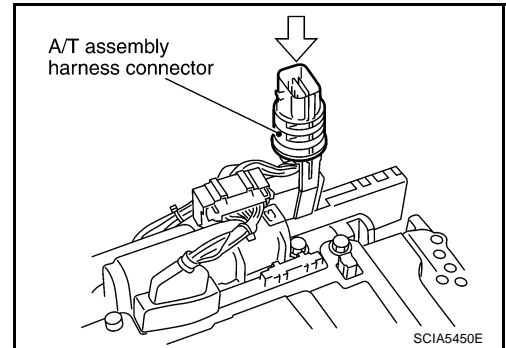
# ASSEMBLY

9. Install control valve with TCM.

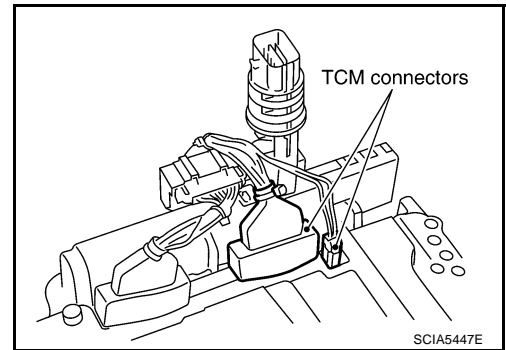
a. Connect TCM connector and park/neutral position switch connector.



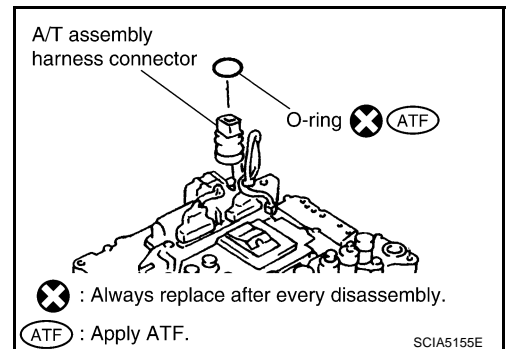
b. Install A/T assembly harness connector to control valve with TCM.



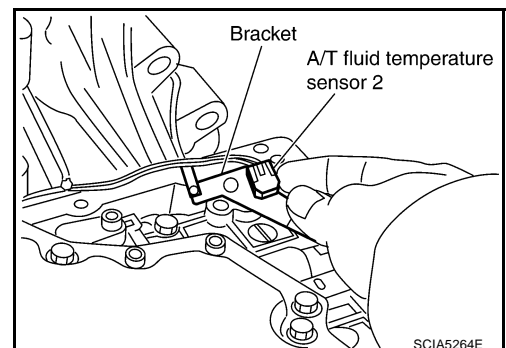
c. Connect TCM connectors.



d. Install O-ring to A/T assembly harness connector.



e. Install A/T fluid temperature sensor 2 to bracket.

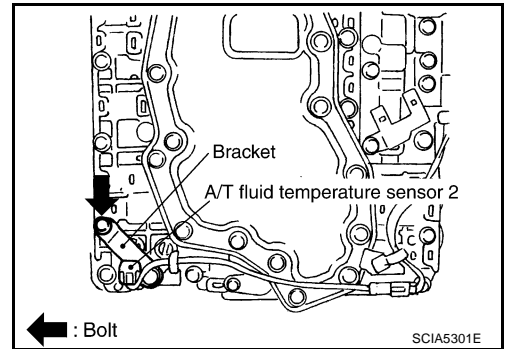


# ASSEMBLY

- f. Install A/T fluid temperature sensor 2 (with bracket) in control valve with TCM, and then tighten mounting bolts to the specified torque. Refer to [AT-262, "Components"](#) .

**CAUTION:**

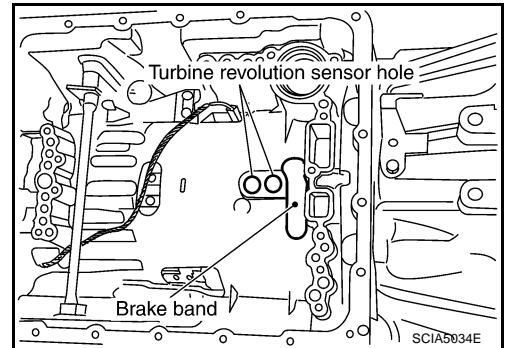
Adjust bolt hole of bracket to bolt hole of control valve with TCM.



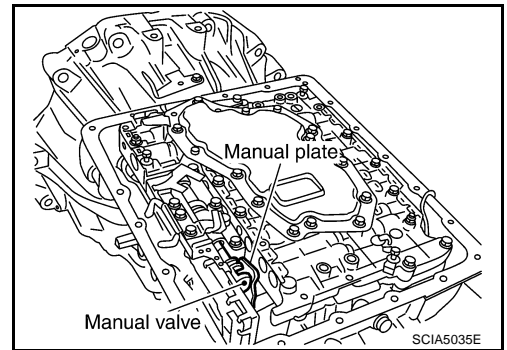
- g. Install control valve with TCM in transmission case.

**CAUTION:**

- Make sure that turbine revolution sensor securely installs turbine revolution sensor hole.
- Hang down revolution sensor harness toward outside so as not to disturb installation of control valve with TCM.
- Adjust A/T assembly harness connector of control valve with TCM to terminal hole of transmission case.

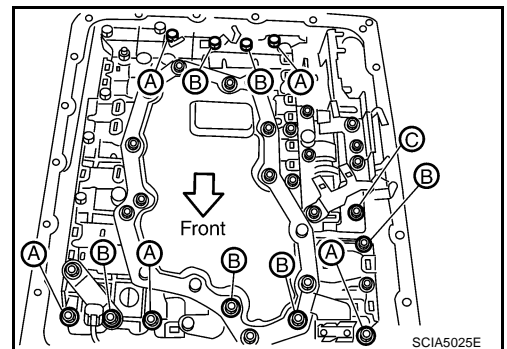


- Assemble it so that manual valve cutout is engaged with manual plate projection.

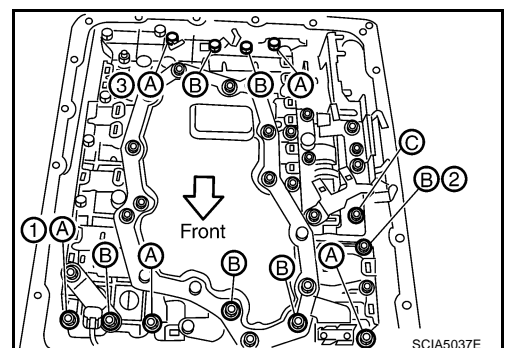


- h. Install bolts A, B and C to control valve with TCM.

Bolt symbol	Length [mm (in)]	Number of bolts
A	42 (1.65)	5
B	55 (2.17)	6
C	40 (1.57)	1



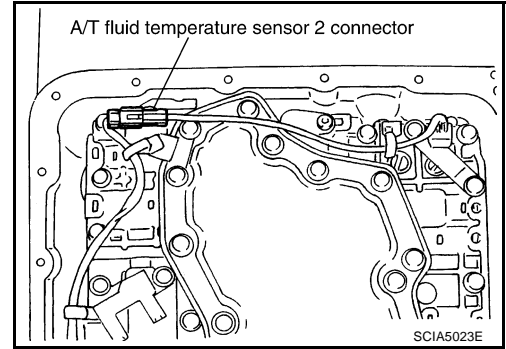
- i. Tighten bolt 1, 2 and 3 temporarily to prevent dislocation. After that tighten them in order (1 → 2 → 3), and then tighten other bolts to the specified torque. Refer to [AT-262, "Components"](#) .



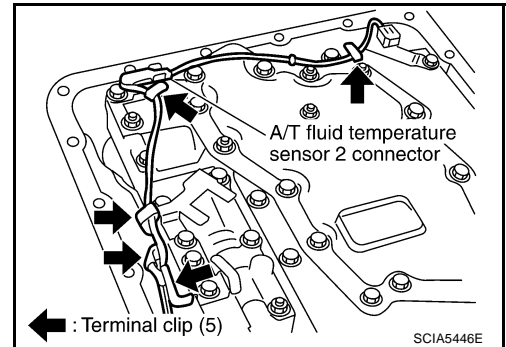
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# ASSEMBLY

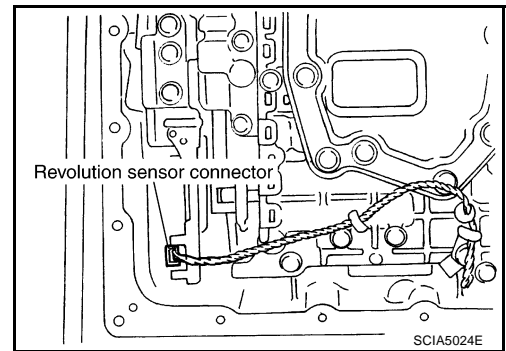
10. Connect A/T fluid temperature sensor 2 connector.



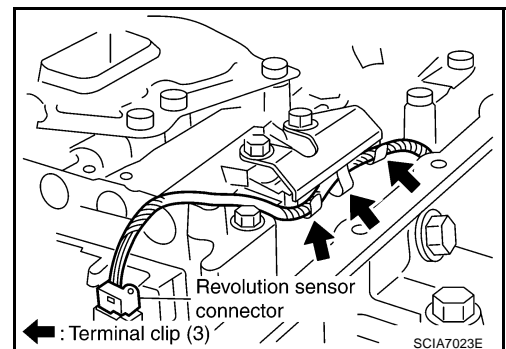
11. Securely fasten terminal cord assembly and A/T fluid temperature sensor 2 harness with terminal clips.



12. Connect revolution sensor connector.

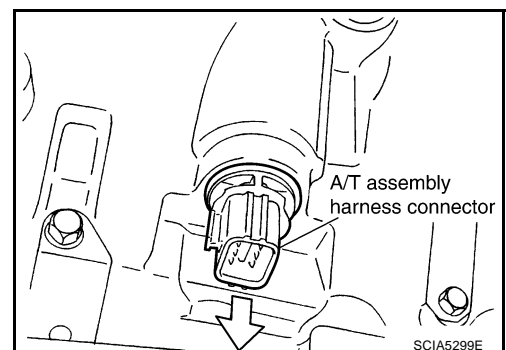


13. Securely fasten revolution sensor harness with terminal clips.



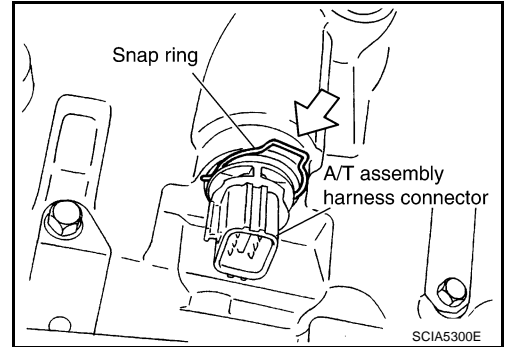
14. Pull down A/T assembly harness connector.

**CAUTION:**  
Be careful not to damage connector.

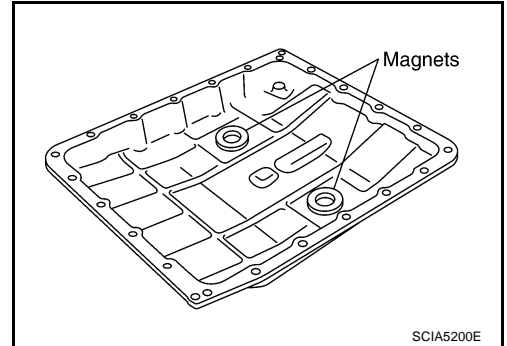


# ASSEMBLY

15. Install snap ring to A/T assembly harness connector.



16. Install magnets onto oil pan.



17. Install oil pan to transmission case.

a. Install oil pan gasket to transmission case.

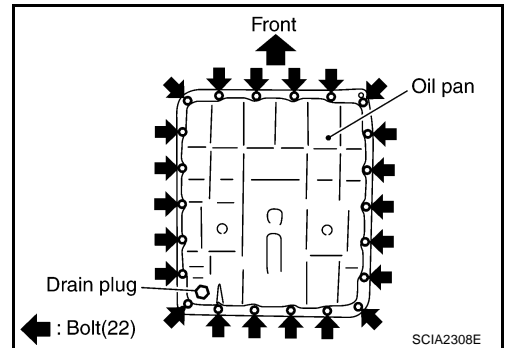
**CAUTION:**

- Do not reuse oil pan gasket.
- Install it in the direction to align hole positions.
- Completely remove all moisture, oil and old gasket, etc. from oil pan gasket mounting surface.

b. Install oil pan to transmission case.

**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 gasket mounting surface.



c. Tighten oil pan mounting bolts to the specified torque in numerical order shown in the figure after temporarily tightening them. Refer to [AT-262, "Components"](#) .

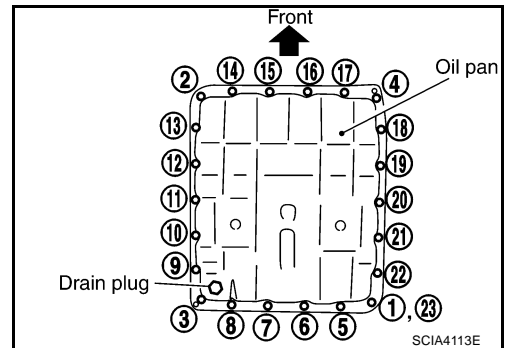
**CAUTION:**

**Do not reuse oil pan mounting bolts.**

18. Install drain plug gasket and drain plug to oil pan, and then tighten drain plug to the specified torque. Refer to [AT-262, "Components"](#) .

**CAUTION:**

**Do not reuse drain plug gasket.**



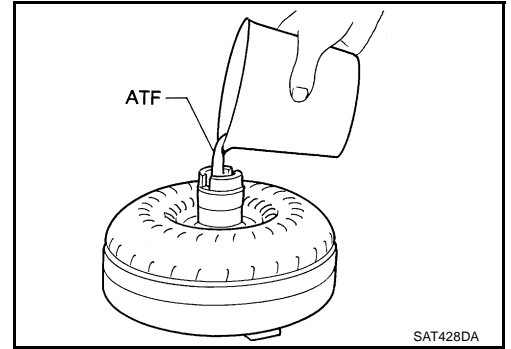
19. Install torque converter.

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# ASSEMBLY

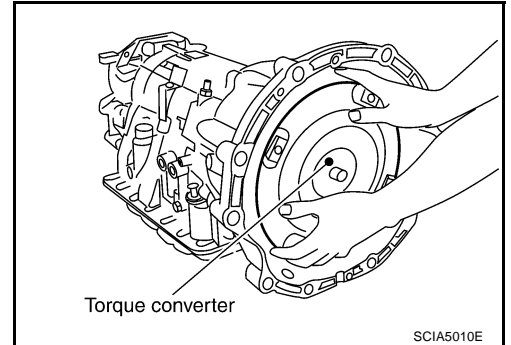
a. Pour ATF into torque converter.

- Approximately 2 liter (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.



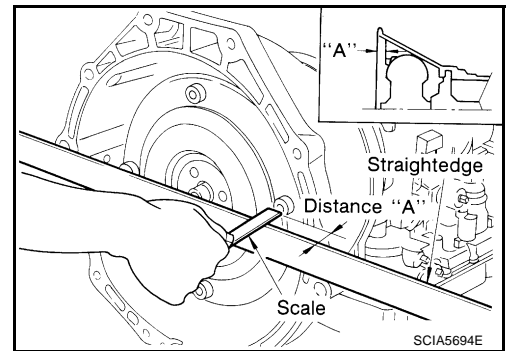
b. Install torque converter while aligning notches of torque converter with notches of oil pump.

**CAUTION:**  
Install torque converter while rotating it.



c. Measure distance "A" to make sure that torque converter is in proper position.

**Distance "A": 25.0 mm (0.98 in) or more**



# SERVICE DATA AND SPECIFICATIONS (SDS)

## SERVICE DATA AND SPECIFICATIONS (SDS)

PPF:00030

### General Specifications

GCS0008S

Applied model		YD25DDTi engine		VQ40DE engine	
		2WD	4WD	2WD	4WD
Automatic transmission model		RE5R05A			
Transmission model code number		95X09	95X0B	97X0D	97X0E
Stall torque ratio		2.0 : 1		1.76 : 1	
Transmission gear ratio	1st	3.827		3.842	
	2nd	2.368		2.353	
	3rd	1.519		1.529	
	4th	1.000		1.000	
	5th	0.834		0.839	
	Reverse	2.613		2.765	
Recommended fluid		Genuine NISSAN ATF Matic Fluid J*1			
Fluid capacity		10.3 liter (9-1/8 Imp qt)			

**CAUTION:**

- Use only Genuine NISSAN ATF Matic Fluid J. Do not mix with other fluid.
- Using A/T fluid other than Genuine NISSAN ATF Matic Fluid J will cause deterioration in driveability and A/T durability, and may damage the A/T, which is not covered by the NISSAN new vehicle warranty.

\*1: Refer to [MA-13, "RECOMMENDED FLUIDS AND LUBRICANTS"](#) .

### Stall Speed

GCS0008T

Engine model	YD25DDTi	VQ40DE
Stall speed	2,700 - 3,100 rpm	2,200 - 2,500 rpm

### Line Pressure

GCS0008U

Engine speed	Line pressure [kPa (bar, kg/cm <sup>2</sup> , psi)]	
	"R" position	"D" position
At idle speed	425 - 465 (4.3 - 4.6, 4.3 - 4.7, 62 - 67)	379 - 428 (3.8 - 4.3, 3.9 - 4.4, 55 - 62)
At stall speed	1,605 - 1,950 (16.0 - 19.5, 16.4 - 19.9, 233 - 283)	1,310 - 1,500 (13.1 - 15.0, 13.4 - 15.3, 190 - 218)

# SERVICE DATA AND SPECIFICATIONS (SDS)

## Vehicle Speed at Which Gear Shifting Occurs 2WD MODELS

GCS0008V

Engine model		YD25DDTi							
Tire size	Throttle position	Vehicle speed [km/h (MPH)]							
		D1 → D2	D2 → D3	D3 → D4	D4 → D5	D5 → D4	D4 → D3	D3 → D2	D2 → D1
255/70 R16 255/65 R17	Full throttle	41 - 45 (26 - 28)	66 - 72 (41 - 45)	103 - 113 (64 - 71)	148 - 164 (93 - 103)	144 - 160 (90 - 100)	92 - 102 (58 - 64)	53 - 59 (33 - 37)	23 - 25 (14 - 16)
	Half throttle	34 - 38 (21 - 24)	55 - 61 (34 - 38)	86 - 96 (54 - 60)	118 - 130 (74 - 81)	88 - 98 (55 - 61)	60 - 66 (38 - 41)	39 - 43 (24 - 27)	10 - 11 (6 - 7)

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

Engine model		VQ40DE							
Tire size	Throttle position	Vehicle speed [km/h (MPH)]							
		D1 → D2	D2 → D3	D3 → D4	D4 → D5	D5 → D4	D4 → D3	D3 → D2	D2 → D1
255/70 R16 255/65 R17	Full throttle	61 - 67 (38 - 42)	99 - 109 (62 - 68)	153 - 169 (96 - 106)	234 - 258 (146 - 161)	230 - 254 (144 - 159)	142 - 158 (89 - 97)	87 - 97 (54 - 61)	42 - 46 (26 - 29)
	Half throttle	49 - 55 (31 - 34)	81 - 89 (51 - 56)	123 - 137 (76 - 86)	149 - 165 (93 - 103)	115 - 127 (72 - 79)	70 - 78 (44 - 49)	50 - 56 (31 - 35)	12 - 14 (8 - 9)

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

## 4WD MODELS

Engine model		YD25DDTi							
Tire size	Throttle position	Vehicle speed [km/h (MPH)]							
		D1 → D2	D2 → D3	D3 → D4	D4 → D5	D5 → D4	D4 → D3	D3 → D2	D2 → D1
235/70 R16	Full throttle	37 - 41 (23 - 26)	60 - 66 (38 - 41)	94 - 104 (59 - 65)	136 - 150 (85 - 94)	132 - 146 (83 - 91)	84 - 92 (53 - 58)	48 - 54 (30 - 34)	21 - 23 (13 - 14)
	Half throttle	31 - 35 (19 - 22)	50 - 56 (31 - 35)	79 - 87 (49 - 54)	113 - 125 (71 - 78)	79 - 87 (49 - 54)	55 - 61 (34 - 38)	36 - 40 (23 - 25)	10 - 11 (6 - 7)
255/70 R16 255/65 R17	Full throttle	38 - 42 (24 - 26)	62 - 68 (39 - 43)	97 - 107 (61 - 67)	141 - 155 (88 - 97)	137 - 151 (86 - 94)	87 - 97 (54 - 61)	50 - 56 (31 - 35)	22 - 24 (14 - 15)
	Half throttle	32 - 36 (20 - 23)	52 - 58 (33 - 36)	82 - 90 (51 - 56)	117 - 129 (73 - 80)	83 - 91 (52 - 57)	57 - 63 (35 - 39)	37 - 41 (23 - 26)	10 - 11 (6 - 7)

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

Engine model		VQ40DE							
Tire size	Throttle position	Vehicle speed [km/h (MPH)]							
		D1 → D2	D2 → D3	D3 → D4	D4 → D5	D5 → D4	D4 → D3	D3 → D2	D2 → D1
235/70 R16	Full throttle	54 - 60 (34 - 38)	88 - 98 (55 - 61)	136 - 150 (85 - 94)	208 - 230 (130 - 144)	204 - 226 (128 - 141)	126 - 140 (79 - 88)	77 - 85 (48 - 53)	36 - 40 (23 - 25)
	Half throttle	44 - 48 (28 - 30)	71 - 79 (44 - 49)	110 - 122 (69 - 76)	133 - 147 (83 - 92)	103 - 113 (64 - 71)	63 - 69 (39 - 43)	46 - 50 (29 - 31)	12 - 14 (8 - 9)
255/70 R16 255/65 R17	Full throttle	58 - 64 (36 - 40)	94 - 104 (59 - 65)	144 - 160 (90 - 100)	221 - 245 (138 - 153)	218 - 240 (136 - 150)	135 - 149 (84 - 93)	83 - 91 (52 - 57)	40 - 44 (25 - 28)
	Half throttle	47 - 51 (29 - 32)	76 - 84 (48 - 53)	117 - 129 (73 - 81)	141 - 155 (88 - 97)	108 - 120 (68 - 75)	67 - 75 (42 - 47)	48 - 54 (30 - 34)	12 - 14 (8 - 9)

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



# SERVICE DATA AND SPECIFICATIONS (SDS)

## Vehicle Speed at Which Lock-up Occurs/Releases

GCS0008W

### 2WD MODELS

Engine model		YD25DDTi	
Tire size	Throttle position	Vehicle speed [km/h (MPH)]	
		Lock-up ON	Lock-up OFF
255/70 R16 255/65 R17	Closed throttle	73 - 81 (46 - 51)	70 - 78 (44 - 49)
	Half throttle	141 - 155 (88 - 97)	130 - 144 (81 - 90)

- 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		VQ40DE	
Tire size	Throttle position	Vehicle speed [km/h (MPH)]	
		Lock-up "ON"	Lock-up "OFF"
255/70 R16 255/65 R17	Closed throttle	68 - 76 (43 - 48)	66 - 72 (41 - 45)
	Half throttle	188 - 208 (118 - 130)	147 - 163 (92 - 102)

- 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.

### 4WD MODELS

Engine model		YD25DDTi	
Tire size	Throttle position	Vehicle speed [km/h (MPH)]	
		Lock-up ON	Lock-up OFF
235/70 R16	Closed throttle	67 - 75 (42 - 47)	65 - 71 (41 - 44)
	Half throttle	129 - 143 (81 - 89)	119 - 131 (74 - 82)
255/70 R16 255/65 R17	Closed throttle	69 - 77 (43 - 48)	66 - 74 (41 - 46)
	Half throttle	134 - 148 (84 - 93)	123 - 135 (77 - 84)

- 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		VQ40DE	
Tire size	Throttle position	Vehicle speed [km/h (MPH)]	
		Lock-up "ON"	Lock-up "OFF"
235/70 R16	Closed throttle	61 - 67 (38 - 42)	58 - 64 (36 - 40)
	Half throttle	167 - 185 (104 - 116)	131 - 145 (82 - 91)
255/70 R16 255/65 R17	Closed throttle	65 - 71 (41 - 44)	62 - 68 (39 - 43)
	Half throttle	178 - 196 (111 - 123)	139 - 154 (87 - 96)

- 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.

## A/T Fluid Temperature Sensor

GCS0008X

Name	Condition	CONSULT-II "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

# SERVICE DATA AND SPECIFICATIONS (SDS)

## Vehicle Speed Sensor A/T (Revolution Sensor)

GCS0008Y

Name	Condition	Data (Approx.)
Revolution sensor	When moving at 20 km/h (12 MPH).	185 Hz

## Turbine Revolution Sensor

GCS0008Z

Name	Condition	Data (Approx.)
Turbine revolution sensor 1	When running at 50 km/h (31 MPH) in 4th gear with the closed throttle position signal "OFF".	1.3 kHz
Turbine revolution sensor 2	When running at 20 km/h (12 MPH) in 1st gear with the closed throttle position signal "OFF".	

## Reverse Brake

GCS00090

Model code number	95X09, 95X0B	97X0D, 97X0E
Number of drive plates	7	6
Number of driven plates	7	6
Clearance mm (in)	Standard	0.7 - 1.1 (0.028 - 0.043)

\*: Always check with the Parts Department for the latest parts information.

## Total End Play

GCS00091

Total end play [mm (in)]	0.25 - 0.55 (0.0098 - 0.0217)
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