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TM

SECTION

TRANSAXLE & TRANSMISSION

TM

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PRECAUTION

PRECAUTIONS

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

INFOID:000000005774595

The Supplemental Restraint System such as "AIR BAG" and "SEAT BELT PRE-TENSIONER", used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. Information necessary to service the system safely is included in the SR 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 SR 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 WHEN USING POWER TOOLS (AIR OR ELECTRIC) AND HAMMERS

WARNING:

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

Service Notice or Precaution

INFOID:000000005280560

- Do not reuse transmission oil once it has been drained.
- Check oil level or replace oil with vehicle on level surface.
- During removal or installation, keep inside of transmission clear of dust or dirt.
- Check for the correct installation status prior to removal or disassembly. If matching marks are required, be certain they do not interfere with the function of the parts they are applied to.
- In principle, tighten nuts and bolts gradually in several steps working diagonally from inside to outside. If tightening sequence is specified, use it.
- Be careful not to damage sliding surfaces and mating surfaces.

PREPARATION

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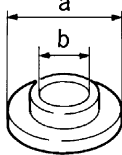
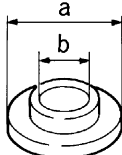
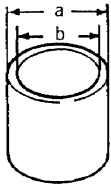
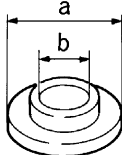
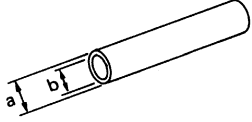
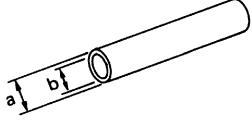
PREPARATION

PREPARATION

Special Service Tool

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

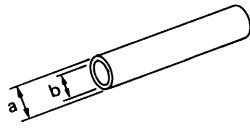
Tool number (Kent-Moore No.) Tool name		Description
ST30911000 (—) Inserter	 <small>ZZA0920D</small>	<ul style="list-style-type: none"> • Installing mainshaft bearing • Installing 5th-6th synchronizer hub assembly • Installing reverse main gear bushing • Installing 3rd gear bushing • Installing 3rd-4th synchronizer hub assembly <p>a: 98 mm (3.86 in) dia. b: 40 mm (1.57 in) dia.</p>
ST30022000 (—) Inserter	 <small>ZZA0920D</small>	<ul style="list-style-type: none"> • Installing 3rd main gear • Installing 4th main gear <p>a: 110 mm (4.33 in) dia. b: 46 mm (1.81 in) dia.</p>
ST27861000 (—) Support ring	 <small>ZZA0832D</small>	<ul style="list-style-type: none"> • Installing 1st-2nd synchronizer hub assembly • Installing 1st gear bushing <p>a: 62 mm (2.44 in) dia. b: 52 mm (2.05 in) dia.</p>
ST30032000 (J-26010-01) Inserter	 <small>ZZA0920D</small>	Installing counter rear bearing inner race <p>a: 80 mm (3.15 in) dia. b: 31 mm (1.22 in) dia.</p>
KV32102700 (—) Drift	 <small>ZZA0534D</small>	Installing main drive gear bearing <p>a: 48 mm (1.89 in) dia. b: 41 mm (1.61 in) dia.</p>
ST23860000 (—) Drift	 <small>ZZA0534D</small>	Installing reverse counter gear <p>a: 38 mm (1.50 in) dia. b: 33 mm (1.30 in) dia.</p>

PREPARATION

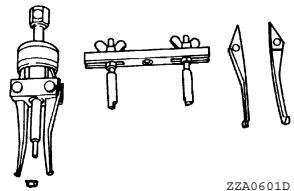
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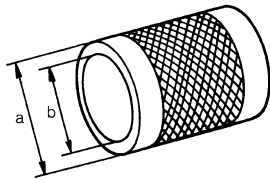
Tool number (Kent-Moore No.) Tool name	Description
ST01530000 (—) Drift	Installing reverse synchronizer hub assembly a: 50 mm (1.97 in) dia. b: 41 mm (1.61 in) dia.
KV381054S0 (J-34286) Puller	Removing rear oil seal
ST33200000 (J-26082) Drift	<ul style="list-style-type: none"> • Installing counter rear bearing • Installing rear oil seal a: 60 mm (2.36 in) dia. b: 44.5 mm (1.752 in) dia.
KV40100630 (J-26092) Inserter	Installing 4th counter gear thrust washer a: 67 mm (2.64 in) dia. b: 38 mm (1.50 in) dia.
KV38102100 (J-25803-01) Drift	Installing front cover oil seal a: 44 mm (1.73 in) dia. b: 28 mm (1.10 in) dia.
KV32103300 (J-46529) Press plate	Installing reverse synchronizer hub assembly a: 73 mm (2.87 in)
ST30031000 (J-22912-01) Puller	Measuring wear of inner baulk ring



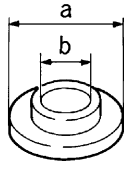
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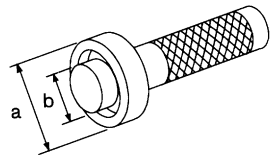
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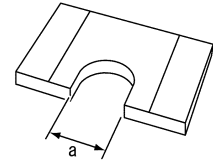
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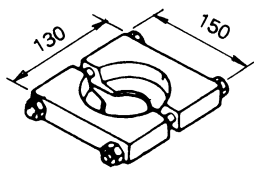
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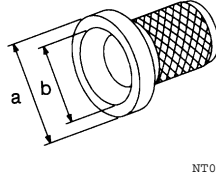
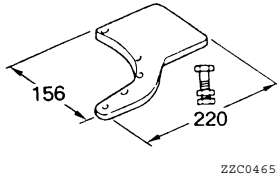
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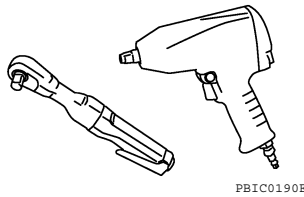
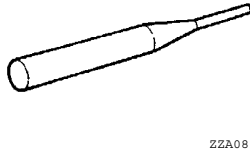
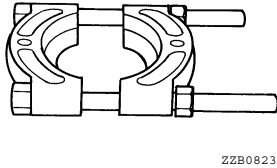
Tool number (Kent-Moore No.) Tool name	Description
ST22490000 (—) Adapter setting plate	Holding a adapter plate
ST33400001 (J-26082) Drift	Installing oil seal a: 60 mm (2.36 in) dia. b: 47 mm (1.85 in) dia.



Commercial Service Tool

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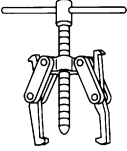
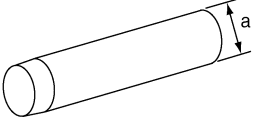
Tool name	Description
Puller	Removing each bearing, gear and bushing
Pin punch Tip diameter: 6.0 mm (0.236 in) dia.	Removing and installing each retaining pin
Power tool	Loosening bolts and nuts



PREPARATION

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Tool name	Description
<p>Puller</p>  <p>NT077</p>	<ul style="list-style-type: none">• Removing reverse synchronizer hub assembly• Removing reverse counter gear• Removing reverse main gear
<p>Drift</p>  <p>LC1A0362E</p>	<p>Removing counter end bearing a: 32 mm (1.26 in) dia.</p>

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

< SYMPTOM DIAGNOSIS >

[6MT: FS6R31A]

SYMPTOM DIAGNOSIS

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NVH Troubleshooting Chart

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Use the chart below to help you find the cause of the symptom. The numbers indicate the order of the inspection. If necessary, repair or replace these parts.

Reference page	IM-14			IM-23		IM-23	IM-28		IM-28			
SUSPECTED PARTS (Possible cause)	OIL (Oil level is low.)	OIL (Wrong oil.)	OIL (Oil level is high.)	GASKET (Damaged)	OIL SEAL (Worn or damaged)	SHIFT CONTROL LINKAGE (Worn)	CHECK PLUG RETURN SPRING AND CHECK BALL (Worn or damaged)	SHIFT FORK (Worn)	GEAR (Worn or damaged)	BEARING (Worn or damaged)	BAULK RING (Worn or damaged)	INSERT SPRING (Damaged)
Noise	1	2							3	3		
Oil leakage		3	1	2	2							
Hard to shift or will not shift		1	1			2					2	2
Jumps out of gear						1	1	2	2			

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DESCRIPTION

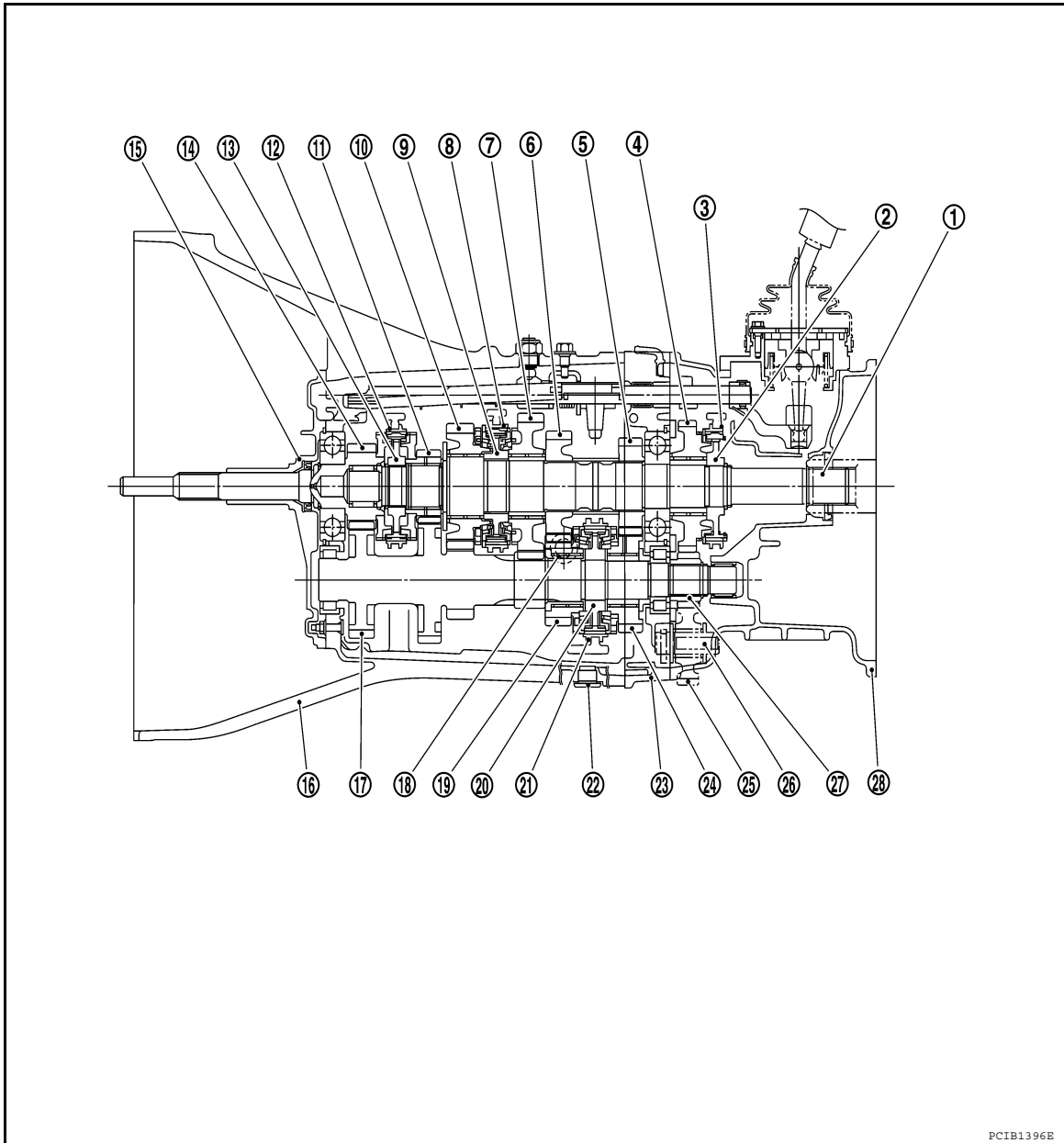
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DESCRIPTION

Cross-Sectional View

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- | | | |
|------------------------------|------------------------------|-----------------------------|
| 1. Mainshaft | 2. Reverse synchronizer hub | 3. Reverse coupling sleeve |
| 4. Reverse main gear | 5. 4th main gear | 6. 3rd main gear |
| 7. 1st main gear | 8. 1st-2nd coupling sleeve | 9. 1st-2nd synchronizer hub |
| 10. 2nd main gear | 11. 6th main gear | 12. 5th-6th coupling sleeve |
| 13. 5th-6th synchronizer hub | 14. Main drive gear | 15. Front cover |
| 16. Transmission case | 17. Counter gear | 18. Filler plug |
| 19. 3rd counter gear | 20. 3rd-4th synchronizer hub | 21. 3rd-4th coupling sleeve |
| 22. Drain plug | 23. Adapter plate | 24. 4th counter gear |
| 25. Reverse idler gear | 26. Reverse idler shaft | 27. Reverse counter gear |
| 28. OD gear case | | |

DOUBLE-CONE SYNCHRONIZER

DESCRIPTION

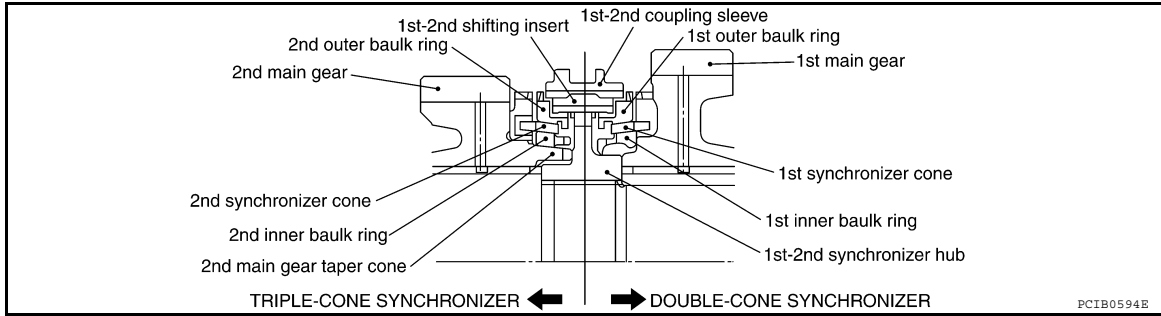
< SYMPTOM DIAGNOSIS >

[6MT: FS6R31A]

The 1st, 3rd and 4th gears are equipped with a double-cone synchronizer to reduce the operating force of the shift lever.

TRIPLE-CONE SYNCHRONIZER

The 2nd gear is equipped with a triple-cone synchronizer to reduce the operating force of the shift lever.



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ON-VEHICLE MAINTENANCE

M/T OIL

Changing

INFOID:000000005774581

DRAINING

1. Start the engine and let it run to warm up the transmission.
2. Stop the engine. Remove the transmission drain plug and drain the oil.
3. Set a gasket on the drain plug and install it to the transmission. Tighten the drain plug to the specified torque. Refer to [TM-28, "Disassembly and Assembly"](#).

CAUTION:

Do not reuse gasket.

FILLING

1. Remove the filler plug. Fill with new oil until oil level reaches the specified limit near the filler plug hole as shown.

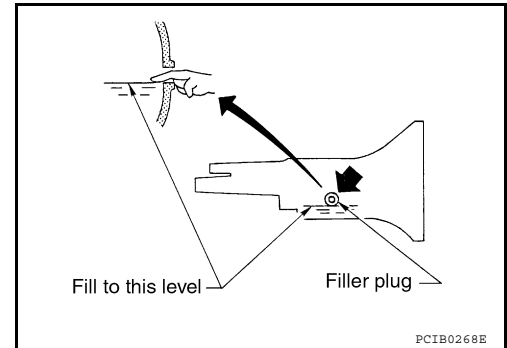
Oil grade and viscosity : Refer to [MA-10, "Fluids and Lubricants"](#).

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

2. After refilling the oil, check oil level. Set a gasket to the filler plug, then install it to the transmission. Tighten the filler plug to the specified torque. Refer to [TM-28, "Disassembly and Assembly"](#).

CAUTION:

Do not reuse gasket.



Checking

INFOID:000000005774582

OIL LEAKAGE AND OIL LEVEL

1. Make sure that oil is not leaking from the transmission or around it.
2. Check oil level from the filler plug hole as shown.

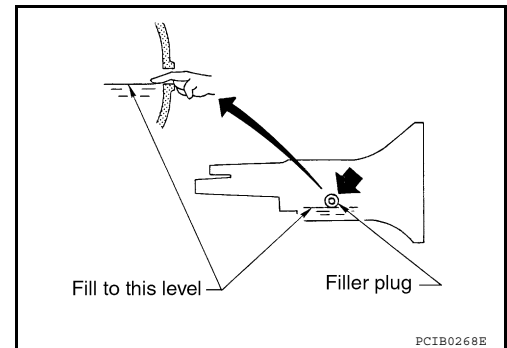
CAUTION:

Do not start engine while checking oil level.

3. Set a gasket on the filler plug and install it to the transmission. Tighten the filler plug to the specified torque. Refer to [TM-28, "Disassembly and Assembly"](#).

CAUTION:

Do not reuse gasket.



ON-VEHICLE REPAIR

REAR OIL SEAL

Removal and Installation

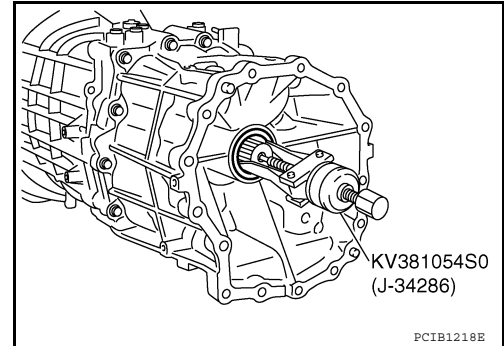
INFOID:000000005774583

REMOVAL

1. Remove front and rear propeller shafts. Refer to [DLN-133. "Removal and Installation"](#) and [DLN-142. "Removal and Installation"](#).
2. Remove transfer assembly. Refer to [DLN-101. "Removal and Installation"](#).
3. Remove rear oil seal using Tool.

Tool number : KV381054S0 (J-34286)

CAUTION:
Do not damage OD gear case.



INSTALLATION

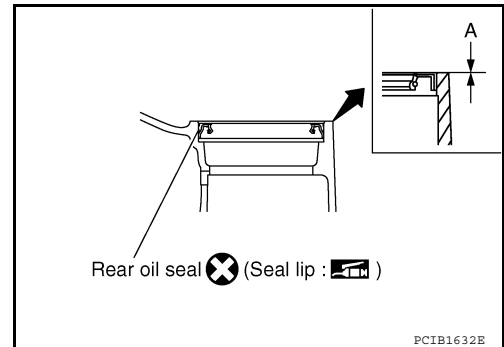
Installation is the reverse order of removal.

- Drive the rear oil seal using Tool.

Tool number : ST33200000 (J-26082)

Dimension (A) : -0.5 - 0.5 mm (-0.020 - 0.020 in)

CAUTION:
Do not incline the rear oil seal during installation.



- Check the transmission oil level after installation. Refer to [TM-14. "Checking"](#).

POSITION SWITCH

< ON-VEHICLE REPAIR >

[6MT: FS6R31A]

POSITION SWITCH

Checking

INFOID:000000005774584

BACK-UP LAMP SWITCH

- Check continuity.

Gear position	Continuity
Reverse	Yes
Except reverse	No

TRANSMISSION RANGE SWITCH

- Check continuity.

Gear position	Continuity
Neutral	Yes
Except neutral	No

SHIFT CONTROL

< ON-VEHICLE REPAIR >

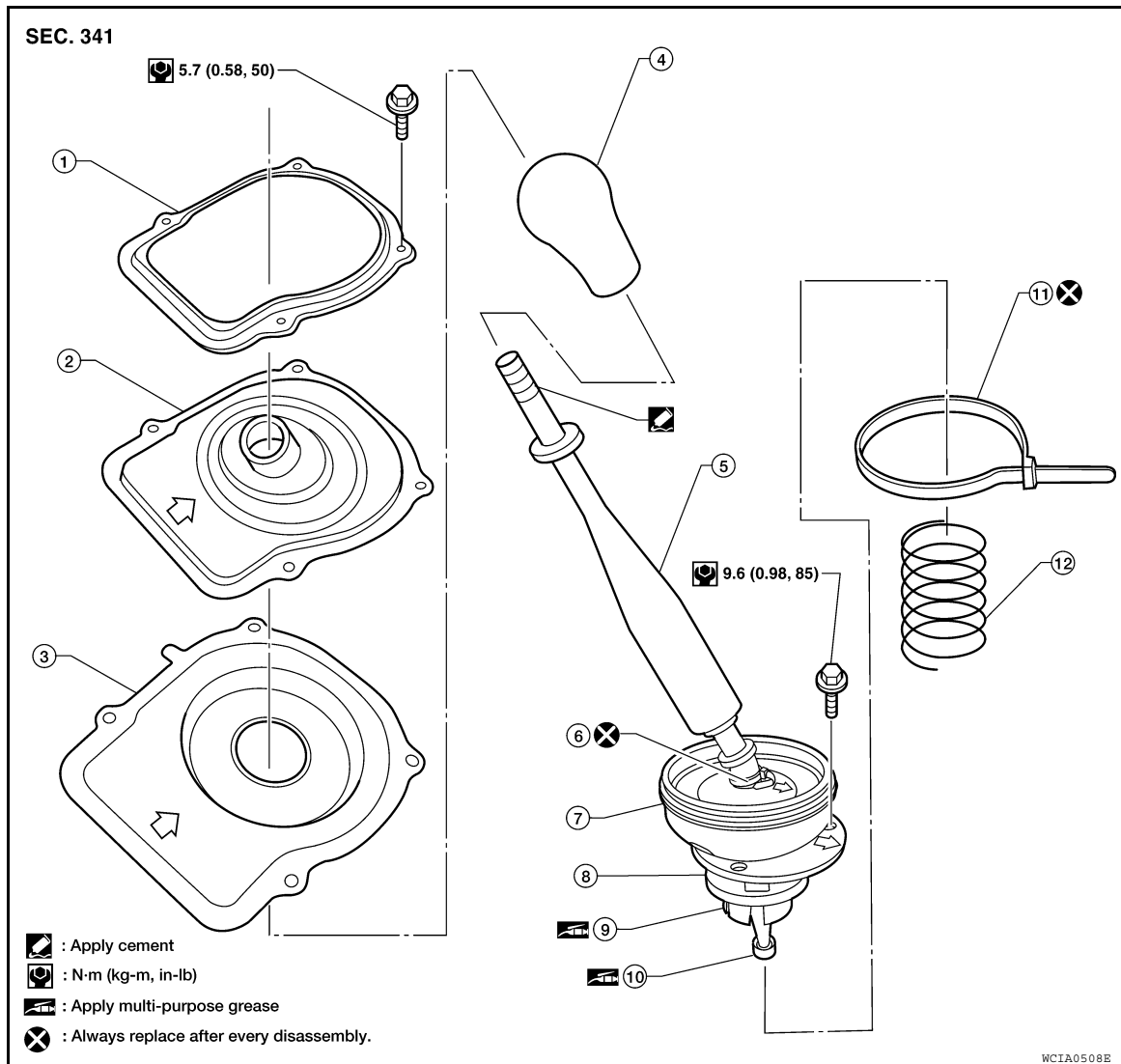
[6MT: FS6R31A]

SHIFT CONTROL

Removal and Installation

INFOID:000000005774585

COMPONENTS



- | | | |
|--------------------|----------------------------|----------------------------|
| 1. Retaining plate | 2. Dust boot cover (upper) | 3. Dust boot cover (lower) |
| 4. Shift handle | 5. Shift lever assembly | 6. Clip (A) |
| 7. Boot | 8. Guide plate | 9. Socket |
| 10. Bushing | 11. Clip (B) | 12. Spring |

REMOVAL

1. Remove the shift handle.
2. Remove the M/T finisher. Refer to [IP-16. "Exploded View"](#).
3. Remove the retaining plate and dust boot covers.
4. Remove the clip (B) and then separate the boot from the control housing.
5. Remove the guide plate bolts and then separate the guide plate.
6. Remove the shift lever assembly and spring from the transmission.

INSTALLATION

Installation is the reverse order of removal.

- Install shift handle according to the following.

SHIFT CONTROL

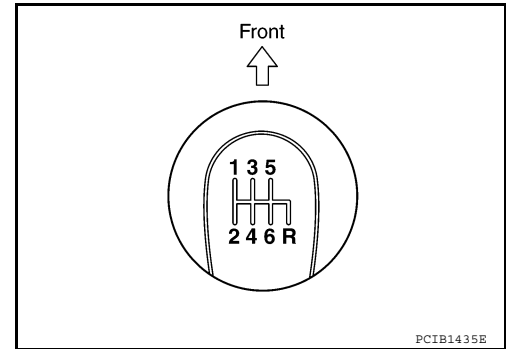
< ON-VEHICLE REPAIR >

[6MT: FS6R31A]

- Apply cement to threads of control lever assembly.
- Tighten shift handle until increased tension is felt. Then align shift handle to the position as shown within one turn.

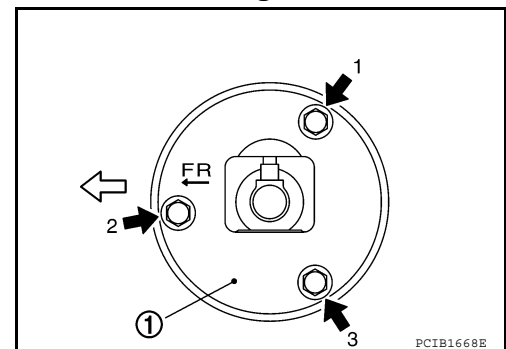
CAUTION:

Do not adjust shift handle by loosening it.

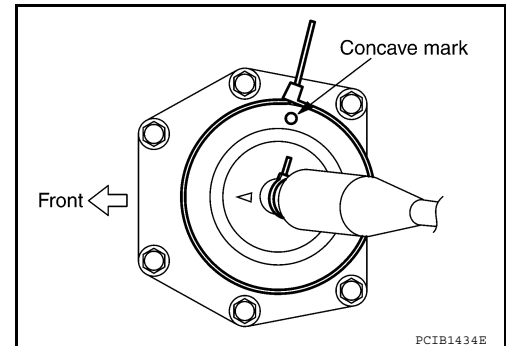


CAUTION:

- Apply multi-purpose grease to socket and bushing.
- Insert bushing of control lever assembly as far as it will go into the hole of striking arm.
- Tighten guide plate (1) bolts to the specified torque in order as shown.



- Do not reuse clip.
- Position clip as shown.
- Be careful with the orientation of control lever boot and insulator.



INSPECTION AFTER INSTALLATION

- Tighten guide plate bolts to the specified torque. Refer to [TM-28, "Disassembly and Assembly"](#).
- When shift lever assembly is shifted to each position, make sure there is no binding or disconnection in either boot.
- When shifted to each position, make sure there is no noise, bending, and backlash. Especially when shift lever assembly is shifted to 5th, 6th without pressing downward, check for bending.
- When shift lever assembly is shifted to 1st, 2nd side and 5th, 6th side, confirm shift lever assembly returns to neutral position smoothly.
- In any position other than reverse, confirm that shift lever assembly can be pressed downward.
- With shift lever assembly pressed downward, confirm that it can be shifted to reverse.
- When shifted from reverse to neutral position, confirm shift lever assembly returns to neutral position smoothly with spring power.
- Without shift lever assembly pressed downward, confirm that it cannot be shifted to reverse.

AIR BREATHER HOSE

< ON-VEHICLE REPAIR >

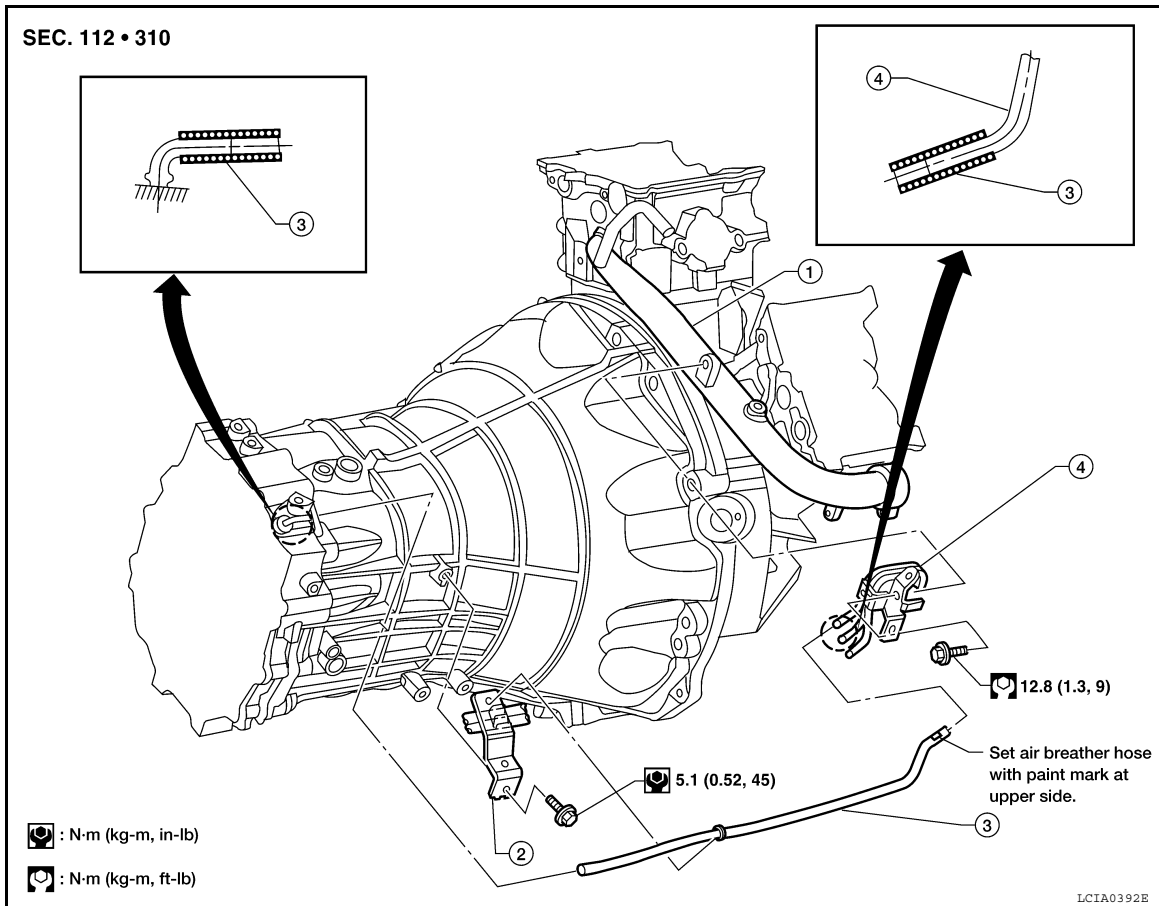
[6MT: FS6R31A]

AIR BREATHER HOSE

Removal and Installation

INFOID:000000005774586

Refer to the figure below for air breather hose removal and installation information.



1. Water outlet
2. Bracket
3. Air breather hose
4. Breather tube

CAUTION:

- Make sure there are no pinched or blocked areas on the air breather hose after installation.
- When inserting the air breather hose, be sure to insert it fully until its end reaches the end of the tube radius.
- Install the air breather hose with the paint mark side up.

TRANSMISSION ASSEMBLY

< REMOVAL AND INSTALLATION >

[6MT: FS6R31A]

REMOVAL AND INSTALLATION

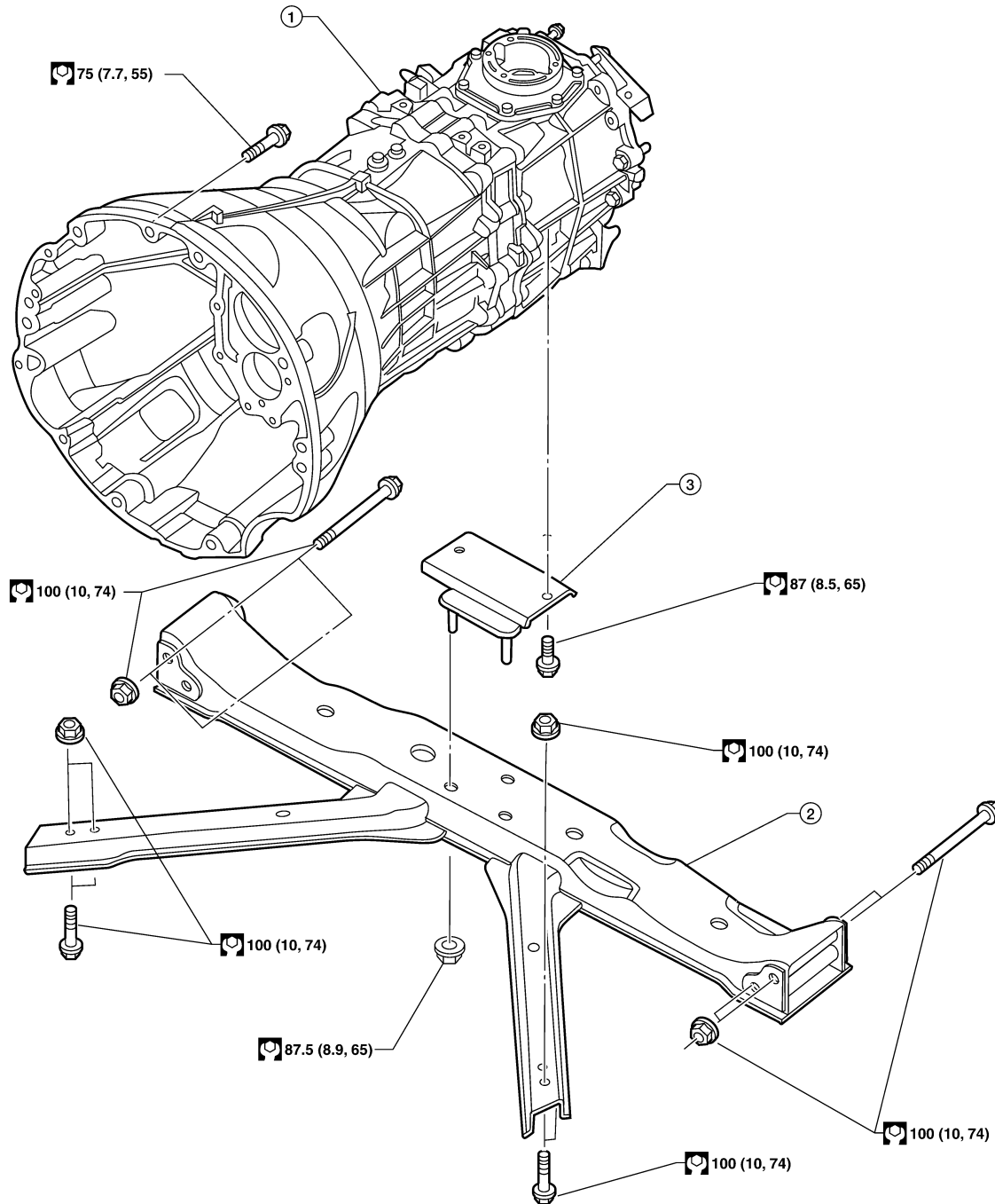
TRANSMISSION ASSEMBLY

Removal and Installation from Vehicle (For 4WD Models)

INFOID:000000005774588

COMPONENTS

SEC. 112 • 310



WCIA0577E

1. Transmission assembly

2. Crossmember

3. Insulator

REMOVAL

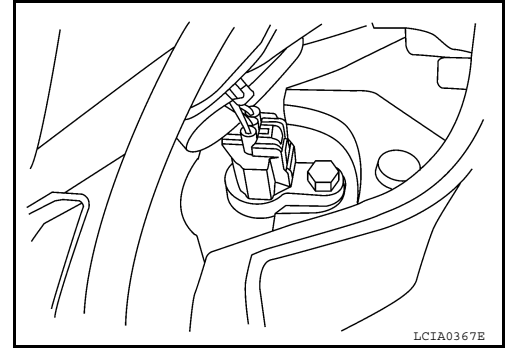
1. Drain transmission oil. Refer to [TM-14, "Changing"](#).

TRANSMISSION ASSEMBLY

[6MT: FS6R31A]

< REMOVAL AND INSTALLATION >

2. Disconnect the battery cable from the negative terminal.
3. Remove the shift lever assembly. Refer to [TM-17, "Removal and Installation"](#).
4. Remove the LH fender protector. Refer to [EXT-19, "Removal and Installation"](#).
5. Remove the crankshaft position sensor (POS) from the M/T assembly.
6. Remove the undercovers using power tool.
7. Remove the front crossmember using power tool.
8. Remove the starter motor. Refer to [STR-19, "Removal and Installation"](#).
9. Remove the front and rear propeller shafts. Refer to [DLN-133, "Removal and Installation"](#) (front) and [DLN-142, "Removal and Installation"](#) (rear).
10. Remove the left and right front exhaust tubes. Refer to [EX-5, "Removal and Installation"](#).
11. Remove the clutch operating cylinder from the transmission. Refer to [CL-13, "Removal and Installation"](#).
12. Support the transmission using a suitable jack.
13. Remove the nuts securing the insulator to the crossmember.
14. Remove the crossmember using power tool.



- CAUTION:**
Do not damage the sensor edge.
15. Tilt the transmission slightly to gain clearance between the body and the transmission, then disconnect the air breather hoses. Refer to [TM-19, "Removal and Installation"](#).
 16. Disconnect the following:
 - Back-up lamp switch connector
 - Park/neutral position (PNP) switch connector
 - ATP switch connector
 - Neutral 4LO switch connector
 - Wait detection switch connector
 - Transfer control device connector
 17. Remove the wiring harness from the retainers.
 18. Remove the transmission to engine bolts using power tool.
 19. Separate the transmission from the engine and remove it from the vehicle.
- WARNING:**
Support the transmission using suitable jack.
- WARNING:**
Support manual transmission while removing it.
20. Separate transmission and transfer case.

INSTALLATION

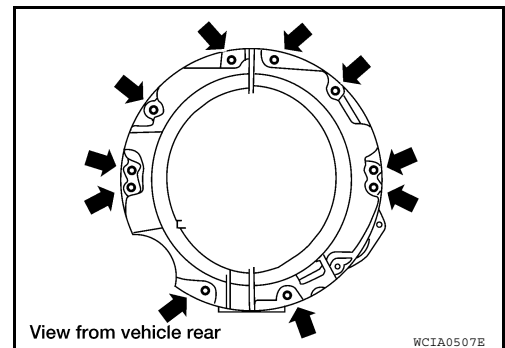
Installation is the reverse order of removal.

- When installing the transmission to the engine, tighten the bolts to the specified torque.

Quantity	10
Bolt length "ℓ" mm (in)	65 (2.56)
Tightening torque N-m (kg-m, ft-lb)	75 (7.7, 55)

CAUTION:

- When installing be careful to avoid interference between transmission main drive gear and clutch cover.
- After installation, check for oil leakage and oil level. Refer to [TM-14, "Checking"](#).
- If flywheel is removed, align dowel pin with the smallest hole of flywheel.
- When replacing an engine or transmission you must make sure the dowels are installed correctly during re-assembly.



TRANSMISSION ASSEMBLY

< REMOVAL AND INSTALLATION >

[6MT: FS6R31A]

- **Improper alignment caused by missing dowels may cause vibration oil leaks or breakage of drivetrain components.**

TRANSMISSION ASSEMBLY

< DISASSEMBLY AND ASSEMBLY >

[6MT: FS6R31A]

DISASSEMBLY AND ASSEMBLY

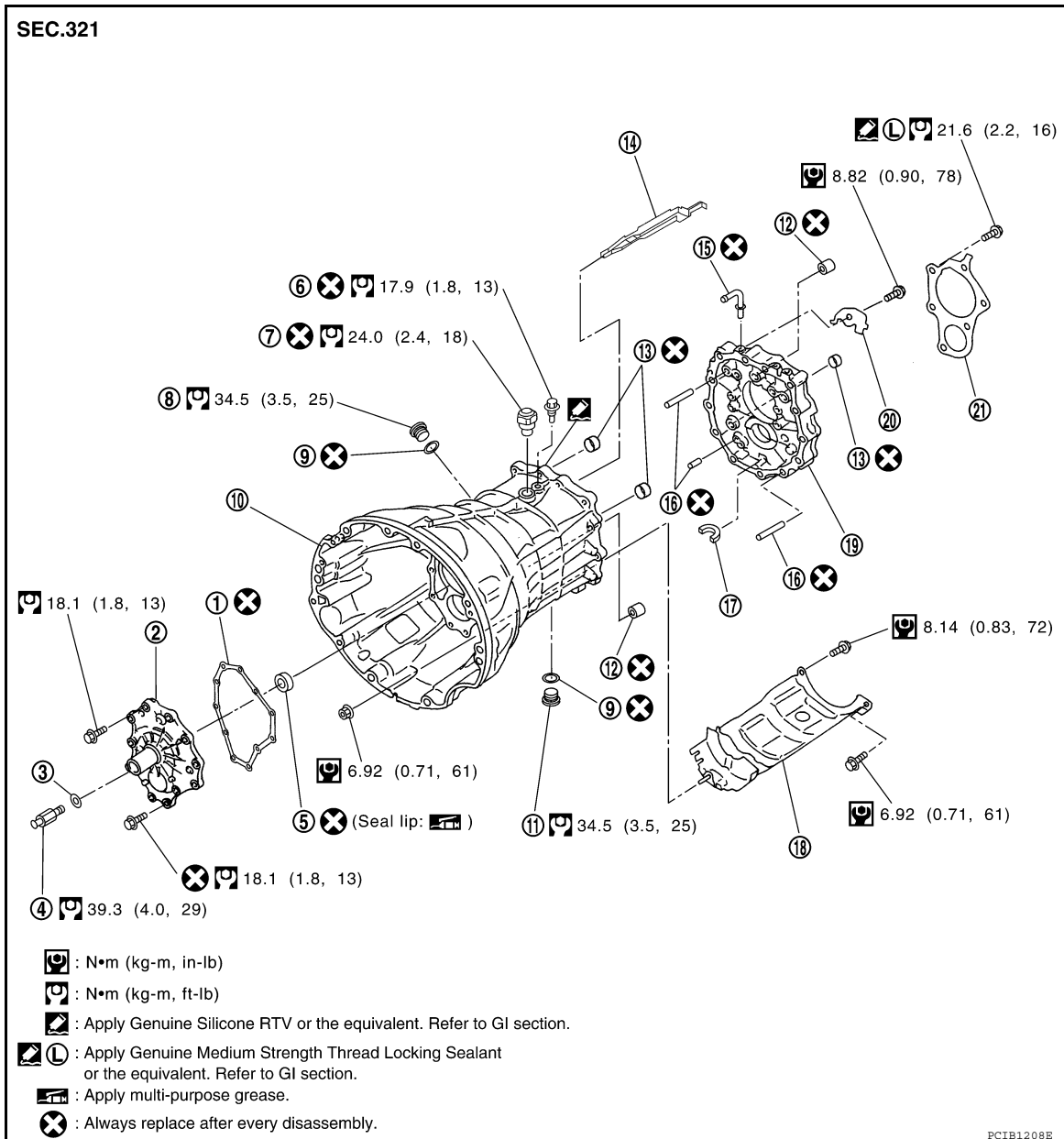
TRANSMISSION ASSEMBLY

Exploded View

INFOID:000000005774589

COMPONENTS

Case Components

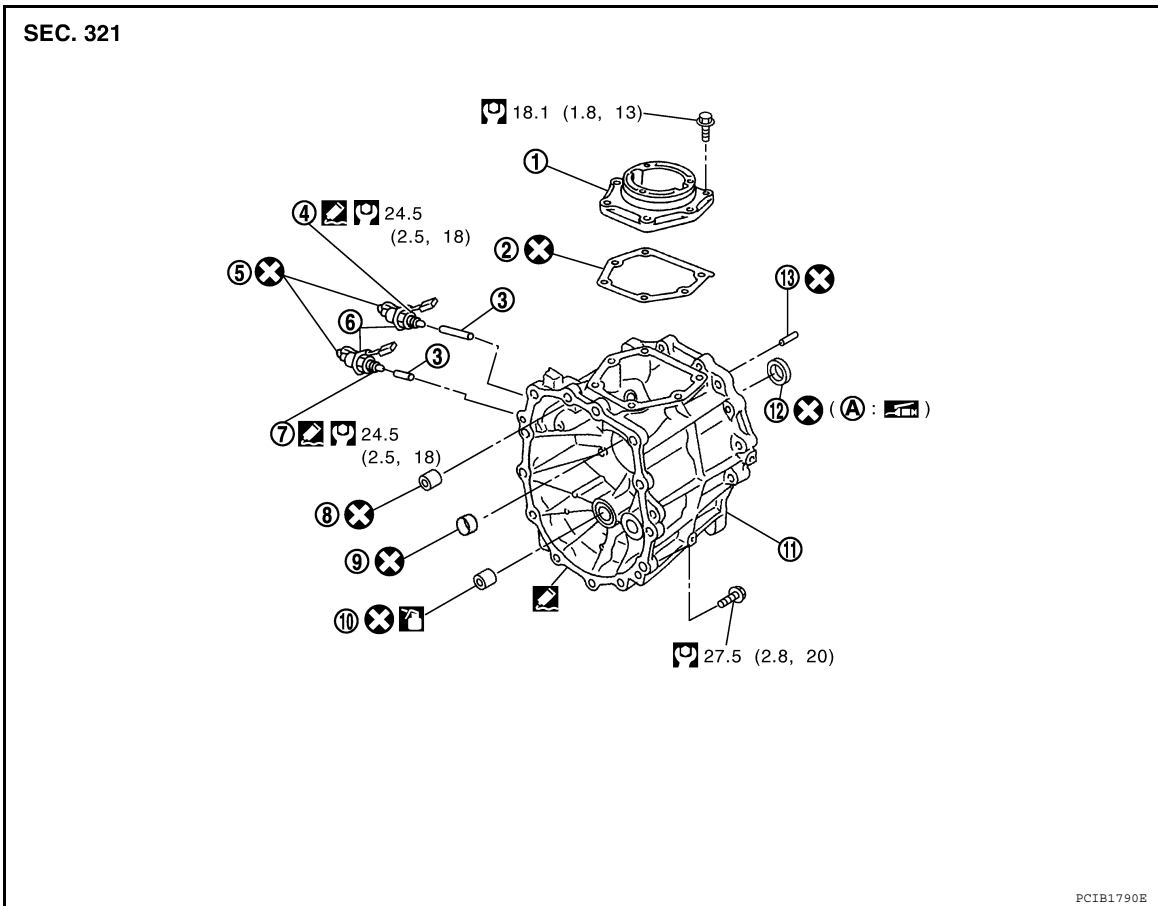


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|------------------------------|-------------------------|--------------------------|
| 1. Front cover gasket | 2. Front cover | 3. Washer |
| 4. Withdrawal lever ball pin | 5. Front cover oil seal | 6. Pivot bolt |
| 7. Check shift pin | 8. Filler plug | 9. Gasket |
| 10. Transmission case | 11. Drain plug | 12. Sliding ball bearing |
| 13. Bushing | 14. Oil gutter | 15. Breather |
| 16. Dowel pin | 17. Magnet | 18. Baffle plate |
| 19. Adapter plate | 20. Baffle plate | 21. Bearing retainer |

TRANSMISSION ASSEMBLY

< DISASSEMBLY AND ASSEMBLY >

[6MT: FS6R31A]



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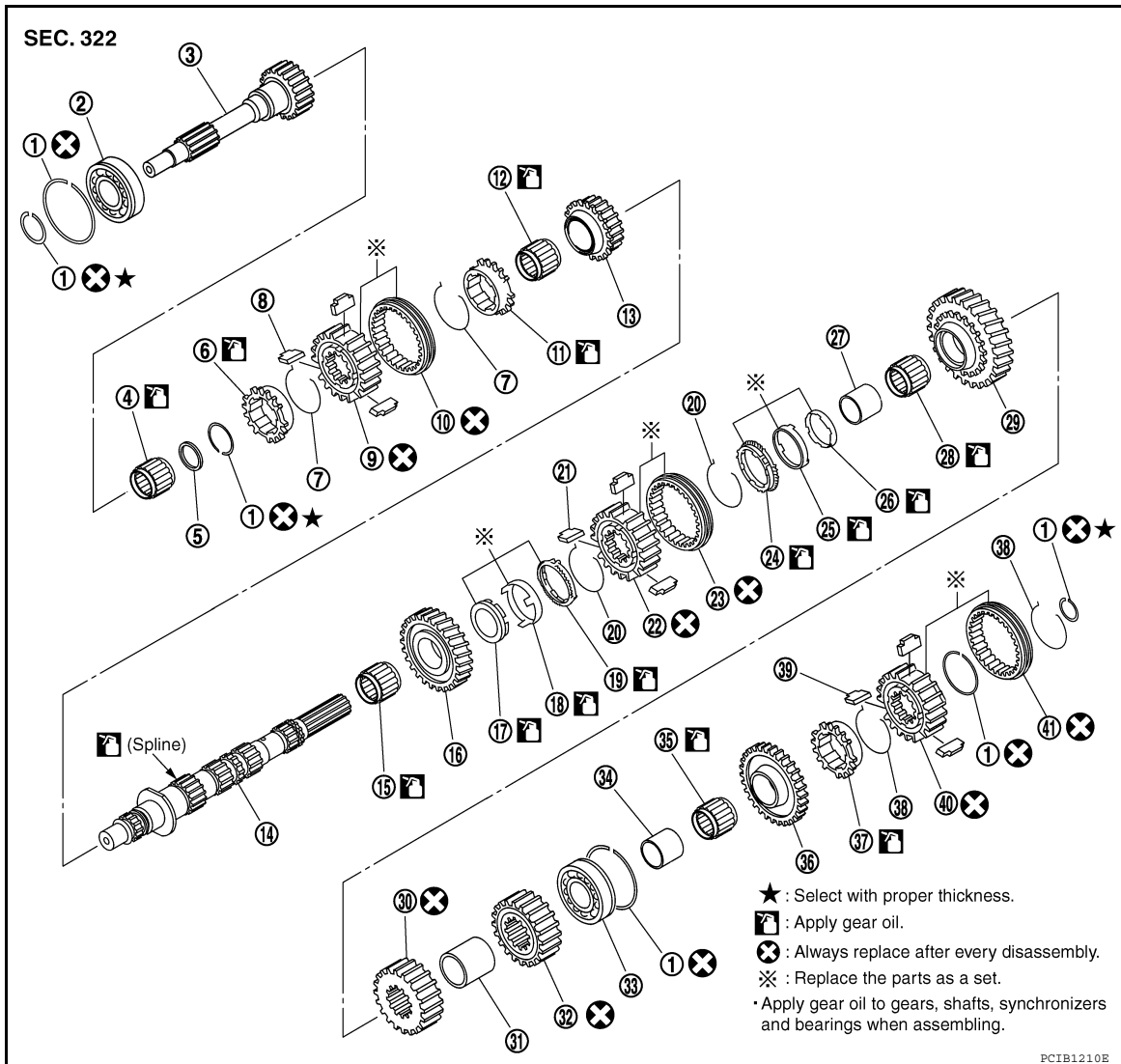
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|------------------------------|-------------------------|------------------------------|
| 1. Control housing | 2. Gasket | 3. Plunger |
| 4. Transmission range switch | 5. Clip | 6. Back-up lamp switch |
| 7. Sliding ball bearing | 8. Bushing | 9. Rear extension oil gutter |
| 10. Cap | 11. Counter end bearing | 12. Rear extension |
| 13. Rear oil seal | 14. Dust seal | 15. Dowel pin |
| 16. OD gear case | | |

Gear Components

TRANSMISSION ASSEMBLY

< DISASSEMBLY AND ASSEMBLY >

[6MT: FS6R31A]



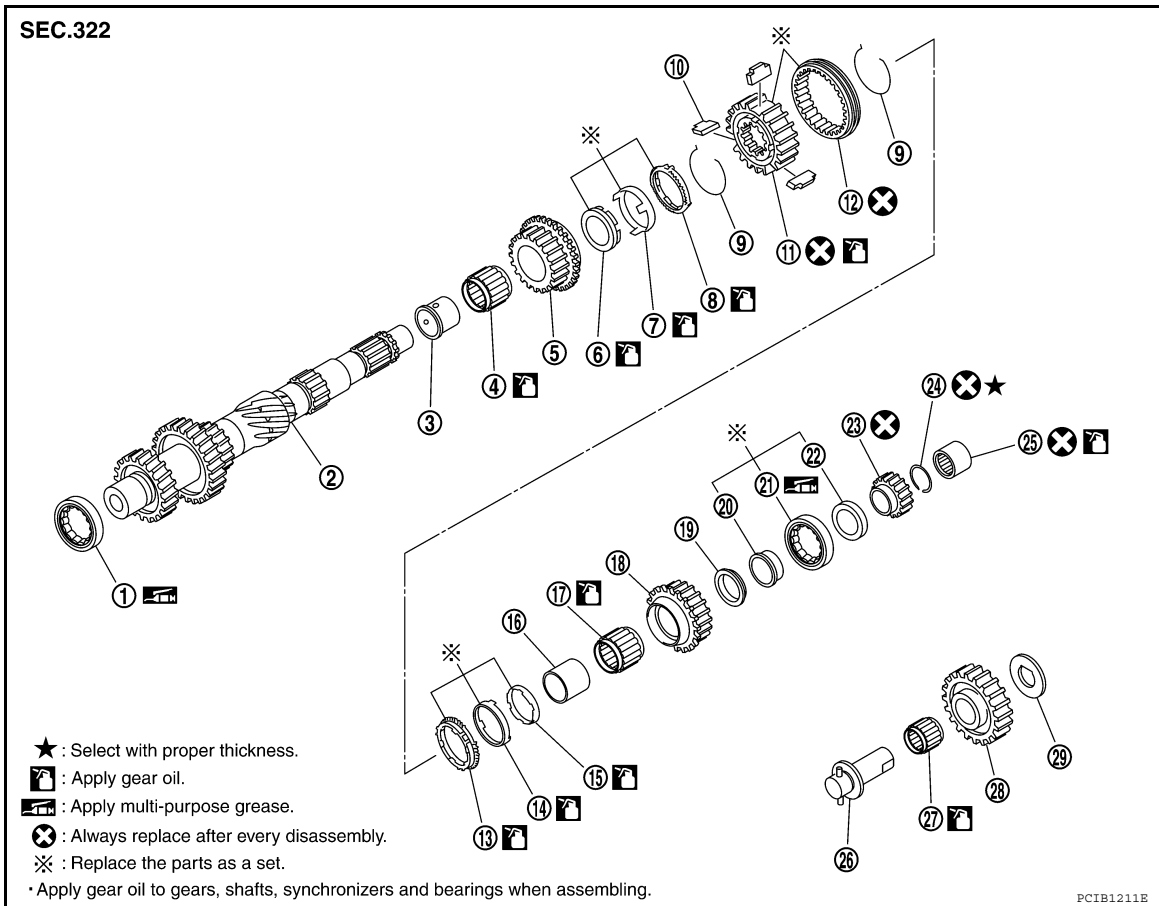
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| 1. Snap ring | 2. Main drive gear bearing | 3. Main drive gear |
| 4. Main pilot bearing | 5. Pilot bearing spacer | 6. 5th baulk ring |
| 7. 5th-6th spread spring | 8. 5th-6th shifting insert | 9. 5th-6th synchronizer hub |
| 10. 5th-6th coupling sleeve | 11. 6th baulk ring | 12. 6th needle bearing |
| 13. 6th main gear | 14. Mainshaft | 15. 2nd needle bearing |
| 16. 2nd main gear | 17. 2nd inner baulk ring | 18. 2nd synchronizer cone |
| 19. 2nd outer baulk ring | 20. 1st-2nd spread spring | 21. 1st-2nd shifting insert |
| 22. 1st-2nd synchronizer hub | 23. 1st-2nd coupling sleeve | 24. 1st outer baulk ring |
| 25. 1st synchronizer cone | 26. 1st inner baulk ring | 27. 1st gear bushing |
| 28. 1st needle bearing | 29. 1st main gear | 30. 3rd main gear |
| 31. 3rd-4th main spacer | 32. 4th main gear | 33. Mainshaft bearing |
| 34. Reverse main gear bushing | 35. Reverse main needle bearing | 36. Reverse main gear |
| 37. Reverse baulk ring | 38. Reverse spread spring | 39. Reverse shifting insert |
| 40. Reverse synchronizer hub | 41. Reverse coupling sleeve | |

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TRANSMISSION ASSEMBLY

< DISASSEMBLY AND ASSEMBLY >

[6MT: FS6R31A]



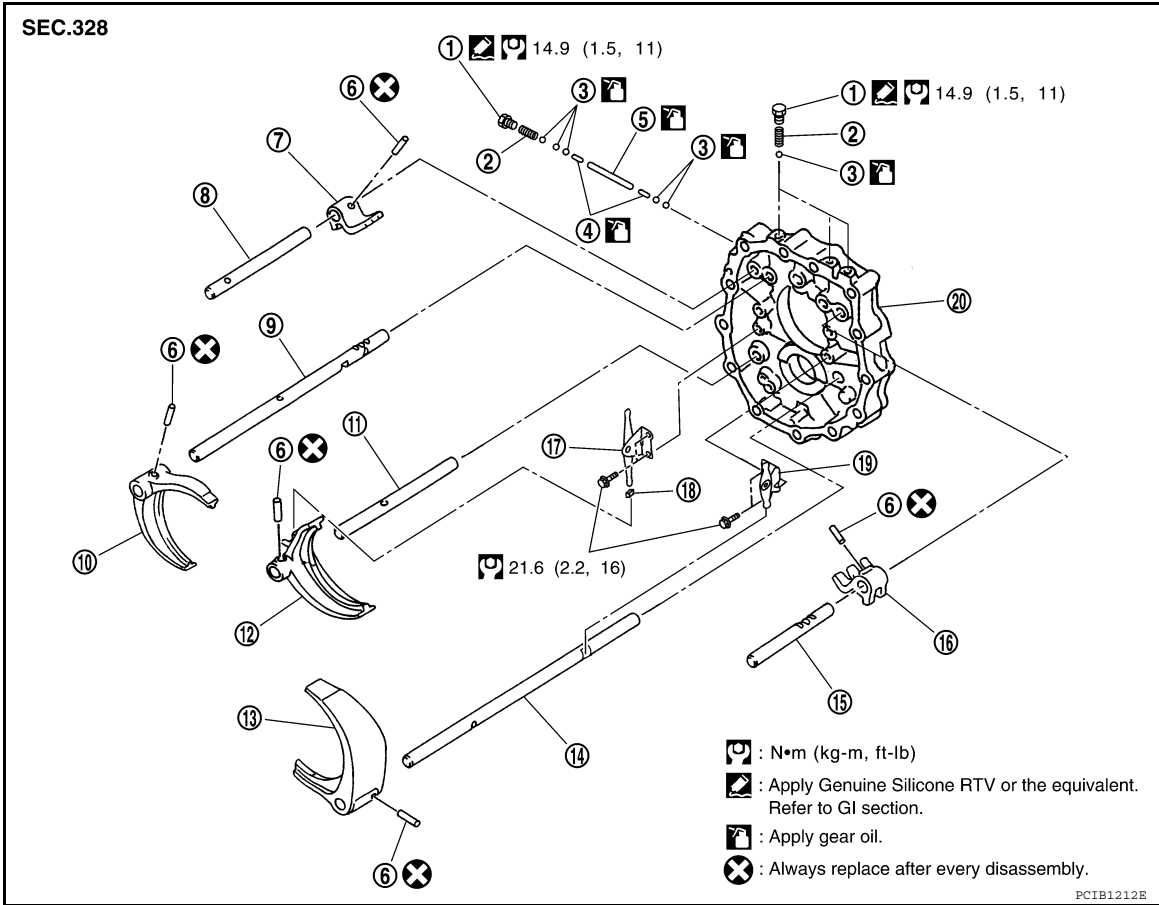
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|------------------------------------|-------------------------------------|----------------------------------|
| 1. Counter front bearing | 2. Counter gear | 3. 3rd gear bushing |
| 4. 3rd needle bearing | 5. 3rd counter gear | 6. 3rd inner baulk ring |
| 7. 3rd synchronizer cone | 8. 3rd outer baulk ring | 9. 3rd-4th spread spring |
| 10. 3rd-4th shifting insert | 11. 3rd-4th synchronizer hub | 12. 3rd-4th coupling sleeve |
| 13. 4th outer baulk ring | 14. 4th synchronizer cone | 15. 4th inner baulk ring |
| 16. 4th gear bushing | 17. 4th needle bearing | 18. 4th counter gear |
| 19. 4th counter gear thrust washer | 20. Counter rear bearing inner race | 21. Counter rear bearing |
| 22. Counter rear bearing spacer | 23. Reverse counter gear | 24. Snap ring |
| 25. Counter end bearing | 26. Reverse idler shaft | 27. Reverse idler needle bearing |
| 28. Reverse idler gear | 29. Reverse idler thrust washer | |

Shift Control Components

TRANSMISSION ASSEMBLY

< DISASSEMBLY AND ASSEMBLY >

[6MT: FS6R31A]



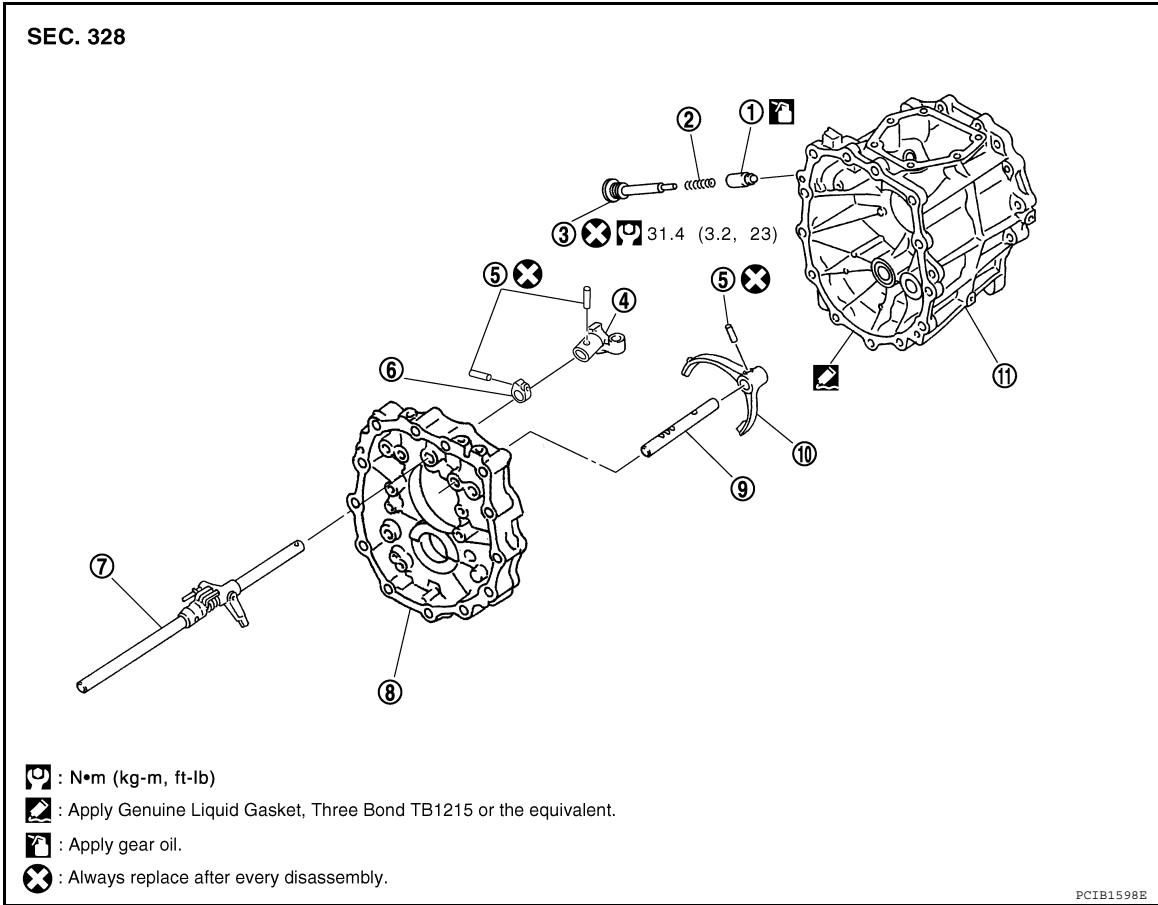
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|------------------------------|--------------------------------------|------------------------|
| 1. Check ball plug | 2. Check ball spring | 3. Check ball |
| 4. Interlock pin | 5. Interlock plunger | 6. Retaining pin |
| 7. 3rd-4th fork rod bracket | 8. 3rd-4th fork rod | 9. 1st-2nd fork rod |
| 10. 1st-2nd shift fork | 11. 3rd-4th fork rod (reversal side) | 12. 3rd-4th shift fork |
| 13. 5th-6th shift fork | 14. 5th-6th fork rod (reversal side) | 15. 5th-6th fork rod |
| 16. 5th-6th fork rod bracket | 17. 3rd-4th control lever | 18. Shifter cap |
| 19. 5th-6th control lever | 20. Adapter plate | |

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TRANSMISSION ASSEMBLY

< DISASSEMBLY AND ASSEMBLY >

[6MT: FS6R31A]



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|--------------------------|--------------------|-----------------------|
| 1. Return spring plunger | 2. Return spring | 3. Return spring plug |
| 4. Striking arm | 5. Retaining pin | 6. Stopper ring |
| 7. Striking rod assembly | 8. Adapter plate | 9. Reverse fork rod |
| 10. Reverse shift fork | 11. Rear extension | 12. OD gear case |

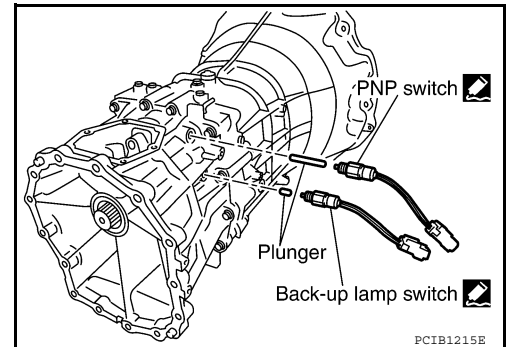
Disassembly and Assembly

INFOID:000000005774590

DISASSEMBLY

Case Components

1. Remove clips from transmission range switch and back-up lamp switch.
2. Remove transmission range switch, back-up lamp switch and plungers from rear extension (or OD gear case).

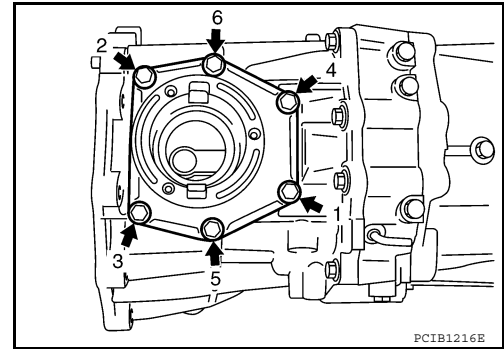


TRANSMISSION ASSEMBLY

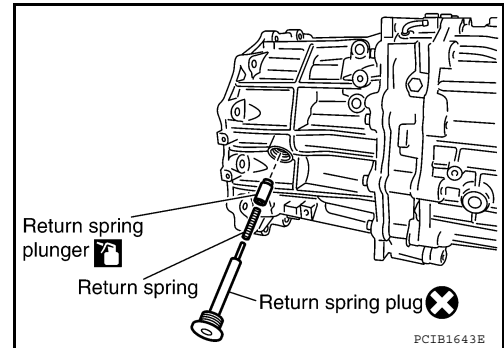
< DISASSEMBLY AND ASSEMBLY >

[6MT: FS6R31A]

3. Remove control housing bolts, and then remove control housing and gasket from rear extension (or OD gear case).



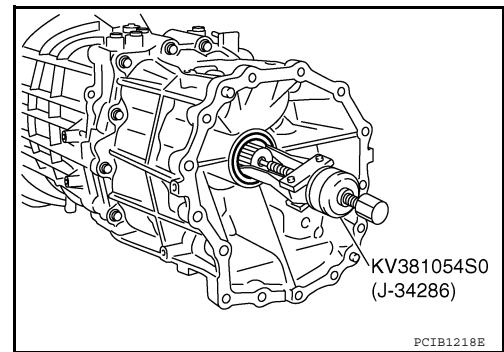
4. Remove return spring plug, return spring and return spring plunger from rear extension (or OD gear case).



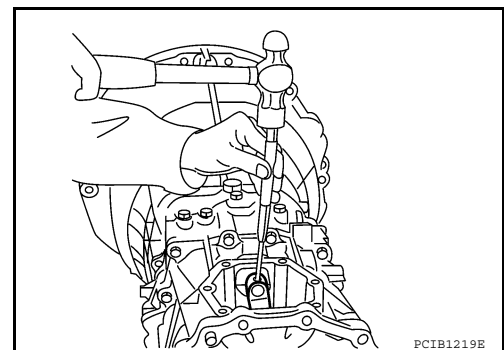
5. Remove rear oil seal from OD gear case using Tool.

Tool number : KV381054S0 (J-34286)

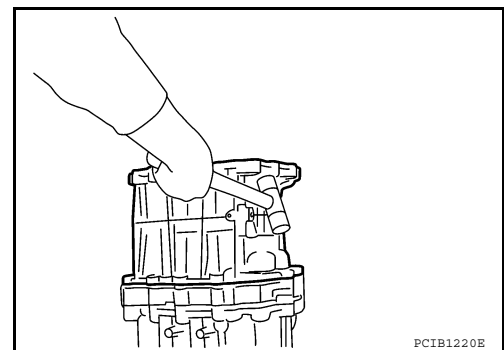
CAUTION:
Do not damage OD gear case.



6. Remove retaining pin using suitable tool, and then remove striking arm from striking rod assembly.



7. Remove rear extension (or OD gear case) bolts, and then remove rear extension (or OD gear case) from adapter plate using suitable tool.



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TRANSMISSION ASSEMBLY

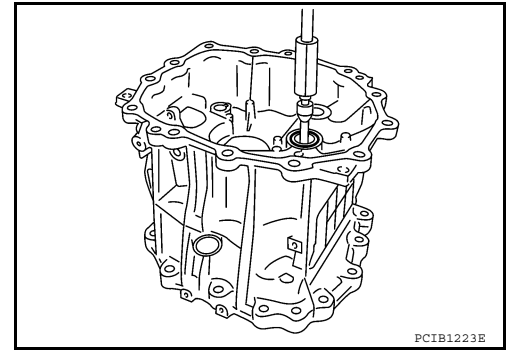
< DISASSEMBLY AND ASSEMBLY >

[6MT: FS6R31A]

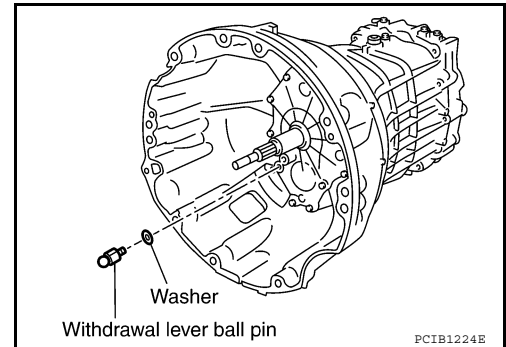
8. Remove counter end bearing from rear extension (or OD gear case) using suitable tool.

CAUTION:

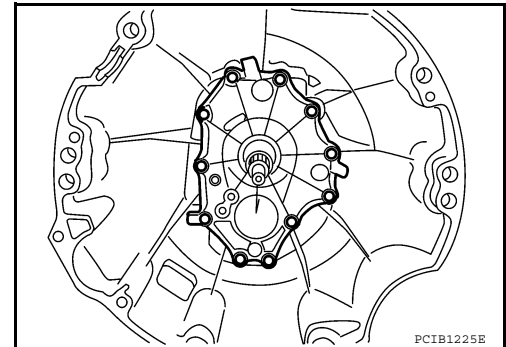
Be careful not to damage rear extension (or OD gear case).



9. Remove withdrawal lever ball pin and washer from front cover.



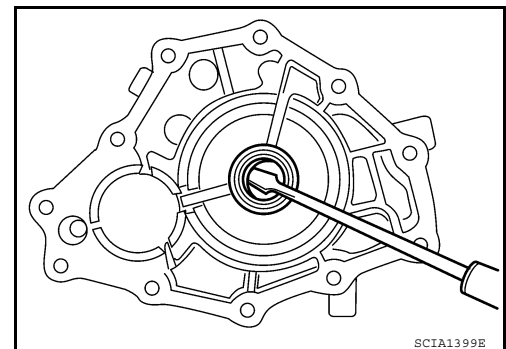
10. Remove front cover bolts, and then remove front cover and front cover gasket from transmission case.



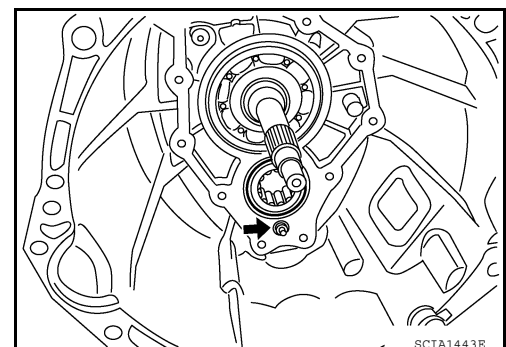
11. Remove front cover oil seal from front cover using suitable tool.

CAUTION:

Be careful not to damage front cover.



12. Remove baffle plate nut from transmission case.

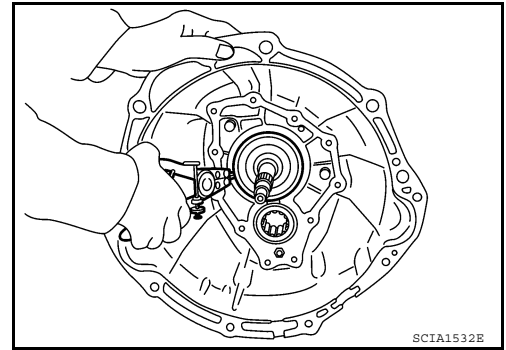


TRANSMISSION ASSEMBLY

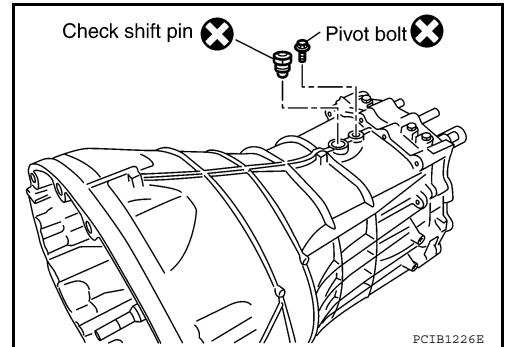
< DISASSEMBLY AND ASSEMBLY >

[6MT: FS6R31A]

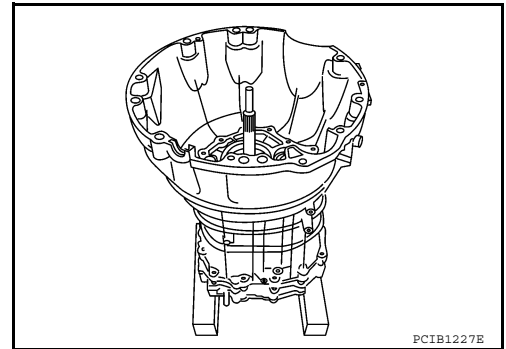
13. Remove snap ring from main drive gear bearing using suitable tool.



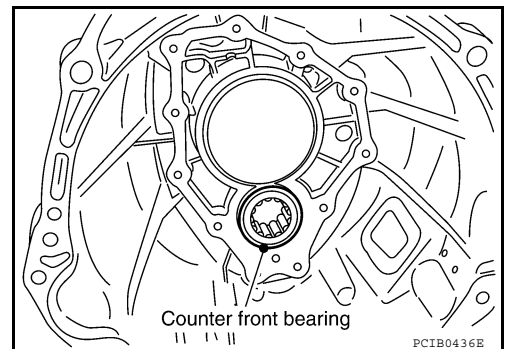
14. Remove pivot bolt and check shift pin from transmission case.



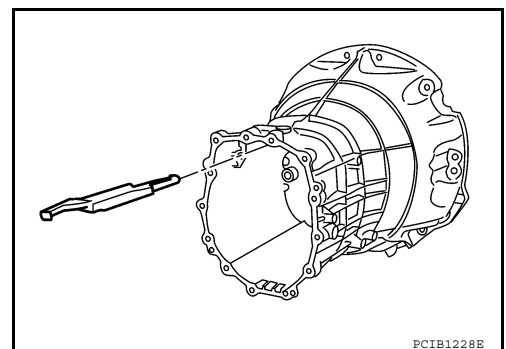
15. Remove transmission case from adapter plate.



16. Remove counter front bearing from transmission case.



17. Remove oil gutter from transmission case.



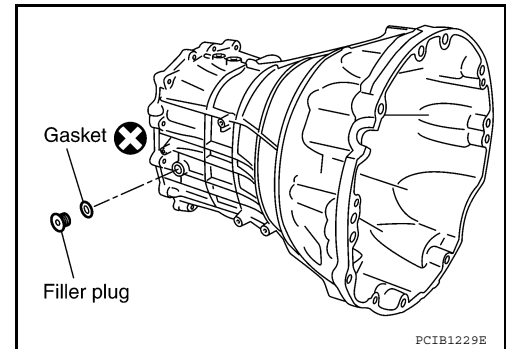
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TRANSMISSION ASSEMBLY

< DISASSEMBLY AND ASSEMBLY >

[6MT: FS6R31A]

18. Remove filler plug and gasket from transmission case.



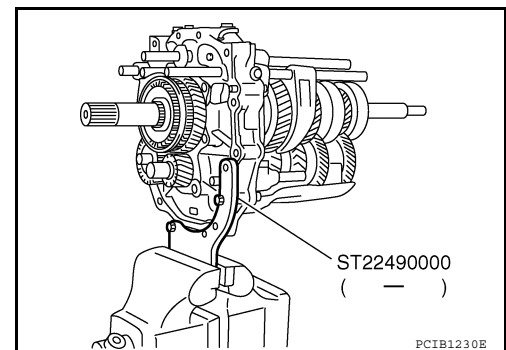
Shift Control Components

1. Remove rear extension (or OD gear case) and transmission case. Refer to [TM-28. "Disassembly and Assembly"](#).
2. Install Tool to adapter plate, and then position in a vise.

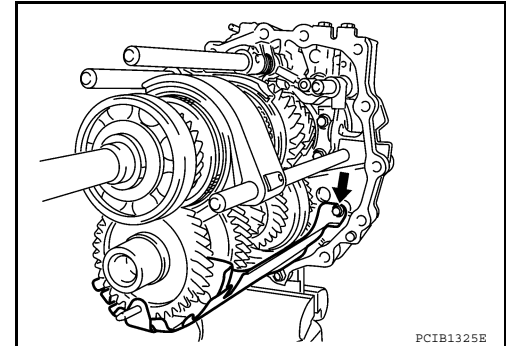
Tool number : ST22490000 (—)

CAUTION:

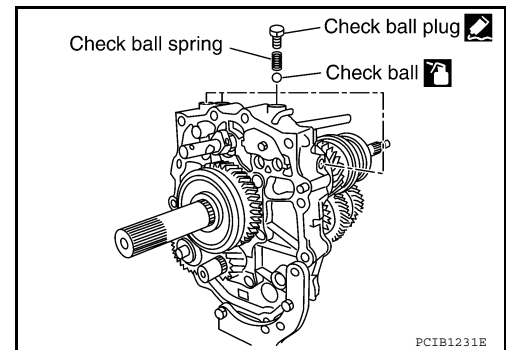
Do not directly secure mating surface of adapter plate in a vise.



3. Remove baffle plate bolts, and then remove baffle plate from adapter plate.



4. Remove check ball plugs, check ball springs and check balls from adapter plate.

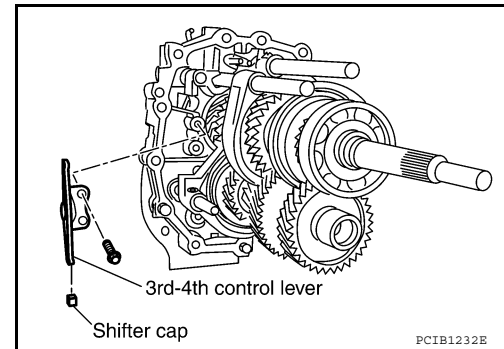


TRANSMISSION ASSEMBLY

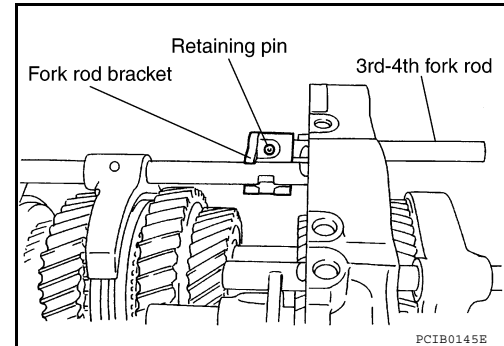
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[6MT: FS6R31A]

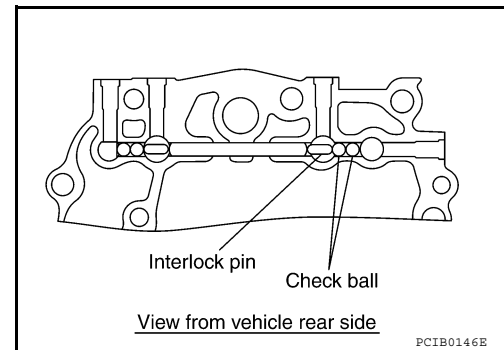
5. Remove 3rd-4th control lever bolts, and then remove 3rd-4th control lever and shifter cap from adapter plate.



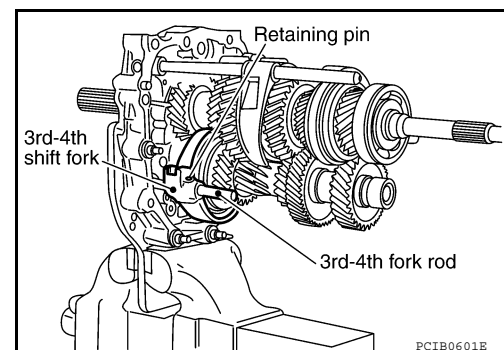
6. Remove retaining pin using suitable tool, and then remove 3rd - 4th fork rod bracket and 3rd-4th fork rod from adapter plate.



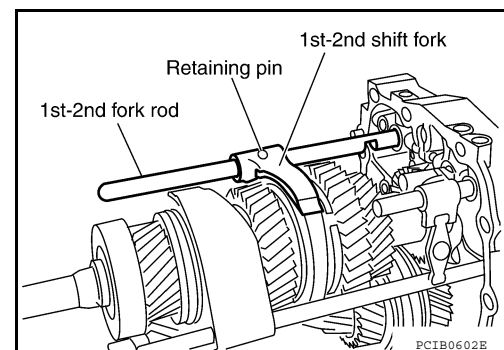
7. Remove check balls and interlock pin from adapter plate.



8. Remove retaining pin using a suitable tool, and then remove 3rd-4th shift fork and 3rd-4th fork rod (reversal side) from adapter plate.



9. Remove retaining pin using a suitable tool, and then remove 1st-2nd shift fork and 1st-2nd fork rod from adapter plate.



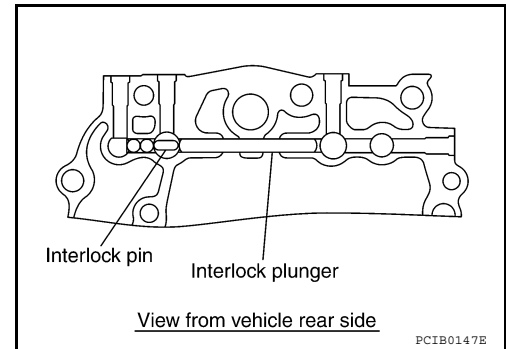
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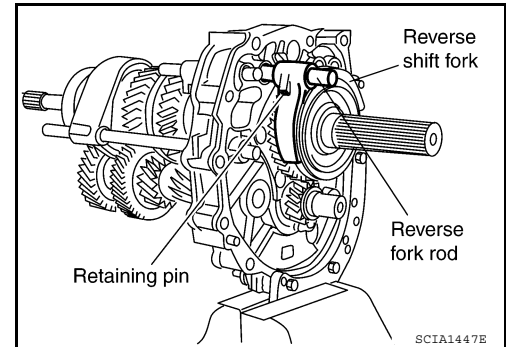
< DISASSEMBLY AND ASSEMBLY >

[6MT: FS6R31A]

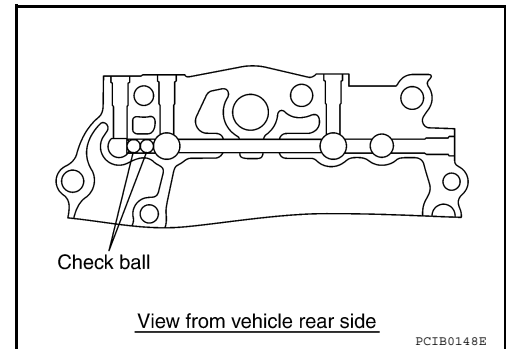
10. Remove interlock plunger and interlock pin from adapter plate.



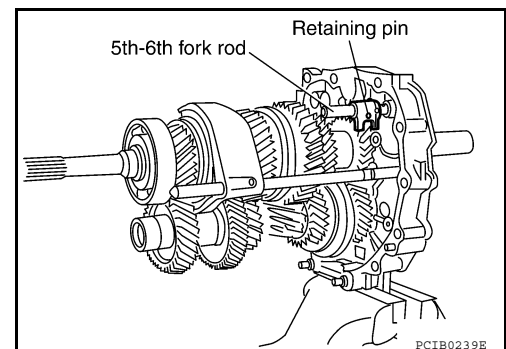
11. Remove retaining pin using suitable tool, and then remove reverse shift fork and reverse fork rod from adapter plate.



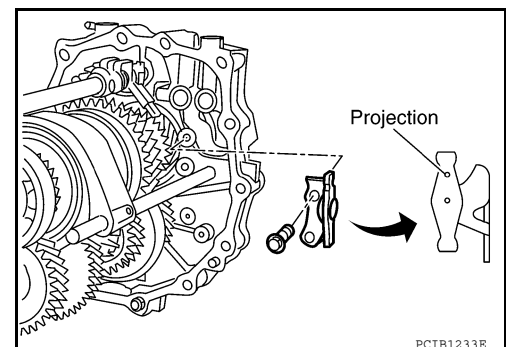
12. Remove check balls from adapter plate.



13. Remove retaining pin using suitable tool, and then remove 5th-6th fork rod bracket and 5th-6th fork rod from adapter plate.



14. Remove 5th-6th control lever bolts, and then remove 5th-6th control lever from adapter plate.

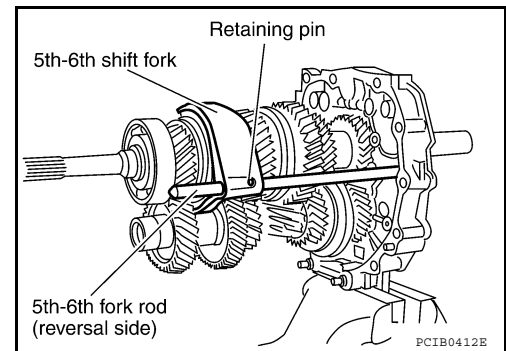


TRANSMISSION ASSEMBLY

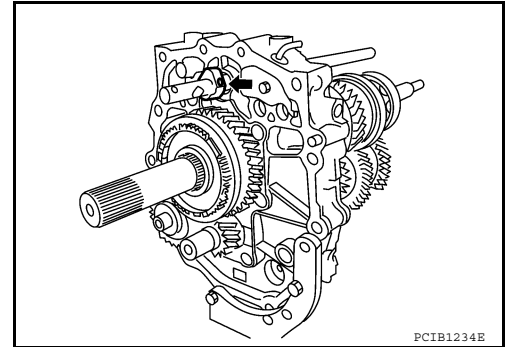
< DISASSEMBLY AND ASSEMBLY >

[6MT: FS6R31A]

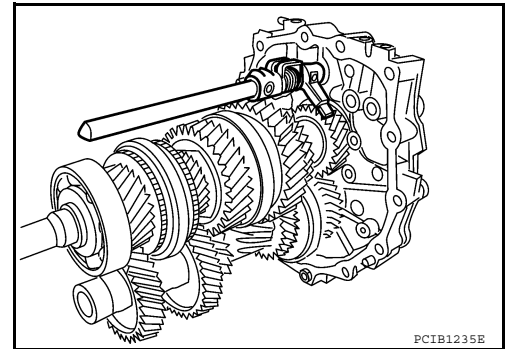
15. Remove retaining pin using suitable tool, and then remove 5th-6th shift fork and 5th-6th fork rod (reversal side) from adapter plate.



16. Remove retaining pin using suitable tool, and then remove stopper ring from striking rod assembly.



17. Remove striking rod assembly from adapter plate.

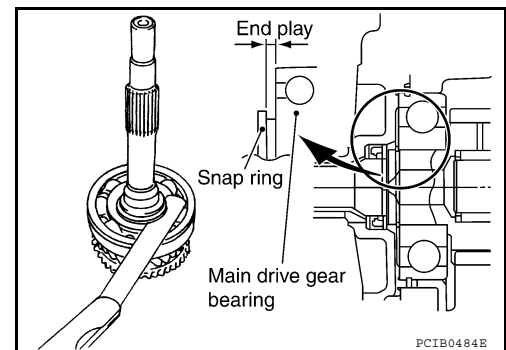


Gear Components

1. Remove rear extension (or OD gear case) and transmission case. Refer to [TM-28, "Disassembly and Assembly"](#).
2. Remove shift forks and fork rods. Refer to [TM-28, "Disassembly and Assembly"](#).
3. Before disassembling, measure the end play for each position. If the end play is outside the standards, disassemble and inspect.
 - Main drive gear

End play

Refer to [TM-69, "Gear End Play"](#)



TRANSMISSION ASSEMBLY

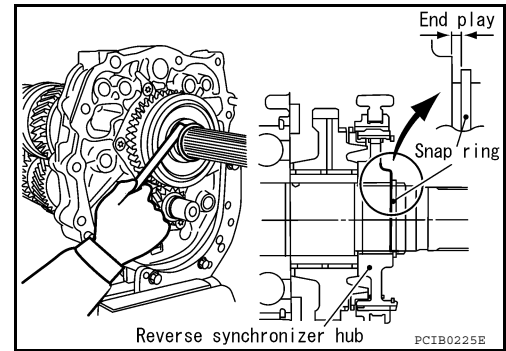
< DISASSEMBLY AND ASSEMBLY >

[6MT: FS6R31A]

- Mainshaft (Rear side)

End play

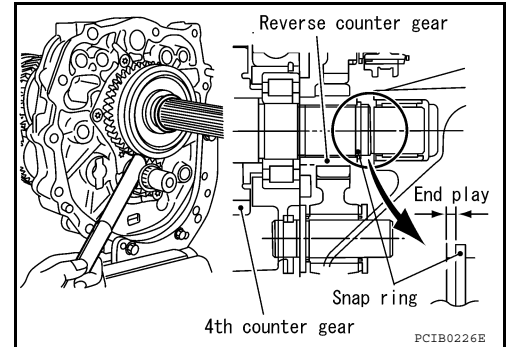
Refer to [TM-69, "Gear End Play"](#)



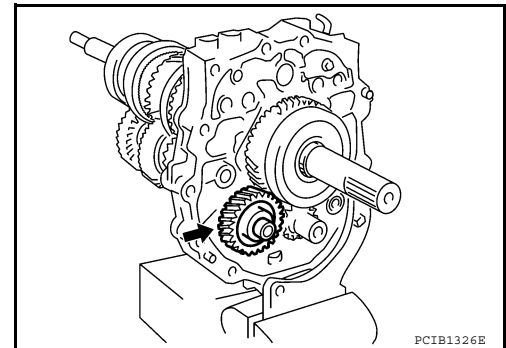
- Counter gear

End play

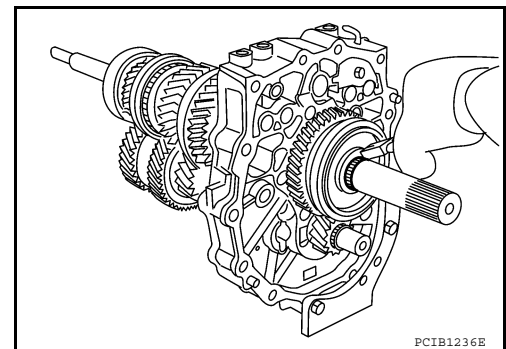
Refer to [TM-69, "Gear End Play"](#)



4. Remove reverse idler gear according to the following.
 - a. Remove reverse idler shaft assembly from adapter plate.
 - b. Remove reverse idler thrust washer, reverse idler gear and reverse idler needle bearing from reverse idler shaft.



5. Remove reverse main gear and reverse synchronizer hub assembly according to the following.
 - a. Remove snap ring from mainshaft using suitable tool.

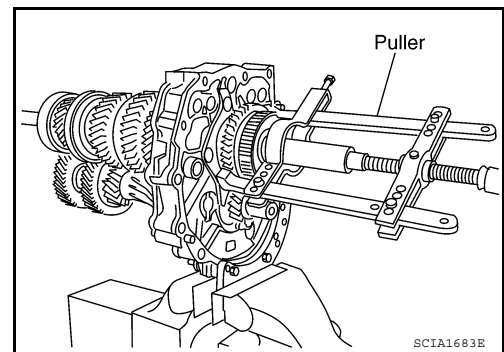


TRANSMISSION ASSEMBLY

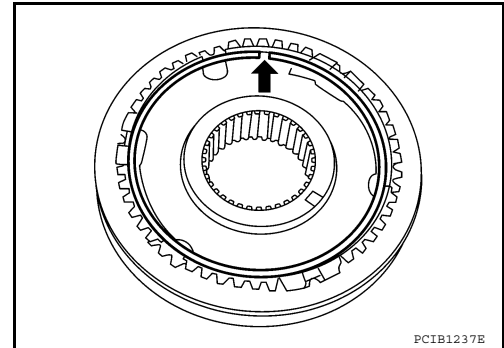
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[6MT: FS6R31A]

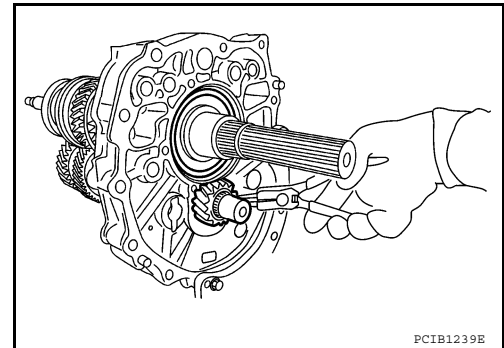
- b. Remove reverse main gear and reverse synchronizer hub assembly using suitable tool.
- c. Remove reverse main needle bearing from mainshaft.



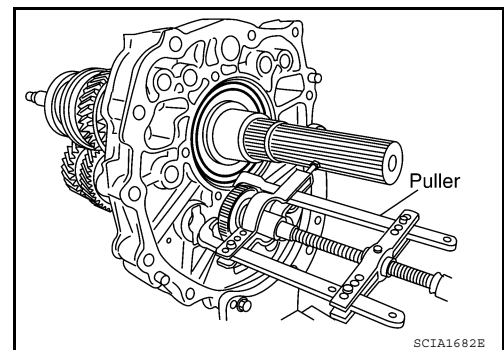
- 6. Remove reverse coupling sleeve according to the following.
 - a. Remove snap ring from reverse synchronizer hub.
 - b. Remove spread springs and shifting inserts from reverse synchronizer hub.
 - c. Remove reverse coupling sleeve from reverse synchronizer hub.



- 7. Remove reverse counter gear according to the following.
 - a. Remove snap ring from counter gear using suitable tool.



- b. Remove reverse counter gear using suitable tool.
- 8. Remove counter rear bearing spacer from counter gear.



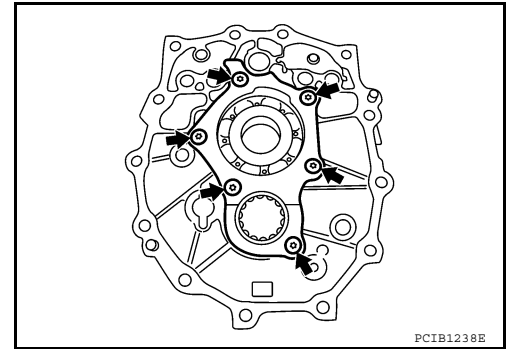
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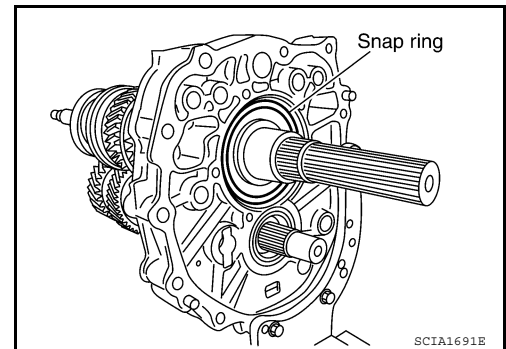
[6MT: FS6R31A]

9. Remove bearing retainer bolts, and then remove bearing retainer.

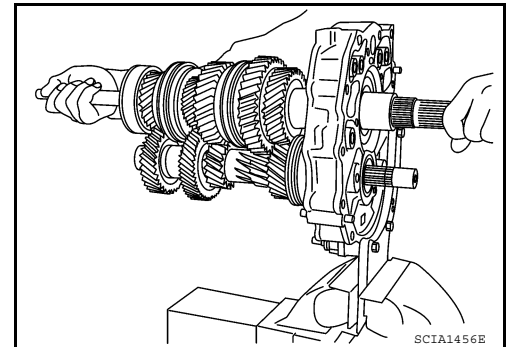


10. Remove main drive gear assembly, mainshaft assembly and counter gear assembly according to the following.

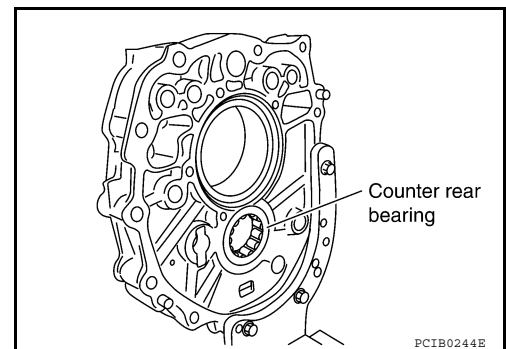
- a. Remove snap ring from mainshaft bearing using suitable tool.



- b. Carefully tap mainshaft using suitable tool, and then remove main drive gear assembly, mainshaft assembly and counter gear assembly from adapter plate.
- c. Remove main pilot bearing, pilot bearing spacer from mainshaft.
- d. Remove 5th baulk ring from main drive gear.



11. Remove counter rear bearing from adapter plate.

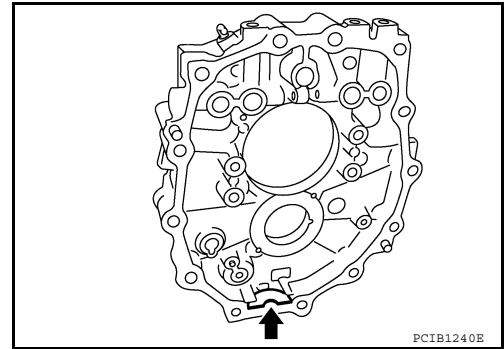


TRANSMISSION ASSEMBLY

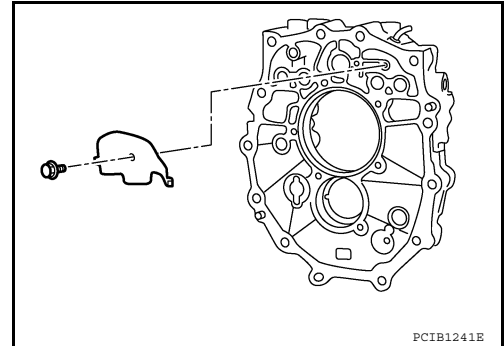
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[6MT: FS6R31A]

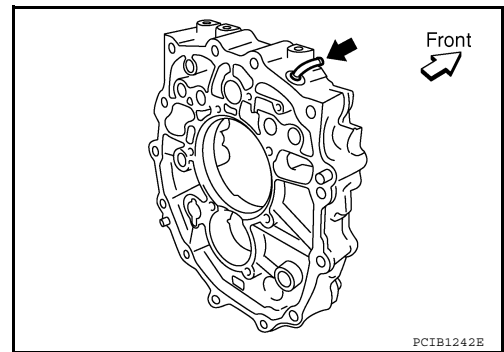
12. Remove magnet from adapter plate.



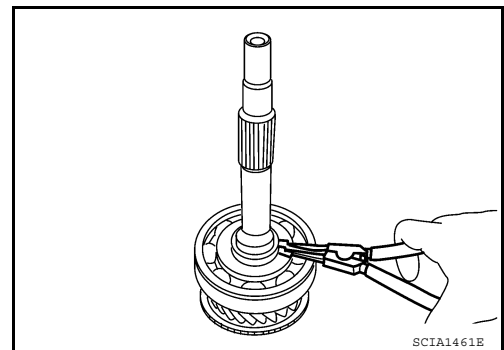
13. Remove baffle plate bolt, and then remove baffle plate from adapter plate.



14. Remove breather from adapter plate.



15. Remove main drive gear bearing according to the following.
a. Remove snap ring from main drive gear using suitable tool.



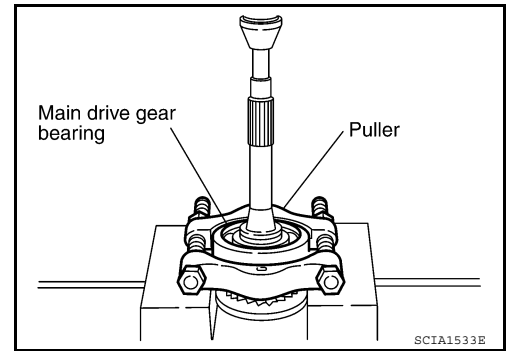
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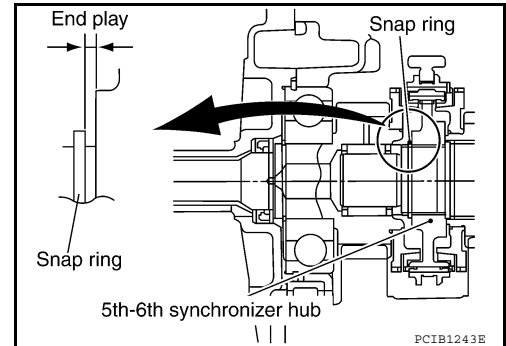
[6MT: FS6R31A]

b. Press out main drive gear bearing using suitable tool.



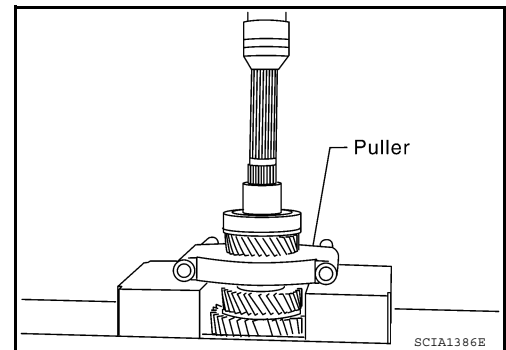
16. Before disassembling, measure the end play for mainshaft (Front side). If the end play is outside the standards, disassemble and inspect.

End play : 0 - 0.10 mm (0 - 0.004 in)



17. Press out reverse main gear bushing, mainshaft bearing and 4th main gear using suitable tool.

18. Remove 3rd-4th main spacer from mainshaft.



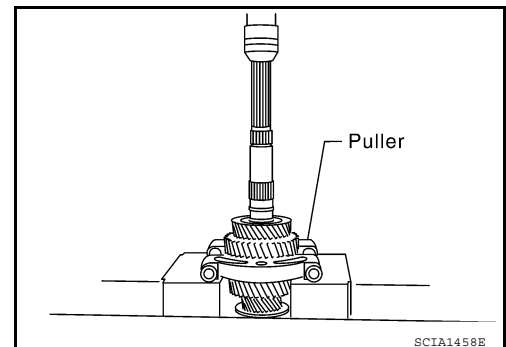
19. Remove 3rd main gear and 1st main gear according to the following.

a. Press out 3rd main gear and 1st main gear using suitable tool.

CAUTION:

Be careful not to damage 1st outer baulk ring.

b. Remove 1st needle bearing from mainshaft.



20. Remove 1st-2nd synchronizer hub assembly and 2nd main gear according to the following.

TRANSMISSION ASSEMBLY

< DISASSEMBLY AND ASSEMBLY >

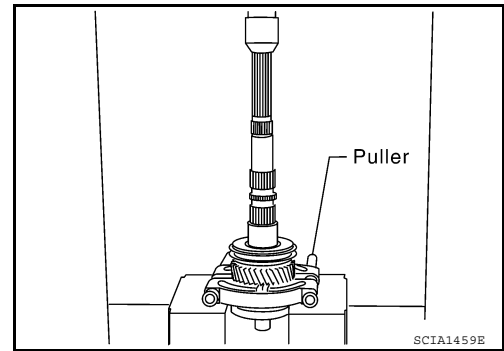
[6MT: FS6R31A]

- a. Press out 1st gear bushing, 1st-2nd synchronizer hub assembly and 2nd main gear using suitable tool.

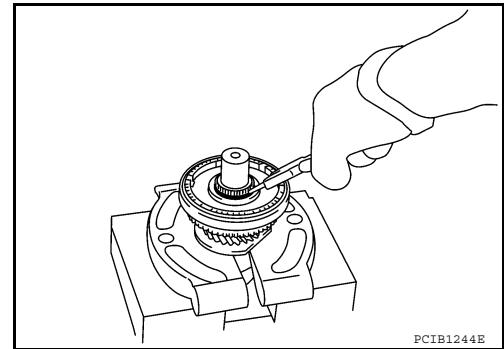
CAUTION:

Be aware that when using the press, if mainshaft gear positioner catches on the V-block, etc., mainshaft could be damaged.

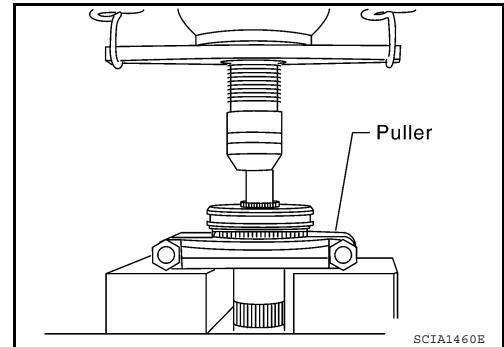
- b. Remove 2nd needle bearing from mainshaft.
21. Remove 1st-2nd coupling sleeve according to the following.
- a. Remove spread springs and shifting inserts from 1st-2nd synchronizer hub.
- b. Remove 1st-2nd coupling sleeve from 1st-2nd synchronizer hub.



22. Remove 6th main gear and 5th-6th synchronizer hub assembly according to the following.
- a. Remove snap ring from mainshaft using suitable tool.

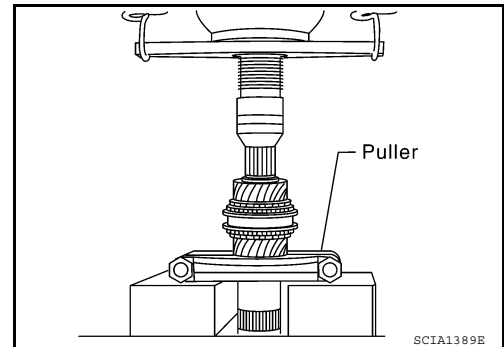


- b. Press out 6th main gear and 5th-6th synchronizer hub assembly using suitable tool.
- c. Remove 6th needle bearing from mainshaft.
23. Remove 5th-6th coupling sleeve according to the following.
- a. Remove spread springs and shifting inserts from 5th-6th synchronizer hub.
- b. Remove 5th-6th coupling sleeve from 5th-6th synchronizer hub.



24. Remove 3rd counter gear, 3rd-4th synchronizer hub assembly, 4th counter gear according to the following.

- a. Press out 3rd counter gear, 3rd-4th synchronizer hub assembly, 4th counter gear, 4th needle bearing, 4th gear bushing, 4th counter gear thrust washer, and counter rear bearing inner race using suitable tool.
- b. Remove 3rd needle bearing from counter gear.
25. Remove 3rd-4th coupling sleeve according to the following.
- a. Remove spread springs and shifting inserts from 3rd-4th synchronizer hub.
- b. Remove 3rd-4th coupling sleeve from 3rd-4th synchronizer hub.



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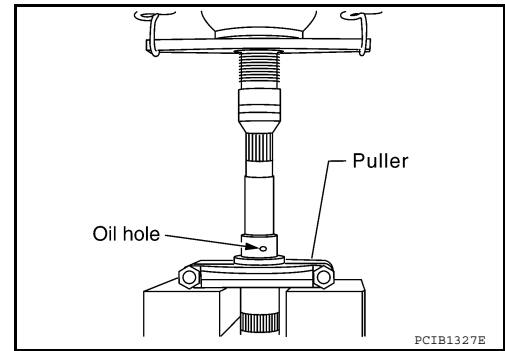
< DISASSEMBLY AND ASSEMBLY >

[6MT: FS6R31A]

26. Press out 3rd gear bushing using suitable tool.

CAUTION:

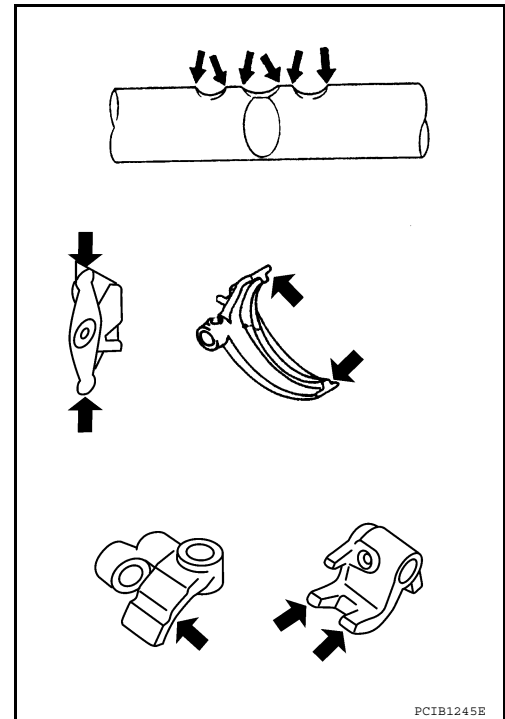
Do not use oil hole of 3rd gear bushing when press out.



INSPECTION AFTER DISASSEMBLY

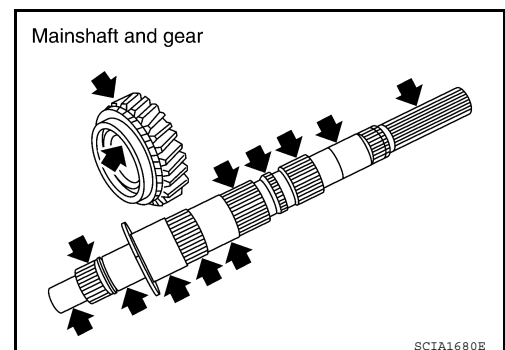
Shift Control

If the contact surface on striking lever, fork rod, shift fork, etc., has excessive wear, abrasion, bend, or any other damage, replace the components.



Gear and Shaft

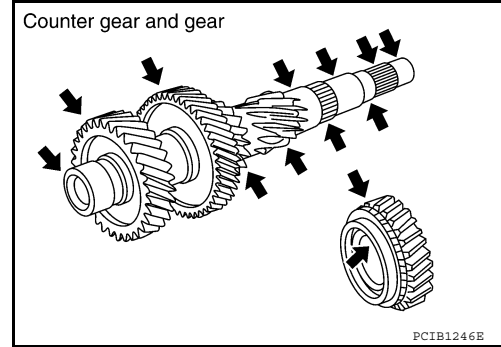
If the contact surface on each gear, mainshaft, main drive gear, and counter gear, etc., has damage, peeling, abrasion, dent, bent, or any other damage, replace the components.



TRANSMISSION ASSEMBLY

< DISASSEMBLY AND ASSEMBLY >

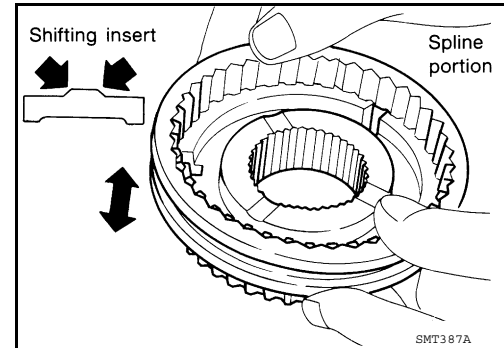
[6MT: FS6R31A]



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Synchronizer

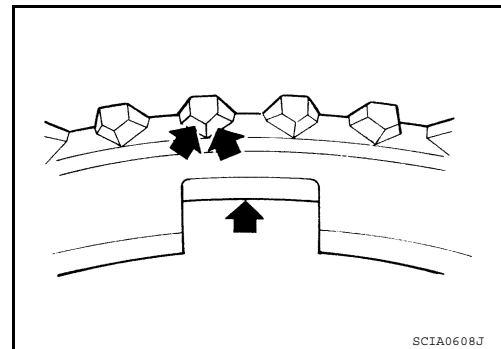
- If the contact surface on coupling sleeve, synchronizer hub, and shifting insert has damage or abrasion, replace the components.
- Coupling sleeve and synchronizer hub shall move smoothly.



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- If the cam surface on baulk ring or contact surface on insert has damage or excessive wear, replace with a new one.
- If spread spring damaged, replace with a new one.



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Baulk Ring Clearance

• Single Cone Synchronizer (5th and 6th)

Push baulk ring on the cone, and measure the clearance between baulk ring and cone. If the measurement is below limit, replace it with a new one.

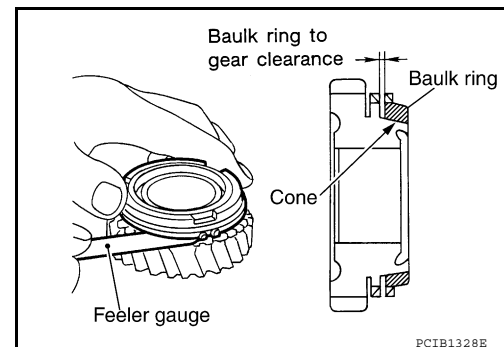
Clearance

Standard value

Refer to [TM-69, "Baulk Ring Clearance"](#)

Limit value

Refer to [TM-69, "Baulk Ring Clearance"](#)



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• Double Cone Synchronizer (1st, 3rd and 4th)

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TRANSMISSION ASSEMBLY

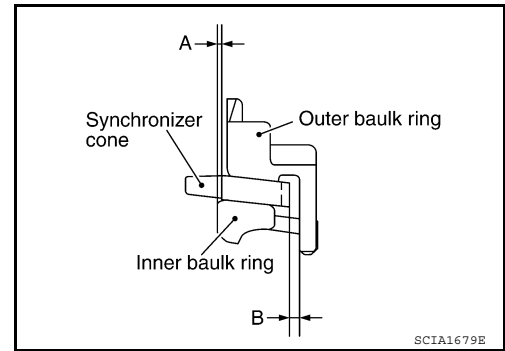
< DISASSEMBLY AND ASSEMBLY >

[6MT: FS6R31A]

Check the clearance between outer baulk ring, synchronizer cone, and inner baulk ring as follows.

CAUTION:

The clearances (A) and (B) are controlled with outer baulk ring, synchronizer cone, and inner baulk ring as a set. Replace them as a set if the clearances are outside the limit value.

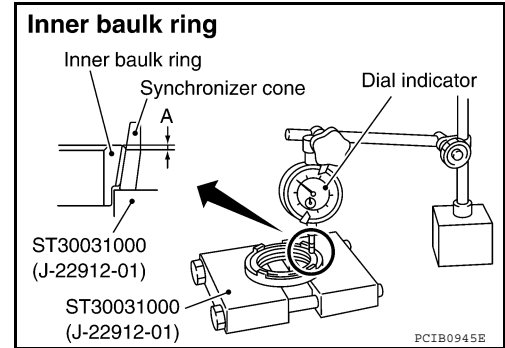


1. Measure the clearance (A) at 2 points or more diagonally opposite using a dial indicator and Tool. Then calculate the mean value.

Tool number : ST30031000 (J-22912-01)

Clearance (A)
Standard value Refer to [TM-69, "Baulk Ring Clearance"](#)

Limit value Refer to [TM-69, "Baulk Ring Clearance"](#)

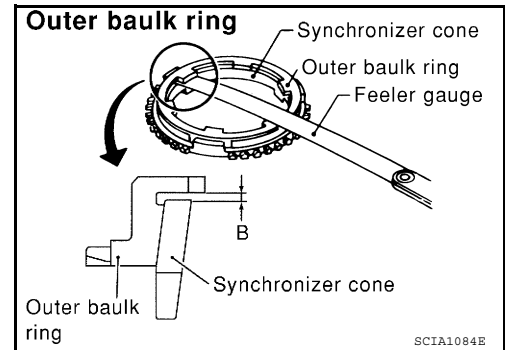


2. Measure the clearance (B) at 2 points or more diagonally opposite using a feeler gauge. Then calculate the mean value.

Clearance (B)
Standard value
 1st Refer to [TM-69, "Baulk Ring Clearance"](#)

3rd,4th Refer to [TM-69, "Baulk Ring Clearance"](#)

Limit value Refer to [TM-69, "Baulk Ring Clearance"](#)

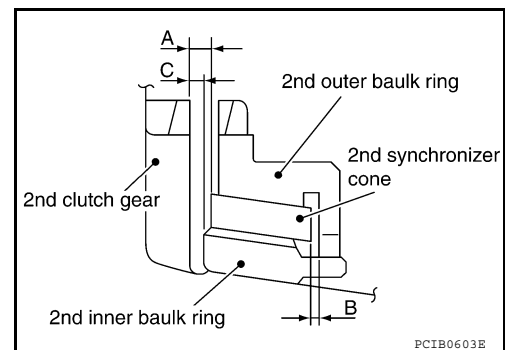


• **Triple Cone Synchronizer (2nd)**

Check the clearance between outer baulk ring, synchronizer cone, and inner baulk ring as follows.

CAUTION:

The clearances (A), (B) and (C) are controlled with outer baulk ring, synchronizer cone, and inner baulk ring as a set. Replace them as a set if the clearances are outside the limit value.



TRANSMISSION ASSEMBLY

< DISASSEMBLY AND ASSEMBLY >

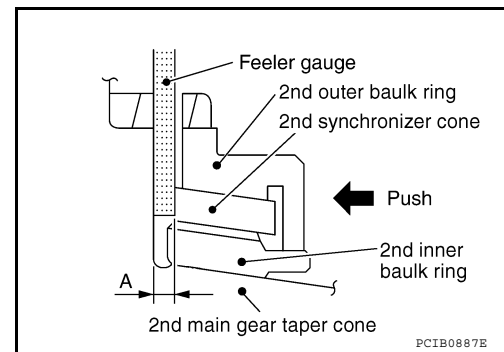
[6MT: FS6R31A]

1. Measure the clearance (A) at 2 points or more diagonally opposite using a feeler gauge when pressing baulk ring toward clutch gear taper cone. Then calculate the mean value.

Clearance (A)

Standard value Refer to [TM-69, "Baulk Ring Clearance"](#)

Limit value Refer to [TM-69, "Baulk Ring Clearance"](#)

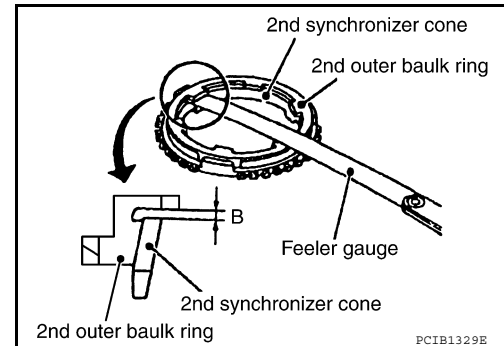


2. Measure the clearance (B) at 2 points or more diagonally opposite using a feeler gauge. Then calculate the mean value.

Clearance (B)

Standard value Refer to [TM-69, "Baulk Ring Clearance"](#)

Limit value Refer to [TM-69, "Baulk Ring Clearance"](#)

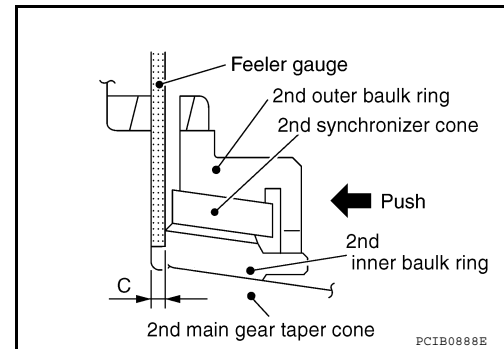


3. Measure the clearance (C) at 2 points or more diagonally opposite using a feeler gauge when pressing baulk ring toward clutch gear taper cone. Then calculate the mean value.

Clearance (C)

Standard value Refer to [TM-69, "Baulk Ring Clearance"](#)

Limit value Refer to [TM-69, "Baulk Ring Clearance"](#)



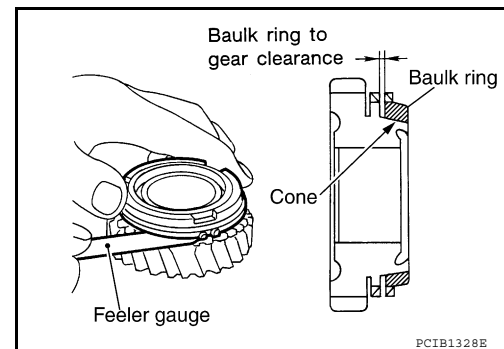
• **Reverse Synchronizer**

Push baulk ring on the cone, and measure the clearance between baulk ring and cone. If the measurement is below limit, replace it with a new one.

Clearance

Standard value Refer to [TM-69, "Baulk Ring Clearance"](#)

Limit value Refer to [TM-69, "Baulk Ring Clearance"](#)



Bearing

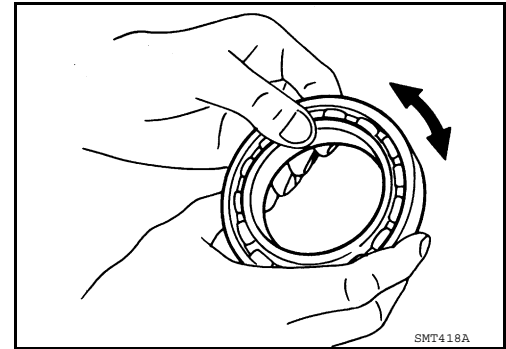
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< DISASSEMBLY AND ASSEMBLY >

[6MT: FS6R31A]

If the bearing does not rotate smoothly or the contact surface on ball or race is damaged or peeled, replace with new ones.



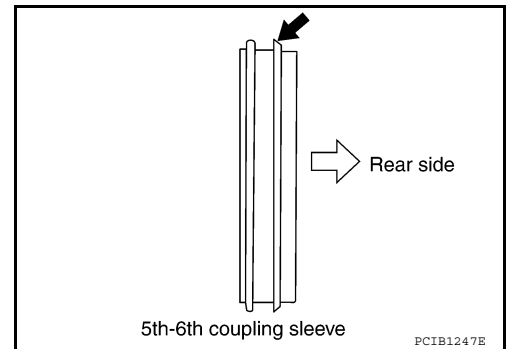
ASSEMBLY

Gear Components

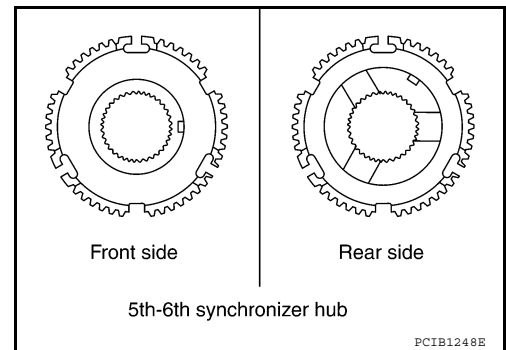
1. Install 5th-6th synchronizer hub assembly according to the following.
 - a. Install 5th-6th coupling sleeve to 5th-6th synchronizer hub.

CAUTION:

- Do not reuse 5th-6th synchronizer hub and 5th-6th coupling sleeve.
- Replace 5th-6th synchronizer hub and 5th-6th coupling sleeve as a set.
- Be careful with the orientation 5th-6th coupling sleeve.



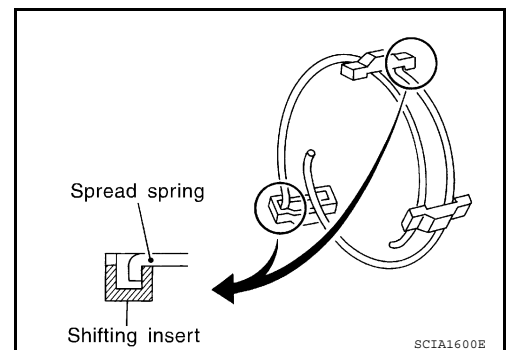
- Be careful with the orientation 5th-6th synchronizer hub.



- b. Install shifting inserts and spread springs to 5th-6th synchronizer hub.

CAUTION:

- Do not install spread spring hook onto the same shifting insert.

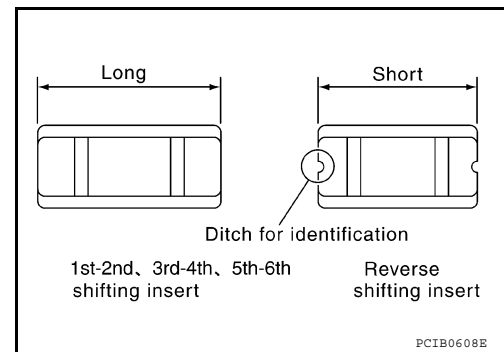


TRANSMISSION ASSEMBLY

< DISASSEMBLY AND ASSEMBLY >

[6MT: FS6R31A]

- Be careful with the shape of reserve shifting insert to avoid misemploy.

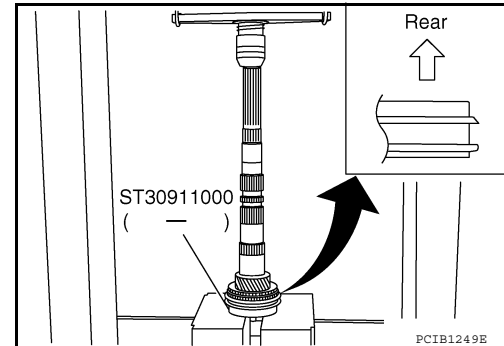


- c. Press in 5th-6th synchronizer hub assembly, 6th baulk ring, 6th main gear and 6th needle bearing using Tool.

Tool number : ST30911000 (—)

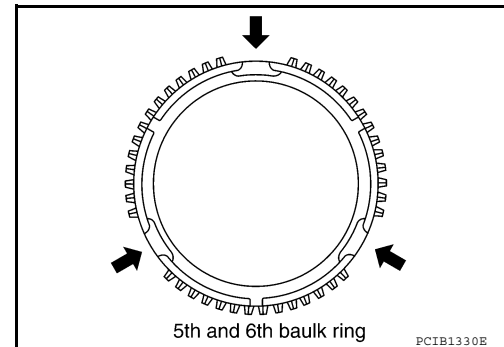
CAUTION:

- Apply gear oil to 6th baulk ring and 6th needle bearing.
- Be careful with the orientation 5th-6th coupling sleeve.



NOTE:

5th and 6th baulk rings have three spaces that four gear teeth are missing as shown.

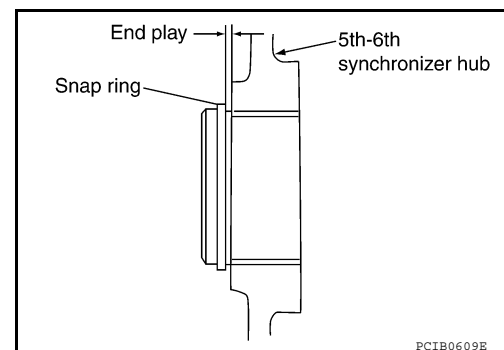


2. Select and install a snap ring so that the end play comes within the standard value. Refer to [TM-69, "Snap Rings"](#).

End play : 0 - 0.10 mm (0 - 0.004 in)

CAUTION:

Do not reuse snap ring.



3. Install 1st-2nd synchronizer hub assembly according to the following.

- a. Install 1st-2nd coupling sleeve to 1st-2nd synchronizer hub.

CAUTION:

- Do not reuse 1st-2nd coupling sleeve and 1st-2nd synchronizer hub.
- Replace 1st-2nd synchronizer hub and 1st-2nd coupling sleeve as a set.

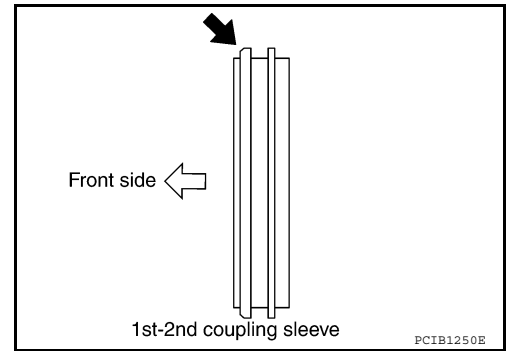
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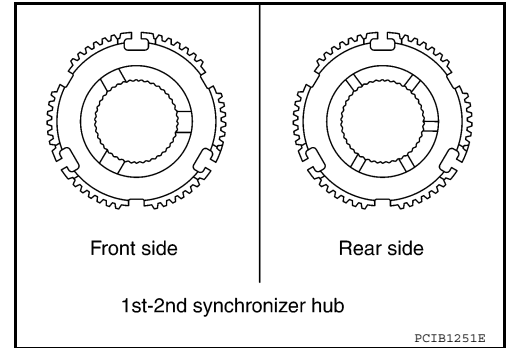
< DISASSEMBLY AND ASSEMBLY >

[6MT: FS6R31A]

- Be careful with the orientation 1st-2nd coupling sleeve.



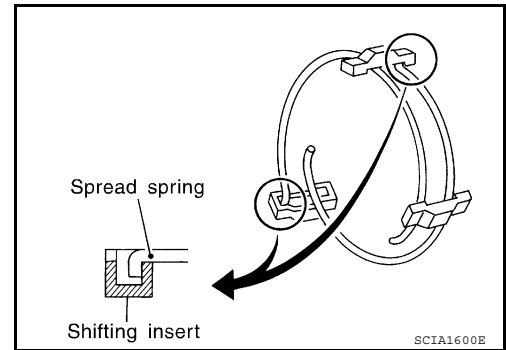
- Be careful with the orientation 1st-2nd synchronizer hub.



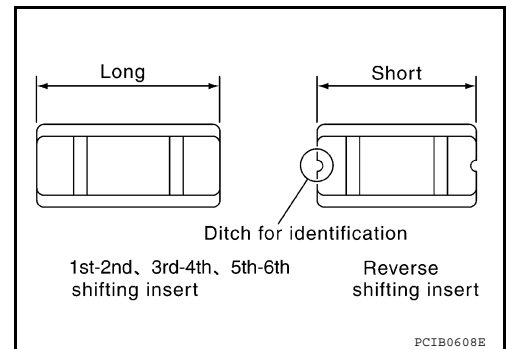
- b. Install spread springs and shifting inserts to 1st-2nd synchronizer hub.

CAUTION:

- Do not install spread spring hook onto the same shifting insert.



- Be careful with the shape of reverse shifting insert to avoid improper assembly.



TRANSMISSION ASSEMBLY

< DISASSEMBLY AND ASSEMBLY >

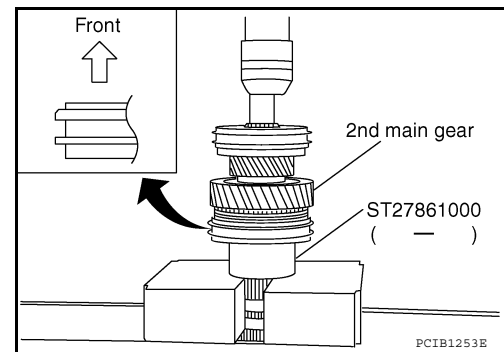
[6MT: FS6R31A]

- c. Press in 1st-2nd synchronizer hub assembly, 2nd inner baulk ring, 2nd synchronizer cone and 2nd outer baulk ring, 2nd main gear and 2nd needle bearing using Tool.

Tool number : ST27861000 (—)

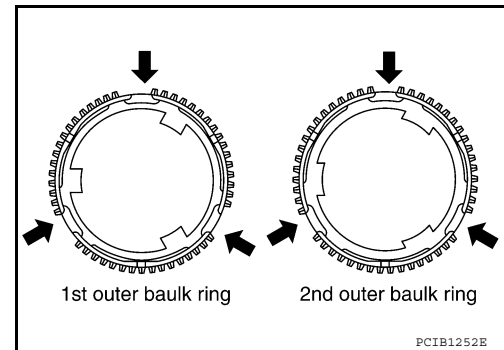
CAUTION:

- Apply gear oil to 2nd needle bearing, 2nd inner baulk ring, 2nd synchronizer cone and 2nd outer baulk ring, 1st-2nd synchronizer hub spline of mainshaft.
- Replace 2nd inner baulk ring, 2nd synchronizer cone and 2nd outer baulk ring as a set.
- Be careful with the orientation 1st-2nd coupling sleeve.



NOTE:

1st outer baulk ring has three spaces that three gear tooth is missing and 2nd outer baulk ring has three spaces that two gear teeth are missing.



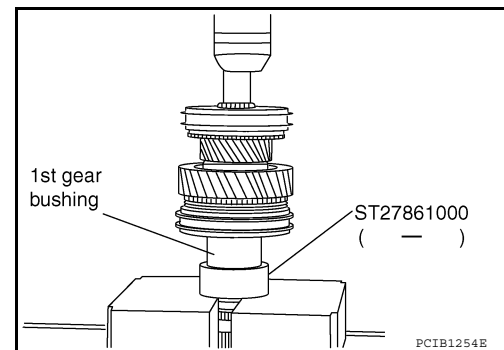
4. Press in 1st gear bushing using Tool.

Tool number : ST27861000 (—)

5. Install 1st outer baulk ring, 1st synchronizer cone, 1st inner baulk ring, 1st needle bearing and 1st main gear to mainshaft.

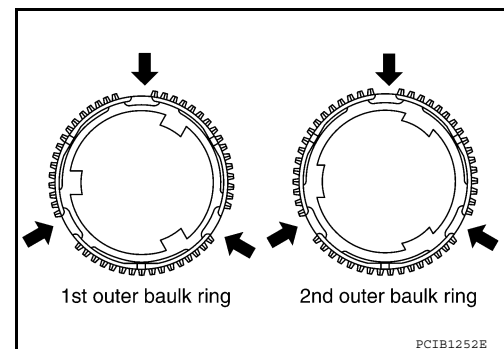
CAUTION:

- Apply gear oil to 1st outer baulk ring, 1st synchronizer cone, 1st inner baulk ring and 1st needle bearing.
- Replace 1st outer baulk ring, 1st synchronizer cone and 1st inner baulk ring as a set.



NOTE:

1st outer baulk ring has three spaces that three gear tooth is missing and 2nd outer baulk ring has three spaces that two gear teeth are missing.



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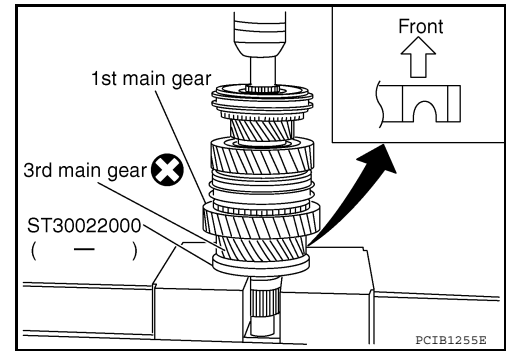
[6MT: FS6R31A]

6. Press in 3rd main gear using Tool.

Tool number : ST30022000 (—)

CAUTION:

- Do not reuse 3rd main gear.
- Be careful with the orientation 3rd main gear.



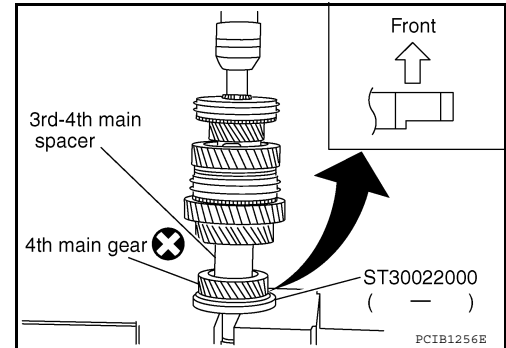
7. Install 3rd-4th main spacer to mainshaft.

8. Press in 4th main gear using Tool.

Tool number : ST30022000 (—)

CAUTION:

- Do not reuse 4th main gear.
- Be careful with the orientation 4th main gear.

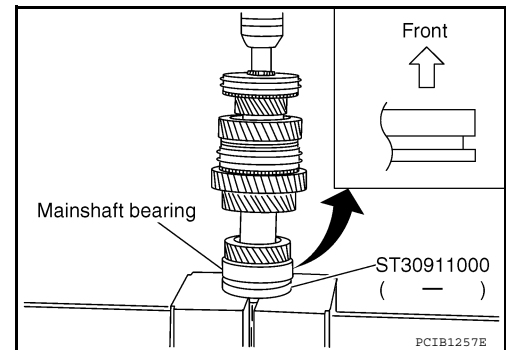


9. Press in mainshaft bearing using Tool.

Tool number : ST30911000 (—)

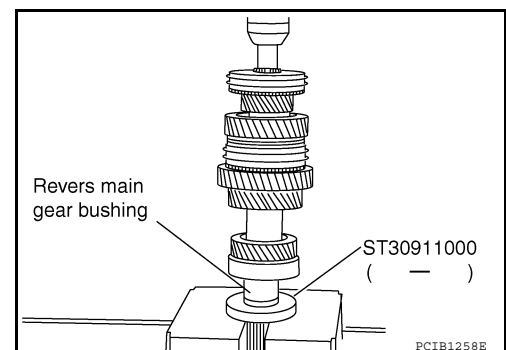
CAUTION:

Be careful with the orientation mainshaft bearing.



10. Press in reverse main gear bushing using Tool.

Tool number : ST30911000 (—)



11. Press in 3rd gear bushing using Tool.

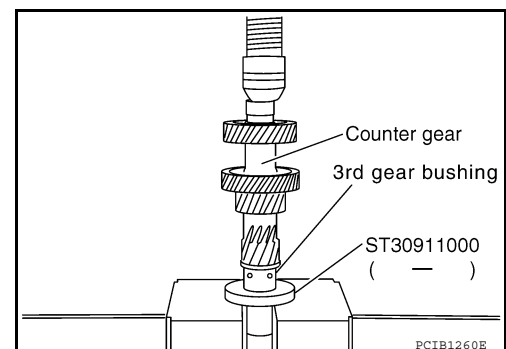
Tool number : ST30911000 (—)

12. Install 3rd-4th synchronizer hub assembly according to the following.

a. Install 3rd-4th coupling sleeve to 3rd-4th synchronizer hub.

CAUTION:

- Do not reuse 3rd-4th synchronizer hub and 3rd-4th coupling sleeve.
- Replace 3rd-4th synchronizer hub and 3rd-4th coupling sleeve as a set.

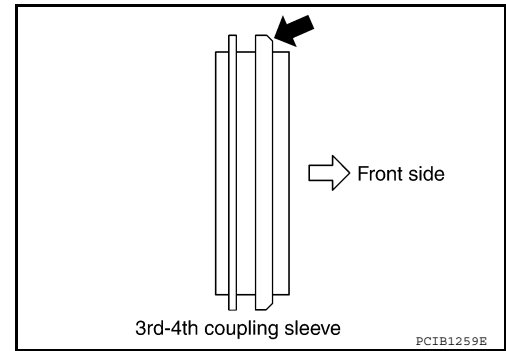


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[6MT: FS6R31A]

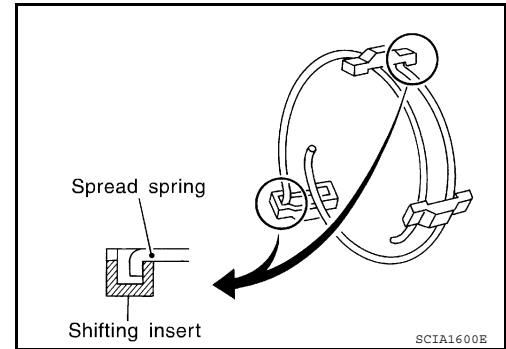
- Be careful with the orientation 3rd-4th coupling sleeve.



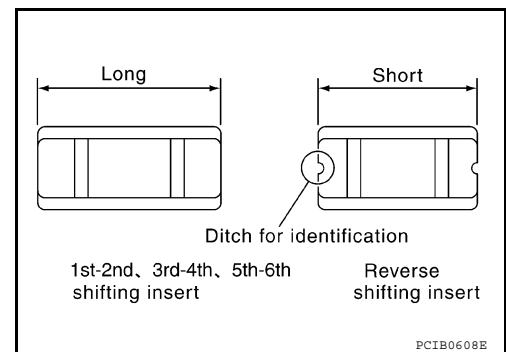
- b. Install spread springs and shifting inserts to 3rd-4th synchronizer hub.

CAUTION:

- Do not install spread spring hook onto the same shifting insert.



- Be careful with the shape of reverse shifting insert to avoid improper assembly.



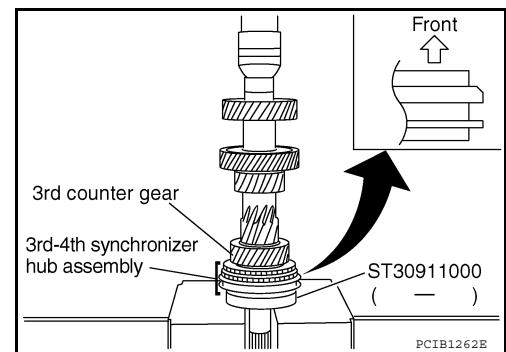
- c. Press in 3rd-4th synchronizer hub assembly, 3rd inner baulk ring, 3rd synchronizer cone, 3rd outer baulk ring, 3rd counter gear and 3rd needle bearing using Tool.

Tool number : ST30911000 (—)

CAUTION:

- Apply gear oil to 3rd inner baulk ring, 3rd synchronizer cone, 3rd outer baulk ring and 3rd needle bearing, hole spline of 3rd-4th synchronizer hub.
- Replace 3rd inner baulk ring, 3rd synchronizer cone and 3rd outer baulk ring as a set.
- Be careful with the orientation 3rd-4th coupling sleeve.

NOTE:



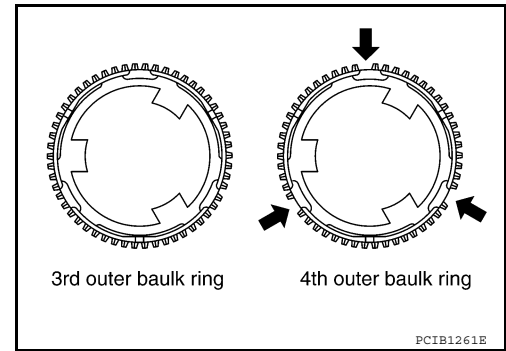
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[6MT: FS6R31A]

4th baulk ring has three spaces that one gear tooth is missing but 3rd baulk ring doesn't.



13. Press in 4th counter gear thrust washer, 4th gear bushing, 4th needle bearing, 4th counter gear, 4th outer baulk ring, 4th synchronizer cone and 4th inner baulk ring using Tool.

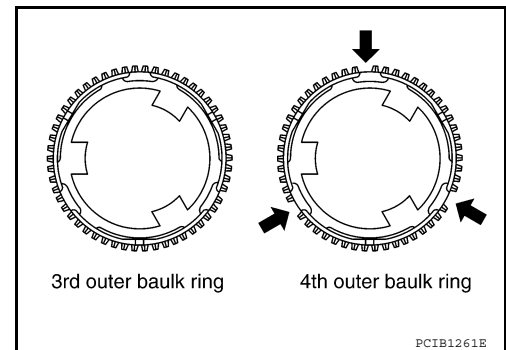
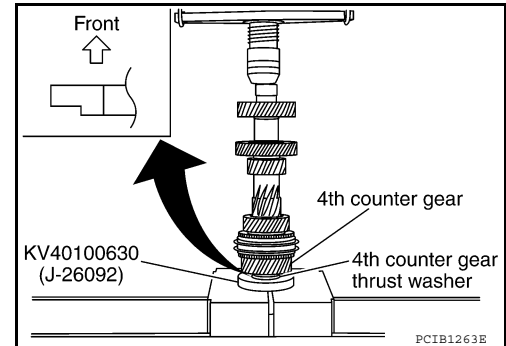
Tool number : KV40100630 (J-26092)

CAUTION:

- Apply gear oil to 4th needle bearing, 4th outer baulk ring, 4th synchronizer cone and 4th inner baulk ring.
- Replace 4th outer baulk ring, 4th synchronizer cone and 4th inner baulk ring as a set.
- Be careful with the orientation 4th counter gear thrust washer.

NOTE:

4th baulk ring has three spaces that one gear tooth is missing but 3rd baulk ring doesn't.

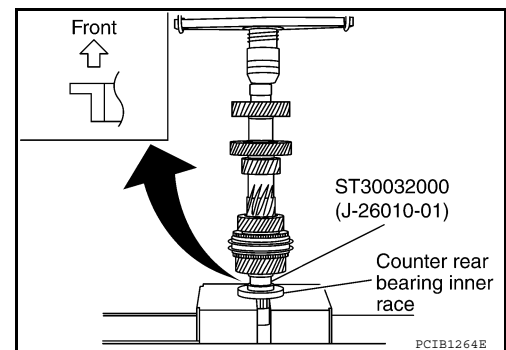


14. Press in counter rear bearing inner race using Tool.

Tool number : ST30032000 (J-26010-01)

CAUTION:

Be careful with the orientation counter rear bearing inner race.



15. Install main drive gear bearing according to the following.

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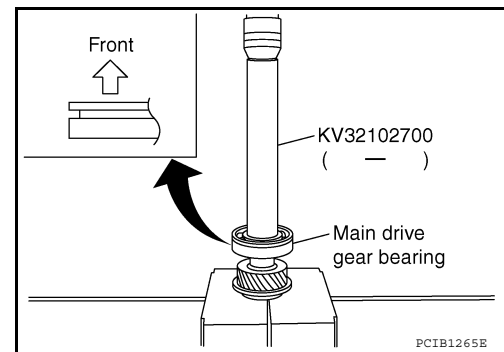
< DISASSEMBLY AND ASSEMBLY >

[6MT: FS6R31A]

- a. Press in main drive gear bearing using Tool.

Tool number : KV32102700 (—)

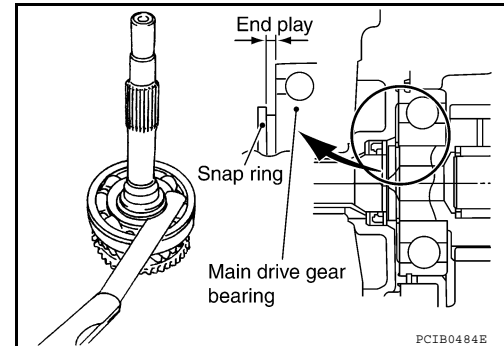
CAUTION:
Be careful with the orientation main drive gear bearing.



- b. Select and install a snap ring to main drive gear bearing so that the end play comes within the standard value. Refer to [TM-69, "Snap Rings"](#).

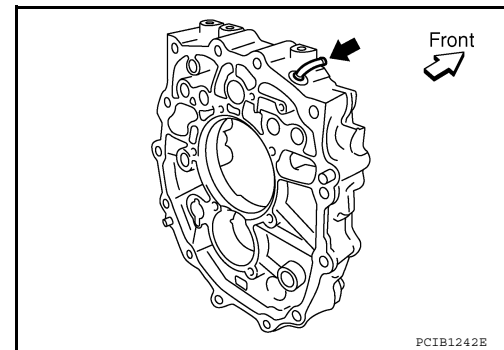
End play : 0 - 0.10 mm (0 - 0.004 in)

CAUTION:
Do not reuse snap ring.



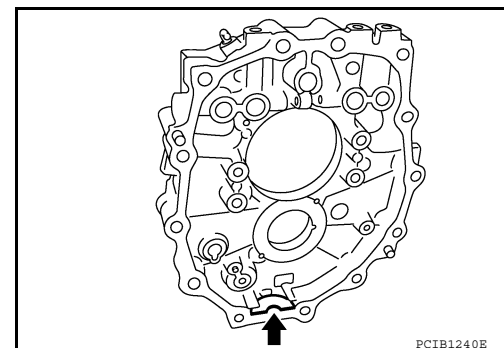
16. Install breather to adapter plate.

CAUTION:
• Do not reuse breather.
• Be careful with the orientation breather.

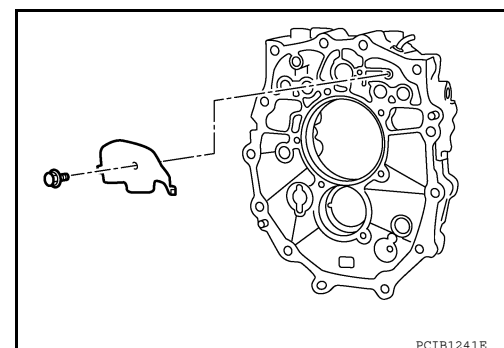


17. Install magnet to adapter plate.

CAUTION:
Be careful with the orientation magnet.



18. Install baffle plate to adapter plate, and then tighten bolt to the specified torque. Refer to [TM-28, "Disassembly and Assembly"](#).



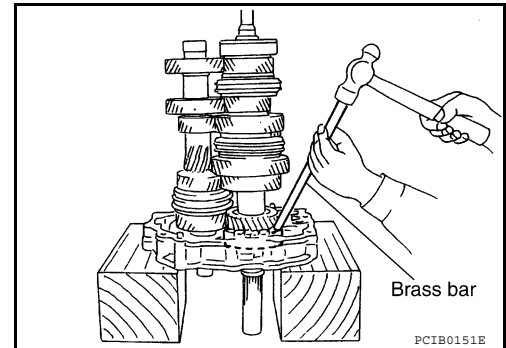
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[6MT: FS6R31A]

19. Install main drive gear assembly, mainshaft assembly and counter gear assembly according to the following.
- a. Install main pilot bearing, pilot bearing spacer and 5th baulk ring to main drive gear.
 - b. Install main drive gear assembly, mainshaft assembly and counter gear assembly combined in one unit to adapter plate using brass bar.

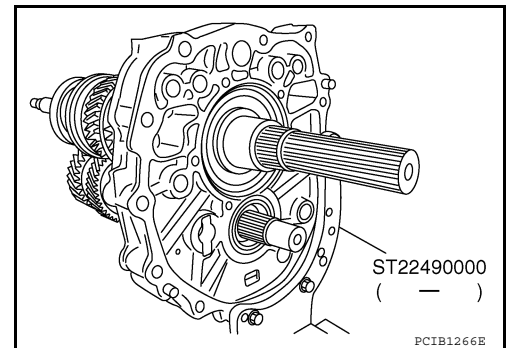


20. Install Tool to adapter plate, and then position in a vise.

Tool number : ST22490000 (—)

CAUTION:

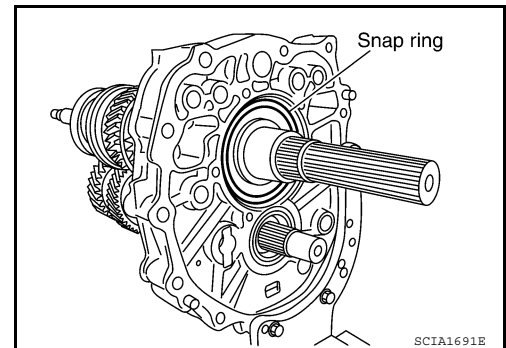
Do not directly secure mating surface of adapter plate in a vise.



21. Install snap ring to mainshaft bearing.

CAUTION:

Do not reuse snap ring.



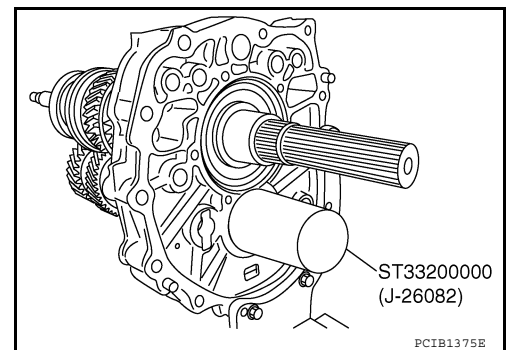
22. Install counter rear bearing to adapter plate using Tool.

Tool number : ST33200000 (J-26082)

23. Install counter rear bearing spacer to counter gear.

CAUTION:

When installing counter rear bearing spacer, groove should face to the rear side.



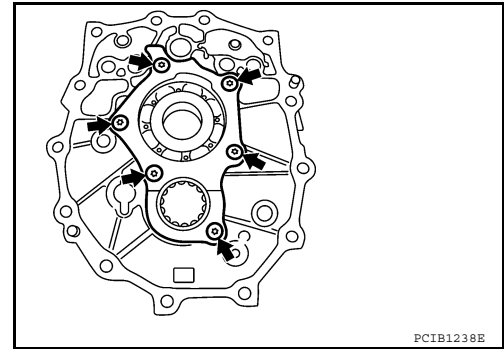
24. Install bearing retainer according to the following.

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< DISASSEMBLY AND ASSEMBLY >

[6MT: FS6R31A]

- a. Instal bearing retainer to adapter plate.
- b. Apply recommended thread locking sealant to threads of bolts, and then tighten bolts to the specified torque. Refer to [TM-28, "Disassembly and Assembly"](#).
 - Use Genuine Medium Strength Thread Locking Sealant or the equivalent. Refer to [GI-14, "Recommended Chemical Products and Sealants"](#).

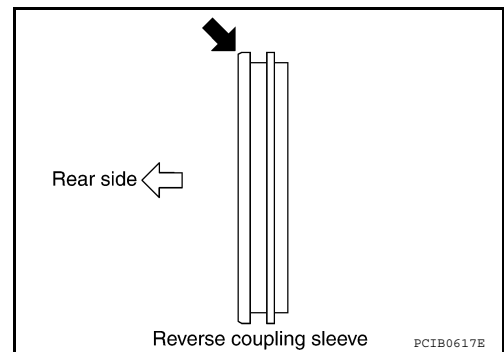


25. Install reverse synchronizer hub assembly according to the following.

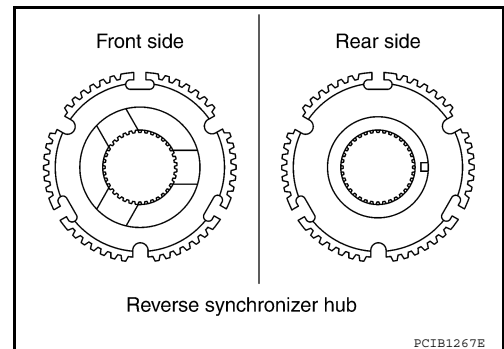
- a. Install reverse coupling sleeve to reverse synchronizer hub.

CAUTION:

- Do not reuse reverse coupling sleeve and reverse synchronizer hub.
- Replace reuse reverse coupling sleeve and reverse synchronizer hub as a set.
- Be careful with the orientation reverse coupling sleeve.



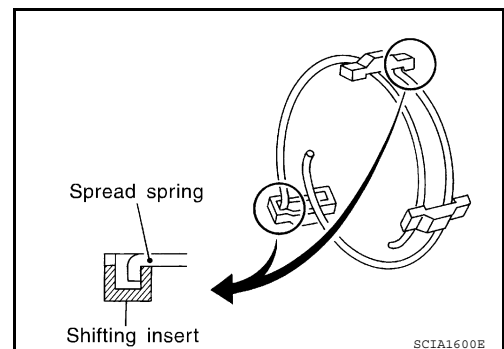
- Be careful with the orientation reverse synchronizer hub.



- b. Install spread springs to shifting inserts to reverse synchronizer hub.

CAUTION:

- Do not install spread spring hook onto the same shifting insert.



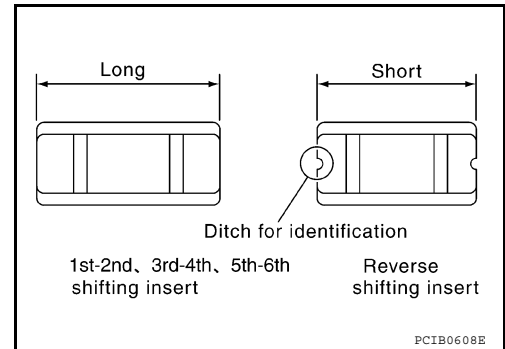
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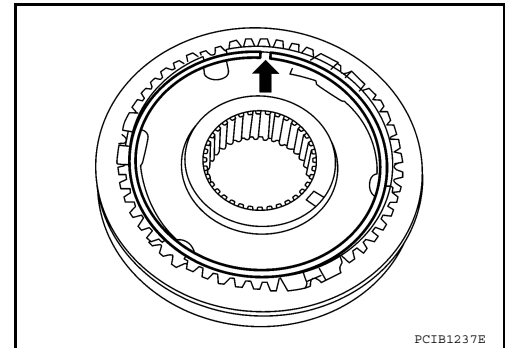
- Be careful with the shape of 1st-2nd, 3rd-4th and 5th-6th shifting insert to avoid improper assembly.



- c. Install snap ring to reverse synchronizer hub.

CAUTION:

- Do not reuse snap ring.
- Do not align the snap ring notch with synchronizer hub groove when assembling.

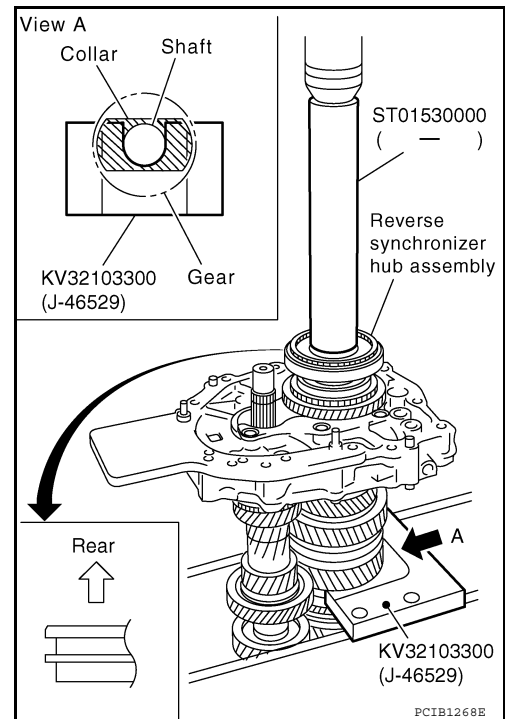


- d. Press in reverse synchronizer hub assembly, reverse baulk ring, reverse main gear and reverse main needle bearing using Tools.

Tool number : ST01530000 (—)
 : KV32103300 (J-46529)

CAUTION:

Apply gear oil to reverse baulk ring and reverse main needle bearing.



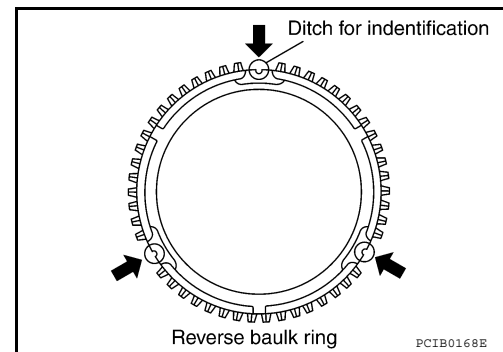
NOTE:

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[6MT: FS6R31A]

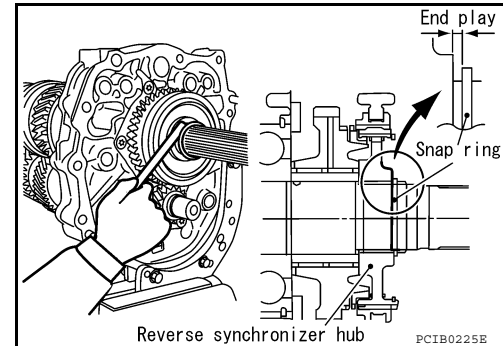
Reverse baulk ring has three spaces that two gear teeth are missing, and each space has small ditch for identification as shown.



26. Select and install a snap ring so that the end play comes within the standard value. Refer to [TM-69, "Snap Rings"](#).

End play : 0 - 0.10 mm (0 - 0.004 in)

CAUTION:
Do not reuse snap ring.

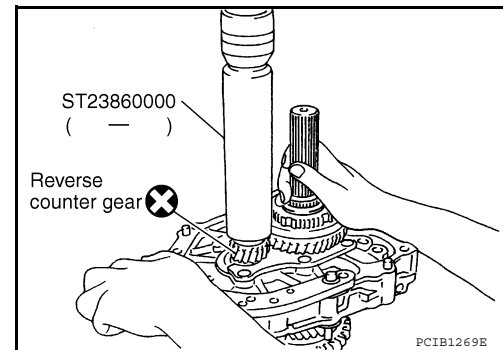


27. Press in reverse counter gear using Tool.

Tool number : ST23860000 (—)

CAUTION:

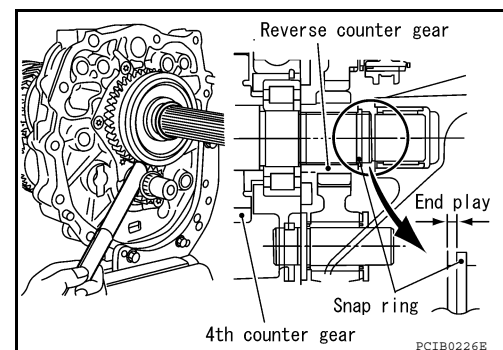
- Do not reverse counter gear.
- Be careful with the orientation counter gear.



28. Select and install a snap ring so that the end play comes within the standard value. Refer to [TM-69, "Snap Rings"](#).

End play : 0 - 0.10 mm (0 - 0.004 in)

CAUTION:
Do not reuse snap ring.



29. Install reverse idler shaft assembly according to the following.
- Install reverse idler needle bearing, reverse idler gear and reverse idler thrust washer to reverse idler shaft.

CAUTION:
Apply gear oil to reverse idler needle bearing.

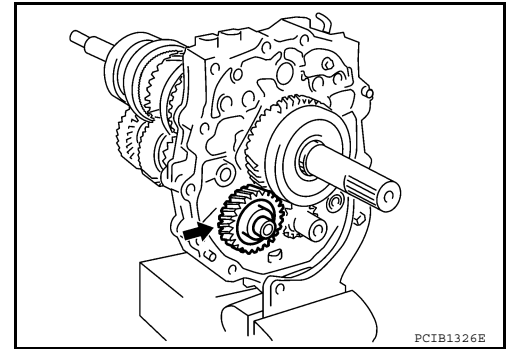
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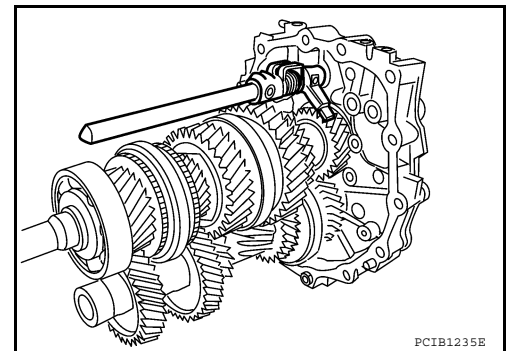
[6MT: FS6R31A]

- b. Install reverse idler shaft assembly to adapter plate.

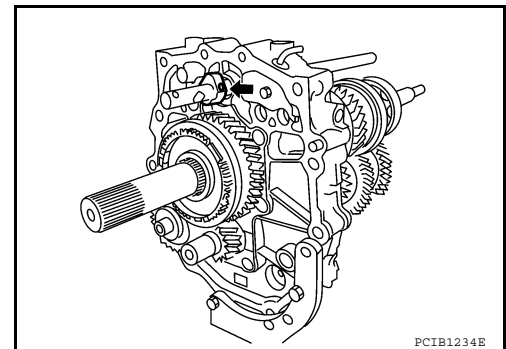


Shift Control Components

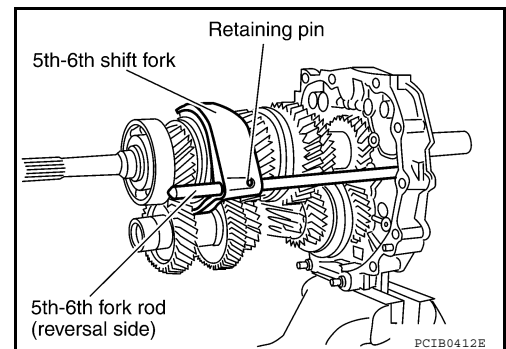
1. Install main drive gear assembly, mainshaft assembly, counter gear assembly and reverse idler shaft assembly. Refer to [TM-28. "Disassembly and Assembly"](#).
2. Install striking rod assembly according to the following.
 - a. Install striking rod assembly to adapter plate.



- b. Install stopper ring to striking rod assembly.
 - c. Install retaining pin onto stopper ring using suitable tool.
CAUTION:
Do not reuse retaining pin.



3. Install 5th-6th fork rod (reversal side) according to the following.
 - a. Install 5th-6th shift fork to 5th-6th coupling sleeve.
 - b. Install 5th-6th fork rod (reversal side) to 5th-6th shift fork.
 - c. Install retaining pin onto 5th-6th shift fork using suitable tool.
CAUTION:
Do not reuse retaining pin.



TRANSMISSION ASSEMBLY

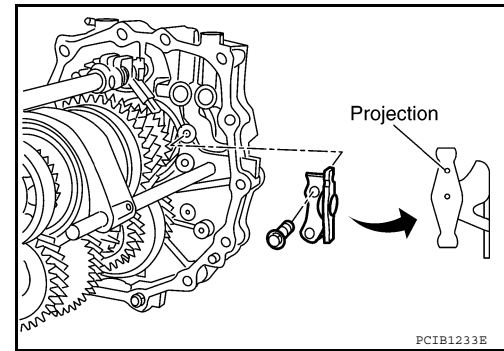
< DISASSEMBLY AND ASSEMBLY >

[6MT: FS6R31A]

4. Install 5th-6th control lever to adapter plate, and then tighten bolts to the specified torque. Refer to ["TM-28, "Disassembly and Assembly"](#).

CAUTION:

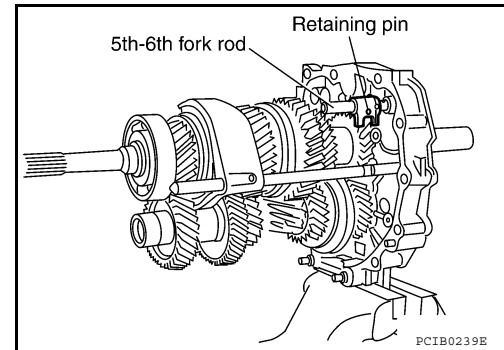
Install 5th-6th control lever with projection side at upward.



5. Install 5th-6th fork rod according to the following.
 - a. Install 5th-6th fork bracket and 5th-6th fork rod to adapter plate.
 - b. Install retaining pin onto 5th-6th fork bracket using suitable tool.

CAUTION:

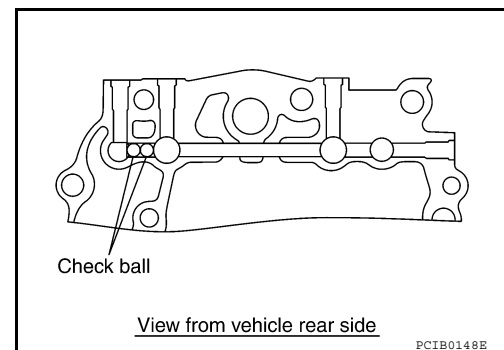
Do not reuse retaining pin.



6. Install check balls to adapter plate.

CAUTION:

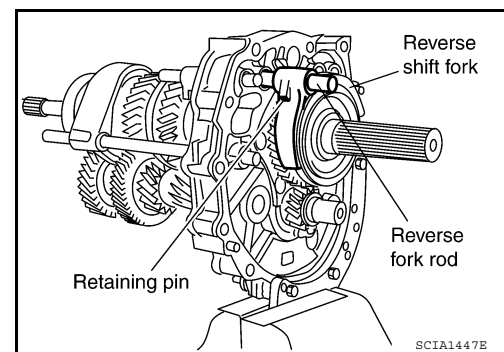
Apply gear oil to check balls.



7. Install reverse fork rod according to the following.
 - a. Install reverse shift fork to reverse coupling sleeve.
 - b. Install reverse fork rod to reverse shift fork.
 - c. Install retaining pin onto reverse shift fork using suitable tool.

CAUTION:

Do not reuse retaining pin.



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TRANSMISSION ASSEMBLY

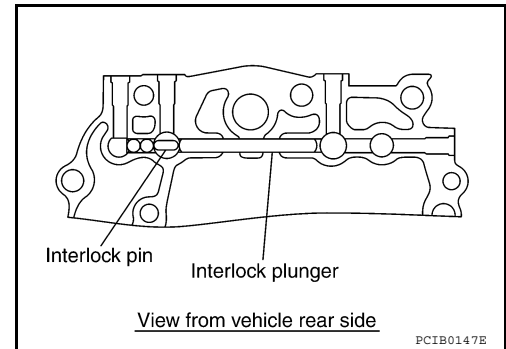
< DISASSEMBLY AND ASSEMBLY >

[6MT: FS6R31A]

8. Install interlock pin and interlock plunger to adapter plate.

CAUTION:

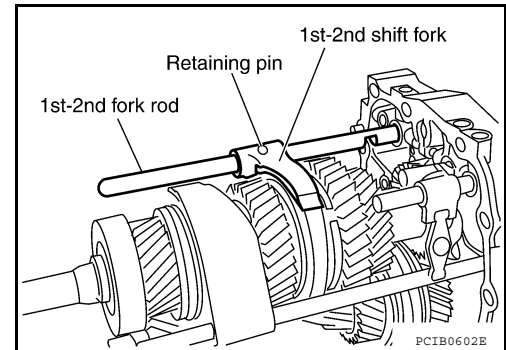
Apply gear oil to interlock pin and interlock plunger.



9. Install 1st-2nd fork rod according to the following.
- Install 1st-2nd shift fork to 1st-2nd coupling sleeve.
 - Install 1st-2nd fork rod to 1st-2nd shift fork.
 - Install retaining pin onto 1st-2nd shift fork using suitable tool.

CAUTION:

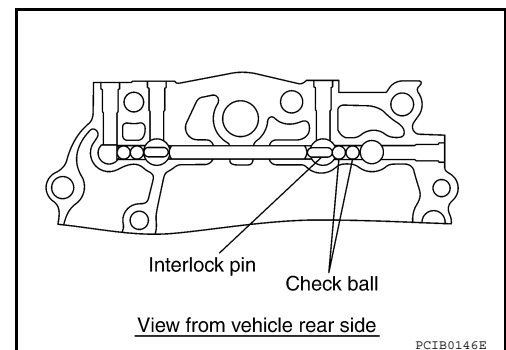
Do not reuse retaining pin.



10. Install interlock pin and check balls to adapter plate.

CAUTION:

Apply gear oil to interlock pin and check balls.

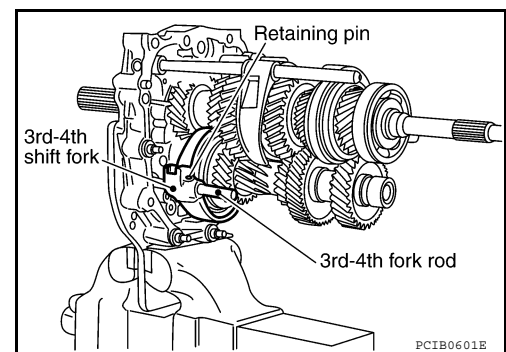


11. Install 3rd-4th fork rod (reversal side) according to the following.

- Install 3rd-4th shift fork to 3rd-4th coupling sleeve.
- Install 3rd-4th fork rod (reversal side) to 3rd-4th shift fork.
- Install retaining pin onto 3rd-4th shift fork using suitable tool.

CAUTION:

Do not reuse retaining pin.



12. Install 3rd-4th fork rod according to the following.

TRANSMISSION ASSEMBLY

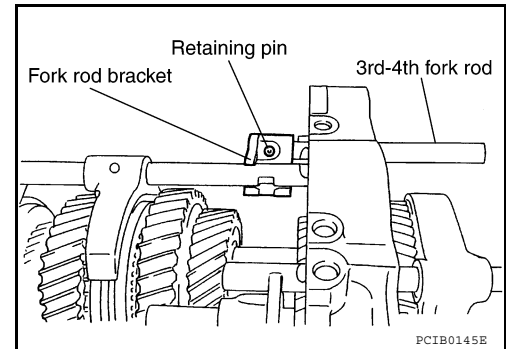
< DISASSEMBLY AND ASSEMBLY >

[6MT: FS6R31A]

- a. Install 3rd-4th fork rod to adapter plate.
- b. Install 3rd-4th fork rod bracket to 3rd-4th fork rod.
- c. Install retaining pin onto 3rd-4th fork rod bracket using suitable tool.

CAUTION:

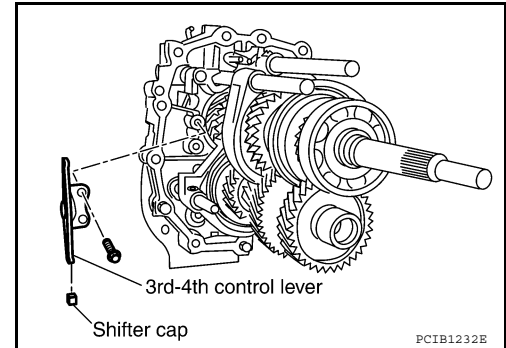
Do not reuse retaining pin.



13. Install 3rd-4th control lever according to the following.
 - a. Install shifter cap to 3rd-4th control lever.
 - b. Install 3rd-4th control lever to adapter plate, and then tighten bolts to the specified torque. Refer to "Shift Control Components".

CAUTION:

Be careful with the orientation 3rd-4th control lever.

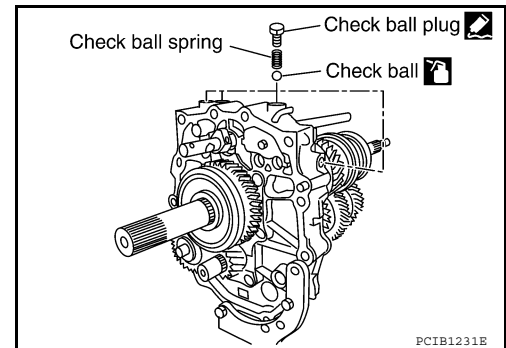


14. Install check ball plug according to the following.
 - a. Install check balls, check ball springs to adapter plate.

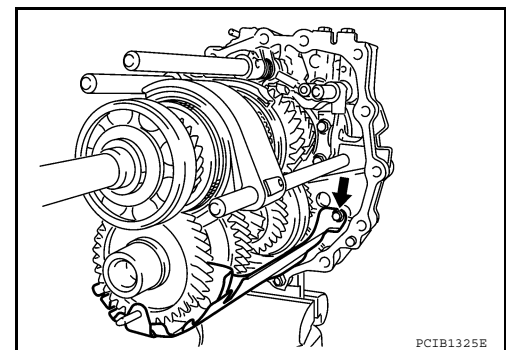
CAUTION:

Apply gear oil to check ball.

- b. Apply recommended sealant to threads of check ball plugs, and tighten check ball plugs to the specified torque. Refer to [TM-28, "Disassembly and Assembly"](#).
 - **Use Genuine Silicone RTV or the equivalent. Refer to [GI-14, "Recommended Chemical Products and Sealants"](#).**



15. Install baffle plate to adapter plate, and then tighten bolt to the specified torque. Refer to [TM-28, "Disassembly and Assembly"](#).



Case Components

1. Install main drive gear assembly, mainshaft assembly, counter gear assembly and reverse idler shaft assembly. Refer to "Gear Components" in assembly.
2. Install fork rods and shift forks. Refer to "Shift Control Components" in assembly.

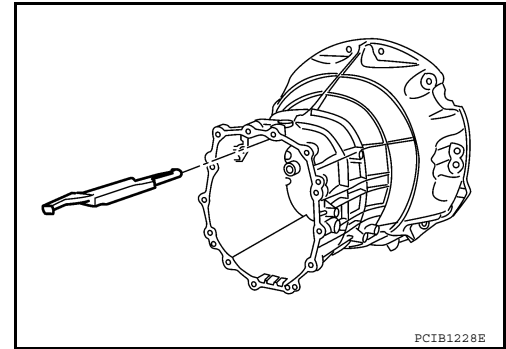
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TRANSMISSION ASSEMBLY

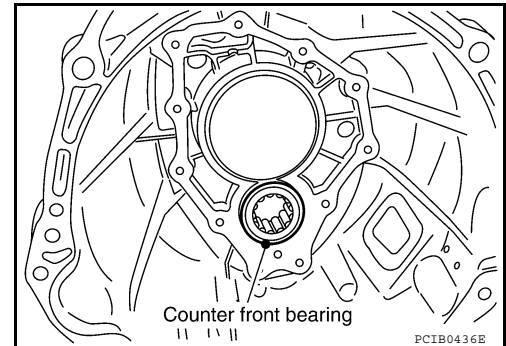
< DISASSEMBLY AND ASSEMBLY >

[6MT: FS6R31A]

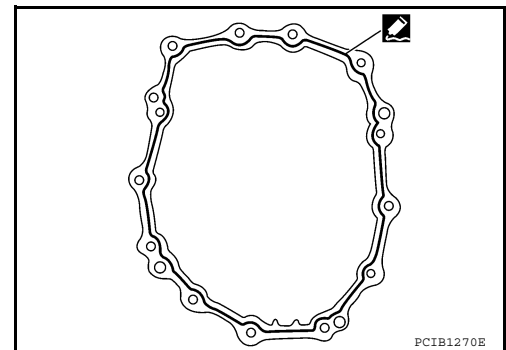
3. Install oil gutter to transmission case.



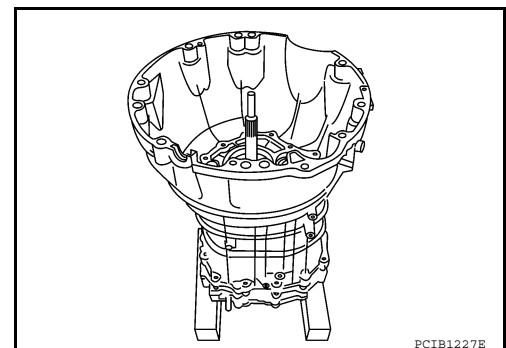
4. Install counter front bearing to transmission case.
CAUTION:
Apply multi-purpose grease to counter front bearing.



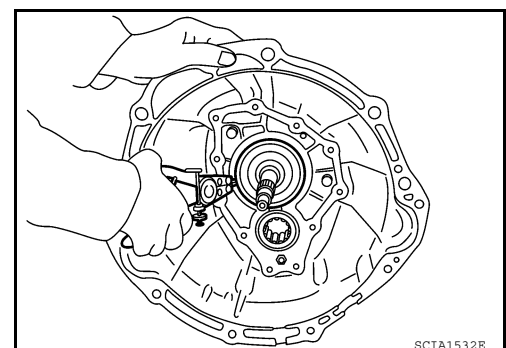
5. Apply recommended sealant to mating surface of transmission case as shown.
• Use Genuine Silicone RTV or the equivalent. Refer to [GI-14, "Recommended Chemical Products and Sealants"](#).
CAUTION:
Remove old sealant adhering to the mating surfaces. Also remove any moisture, oil, or foreign material adhering to both mating surfaces.



6. Install transmission case to adapter plate assembly.



7. Install snap ring to main drive gear bearing using suitable tool.
CAUTION:
Do not reuse snap ring.

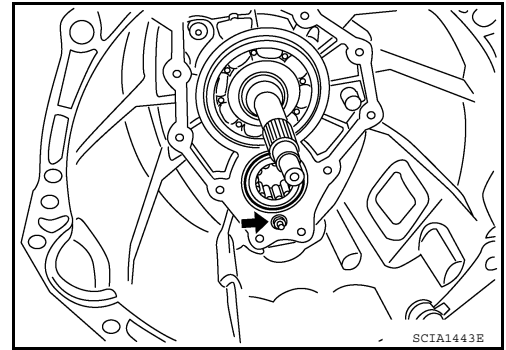


TRANSMISSION ASSEMBLY

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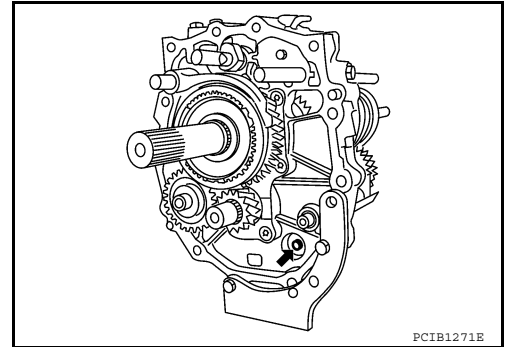
[6MT: FS6R31A]

8. Tighten baffle plate nut to the specified torque. Refer to "Case Components" in assembly.



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9. Tighten baffle plate bolt to the specified torque. Refer to "Case Components" in assembly.



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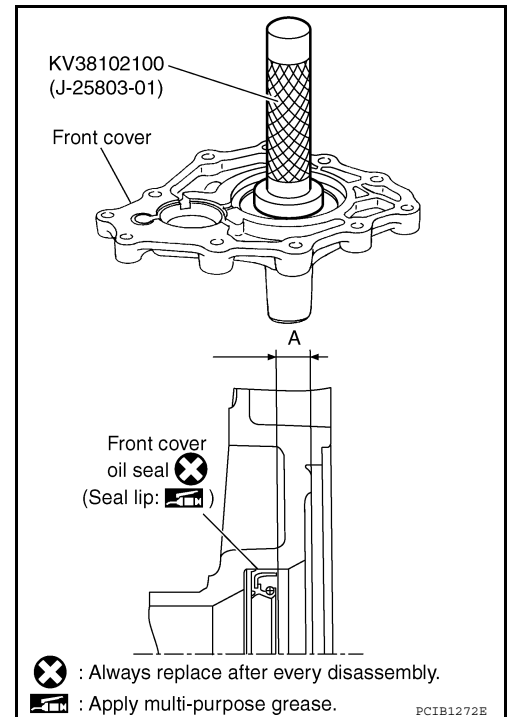
10. Install front cover oil seal to front cover using Tool.

Tool number : KV38102100 (J-25803-01)

Dimension A: 8.55 - 9.55 (0.336 - 0.376 in)

CAUTION:

- Do not reuse front cover oil seal.
- Apply multi-purpose grease onto oil seal lip.
- When installing, do not incline front cover oil seal.



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11. Install front cover according to the following.

TRANSMISSION ASSEMBLY

< DISASSEMBLY AND ASSEMBLY >

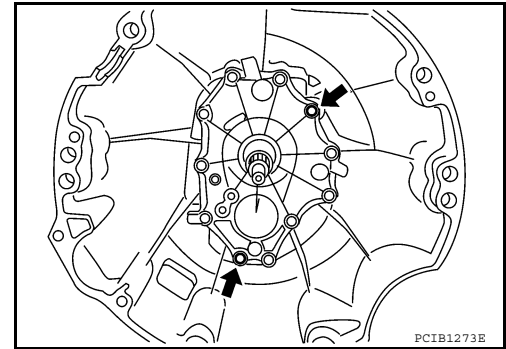
[6MT: FS6R31A]

- a. Install front cover gasket and front cover to transmission case.

CAUTION:

Do not reuse front cover gasket.

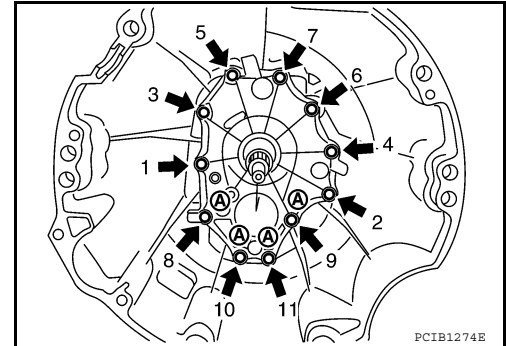
- b. Temporarily tighten 2 bolts in the positions shown.
c. Temporarily tighten remaining 9 bolts.



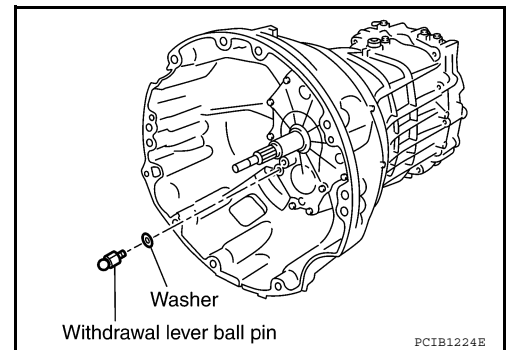
- d. Tighten bolts to the specified torque in order as shown. Refer to [TM-28, "Disassembly and Assembly"](#).

CAUTION:

Do not reuse bolts indicated as A in the figure.



12. Install washer to withdrawal lever ball pin, and then install it to front cover. Tighten withdrawal lever ball pin to the specified torque. Refer to [TM-28, "Disassembly and Assembly"](#)

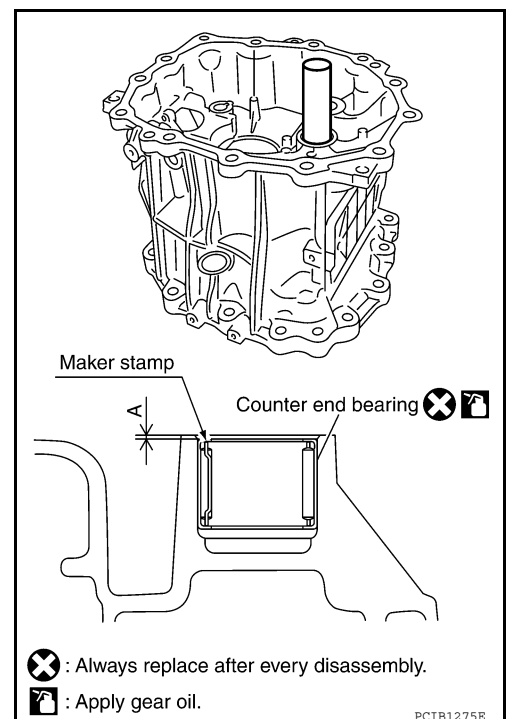


13. Install counter end bearing to rear extension (or OD gear case) using suitable tool [32 mm (1.26 in) dia.].

Dimension A: 0.5 - 1.5 (0.020 - 0.059 in)

CAUTION:

- Do not reuse counter end bearing.
- Apply gear oil to counter end bearing.
- Install counter end bearing with maker stamp at upper side.



TRANSMISSION ASSEMBLY

< DISASSEMBLY AND ASSEMBLY >

[6MT: FS6R31A]

14. Install rear oil seal (1) to rear extension (or OD gear case) using Tool A.

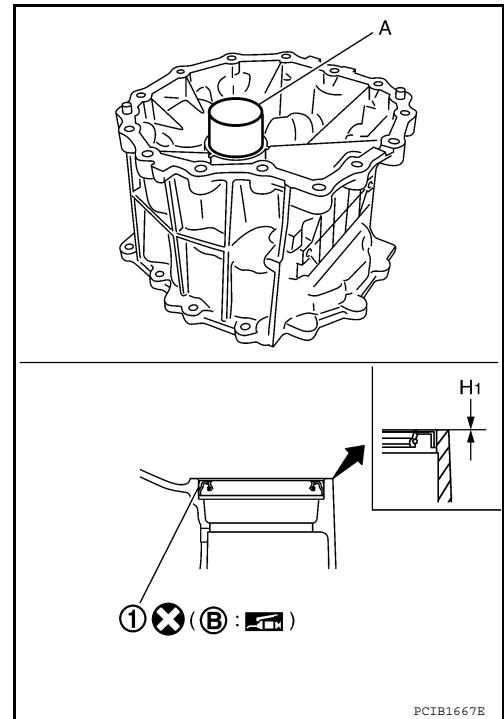
Tool number : ST33200000 (J-26082)

Dimension H1 : -0.5 - 0.5 mm (-0.020 - 0.020 in)

CAUTION:

When installing, do not incline rear oil seal.

(B): Seal lip

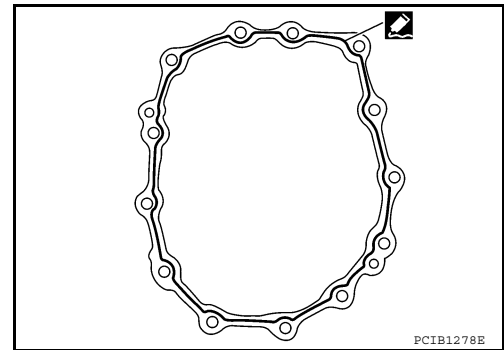


15. Apply recommended sealant to mating surface of rear extension as shown.

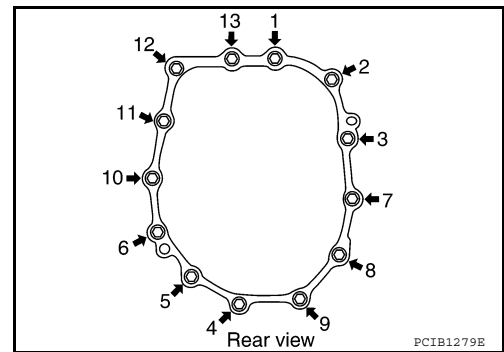
- Use Genuine Silicone RTV or the equivalent. Refer to [GI-14, "Recommended Chemical Products and Sealants"](#).

CAUTION:

Remove old sealant adhering to the mating surfaces. Also remove any moisture, oil, or foreign material adhering to both mating surfaces.



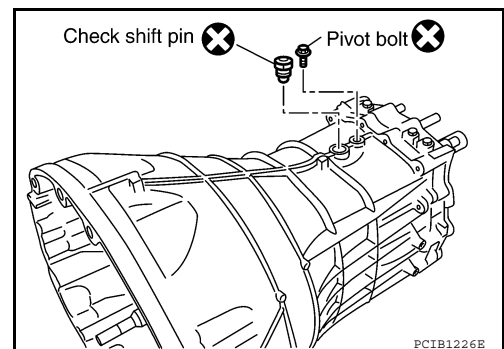
16. Install rear extension (or OD gear case) to adapter plate, and then tighten bolts to the specified torque in order as shown. Refer to [TM-28, "Disassembly and Assembly"](#).



17. Install check shift pin and pivot bolt to transmission case, and then tighten them to the specified torque. Refer to [TM-28, "Disassembly and Assembly"](#).

CAUTION:

Do not reuse check shift pin and pivot bolt.



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TRANSMISSION ASSEMBLY

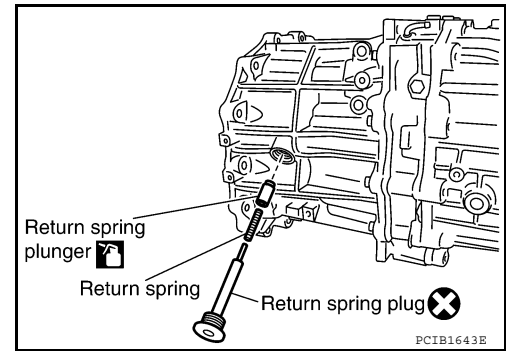
< DISASSEMBLY AND ASSEMBLY >

[6MT: FS6R31A]

18. Install return spring plunger, return spring and return spring plug to rear extension (or OD gear case), and then tighten return spring plug to the specified torque. Refer to [TM-28. "Disassembly and Assembly"](#).

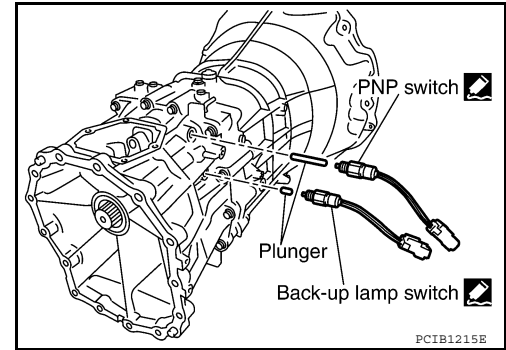
CAUTION:

- Do not reuse return spring plug.
- Apply gear oil to return spring plunger.



19. Install transmission range switch and back-up lamp switch according to the following.

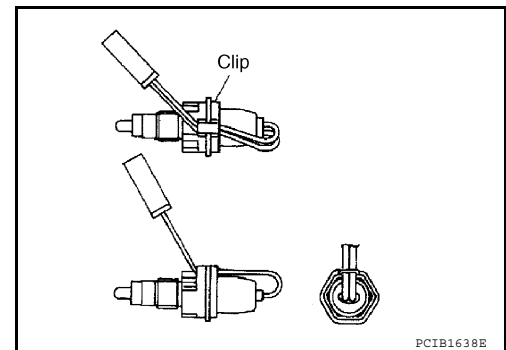
- Install plunger to rear extension (or OD gear case).
- Apply recommended sealant to threads of transmission range switch and back-up lamp switch.
 - Use Genuine Silicone RTV or the equivalent. Refer to [GI-14. "Recommended Chemical Products and Sealants"](#).
- Install transmission range switch and back-up lamp switch to rear extension (or OD gear case), and tighten them to the specified torque. Refer to [TM-28. "Disassembly and Assembly"](#).



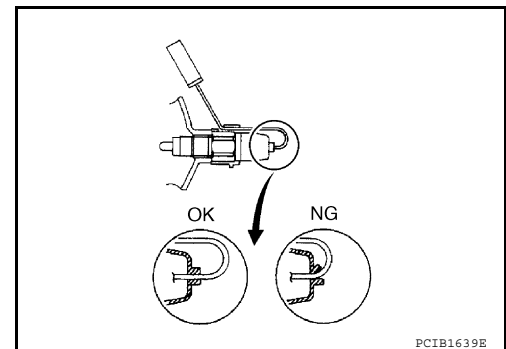
20. Install clips to transmission range switch and back-up lamp switch.

CAUTION:

- Thread harness through the notch of clip.



- Thread the harness as shown.



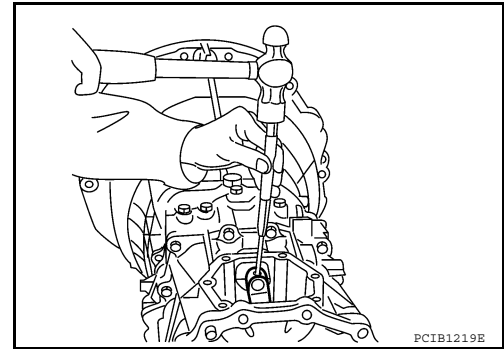
21. Install striking arm according to the following.

TRANSMISSION ASSEMBLY

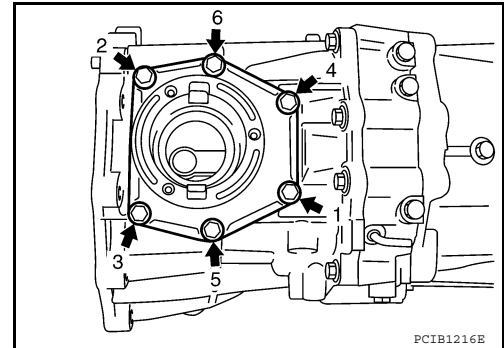
< DISASSEMBLY AND ASSEMBLY >

[6MT: FS6R31A]

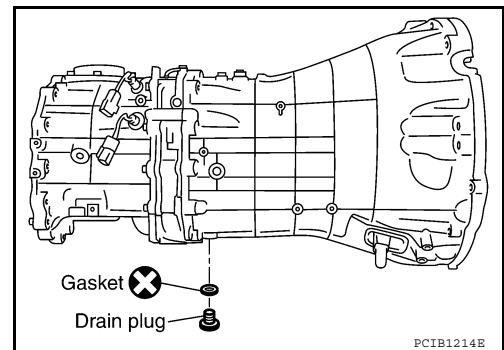
- a. Install striking arm to striking rod assembly.
- b. Install retaining pin to striking arm using suitable tool.
CAUTION:
Do not reuse retaining pin.



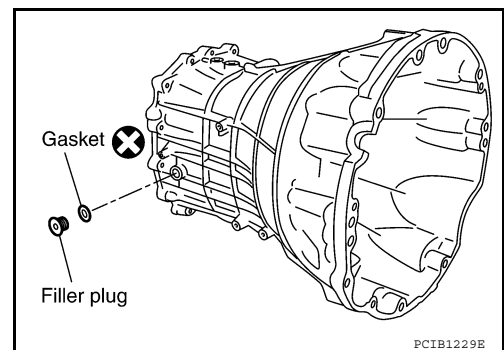
22. Install control housing according to the following.
 - a. Install gasket and control housing to rear extension (or OD gear case).
CAUTION:
Do not reuse gasket.
 - b. Tighten bolts to the specified torque in order as shown. Refer to [TM-28. "Disassembly and Assembly"](#).



23. Install gasket to drain plug, and then install it to transmission case. Tighten drain plug to the specified torque. Refer to [TM-28. "Disassembly and Assembly"](#).
CAUTION:
Do not reuse gasket.



24. Install gasket to filler plug, and then install it to transmission case. Tighten filler plug to the specified torque. Refer to [TM-28. "Disassembly and Assembly"](#).
CAUTION:
 - Do not reuse gasket.
 - After oil is filled, tighten filler plug to specified torque.



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SERVICE DATA AND SPECIFICATIONS (SDS)

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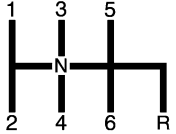
[6MT: FS6R31A]

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

General Specification

INFOID:000000005774591

Engine	VQ40DE	
Transmission model	FS6R31A	
Axle type	4WD	
Number of speed	6	
Synchromesh type	Warner	
Shift pattern	 <p style="text-align: right; font-size: small;">SCIA0955E</p>	
Gear ratio	1st	4.368
	2nd	2.518
	3rd	1.743
	4th	1.283
	5th	1.000
	6th	0.769
	Reverse	3.966
Main gear (Number of teeth)	Drive	24
	1st	37
	2nd	32
	3rd	32
	4th	29
	6th	25
	Reverse	42
Counter gear (Number of teeth)	Drive	34
	1st	12
	2nd	18
	3rd	26
	4th	32
	6th	46
	Reverse	15
Reverse idler gear (Number of teeth)	26	
Oil capacity (Approx.)	ℓ (US qt, Imp qt)	4.18 (4-3/8, 3-5/8)
Remarks	Reverse synchronizer	Installed
	Double cone synchronizer	1st, 3rd and 4th
	Triple cone synchronizer	2nd

SERVICE DATA AND SPECIFICATIONS (SDS)

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[6MT: FS6R31A]

Gear End Play

INFOID:000000005774592

Unit: mm (in)

Item	Standard value
Counter gear	0 - 0.10 (0 - 0.004)
Main drive gear	0 - 0.10 (0 - 0.004)
Mainshaft (Front side)	0 - 0.10 (0 - 0.004)
Mainshaft (Rear side)	0 - 0.10 (0 - 0.004)

Snap Rings

INFOID:000000005774593

Unit: mm (in)

Selective parts	Thickness	Part number*	
Main drive gear	1.89 (0.0744)	32204 01G60	
	1.95 (0.0768)	32204 01G61	
	1.99 (0.0783)	32204 01G62	
	2.03 (0.0799)	32204 01G63	
	2.07 (0.0815)	32204 01G64	
	2.11 (0.0831)	32204 01G65	
Counter gear	1.96 (0.0772)	32236 CD000	
	2.02 (0.0795)	32236 CD001	
	2.08 (0.0819)	32236 CD002	
	2.14 (0.0843)	32236 CD003	
	2.20 (0.0866)	32236 CD004	
	2.26 (0.0890)	32236 CD005	
	2.32 (0.0913)	32236 CD006	
	2.38 (0.0937)	32236 CD007	
	2.44 (0.0961)	32236 CD008	
	2.50 (0.0984)	32236 CD009	
	2.56 (0.1008)	32236 CD010	
2.62 (0.1031)	32236 CD011		
Mainshaft	Front side	2.08 (0.0819)	32204 CD000
		2.14 (0.0843)	32204 CD001
		2.20 (0.0866)	32204 CD002
	Rear side	2.26 (0.0890)	32204 CD003
		2.08 (0.0819)	32204 CD000
		2.14 (0.0843)	32204 CD001
2.20 (0.0866)		32204 CD002	
2.26 (0.0890)		32204 CD003	
2.32 (0.0913)		32204 CD004	
2.38 (0.0937)		32204 CD005	
2.44 (0.0961)	32204 CD006		
2.50 (0.0984)	32204 CD007		
2.56 (0.1008)	32204 CD008		
2.62 (0.1031)	32204 CD009		
2.68 (0.1055)	32204 CD010		
2.74 (0.1079)	32204 CD011		
2.80 (0.1102)	32204 CD012		
2.86 (0.1126)	32204 CD013		
2.92 (0.1150)	32204 CD014		
2.98 (0.1173)	32204 CD015		

*: Always check with the Parts Department for the latest parts information.

Baulk Ring Clearance

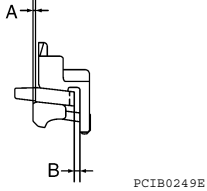
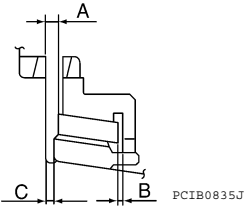
INFOID:000000005774594

Unit: mm (in)

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

[6MT: FS6R31A]

Measurement point		Standard value	Limit value
1st, 3rd and 4th (Double-cone synchronizer)	Clearance between synchronizer cone and inner baulk ring end face "A"	0.5 - 0.7 (0.020 - 0.028)	0.3 (0.012)
	Clearance between outer baulk ring pawl and synchronizer cone "B"	1st : 1.0 - 1.5 (0.039 - 0.059) 3rd, 4th : 0.85 - 1.35 (0.0335 - 0.0531)	0.7 (0.028) 0.7 (0.028)
			
2nd (Triple-cone synchronizer)	Clearance between synchronizer and clutch gear end face "A"	0.6 - 1.3 (0.024 - 0.051)	0.3 (0.012)
	Clearance between outer baulk ring pawl and synchronizer cone "B"	0.85 - 1.35 (0.0335 - 0.0531)	0.7 (0.028)
	Clearance between inner baulk ring and clutch gear end face "C"	0.7 - 1.25 (0.028 - 0.0492)	0.3 (0.012)
			
5th and 6th		0.7 - 1.35 (0.028 - 0.0531)	0.5 (0.020)
Reverse		0.75 - 1.2 (0.0295 - 0.047)	0.5 (0.020)

BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

How to Perform Trouble Diagnosis For Quick and Accurate Repair

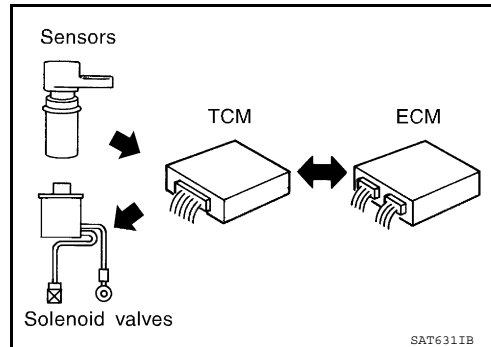
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INTRODUCTION

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

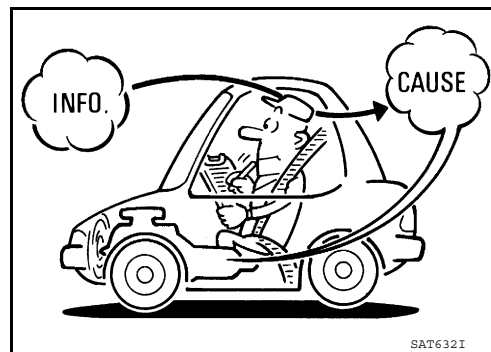
The TCM also communicates with the ECM by means of a signal sent from sensing elements used with the OBD-related parts of the A/T system for malfunction-diagnostic purposes. The TCM is capable of diagnosing malfunctioning parts while the ECM can store malfunctions in its memory.

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



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

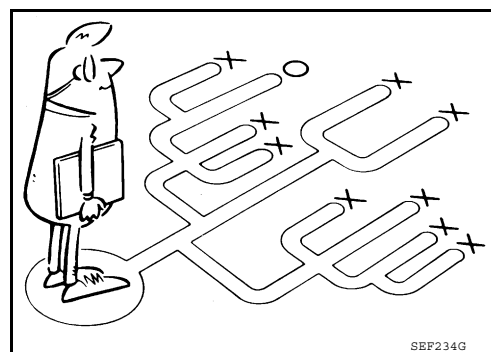
A visual check only may not find the cause of the errors. A road test with CONSULT-III or a circuit tester connected should be performed. Follow the "DETAILED FLOW".



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 work sheet" as shown on the example (Refer to [TM-72](#)) 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.



DETAILED FLOW

1. COLLECT THE INFORMATION FROM THE CUSTOMER

Get the detailed information from the customer about the symptom (the condition and the environment when the incident/malfunction occurred) using diagnosis worksheet. Refer to [TM-72, "Diagnostic Work Sheet"](#).

>> GO TO 2.

2. CHECK SYMPTOM 1

Check the following items based on the information obtained from the customer.

- Fail-safe. Refer to [TM-175, "Fail-Safe"](#).
- A/T fluid inspection. Refer to [TM-204, "Checking the A/T Fluid \(ATF\)"](#).
- Stall test. Refer to [TM-207, "Stall Test"](#).
- Line pressure test. Refer to [TM-208, "Line Pressure Test"](#).

DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

[5AT: RE5R05A]

>> GO TO 3.

3. CHECK DTC

1. Check DTC.
2. Perform the following procedure if DTC is detected.
 - Record DTC.
 - Erase DTC.

Is any DTC detected?

YES >> GO TO 4.

NO >> GO TO 6.

4. PERFORM DIAGNOSTIC PROCEDURE

Perform "Diagnosis Procedure" for the displayed DTC.

>> GO TO 5.

5. PERFORM DTC CONFIRMATION PROCEDURE

Perform "DTC CONFIRMATION PROCEDURE".

Is DTC detected?

YES >> GO TO 4.

NO >> GO TO 6.

6. CHECK SYMPTOM 2

Try to confirm the symptom described by the customer.

Is any malfunction present?

YES >> GO TO 7.

NO >> INSPECTION END

7. ROAD TEST

Perform "ROAD TEST". Refer to [TM-211. "Check Before Engine Is Started"](#).

>> GO TO 8.

8. CHECK SYMPTOM 3

Try to confirm the symptom described by the customer.

Is any malfunction present?

YES >> GO TO 2.

NO >> INSPECTION END

Diagnostic Work Sheet

INFOID:000000005280579

INFORMATION FROM CUSTOMER

KEY POINTS

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

Customer name MR/MS	Model and Year	VIN
Trans. Model	Engine	Mileage
Malfunction Date	Manuf. Date	In Service Date
Frequency	<input type="checkbox"/> Continuous <input type="checkbox"/> Intermittent (times a day)	

DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

[5AT: RE5R05A]

Symptoms	<input type="checkbox"/> Vehicle does not move. (<input type="checkbox"/> Any position <input type="checkbox"/> Particular position)	
	<input type="checkbox"/> No up-shift (<input type="checkbox"/> 1st → 2nd <input type="checkbox"/> 2nd → 3rd <input type="checkbox"/> 3rd → 4th <input type="checkbox"/> 4th → 5th)	
	<input type="checkbox"/> No down-shift (<input type="checkbox"/> 5th → 4th <input type="checkbox"/> 4th → 3rd <input type="checkbox"/> 3rd → 2nd <input type="checkbox"/> 2nd → 1st)	
	<input type="checkbox"/> Lock-up malfunction	
	<input type="checkbox"/> Shift point too high or too low.	
	<input type="checkbox"/> Shift shock or slip (<input type="checkbox"/> N → D <input type="checkbox"/> N → R <input type="checkbox"/> Lock-up <input type="checkbox"/> Any drive position)	
	<input type="checkbox"/> Noise or vibration	
	<input type="checkbox"/> No kick down	
	<input type="checkbox"/> No pattern select	
	<input type="checkbox"/> Cannot be changed to manual mode	
<input type="checkbox"/> Others ()		
O/D OFF indicator lamp	<input type="checkbox"/> Continuously lit	<input type="checkbox"/> Not lit

DIAGNOSTIC WORK SHEET

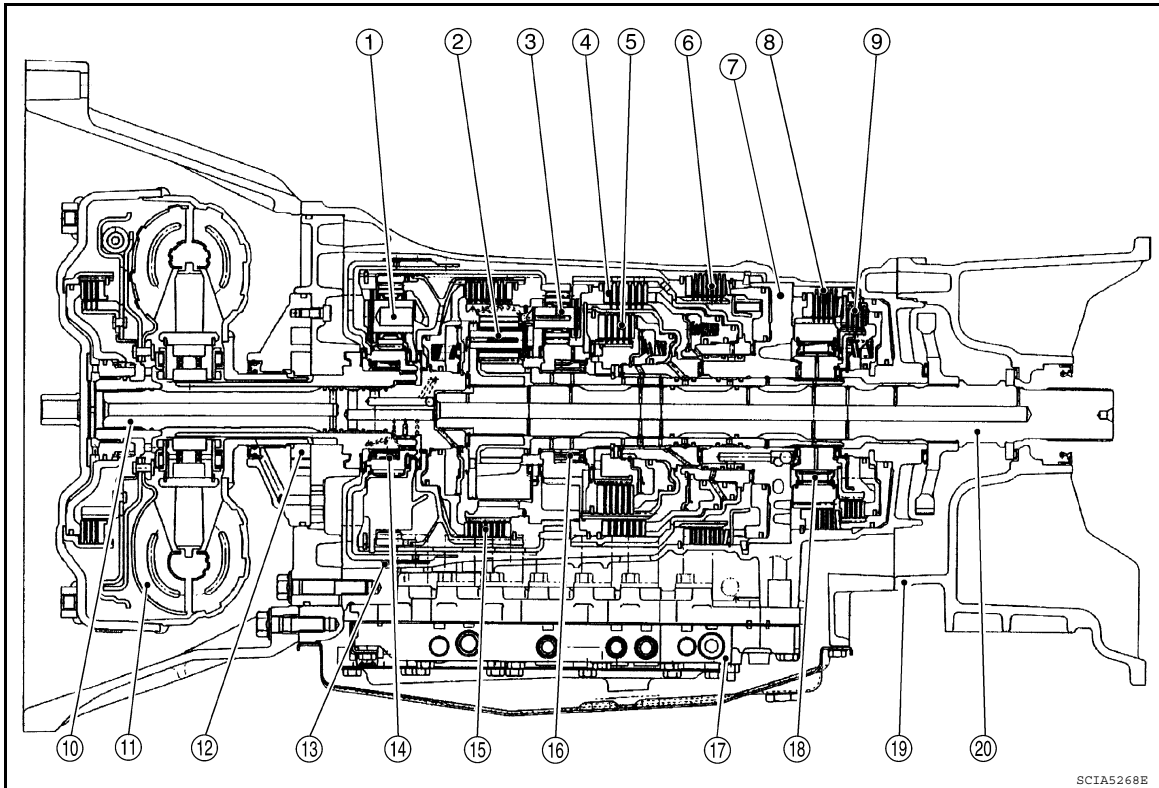
1	<input type="checkbox"/> Read the item on cautions concerning fail-safe and understand the customer's complaint.		TM-175	
2	<input type="checkbox"/> A/T fluid inspection, stall test and line pressure test		TM-204 TM-207 TM-208	
	<input type="checkbox"/> A/T fluid inspection			
	<input type="checkbox"/> Leak (Repair leak location.) <input type="checkbox"/> State <input type="checkbox"/> Amount			
	<input type="checkbox"/> Stall test			
	<input type="checkbox"/> Torque converter one-way clutch <input type="checkbox"/> Front brake <input type="checkbox"/> High and low reverse clutch <input type="checkbox"/> Low coast brake <input type="checkbox"/> Forward brake <input type="checkbox"/> Reverse brake <input type="checkbox"/> Forward one-way clutch	<input type="checkbox"/> 1st one-way clutch <input type="checkbox"/> 3rd one-way clutch <input type="checkbox"/> Engine <input type="checkbox"/> Line pressure low <input type="checkbox"/> Except for input clutch and direct clutch, clutches and brakes OK		
<input type="checkbox"/> Line pressure test - Suspected part:				
3	<input type="checkbox"/> Perform self-diagnosis. — Check detected items to repair or replace malfunctioning part.		TM-95	
4	<input type="checkbox"/> Perform road test.		TM-211 TM-211 TM-212 TM-214 TM-214	
	5-1	<input type="checkbox"/> Check before engine is started		
	5-2	<input type="checkbox"/> Check at idle		
	5-3	Cruise test		<input type="checkbox"/> Part 1
				<input type="checkbox"/> Part 2
				<input type="checkbox"/> Part 3
<input type="checkbox"/> Check malfunction phenomena to repair or replace malfunctioning part after completing all road test. Refer to TM-178 , "Symptom Chart".				
5	<input type="checkbox"/> Drive vehicle to check that the malfunction phenomenon has been resolved.			
6	<input type="checkbox"/> Erase the results of the self-diagnosis from the TCM.		TM-95	

FUNCTION DIAGNOSIS

A/T CONTROL SYSTEM

Cross-Sectional View

INFOID:000000005280580



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

Shift Mechanism

INFOID:000000005280581

The automatic transmission uses compact triple planetary gear systems to improve power-transmission efficiency, simplify construction and reduce weight.

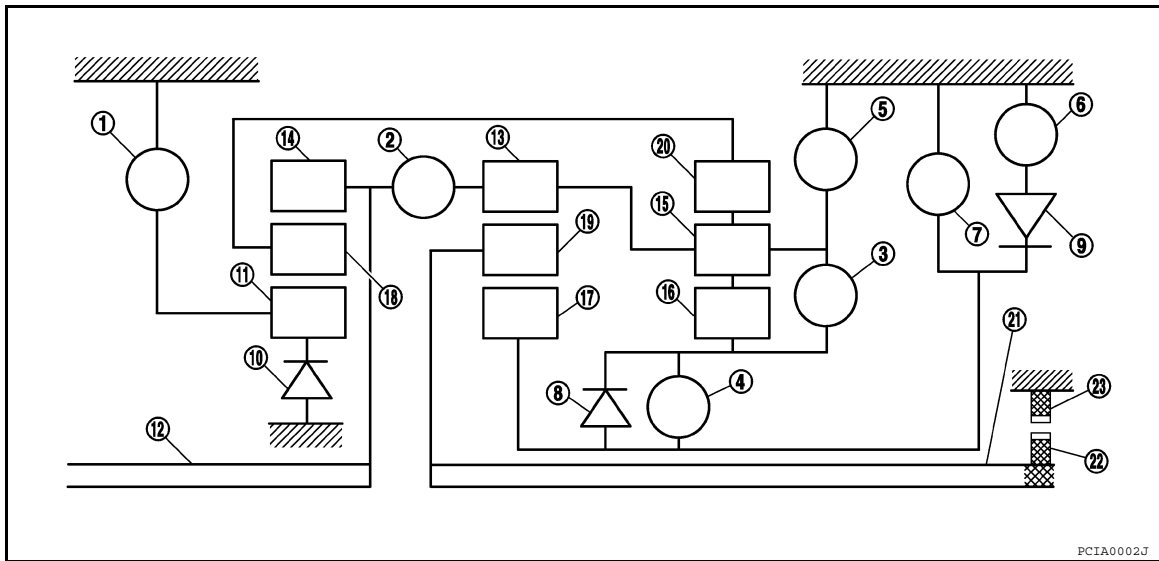
It also employs an optimum shift control and super wide gear ratios. They improve starting performance and acceleration during medium and high-speed operation.

CONSTRUCTION

A/T CONTROL SYSTEM

< FUNCTION DIAGNOSIS >

[5AT: RE5R05A]



- | | | |
|--------------------------------|-------------------------|---------------------------|
| 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 WOC	Allows the rear sun gear (16) to turn freely forward relative to the mid sun gear (17) but fastens it for reverse rotation.
Forward one-way clutch (9)	Fwd OWC	Allows the mid sun gear (17) to turn freely in the forward direction but fastens it for reverse rotation.
3rd one-way clutch (10)	3rd OWC	Allows the front sun gear (11) to turn freely in the forward direction but fastens it for reverse rotation.

CLUTCH AND BAND CHART

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

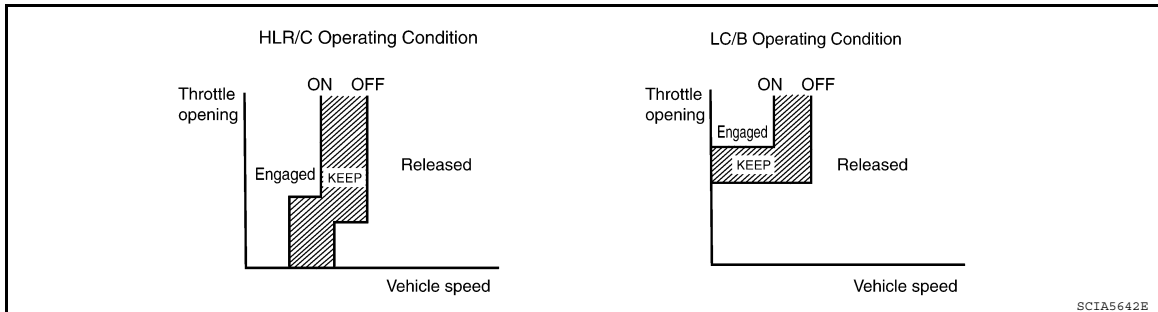
A/T CONTROL SYSTEM

< FUNCTION DIAGNOSIS >

[5AT: RE5R05A]

Shift position	I/C	HLR/C	D/C	R/B	FR/B	LC/B	Fwd/B	1st OWC	Fwd OWC	3rd OWC	Remarks
N		△			△						NEUTRAL POSITION
D*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 overdrive control switch is set in “OFF” position.



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

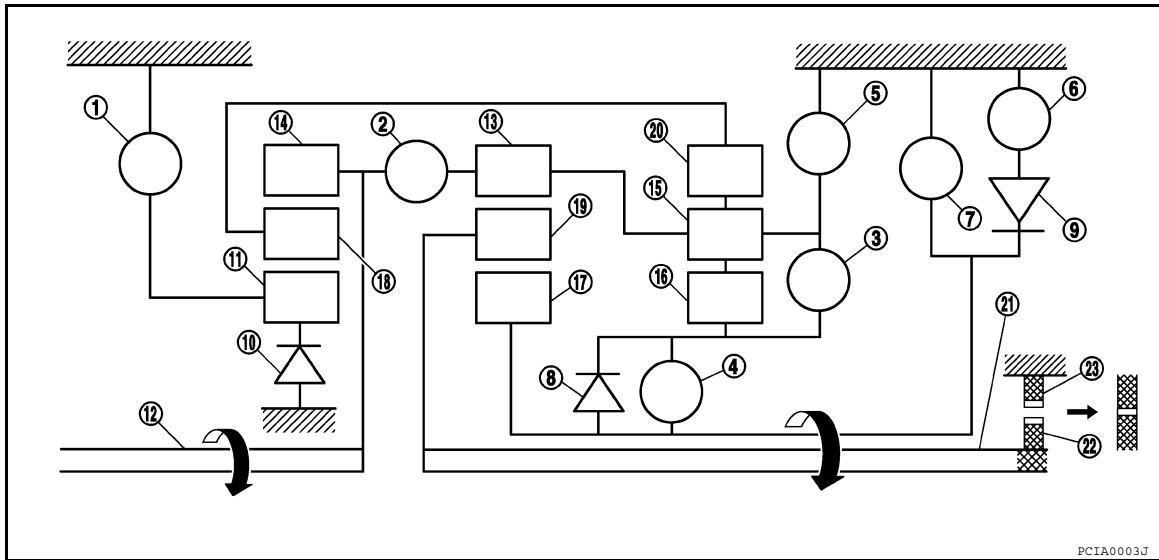
- The same as for the “N” position, both the forward brake and the reverse brake are released, so torque from the input shaft drive is not transmitted to the output shaft.

A/T CONTROL SYSTEM

< FUNCTION DIAGNOSIS >

[5AT: RE5R05A]

- 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 | |

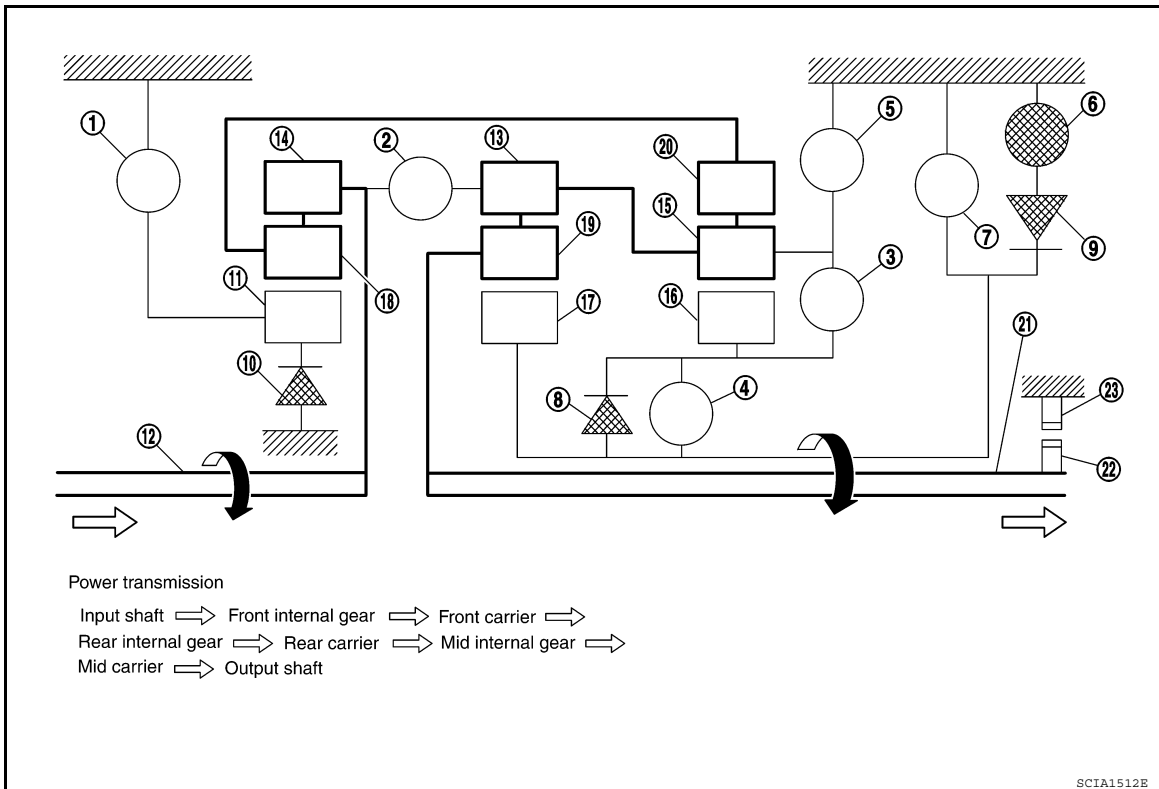
"D1", "31" and "21" Positions

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

A/T CONTROL SYSTEM

< FUNCTION DIAGNOSIS >

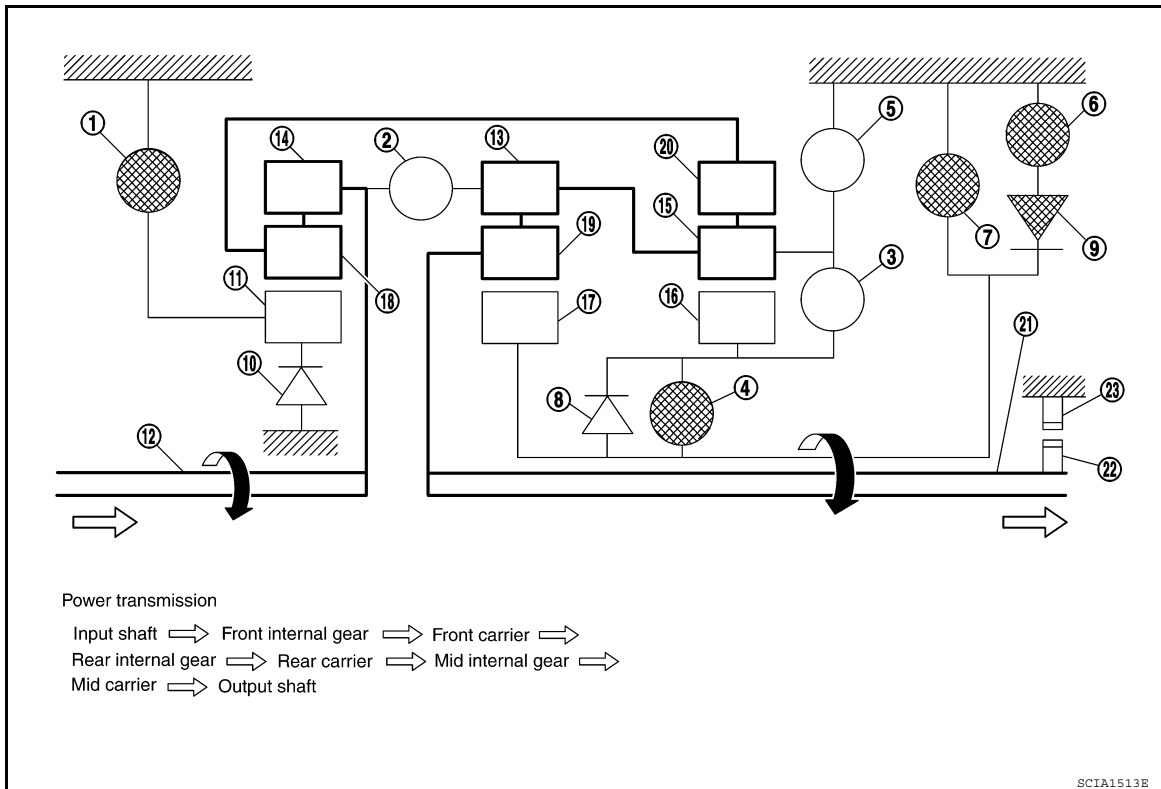
[5AT: RE5R05A]



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

"11" Position

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



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

“D2” and “32” Positions

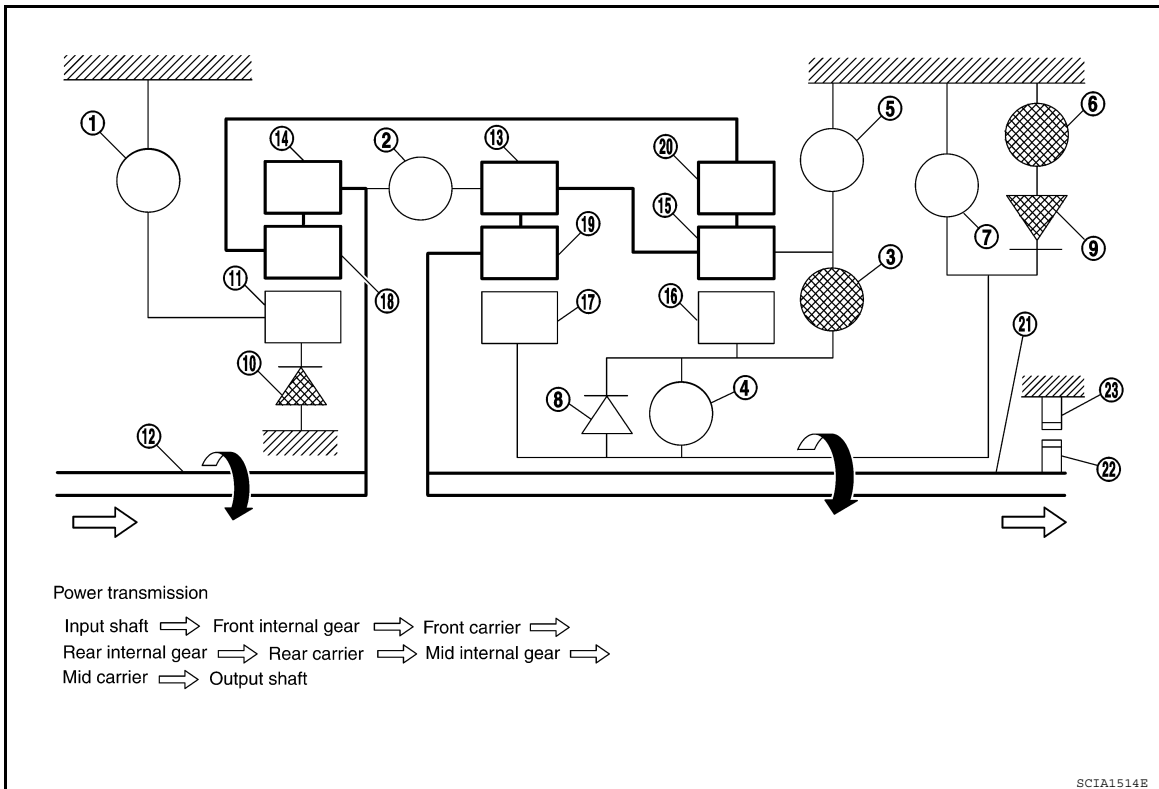
- The forward brake and the forward one-way clutch regulate reverse rotation of the mid sun gear.
- The 3rd one-way clutch regulates reverse rotation of the front sun gear.
- The direct clutch is coupled and the rear carrier and rear sun gear are connected.
- During deceleration, the mid sun gear turns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

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A/T CONTROL SYSTEM

< FUNCTION DIAGNOSIS >

[5AT: RE5R05A]



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

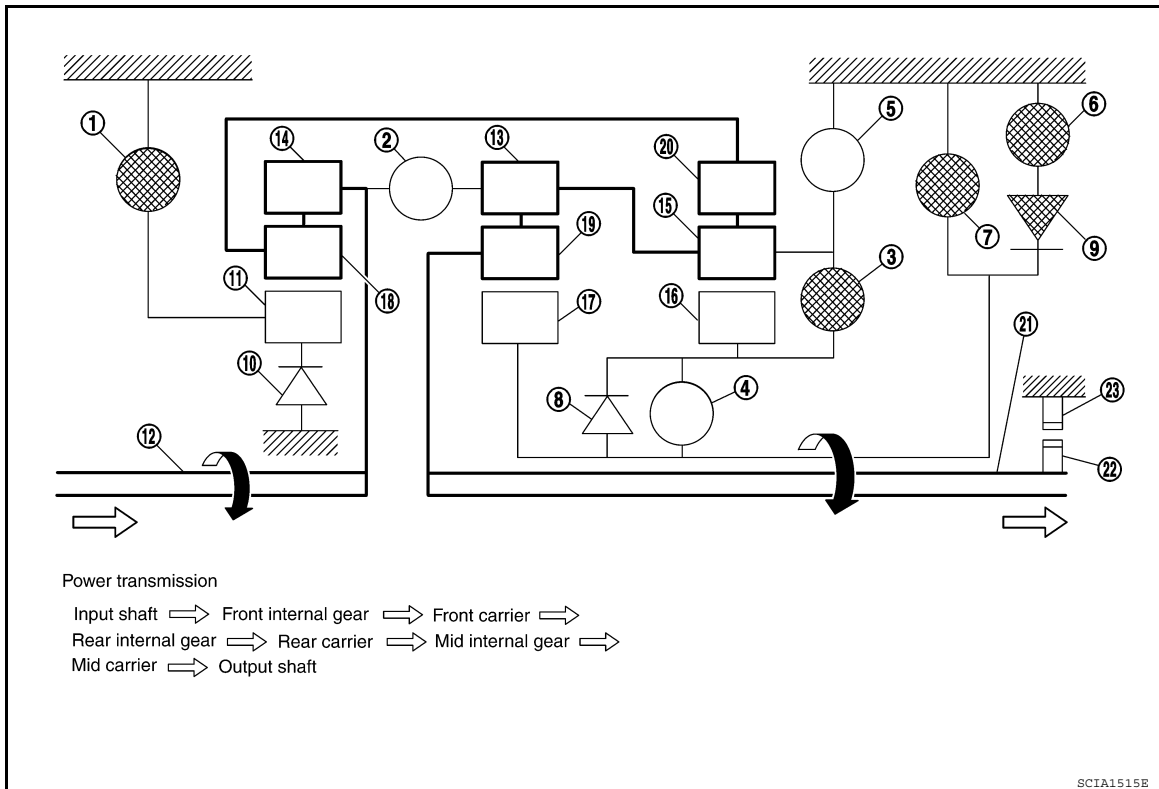
"22" and "12" Positions

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

A/T CONTROL SYSTEM

< FUNCTION DIAGNOSIS >

[5AT: RE5R05A]



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

"D3" and "33" Positions

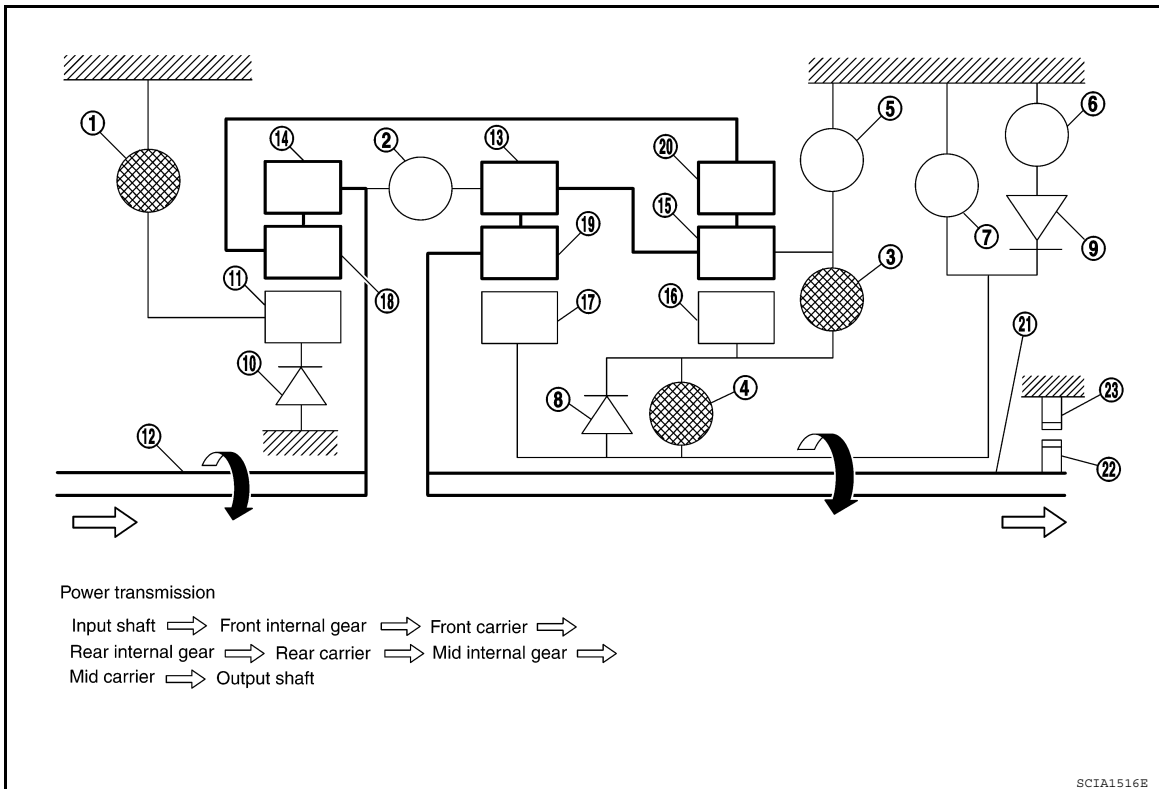
- The front brake fastens the front sun gear.
- The direct clutch is coupled, and the rear carrier and rear sun gear are connected.
- The high and low reverse clutch is coupled and the mid sun gear and rear sun gear are connected.

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A/T CONTROL SYSTEM

< FUNCTION DIAGNOSIS >

[5AT: RE5R05A]



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

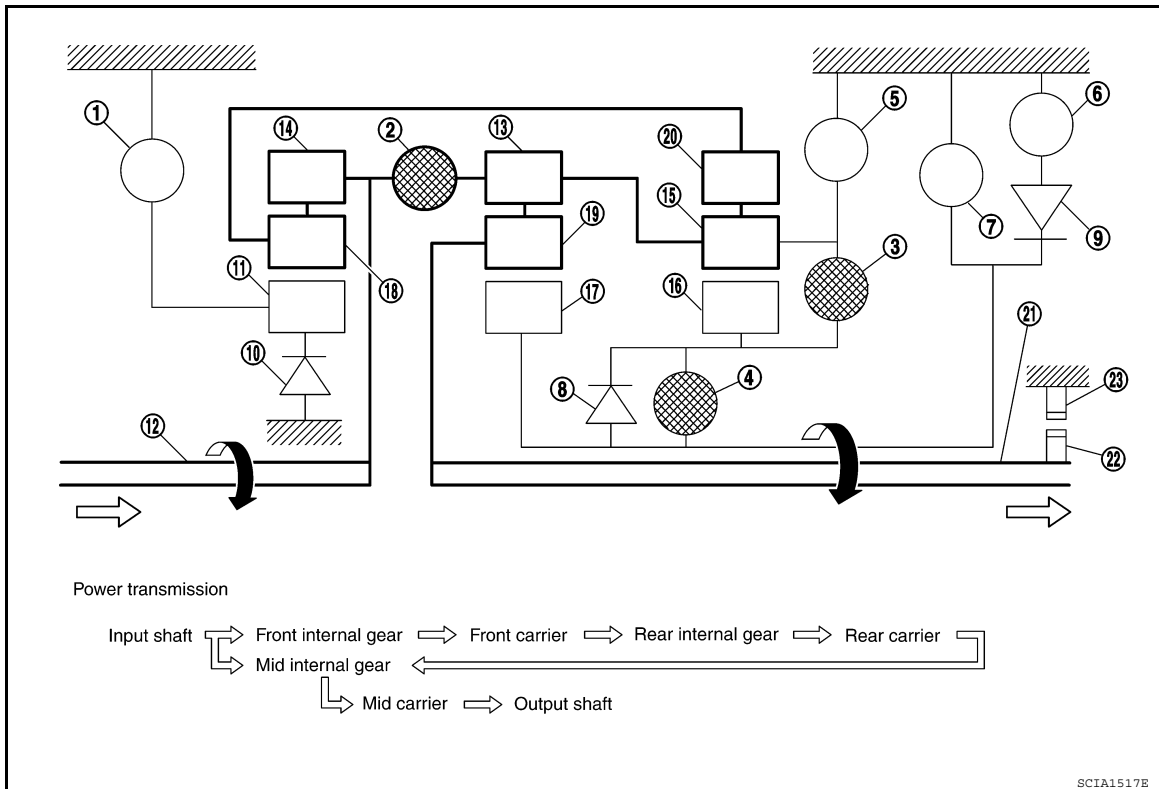
"D4" Position

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

A/T CONTROL SYSTEM

< FUNCTION DIAGNOSIS >

[5AT: RE5R05A]



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

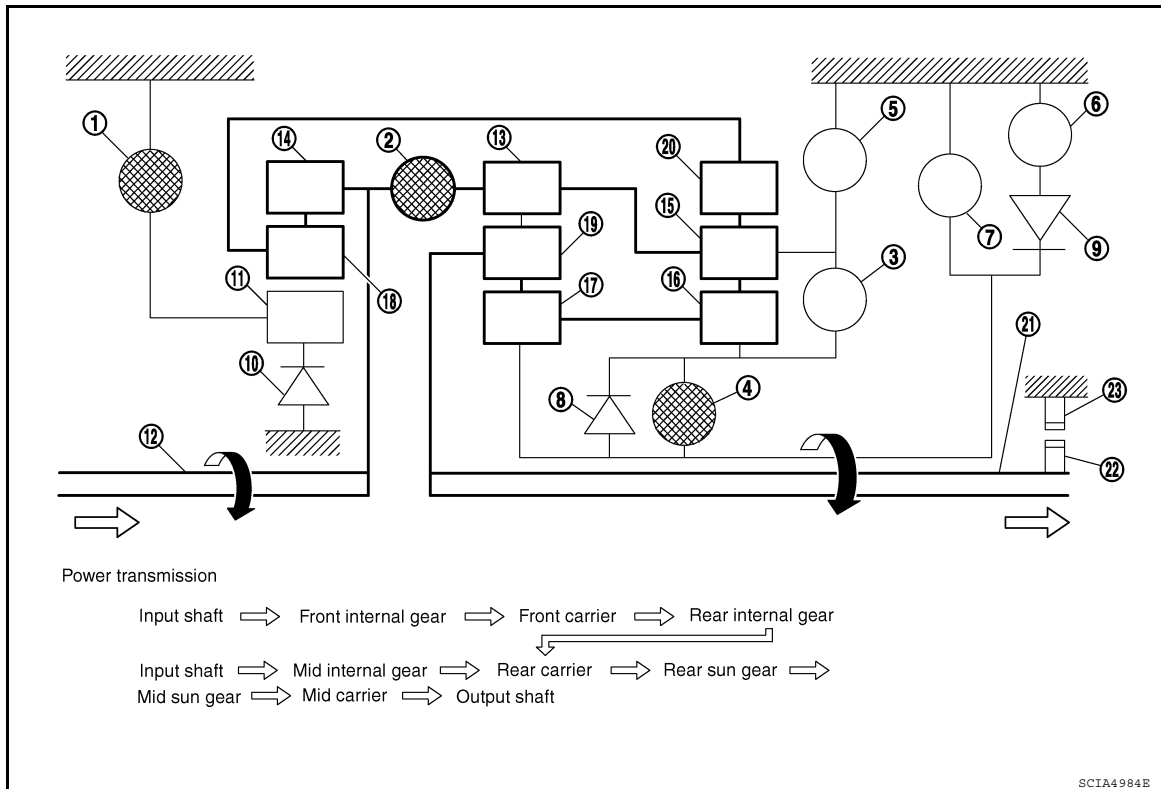
"D5" Position

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

A/T CONTROL SYSTEM

< FUNCTION DIAGNOSIS >

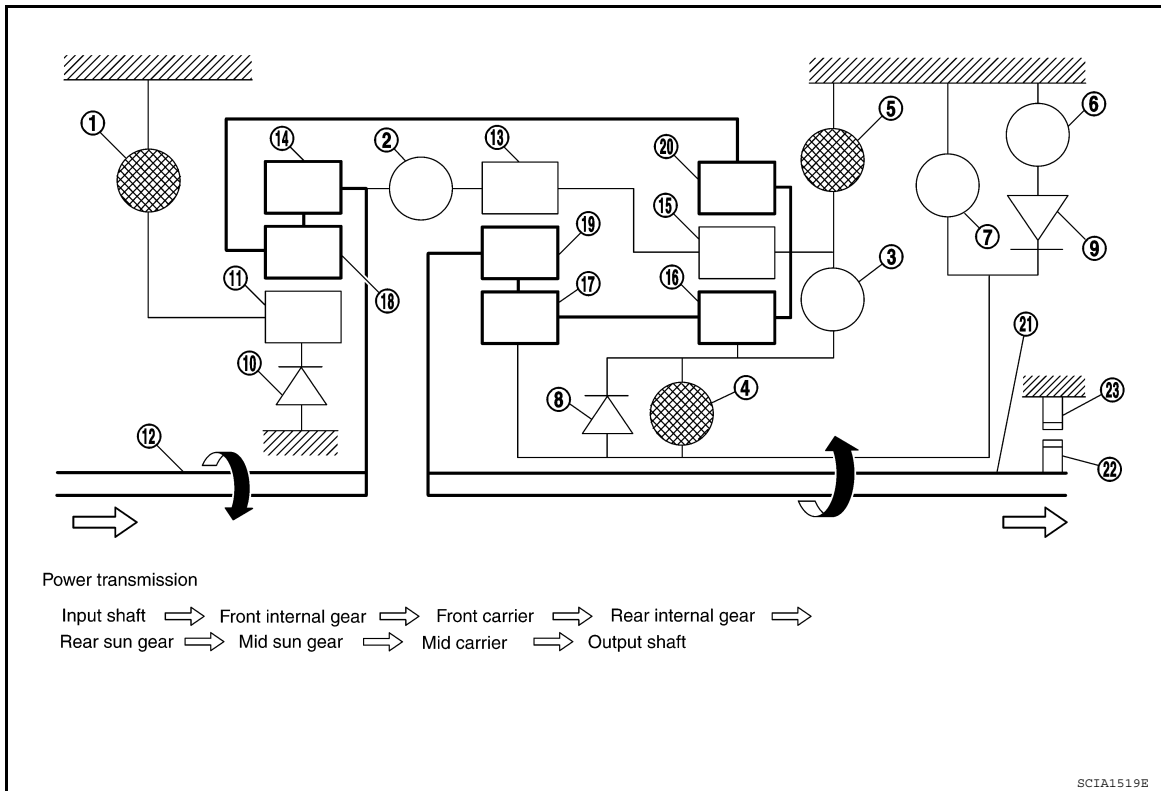
[5AT: RE5R05A]



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

"R" Position

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



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

TCM Function

INFOID:000000005280582

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.

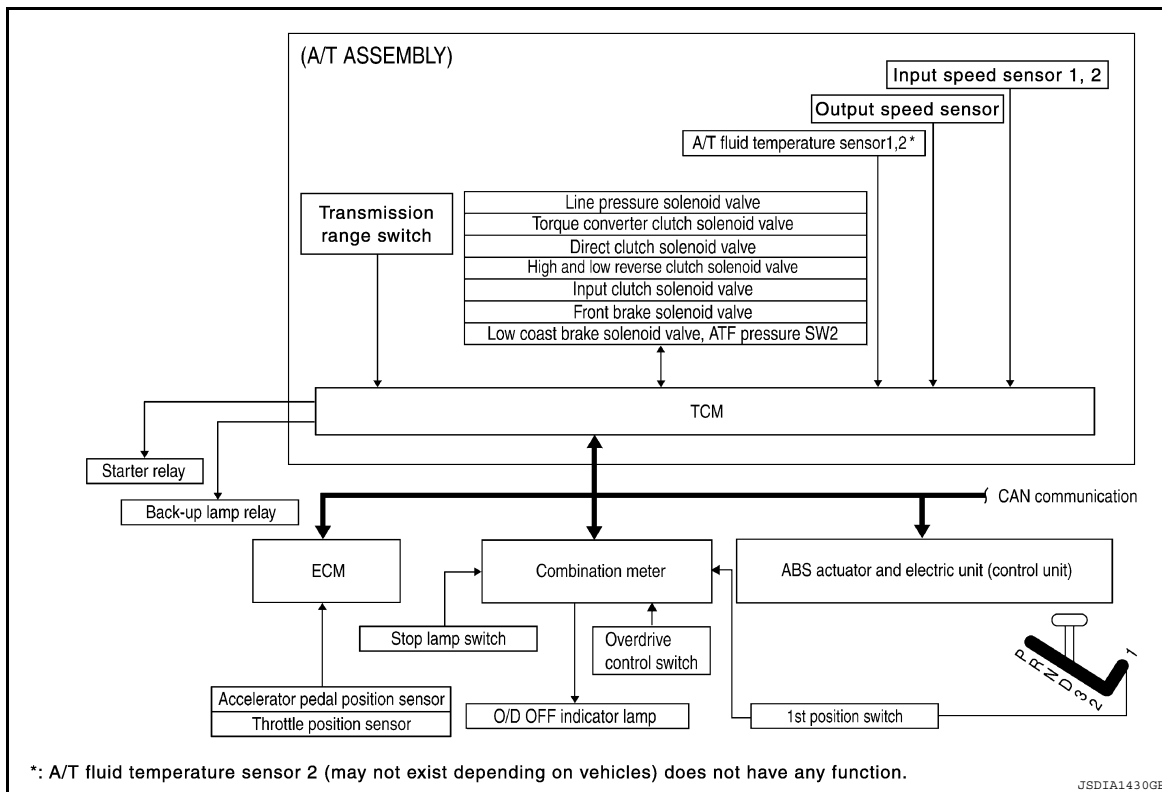
A/T CONTROL SYSTEM

< FUNCTION DIAGNOSIS >

[5AT: RE5R05A]

SENSORS (or SIGNALS)		TCM		ACTUATORS
Transmission range switch Accelerator pedal position sensor Closed throttle position signal Wide open throttle position signal Engine speed signal A/T fluid temperature sensor Output speed sensor Vehicle speed signal Stop lamp switch signal Input speed sensor 1st position switch signal Overdrive control switch signal ATF pressure switch signal	⇒	Shift control Line pressure control Lock-up control Engine brake control Timing control Fail-safe control Self-diagnosis CONSULT-III communication line Duet-EA control CAN system	⇒	Input clutch solenoid valve Direct clutch solenoid valve Front brake solenoid valve High and low reverse clutch solenoid valve Low coast brake solenoid valve Torque converter clutch solenoid valve Line pressure solenoid valve O/D OFF indicator lamp Starter relay Back-up lamp relay

CONTROL SYSTEM DIAGRAM



CAN Communication

INFOID:000000005280583

SYSTEM DESCRIPTION

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN H line, CAN L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only. For details, refer to [LAN-45, "CAN System Specification Chart"](#).

A/T CONTROL SYSTEM

< FUNCTION DIAGNOSIS >

[5AT: RE5R05A]

Input/Output Signal of TCM

INFOID:000000005280584

Control item		Line pressure control	Vehicle speed control	Shift control	Lock-up control	Engine brake control	Fail-safe function (*3)	Self-diagnostics function
Input	Accelerator pedal position signal (*5)	X	X	X	X	X	X	X
	Output speed sensor	X	X	X	X	X	X	X
	Vehicle speed signal(*1) (*5)						X	
	Closed throttle position signal(*5)		X(*2)	X	X		X	X(*4)
	Wide open throttle position signal(*5)						X	X(*4)
	Input speed sensor 1		X		X	X	X	X
	Input speed sensor 2		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(*7)	X	X	X	X		X	X
	ASCD	Operation signal(*5)		X	X	X		
Overdrive cancel signal(*5)			X					
Output	Direct clutch solenoid		X	X			X	X
	Input clutch solenoid		X	X			X	X
	High and low reverse clutch solenoid		X	X			X	X
	Front brake solenoid		X	X			X	X
	Low coast brake solenoid (ATF pressure switch 2)		X	X		X	X	X
	Line pressure solenoid	X	X	X	X	X	X	X
	TCC solenoid				X		X	X
	O/D OFF indicator lamp(*6)							X(*4)
Starter relay						X	X	

*1: Spare for output speed sensor

*2: Spare for accelerator pedal position signal

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

*4: Used as a condition for starting self-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

*7: A/T fluid temperature sensor 2 (may not exist depending on vehicle) does not have any function.

Line Pressure Control

INFOID:000000005280585

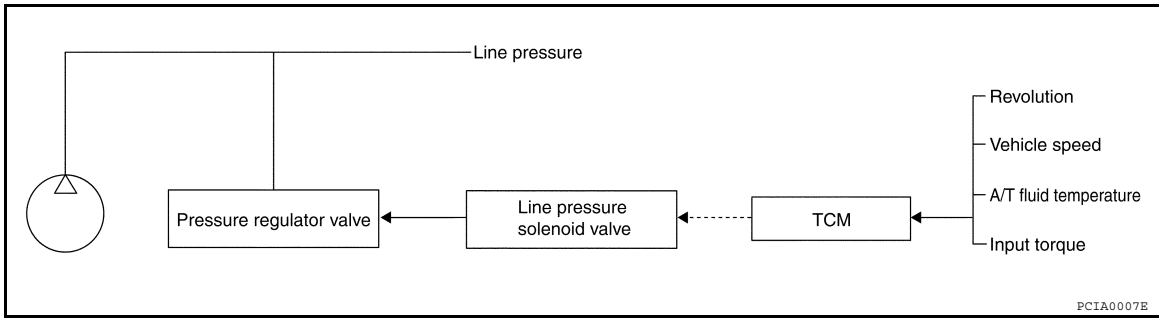
- When an input torque signal equivalent to the engine drive force is sent from the ECM to the TCM, the TCM controls the line pressure solenoid.

A/T CONTROL SYSTEM

< FUNCTION DIAGNOSIS >

[5AT: RE5R05A]

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

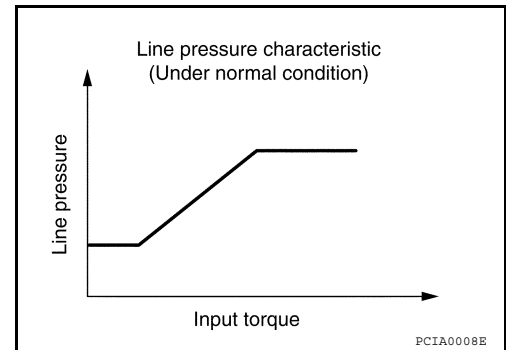


LINE PRESSURE CONTROL IS BASED ON THE TCM LINE PRESSURE CHARACTERISTIC PATTERN

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

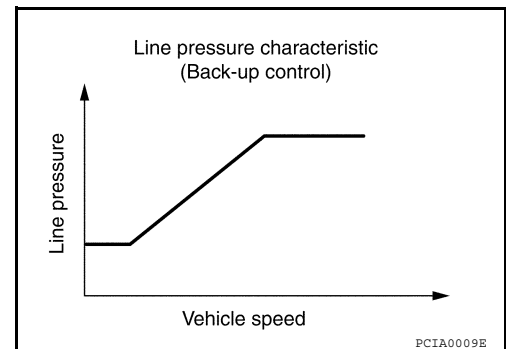
Normal Control

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



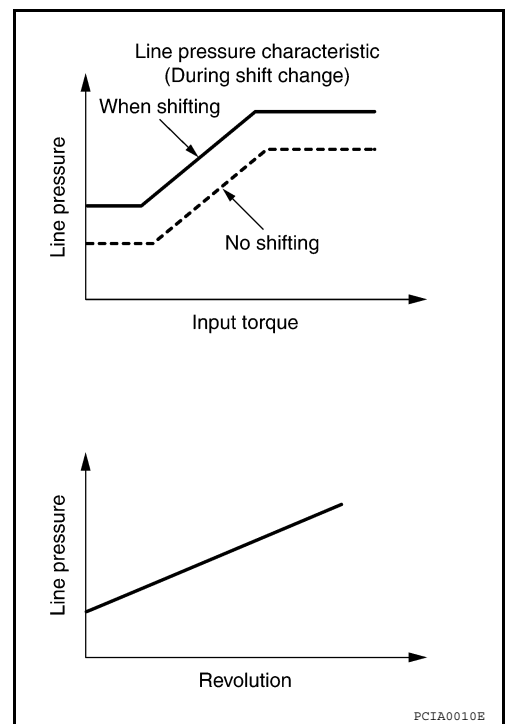
Back-up Control (Engine Brake)

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



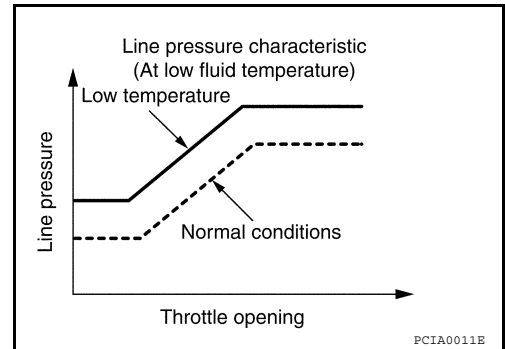
During Shift Change

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



At Low Fluid Temperature

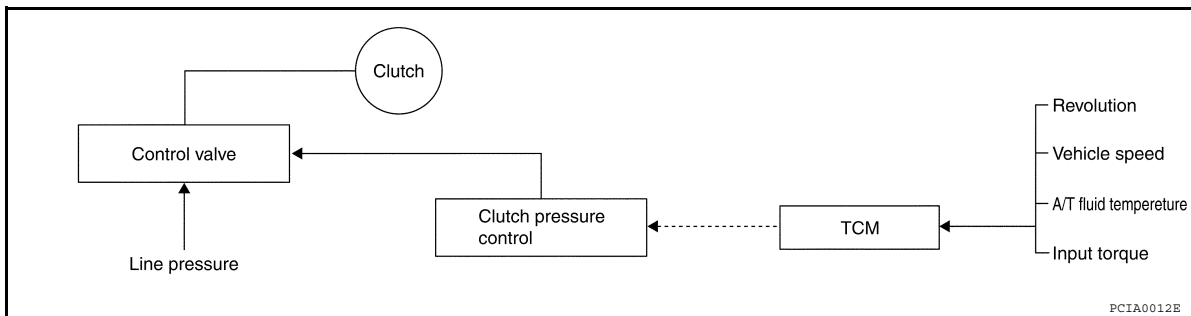
When the A/T fluid temperature drops below the prescribed temperature, in order to speed up the action of each friction element, the line pressure is set higher than the normal line pressure characteristic.



Shift Control

INFOID:000000005280586

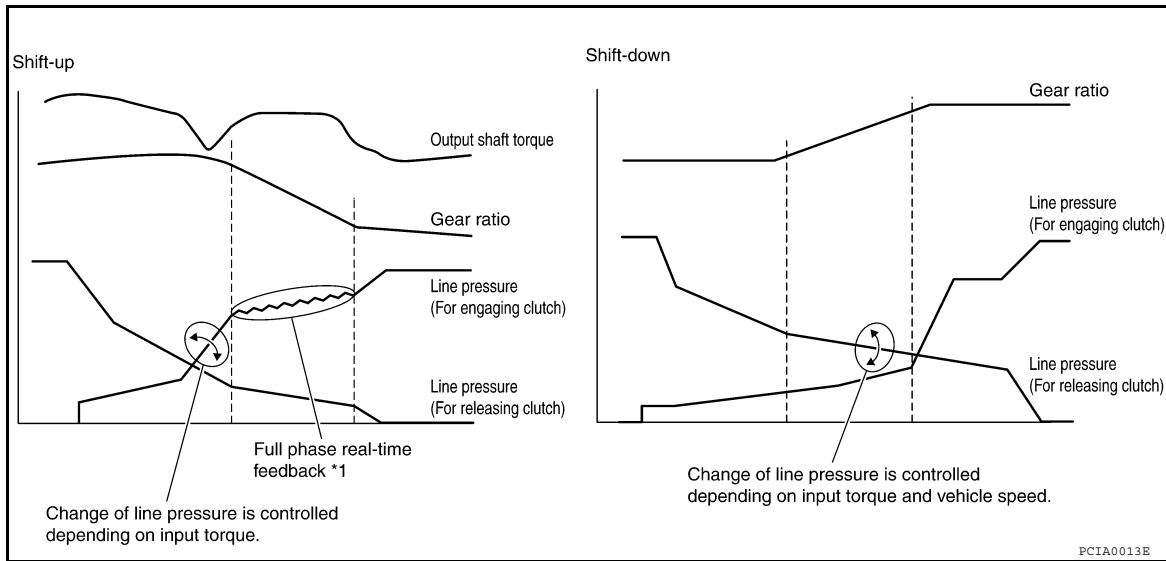
The clutch pressure control solenoid is controlled by the signals from the switches and sensors. Thus, the clutch pressure is adjusted to be appropriate to the engine load state and vehicle driving state. It becomes possible to finely control the clutch hydraulic pressure with high precision and a smoother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



SHIFT CHANGE

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

Shift Change System Diagram



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

Lock-up Control

INFOID:000000005280587

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

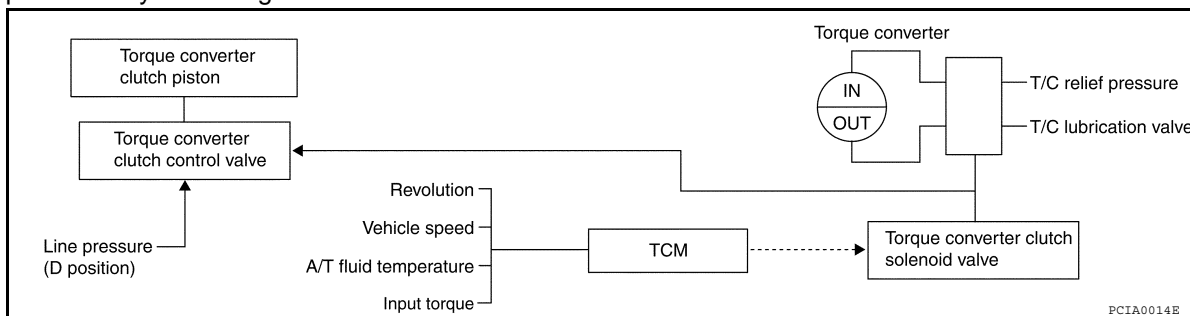
The torque converter clutch control valve operation is controlled by the torque converter clutch solenoid valve, which is controlled by a signal from TCM, and the torque converter clutch valve engages or releases the torque converter clutch piston.

Lock-up Operation Condition Table

Select lever	D position		3 position	2 position
Gear position	5	4	3	2
Lock-up	×	—	×	—
Slip lock-up	×	×	—	—

TORQUE CONVERTER CLUTCH CONTROL VALVE CONTROL

Lock-up Control System Diagram



Lock-up Released

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

Lock-up Applied

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

SMOOTH LOCK-UP CONTROL

A/T CONTROL SYSTEM

< FUNCTION DIAGNOSIS >

[5AT: RE5R05A]

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

Half-clutched State

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

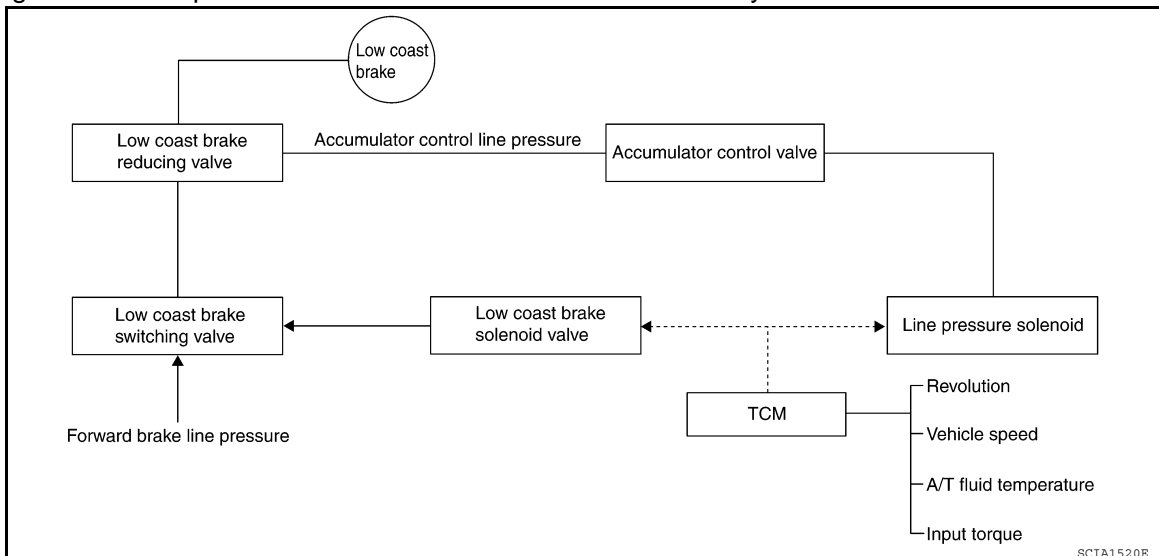
Slip Lock-up Control

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

Engine Brake Control

INFOID:000000005280588

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



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

Control Valve

INFOID:000000005280589

FUNCTION OF CONTROL VALVE

Name	Function
Torque converter regulator valve	In order to prevent the pressure supplied to the torque converter from being excessive, the line pressure is adjusted to the optimum pressure (torque converter operating pressure).
Pressure regulator valve Pressure regulator plug Pressure regulator sleeve	Adjusts the oil discharged from the oil pump to the optimum pressure (line pressure) for the driving state.
Front brake control valve	When the front brake is coupled, adjusts the line pressure to the optimum pressure (front brake pressure) and supplies it to the front brake. (In 1GR, 2GR, 3GR, and 5GR, adjusts the clutch pressure.)
Accumulator control valve	Adjusts the pressure (accumulator control pressure) acting on the accumulator piston and low coast reducing valve to the pressure appropriate to the driving state.

A/T CONTROL SYSTEM

< FUNCTION DIAGNOSIS >

[5AT: RE5R05A]

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

FUNCTION OF PRESSURE SWITCH

Name	Function
Pressure switch 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.

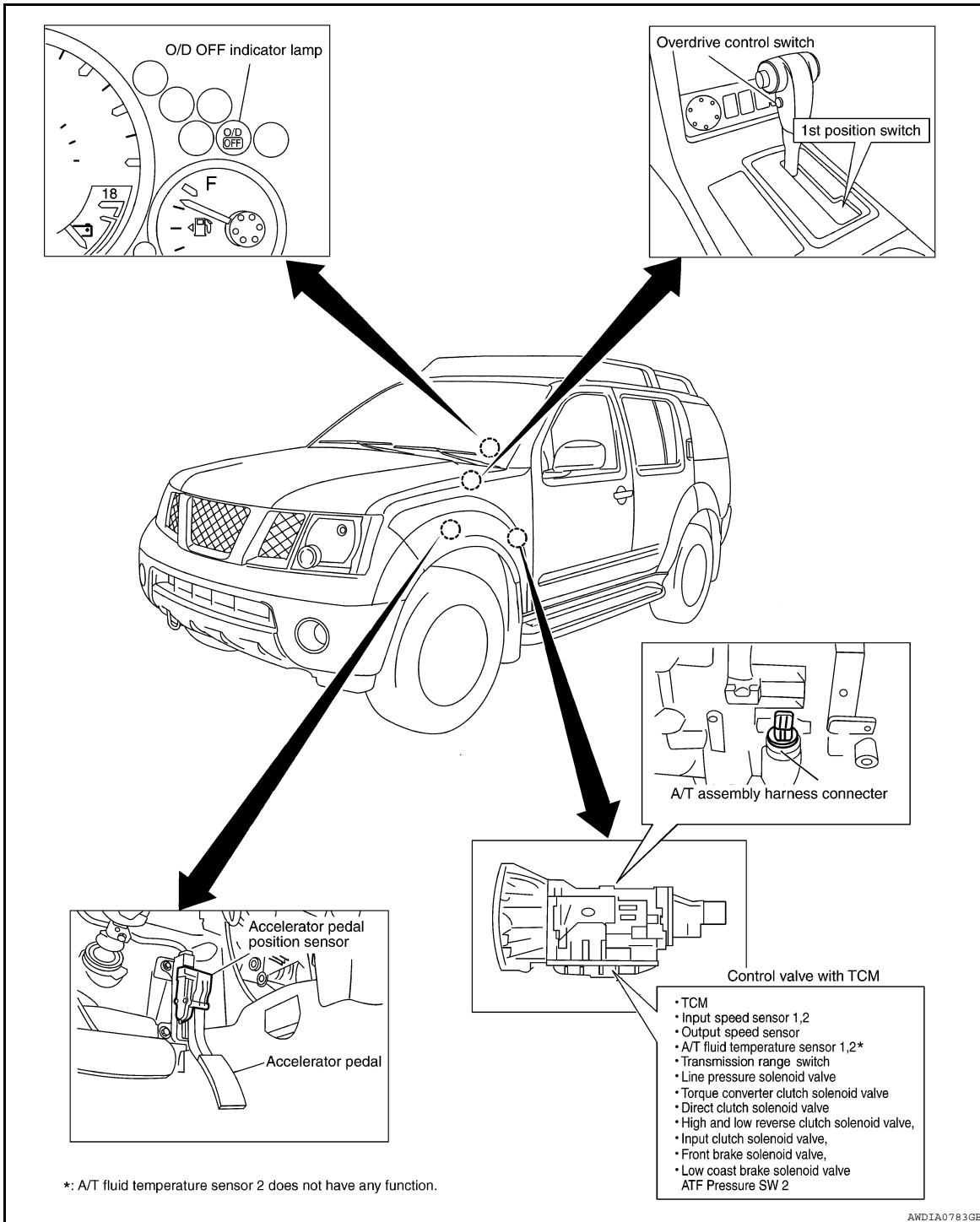
A/T CONTROL SYSTEM

< FUNCTION DIAGNOSIS >

[5AT: RE5R05A]

A/T Electrical Parts Location

INFOID:000000005280590



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A/T SHIFT LOCK SYSTEM

< FUNCTION DIAGNOSIS >

[5AT: RE5R05A]

A/T SHIFT LOCK SYSTEM

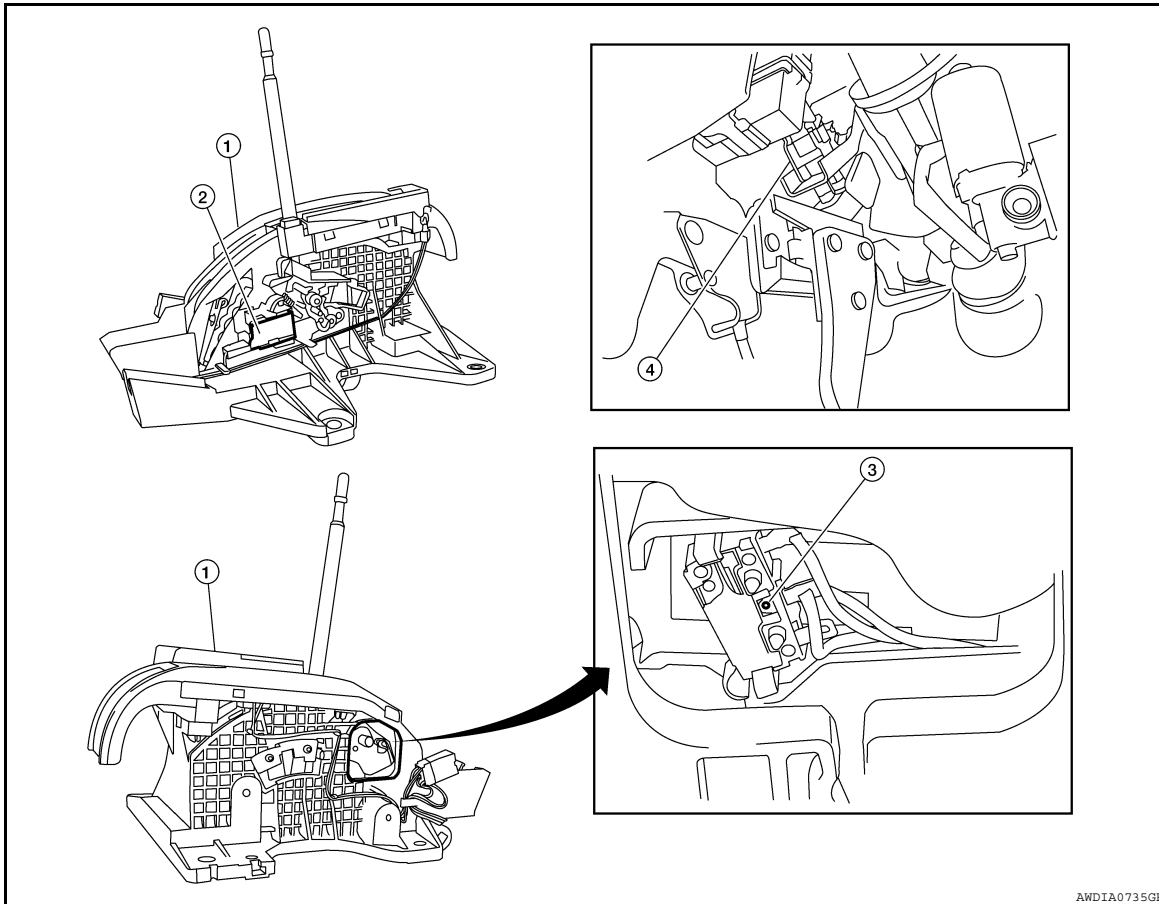
System Description

INFOID:000000005280591

- The selector lever cannot be shifted from “P” (Park) unless the brake pedal is depressed and the ignition switch is in the “ON” position.
- Battery voltage is supplied to the shift lock solenoid by the stop lamp switch.
- Ground is supplied to the shift lock solenoid by the park position switch (shift selector).
- With the ignition switch “ON”, brake pedal depressed and the A/T shift selector in “P” (Park), the shift lock solenoid is energized, allowing the selector lever to be shifted from Park.

Component Parts Location

INFOID:000000005280592



AWDIA0735GB

1. A/T shift selector M156
2. Shift lock solenoid
3. Park position switch (shift selector)
4. Stop lamp switch E38

DIAGNOSIS SYSTEM (TCM)

[5AT: RE5R05A]

< FUNCTION DIAGNOSIS >

DIAGNOSIS SYSTEM (TCM)

CONSULT-III Function (TRANSMISSION)

INFOID:000000005280593

FUNCTION

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

*: Although "Function Test" is selectable, do not use it.

SELF-DIAGNOSTIC RESULT MODE

Display Items List

X: Applicable, —: Not applicable

Items (CONSULT-III screen terms)	Malfunction is detected when...	TCM self-diagnosis	Reference page
		"TRANSMISSION" with CONSULT-III	
CAN COMM CIRCUIT	<ul style="list-style-type: none"> When TCM is not transmitting or receiving CAN communication signal for 2 seconds or more. 	U1000	TM-103
STARTER RELAY	<ul style="list-style-type: none"> If this signal is ON other than in "P" or "N" position, this is judged to be a malfunction. (And if it is OFF in "P" or "N" position, this too is judged to be a malfunction.) 	P0615	TM-104
TRANSMISSION CONT	<ul style="list-style-type: none"> TCM is malfunctioning. 	P0700	TM-107
T/M RANGE SWITCH A	<ul style="list-style-type: none"> Transmission range switch 1-4 signals input with impossible pattern "P" position is detected from "N" position without any other position being detected in between. 	P0705	TM-108
INPUT SPEED SENSOR A	<ul style="list-style-type: none"> TCM does not receive the proper voltage signal from the sensor. TCM detects an irregularity only at position of 4GR for input speed sensor 2. 	P0717	TM-110
OUTPUT SPEED SENSOR	<ul style="list-style-type: none"> Signal from output speed not input due to cut line or the like Unexpected signal input during running After ignition switch is turned ON, irregular vehicle speed signal input from combination meter before the vehicle starts moving 	P0720	TM-112
ENGINE SPEED	<ul style="list-style-type: none"> TCM does not receive the CAN communication signal from the ECM. 	P0725	TM-115
1GR INCORRECT RATIO	<ul style="list-style-type: none"> A/T cannot shift to 1GR 	P0731	TM-118
2GR INCORRECT RATIO	<ul style="list-style-type: none"> A/T cannot shift to 2GR 	P0732	TM-120
3GR INCORRECT RATIO	<ul style="list-style-type: none"> A/T cannot shift to 3GR 	P0733	TM-122
4GR INCORRECT RATIO	<ul style="list-style-type: none"> A/T cannot shift to 4GR 	P0734	TM-124
5GR INCORRECT RATIO	<ul style="list-style-type: none"> A/T cannot shift to 5GR 	P0735	TM-126

DIAGNOSIS SYSTEM (TCM)

< FUNCTION DIAGNOSIS >

[5AT: RE5R05A]

Items (CONSULT-III screen terms)	Malfunction is detected when...	TCM self-diagnosis	Reference page
		"TRANSMISSION" with CONSULT-III	
TORQUE CONVERTER	<ul style="list-style-type: none"> Normal voltage not applied to solenoid due to cut line, short, or the like 	P0740	TM-127
TORQUE CONVERTER	<ul style="list-style-type: none"> A/T cannot perform lock-up even if electrical circuit is good. TCM detects as irregular by comparing difference value with slip rotation. 	P0744	TM-129
PC SOLENOID A	<ul style="list-style-type: none"> Normal voltage not applied to solenoid due to cut line, short, or the like TCM detects as irregular by comparing target value with monitor value. 	P0745	TM-131
TP SENSOR	<ul style="list-style-type: none"> TCM does not receive the proper accelerator pedal position signals (input by CAN communication) from ECM. 	P1705	TM-133
TRANS FLUID TEMP SEN	<ul style="list-style-type: none"> During running, the ATF temperature sensor signal voltage is excessively high or low 	P1710	TM-135
VEHICLE SPEED SIGNAL	<ul style="list-style-type: none"> Signal (CAN communication) from vehicle speed signal not input due to cut line or the like Unexpected signal input during running 	P1721	TM-137
INTERLOCK	<ul style="list-style-type: none"> Except during shift change, the gear position and ATF pressure switch states are monitored and comparative judgment made. 	P1730	TM-139
1ST E/BRAKING	<ul style="list-style-type: none"> Each ATF pressure switch and solenoid current is monitored and if a pattern is detected having engine braking 1GR other than in the "1" position, a malfunction is detected. 	P1731	TM-141
INPUT CLUTCH SOL	<ul style="list-style-type: none"> Normal voltage not applied to solenoid due to functional malfunction, cut line, short, or the like TCM detects as irregular by comparing target value with monitor value. 	P1752	TM-143
FR BRAKE SOLENOID	<ul style="list-style-type: none"> Normal voltage not applied to solenoid due to functional malfunction, cut line, short, or the like TCM detects as irregular by comparing target value with monitor value. 	P1757	TM-145
DRCT CLUTCH SOL	<ul style="list-style-type: none"> Normal voltage not applied to solenoid due to cut line, short, or the like TCM detects as irregular by comparing target value with monitor value. 	P1762	TM-147
HLR CLUTCH SOLENOID	<ul style="list-style-type: none"> Normal voltage not applied to solenoid due to functional malfunction, cut line, short, or the like TCM detects as irregular by comparing target value with monitor value. 	P1767	TM-149
L C BRAKE SOLENOID	<ul style="list-style-type: none"> Normal voltage not applied to solenoid due to functional malfunction, cut line, short, or the like 	P1772	TM-151
L C BRAKE SOLENOID	<ul style="list-style-type: none"> TCM detects an improper voltage drop when it tries to operate the solenoid valve. Condition of ATF pressure switch 2 is different from monitor value, and relation between gear position and actual gear ratio is irregular. 	P1774	TM-153
NODTC IS DETECTED FURTHER TESTING MAY BE REQUIRED	<ul style="list-style-type: none"> No NG item has been detected. 	X	—

DATA MONITOR MODE

Display Items List

DIAGNOSIS SYSTEM (TCM)

< FUNCTION DIAGNOSIS >

[5AT: RE5R05A]

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

Monitored item (Unit)	Monitor Item Selection			Remarks
	ECU IN-PUT SIG-NALS	MAIN SIG-NALS	SELEC-TION FROM MENU	
VHCL/S SE-A/T (km/h or mph)	X	X	▼	Output speed sensor
VHCL/S SE-MTR (km/h or mph)	X	—	▼	
ACCELE POSI (0.0/8)	X	—	▼	Accelerator pedal position signal
THROTTLE POSI (0.0/8)	X	X	▼	Degree of opening for accelerator recognized by the TCM For fail-safe operation, the specific value used for control is displayed.
CLSD THL POS (ON-OFF display)	X	—	▼	Signal input with CAN communications
W/O THL POS (ON-OFF display)	X	—	▼	
BRAKESW (ON-OFF display)	X	—	▼	Stop lamp switch
GEAR	—	X	▼	Gear position recognized by the TCM updated after gear-shifting
ENGINE SPEED (rpm)	X	X	▼	
INPUT SPEED (rpm)	X	X	▼	
OUTPUT REV (rpm)	X	X	▼	
GEAR RATIO	—	X	▼	
TC SLIP SPEED (rpm)	—	X	▼	Difference between engine speed and torque converter input shaft speed
F SUN GR REV (rpm)	—	—	▼	
F CARR GR REV (rpm)	—	—	▼	
ATF TEMP SE 1 (V)	X	—	▼	
ATF TEMP 1 (°C)	—	X	▼	
ATF TEMP 2 (°C)	—	X	▼	
BATTERY VOLT (V)	X	—	▼	
ATF PRES SW 1 (ON-OFF display)	X	X	▼	
ATF PRES SW 2 (ON-OFF display)	X	X	▼	(for LC/B solenoid)
ATF PRES SW 3 (ON-OFF display)	X	X	▼	
ATF PRES SW 5 (ON-OFF display)	X	X	▼	
ATF PRES SW 6 (ON-OFF display)	X	X	▼	
RANGE SW 1 (ON-OFF display)	X	—	▼	
RANGE SW 2 (ON-OFF display)	X	—	▼	
RANGE SW 3 (ON-OFF display)	X	—	▼	
RANGE SW 4 (ON-OFF display)	X	—	▼	
1 POSITION SW (ON-OFF display)	X	—	▼	1st position switch
SLCT LVR POSI	—	X	▼	Selector lever position is recognized by the TCM. For fail-safe operation, the specific value used for control is displayed.
OD CONT SW (ON-OFF display)	X	—	▼	

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DIAGNOSIS SYSTEM (TCM)

< FUNCTION DIAGNOSIS >

[5AT: RE5R05A]

Monitored item (Unit)	Monitor Item Selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
POWERSHIFT SW (ON-OFF display)	X	—	▼	Not mounted but displayed.
HOLD SW (ON-OFF display)	X	—	▼	
DS RANGE (ON-OFF display)	—	—	▼	
MANU MODE SW (ON-OFF display)	X	—	▼	
NON M-MODE SW (ON-OFF display)	X	—	▼	
UP SW LEVER (ON-OFF display)	X	—	▼	
DOWN SW LEVER (ON-OFF display)	X	—	▼	
SFT UP ST SW (ON-OFF display)	—	—	▼	
SFT DWN ST SW (ON-OFF display)	—	—	▼	
ASCD-OD CUT (ON-OFF display)				
ASCD-CRUISE (ON-OFF display)	—	—	▼	
ABS SIGNAL (ON-OFF display)	—	—	▼	
ACC OD CUT (ON-OFF display)	—	—	▼	Not mounted but displayed.
ACC SIGNAL (ON-OFF display)	—	—	▼	
TCS GR/P KEEP (ON-OFF display)	—	—	▼	
TCS SIGNAL 2 (ON-OFF display)	—	—	▼	
TCS SIGNAL 1 (ON-OFF display)	—	—	▼	
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 display)	—	—	▼	LC/B solenoid
TCC SOL MON (A)	—	—	▼	
L/P SOL MON (A)	—	—	▼	
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 display)	—	—	▼	LC/B solenoid
P POSI IND (ON-OFF display)	—	—	▼	
R POSI IND (ON-OFF display)	—	—	▼	
N POSI IND (ON-OFF display)	—	—	▼	
D POSI IND (ON-OFF display)	—	—	▼	

DIAGNOSIS SYSTEM (TCM)

< FUNCTION DIAGNOSIS >

[5AT: RE5R05A]

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

DTC & SRT CONFIRMATION

DTC Work Support Mode

DIAGNOSIS SYSTEM (TCM)

< FUNCTION DIAGNOSIS >

[5AT: RE5R05A]

DTC work support item	Description	Check item
1ST GR FNCTN P0731	Following items for "1GR incorrect ratio" can be confirmed. <ul style="list-style-type: none"> • Self-diagnosis status (whether the diagnosis is being performed or not) • Self-diagnostic results (OK or NG) 	<ul style="list-style-type: none"> • Input clutch solenoid valve • Front brake solenoid valve • Direct clutch solenoid valve • High and low reverse clutch solenoid valve • Each clutch and brake • Hydraulic control circuit
2ND GR FNCTN P0732	Following items for "2GR incorrect ratio" can be confirmed. <ul style="list-style-type: none"> • Self-diagnosis status (whether the diagnosis is being performed or not) • Self-diagnostic results (OK or NG) 	
3RD GR FNCTN P0733	Following items for "3GR incorrect ratio" can be confirmed. <ul style="list-style-type: none"> • Self-diagnosis status (whether the diagnosis is being performed or not) • Self-diagnostic results (OK or NG) 	
4TH GR FNCTN P0734	Following items for "4GR incorrect ratio" can be confirmed. <ul style="list-style-type: none"> • Self-diagnosis status (whether the diagnosis is being performed or not) • Self-diagnostic results (OK or NG) 	
5TH GR FNCTN P0735	Following items for "5GR incorrect ratio" can be confirmed. <ul style="list-style-type: none"> • Self-diagnosis status (whether the diagnosis is being performed or not) • Self-diagnostic results (OK or NG) 	

Diagnosis Procedure without CONSULT-III

INFOID:000000005280594

⊗ TCM SELF-DIAGNOSTIC PROCEDURE (WITHOUT CONSULT-III)

Description

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

Diagnostic Procedure

1. CHECK O/D 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 O/D OFF indicator lamp come on for about 2 seconds?

YES >> GO TO 2.

NO >> Go to [TM-178. "Symptom Chart"](#).

2. JUDGMENT PROCEDURE STEP 1

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

>> GO TO 3.

3. CHECK SELF-DIAGNOSIS CODE

Check O/D OFF indicator lamp.

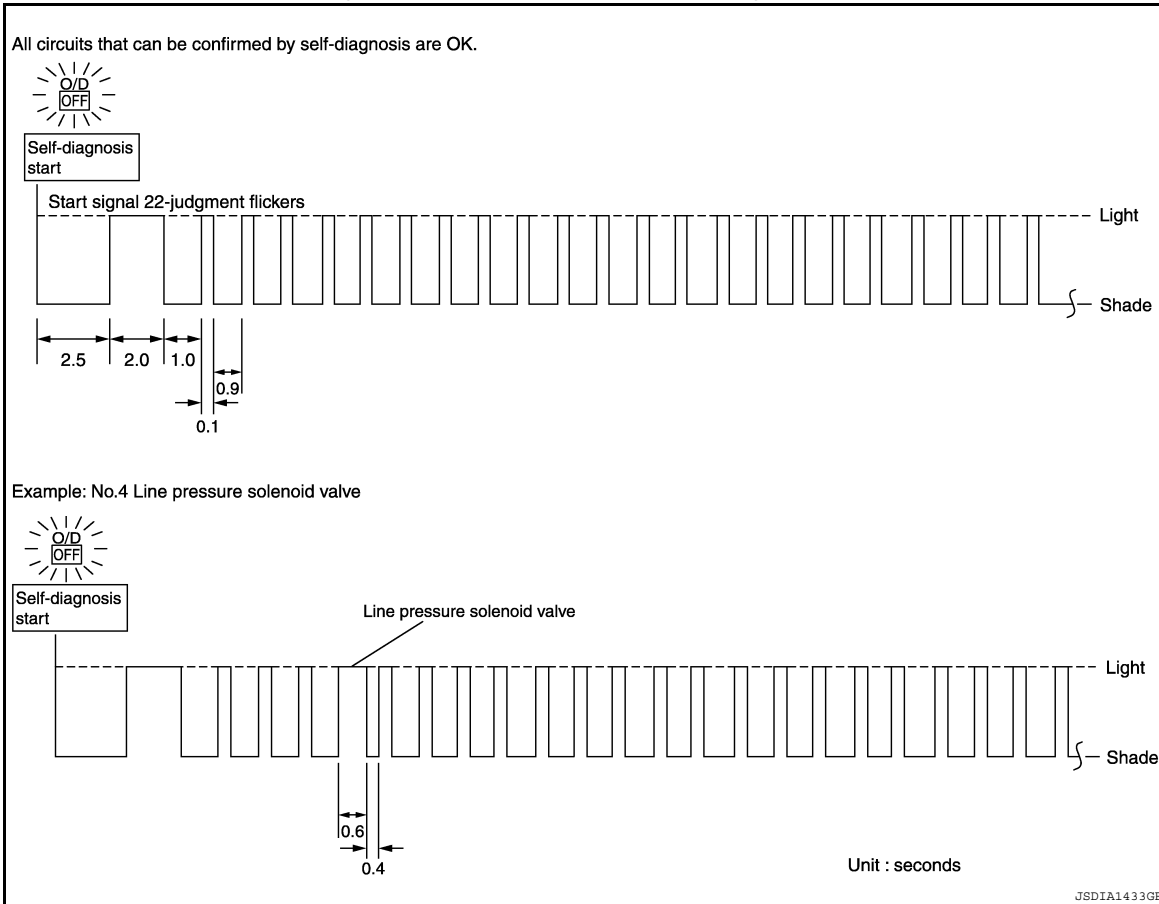
Refer to "Judgment Self-diagnosis Code".

If the system does not go into self-diagnostics. Refer to [TM-108. "Diagnosis Procedure"](#), [TM-157. "Diagnosis Procedure"](#), [TM-158. "Diagnosis Procedure"](#).

>> DIAGNOSIS END

Judgment Self-diagnosis Code

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



No.	Malfunctioning item	No.	Malfunctioning item
1	Output speed sensor TM-112	12	Interlock TM-139
2	Direct clutch solenoid TM-147	13	1st engine braking TM-141
3	Torque converter TM-127 , TM-129	14	Starter relay TM-104
4	Line pressure solenoid TM-131	15	TP sensor TM-133
5	Input clutch solenoid TM-143	16	Engine speed TM-115
6	Front brake solenoid TM-145	17	CAN communication line TM-103
7	Low coast brake solenoid TM-151 , TM-153	18	1GR incorrect ratio TM-117
8	High and low reverse clutch solenoid TM-149	19	2GR incorrect ratio TM-119
9	Transmission range switch TM-108	20	3GR incorrect ratio TM-121
10	Transmission fluid temperature sensor TM-135	21	4GR incorrect ratio TM-123
11	Input speed sensor TM-110	22	5GR incorrect ratio TM-125

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.

DIAGNOSIS SYSTEM (TCM)

< FUNCTION DIAGNOSIS >

[5AT: RE5R05A]

-
- However, this information is erased by turning ignition switch OFF after executing self-diagnostics or by erasing the memory using the CONSULT-III.

COMPONENT DIAGNOSIS

U1000 CAN COMM CIRCUIT

Description

INFOID:000000005280595

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

On Board Diagnosis Logic

INFOID:000000005280596

Diagnostic trouble code "U1000" with CONSULT-III or 17th judgment flicker without CONSULT-III is detected when TCM cannot communicate to other control units.

Possible Cause

INFOID:000000005280597

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

DTC Confirmation Procedure

INFOID:000000005280598

NOTE:

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

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

WITH CONSULT-III

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
3. Start engine and wait for at least 6 seconds.
4. If DTC is detected, go to [TM-103, "Diagnosis Procedure"](#).

WITHOUT CONSULT-III

1. Perform self-diagnosis. Refer to [TM-100, "Diagnosis Procedure without CONSULT-III"](#).
2. If the check result is NG, go to [TM-103, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000005280599

1. CHECK CAN COMMUNICATION CIRCUIT

With CONSULT-III

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

Is "U1000" detected?

- YES >> Go to LAN section. Refer to [LAN-13, "How to Use CAN Communication Signal Chart"](#).
 NO >> **INSPECTION END**

P0615 STARTER RELAY

< COMPONENT DIAGNOSIS >

[5AT: RE5R05A]

P0615 STARTER RELAY

Description

INFOID:000000005280600

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

CONSULT-III Reference Value in Data Monitor Mode

INFOID:000000005280601

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

On Board Diagnosis Logic

INFOID:000000005280602

Diagnostic trouble code "P0615" with CONSULT-III or 14th judgment flicker without CONSULT-III is detected when starter relay is switched "ON" other than at "P" or "N" position. (Or when switched "OFF" at "P" or "N" position).

Possible Cause

INFOID:000000005280603

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

DTC Confirmation Procedure

INFOID:000000005280604

NOTE:

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

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

☐ WITH CONSULT-III

1. Shift selector lever to "P" or "N" position.
2. Turn ignition switch ON and wait for at least 2 seconds.
3. Select "SELF-DIAG RESULTS" mode for "TRANSMISSION" with CONSULT-III.
4. If DTC is detected, go to [TM-104, "Diagnosis Procedure"](#).

⊗ WITHOUT CONSULT-III

1. Start engine.
2. Drive vehicle for at least 2 consecutive seconds.
3. Perform self-diagnosis. Refer to [TM-100, "Diagnosis Procedure without CONSULT-III"](#).
4. If the check result is NG, go to [TM-104, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000005280605

1. CHECK STARTER RELAY

☐ With CONSULT-III

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

⊗ Without CONSULT-III

1. Turn ignition switch ON. (Do not start engine.)

P0615 STARTER RELAY

[5AT: RE5R05A]

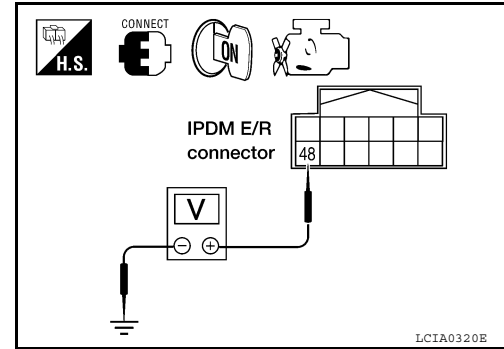
< COMPONENT DIAGNOSIS >

2. Check voltage between the IPDM E/R connector and ground.

Item	Connector	Terminal	Shift position	Voltage (Approx.)
Starter relay	E122	48	Ground	Battery voltage
			"N" and "P"	0V

OK or NG

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



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

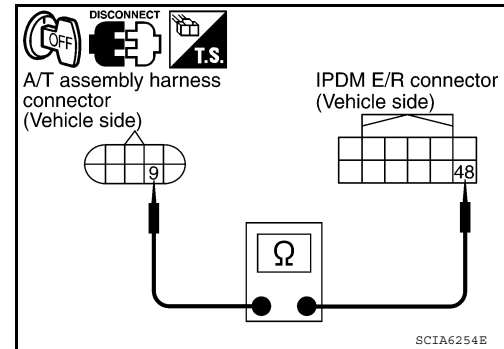
1. Turn ignition switch OFF.
2. Disconnect A/T assembly harness connector and IPDM E/R connector.
3. Check continuity between A/T assembly harness connector and IPDM E/R connector.

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

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

OK or NG

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



3. CHECK TERMINAL CORD ASSEMBLY

1. Remove control valve with TCM. Refer to [TM-220, "Removal and Installation"](#).
2. Disconnect A/T assembly harness connector and TCM connector.
3. Check continuity between A/T assembly harness connector terminal and TCM connector terminal.

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

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

OK or NG

- 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 [STR-4](#).
- IPDM E/R, Refer to [PCS-6](#).

OK or NG

- OK >> Replace the control valve with TCM. Refer to [TM-220, "Removal and Installation"](#).
- NG >> Repair or replace damaged parts.

5. CHECK DTC

Perform [TM-104, "DTC Confirmation Procedure"](#).

OK or NG

- OK >> **INSPECTION END**

P0615 STARTER RELAY

< COMPONENT DIAGNOSIS >

[5AT: RE5R05A]

NG >> GO TO 2.

P0700 TRANSMISSION CONTROL

< COMPONENT DIAGNOSIS >

[5AT: RE5R05A]

P0700 TRANSMISSION CONTROL

Description

INFOID:000000005280606

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

On Board Diagnosis Logic

INFOID:000000005280607

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

Possible Cause

INFOID:000000005280608

TCM.

DTC Confirmation Procedure

INFOID:000000005280609

NOTE:

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

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

④ WITH CONSULT-III

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
3. Start engine.
4. Run engine for at least 2 consecutive seconds at idle speed.
5. If DTC is detected, go to [TM-107, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000005280610

1. CHECK DTC

④ With CONSULT-III

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "SELF DIAG RESULTS" mode for "TRANSMISSION" with CONSULT-III.
3. Touch "ERASE".
4. Turn ignition switch "OFF" and wait at least 10 seconds.
5. Perform [TM-107, "DTC Confirmation Procedure"](#).

Is the "P0700" displayed again?

- YES >> Replace the control valve with TCM. Refer to [TM-220, "Removal and Installation"](#).
- NO >> **INSPECTION END**

P0705 TRANSMISSION RANGE SWITCH A

< COMPONENT DIAGNOSIS >

[5AT: RE5R05A]

P0705 TRANSMISSION RANGE SWITCH A

Description

INFOID:000000005280611

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

CONSULT-III Reference Value in Data Monitor Mode

INFOID:000000005280612

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

On Board Diagnosis Logic

INFOID:000000005280613

Diagnostic trouble code "P0705" with CONSULT-III or 9th judgment flicker without CONSULT-III is detected under the following conditions.

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

Possible Cause

INFOID:000000005280614

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

DTC Confirmation Procedure

INFOID:000000005280615

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

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

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

☐ WITH CONSULT-III

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
3. Start engine.
4. Drive vehicle and maintain the following conditions for at least 2 consecutive seconds.
ACCELE POSI: More than 1.0/8
5. If DTC is detected, go to [TM-108, "Diagnosis Procedure"](#).

☒ WITHOUT CONSULT-III

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 [TM-100, "Diagnosis Procedure without CONSULT-III"](#).
4. If the check result is NG, go to [TM-108, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000005280616

1. CHECK TRANSMISSION RANGE SW CIRCUIT

☐ With CONSULT-III

1. Turn ignition switch ON. (Do not start engine.)

P0705 TRANSMISSION RANGE SWITCH A

[5AT: RE5R05A]

< COMPONENT DIAGNOSIS >

2. Select "SELECTION FROM MENU" in "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
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.

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 [TM-155, "Diagnosis Procedure"](#).

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.

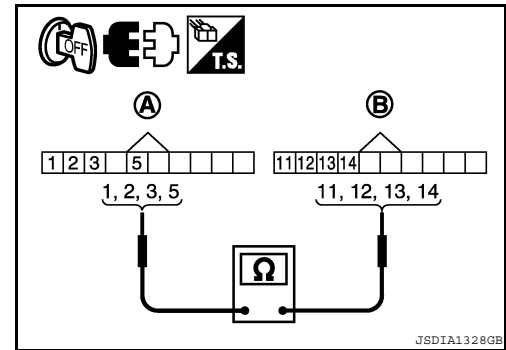
OK or NG

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

4.CHECK SUB-HARNESS

1. Remove control valve with TCM. Refer to [TM-220, "Removal and Installation"](#).
2. Disconnect transmission range switch connector and TCM connector.
3. Check continuity between transmission range switch connector (A) terminals and TCM connector (B) terminals.

Item	Connector	Terminal	Continuity
Transmission range switch connector	F505	1	Yes
TCM connector	F503	13	
Transmission range switch connector	F505	2	Yes
TCM connector	F503	11	
Transmission range switch connector	F505	3	Yes
TCM connector	F503	12	
Transmission range switch connector	F505	5	Yes
TCM connector	F503	14	



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

OK or NG

- OK >> Replace the control valve with TCM. Refer to [TM-220, "Removal and Installation"](#).
- NG >> Replace open circuit or short to ground and short to power in harness or connectors.

5.CHECK DTC

Perform "DTC Confirmation Procedure".

- Refer to [TM-108, "DTC Confirmation Procedure"](#).

OK or NG

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

P0717 INPUT SPEED SENSOR A

< COMPONENT DIAGNOSIS >

[5AT: RE5R05A]

P0717 INPUT SPEED SENSOR A

Description

INFOID:000000005280617

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

CONSULT-III Reference Value in Data Monitor Mode

INFOID:000000005280618

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

On Board Diagnosis Logic

INFOID:000000005280619

Diagnostic trouble code "P0717" with CONSULT-III or 11th judgment flicker without CONSULT-III is detected under the following conditions.

- When TCM does not receive the proper voltage signal from the sensor.
- When TCM detects an irregularity only at position of 4GR for input speed sensor 2.

Possible Cause

INFOID:000000005280620

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

DTC Confirmation Procedure

INFOID:000000005280621

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-III

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
3. Start engine 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: 0.5/8 or more
SLCT LVR POSI: "D" position
GEAR (Input speed sensor 1): 4th or 5th position
GEAR (Input speed sensor 2): All position
Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.
4. If DTC is detected, go to [TM-111, "Diagnosis Procedure"](#).

⊗ WITHOUT CONSULT-III

1. Start engine.
2. Drive vehicle under the following conditions:
Selector lever "D" position, vehicle speed higher than 40 km/h (25 MPH), engine speed more than 1,500 rpm, throttle opening greater than 0.5/8 of the full throttle position and driving for at least 5 consecutive seconds.
Gear position (Input speed sensor 1): 4th position
Gear position (Input speed sensor 2): All 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 [TM-100, "Diagnosis Procedure without CONSULT-III"](#).
4. If the check result is NG, go to [TM-111, "Diagnosis Procedure"](#).

P0717 INPUT SPEED SENSOR A

< COMPONENT DIAGNOSIS >

[5AT: RE5R05A]

Diagnosis Procedure

INFOID:000000005280622

1. CHECK INPUT SIGNAL

With CONSULT-III

1. Start engine.
2. Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
3. Vehicle start and read out the value of "INPUT SPEED".

OK or NG

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

2. CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit. Refer to [TM-155, "Diagnosis Procedure"](#).

OK or NG

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

3. DETECT MALFUNCTIONING ITEM

Check the following.

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

OK or NG

- OK >> Replace the control valve with TCM. Refer to [TM-220, "Removal and Installation"](#).
- NG >> Repair or replace damaged parts.

4. CHECK DTC

Perform "DTC Confirmation Procedure".

- Refer to [TM-110, "DTC Confirmation Procedure"](#).

OK or NG

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

A
B
C
TM
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L
M
N
O
P

P0720 OUTPUT SPEED SENSOR

< COMPONENT DIAGNOSIS >

[5AT: RE5R05A]

P0720 OUTPUT SPEED SENSOR

Description

INFOID:000000005280623

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

CONSULT-III Reference Value in Data Monitor Mode

INFOID:000000005280624

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

On Board Diagnosis Logic

INFOID:000000005280625

Diagnostic trouble code "P0720" with CONSULT-III or 1st judgment flicker without CONSULT-III is detected under the following conditions.

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

Possible Cause

INFOID:000000005280626

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

DTC Confirmation Procedure

INFOID:000000005280627

CAUTION:

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

NOTE:

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

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

Ⓟ WITH CONSULT-III

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
3. Drive vehicle and check for an increase of "VHCL/S SE-A/T" value in response to "VHCL/S SE-MTR" value.
If the check result is NG, go to [TM-113, "Diagnosis Procedure"](#).
If the check result is OK, go to following step.
4. Select "DATA MONITOR" mode for "ENGINE" with CONSULT-III.
5. Start engine 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 [TM-113, "Diagnosis Procedure"](#).
If the check result is OK, go to following step.
6. Maintain the following conditions for at least 5 consecutive seconds.
ENGINE SPEED: 3,500 rpm or more
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 [TM-113, "Diagnosis Procedure"](#).

P0720 OUTPUT SPEED SENSOR

< COMPONENT DIAGNOSIS >

[5AT: RE5R05A]

⊗ WITHOUT CONSULT-III

1. Start engine.
2. Drive vehicle under the following conditions:
Selector lever "D" position, vehicle speed higher than 30 km/h (19 MPH), throttle opening greater than 1/8 of the full throttle position and driving for at least 5 consecutive seconds.
3. Perform self-diagnosis. Refer to [TM-100, "Diagnosis Procedure without CONSULT-III"](#).
4. If the check result is NG, go to [TM-113, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000005280628

1. CHECK INPUT SIGNAL

Ⓜ With CONSULT-III

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

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 [TM-155, "Diagnosis Procedure"](#).

OK or NG

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

3. DETECT MALFUNCTIONING ITEM

Check the following.

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

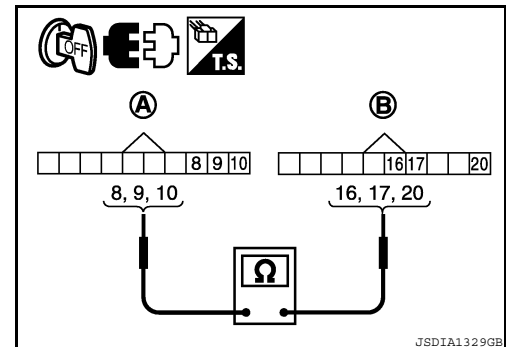
OK or NG

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

4. CHECK SUB-HARNESS

1. Remove control valve with TCM. Refer to [TM-220, "Removal and Installation"](#).
2. Disconnect transmission range switch connector and TCM connector.
3. Check continuity between transmission range switch connector (A) terminals and TCM connector (B) terminals.

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



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

OK or NG

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

P0720 OUTPUT SPEED SENSOR

< COMPONENT DIAGNOSIS >

[5AT: RE5R05A]

5. REPLACE THE OUTPUT SPEED SENSOR AND CHECK DTC

1. Replace the output speed sensor. Refer to [TM-245](#).
2. Perform "DTC Confirmation Procedure". Refer to [TM-112, "DTC Confirmation Procedure"](#).

OK or NG

OK >> **INSPECTION END**

NG >> Replace the control valve with TCM. Refer to [TM-220, "Removal and Installation"](#).

6. CHECK DTC

Perform "DTC Confirmation Procedure".

- Refer to [TM-112, "DTC Confirmation Procedure"](#).

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 2.

P0725 ENGINE SPEED

< COMPONENT DIAGNOSIS >

[5AT: RE5R05A]

P0725 ENGINE SPEED

Description

INFOID:000000005280629

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

CONSULT-III Reference Value in Data Monitor Mode

INFOID:000000005280630

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

On Board Diagnosis Logic

INFOID:000000005280631

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

Possible Cause

INFOID:000000005280632

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

DTC Confirmation Procedure

INFOID:000000005280633

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

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

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

☐ WITH CONSULT-III

1. Turn ignition switch "ON" and select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
2. Start engine 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 1/8
SLCT LVR POSI: "D" position
3. If DTC is detected, go to [TM-115, "Diagnosis Procedure"](#).

☒ WITHOUT CONSULT-III

1. Start engine.
2. Drive vehicle under the following condition:
Selector lever "D" position, vehicle speed higher than 10 km/h (6 MPH), throttle opening greater than 1/8 of the full throttle position and driving for at least 10 consecutive seconds.
3. Perform self-diagnosis. Refer to [TM-100, "Diagnosis Procedure without CONSULT-III"](#).
4. If the check result is NG, go to [TM-115, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000005280634

1. CHECK CAN COMMUNICATION LINE

Perform the self-diagnosis. Refer to [TM-95, "CONSULT-III Function \(TRANSMISSION\)"](#).

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

- YES >> Check CAN communication line. Refer to [TM-103](#).
NO >> GO TO 2.

2. CHECK DTC WITH TCM

☐ With CONSULT-III

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

P0725 ENGINE SPEED

[5AT: RE5R05A]

< COMPONENT DIAGNOSIS >

Is the inspection result normal?

- YES >> GO TO 3.
NO >> Check the ignition signal circuit.
• Refer to [TM-115, "Diagnosis Procedure"](#).

3.CHECK DTC

Perform "DTC Confirmation Procedure".

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

Is the inspection result normal?

- YES >> **INSPECTION END**
NO >> GO TO 4.

4.CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit. Refer to [TM-155, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES >> GO TO 5.
NO >> Repair or replace damaged parts.

5.DETECT MALFUNCTIONING ITEM

Check the following.

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

Is the inspection result normal?

- YES >> Replace the control valve with TCM. Refer to [TM-220, "Removal and Installation"](#).
NO >> Repair or replace damaged parts.

P0731 1GR INCORRECT RATIO

< COMPONENT DIAGNOSIS >

[5AT: RE5R05A]

P0731 1GR INCORRECT RATIO

Description

INFOID:000000005280635

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

On Board Diagnosis Logic

INFOID:000000005280636

Diagnostic trouble code "P0731" with CONSULT-III or 18th judgment flicker without CONSULT-III is detected when TCM detects any inconsistency in the actual gear ratio.

Possible Cause

INFOID:000000005280637

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

DTC Confirmation Procedure

INFOID:000000005280638

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

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

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

Ⓜ WITH CONSULT-III

1. Start the engine and select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
2. Make sure that "ATF TEMP 1" is within the following range.
ATF TEMP 1: 20°C – 180°C
If out of range, drive vehicle to warm ATF or stop engine to cool ATF.
3. Select "1ST GR FNCTN P0731" of "DTC & SRT CONFIRMATION" mode for "TRANSMISSION" with CONSULT-III.
4. Drive vehicle and maintain the following conditions.
SLCT LVR POSI: "1" position
GEAR: "1" position
ACCELE POSI: 0.6/8 or more
VEHICLE SPEED: 10 km/h (6 MPH) or more
ENGINE SPEED: INPUT SPEED – 50 rpm or more
INPUT SPEED: 300 rpm or more
5. Keep the current driving status for at least 5 consecutive seconds if CONSULT-III screen changes from "OUT OF CONDITION" to "TESTING".
CAUTION:
If "TESTING" does not appear on CONSULT-III for a long time, select "SELF-DIAG RESULTS". In case a 1st trip DTC other than P0731 is shown, refer to [TM-95, "CONSULT-III Function \(TRANSMISSION\)"](#).
If "COMPLETED RESULT NG" is detected, go to [TM-117, "Possible Cause"](#).
If "STOP VEHICLE" is detected, go to the following step.
6. Stop vehicle.
7. Drive vehicle in "D" position allowing it to shift from 1GR to 5GR and check shift timing and shift shock.
 - Touch "OK" to complete the inspection when normally shifted from the 1GR to 5GR.
 - Touch "NG" when an unusual shift shock, etc. occurs in spite of shifting from the 1GR to 5GR. Go to [TM-211, "Check Before Engine Is Started"](#).
 - Perform [TM-95, "CONSULT-III Function \(TRANSMISSION\)"](#) when not shifted from the 1GR to 5GR. (Neither "OK" nor "NG" are indicated.)

ⓧ WITHOUT CONSULT-III

1. Start engine.

P0731 1GR INCORRECT RATIO

< COMPONENT DIAGNOSIS >

[5AT: RE5R05A]

2. Drive vehicle under the following conditions:
Selector lever "1" position, gear position "1st", vehicle speed higher than 10 km/h (6 MPH), throttle opening greater than 0.6/8 of the full throttle position and driving for at least 5 consecutive seconds.
3. Perform self-diagnosis. Refer to [TM-100, "Diagnosis Procedure without CONSULT-III"](#).
4. If the check result is NG, go to [TM-117, "Possible Cause"](#).

Diagnosis Procedure

INFOID:000000005280639

1. CHECK CAN COMMUNICATION LINE

Perform self-diagnosis. Refer to [TM-95, "CONSULT-III Function \(TRANSMISSION\)"](#), [TM-100, "Diagnosis Procedure without CONSULT-III"](#).

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

- YES >> Check CAN communication line. Refer to [TM-103, "Diagnosis Procedure"](#).
- NO >> GO TO 2.

2. CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit. Refer to [TM-155, "Diagnosis Procedure"](#).

OK or NG

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

3. DETECT MALFUNCTION ITEM

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

OK or NG

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

4. REPLACE CONTROL VALVE WITH TCM

1. Replace control valve with TCM. Refer to [TM-220, "Removal and Installation"](#).
2. Perform [TM-117, "DTC Confirmation Procedure"](#).

OK or NG

- OK >> **INSPECTION END**
- NG >> Confirm malfunction phenomena by "ROAD TEST" to repair malfunctioning part. Refer to [TM-211, "Check Before Engine Is Started"](#).

P0732 2GR INCORRECT RATIO

< COMPONENT DIAGNOSIS >

[5AT: RE5R05A]

P0732 2GR INCORRECT RATIO

Description

INFOID:000000005280640

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

On Board Diagnosis Logic

INFOID:000000005280641

Diagnostic trouble code "P0732" with CONSULT-III or 19th judgment flicker without CONSULT-III is detected when TCM detects any inconsistency in the actual gear ratio.

Possible Cause

INFOID:000000005280642

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

DTC Confirmation Procedure

INFOID:000000005280643

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

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

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

Ⓟ WITH CONSULT-III

1. Start the engine and select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
2. Make sure that "ATF TEMP 1" is within the following range.
ATF TEMP 1: 20°C – 180°C
If out of range, drive vehicle to warm ATF or stop engine to cool ATF.
3. Select "2ND GR FNCTN P0732" of "DTC & SRT CONFIRMATION" mode for "TRANSMISSION" with CONSULT-III.
4. Drive vehicle and maintain the following conditions.
SLCT LVR POSI: "2" position
GEAR: "2" position
ACCELE POSI: 0.6/8 or more
VEHICLE SPEED: 10 km/h (6 MPH) or more
ENGINE SPEED: INPUT SPEED – 50 rpm or more
INPUT SPEED: 300 rpm or more
5. Keep the current driving status for at least 5 consecutive seconds if CONSULT-III screen changes from "OUT OF CONDITION" to "TESTING".
CAUTION:
If "TESTING" does not appear on CONSULT-III for a long time, select "SELF-DIAG RESULTS". In case a 1st trip DTC other than P0732 is shown, refer to "TM-95. "CONSULT-III Function (TRANSMISSION)".
If "COMPLETED RESULT NG" is detected, go to [TM-119. "Possible Cause"](#).
If "STOP VEHICLE" is detected, go to the following step.
6. Stop vehicle.
7. Drive vehicle in "D" position allowing it to shift from 1GR to 5GR gear and check shift timing and shift shock.
 - Touch "OK" to complete the inspection when normally shifted from the 1GR to 5GR.
 - Touch "NG" when an unusual shift shock, etc. occurs in spite of shifting from the 1GR to 5GR. Go to [TM-211. "Check Before Engine Is Started"](#).
 - Perform [TM-95. "CONSULT-III Function \(TRANSMISSION\)"](#) when not shifted from the 1GR to 5GR. (Neither "OK" nor "NG" are indicated.)

Ⓧ WITHOUT CONSULT-III

P0732 2GR INCORRECT RATIO

< COMPONENT DIAGNOSIS >

[5AT: RE5R05A]

1. Start engine.
2. Drive vehicle under the following conditions:
Selector lever "2" position, gear position "2nd", vehicle speed higher than 10 km/h (6 MPH), throttle opening greater than 0.6/8 of the full throttle position and driving for at least 5 consecutive seconds.
3. Perform self-diagnosis. Refer to [TM-100, "Diagnosis Procedure without CONSULT-III"](#).
4. If the check result is NG, go to [TM-119, "Possible Cause"](#).

Diagnosis Procedure

INFOID:000000005280644

1. CHECK CAN COMMUNICATION LINE

Perform self-diagnosis. Refer to [TM-95, "CONSULT-III Function \(TRANSMISSION\)"](#), [TM-100, "Diagnosis Procedure without CONSULT-III"](#).

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

YES >> Check CAN communication line. Refer to [TM-103, "Diagnosis Procedure"](#).

NO >> GO TO 2.

2. CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit. Refer to [TM-155, "Diagnosis Procedure"](#).

OK or NG

OK >> GO TO 3.

NG >> Repair or replace damaged parts.

3. DETECT MALFUNCTION ITEM

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

OK or NG

OK >> GO TO 4.

NG >> Repair or replace damaged parts.

4. REPLACE CONTROL VALVE WITH TCM

1. Replace control valve with TCM. Refer to [TM-220, "Removal and Installation"](#).

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

OK or NG

OK >> **INSPECTION END**

NG >> Confirm malfunction phenomena by "ROAD TEST" to repair malfunctioning part. Refer to [TM-211, "Check Before Engine Is Started"](#).

P0733 3GR INCORRECT RATIO

< COMPONENT DIAGNOSIS >

[5AT: RE5R05A]

P0733 3GR INCORRECT RATIO

Description

INFOID:000000005280645

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

On Board Diagnosis Logic

INFOID:000000005280646

Diagnostic trouble code "P0733" with CONSULT-III or 20th judgment flicker without CONSULT-III is detected when TCM detects any inconsistency in the actual gear ratio.

Possible Cause

INFOID:000000005280647

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

DTC Confirmation Procedure

INFOID:000000005280648

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

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

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

④ WITH CONSULT-III

1. Start the engine and select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
2. Make sure that "ATF TEMP 1" is within the following range.
ATF TEMP 1: 20°C – 180°C
If out of range, drive vehicle to warm ATF or stop engine to cool ATF.
3. Select "3RD GR FNCTN P0733" of "DTC & SRT CONFIRMATION" mode for "TRANSMISSION" with CONSULT-III.
4. Drive vehicle and maintain the following conditions.
SLCT LVR POSI: "3" position
GEAR: "3" position
ACCELE POSI: 0.6/8 or more
VEHICLE SPEED: 10 km/h (6 MPH) or more
ENGINE SPEED: INPUT SPEED – 50 rpm or more
INPUT SPEED: 300 rpm or more
5. Keep the current driving status for at least 5 consecutive seconds if CONSULT-III screen changes from "OUT OF CONDITION" to "TESTING".
CAUTION:
If "TESTING" does not appear on CONSULT-III for a long time, select "SELF-DIAG RESULTS". In case a 1st trip DTC other than P0733 is shown, refer to "TM-95. "CONSULT-III Function (TRANSMISSION)".
If "COMPLETED RESULT NG" is detected, go to [TM-121, "Possible Cause"](#).
If "STOP VEHICLE" is detected, go to the following step.
6. Stop vehicle.
7. Drive vehicle in "D" position allowing it to shift from 1GR to 5GR and check shift timing and shift shock.
 - Touch "OK" to complete the inspection when normally shifted from the 1GR to 5GR.
 - Touch "NG" when an unusual shift shock, etc. occurs in spite of shifting from the 1GR to 5GR. Go to [TM-211, "Check Before Engine Is Started"](#).
 - Perform [TM-95. "CONSULT-III Function \(TRANSMISSION\)"](#) when not shifted from the 1GR to 5GR. (Neither "OK" nor "NG" are indicated.)

⊗ WITHOUT CONSULT-III

1. Start engine.

P0733 3GR INCORRECT RATIO

< COMPONENT DIAGNOSIS >

[5AT: RE5R05A]

2. Drive vehicle under the following conditions:
Selector lever "3" position, gear position "3rd", vehicle speed higher than 10 km/h (6 MPH), throttle opening greater than 0.6/8 of the full throttle position and driving for at least 5 consecutive seconds.
3. Perform self-diagnosis. Refer to [TM-100. "Diagnosis Procedure without CONSULT-III"](#).
4. If the check result is NG, go to [TM-121. "Possible Cause"](#).

Diagnosis Procedure

INFOID:000000005280649

1. CHECK CAN COMMUNICATION LINE

Perform self-diagnosis. Refer to [TM-95. "CONSULT-III Function \(TRANSMISSION\)"](#), [TM-100. "Diagnosis Procedure without CONSULT-III"](#).

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

- YES >> Check CAN communication line. Refer to [TM-103. "Diagnosis Procedure"](#).
- NO >> GO TO 2.

2. CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit. Refer to [TM-155. "Diagnosis Procedure"](#).

OK or NG

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

3. DETECT MALFUNCTION ITEM

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

OK or NG

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

4. REPLACE CONTROL VALVE WITH TCM

1. Replace control valve with TCM. Refer to [TM-220. "Removal and Installation"](#).
2. Perform [TM-121. "DTC Confirmation Procedure"](#).

OK or NG

- OK >> **INSPECTION END**
- NG >> Confirm malfunction phenomena by "ROAD TEST" to repair malfunctioning part. Refer to [TM-211. "Check Before Engine Is Started"](#).

P0734 4GR INCORRECT RATIO

< COMPONENT DIAGNOSIS >

[5AT: RE5R05A]

P0734 4GR INCORRECT RATIO

Description

INFOID:000000005280650

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

On Board Diagnosis Logic

INFOID:000000005280651

Diagnostic trouble code "P0734" with CONSULT-III or 21th judgment flicker without CONSULT-III is detected when TCM detects any inconsistency in the actual gear ratio.

Possible Cause

INFOID:000000005280652

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

DTC Confirmation Procedure

INFOID:000000005280653

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

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

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

④ WITH CONSULT-III

1. Start the engine and select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
2. Make sure that "ATF TEMP 1" is within the following range.
ATF TEMP 1: 20°C – 180°C
If out of range, drive vehicle to warm ATF or stop engine to cool ATF.
3. Select "4TH GR FNCTN P0734" of "DTC & SRT CONFIRMATION" mode for "TRANSMISSION" with CONSULT-III.
4. Drive vehicle and maintain the following conditions.
SLCT LVR POSI: "D" position
GEAR: "4" position
O/D OFF indicator lamp: ON
ACCELE POSI: 0.6/8 or more
VEHICLE SPEED: 10 km/h (6 MPH) or more
ENGINE SPEED: INPUT SPEED – 50 rpm or more
INPUT SPEED: 300 rpm or more
5. Keep the current driving status for at least 5 consecutive seconds if CONSULT-III screen changes from "OUT OF CONDITION" to "TESTING".
CAUTION:
If "TESTING" does not appear on CONSULT-III for a long time, select "SELF-DIAG RESULTS". In case a 1st trip DTC other than P0734 is shown, refer to "[TM-95. "CONSULT-III Function \(TRANSMISSION\)"](#)".
If "COMPLETED RESULT NG" is detected, go to [TM-123. "Possible Cause"](#).
If "STOP VEHICLE" is detected, go to the following step.
6. Stop vehicle.
7. Drive vehicle in "D" position allowing it to shift from 1GR to 5GR and check shift timing and shift shock.
 - Touch "OK" to complete the inspection when normally shifted from the 1GR to 5GR.
 - Touch "NG" when an unusual shift shock, etc. occurs in spite of shifting from the 1GR to 5GR. Go to [TM-211. "Check Before Engine Is Started"](#).
 - Perform [TM-95. "CONSULT-III Function \(TRANSMISSION\)"](#) when not shifted from the 1GR to 5GR. (Neither "OK" nor "NG" are indicated.)

⊗ WITHOUT CONSULT-III

P0734 4GR INCORRECT RATIO

< COMPONENT DIAGNOSIS >

[5AT: RE5R05A]

1. Start engine.
2. Drive vehicle under the following conditions:
Selector lever "D" position, gear position "4th", vehicle speed higher than 10 km/h (6 MPH), throttle opening greater than 0.6/8 of the full throttle position and driving for at least 5 consecutive seconds.
3. Perform self-diagnosis. Refer to [TM-100, "Diagnosis Procedure without CONSULT-III"](#).
4. If the check result is NG, go to [TM-123, "Possible Cause"](#).

Diagnosis Procedure

INFOID:000000005280654

1. CHECK CAN COMMUNICATION LINE

Perform self-diagnosis. Refer to [TM-95, "CONSULT-III Function \(TRANSMISSION\)"](#), [TM-100, "Diagnosis Procedure without CONSULT-III"](#).

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

YES >> Check CAN communication line. Refer to [TM-103, "Diagnosis Procedure"](#).

NO >> GO TO 2.

2. CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit. Refer to [TM-155, "Diagnosis Procedure"](#).

OK or NG

OK >> GO TO 3.

NG >> Repair or replace damaged parts.

3. DETECT MALFUNCTION ITEM

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

OK or NG

OK >> GO TO 4.

NG >> Repair or replace damaged parts.

4. REPLACE CONTROL VALVE WITH TCM

1. Replace control valve with TCM. Refer to [TM-220, "Removal and Installation"](#).

2. Perform [TM-123, "DTC Confirmation Procedure"](#).

OK or NG

OK >> **INSPECTION END**

NG >> Confirm malfunction phenomena by "ROAD TEST" to repair malfunctioning part. Refer to [TM-211, "Check Before Engine Is Started"](#).

P0735 5GR INCORRECT RATIO

< COMPONENT DIAGNOSIS >

[5AT: RE5R05A]

P0735 5GR INCORRECT RATIO

Description

INFOID:000000005280655

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

On Board Diagnosis Logic

INFOID:000000005280656

Diagnostic trouble code "P0735" with CONSULT-III or 22th judgment flicker without CONSULT-III is detected when TCM detects any inconsistency in the actual gear ratio.

Possible Cause

INFOID:000000005280657

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

DTC Confirmation Procedure

INFOID:000000005280658

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

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

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

④ WITH CONSULT-III

1. Start the engine and select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
2. Make sure that "ATF TEMP 1" is within the following range.
ATF TEMP 1: 20°C – 180°C
If out of range, drive vehicle to warm ATF or stop engine to cool ATF.
3. Select "5TH GR FNCTN P0735" of "DTC & SRT CONFIRMATION" mode for "TRANSMISSION" with CONSULT-III.
4. Drive vehicle and maintain the following conditions.
SLCT LVR POSI: "D" position
O/D OFF indicator lamp: OFF
GEAR: "5" position
ACCELE POSI: 0.6/8 or more
VEHICLE SPEED: 10 km/h (6 MPH) or more
ENGINE SPEED: INPUT SPEED – 50 rpm or more
INPUT SPEED: 300 rpm or more
5. Keep the current driving status for at least 5 consecutive seconds if CONSULT-III screen changes from "OUT OF CONDITION" to "TESTING".
CAUTION:
If "TESTING" does not appear on CONSULT-III for a long time, select "SELF-DIAG RESULTS". In case a 1st trip DTC other than P0735 is shown, refer to "[TM-95. "CONSULT-III Function \(TRANSMISSION\)"](#)".
If "COMPLETED RESULT NG" is detected, go to [TM-125. "Possible Cause"](#).
If "STOP VEHICLE" is detected, go to the following step.
6. Stop vehicle.
7. Drive vehicle in "D" position allowing it to shift from 1GR to 5GR and check shift timing and shift shock.
 - Touch "OK" to complete the inspection when normally shifted from the 1GR to 5GR.
 - Touch "NG" when an unusual shift shock, etc. occurs in spite of shifting from the 1GR to 5GR. Go to [TM-211. "Check Before Engine Is Started"](#).
 - Perform [TM-95. "CONSULT-III Function \(TRANSMISSION\)"](#) when not shifted from the 1GR to 5GR. (Neither "OK" nor "NG" are indicated.)

⊗ WITHOUT CONSULT-III

P0735 5GR INCORRECT RATIO

< COMPONENT DIAGNOSIS >

[5AT: RE5R05A]

1. Start engine.
2. Drive vehicle under the following conditions:
Selector lever "D" position, gear position "5th", vehicle speed higher than 10 km/h (6 MPH), throttle opening greater than 0.6/8 of the full throttle position and driving for at least 5 consecutive seconds.
3. Perform self-diagnosis. Refer to [TM-100, "Diagnosis Procedure without CONSULT-III"](#).
4. If the check result is NG, go to [TM-125, "Possible Cause"](#).

Diagnosis Procedure

INFOID:000000005280659

1. CHECK CAN COMMUNICATION LINE

Perform self-diagnosis. Refer to [TM-95, "CONSULT-III Function \(TRANSMISSION\)"](#), [TM-100, "Diagnosis Procedure without CONSULT-III"](#).

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

YES >> Check CAN communication line. Refer to [TM-103, "Diagnosis Procedure"](#).

NO >> GO TO 2.

2. CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit. Refer to [TM-155, "Diagnosis Procedure"](#).

OK or NG

OK >> GO TO 3.

NG >> Repair or replace damaged parts.

3. DETECT MALFUNCTION ITEM

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

OK or NG

OK >> GO TO 4.

NG >> Repair or replace damaged parts.

4. REPLACE CONTROL VALVE WITH TCM

1. Replace control valve with TCM. Refer to [TM-220, "Removal and Installation"](#).

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

OK or NG

OK >> **INSPECTION END**

NG >> Confirm malfunction phenomena by "ROAD TEST" to repair malfunctioning part. Refer to [TM-211, "Check Before Engine Is Started"](#).

P0740 TORQUE CONVERTER

< COMPONENT DIAGNOSIS >

[5AT: RE5R05A]

P0740 TORQUE CONVERTER

Description

INFOID:000000005280660

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

CONSULT-III Reference Value in Data Monitor Mode

INFOID:000000005280661

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

On Board Diagnosis Logic

INFOID:000000005280662

Diagnostic trouble code "P0740" with CONSULT-III or 3rd judgment flicker without CONSULT-III is detected under the following conditions.

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

Possible Cause

INFOID:000000005280663

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

DTC Confirmation Procedure

INFOID:000000005280664

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

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

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

WITH CONSULT-III

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "DATA MONITOR" mode for "ENGINE" with CONSULT-III.
3. Start engine and maintain the following conditions for at least 5 consecutive seconds.
VHCL/S SE-A/T: 80 km/h (50 MPH) or more
ACCELE POSI: 0.5/8 - 1.0/8
SLCT LVR POSI: "D" position
Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.
4. If DTC is detected go to [TM-128, "Diagnosis Procedure"](#).

WITHOUT CONSULT-III

1. Start engine.
2. Drive vehicle under the following conditions:
Selector lever "D" position, vehicle speed higher than 80 km/h (50 MPH) (Lock-up position), throttle opening 0.5/8 - 1/8 of the full throttle position and driving for at least 5 consecutive seconds.
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 [TM-100, "Diagnosis Procedure without CONSULT-III"](#).
4. If the check result is NG, go to [TM-128, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000005280665

1. CHECK INPUT SIGNAL

Ⓜ With CONSULT-III

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

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 [TM-155, "Diagnosis Procedure"](#).

OK or NG

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

3. DETECT MALFUNCTIONING ITEM

Check the following.

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

OK or NG

- OK >> Replace the control valve with TCM. Refer to [TM-220, "Removal and Installation"](#).
NG >> Repair or replace damaged parts.

4. CHECK DTC

Perform "DTC Confirmation Procedure".

- Refer to [TM-127, "DTC Confirmation Procedure"](#).

OK or NG

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

P0744 TORQUE CONVERTER

< COMPONENT DIAGNOSIS >

[5AT: RE5R05A]

P0744 TORQUE CONVERTER

Description

INFOID:000000005280666

This malfunction is detected when the A/T does not lock-up. This is not only caused by electrical malfunction (circuits open or shorted) but also by mechanical malfunction such as control valve sticking, improper solenoid valve operation, etc.

CONSULT-III Reference Value in Data Monitor Mode

INFOID:000000005280667

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

On Board Diagnosis Logic

INFOID:000000005280668

Diagnostic trouble code "P0744" with CONSULT-III or 3rd judgment flicker without CONSULT-III is detected under the following conditions.

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

Possible Cause

INFOID:000000005280669

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

DTC Confirmation Procedure

INFOID:000000005280670

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

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

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

☑ WITH CONSULT-III

1. Start engine.
2. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
3. Drive vehicle and maintain the following conditions for at least 30 consecutive seconds.
Selector lever position: "D" position
ACCELE POSI: More than 1.0/8
TCC SOLENOID: 0.4 - 0.6 A
VEHICLE SPEED: 80 km/h (50 MPH) or more
Driving locations: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.
4. If DTC is detected, go to [TM-130, "Diagnosis Procedure"](#).

☒ WITHOUT CONSULT-III

1. Start engine.
2. Drive vehicle under the following conditions:
Selector lever "D" position, vehicle speed higher than 80 km/h (50 MPH) (Lock-up position), throttle opening more than 1/8 of the full throttle position and driving for at least 30 consecutive seconds.
Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.
- **For shift schedule, refer to [TM-304, "Vehicle Speed at Which Lock-up Occurs/Releases"](#).**
3. Perform self-diagnosis. Refer to [TM-100, "Diagnosis Procedure without CONSULT-III"](#).
4. If the check result is NG, go to [TM-130, "Diagnosis Procedure"](#).

P0744 TORQUE CONVERTER

< COMPONENT DIAGNOSIS >

[5AT: RE5R05A]

Diagnosis Procedure

INFOID:000000005280671

1. CHECK INPUT SIGNAL

Ⓜ With CONSULT-III

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

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 [TM-155, "Diagnosis Procedure"](#).

OK or NG

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

3. DETECT MALFUNCTIONING ITEM

Check the following.

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

OK or NG

- OK >> Replace the control valve with TCM. Refer to [TM-220, "Removal and Installation"](#).
NG >> Repair or replace damaged parts.

4. CHECK DTC

Perform "DTC Confirmation Procedure".

- Refer to [TM-129, "DTC Confirmation Procedure"](#).

OK or NG

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

P0745 PRESSURE CONTROL SOLENOID A

< COMPONENT DIAGNOSIS >

[5AT: RE5R05A]

P0745 PRESSURE CONTROL SOLENOID A

Description

INFOID:000000005280672

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

CONSULT-III Reference Value in Data Monitor Mode

INFOID:000000005280673

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

On Board Diagnosis Logic

INFOID:000000005280674

Diagnostic trouble code "P0745" with CONSULT-III or 4th judgment flicker without CONSULT-III is detected under the following conditions.

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

Possible Cause

INFOID:000000005280675

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

DTC Confirmation Procedure

INFOID:000000005280676

NOTE:

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

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

WITH CONSULT-III

1. Turn ignition switch "ON" and select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
2. Engine start and wait at least 5 second.
3. If DTC is detected, go to [TM-131, "Diagnosis Procedure"](#).

WITHOUT CONSULT-III

1. Perform self-diagnosis. Refer to [TM-100, "Diagnosis Procedure without CONSULT-III"](#).
2. If the check result is NG, go to [TM-131, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000005280677

1. CHECK INPUT SIGNAL

With CONSULT-III

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

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 [TM-155, "Diagnosis Procedure"](#).

OK or NG

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

3. DETECT MALFUNCTIONING ITEM

P0745 PRESSURE CONTROL SOLENOID A

< COMPONENT DIAGNOSIS >

[5AT: RE5R05A]

Check the following.

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

OK or NG

OK >> Replace the control valve with TCM. Refer to [TM-220, "Removal and Installation"](#).

NG >> Repair or replace damaged parts.

4.CHECK DTC

Perform "DTC Confirmation Procedure".

- Refer to [TM-131, "DTC Confirmation Procedure"](#).

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 2.

P1705 TP SENSOR

< COMPONENT DIAGNOSIS >

[5AT: RE5R05A]

P1705 TP SENSOR

Description

INFOID:000000005280678

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

CONSULT-III Reference Value in Data Monitor Mode

INFOID:000000005280679

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

On Board Diagnosis Logic

INFOID:000000005280680

Diagnostic trouble code "P1705" with CONSULT-III or 15th judgment flicker without CONSULT-III is detected when TCM does not receive the proper accelerator pedal position signals (input by CAN communication) from ECM.

Possible Cause

INFOID:000000005280681

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

DTC Confirmation Procedure

INFOID:000000005280682

NOTE:

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

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

④ WITH CONSULT-III

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
3. Start engine and let it idle for 1 second.
4. If DTC is detected, go to [TM-133, "Diagnosis Procedure"](#).

⊗ WITHOUT CONSULT-III

1. Start engine and let it idle for 1 second.
2. Perform self-diagnosis. Refer to [TM-100, "Diagnosis Procedure without CONSULT-III"](#).
3. If the check result is NG, go to [TM-133, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000005280683

1. CHECK CAN COMMUNICATION LINE

Perform the self-diagnosis. Refer to [TM-95, "CONSULT-III Function \(TRANSMISSION\)"](#).

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

- YES >> Check CAN communication line. Refer to [TM-103](#).
NO >> GO TO 2.

2. CHECK DTC WITH TCM

④ With CONSULT-III

1. Turn ignition switch ON. (Do not start engine.)
2. Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
3. Depress accelerator pedal and read out the value of "ACCELE POSI".
4. Select "SELF-DIAG RESULTS" mode for "TRANSMISSION" with CONSULT-III. Refer to [TM-95, "CONSULT-III Function \(TRANSMISSION\)"](#).

Is the inspection result normal?

P1705 TP SENSOR

[5AT: RE5R05A]

< COMPONENT DIAGNOSIS >

- YES >> GO TO 4.
- NO >> GO TO 3.

3.CHECK DTC WITH ECM

With CONSULT-III

1. Turn ignition switch ON. (Do not start engine.)
2. Select "SELF-DIAG RESULTS" mode for "ENGINE" with CONSULT-III. Refer to [EC-48. "CONSULT-III Function \(ENGINE\)".](#)

Is the inspection result normal?

- YES >> GO TO 4.
- NO >> Check the DTC detected item. Refer to [EC-48. "CONSULT-III Function \(ENGINE\)".](#)
 - If CAN communication line is detected, go to [TM-103. "Diagnosis Procedure".](#)

4.CHECK DTC

Perform "DTC Confirmation Procedure".

- Refer to [TM-133. "DTC Confirmation Procedure".](#)

Is the inspection result normal?

- YES >> **INSPECTION END**
- NO >> GO TO 5.

5.CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit. Refer to [TM-155. "Diagnosis Procedure".](#)

Is the inspection result normal?

- YES >> GO TO 6.
- NO >> Repair or replace damaged parts.

6.DETECT MALFUNCTIONING ITEM

Check the following.

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

Is the inspection result normal?

- YES >> Replace the control valve with TCM. Refer to [TM-220. "Removal and Installation".](#)
- NO >> Repair or replace damaged parts.

P1710 TRANSMISSION FLUID TEMPERATURE SENSOR

< COMPONENT DIAGNOSIS >

[5AT: RE5R05A]

P1710 TRANSMISSION FLUID TEMPERATURE SENSOR

Description

INFOID:000000005280684

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

CONSULT-III Reference Value in Data Monitor Mode

INFOID:000000005280688

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

On Board Diagnosis Logic

INFOID:000000005280686

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

Possible Cause

INFOID:000000005280687

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

DTC Confirmation Procedure

INFOID:000000005280688

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

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

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

WITH CONSULT-III

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
3. Start engine and maintain the following conditions for at least 14 minutes (Total). (It is not necessary to maintain continuously.)
VHCL/S SE-A/T: 10 km/h (6 MPH) or more
ACCELE POSI: More than 1.0/8
SLCT LVR POSI: "D" position
4. If DTC is detected, go to [TM-135, "Diagnosis Procedure"](#).

WITHOUT CONSULT-III

1. Start engine.
2. Selector lever "D" position, vehicle speed higher than 10 km/h (6 MPH), throttle opening greater than 1/8 of the full throttle position and driving for at least 14 minutes total.
3. Perform self-diagnosis. Refer to [TM-100, "Diagnosis Procedure without CONSULT-III"](#).
4. If the check result is NG, go to [TM-135, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000005280689

1. CHECK A/T FLUID TEMPERATURE SENSOR 1 SIGNAL

With CONSULT-III

1. Start engine.
2. Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
3. Read out the value of "ATF TEMP SE 1".

OK or NG

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

2. CHECK A/T FLUID TEMPERATURE SENSOR 1

P1710 TRANSMISSION FLUID TEMPERATURE SENSOR

< COMPONENT DIAGNOSIS >

[5AT: RE5R05A]

Check A/T fluid temperature sensor 1. Refer to [TM-136, "Component Inspection"](#).

OK or NG

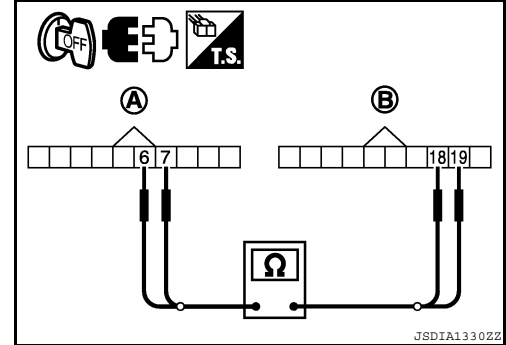
OK >> GO TO 3.

NG >> Replace the control valve with TCM. Refer to [TM-220, "Removal and Installation"](#).

3. CHECK SUB-HARNESS

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

Item	Connector	Terminal	Continuity
Transmission range switch connector	F505	6	Yes
TCM connector	F503	19	
Transmission range switch connector	F505	7	Yes
TCM connector	F503	18	



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

OK or NG

OK >> GO TO 4.

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

4. CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

1. Check TCM power supply and ground circuit. Refer to [TM-155, "Diagnosis Procedure"](#).
2. Reinstall any part removed.

OK or NG

OK >> Replace the control valve with TCM. Refer to [TM-220, "Removal and Installation"](#).

NG >> Repair or replace damaged parts.

5. CHECK DTC

Perform "DTC Confirmation Procedure".

- Refer to [TM-135, "DTC Confirmation Procedure"](#).

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 1.

Component Inspection

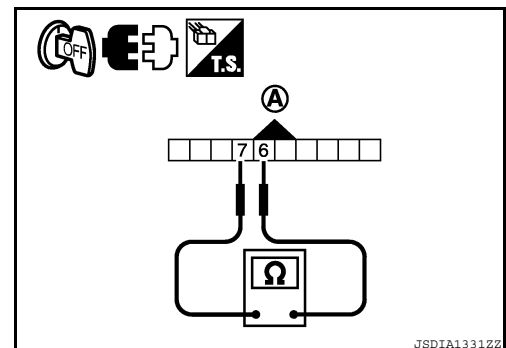
INFOID:000000005280690

A/T FLUID TEMPERATURE SENSOR 1

1. Remove control valve with TCM. Refer to [TM-220, "Removal and Installation"](#).
2. Check resistance between transmission range switch connector (A) terminals.

Name	Terminal	Temperature °C (°F)	Resistance (Approx.)
A/T fluid temperature sensor 1	6 - 7	TM-305, "A/T Fluid Temperature Sensor"	

3. If NG, replace the control valve with TCM. Refer to [TM-220, "Removal and Installation"](#).



P1721 VEHICLE SPEED SIGNAL

< COMPONENT DIAGNOSIS >

[5AT: RE5R05A]

P1721 VEHICLE SPEED SIGNAL

Description

INFOID:000000005280691

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

CONSULT-III Reference Value in Data Monitor Mode

INFOID:000000005280692

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

On Board Diagnosis Logic

INFOID:000000005280693

Diagnostic trouble code "P1721" with CONSULT-III is detected when TCM does not receive the proper vehicle speed signal (input by CAN communication) from combination meter.

Possible Cause

INFOID:000000005280694

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

DTC Confirmation Procedure

INFOID:000000005280695

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

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

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

Ⓟ WITH CONSULT-III

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
3. Start engine and maintain the following conditions for at least 5 consecutive seconds.
ACCELE POSI: 1/8 or less
VHCL/S SE-A/T: 30 km/h (19 MPH) or more
4. If DTC is detected, go to [TM-137, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000005280696

1.CHECK CAN COMMUNICATION LINE

Perform the self-diagnosis. Refer to [TM-95, "CONSULT-III Function \(TRANSMISSION\)"](#).

Is malfunction in the CAN communication indicated in the result?

- YES >> Check CAN communication line. Refer to [TM-103](#).
NO >> GO TO 2.

2.CHECK INPUT SIGNAL

Ⓟ With CONSULT-III

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

OK or NG

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

3.CHECK COMBINATION METERS

Check combination meters. Refer to [MWI-4, "METER SYSTEM : System Description"](#).

P1721 VEHICLE SPEED SIGNAL

[5AT: RE5R05A]

< COMPONENT DIAGNOSIS >

OK or NG

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

4.CHECK DTC

Perform "DTC Confirmation Procedure".

- Refer to [TM-137, "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 [TM-155, "Diagnosis Procedure"](#).

OK or NG

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

6.DETECT MALFUNCTIONING ITEM

Check the following.

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

OK or NG

- OK >> Replace the control valve with TCM. Refer to [TM-220, "Removal and Installation"](#).
- NG >> Repair or replace damaged parts.

P1730 INTERLOCK

Description

INFOID:000000005280697

Fail-safe function to detect interlock conditions.

On Board Diagnosis Logic

INFOID:000000005280698

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

Possible Cause

INFOID:000000005280699

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

DTC Confirmation Procedure

INFOID:000000005280700

NOTE:

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

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

④ WITH CONSULT-III

1. Turn ignition switch “ON”. (Do not start engine.)
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III.
3. Start engine.
4. Drive vehicle and maintain the following conditions for at least 2 consecutive seconds.
SLCR LVR POSI: “D” position
5. If DTC is detected, go to [TM-139, "Diagnosis Procedure"](#).

⊗ WITHOUT CONSULT-III

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 [TM-100, "Diagnosis Procedure without CONSULT-III"](#).
4. If the check result is NG, go to [TM-139, "Diagnosis Procedure"](#).

Judgment of A/T Interlock

INFOID:000000005280701

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

NOTE:

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

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

Diagnosis Procedure

INFOID:000000005280702

1. SELF-DIAGNOSIS

④ With CONSULT-III

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

④ Without CONSULT-III

1. Drive vehicle.
2. Stop vehicle and turn ignition switch OFF.

P1730 INTERLOCK

[5AT: RE5R05A]

< COMPONENT DIAGNOSIS >

3. Turn ignition switch ON.
4. Perform self-diagnosis. Refer to [TM-100, "Diagnosis Procedure without CONSULT-III"](#).

OK or NG

- OK >> GO TO 2.
- NG >> Check low coast brake solenoid valve circuit and function. Refer to [TM-151](#), [TM-153](#).

2.CHECK DTC

Perform "DTC Confirmation Procedure".

- Refer to [TM-139, "DTC Confirmation Procedure"](#).

OK or NG

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

3.CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit. Refer to [TM-155, "Diagnosis Procedure"](#).

OK or NG

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

4.DETECT MALFUNCTIONING ITEM

Check the following.

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

OK or NG

- OK >> Replace the control valve with TCM. Refer to [TM-220, "Removal and Installation"](#).
- NG >> Repair or replace damaged parts.

P1731 1ST ENGINE BRAKING

< COMPONENT DIAGNOSIS >

[5AT: RE5R05A]

P1731 1ST ENGINE BRAKING

Description

INFOID:000000005280703

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

CONSULT-III Reference Value in Data Monitor Mode

INFOID:000000005280704

Item name	Condition	Display value
ON OFF SOL	Low coast brake engaged. Refer to TM-74 .	ON
	Low coast brake disengaged. Refer to TM-74 .	OFF
ATF PRES SW 2	Low coast brake engaged. Refer to TM-74 .	ON
	Low coast brake disengaged. Refer to TM-74 .	OFF

On Board Diagnosis Logic

INFOID:000000005280705

Diagnostic trouble code “P1731” with CONSULT-III or 13th judgment flicker without CONSULT-III is detected under the following conditions.

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

Possible Cause

INFOID:000000005280706

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

DTC Confirmation Procedure

INFOID:000000005280707

NOTE:

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

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

☐ WITH CONSULT-III

1. Turn ignition switch “ON”. (Do not start engine.)
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III.
3. Start engine.
4. Drive vehicle and maintain the following conditions for at least 2 consecutive seconds.
ENGINE SPEED: 1,200 rpm
SLCR LVR POSI: “1” position
GEAR: “1” position
5. If DTC is detected, go to [TM-141, "Diagnosis Procedure"](#).

⊗ WITHOUT CONSULT-III

1. Start engine.
2. Drive vehicle under the following conditions:
Selector lever “1” position, gear position “1GR”, engine speed more than 1,200 rpm and driving for at least 2 consecutive seconds.
3. Perform self-diagnosis. Refer to [TM-100, "Diagnosis Procedure without CONSULT-III"](#).
4. If the check result is NG, go to [TM-141, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000005280708

1. CHECK INPUT SIGNALS

☐ With CONSULT-III

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

P1731 1ST ENGINE BRAKING

[5AT: RE5R05A]

< COMPONENT DIAGNOSIS >

3. Drive vehicle in the "1" position (1GR), and confirm the ON/OFF actuation of "ATF PRES SW 2" and "ON OFF SOL".

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 [TM-155. "Diagnosis Procedure"](#).

OK or NG

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

3.DETECT MALFUNCTIONING ITEM

Check the following.

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

OK or NG

- OK >> Replace the control valve with TCM. Refer to [TM-220. "Removal and Installation"](#).
NG >> Repair or replace damaged parts.

4.CHECK DTC

Perform "DTC Confirmation Procedure".

- Refer to [TM-141. "DTC Confirmation Procedure"](#).

OK or NG

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

P1752 INPUT CLUTCH SOLENOID

< COMPONENT DIAGNOSIS >

[5AT: RE5R05A]

P1752 INPUT CLUTCH SOLENOID

Description

INFOID:000000005280709

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

CONSULT-III Reference Value in Data Monitor Mode

INFOID:000000005280710

Item name	Condition	Display value (Approx.)
I/C SOLENOID	Input clutch disengaged. Refer to TM-74 .	0.6 - 0.8 A
	Input clutch engaged. Refer to TM-74 .	0 - 0.05 A

On Board Diagnosis Logic

INFOID:000000005280711

Diagnostic trouble code "P1752" with CONSULT-III or 5th judgment flicker without CONSULT-III is detected under the following conditions.

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

Possible Cause

INFOID:000000005280712

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

DTC Confirmation Procedure

INFOID:000000005280713

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

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

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

④ WITH CONSULT-III

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
3. Start engine.
4. 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: "3rd" ⇒ "4th" (I/C ON/OFF)
Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.
5. If DTC is detected go to [TM-144, "Diagnosis Procedure"](#).

⊗ WITHOUT CONSULT-III

1. Start engine.
2. Drive vehicle under the following conditions:
Selector lever "D" position, gear position "3rd" ⇒ "4th", throttle opening 1.5/8 - 2/8 of the full throttle position and driving for at least 5 consecutive seconds.
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 [TM-100, "Diagnosis Procedure without CONSULT-III"](#).
4. If the check result is NG, go to [TM-144, "Diagnosis Procedure"](#).

P1752 INPUT CLUTCH SOLENOID

< COMPONENT DIAGNOSIS >

[5AT: RE5R05A]

INFOID:000000005280714

Diagnosis Procedure

1. CHECK INPUT SIGNAL

Ⓟ With CONSULT-III

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

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 [TM-155, "Diagnosis Procedure"](#).

OK or NG

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

3. DETECT MALFUNCTIONING ITEM

Check the following.

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

OK or NG

- OK >> Replace the control valve with TCM. Refer to [TM-220, "Removal and Installation"](#).
NG >> Repair or replace damaged parts.

4. CHECK DTC

Perform "DTC Confirmation Procedure".

- Refer to [TM-143, "DTC Confirmation Procedure"](#).

OK or NG

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

P1757 FRONT BRAKE SOLENOID

< COMPONENT DIAGNOSIS >

[5AT: RE5R05A]

P1757 FRONT BRAKE SOLENOID

Description

INFOID:000000005280715

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

CONSULT-III Reference Value in Data Monitor Mode

INFOID:000000005280716

Item name	Condition	Display value (Approx.)
FR/B SOLENOID	Front brake engaged. Refer to TM-74 .	0.6 - 0.8 A
	Front brake disengaged. Refer to TM-74 .	0 - 0.05 A

On Board Diagnosis Logic

INFOID:000000005280717

Diagnostic trouble code "P1757" with CONSULT-III or 6th judgment flicker without CONSULT-III is detected under the following conditions.

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

Possible Cause

INFOID:000000005280718

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

DTC Confirmation Procedure

INFOID:000000005280719

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

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

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

④ WITH CONSULT-III

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
3. Start engine.
4. 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: "3rd" ⇒ "4th" (FR/B ON/OFF)
Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.
5. If DTC is detected go to [TM-146, "Diagnosis Procedure"](#).

⊗ WITHOUT CONSULT-III

1. Start engine.
2. Drive vehicle under the following conditions:
Selector lever "D" position, gear position "3rd" ⇒ "4th", throttle opening 1.5/8 - 2/8 of the full throttle position and driving for at least 5 consecutive seconds.
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 [TM-100, "Diagnosis Procedure without CONSULT-III"](#).
4. If the check result is NG, go to [TM-146, "Diagnosis Procedure"](#).

P1757 FRONT BRAKE SOLENOID

< COMPONENT DIAGNOSIS >

[5AT: RE5R05A]

Diagnosis Procedure

INFOID:000000005280720

1. CHECK INPUT SIGNAL

Ⓟ With CONSULT-III

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

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 [TM-155, "Diagnosis Procedure"](#).

OK or NG

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

3. DETECT MALFUNCTIONING ITEM

Check the following.

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

OK or NG

- OK >> Replace the control valve with TCM. Refer to [TM-220, "Removal and Installation"](#).
NG >> Repair or replace damaged parts.

4. CHECK DTC

Perform "DTC Confirmation Procedure".

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

OK or NG

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

P1762 DIRECT CLUTCH SOLENOID

< COMPONENT DIAGNOSIS >

[5AT: RE5R05A]

P1762 DIRECT CLUTCH SOLENOID

Description

INFOID:000000005280721

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

CONSULT-III Reference Value in Data Monitor Mode

INFOID:000000005280722

Item name	Condition	Display value (Approx.)
D/C SOLENOID	Direct clutch disengaged. Refer to TM-74 .	0.6 - 0.8 A
	Direct clutch engaged. Refer to TM-74 .	0 - 0.05 A

On Board Diagnosis Logic

INFOID:000000005280723

Diagnostic trouble code "P1762" with CONSULT-III or 2nd judgment flicker without CONSULT-III is detected under the following conditions.

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

Possible Cause

INFOID:000000005280724

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

DTC Confirmation Procedure

INFOID:000000005280725

NOTE:

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

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

④ WITH CONSULT-III

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
3. Start engine.
4. 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: "1st" ⇒ "2nd" (D/C ON/OFF)
Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.
5. If DTC is detected, go to [TM-147, "Diagnosis Procedure"](#).

⊗ WITHOUT CONSULT-III

1. Start engine.
2. Drive vehicle under the following conditions:
Selector lever "D" position, gear position "1st" ⇒ "2nd", throttle opening 1.5/8 - 2/8 of the full throttle position and driving for at least 5 consecutive seconds.
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 [TM-100, "Diagnosis Procedure without CONSULT-III"](#).
4. If the check result is NG, go to [TM-147, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000005280726

1. CHECK INPUT SIGNAL

④ With CONSULT-III

P1762 DIRECT CLUTCH SOLENOID

[5AT: RE5R05A]

< COMPONENT DIAGNOSIS >

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

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 [TM-155, "Diagnosis Procedure"](#).

OK or NG

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

3.DETECT MALFUNCTIONING ITEM

Check the following.

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

OK or NG

- OK >> Replace the control valve with TCM. Refer to [TM-220, "Removal and Installation"](#).
NG >> Repair or replace damaged parts.

4.CHECK DTC

Perform "DTC Confirmation Procedure".

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

OK or NG

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

P1767 HIGH AND LOW REVERSE CLUTCH SOLENOID

< COMPONENT DIAGNOSIS >

[5AT: RE5R05A]

P1767 HIGH AND LOW REVERSE CLUTCH SOLENOID

Description

INFOID:000000005280727

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

CONSULT-III Reference Value in Data Monitor Mode

INFOID:000000005280728

Item name	Condition	Display value (Approx.)
HLR/C SOL	High and low reverse clutch disengaged. Refer to TM-74 .	0.6 - 0.8 A
	High and low reverse clutch engaged. Refer to TM-74 .	0 - 0.05 A

On Board Diagnosis Logic

INFOID:000000005280729

Diagnostic trouble code "P1767" with CONSULT-III or 8th judgment flicker without CONSULT-III is detected under the following conditions.

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

Possible Cause

INFOID:000000005280730

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

DTC Confirmation Procedure

INFOID:000000005280731

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

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

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

④ WITH CONSULT-III

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
3. Start engine.
4. 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: "2nd" ⇒ "3rd" position (HLR/C ON/OFF)
Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.
5. If DTC is detected, go to [TM-150, "Diagnosis Procedure"](#).

⊗ WITHOUT CONSULT-III

1. Start engine.
2. Drive vehicle under the following conditions:
Selector lever "D" position, gear position "2nd" ⇒ "3rd", throttle opening 1.5/8 - 2/8 of the full throttle position and driving for at least 5 consecutive seconds.
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 [TM-100, "Diagnosis Procedure without CONSULT-III"](#).
4. If the check result is NG, go to [TM-150, "Diagnosis Procedure"](#).

P1767 HIGH AND LOW REVERSE CLUTCH SOLENOID

< COMPONENT DIAGNOSIS >

[5AT: RE5R05A]

Diagnosis Procedure

INFOID:000000005280732

1. CHECK INPUT SIGNAL

With CONSULT-III

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

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 [TM-155, "Diagnosis Procedure"](#).

OK or NG

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

3. DETECT MALFUNCTIONING ITEM

Check the following.

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

OK or NG

- OK >> Replace the control valve with TCM. Refer to [TM-220, "Removal and Installation"](#).
- NG >> Repair or replace damaged parts.

4. CHECK DTC

Perform "DTC Confirmation Procedure".

- Refer to [TM-149, "DTC Confirmation Procedure"](#).

OK or NG

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

P1772 LOW COAST BRAKE SOLENOID

< COMPONENT DIAGNOSIS >

[5AT: RE5R05A]

P1772 LOW COAST BRAKE SOLENOID

Description

INFOID:000000005280733

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

CONSULT-III Reference Value in Data Monitor Mode

INFOID:000000005280734

Item name	Condition	Display value
ON OFF SOL	Low coast brake engaged. Refer to TM-74 .	ON
	Low coast brake disengaged. Refer to TM-74 .	OFF

On Board Diagnosis Logic

INFOID:000000005280735

Diagnostic trouble code "P1772" with CONSULT-III or 7th judgment flicker without CONSULT-III is detected when TCM detects an improper voltage drop when it tries to operate the solenoid valve.

Possible Cause

INFOID:000000005280736

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

DTC Confirmation Procedure

INFOID:000000005280737

NOTE:

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

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

④ WITH CONSULT-III

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
3. Start engine.
4. Drive vehicle and maintain the following conditions for at least 5 consecutive seconds.
SLCT LVR POSI: "1" or "2" position
GEAR: "1st" or "2nd" (LC/B ON/OFF)
5. If DTC is detected, go to [TM-151, "Diagnosis Procedure"](#).

⊗ WITHOUT CONSULT-III

1. Start engine.
2. Drive vehicle and maintain the following conditions for at least 5 consecutive seconds:
Selector lever: "1" or "2" position
Gear position: "1st" or "2nd"
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 [TM-100, "Diagnosis Procedure without CONSULT-III"](#).
4. If the check result is NG, go to [TM-151, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000005280738

1. CHECK INPUT SIGNAL

④ With CONSULT-III

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

OK or NG

P1772 LOW COAST BRAKE SOLENOID

< COMPONENT DIAGNOSIS >

[5AT: RE5R05A]

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 [TM-155. "Diagnosis Procedure"](#).

OK or NG

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

3.DETECT MALFUNCTIONING ITEM

Check the following.

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

OK or NG

OK >> Replace the control valve with TCM. Refer to [TM-220. "Removal and Installation"](#).
NG >> Repair or replace damaged parts.

4.CHECK DTC

Perform "DTC Confirmation Procedure".

- Refer to [TM-151. "DTC Confirmation Procedure"](#).

OK or NG

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

P1774 LOW COAST BRAKE SOLENOID

< COMPONENT DIAGNOSIS >

[5AT: RE5R05A]

P1774 LOW COAST BRAKE SOLENOID

Description

INFOID:000000005280739

- Low coast brake solenoid valve is turned “ON” or “OFF” by the TCM in response to signals sent from the transmission range switch, output speed sensor and accelerator pedal position sensor (throttle position sensor). Gears will then be shifted to the optimum position.
- This is not only caused by electrical malfunction (circuits open or shorted) but also by mechanical malfunction such as control valve sticking, improper solenoid valve operation.

CONSULT-III Reference Value in Data Monitor Mode

INFOID:000000005280740

Item name	Condition	Display value
ON OFF SOL	Low coast brake engaged. Refer to TM-74 .	ON
	Low coast brake disengaged. Refer to TM-74 .	OFF
ATF PRES SW 2	Low coast brake engaged. Refer to TM-74 .	ON
	Low coast brake disengaged. Refer to TM-74 .	OFF

On Board Diagnosis Logic

INFOID:000000005280741

Diagnostic trouble code “P1774” with CONSULT-III or 7th judgment flicker without CONSULT-III is detected under the following conditions.

- When TCM detects that actual gear ratio is irregular, and relation between gear position and condition of ATF pressure switch 2 is irregular during depressing accelerator pedal. (Other than during shift change)
- When TCM detects that relation between gear position and condition of ATF pressure switch 2 is irregular during releasing accelerator pedal. (Other than during shift change)

Possible Cause

INFOID:000000005280742

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

DTC Confirmation Procedure

INFOID:000000005280743

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

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

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

WITH CONSULT-III

1. Start engine.
2. Accelerate vehicle to maintain the following conditions.
SLCT LVR POSI: “1” or “2” position
GEAR: “1st” or “2nd” (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 “TRANSMISSION” with CONSULT-III. If DTC (P1774) is detected, refer to [TM-154, "Diagnosis Procedure"](#).
If DTC (P1772) is detected, go to [TM-154, "Diagnosis Procedure"](#).

WITHOUT CONSULT-III

1. Start engine.
2. Drive vehicle under the following conditions:
Selector lever “1” or “2” position, gear position “1st” or “2nd”.
Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.

P1774 LOW COAST BRAKE SOLENOID

< COMPONENT DIAGNOSIS >

[5AT: RE5R05A]

3. Perform self-diagnosis. Refer to [TM-100. "Diagnosis Procedure without CONSULT-III"](#).
4. If the check result is NG, go to [TM-154. "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000005280744

1. CHECK INPUT SIGNALS

With CONSULT-III

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

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 [TM-155. "Diagnosis Procedure"](#).

OK or NG

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

3. DETECT MALFUNCTIONING ITEM

Check the following.

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

OK or NG

- OK >> Replace the control valve with TCM. Refer to [TM-220. "Removal and Installation"](#).
NG >> Repair or replace damaged parts.

4. CHECK DTC

Perform "DTC Confirmation Procedure".

- Refer to [TM-153. "DTC Confirmation Procedure"](#).

OK or NG

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

MAIN POWER SUPPLY AND GROUND CIRCUIT

< COMPONENT DIAGNOSIS >

[5AT: RE5R05A]

MAIN POWER SUPPLY AND GROUND CIRCUIT

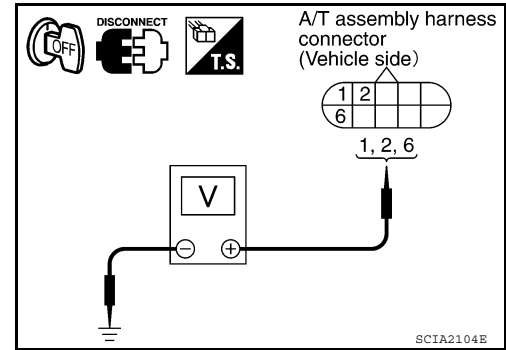
Diagnosis Procedure

INFOID:000000005280745

1. CHECK TCM POWER SOURCE STEP 1

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

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



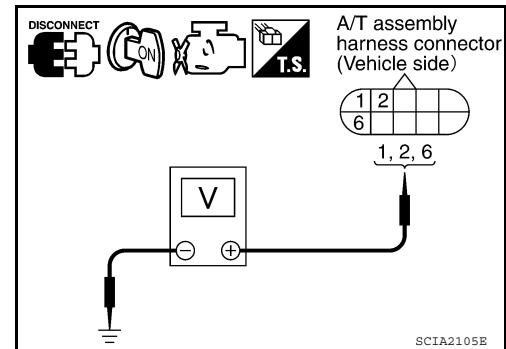
OK or NG

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

2. CHECK TCM POWER SOURCE STEP 2

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

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



OK or NG

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

3. DETECT MALFUNCTIONING ITEM

Check the following.

- Harness for short or open between battery and A/T assembly harness connector terminals 1, 2
- Harness for short or open between ignition switch and A/T assembly harness connector terminal 6
- 10A fuse (No. 22, located in the fuse and fusible link block) and 10A fuse (No. 49, located in the IPDM E/R)
- Ignition switch. Refer to [PG-19, "Wiring Diagram — Ignition Power Supply —"](#).

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.

MAIN POWER SUPPLY AND GROUND CIRCUIT

[5AT: RE5R05A]

< COMPONENT DIAGNOSIS >

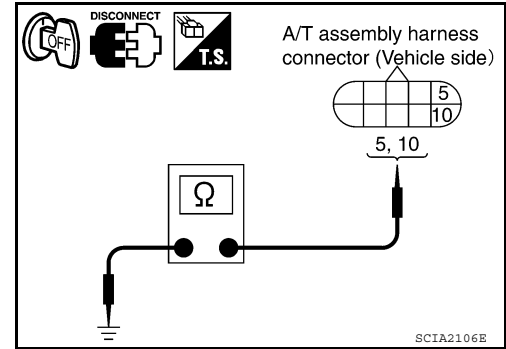
- Check continuity between A/T assembly harness connector terminals and ground.

Item	Connector	Terminal	Continuity
TCM	F9	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.

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

OK or NG

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

6. PERFORM SELF-DIAGNOSIS

Perform self-diagnosis. Refer to [TM-95, "CONSULT-III Function \(TRANSMISSION\)"](#).

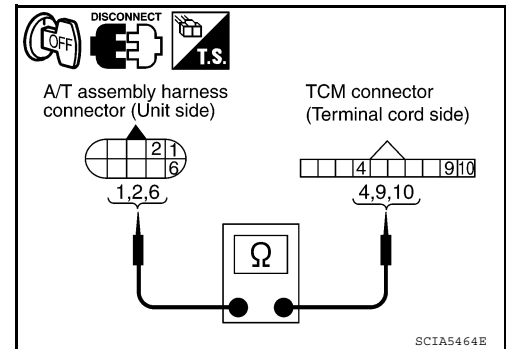
OK or NG

- OK >> **INSPECTION END**
 NG-1 >> Self-diagnosis does not activate: GO TO 7.
 NG-2 >> DTC is displayed: Check the malfunctioning system. Refer to [TM-95, "CONSULT-III Function \(TRANSMISSION\)"](#).

7. CHECK TERMINAL CORD ASSEMBLY

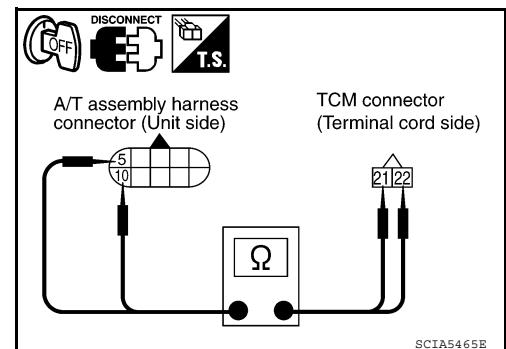
- Remove control valve with TCM. Refer to [TM-220, "Removal and Installation"](#).
- Disconnect A/T assembly harness connector and TCM connector.
- Check continuity between A/T assembly harness connector terminals and TCM connector terminals.

Item	Connector	Terminal	Continuity
A/T assembly harness connector	F9	1	Yes
TCM connector	F502	9	
A/T assembly harness connector	F9	2	Yes
TCM connector	F502	10	
A/T assembly harness connector	F9	6	Yes
TCM connector	F502	4	



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

Item	Connector	Terminal	Continuity
A/T assembly harness connector	F9	5	Yes
TCM connector	F504	21	
A/T assembly harness connector	F9	10	Yes
TCM connector	F504	22	



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

OK or NG

- OK >> Replace the control valve with TCM. Refer to [TM-220, "Removal and Installation"](#).
 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

< COMPONENT DIAGNOSIS >

[5AT: RE5R05A]

CLOSED THROTTLE POSITION AND WIDE OPEN THROTTLE POSITION CIRCUIT

CONSULT-III Reference Value in Data Monitor Mode

INFOID:000000005280746

Item name	Condition	Display value
CLSD THL POS	Released accelerator pedal.	ON
	Fully depressed accelerator pedal.	OFF
W/O THL POS	Fully depressed accelerator pedal.	ON
	Released accelerator pedal.	OFF

Diagnosis Procedure

INFOID:000000005280747

1. CHECK CAN COMMUNICATION LINE

Perform the self-diagnosis. Refer to [TM-95, "CONSULT-III Function \(TRANSMISSION\)"](#).

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

- YES >> Check CAN communication line. Refer to [TM-103](#).
NO >> GO TO 2.

2. CHECK THROTTLE POSITION SIGNAL CIRCUIT

With CONSULT-III

- Turn ignition switch "ON". (Do not start engine.)
- Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
- Depress accelerator pedal and read out the value of "CLSD THL POS" and "W/O THL POS".

OK or NG

OK >> **INSPECTION END**

- NG >> Check the following. If NG, repair or replace damaged parts.
- Perform the self-diagnosis for "ENGINE" with CONSULT-III.
 - 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

< COMPONENT DIAGNOSIS >

[5AT: RE5R05A]

BRAKE SIGNAL CIRCUIT

CONSULT-III Reference Value in Data Monitor Mode

INFOID:000000005280748

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

Diagnosis Procedure

INFOID:000000005280749

1. CHECK CAN COMMUNICATION LINE

Perform the self-diagnosis. Refer to [TM-95. "CONSULT-III Function \(TRANSMISSION\)"](#).

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

- YES >> Check CAN communication line. Refer to [TM-103](#).
- NO >> GO TO 2.

2. CHECK STOP LAMP SWITCH CIRCUIT

With CONSULT-III

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
3. Read out ON/OFF switching action of the "BRAKE SW".

OK or NG

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

3. CHECK STOP LAMP SWITCH

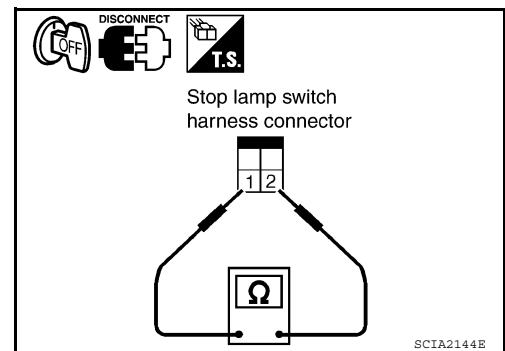
Check continuity between stop lamp switch harness connector terminals 1 and 2.

Item	Condition	Terminal	Continuity
Stop lamp switch harness connector	When brake pedal is depressed	1 - 2	Yes
	When brake pedal is released		No

Check stop lamp switch after adjusting brake pedal — refer to [BR-17. "Inspection and Adjustment"](#).

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.
- NG >> Repair or replace the stop lamp switch.



A/T SHIFT LOCK SYSTEM

< COMPONENT DIAGNOSIS >

[5AT: RE5R05A]

A/T SHIFT LOCK SYSTEM

Description

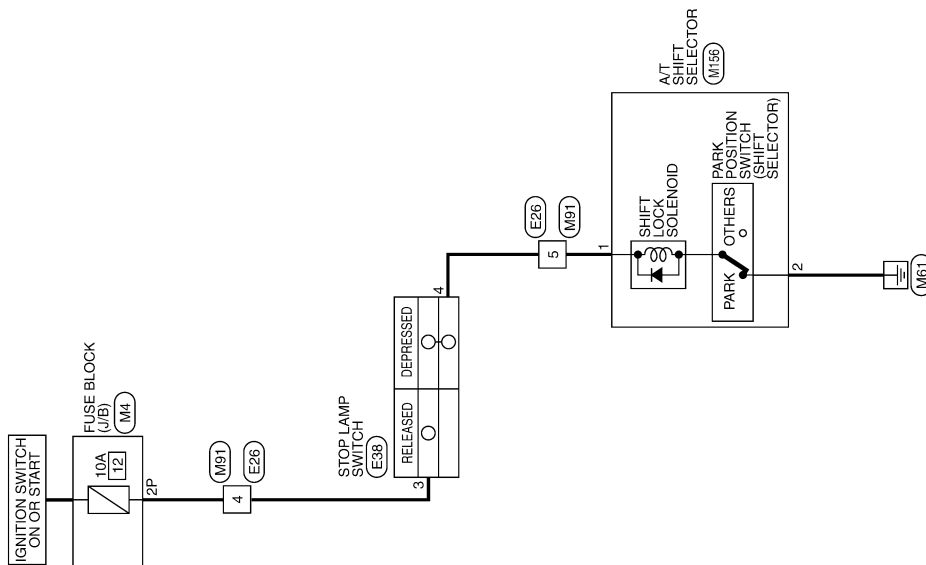
INFOID:000000005713917

Refer to [TM-94, "System Description"](#).

Wiring Diagram - A/T SHIFT LOCK SYSTEM -

INFOID:000000005280750

A/T SHIFT LOCK SYSTEM

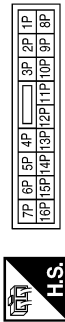


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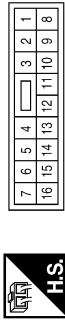
A/T SHIFT LOCK SYSTEM CONNECTORS

Connector No.	M4
Connector Name	FUSE BLOCK (J/B)
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
2P	W/G	-

Connector No.	M91
Connector Name	WIRE TO WIRE
Connector Color	WHITE



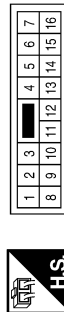
Terminal No.	Color of Wire	Signal Name
4	W/G	-
5	R	-

Connector No.	M156
Connector Name	A/T SHIFT SELECTOR
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1	R	-
2	B	-

Connector No.	E26
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
4	W/G	-
5	R	-

Connector No.	E38
Connector Name	STOP LAMP SWITCH
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
3	W/G	-
4	R	-

Diagnosis Procedure

Regarding Wiring Diagram information, refer to [TM-159. "Wiring Diagram - A/T SHIFT LOCK SYSTEM -"](#).

1. CHECK KEY INTERLOCK CABLE

ABD1A0433GB

INFOID:000000005280751

A/T SHIFT LOCK SYSTEM

[5AT: RE5R05A]

< COMPONENT DIAGNOSIS >

Check key interlock cable for damage.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair key interlock cable. Refer to [TM-230, "Removal and Installation"](#).

2.CHECK SELECTOR LEVER POSITION

Check selector lever position for damage. Refer to [TM-217, "Checking of A/T Position"](#).

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair selector lever. Refer to [TM-216, "Control Device Removal and Installation"](#).

3.CHECK INPUT SIGNAL

1. Turn ignition switch ON.
2. Check voltage between A/T shift selector connector M156 terminal 1 and ground.

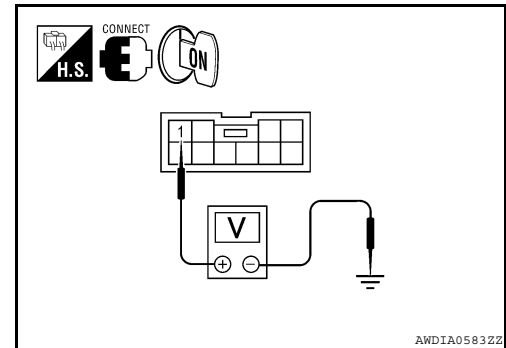
Brake pedal depressed : Battery voltage

Brake pedal released : 0V

Is the inspection result normal?

YES >> GO TO 5.

NO >> GO TO 4.



4.CHECK STOP LAMP SWITCH

1. Turn ignition switch OFF.
2. Disconnect stop lamp switch connector.
3. Check continuity between stop lamp switch terminals 3 and 4.

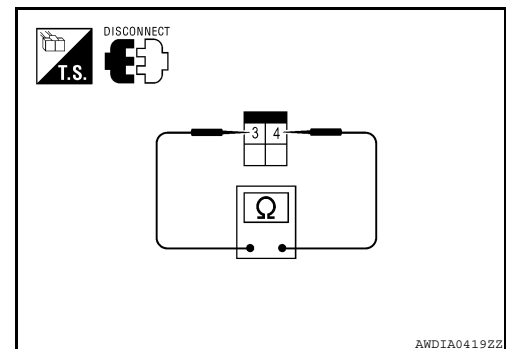
Brake pedal depressed : Continuity should exist

Brake pedal released : Continuity should not exist

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace damaged parts.



5.CHECK STOP LAMP SWITCH CIRCUIT

1. Disconnect fuse block (J/B) connector M4.
2. Check continuity between fuse block (J/B) connector M4 terminal 2P and stop lamp switch connector E38 terminal 3.

: Continuity should exist.

3. Check continuity between fuse block (J/B) connector M4 terminal 2P and ground.

: Continuity should not exist.

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace damaged parts.

6.CHECK GROUND CIRCUIT

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A/T SHIFT LOCK SYSTEM

[5AT: RE5R05A]

< COMPONENT DIAGNOSIS >

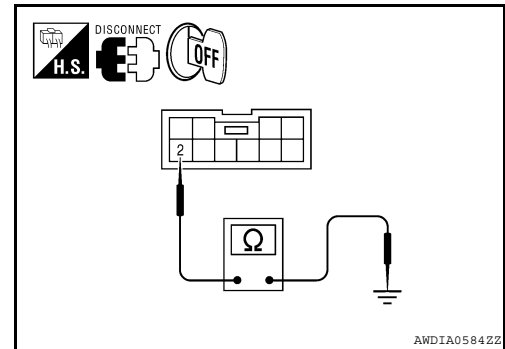
1. Turn ignition switch OFF.
2. Disconnect A/T shift selector connector.
3. Check continuity between A/T shift selector connector M156 terminal 2 and ground.

Continuity should exist.

Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair harness or connectors.



7. CHECK PARK POSITION SWITCH AND SHIFT LOCK SOLENOID

Check continuity between A/T shift selector terminals 1 and 2.

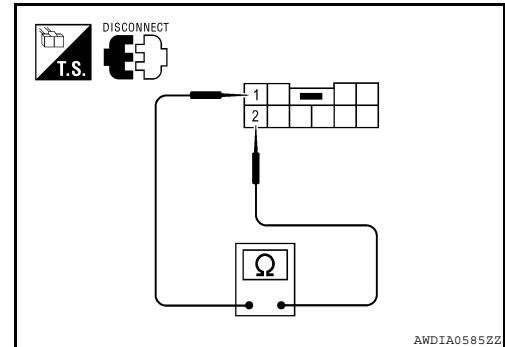
Selector lever in "P" position : Continuity should exist

Except above : Continuity should not exist

Is the inspection result normal?

YES >> Inspection End

NO >> Replace A/T shift selector. Refer to [TM-216, "Control Device Removal and Installation"](#).



OVERDRIVE CONTROL SWITCH

< COMPONENT DIAGNOSIS >

[5AT: RE5R05A]

OVERDRIVE CONTROL SWITCH

CONSULT-III Reference Value in Data Monitor Mode

INFOID:000000005280752

Item name	Condition	Display value
OD CONT SW	Releasing overdrive control switch	OFF
	Holding overdrive control switch	ON

Diagnosis Procedure

INFOID:000000005280753

1. CHECK CAN COMMUNICATION LINE

Perform the self-diagnosis. Refer to [TM-95, "CONSULT-III Function \(TRANSMISSION\)"](#).

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

- YES >> Check CAN communication line. Refer to [TM-103](#).
- NO >> GO TO 2.

2. CHECK OVERDRIVE CONTROL SWITCH CIRCUIT

With CONSULT-III

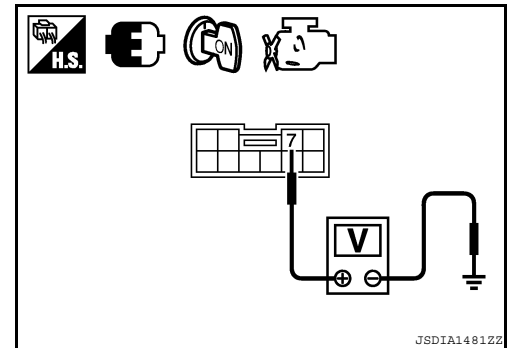
1. Turn ignition switch "ON".
2. Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
3. Read out "OD CONT SW".
Check the signal of the overdrive control switch is indicated properly.

Monitor item	Condition	Display value
OD CONT SW	Releasing overdrive control switch	OFF
	Holding overdrive control switch	ON

Without CONSULT-III

1. Turn ignition switch "ON". (Do not start engine)
2. Check voltage between A/T control device connector terminal and ground.

Item	Connector	Terminal	Condition	Data (Approx.)
Overdrive control switch	M156	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

1. Turn ignition switch "OFF".
2. Disconnect A/T control device connector.

OVERDRIVE CONTROL SWITCH

[5AT: RE5R05A]

< COMPONENT DIAGNOSIS >

3. Check continuity between A/T control device connector terminals.

Item	Connector	Terminal	Condition	Continuity
Overdrive control switch	M156	7 - 8	Releasing overdrive control switch	No
			Holding overdrive control switch	Yes

OK or NG

OK >> GO TO 4.

NG >> Repair or replace 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 terminal 20 and A/T control device connector terminal 7.
- Harness for short or open between A/T control device connector terminal 8 and ground.

OK or NG

OK >> GO TO 5.

NG >> Repair or replace damaged parts.

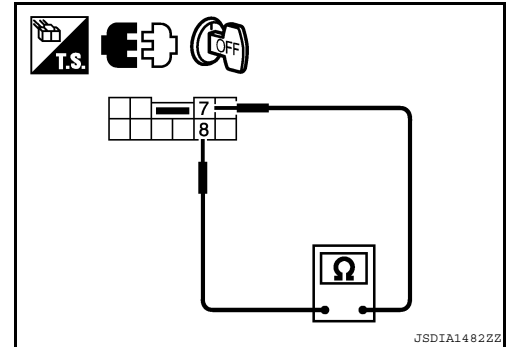
5. CHECK COMBINATION METER

Check the combination meter. Refer to [MWI-4, "METER SYSTEM : System Description"](#).

OK or NG

OK >> **INSPECTION END**

NO >> Repair or replace damaged parts.



1ST POSITION SWITCH

< COMPONENT DIAGNOSIS >

[5AT: RE5R05A]

1ST POSITION SWITCH

CONSULT-III Reference Value in Data Monitor Mode

INFOID:000000005473879

Item name	Condition	Display value
1 POSITION SW	When setting selector lever to "1" position.	ON
	When setting selector lever to other positions.	OFF

Diagnosis Procedure

INFOID:000000005473880

1. CHECK CAN COMMUNICATION LINE

Perform the self-diagnosis. Refer to [TM-95, "CONSULT-III Function \(TRANSMISSION\)"](#).

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

- YES >> Check CAN communication line. Refer to [TM-103](#).
- NO >> GO TO 2.

2. CHECK 1ST POSITION SWITCH CIRCUIT

With CONSULT-III

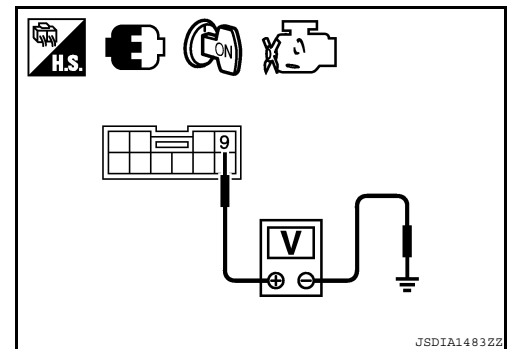
1. Turn ignition switch "ON".
2. Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
3. Read out "1 POSITION SW".
Check the signal of the 1st position switch is indicated properly.

Monitor item	Condition	Display value
1 POSITION SW	When setting selector lever to "1" position.	ON
	When setting selector lever to other positions.	OFF

Without CONSULT-III

1. Turn ignition switch "ON". (Do not start engine)
2. Check voltage between A/T shift selector connector terminal and ground.

Item	Connector	Terminal	Condition	Data (Approx.)
1st position switch	M156	9 - Ground	When setting selector lever to "1" position.	0V
			When setting selector lever to other positions.	Battery voltage



OK or NG

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

3. CHECK 1ST POSITION SWITCH

1. Turn ignition switch "OFF".
2. Disconnect A/T shift selector connector.

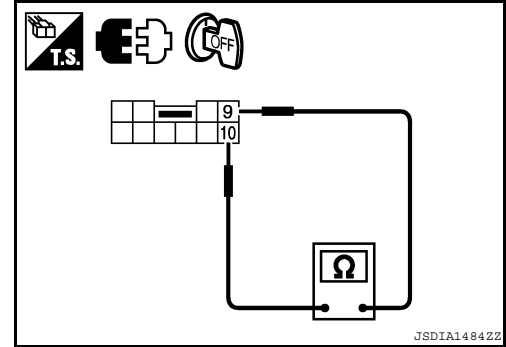
1ST POSITION SWITCH

[5AT: RE5R05A]

< COMPONENT DIAGNOSIS >

3. Check continuity between A/T shift selector connector terminals.

Item	Connector	Terminal	Condition	Continuity
1st position switch	M156	9 - 10	When setting selector lever to "1" position.	Yes
			When setting selector lever to other positions.	No



OK or NG

- OK >> GO TO 4.
- NG >> Repair or replace A/T shift selector assembly.

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 terminal 18 and A/T shift selector connector terminal 9.
- Harness for short or open between A/T shift selector connector 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 [MWI-21, "Diagnosis Description"](#).

OK or NG

- OK >> **INSPECTION END**
- NO >> Repair or replace damaged parts.

ECU DIAGNOSIS

TCM

Reference Value

INFOID:000000005280754

VALUES ON THE DIAGNOSIS TOOL

NOTICE:

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

Item name	Condition	Display value (Approx.)
ATF TEMP SE 1	0°C (32° F) - 20°C (68°F) - 80°C (176°F)	3.3 - 2.7 - 0.9 V
TCC SOLENOID	When perform slip lock-up	0.2 - 0.4 A
	When perform lock-up	0.4 - 0.6 A
SLCT LVR POSI	Selector lever in "N", "P" positions.	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
VHCL/S SE-A/T	During driving	Approximately matches the speedometer reading.
ENGINE SPEED	Engine running	Closely matches the tachometer reading.
LINE PRES SOL	During driving	0.2 - 0.6 A
INPUT SPEED	During driving (lock-up ON)	Approximately matches the engine speed.
VHCL/S SE-MTR	During driving	Approximately matches the speedometer reading.
ATF PRES SW 2	Low coast brake engaged. Refer to TM-74	ON
	Low coast brake disengaged. Refer to TM-74	OFF
I/C SOLENOID	Input clutch disengaged. Refer to TM-74	0.6 - 0.8 A
	Input clutch engaged. Refer to TM-74	0 - 0.05 A
FR/B SOLENOID	Front brake engaged. Refer to TM-74	0.6 - 0.8 A
	Front brake disengaged. Refer to TM-74	0 - 0.05 A
D/C SOLENOID	Direct clutch disengaged. Refer to TM-74	0.6 - 0.8 A
	Direct clutch engaged. Refer to TM-74	0 - 0.05 A
HLR/C SOL	High and low reverse clutch disengaged. Refer to TM-74	0.6 - 0.8 A
	High and low reverse clutch engaged. Refer to TM-74	0 - 0.05 A
ON OFF SOL	Low coast brake engaged. Refer to TM-74	ON
	Low coast brake disengaged. Refer to TM-74	OFF

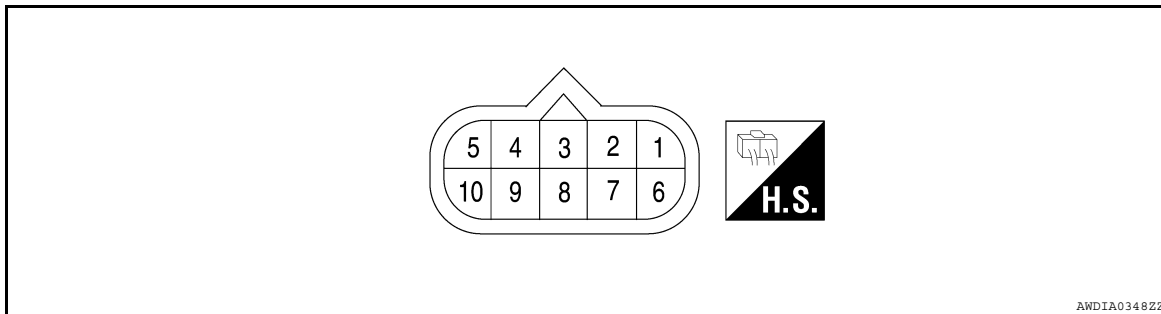
TCM

< ECU DIAGNOSIS >

[5AT: RE5R05A]




Item name	Condition	Display value (Approx.)
STARTER RELAY	Selector lever in "N", "P" positions.	ON
	Selector lever in other position.	OFF
ACCELE POSI	Released accelerator pedal.	0.0/8
	Fully depressed accelerator pedal.	8/8
CLSD THL POS	Released accelerator pedal.	ON
	Fully depressed accelerator pedal.	OFF
W/O THL POS	Fully depressed accelerator pedal.	ON
	Released accelerator pedal.	OFF
OD CONT SW	Releasing overdrive control switch	OFF
	Holding overdrive control switch	ON
1 POSITION SW	When setting selector lever to "1" position.	ON
	When setting selector lever to other positions.	OFF
BRAKESW	Depressed brake pedal.	ON
	Released brake pedal.	OFF


TERMINAL LAYOUT



PHYSICAL VALUES

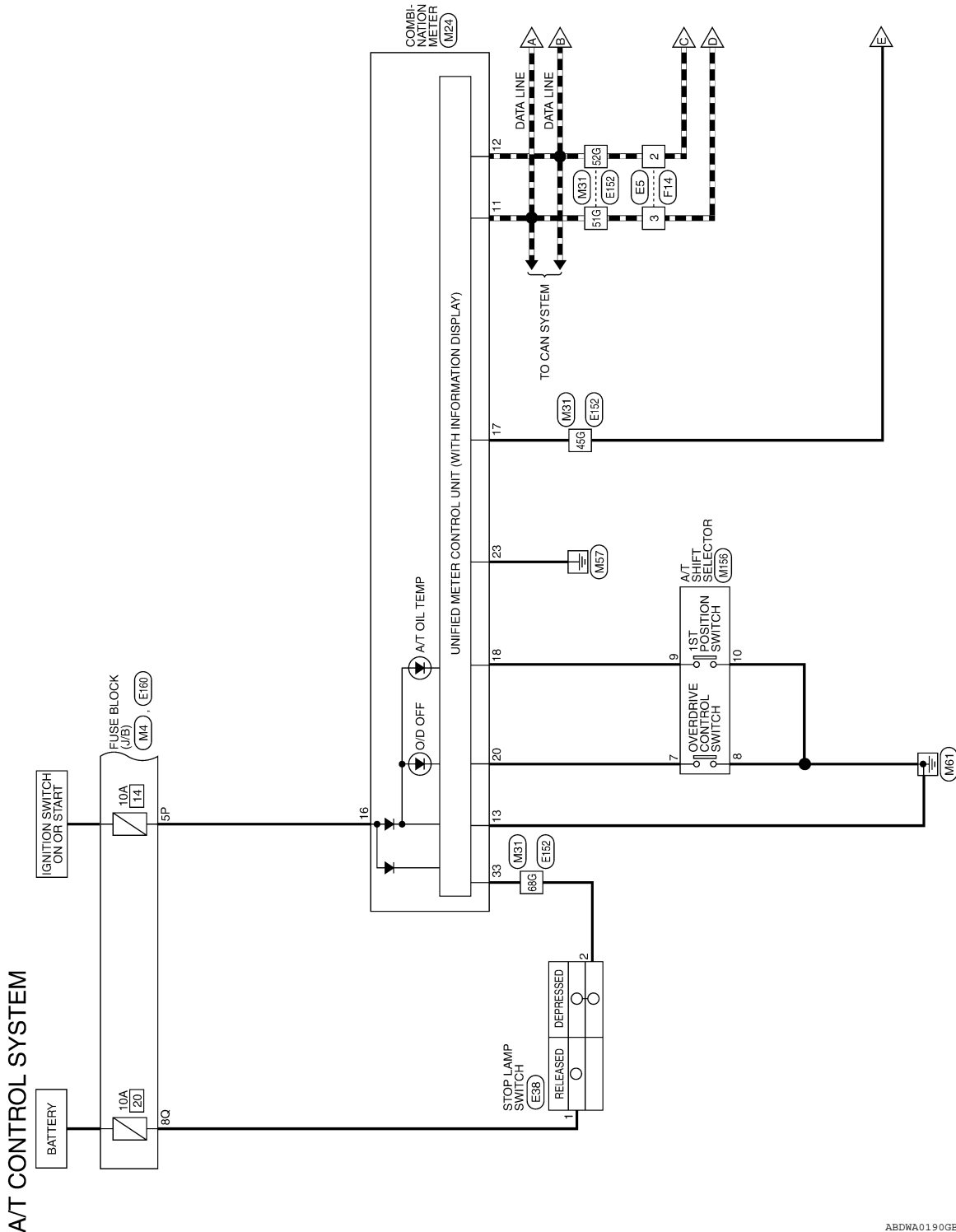
Data are reference value and are measured between each terminal and ground.

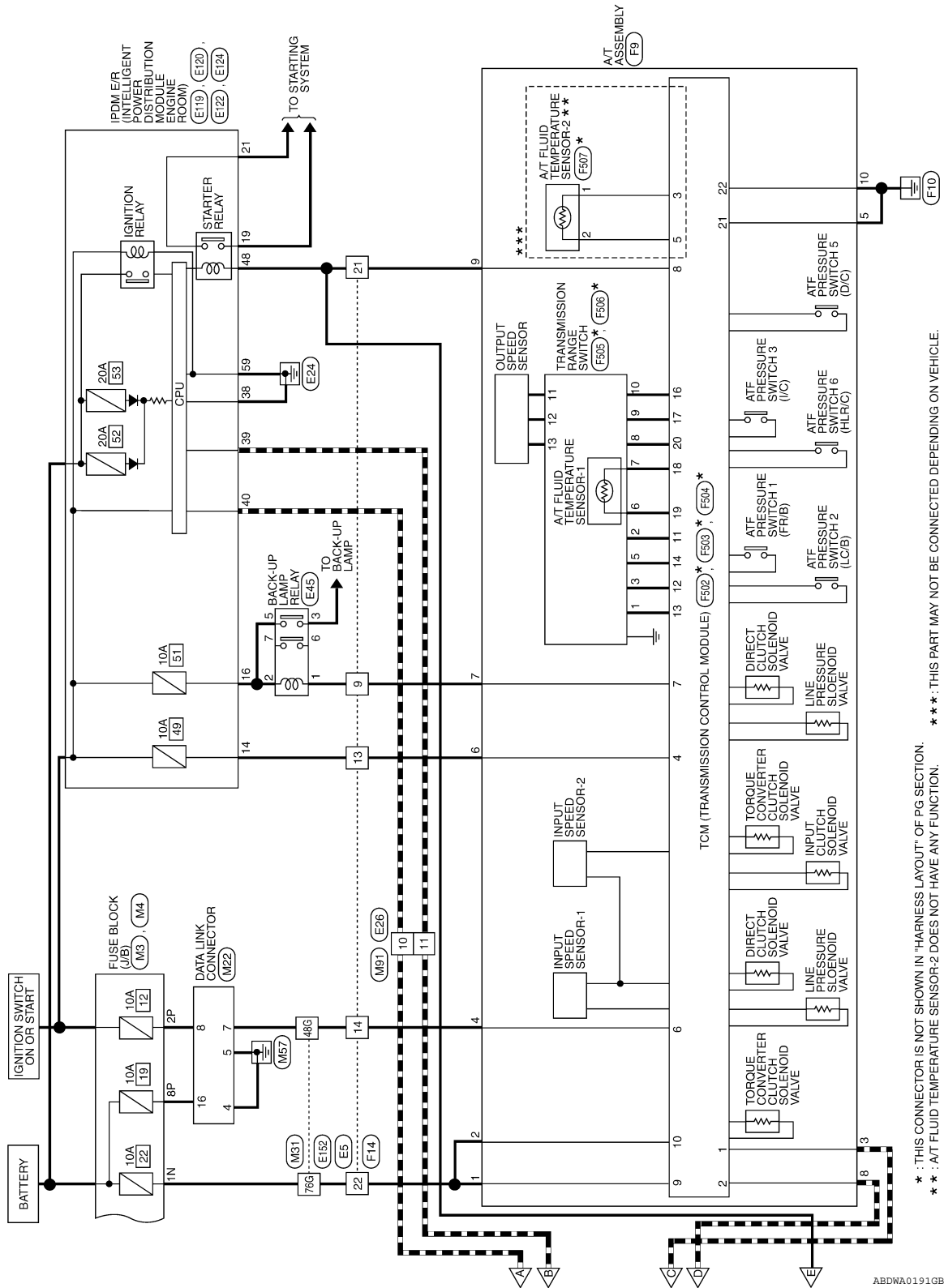
Terminal No.	Wire color	Item	Condition	Data (Approx.)
1	R/B	Power supply (Memory back-up)	Always	Battery voltage
2	R/B	Power supply (Memory back-up)	Always	Battery voltage
3	L	CAN H	-	-
4	V	K-line (CONSULT-III signal)	The terminal is connected to the data link connector for CONSULT-III.	
5	B	Ground	Always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

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

Wiring Diagram - A/T CONTROL SYSTEM -

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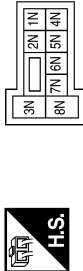


* : THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT" OF PG SECTION.
 ** : AT FLUID TEMPERATURE SENSOR-2 DOES NOT HAVE ANY FUNCTION.
 *** : THIS PART MAY NOT BE CONNECTED DEPENDING ON VEHICLE.

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A/T CONTROL SYSTEM CONNECTORS

Connector No.	M3
Connector Name	FUSE BLOCK (J/B)
Connector Color	WHITE



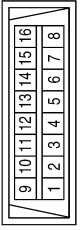
Terminal No.	Color of Wire	Signal Name
1N	R/B	-

Connector No.	M4
Connector Name	FUSE BLOCK (J/B)
Connector Color	WHITE



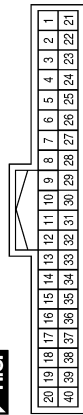
Terminal No.	Color of Wire	Signal Name
2P	W/G	-
5P	W/G	-
8P	R/Y	-

Connector No.	M22
Connector Name	DATA LINK CONNECTOR
Connector Color	WHITE



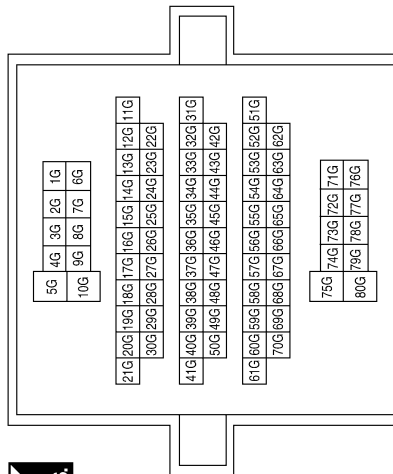
Terminal No.	Color of Wire	Signal Name
4	B	-
5	B	-
7	W	-
8	W/G	-
16	R/Y	-

Connector No.	M24
Connector Name	COMBINATION METER
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
11	P	CAN-L
12	L	CAN-H
13	GR	GROUND
16	W/G	RUN START
17	B	AT-PN SWITCH
18	L	AT 1 RANGE SWITCH
20	Y	O/D OFF SWITCH
23	B	POWER GND
33	LG	BRAKE PEDAL SW

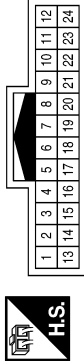
Connector No.	M31
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
45G	B	-
48G	W	-
51G	P	-
52G	L	-
68G	LG	-
76G	R/B	-

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Connector No.	E5
Connector Name	WIRE TO WIRE
Connector Color	WHITE



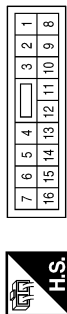
Terminal No.	Color of Wire	Signal Name
2	L	-
3	P	-
9	LG	-
13	W/G	-
14	V	-
21	R	-
22	R/B	-

Connector No.	M156
Connector Name	A/T SHIFT SELECTOR
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
7	Y	-
8	B	-
9	L	-
10	B	-

Connector No.	M91
Connector Name	WIRE TO WIRE
Connector Color	WHITE



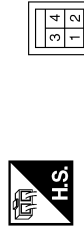
Terminal No.	Color of Wire	Signal Name
10	P	-
11	L	-

Connector No.	E45
Connector Name	BACK-UP LAMP RELAY
Connector Color	BROWN



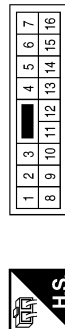
Terminal No.	Color of Wire	Signal Name
1	LG	-
2	W/G	-
3	SB	-
5	W/G	-

Connector No.	E38
Connector Name	STOP LAMP SWITCH
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1	R/B	-
2	Y	-

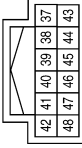
Connector No.	E26
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
10	P	-
11	L	-

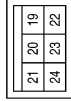
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Connector No.	E122
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	WHITE



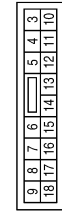
Terminal No.	Color of Wire	Signal Name
38	B	GND (SIGNAL)
39	L	CAN-H
40	P	CAN-L
48	R	INHIBIT SW

Connector No.	E120
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
19	W	STARTER MOTOR
21	GR	IGN SW (ST)

Connector No.	E119
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	WHITE

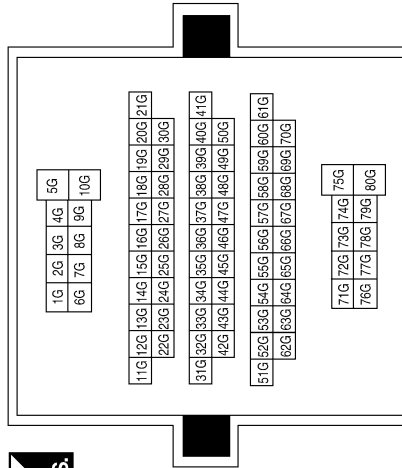


Terminal No.	Color of Wire	Signal Name
14	W/G	A/T ECU IGN SUPPLY
16	W/G	REVERS LAMP

Connector No.	E152
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Terminal No.	45G	Color of Wire	B	Signal Name	-
Terminal No.	48G	Color of Wire	W	Signal Name	-
Terminal No.	51G	Color of Wire	P	Signal Name	-
Terminal No.	52G	Color of Wire	L	Signal Name	-
Terminal No.	68G	Color of Wire	LG	Signal Name	-
Terminal No.	76G	Color of Wire	R/B	Signal Name	-



Connector No.	E124
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	BLACK

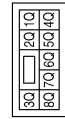


Terminal No.	Color of Wire	Signal Name
59	B	GND (POWER)

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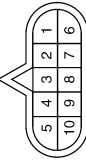
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Connector No.	E160
Connector Name	FUSE BLOCK (J/B)
Connector Color	WHITE



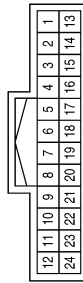
Terminal No.	Color of Wire	Signal Name
8Q	R/B	-

Connector No.	F9
Connector Name	A/T ASSEMBLY
Connector Color	GREEN



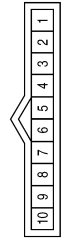
Terminal No.	Color of Wire	Signal Name
1	R/B	-
2	R/B	-
3	L	-
4	V	-
5	B	-
6	W/G	-
7	LG	-
8	P	-
9	R	-
10	B	-

Connector No.	F14
Connector Name	WIRE TO WIRE
Connector Color	WHITE



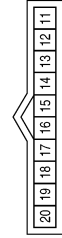
Terminal No.	Color of Wire	Signal Name
2	L	-
3	P	-
9	LG	-
13	W/G	-
14	V	-
21	R	-
22	R/B	-

Connector No.	F502
Connector Name	TCM (TRANSMISSION CONTROL MODULE)
Connector Color	GRAY



Terminal No.	Color of Wire	Signal Name
1	BR	CAN-H
2	L/Y	CAN-L
3	W/Y	ATF SENS 2-
4	R	VIGN
5	W/R	ATF SENS 2+
6	L	K-LINE
7	O	REV LAMP RLY
8	G	START-RLY
9	W	STAND BY SUPPLY-1
10	GR	STAND BY SUPPLY-2

Connector No.	F503
Connector Name	TCM (TRANSMISSION CONTROL MODULE)
Connector Color	GREEN



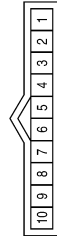
Terminal No.	Color of Wire	Signal Name
11	W	TR SW4
12	GR	TR SW2
13	BR	TR SW1
14	L	TR SW3
15	-	-
16	B	OUT SPD SEN GND
17	R	OUT SPD SEN
18	O	ATF SENS1-
19	G	ATF SENS1+
20	Y	OUT SPD SEN POWER

Connector No.	F506
Connector Name	TRANSMISSION RANGE SWITCH
Connector Color	GREEN



Terminal No.	Color of Wire	Signal Name
11	B	C3 (GND)
12	W	C2 (VOUT)
13	R	C1 (VIN)

Connector No.	F505
Connector Name	TRANSMISSION RANGE SWITCH
Connector Color	GRAY



Terminal No.	Color of Wire	Signal Name
1	BR	S1
2	W	S4
3	GR	S2
4	-	-
5	L	S3
6	G	-
7	O	-
8	Y	C1
9	R	C2
10	B	C3

Connector No.	F504
Connector Name	TCM (TRANSMISSION CONTROL MODULE)
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
21	B	POWER GND-1
22	Y	POWER GND-2

Connector No.	F507
Connector Name	A/T TEMPERATURE SENSOR-2
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1	W/Y	-
2	W/R	-

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Fail-Safe

The TCM has an electrical fail-safe mode. This mode makes it possible to operate even if there is an error in a main electronic control input/output signal circuit. In fail-safe mode the transmission is fixed in 2GR, 4GR or 5GR (depending on the breakdown position), so the customer should feel "slipping" or "poor acceleration". Even when the electronic circuits are normal, under special conditions (for example, when slamming on the brake with the wheels spinning drastically and stopping the tire rotation), the 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

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< ECU DIAGNOSIS >

the normal shift pattern. Therefore, the customer's vehicle has returned to normal, so handle according to the "diagnostics flow" (Refer to [TM-72, "Diagnostic Work Sheet"](#)).

FAIL-SAFE FUNCTION

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

Output Speed Sensor

- Signals are input from two systems - from output speed sensor installed on the transmission and from combination meter so normal driving is possible even if there is a malfunction in one of the systems. And if output speed sensor has unusual cases, 5GR is prohibited.

Accelerator Pedal Position Sensor

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

Throttle Position Sensor

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

Transmission Range Switch

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

Starter Relay

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

Interlock

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

NOTE:

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

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

1st Engine Braking

- When there is an 1st engine brake judgment malfunction, the low coast brake solenoid is switched "OFF" to avoid the engine brake operation.

Line Pressure Solenoid

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

Torque Converter Clutch Solenoid

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

Low Coast Brake Solenoid

- When a (electrical or functional) malfunction occurs, in order to make driving possible, the engine brake is not applied in 1GR and 2GR.

Input Clutch Solenoid

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

Direct Clutch Solenoid

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

Front Brake Solenoid

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

High and Low Reverse Clutch Solenoid

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

Input Speed Sensor 1 or 2

- The control is the same as if there were no input speed sensors, 5GR is prohibited.

DTC Inspection Priority Chart

INFOID:000000005280757

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

NOTE:

If DTC U1000 is displayed with other DTCs, first perform the trouble diagnosis for DTC U1000. Refer to [TM-103](#).

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

DTC No. Index

INFOID:000000005280758

NOTE:

If DTC U1000 is displayed with other DTC, first perform the trouble diagnosis for DTC U1000. Refer to [TM-103](#).

DTC CONSULT- III "TRANSMISSION"	Items (CONSULT- III screen terms)	Reference page
P0615	STARTER RELAY	TM-104
P0700	TRANSMISSION CONT	TM-107
P0705	T/M RANGE SWITCH A	TM-108
P0717	INPUT SPEED SENSOR A	TM-110
P0720	OUTPUT SPEED SENSOR	TM-112
P0725	ENGINE SPEED	TM-115
P0731	1GR INCORRECT RATIO	TM-127
P0732	2GR INCORRECT RATIO	TM-127
P0733	3GR INCORRECT RATIO	TM-127
P0734	4GR INCORRECT RATIO	TM-127
P0735	5GR INCORRECT RATIO	TM-127
P0740	TORQUE CONVERTER	TM-127
P0744	TORQUE CONVERTER	TM-129
P0745	PC SOLENOID A	TM-131
P1705	TP SENSOR	TM-133
P1710	TRANS FLUID TEMP SEN	TM-135
P1721	VEHICLE SPEED SIGNAL	TM-137
P1730	INTERLOCK	TM-139
P1731	1ST E/BRAKING	TM-141
P1752	INPUT CLUTCH SOL	TM-143
P1757	FR BRAKE SOLENOID	TM-145
P1762	DRCT CLUTCH SOL	TM-147
P1767	HLR CLUTCH SOLENOID	TM-149
P1772	L C BRAKE SOLENOID	TM-151
P1774	L C BRAKE SOLENOID	TM-153
U1000	CAN COMM CIRCUIT	TM-103

SYSTEM SYMPTOM

< SYMPTOM DIAGNOSIS >

[5AT: RE5R05A]

SYMPTOM DIAGNOSIS

SYSTEM SYMPTOM

Symptom Chart

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- The diagnostics item numbers show the sequence for inspection. Inspect in order from item 1.
- Overhaul and inspect inside the A/T only if A/T fluid condition is NG. Refer to [TM-204](#). "Checking the A/T Fluid (ATF)".

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
1		Large shock. ("N"→"D" position)	ON vehicle	1. Engine idle speed	EC-16
				2. Engine speed signal	TM-115
				3. Accelerator pedal position sensor	TM-133
				4. Control cable adjustment	TM-217
				5. ATF temperature sensor	TM-135
				6. Front brake solenoid valve	TM-145
				7. CAN communication line	TM-103
				8. Fluid level and state	TM-204
				9. Line pressure test	TM-208
				10. Control valve with TCM	TM-220
			OFF vehicle	11. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to TM-74 .)	TM-245
2	Shift Shock	Shock is too large when changing D1→D2.	ON vehicle	1. Accelerator pedal position sensor	TM-133
				2. Control cable adjustment	TM-217
				3. Direct clutch solenoid valve	TM-147
				4. CAN communication line	TM-103
				5. Engine speed signal	TM-115
				6. Input speed sensor	TM-110
				7. Output speed sensor and vehicle speed signal	TM-112 , TM-137
				8. Fluid level and state	TM-204
				9. Control valve with TCM	TM-220
			OFF vehicle	10. Direct clutch	TM-280
3		Shock is too large when changing D2→D3.	ON vehicle	1. Accelerator pedal position sensor	TM-133
				2. Control cable adjustment	TM-217
				3. High and low reverse clutch solenoid valve	TM-149
				4. CAN communication line	TM-103
				5. Engine speed signal	TM-115
				6. Input speed sensor	TM-110
				7. Output speed sensor and vehicle speed signal	TM-112 , TM-137
				8. Fluid level and state	TM-204
				9. Control valve with TCM	TM-220
			OFF vehicle	10. High and low reverse clutch	TM-278

SYSTEM SYMPTOM

< SYMPTOM DIAGNOSIS >

[5AT: RE5R05A]

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
4		Shock is too large when changing D3→D4.	ON vehicle	1. Accelerator pedal position sensor	TM-133
				2. Control cable adjustment	TM-217
				3. Input clutch solenoid valve	TM-143
				4. CAN communication line	TM-103
				5. Engine speed signal	TM-115
				6. Input speed sensor	TM-110
				7. Output speed sensor and vehicle speed signal	TM-112, TM-137
				8. Fluid level and state	TM-204
				9. Control valve with TCM	TM-220
			OFF vehicle	10. Input clutch	TM-268
5	Shift Shock	Shock is too large when changing D4→D5.	ON vehicle	1. Accelerator pedal position sensor	TM-133
				2. Control cable adjustment	TM-217
				3. Front brake solenoid valve	TM-145
				4. CAN communication line	TM-103
				5. Engine speed signal	TM-115
				6. Input speed sensor	TM-110
				7. Output speed sensor and vehicle speed signal	TM-112, TM-137
				8. Fluid level and state	TM-204
				9. Control valve with TCM	TM-220
			OFF vehicle	10. Front brake (brake band)	TM-245
				11. Input clutch	TM-268
6		Shock is too large for downshift when accelerator pedal is pressed.	ON vehicle	1. Accelerator pedal position sensor	TM-133
				2. Control cable adjustment	TM-217
				3. CAN communication line	TM-103
				4. Engine speed signal	TM-115
				5. Input speed sensor	TM-110
				6. Output speed sensor and vehicle speed signal	TM-112, TM-137
				7. Fluid level and state	TM-204
				8. Control valve with TCM	TM-220
			OFF vehicle	9. Front brake (brake band)	TM-245
				10. Input clutch	TM-268
				11. High and low reverse clutch	TM-278
				12. Direct clutch	TM-280

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SYSTEM SYMPTOM

< SYMPTOM DIAGNOSIS >

[5AT: RE5R05A]

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
7		Shock is too large for upshift when accelerator pedal is released.	ON vehicle	1. Accelerator pedal position sensor	TM-133
				2. Control cable adjustment	TM-217
				3. Engine speed signal	TM-115
				4. CAN communication line	TM-103
				5. Input speed sensor	TM-110
				6. Output speed sensor and vehicle speed signal	TM-112, TM-137
				7. Fluid level and state	TM-204
				8. Control valve with TCM	TM-220
			OFF vehicle	9. Front brake (brake band)	TM-245
				10. Input clutch	TM-268
				11. High and low reverse clutch	TM-278
				12. Direct clutch	TM-280
8	Shift Shock	Shock is too large for lock-up.	ON vehicle	1. Accelerator pedal position sensor	TM-133
				2. Control cable adjustment	TM-217
				3. Engine speed signal	TM-115
				4. CAN communication line	TM-103
				5. Input speed sensor	TM-110
				6. Output speed sensor and vehicle speed signal	TM-112, TM-137
				7. Torque converter clutch solenoid valve	TM-127
				8. Fluid level and state	TM-204
				9. Control valve with TCM	TM-220
			OFF vehicle	10. Torque converter	TM-245
9		Shock is too large during engine brake.	ON vehicle	1. Accelerator pedal position sensor	TM-133
				2. Control cable adjustment	TM-217
				3. CAN communication line	TM-103
				4. Fluid level and state	TM-204
				5. Control valve with TCM	TM-220
			OFF vehicle	6. Front brake (brake band)	TM-245
				7. Input clutch	TM-268
				8. High and low reverse clutch	TM-278
				9. Direct clutch	TM-280

SYSTEM SYMPTOM

< SYMPTOM DIAGNOSIS >

[5AT: RE5R05A]

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
10		Gear does not change from D1 → D2.	ON vehicle	1. Fluid level and state	TM-204
				2. Output speed sensor and vehicle speed signal	TM-112 , TM-137
				3. Direct clutch solenoid valve	TM-147
				4. Line pressure test	TM-208
				5. CAN communication line	TM-103
				6. Control valve with TCM	TM-220
			OFF vehicle	7. Direct clutch	TM-280
11		Gear does not change from D2 → D3.	ON vehicle	1. Fluid level and state	TM-204
				2. Output speed sensor and vehicle speed signal	TM-112 , TM-137
				3. High and low reverse clutch solenoid valve	TM-149
				4. Line pressure test	TM-208
				5. CAN communication line	TM-103
				6. Control valve with TCM	TM-220
			OFF vehicle	7. High and low reverse clutch	TM-278
12	No Up Shift	Gear does not change from D3 → D4.	ON vehicle	1. Fluid level and state	TM-204
				2. Output speed sensor and vehicle speed signal	TM-112 , TM-137
				3. Input clutch solenoid valve	TM-143
				4. Front brake solenoid valve	TM-145
				5. Line pressure test	TM-208
				6. CAN communication line	TM-103
				7. Control valve with TCM	TM-220
OFF vehicle	8. Input clutch	TM-268			
13		Gear does not change from D4 → D5.	ON vehicle	1. Fluid level and state	TM-204
				2. Output speed sensor and vehicle speed signal	TM-112 , TM-137
				3. Front brake solenoid valve	TM-145
				4. Direct clutch solenoid valve	TM-147
				5. Input speed sensor	TM-110
				6. Line pressure test	TM-208
				7. CAN communication line	TM-103
				8. Control valve with TCM	TM-220
			OFF vehicle	9. Front brake (brake band)	TM-245
				10. Input clutch	TM-268

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No.	Items	Symptom	Condition	Diagnostic Item	Reference page
14	No Down Shift	In "D" range, does not downshift to 4GR.	ON vehicle	1. Fluid level and state	TM-204
				2. Output speed sensor and vehicle speed signal	TM-112, TM-137
				3. Front brake solenoid valve	TM-145
				4. Direct clutch solenoid valve	TM-147
				5. CAN communication line	TM-103
				6. Line pressure test	TM-208
				7. Control valve with TCM	TM-220
			OFF vehicle	8. Front brake (brake band)	TM-245
				9. Input clutch	TM-268
15	No Down Shift	In "D" or "3" range, does not downshift to 3GR.	ON vehicle	1. Fluid level and state	TM-204
				2. Output speed sensor and vehicle speed signal	TM-112, TM-137
				3. Input clutch solenoid valve	TM-143
				4. Front brake solenoid valve	TM-145
				5. CAN communication line	TM-103
				6. Line pressure test	TM-208
				7. Control valve with TCM	TM-220
			OFF vehicle	8. Input clutch	TM-268
16	No Down Shift	In "D" or "2" range, does not downshift to 2GR.	ON vehicle	1. Fluid level and state	TM-204
				2. Output speed sensor and vehicle speed signal	TM-112, TM-137
				3. High and low reverse clutch solenoid valve	TM-149
				4. CAN communication line	TM-103
				5. Line pressure test	TM-208
				6. Control valve with TCM	TM-220
			OFF vehicle	7. High and low reverse clutch	TM-278
17	No Down Shift	In "D" or "1" range, does not downshift to 1GR.	ON vehicle	1. Fluid level and state	TM-204
				2. Output speed sensor and vehicle speed signal	TM-112, TM-137
				3. Direct clutch solenoid valve	TM-147
				4. CAN communication line	TM-103
				5. Line pressure test	TM-208
				6. Control valve with TCM	TM-220
			OFF vehicle	7. Direct clutch	TM-280

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No.	Items	Symptom	Condition	Diagnostic Item	Reference page
18	Slips/Will Not engage	When "D" position, remains in 1GR.	ON vehicle	1. Fluid level and state	TM-204
				2. Output speed sensor and vehicle speed signal	TM-112, TM-137
				3. Direct clutch solenoid valve	TM-147
				4. Line pressure test	TM-208
				5. CAN communication line	TM-103
				6. Control valve with TCM	TM-220
			OFF vehicle	7. 3rd one-way clutch	TM-266
				8. 1st one-way clutch	TM-245
				9. Gear system	TM-245
				10. Reverse brake	TM-245
				11. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to TM-74.)	TM-245
				12. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to TM-74.)	TM-245
19		When "D" position, remains in 2GR.	ON vehicle	1. Fluid level and state	TM-204
				2. Output speed sensor and vehicle speed signal	TM-112, TM-137
				3. Low coast brake solenoid valve	TM-151
				4. Line pressure test	TM-208
				5. CAN communication line	TM-103
				6. Control valve with TCM	TM-220
			OFF vehicle	7. 3rd one-way clutch	TM-245
				8. Gear system	TM-245
				9. Direct clutch	TM-280
				10. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to TM-74.)	TM-245

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No.	Items	Symptom	Condition	Diagnostic Item	Reference page
20		When "D" position, re- mains in 3GR.	ON vehicle	1. Fluid level and state	TM-204
				2. Output speed sensor and vehicle speed signal	TM-112, TM-137
				3. Line pressure test	TM-208
				4. CAN communication line	TM-103
				5. Control valve with TCM	TM-220
			OFF vehicle	6. 3rd one-way clutch	TM-245
				7. Gear system	TM-245
				8. High and low reverse clutch	TM-278
				9. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to TM-74.)	TM-245
				10. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to TM-74.)	TM-245
21	Slips/Will Not en- gage	When "D" position, re- mains in 4GR.	ON vehicle	1. Fluid level and state	TM-204
				2. Output speed sensor and vehicle speed signal	TM-112, TM-137
				3. Input clutch solenoid valve	TM-143
				4. Direct clutch solenoid valve	TM-147
				5. High and low reverse clutch solenoid valve	TM-149
				6. Low coast brake solenoid valve	TM-151
				7. Front brake solenoid valve	TM-145
				8. Line pressure test	TM-208
				9. CAN communication line	TM-103
				10. Control valve with TCM	TM-220
			OFF vehicle	11. Input clutch	TM-268
				12. Gear system	TM-245
				13. High and low reverse clutch	TM-278
				14. Direct clutch	TM-280

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No.	Items	Symptom	Condition	Diagnostic Item	Reference page
22		When "D" position, remains in 5GR.	ON vehicle	1. Fluid level and state	TM-204
				2. Output speed sensor and vehicle speed signal	TM-112 , TM-137
				3. Front brake solenoid valve	TM-145
				4. Line pressure test	TM-208
				5. CAN communication line	TM-103
				6. Control valve with TCM	TM-220
			OFF vehicle	7. Front brake (brake band)	TM-245
				8. Input clutch	TM-268
				9. Gear system	TM-245
				10. High and low reverse clutch	TM-278
23	Slips/Will Not Engage	Vehicle cannot be started from D1.	ON vehicle	1. Fluid level and state	TM-204
				2. Accelerator pedal position sensor	TM-133
				3. Line pressure test	TM-208
				4. CAN communication line	TM-103
				5. Control valve with TCM	TM-220
			OFF vehicle	6. Torque converter	TM-245
				7. Oil pump assembly	TM-263
				8. 3rd one-way clutch	TM-266
				9. 1st one-way clutch	TM-245
				10. Gear system	TM-245
				11. Reverse brake	TM-245
				12. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to TM-74 .)	TM-245
				13. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to TM-74 .)	TM-245
24		Does not lock-up.	ON vehicle	1. Fluid level and state	TM-204
				2. Line pressure test	TM-208
				3. Engine speed signal	TM-115
				4. Input speed sensor	TM-110
				5. Torque converter clutch solenoid valve	TM-127
				6. CAN communication line	TM-103
				7. Control valve with TCM	TM-220
			OFF vehicle	8. Torque converter	TM-245
				9. Oil pump assembly	TM-263

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No.	Items	Symptom	Condition	Diagnostic Item	Reference page	
25	Slips/Will Not engage	Does not hold lock-up condition.	ON vehicle	1. Fluid level and state	TM-204	
				2. Line pressure test	TM-208	
				3. Engine speed signal	TM-115	
				4. Input speed sensor	TM-110	
				5. Torque converter clutch solenoid valve	TM-127	
				6. CAN communication line	TM-103	
				7. Control valve with TCM	TM-220	
			OFF vehicle	8. Torque converter	TM-245	
				9. Oil pump assembly	TM-263	
26		Slips/Will Not engage	Lock-up is not released.	ON vehicle	1. Fluid level and state	TM-204
					2. Line pressure test	TM-208
					3. Engine speed signal	TM-115
					4. Input speed sensor	TM-110
					5. Torque converter clutch solenoid valve	TM-127
					6. CAN communication line	TM-103
					7. Control valve with TCM	TM-220
				OFF vehicle	8. Torque converter	TM-245
					9. Oil pump assembly	TM-263
27	Slips/Will Not engage		No shock at all or the clutch slips when vehicle changes speed D1 → D2.	ON vehicle	1. Fluid level and state	TM-204
					2. Output speed sensor and vehicle speed signal	TM-112, TM-137
					3. Direct clutch solenoid valve	TM-147
					4. CAN communication line	TM-103
					5. Line pressure test	TM-208
					6. Control valve with TCM	TM-220
				OFF vehicle	7. Torque converter	TM-245
					8. Oil pump assembly	TM-263
					9. 3rd one-way clutch	TM-266
		10. Gear system			TM-245	
		11. Direct clutch			TM-280	
		12. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to TM-74.)			TM-245	

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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. Fluid level and state	TM-204
				2. Output speed sensor and vehicle speed signal	TM-112, TM-137
				3. High and low reverse clutch solenoid valve	TM-149
				4. CAN communication line	TM-103
				5. Line pressure test	TM-208
				6. Control valve with TCM	TM-220
			OFF vehicle	7. Torque converter	TM-245
				8. Oil pump assembly	TM-263
				9. 3rd one-way clutch	TM-266
				10. Gear system	TM-245
				11. High and low reverse clutch	TM-278
				12. Forward one- way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to TM-74.)	TM-245
				13. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to TM-74.)	TM-245
29		No shock at all or the clutch slips when vehicle changes speed D3 → D4.	ON vehicle	1. Fluid level and state	TM-204
				2. Output speed sensor and vehicle speed signal	TM-112, TM-137
				3. Input clutch solenoid valve	TM-143
				4. Front brake solenoid valve	TM-145
				5. CAN communication line	TM-103
				6. Line pressure test	TM-208
				7. Control valve with TCM	TM-220
			OFF vehicle	8. Torque converter	TM-245
				9. Oil pump assembly	TM-263
				10. Input clutch	TM-268
				11. Gear system	TM-245
				12. High and low reverse clutch	TM-278
				13. Direct clutch	TM-280

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No.	Items	Symptom	Condition	Diagnostic Item	Reference page
30	Slips/Will Not engage	No shock at all or the clutch slips when vehicle changes speed D4 → D5.	ON vehicle	1. Fluid level and state	TM-204
				2. Output speed sensor and vehicle speed signal	TM-112, TM-137
				3. Front brake solenoid valve	TM-145
				4. Direct clutch solenoid valve	TM-147
				5. CAN communication line	TM-103
				6. Line pressure test	TM-208
				7. Control valve with TCM	TM-220
			OFF vehicle	8. Torque converter	TM-245
				9. Oil pump assembly	TM-263
				10. Front brake (brake band)	TM-245
				11. Input clutch	TM-268
				12. Gear system	TM-245
				13. High and low reverse clutch	TM-278
31	Slips/Will Not engage	When you press the accelerator pedal and shift speed D5→ D4, the engine idles or the transmission slips.	ON vehicle	1. Fluid level and state	TM-204
				2. Output speed sensor and vehicle speed signal	TM-112, TM-137
				3. Front brake solenoid valve	TM-145
				4. Direct clutch solenoid valve	TM-147
				5. CAN communication line	TM-103
				6. Line pressure test	TM-208
				7. Control valve with TCM	TM-220
			OFF vehicle	8. Torque converter	TM-245
				9. Oil pump assembly	TM-263
				10. Input clutch	TM-268
				11. Gear system	TM-245
				12. High and low reverse clutch	TM-278
				13. Direct clutch	TM-280

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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 transmission slips.	ON vehicle	1. Fluid level and state	TM-204
				2. Output speed sensor and vehicle speed signal	TM-112, TM-137
				3. Input clutch solenoid valve	TM-143
				4. Front brake solenoid valve	TM-145
				5. CAN communication line	TM-103
				6. Line pressure test	TM-208
				7. Control valve with TCM	TM-220
			OFF vehicle	8. Torque converter	TM-245
				9. Oil pump assembly	TM-263
				10. 3rd one-way clutch	TM-266
				11. Gear system	TM-245
				12. High and low reverse clutch	TM-278
				13. Forward one- way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to TM-74.)	TM-245
				14. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to TM-74.)	TM-245
33		When you press the accelerator pedal and shift speed D3→ D2, the engine idles or the transmission slips.	ON vehicle	1. Fluid level and state	TM-204
				2. Output speed sensor and vehicle speed signal	TM-112, TM-137
				3. High and low reverse clutch solenoid valve	TM-149
				4. Direct clutch solenoid valve	TM-147
				5. CAN communication line	TM-103
				6. Line pressure test	TM-208
				7. Control valve with TCM	TM-220
			OFF vehicle	8. Torque converter	TM-245
				9. Oil pump assembly	TM-263
				10. 3rd one-way clutch	TM-266
				11. Gear system	TM-245
				12. Direct clutch	TM-280
				13. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to TM-74.)	TM-245

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No.	Items	Symptom	Condition	Diagnostic Item	Reference page
34	Slips/Will Not Engage	When you press the accelerator pedal and shift speed D2→ D1, the engine idles or the transmission slips.	ON vehicle	1. Fluid level and state	TM-204
				2. Output speed sensor and vehicle speed signal	TM-112 , TM-137
				3. Direct clutch solenoid valve	TM-147
				4. CAN communication line	TM-103
				5. Line pressure test	TM-208
				6. Control valve with TCM	TM-220
			OFF vehicle	7. Torque converter	TM-245
				8. Oil pump assembly	TM-263
				9. 3rd one-way clutch	TM-266
				10. 1st one-way clutch	TM-245
				11. Gear system	TM-245
				12. Reverse brake	TM-245
				13. Forward one- way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to TM-74.)	TM-245
				14. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to TM-74.)	TM-245
35		With selector lever in "D" position, acceleration is extremely poor.	ON vehicle	1. Fluid level and state	TM-204
				2. Line pressure test	TM-208
				3. Accelerator pedal position sensor	TM-133
				4. CAN communication line	TM-103
				5. Transmission range switch	TM-108
				6. Control cable adjustment	TM-217
				7. Control valve with TCM	TM-220
			OFF vehicle	8. Torque converter	TM-245
				9. Oil pump assembly	TM-263
				10. 1st one-way clutch	TM-245
				11. Gear system	TM-245
				12. Reverse brake	TM-245
				13. Forward one- way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to TM-74.)	TM-245
				14. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to TM-74.)	TM-245

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No.	Items	Symptom	Condition	Diagnostic Item	Reference page	
36		With selector lever in "R" position, acceleration is extremely poor.	ON vehicle	1. Fluid level and state	TM-204	A
				2. Line pressure test	TM-208	B
				3. Accelerator pedal position sensor	TM-133	C
				4. High and low reverse clutch solenoid valve	TM-149	
				5. CAN communication line	TM-103	
				6. Transmission range switch	TM-108	
				7. Control cable adjustment	TM-217	
				8. Control valve with TCM	TM-220	TM
			OFF vehicle	9. Gear system	TM-245	
				10. Output shaft	TM-245	E
				11. Reverse brake	TM-245	
37	Slips/Will Not Engage	While starting off by accelerating in 1st, engine races or slippage occurs.	ON vehicle	1. Fluid level and state	TM-204	F
				2. Line pressure test	TM-208	
				3. Accelerator pedal position sensor	TM-133	
				4. CAN communication line	TM-103	G
				5. Control valve with TCM	TM-220	
			OFF vehicle	6. Torque converter	TM-245	H
				7. Oil pump assembly	TM-263	
				8. 3rd one-way clutch	TM-266	
				9. 1st one-way clutch	TM-245	I
				10. Gear system	TM-245	
				11. Reverse brake	TM-245	
				12. Forward one- way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to TM-74.)	TM-245	J
				13. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to TM-74.)	TM-245	K
38		While accelerating in 2nd, engine races or slippage occurs.	ON vehicle	1. Fluid level and state	TM-204	L
				2. Line pressure test	TM-208	
				3. Accelerator pedal position sensor	TM-133	
				4. CAN communication line	TM-103	
				5. Direct clutch solenoid valve	TM-147	M
				6. Control valve with TCM	TM-220	
			OFF vehicle	7. Torque converter	TM-245	N
				8. Oil pump assembly	TM-263	
				9. 3rd one-way clutch	TM-266	
				10. Gear system	TM-245	O
				11. Direct clutch	TM-280	
				12. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to TM-74.)	TM-245	P

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No.	Items	Symptom	Condition	Diagnostic Item	Reference page
39	Slips/Will Not Engage	While accelerating in 3rd, engine races or slippage occurs.	ON vehicle	1. Fluid level and state	TM-204
				2. Line pressure test	TM-208
				3. Accelerator pedal position sensor	TM-133
				4. CAN communication line	TM-103
				5. High and low reverse clutch solenoid valve	TM-149
				6. Control valve with TCM	TM-220
			OFF vehicle	7. Torque converter	TM-245
				8. Oil pump assembly	TM-263
				9. 3rd one-way clutch	TM-266
				10. Gear system	TM-245
				11. High and low reverse clutch	TM-278
				12. Forward one- way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to TM-74.)	TM-245
				13. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to TM-74.)	TM-245
40		While accelerating in 4th, engine races or slippage occurs.	ON vehicle	1. Fluid level and state	TM-204
				2. Line pressure test	TM-208
				3. Accelerator pedal position sensor	TM-133
				4. CAN communication line	TM-103
				5. Input clutch solenoid valve	TM-143
				6. Control valve with TCM	TM-220
			OFF vehicle	7. Torque converter	TM-245
				8. Oil pump assembly	TM-263
				9. Input clutch	TM-268
				10. Gear system	TM-245
				11. High and low reverse clutch	TM-278
				12. Direct clutch	TM-280

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No.	Items	Symptom	Condition	Diagnostic Item	Reference page
41		While accelerating in 5th, engine races or slippage occurs.	ON vehicle	1. Fluid level and state	TM-204
				2. Line pressure test	TM-208
				3. Accelerator pedal position sensor	TM-133
				4. CAN communication line	TM-103
				5. Front brake solenoid valve	TM-145
				6. Control valve with TCM	TM-220
			OFF vehicle	7. Torque converter	TM-245
				8. Oil pump assembly	TM-263
				9. Front brake (brake band)	TM-245
				10. Input clutch	TM-268
				11. Gear system	TM-245
				12. High and low reverse clutch	TM-278
42	Slips/Will Not Engage	Slips at lock-up.	ON vehicle	1. Fluid level and state	TM-204
				2. Line pressure test	TM-208
				3. Engine speed signal	TM-115
				4. Input speed sensor	TM-110
				5. Torque converter clutch solenoid valve	TM-127
				6. CAN communication line	TM-103
				7. Control valve with TCM	TM-220
			OFF vehicle	8. Torque converter	TM-245
				9. Oil pump assembly	TM-263
43		No creep at all.	ON vehicle	1. Fluid level and state	TM-204
				2. Line pressure test	TM-208
				3. Accelerator pedal position sensor	TM-133
				4. Direct clutch solenoid valve	TM-147
				5. Transmission range switch	TM-108
				6. CAN communication line	TM-103
				7. Control cable adjustment	TM-217
				8. Control valve with TCM	TM-220
			OFF vehicle	9. Torque converter	TM-245
				10. Oil pump assembly	TM-263
				11. 1st one-way clutch	TM-245
				12. Gear system	TM-245
				13. Reverse brake	TM-245
				14. Direct clutch	TM-280
				15. Forward one- way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to TM-74.)	TM-245
				16. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to TM-74.)	TM-245

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No.	Items	Symptom	Condition	Diagnostic Item	Reference page
44		Vehicle cannot run in all positions.	ON vehicle	1. Fluid level and state	TM-204
				2. Line pressure test	TM-208
				3. Transmission range switch	TM-108
				4. Control cable adjustment	TM-217
				5. Control valve with TCM	TM-220
			OFF vehicle	6. Oil pump assembly	TM-263
				7. Gear system	TM-245
				8. Output shaft	TM-245
45	Slips/Will Not Engage	With selector lever in "D" position, driving is not possible.	ON vehicle	1. Fluid level and state	TM-204
				2. Line pressure test	TM-208
				3. Transmission range switch	TM-108
				4. Control cable adjustment	TM-217
				5. Control valve with TCM	TM-220
			OFF vehicle	6. Torque converter	TM-245
				7. Oil pump assembly	TM-263
				8. 1st one-way clutch	TM-245
				9. Gear system	TM-245
				10. Reverse brake	TM-245
				11. Forward one- way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to TM-74.)	TM-245
				12. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to TM-74.)	TM-245
46		With selector lever in "R" position, driving is not possible.	ON vehicle	1. Fluid level and state	TM-204
				2. Line pressure test	TM-208
				3. Transmission range switch	TM-108
				4. Control cable adjustment	TM-217
				5. Control valve with TCM	TM-220
			OFF vehicle	6. Gear system	TM-245
				7. Output shaft	TM-245
				8. Reverse brake	TM-245
47	Others	Shift point is high in "D" position.	ON vehicle	1. Output speed sensor and vehicle speed signal	TM-112, TM-137
				2. Accelerator pedal position sensor	TM-133
				3. CAN communication line	TM-103
				4. ATF temperature sensor	TM-135
				5. Control valve with TCM	TM-220

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No.	Items	Symptom	Condition	Diagnostic Item	Reference page
48		Shift point is low in "D" position.	ON vehicle	1. Output speed sensor and vehicle speed signal	TM-112 , TM-137
				2. Accelerator pedal position sensor	TM-133
				3. CAN communication line	TM-103
				4. Control valve with TCM	TM-220
49		Judder occurs during lock-up.	ON vehicle	1. Fluid level and state	TM-204
				2. Engine speed signal	TM-115
				3. Input speed sensor	TM-110
				4. Output speed sensor and vehicle speed signal	TM-112 , TM-137
			OFF vehicle	5. Accelerator pedal position sensor	TM-133
				6. CAN communication line	TM-103
				7. Torque converter clutch solenoid valve	TM-127
				8. Control valve with TCM	TM-220
50	Others	Strange noise in "R" position.	ON vehicle	1. Fluid level and state	TM-204
				2. Engine speed signal	TM-115
				3. CAN communication line	TM-103
				4. Control valve with TCM	TM-220
			OFF vehicle	5. Torque converter	TM-245
				6. Oil pump assembly	TM-263
				7. Gear system	TM-245
				8. High and low reverse clutch	TM-278
				9. Reverse brake	TM-245
51		Strange noise in "N" position.	ON vehicle	1. Fluid level and state	TM-204
				2. Engine speed signal	TM-115
				3. CAN communication line	TM-103
				4. Control valve with TCM	TM-220
			OFF vehicle	5. Torque converter	TM-245
				6. Oil pump assembly	TM-263
				7. Gear system	TM-245
52		Strange noise in "D" position.	ON vehicle	1. Fluid level and state	TM-204
				2. Engine speed signal	TM-115
				3. CAN communication line	TM-103
				4. Control valve with TCM	TM-220
			OFF vehicle	5. Torque converter	TM-245
				6. Oil pump assembly	TM-263
				7. Gear system	TM-245
				8. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to TM-74.)	TM-245

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SYSTEM SYMPTOM

< SYMPTOM DIAGNOSIS >

[5AT: RE5R05A]

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
53		Vehicle does not decelerate by engine brake.	ON vehicle	1. Transmission range switch	TM-108
				2. Fluid level and state	TM-204
				3. Control cable adjustment	TM-217
				4. 1st position switch	TM-165
				5. CAN communication line	TM-103
				6. Control valve with TCM	TM-220
			OFF vehicle	7. Input clutch	TM-268
				8. High and low reverse clutch	TM-278
				9. Direct clutch	TM-280
54	Others	Engine brake does not operate in "2" position.	ON vehicle	1. Transmission range switch	TM-108
				2. Fluid level and state	TM-204
				3. Control cable adjustment	TM-217
				4. CAN communication line	TM-103
				5. Control valve with TCM	TM-220
			OFF vehicle	6. Front brake (brake band)	TM-263
				7. Input clutch	TM-268
				8. High and low reverse clutch	TM-278
55		Engine brake does not operate in "1" position.	ON vehicle	1. Transmission range switch	TM-108
				2. Fluid level and state	TM-204
				3. Control cable adjustment	TM-217
				4. 1st position switch	TM-165
				5. CAN communication line	TM-103
				6. Control valve with TCM	TM-220
			OFF vehicle	7. Input clutch	TM-268
				8. High and low reverse clutch	TM-278
				9. Direct clutch	TM-280

SYSTEM SYMPTOM

< SYMPTOM DIAGNOSIS >

[5AT: RE5R05A]

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
56	Others	Maximum speed low.	ON vehicle	1. Fluid level and state	TM-204
				2. Line pressure test	TM-208
				3. Accelerator pedal position sensor	TM-133
				4. CAN communication line	TM-103
				5. Direct clutch solenoid valve	TM-147
				6. Control valve with TCM	TM-220
			OFF vehicle	7. Torque converter	TM-245
				8. Oil pump assembly	TM-263
				9. Input clutch	TM-268
				10. Gear system	TM-245
				11. High and low reverse clutch	TM-278
				12. Direct clutch	TM-280
				13. Forward one- way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to TM-74.)	TM-245
				14 Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to TM-74.)	TM-245
57	Extremely large creep.	ON vehicle	1. Engine idle speed	EC-16	
			2. CAN communication line	TM-103	
		OFF vehicle	3. Torque converter	TM-245	
		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.	ON vehicle	1. Transmission range switch
2. Control cable adjustment	TM-217				
OFF vehicle	3. Parking pawl components			TM-245	
59	Vehicle runs with transmission in "P" position.	ON vehicle	1. Transmission range switch	TM-108	
			2. Fluid level and state	TM-204	
			3. Control cable adjustment	TM-217	
			4. Control valve with TCM	TM-220	
			5. Parking pawl components	TM-245	
		OFF vehicle	6. Gear system	TM-245	

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SYSTEM SYMPTOM

< SYMPTOM DIAGNOSIS >

[5AT: RE5R05A]

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
60		Vehicle runs with transmission in "N" position.	ON vehicle	1. Transmission range switch	TM-108
				2. Fluid level and state	TM-204
				3. Control cable adjustment	TM-217
				4. Control valve with TCM	TM-220
			OFF vehicle	5. Input clutch	TM-268
				6. Gear system	TM-245
				7. Direct clutch	TM-280
				8. Reverse brake	TM-245
				9. Forward one- way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to TM-74 .)	TM-245
				10. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to TM-74 .)	TM-245
61		Engine does not start in "N" or "P" position.	ON vehicle	1. Ignition switch and starter	PG-19, STR-7
				2. Control cable adjustment	TM-217
				3. Transmission range switch	TM-108
62	Others	Engine starts in positions other than "N" or "P".	ON vehicle	1. Ignition switch and starter	PG-19, STR-7
				2. Control cable adjustment	TM-217
				3. Transmission range switch	TM-108
63		Engine stall.	ON vehicle	1. Fluid level and state	TM-204
				2. Engine speed signal	TM-115
				3. Input speed sensor	TM-110
				4. Torque converter clutch solenoid valve	TM-127
				5. CAN communication line	TM-103
				6. Control valve with TCM	TM-220
			OFF vehicle	7. Torque converter	TM-245
64		Engine stalls when select lever shifted "N" → "D", "R".	ON vehicle	1. Fluid level and state	TM-204
				2. Engine speed signal	TM-115
				3. Input speed sensor	TM-110
				4. Torque converter clutch solenoid valve	TM-127
				5. CAN communication line	TM-103
				6. Control valve with TCM	TM-220
			OFF vehicle	7. Torque converter	TM-245

SYSTEM SYMPTOM

< SYMPTOM DIAGNOSIS >

[5AT: RE5R05A]

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
65	Others	Engine speed does not return to idle.	ON vehicle	1. Fluid level and state	TM-204
				2. Direct clutch solenoid valve	TM-147
				3. Front brake solenoid valve	TM-145
				4. Accelerator pedal position sensor	TM-133
				5. Output speed sensor and vehicle speed signal	TM-112, TM-137
				6. CAN communication line	TM-103
				7. Control valve with TCM	TM-220
			OFF vehicle	8. Front brake (brake band)	TM-245
				9. Direct clutch	TM-280
66		O/D OFF indicator lamp does not come on.	ON vehicle	1. CAN communication line	TM-103
				2. Combination meter	MWI-21
				3. TCM power supply	TM-155

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PRECAUTION

PRECAUTIONS

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

INFOID:000000005280782

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

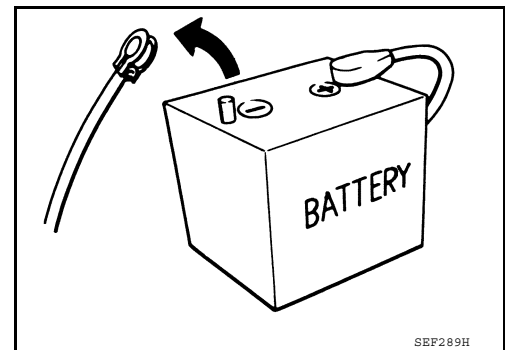
WARNING:

- 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 SR section.
- Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.

Precaution

INFOID:000000005280783

- Before connecting or disconnecting the A/T assembly harness connector, turn ignition switch "OFF" and disconnect negative battery cable. Because battery voltage is applied to TCM even if ignition switch is turned "OFF".
- After performing each TROUBLE DIAGNOSIS, perform "DTC (Diagnostic Trouble Code) CONFIRMATION PROCEDURE". If the repair is completed the DTC should not be displayed in the "DTC CONFIRMATION PROCEDURE".



- Always use the specified brand of ATF. Refer to [MA-10. "Fluids and Lubricants"](#).
- Use lint-free paper not cloth rags during work.
- After replacing the ATF, dispose of the waste oil using the methods prescribed by law, ordinance, etc.
- Before proceeding with disassembly, thoroughly clean the outside of the transmission. It is important to prevent the internal parts from becoming contaminated by dirt or other foreign matter.
- Disassembly should be done in a clean work area.
- Use lint-free paper or towels for wiping parts clean. Common shop rags can leave fibers that could interfere with the operation of the transmission.
- Place disassembled parts in order for easier and proper assembly.
- All parts should be carefully cleaned with a general purpose, non-flammable solvent before inspection or reassembly.
- Gaskets, seals and O-rings should be replaced any time the transmission is disassembled.
- It is very important to perform functional tests whenever they are indicated.
- The valve body contains precision parts and requires extreme care when parts are removed and serviced. Place disassembled valve body parts in order for easier and proper assembly. Care will also prevent springs and small parts from becoming scattered or lost.
- Properly installed valves, sleeves, plugs, etc. will slide along bores in valve body under their own weight.
- Before assembly, apply a coat of recommended ATF to all parts. Apply petroleum jelly to protect O-rings and seals, or hold bearings and washers in place during assembly. Do not use grease.
- Extreme care should be taken to avoid damage to O-rings, seals and gaskets when assembling.
- After overhaul, refill the transmission with new ATF.

PRECAUTIONS

< PRECAUTION >

[5AT: RE5R05A]

- When the A/T drain plug is removed, only some of the fluid is drained. Old A/T fluid will remain in torque converter and ATF cooling system.
Always follow the procedures under “Changing A/T Fluid” in the AT section when changing A/T fluid. Refer to [TM-205. "Changing the A/T Fluid \(ATF\)".](#)

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PREPARATION

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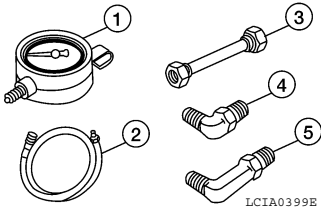
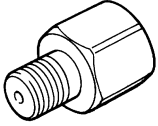
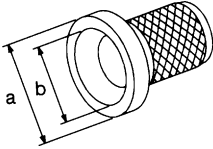
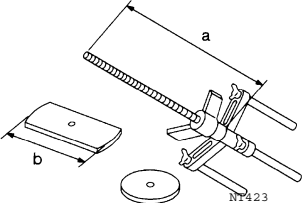
PREPARATION

PREPARATION

Special Service Tool

INFOID:000000005280784

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

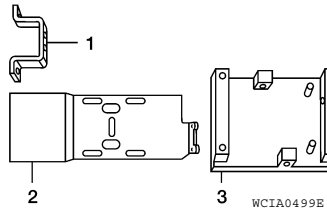
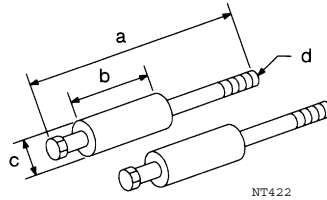
Tool number (Kent-Moore No.) Tool name	Description
<p>ST2505S001 (J-34301-C) Oil pressure gauge set 1. ST25051001 (—) Oil pressure gauge 2. ST25052000 (—) Hose 3. ST25053000 (—) Joint pipe 4. ST25054000 (—) Adapter 5. ST25055000 (—) Adapter</p>  <p style="text-align: right; font-size: small;">LCIA0399E</p>	<p>Measuring line pressure</p>
<p>KV31103600 (J-45674) Joint pipe adapter (With ST25054000)</p>  <p style="text-align: right; font-size: small;">ZZA1227D</p>	<p>Measuring line pressure</p>
<p>ST33400001 (J-26082) Drift</p>  <p style="text-align: right; font-size: small;">NT086</p>	<p>Installing oil pump housing oil seal a: 60 mm (2.36 in) dia. b: 47 mm (1.85 in) dia.</p>
<p>KV31102400 (J-34285 and J-34285-87) Clutch spring compressor</p>  <p style="text-align: right; font-size: small;">NT423</p>	<p>Installing reverse brake return spring retainer a: 320 mm (12.60 in) b: 174 mm (6.85 in)</p>

PREPARATION

< PREPARATION >

[5AT: RE5R05A]

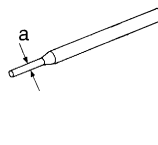
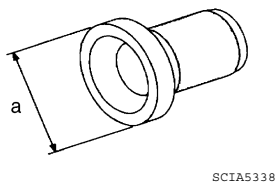
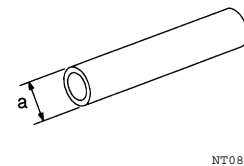
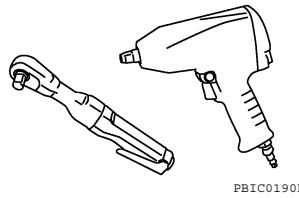
Tool number (Kent-Moore No.) Tool name	Description
ST25850000 (J-25721-A) Sliding hammer	Remove oil pump assembly a: 179 mm (7.05 in) b: 70 mm (2.76 in) c: 40 mm (1.57 in) d: M12X1.75P
— (J-47002) Transmission jack adapter kit 1. — (J-47002-1) Center bracket 2. — (J-47002-3) Adapter plate 3. — (J-47002-4)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



Commercial Service Tool

INFOID:000000005280785

Tool name	Description
Power tool	Loosening bolts and nuts
Drift	Installing manual shaft seals a: 22 mm (0.87 in) dia.
Drift	Installing rear oil seal a: 64 mm (2.52 in) dia.
Pin punch	<ul style="list-style-type: none"> • Removing retaining pin • Installing retaining pin a: 4 mm (0.16 in) dia.



ON-VEHICLE MAINTENANCE

A/T FLUID

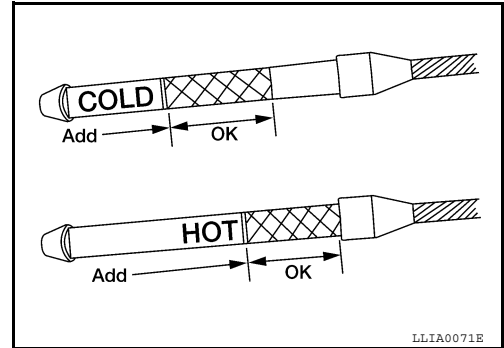
Checking the A/T Fluid (ATF)

INFOID:000000005280786

CAUTION:

If using the vehicle for towing, the A/T fluid must be replaced as specified. Refer to [MA-7, "Periodic Maintenance"](#).

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



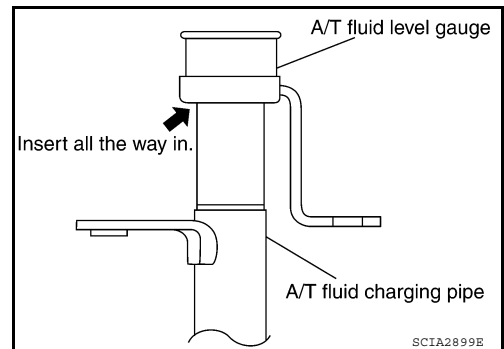
CAUTION:

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

- e. Re-insert the A/T fluid level gauge into the A/T fluid charging pipe until the cap contacts the top of the A/T fluid charging pipe as shown.

CAUTION:

To check A/T fluid level, insert the A/T fluid level gauge until the cap contacts the top of the A/T fluid charging pipe, with the gauge reversed from the normal inserted position.



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

CAUTION:

Do not overfill the transmission with A/T fluid.

- g. Install the A/T fluid level gauge and the A/T fluid level gauge bolt.

A/T fluid level gauge bolt : Refer to [TM-235, "Exploded View"](#).

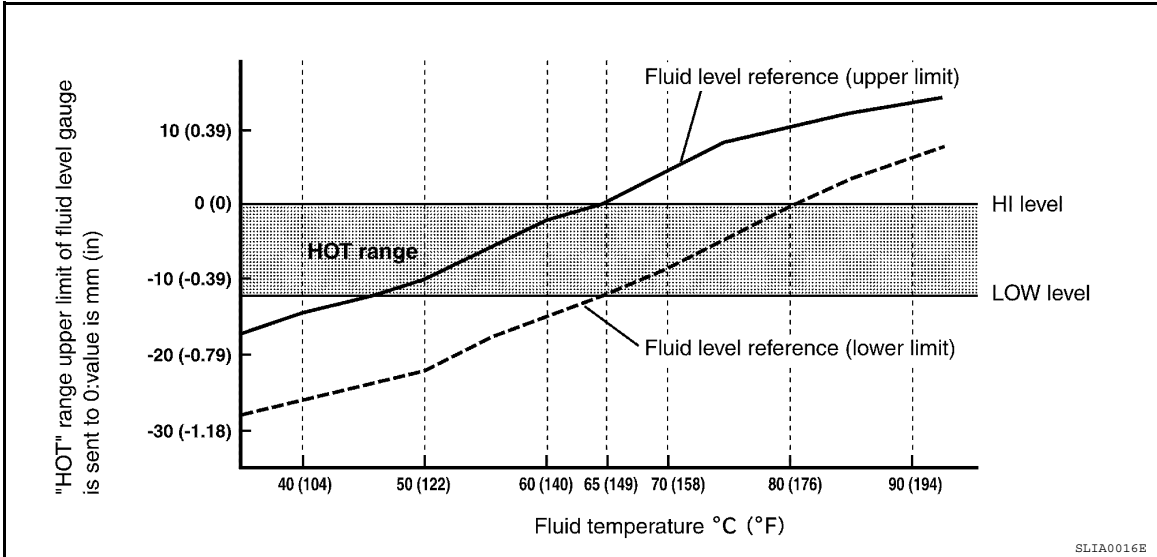
2. Warm up the engine and transmission.
3. Check for any A/T fluid leaks.
4. Drive the vehicle to increase the A/T fluid temperature to 80° C (176° F).

A/T FLUID

< ON-VEHICLE MAINTENANCE >

[5AT: RE5R05A]

- Allow the A/T fluid temperature to fall to approximately 65°C (149°F). Use the CONSULT-III to monitor the A/T fluid temperature as follows:



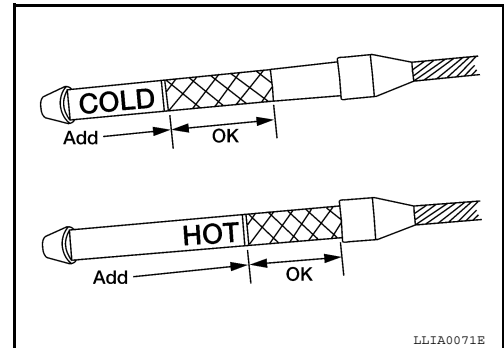
NOTE:

The A/T fluid level will be significantly affected by the A/T fluid temperature as shown. Therefore monitor the A/T fluid temperature data using the CONSULT-III.

- Connect CONSULT-III to data link connector.
 - Select "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-III.
 - Read out the value of "ATF TEMP 1".
- Re-check the A/T fluid level at A/T fluid temperatures of approximately 65°C (149°F) using the "HOT" range on the A/T fluid level gauge as shown. The HOT range is between 50° - 80° C (122° - 176° F).

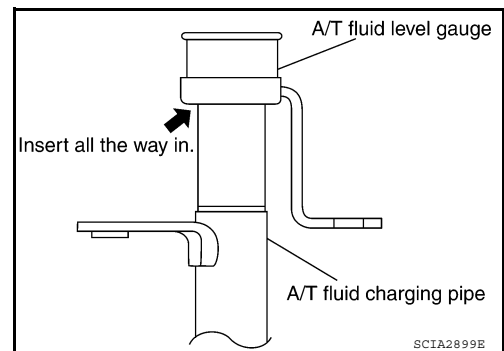
CAUTION:

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



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

- Check the A/T fluid condition.
 - If the A/T fluid is very dark or smells burned, check operation of A/T. Flush cooling system after repair of A/T.
 - If the A/T fluid contains frictional material (clutches, bands, etc.), replace the radiator and flush the transmission cooler lines using cleaning solvent and compressed air after repairing the transmission.
- Install the A/T fluid level gauge in the A/T fluid charging pipe.
- Tighten the A/T fluid level gauge bolt to specification.



A/T fluid level gauge bolt : Refer to [TM-235, "Exploded View"](#).

Changing the A/T Fluid (ATF)

INFOID:000000005280787

CAUTION:

A/T FLUID

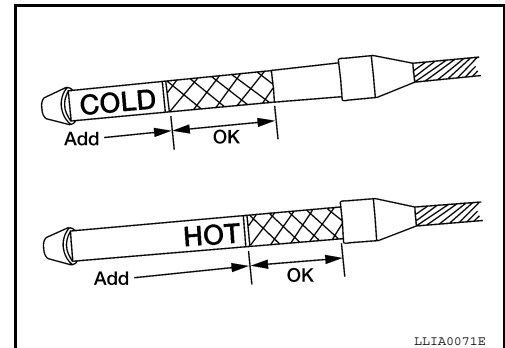
< ON-VEHICLE MAINTENANCE >

[5AT: RE5R05A]

If using the vehicle for towing, the A/T fluid must be replaced as specified. Refer to [MA-7, "Periodic Maintenance"](#).

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

Drain plug : Refer to [TM-218, "Removal and Installation"](#).



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

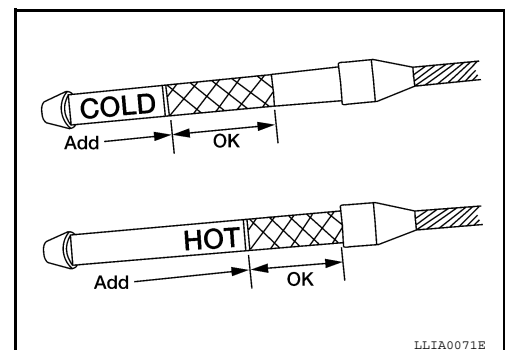
A/T fluid grade and capacity : Refer to [MA-10, "Fluids and Lubricants"](#).

CAUTION:

- If Genuine NISSAN Matic S ATF is not available, Genuine NISSAN Matic J ATF may also be used. Using automatic transmission fluid other than Genuine NISSAN Matic S ATF or Matic J ATF will cause deterioration in driveability and automatic transmission durability, and may damage the automatic transmission, which is not covered by the NISSAN new vehicle limited warranty.
 - When filling the transmission with A/T fluid, do not spill the A/T fluid on any heat generating parts such as the exhaust manifold.
 - Do not reuse the drain plug gasket.
5. Install the A/T fluid level gauge and tighten the A/T fluid level gauge bolt to specification.

A/T fluid level gauge bolt : Refer to [TM-235, "Exploded View"](#).

6. Drive the vehicle to warm up the A/T fluid to approximately 80° C (176° F).
7. Check the fluid level and condition. If the A/T fluid is still dirty, repeat steps 2 through 6.



8. Install the A/T fluid level gauge in the A/T fluid charging pipe and install the A/T fluid level gauge bolt.
9. Tighten the A/T fluid level gauge bolt to specification.

A/T fluid level gauge bolt : Refer to [TM-235, "Exploded View"](#).

INSPECTIONS BEFORE TROUBLE DIAGNOSIS

< ON-VEHICLE MAINTENANCE >

[5AT: RE5R05A]

INSPECTIONS BEFORE TROUBLE DIAGNOSIS

Fluid Condition Check

INFOID:000000005389102

A/T FLUID CHECK

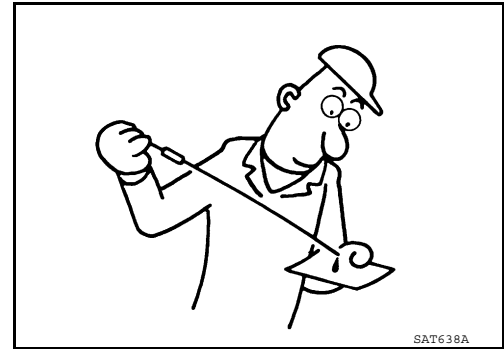
Fluid Leakage and Fluid Level Check

- Inspect for fluid leakage and check the fluid level. Refer to [TM-204, "Checking the A/T Fluid \(ATF\)".](#)

Fluid Condition Check

Inspect the fluid condition.

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



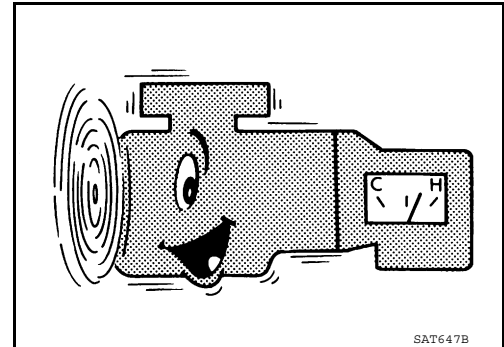
Stall Test

INFOID:000000005280790

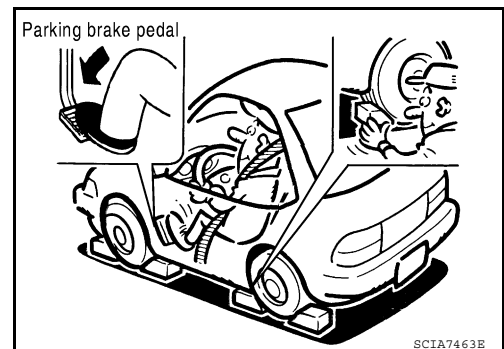
STALL TEST

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.



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INSPECTIONS BEFORE TROUBLE DIAGNOSIS

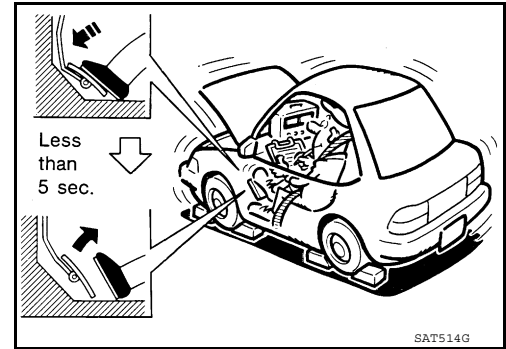
< ON-VEHICLE MAINTENANCE >

[5AT: RE5R05A]

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: [TM-304, "Stall Speed"](#)

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

Judgment of Stall Test

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

O: Stall speed within standard value position

H: Stall speed higher than standard value

L: Stall speed lower than standard value

Stall test standard value position

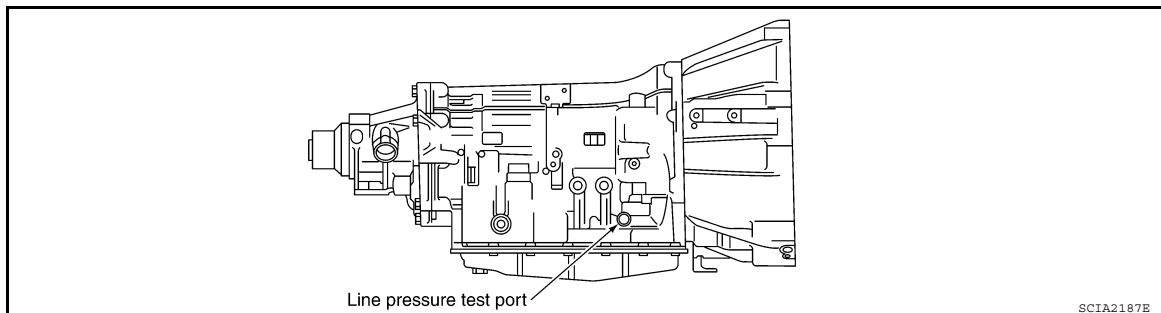
Does not shift-up D position 1 → 2	Slipping in 2GR, 3GR, 4GR	Direct clutch slippage
Does not shift-up D position 2 → 3	Slipping in 3GR, 4GR, 5GR	High and low reverse clutch slippage
Does not shift-up D position 3 → 4	Slipping in 4GR, 5GR	Input clutch slippage
Does not shift-up D position 4 → 5	Slipping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

Line Pressure Test

INFOID:000000005280791

LINE PRESSURE TEST

Line Pressure Test Port



Line Pressure Test Procedure

1. Inspect the amount of engine oil and replenish if necessary.

INSPECTIONS BEFORE TROUBLE DIAGNOSIS

< ON-VEHICLE MAINTENANCE >

[5AT: RE5R05A]

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

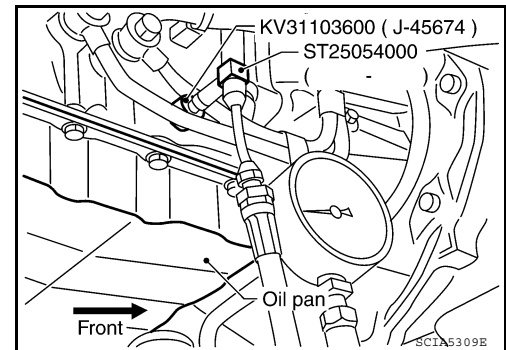
NOTE:

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

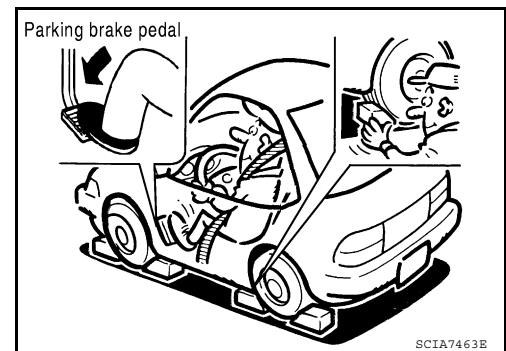
- After warming up remove the oil pressure detection plug and install the oil pressure gauge [ST2505S001(J-34301-C)].

CAUTION:

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



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



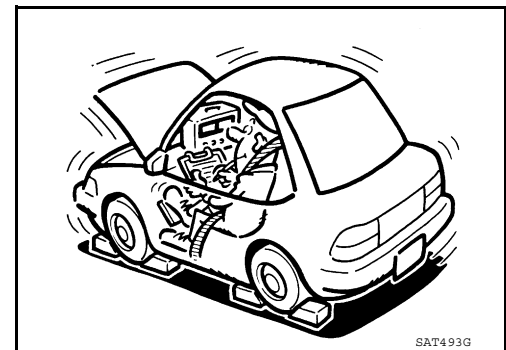
- Start the engine, then measure the line pressure at both idle and the stall speed.

CAUTION:

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

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

:7.3 N·m (0.74 kg·m, 65 in·lb)



CAUTION:

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

Line Pressure

Engine speed	Line pressure [kPa (kg/cm ² , psi)]	
	"R" position	"D" position
At idle speed	TM-305. "Line Pressure"	
At stall speed		

Judgment of Line Pressure Test

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INSPECTIONS BEFORE TROUBLE DIAGNOSIS

< ON-VEHICLE MAINTENANCE >

[5AT: RE5R05A]

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

ROAD TEST

Description

INFOID:000000005388932

ROAD TEST

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

1. Check before engine is started. Refer to [TM-211](#).
2. Check at idle. Refer to [TM-211](#).
3. Cruise test
 - Inspect all the items from Part 1 to Part 3. Refer to [TM-212](#), [TM-214](#), [TM-214](#).
- Before beginning the road test, check the test procedure and inspection items.
- Test all inspection items until the symptom is uncovered. Diagnose NG items when all road tests are complete.

Check Before Engine Is Started

INFOID:000000005280792

1.CHECK O/D OFF INDICATOR LAMP

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

Does O/D OFF indicator lamp light up for about 2 seconds?

- YES >> 1. Turn ignition switch "OFF".
2. Perform self-diagnostics and record all NG items on the diagnostic worksheet. Refer to [TM-95](#), "[CONSULT-III Function \(TRANSMISSION\)](#)", [TM-100](#), "[Diagnosis Procedure without CONSULT-III](#)".
3. Go to [TM-211](#), "[Check at Idle](#)".
- NO >> Stop the test and go to [TM-178](#), "[Symptom Chart](#)".

Check at Idle

INFOID:000000005280793

1.CHECK STARTING THE ENGINE

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

Does the engine start?

- YES >> GO TO 2.
- NO >> Stop the road test and go to [TM-178](#), "[Symptom Chart](#)".

2.CHECK STARTING THE ENGINE

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

Does the engine start in either position?

- YES >> Stop the road test and go to [TM-178](#), "[Symptom Chart](#)".
- NO >> GO TO 3.

3.CHECK "P" POSITION FUNCTIONS

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

ROAD TEST

< ON-VEHICLE MAINTENANCE >

[5AT: RE5R05A]

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

- YES >> Record the malfunction, GO TO 4.
- NO >> GO TO 4.

4.CHECK "N" POSITION FUNCTIONS

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

Does vehicle move forward or backward?

- YES >> Record the malfunction, GO TO 5.
- NO >> GO TO 5.

5.CHECK SHIFT SHOCK

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

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

- YES >> Record the malfunction, GO TO 6.
- NO >> GO TO 6.

6.CHECK "R" POSITION FUNCTIONS

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

Does the vehicle creep backward?

- YES >> GO TO 7.
- NO >> Record the malfunction, GO TO 7.

7.CHECK "D" POSITION FUNCTIONS

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

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

- YES >> Go to [TM-212, "Cruise Test - Part 1"](#).
- NO >> Record the malfunction and go to [TM-212, "Cruise Test - Part 1"](#).

Cruise Test - Part 1

INFOID:000000005280794

1.CHECK STARTING OUT FROM D1

1. Drive the vehicle for about 10 minutes to warm up the engine oil and ATF.
Appropriate temperature for the ATF: 50 - 80°C (122 - 176°F)
2. Park the vehicle on a level surface.
3. Move selector lever to "P" position.
4. Start the engine.
5. Set overdrive control switch to ON position (without manual mode).
6. Move selector lever to "D" position.
7. Press the accelerator pedal about half way down to accelerate the vehicle.

 **With CONSULT-III**

Read off the gear positions.

Starts from D1?

- YES >> GO TO 2.
- NO >> Record the malfunction, GO TO 2.

2.CHECK SHIFT-UP D1 → D2

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

- Refer to [TM-304, "Vehicle Speed at Which Gear Shifting Occurs"](#).

 **With CONSULT-III**

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

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

ROAD TEST

< ON-VEHICLE MAINTENANCE >

[5AT: RE5R05A]

- YES >> GO TO 3.
NO >> Record the malfunction, GO TO 3.

3.CHECK SHIFT-UP D2 → D3

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

- Refer to [TM-304, "Vehicle Speed at Which Gear Shifting Occurs"](#).

With CONSULT-III

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

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

- YES >> GO TO 4.
NO >> Record the malfunction, GO TO 4.

4.CHECK SHIFT-UP D3 → D4

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

- Refer to [TM-304, "Vehicle Speed at Which Gear Shifting Occurs"](#).

With CONSULT-III

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

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

- YES >> GO TO 5.
NO >> Record the malfunction, GO TO 5.

5.CHECK SHIFT-UP D4 → D5

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

- Refer to [TM-304, "Vehicle Speed at Which Gear Shifting Occurs"](#).

With CONSULT-III

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

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

- YES >> GO TO 6.
NO >> Record the malfunction, GO TO 6.

6.CHECK LOCK-UP

When releasing accelerator pedal from D5 (closed throttle position signal: OFF), check lock-up from D5 to L/U.

- Refer to [TM-304, "Vehicle Speed at Which Gear Shifting Occurs"](#).

With CONSULT-III

Select "TCC SOLENOID" with the "MAIN SIGNAL" mode for "TRANSMISSION".

Does it lock-up?

- YES >> GO TO 7.
NO >> Record the malfunction, GO TO 7.

7.CHECK LOCK-UP HOLD

Check hold lock-up.

With CONSULT-III

Select "TCC SOLENOID" with the "MAIN SIGNAL" mode for "TRANSMISSION".

Does it maintain lock-up status?

- YES >> GO TO 8.
NO >> Record the malfunction, GO TO 8.

8.CHECK LOCK-UP RELEASE

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

With CONSULT-III

Select "TCC SOLENOID" with the "MAIN SIGNAL" mode for "TRANSMISSION".

Does lock-up cancel?

- YES >> GO TO 9.

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ROAD TEST

[5AT: RE5R05A]

< ON-VEHICLE MAINTENANCE >

NO >> Record the malfunction, GO TO 9.

9. CHECK SHIFT-DOWN D5 → D4

Decelerate by pressing lightly on the brake pedal.

With CONSULT-III

Read the gear position and engine speed.

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

YES >> 1. Stop the vehicle.

2. Go to [TM-214, "Cruise Test - Part 2"](#).

NO >> Record the malfunction and go to [TM-214, "Cruise Test - Part 2"](#).

Cruise Test - Part 2

INFOID:000000005388933

1. CHECK SHIFT-UP D1 → D2

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

- Refer to [TM-304, "Vehicle Speed at Which Gear Shifting Occurs"](#).

With CONSULT-III

Read the gear position, throttle position and vehicle speed.

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

YES >> GO TO 2.

NO >> Record the malfunction, GO TO 2.

2. CHECK SHIFT-UP D2 → D3

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

- Refer to [TM-304, "Vehicle Speed at Which Gear Shifting Occurs"](#).

With CONSULT-III

Read the gear position, throttle position and vehicle speed.

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

YES >> GO TO 3.

NO >> Record the malfunction, GO TO 3.

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

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

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

YES >> 1. Stop the vehicle.

2. Go to [TM-214, "Cruise Test - Part 3"](#).

NO >> Record the malfunction and go to [TM-214, "Cruise Test - Part 3"](#).

Cruise Test - Part 3

INFOID:000000005280796

1. CHECK SHIFT-DOWN

1. Confirm overdrive control switch is ON position.
2. Confirm gear selector lever is in "D" position.
3. Accelerate vehicle using half-throttle to D5.
4. Release accelerator pedal.
5. Set overdrive control switch to OFF position while driving in D5.

With CONSULT-III

Read the gear position.

Does A/T shift from D5 to D4 (O/D OFF)?

YES >> GO TO 2.

NO >> Record the malfunction, GO TO 2.

2. CHECK SHIFT-DOWN

During D4 driving, move gear selector from D → 3 → 2 → 1.

ROAD TEST

< ON-VEHICLE MAINTENANCE >

[5AT: RE5R05A]

Ⓜ **With CONSULT-III**

Read the gear position.

Is downshifting correctly performed?

YES >> GO TO 3.

NO >> Record the malfunction, GO TO 3.

3.CHECK ENGINE BRAKE

Check engine brake.

Does engine braking effectively reduce speed in M1 position (with manual mode) or 11 position (without manual mode)?

YES >> 1. Stop the vehicle.

2. Carry out the self-diagnostics. Refer to [TM-95. "CONSULT-III Function \(TRANSMISSION\)"](#).

NO >> Record the malfunction, then continue the trouble diagnosis.

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SHIFT CONTROL SYSTEM

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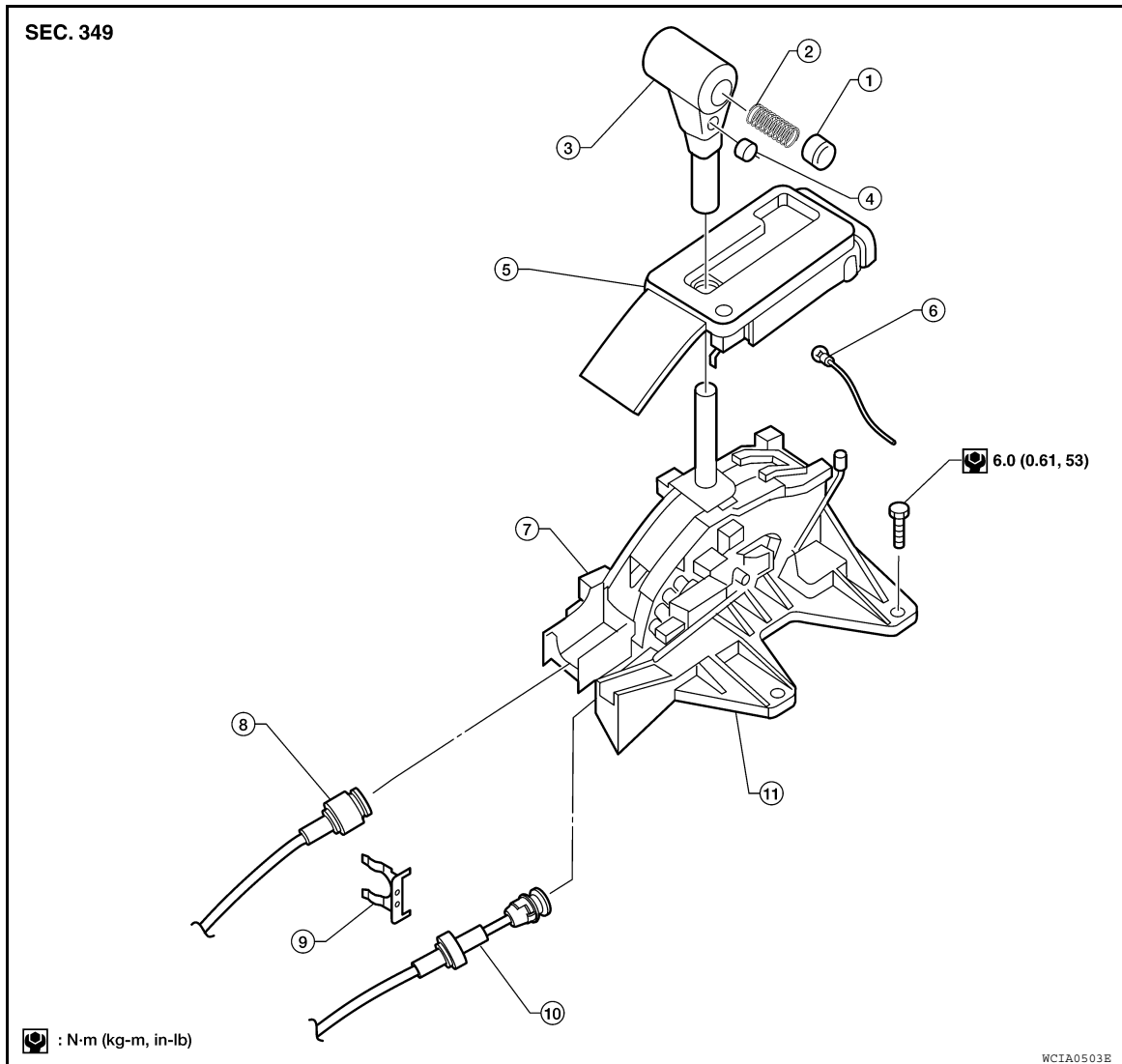
[5AT: RE5R05A]

ON-VEHICLE REPAIR

SHIFT CONTROL SYSTEM

Control Device Removal and Installation

INFOID:000000005280797



- | | | |
|-----------------------------------|-------------------------------|--------------------|
| 1. Selector button | 2. Selector spring | 3. Selector handle |
| 4. Overdrive control switch | 5. Position indicator | 6. Position lamp |
| 7. A/T selector harness connector | 8. A/T selector control cable | 9. Lock plate |
| 10. Key interlock cable | 11. A/T shift selector | |

REMOVAL

1. Remove the center console (front and rear). Refer to [IP-10, "Exploded View"](#).
2. Disconnect the following from the A/T shift selector.
 - A/T selector control cable
 - A/T key interlock cable
 - A/T selector connector
3. Remove the A/T shift selector.

INSTALLATION

Installation is in reverse order of removal.

SHIFT CONTROL SYSTEM

< ON-VEHICLE REPAIR >

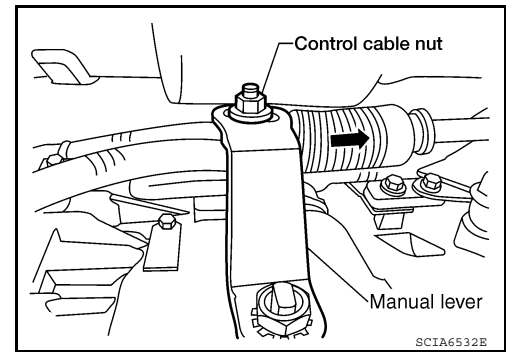
[5AT: RE5R05A]

Adjustment of A/T Position

INFOID:000000005280798

1. Loosen nut of control cable.
2. Place the manual lever and selector lever in "P" position.
3. Push the control cable in the direction shown with a force of 9.8 N (1kg, 2.2 lb), release it. This is in the natural state, tighten control cable nut to specifications.

Control cable nut : 14.5 N-m (1.5 kg-m, 11 ft-lb)



Checking of A/T Position

INFOID:000000005280799

With the selector lever in the "P" position, turn the ignition switch to the ON position with the engine OFF. Confirm that the following conditions apply.

- The selector lever can be shifted from the "P" position when the brake pedal is depressed.
- The selector lever stops at each position with the feel of engagement when it is moved through all the positions.
- There is no excessive effort, sticking, noise or rattle.
- The actual position of the selector lever matches the position shown by the shift position indicator and the A/T body.
- The back-up lamps illuminate only when the selector lever is placed in the "R" position.
- The back-up lamps do not illuminate when the selector lever is pushed against the "R" position when in the "P" or "N" position.
- The engine can only be started with the selector lever in the "P" and "N" positions.
- The A/T is locked completely when in the "P" position.

OIL PAN

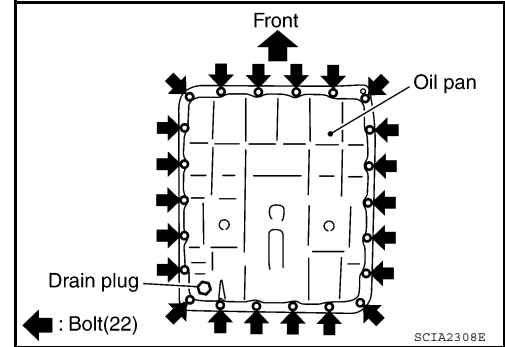
Removal and Installation

INFOID:000000005774518

REMOVAL AND INSTALLATION

Removal

1. Drain A/T fluid. Refer to [TM-205. "Changing the A/T Fluid \(ATF\)".](#)
2. Remove oil pan bolts.
3. Remove oil pan and gasket.

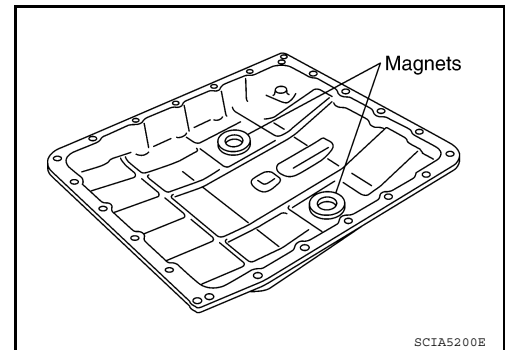


4. Check for foreign materials in oil pan to help determine cause of malfunction. If the A/T fluid is very dark, has some burned smell, or contains foreign particles then friction material (clutches, band) may need replacement. A tacky film that will not wipe clean indicates varnish build up. Varnish can cause valves, servo, and clutches to stick and can inhibit pump pressure.

CAUTION:

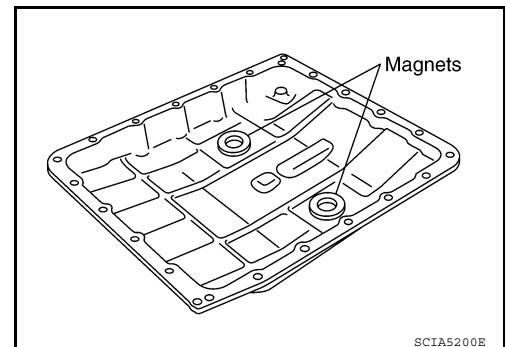
If friction material is detected, flush the transmission cooler after repair.

5. Remove magnets from oil pan.



Installation

1. Install the oil pan magnets as shown.



OIL PAN

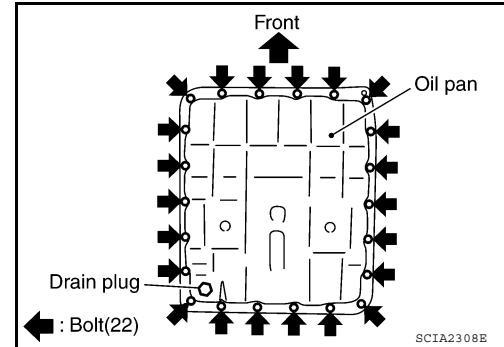
< ON-VEHICLE REPAIR >

[5AT: RE5R05A]

2. Install the oil pan with new oil pan gasket.

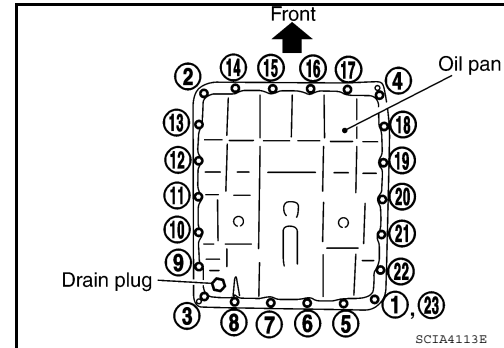
CAUTION:

- Be sure the oil drain plug is located to the rear of the transmission assembly.
- Before installing oil pan bolts, remove any traces of old sealant from the sealing surfaces and threaded holes.
- Do not reuse old gasket, replace with a new one.
- Always replace the oil pan bolts as they are self-sealing.
- Partially install the oil pan bolts in a criss-cross pattern to prevent dislocation of the gasket.



3. Tighten oil pan bolts in numerical order as shown.

Oil pan bolts : 7.9 N·m (0.81 kg-m, 70 in-lb)



4. Refill the A/T with fluid and check for fluid leakage. Refer to [TM-204. "Checking the A/T Fluid \(ATF\)".](#)

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CONTROL VALVE WITH TCM

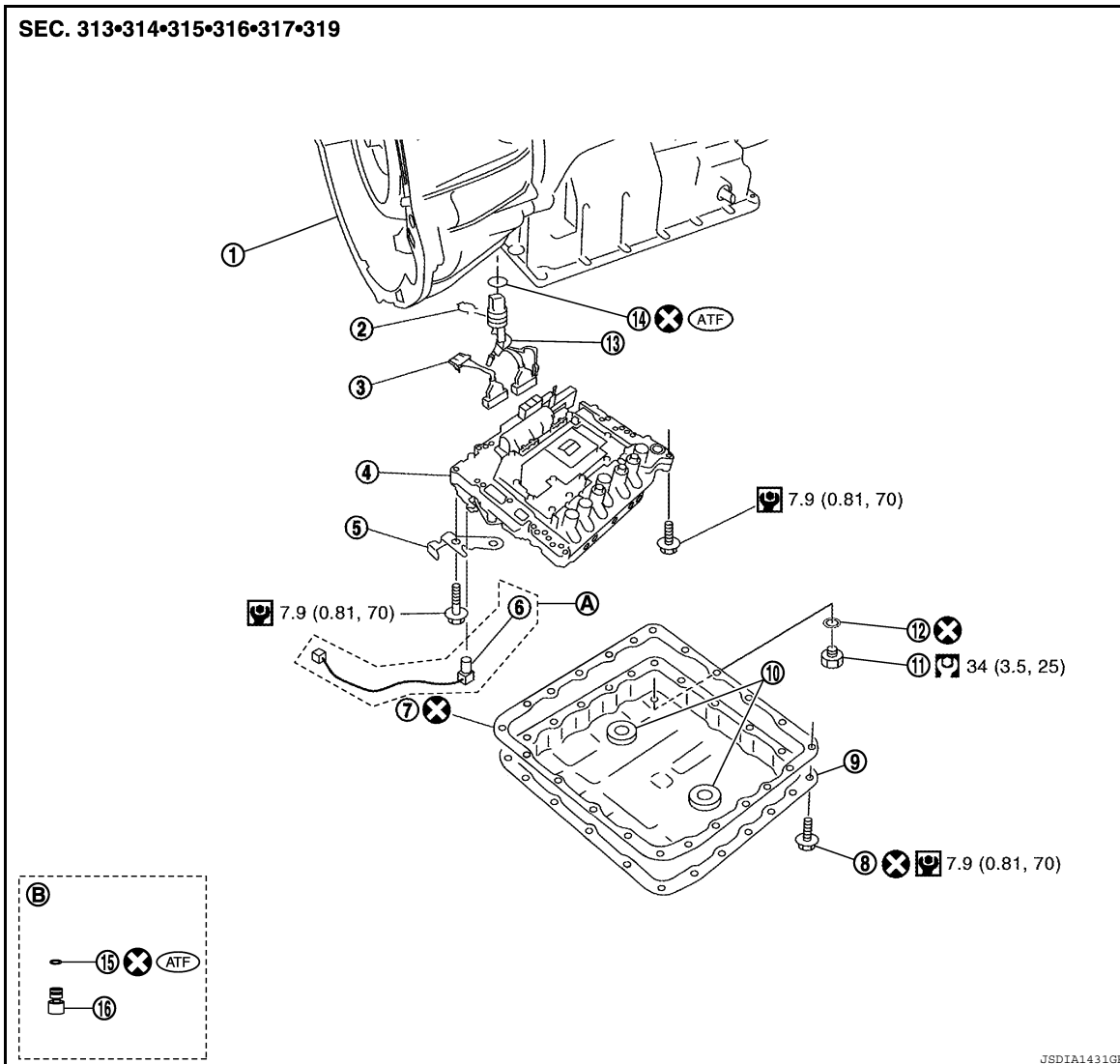
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[5AT: RE5R05A]

CONTROL VALVE WITH TCM

Exploded View

INFOID:000000005280801



JSDIA1431GB

- | | | |
|----------------------------|-----------------|-----------------------------------|
| 1. Transmission | 2. Snap ring | 3. Sub-harness |
| 4. Control valve with TCM | 5. Bracket | 6. A/T fluid temperature sensor 2 |
| 7. Oil pan gasket | 8. Oil pan bolt | 9. Oil pan |
| 10. Magnet | 11. Drain plug | 12. Drain plug gasket |
| 13. Terminal cord assembly | 14. O-ring | 15. O-ring |
| 16. Plug | | |

A/T fluid temperature sensor 2 (A) can be changed to plug (B), depending on vehicles.

Removal and Installation

INFOID:000000005280802

REMOVAL

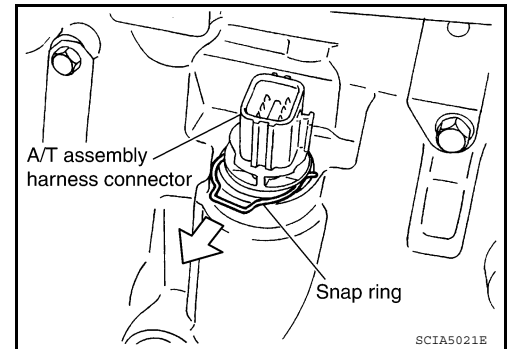
1. Disconnect negative battery terminal.
2. Drain A/T fluid.
3. Disconnect A/T assembly harness connector.

CONTROL VALVE WITH TCM

< ON-VEHICLE REPAIR >

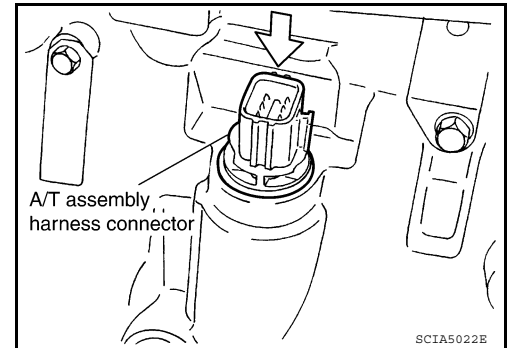
[5AT: RE5R05A]

4. Remove snap ring from A/T assembly harness connector.



5. Push A/T assembly harness connector.

CAUTION:
Do not damage connector.

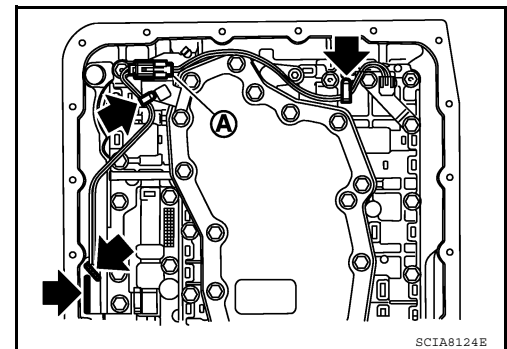


6. Remove oil pan and oil pan gasket. Refer to [TM-218, "Removal and Installation"](#).
7. If an A/T fluid temperature sensor 2 is attached, disconnect the A/T fluid temperature sensor 2 connector as shown below.

- a. Disconnect A/T fluid temperature sensor 2 connector (A).

CAUTION:
Do not damage connector.

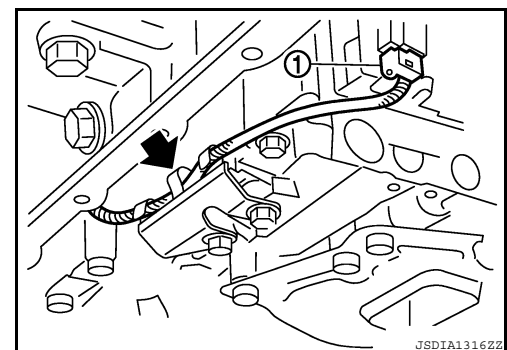
- b. Straighten the four terminal clips (←) to free the terminal cord assembly for A/T fluid temperature sensor 2 harness.



8. Straighten terminal clip (←) to free the output speed sensor harness.

9. Disconnect output speed sensor connector (1).

CAUTION:
Do not damage connector.



CONTROL VALVE WITH TCM

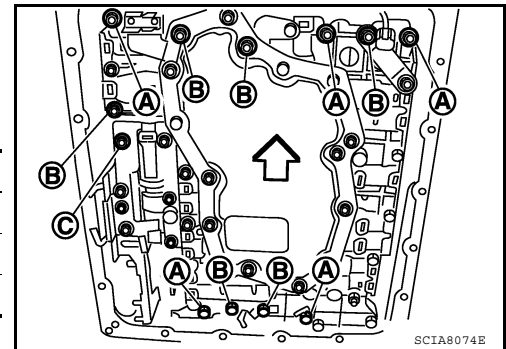
< ON-VEHICLE REPAIR >

[5AT: RE5R05A]

10. Remove bolts (A), (B) and (C) from control valve with TCM.

← : Front

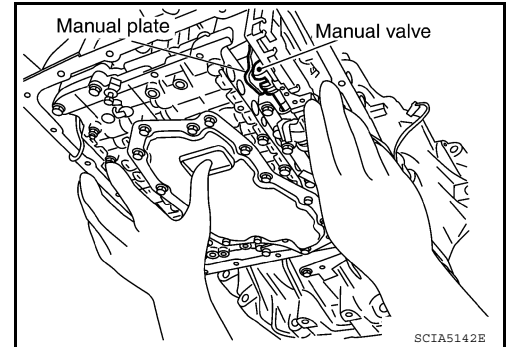
Bolt symbol	Length mm (in)	Number of bolts
A	42 (1.65)	5
B	55 (2.17)	6
C	40 (1.57)	1



11. Remove control valve with TCM from transmission case.

CAUTION:

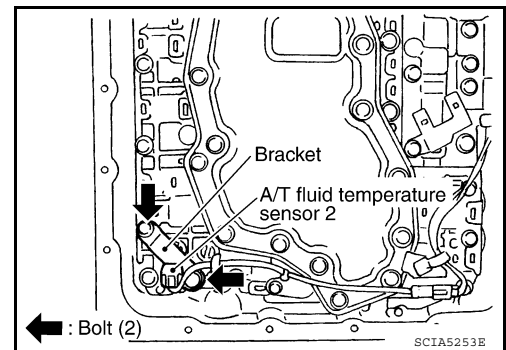
When removing, be careful with the manual valve notch and manual plate height. Remove it vertically.



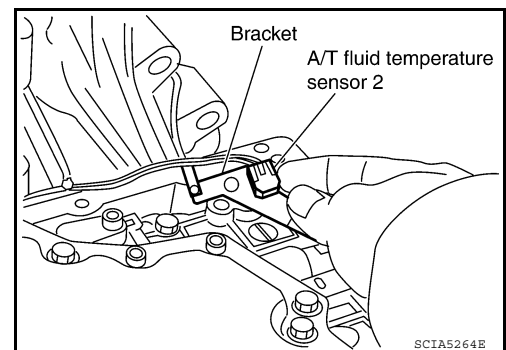
12. Remove the A/T fluid temperature sensor 2 or plug as shown below.

a. **A/T fluid temperature sensor 2**

i. Remove A/T fluid temperature sensor 2 with bracket from control valve with TCM.



ii. Remove bracket from A/T fluid temperature sensor 2.



b. **Plug**

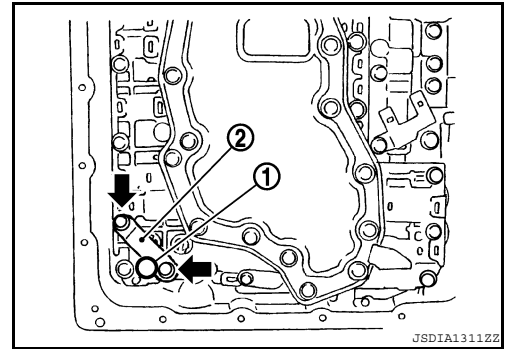
CONTROL VALVE WITH TCM

< ON-VEHICLE REPAIR >

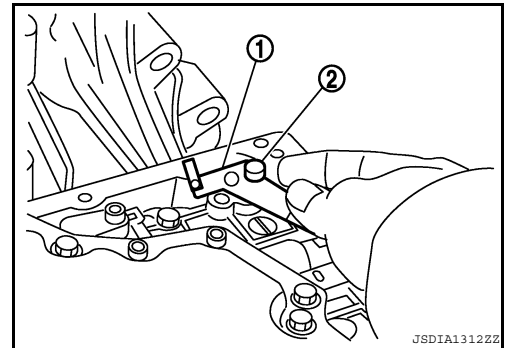
[5AT: RE5R05A]

i. Remove plug (1) with bracket (2) from control valve with TCM.

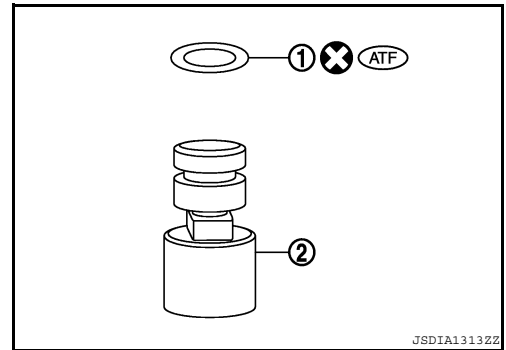
← : Bolt



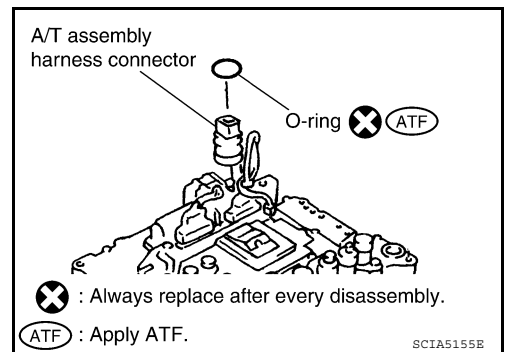
ii. Remove bracket (1) from plug (2).



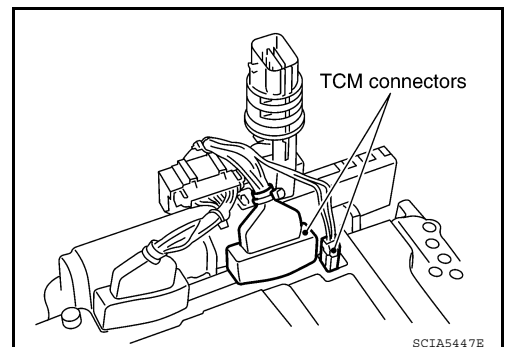
iii. Remove O-ring (1) from plug (2).



13. Remove O-ring from A/T assembly harness connector.



14. Disconnect TCM connectors.
CAUTION:
Do not damage connectors.



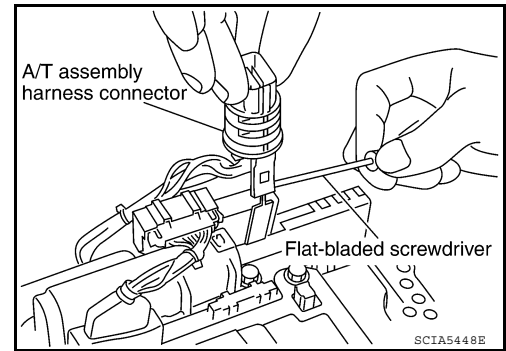
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CONTROL VALVE WITH TCM

< ON-VEHICLE REPAIR >

[5AT: RE5R05A]

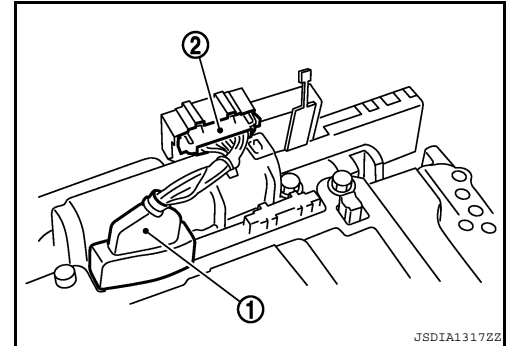
15. Remove A/T assembly harness connector from control valve with TCM using suitable tool.



16. Disconnect TCM connector (1) and transmission range switch connector (2).

CAUTION:

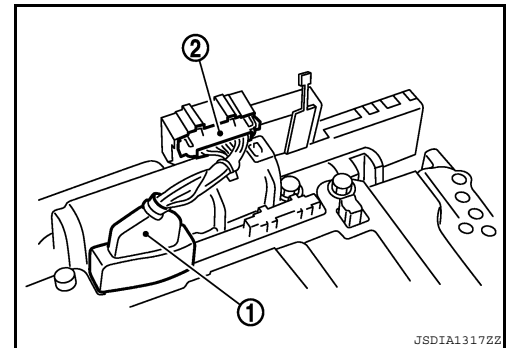
Do not damage connectors.



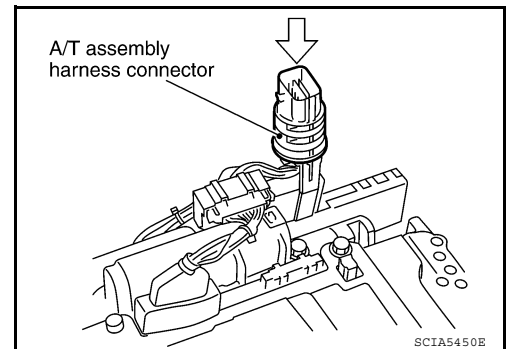
INSTALLATION

CAUTION:

- If the A/T fluid temperature sensor 2 has flaws, replace it with a plug.
 - After completing installation, check A/T fluid leakage and fluid level. Refer to [TM-204, "Checking the A/T Fluid \(ATF\)"](#).
1. Connect TCM connector (1) and transmission range switch connector (2).



2. Install A/T assembly harness connector to control valve with TCM.

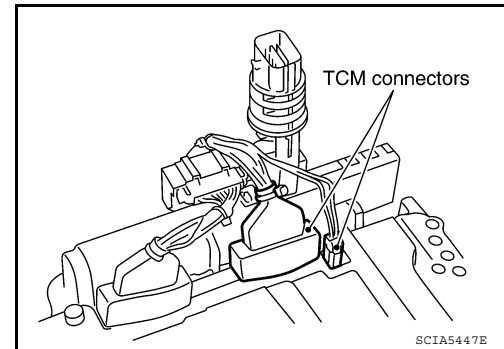


CONTROL VALVE WITH TCM

< ON-VEHICLE REPAIR >

[5AT: RE5R05A]

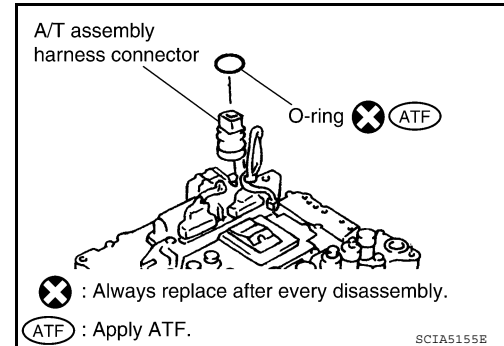
3. Connect TCM connector.



4. Install new O-ring in A/T assembly harness connector.

CAUTION:

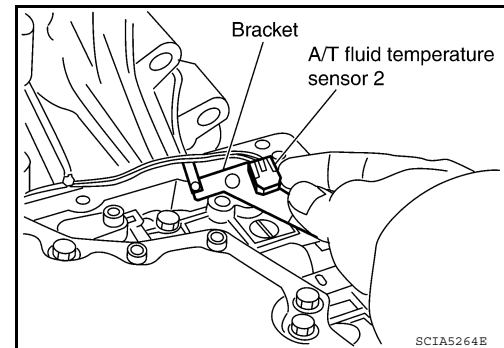
- Do not reuse O-ring.
- Apply ATF to O-ring.



5. Install the A/T fluid temperature sensor 2 or plug as shown below.

a. **A/T fluid temperature sensor 2**

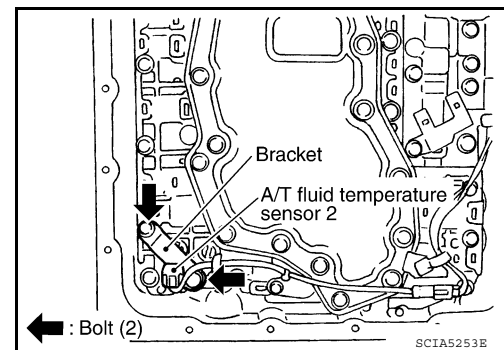
i. Install A/T fluid temperature sensor 2 to bracket.



ii. Install A/T fluid temperature sensor 2 (with bracket) to control valve with TCM. Tighten A/T fluid temperature sensor 2 bolt to the specified torque.

CAUTION:

Adjust bolt hole of bracket to bolt hole of control valve with TCM.



b. **Plug**

NOTE:

- When replacing the A/T fluid temperature sensor 2 with the plug, the A/T fluid temperature sensor 2 connector should not be connected.
- Fold the terminal clips.

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CONTROL VALVE WITH TCM

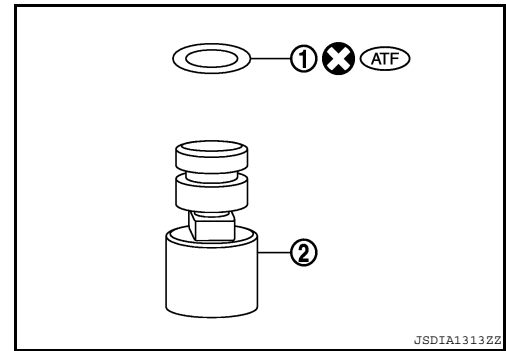
< ON-VEHICLE REPAIR >

[5AT: RE5R05A]

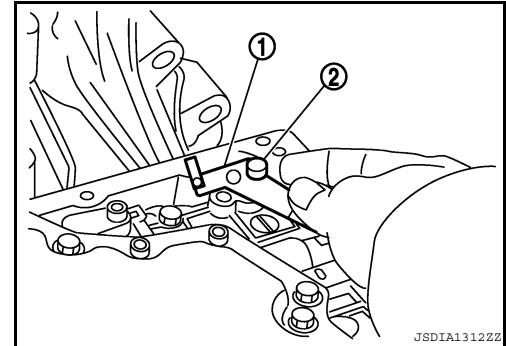
- i. Install new O-ring (1) in plug (2).

CAUTION:

- Do not reuse O-ring.
- Apply ATF to O-ring.
- O-ring should be free of contamination.



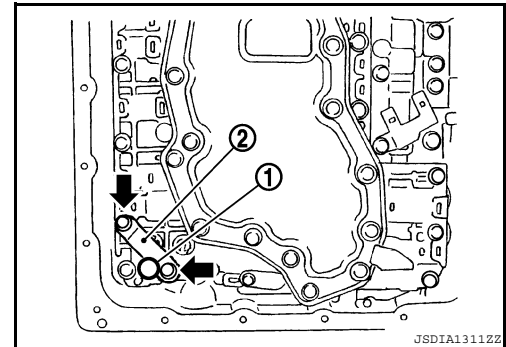
- ii. Install plug (2) to bracket (1).



- iii. Install plug (1) [with bracket (2)] to control valve with TCM. Tighten plug bolt (←) to the specified torque.

CAUTION:

Adjust bolt hole of bracket to bolt hole of control valve with TCM.

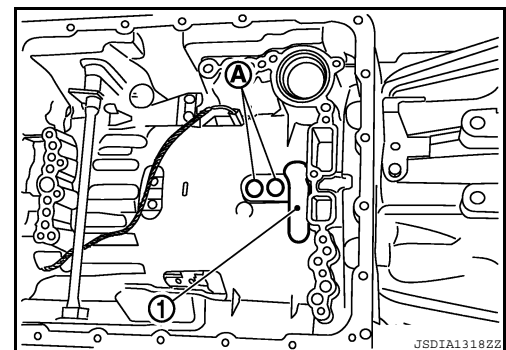


6. Install control valve with TCM in transmission case.

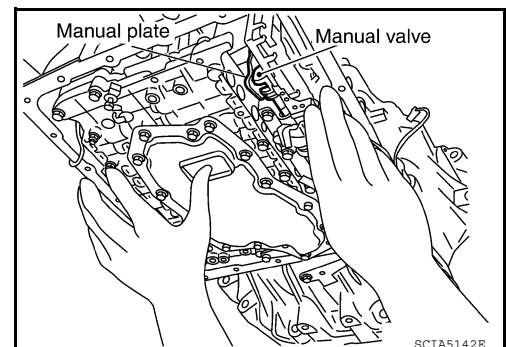
1 : Brake band

CAUTION:

- Make sure that input speed sensor is securely installed into input speed sensor hole (A).
- Hang down output speed sensor harness toward outside so as not to disturb installation of control valve with TCM.
- Adjust A/T assembly harness connector of control valve with TCM to terminal hole of transmission case.



- Assemble it so that manual valve cutout is engaged with manual plate projection.



CONTROL VALVE WITH TCM

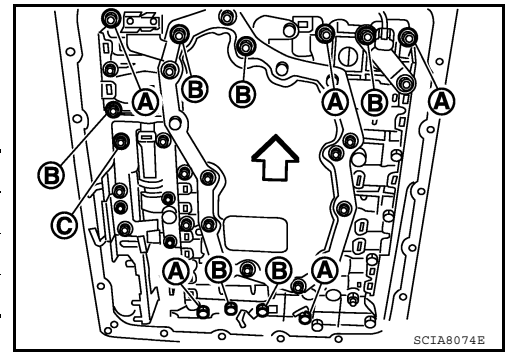
< ON-VEHICLE REPAIR >

[5AT: RE5R05A]

7. Install bolts (A), (B) and (C) in control valve with TCM.

← : Front

Bolt symbol	Length mm (in)	Number of bolts
A	42 (1.65)	5
B	55 (2.17)	6
C	40 (1.57)	1

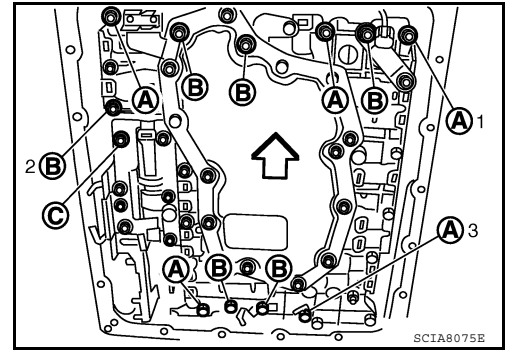


8. Tighten bolt (1), (2) and (3) temporarily to prevent dislocation. After that tighten them in order (1 → 2 → 3). Then tighten other bolts.

← : Front

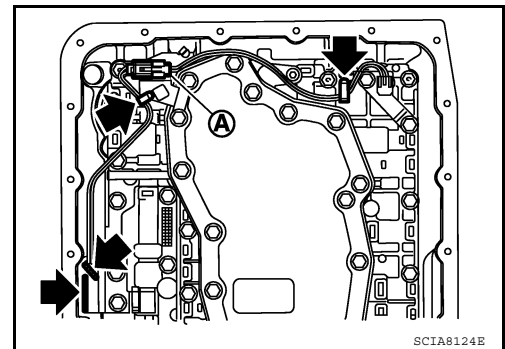
9. Tighten control valve with TCM bolts to the specified torque.

Bolt symbol	A	B	C
Number of bolts	5	6	1
Length mm (in)	42 (1.65)	55 (2.17)	40 (1.57)
Tightening torque N·m (km-g, in-lb)	7.9 (0.81, 70)		With ATF applied
			7.9 (0.81, 70)

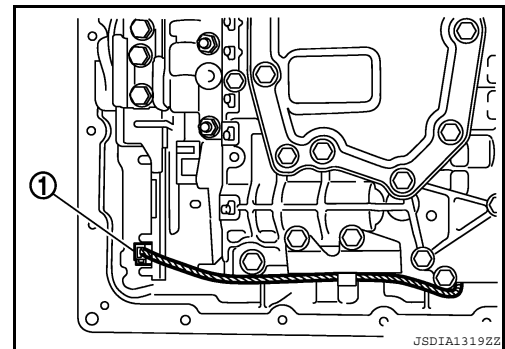


10. After installing the A/T fluid temperature sensor 2, connect the A/T fluid temperature sensor 2 connector as shown below.

- Connect A/T fluid temperature sensor 2 connector (A).
- Securely fasten terminal cord assembly and A/T fluid temperature sensor 2 harness with terminal clips (←).



11. Connect output speed sensor connector (1).

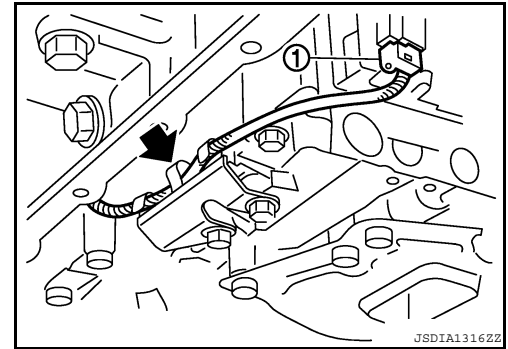


CONTROL VALVE WITH TCM

< ON-VEHICLE REPAIR >

[5AT: RE5R05A]

12. Securely fasten output speed sensor (1) harness with terminal clip (←).

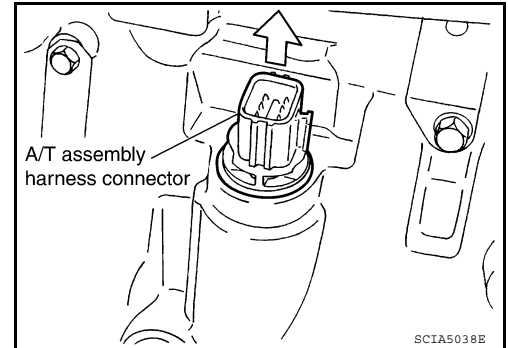


13. Install oil pan to transmission case. Refer to [TM-218, "Removal and Installation"](#).

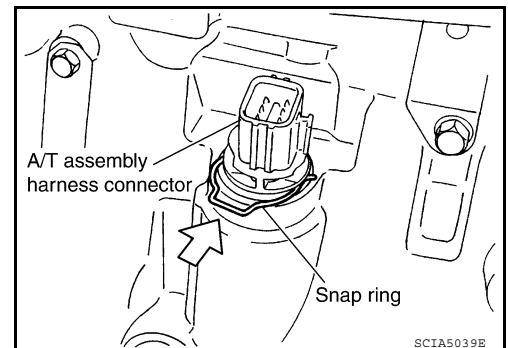
14. Pull up A/T assembly harness connector.

CAUTION:

Do not damage connector.



15. Install snap ring to A/T assembly harness connector.
16. Connect A/T assembly harness connector.
17. Connect the negative battery terminal.
18. Refill the A/T with fluid and check the fluid level and for fluid leakage. Refer to [TM-204, "Checking the A/T Fluid \(ATF\)"](#).



REAR OIL SEAL

< ON-VEHICLE REPAIR >

[5AT: RE5R05A]

REAR OIL SEAL

Removal and Installation

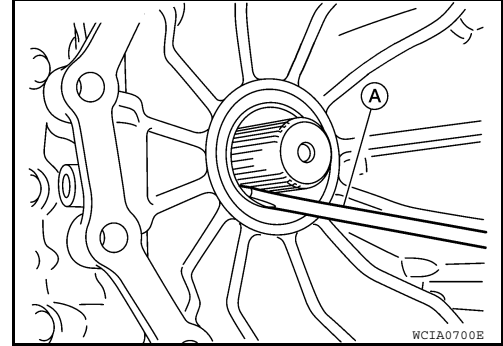
INFOID:000000005280803

REMOVAL

1. Remove transfer from transmission. Refer to [DLN-101, "Removal and Installation"](#).
2. Remove rear oil seal using suitable tool (A).

CAUTION:

Do not scratch adapter case assembly.



INSTALLATION

1. Install new rear oil seal into the adapter case until it is flush with component face using suitable tool (A).

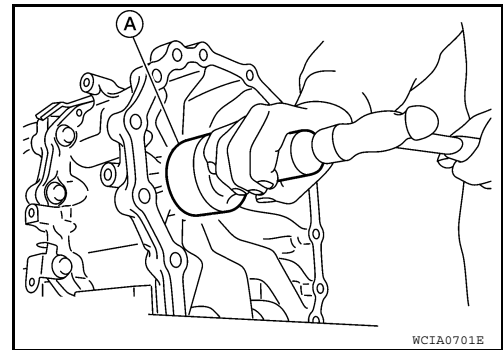
CAUTION:

- Apply ATF to rear oil seal.
- Do not reuse rear oil seal.

2. Install transfer to transmission. Refer to [DLN-101, "Removal and Installation"](#).

CAUTION:

After installation, check for A/T fluid leakage and fluid level. Refer to [TM-204, "Checking the A/T Fluid \(ATF\)"](#).



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KEY INTERLOCK CABLE

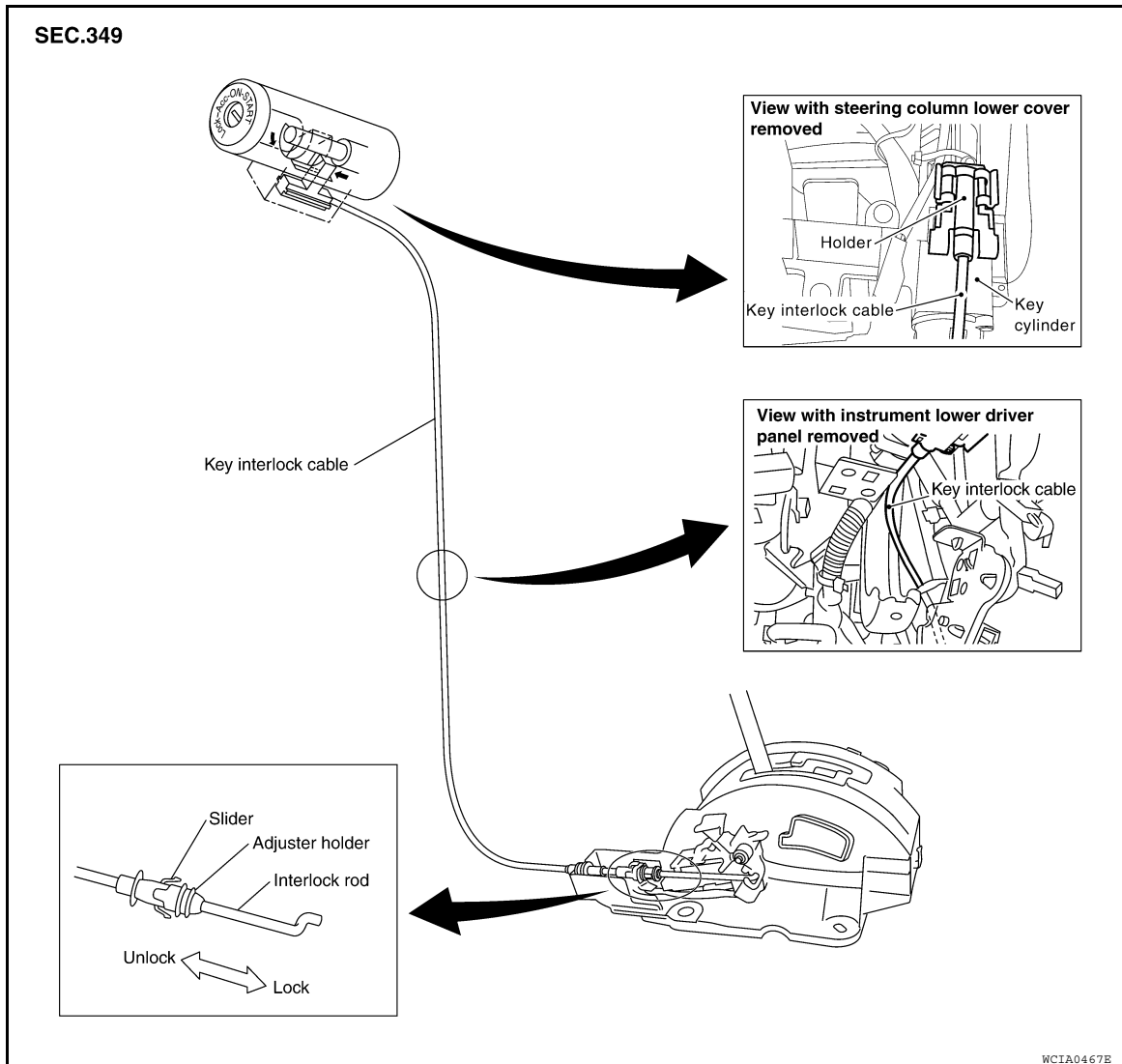
< ON-VEHICLE REPAIR >

[5AT: RE5R05A]

KEY INTERLOCK CABLE

Component

INFOID:000000005280804



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.

Removal and Installation

INFOID:000000005774522

REMOVAL

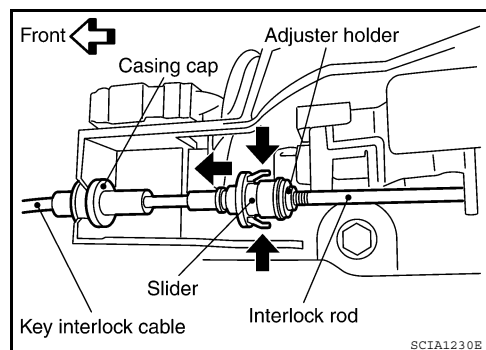
1. Remove lower glove box. Refer to [IP-11, "Removal and Installation"](#).
2. Remove the center console (front and rear). Refer to [IP-16, "Exploded View"](#).
3. Remove lower instrument panel LH. Refer to [IP-10, "Exploded View"](#).

KEY INTERLOCK CABLE

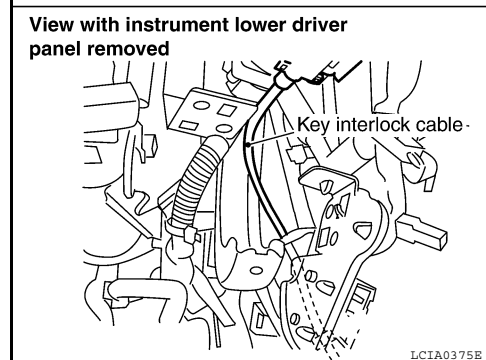
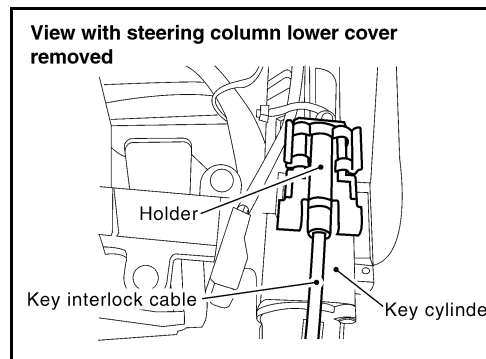
[5AT: RE5R05A]

< ON-VEHICLE REPAIR >

4. Unlock slider from adjuster holder by squeezing lock tabs.
5. Remove casing cap from bracket of A/T shift selector and remove interlock rod from adjuster holder.

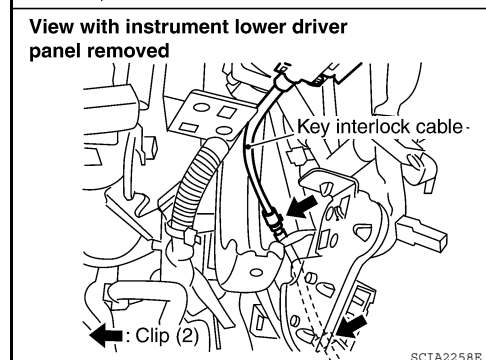
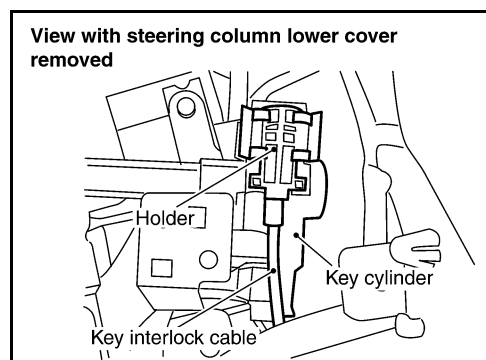


6. Remove holder from key cylinder and remove key interlock cable.



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.



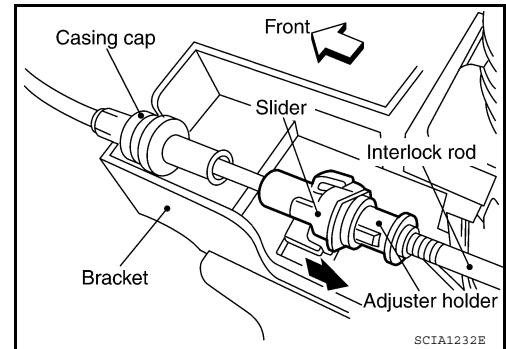
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KEY INTERLOCK CABLE

< ON-VEHICLE REPAIR >

[5AT: RE5R05A]

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.
7. Install lower instrument panel LH. Refer to [IP-10. "Exploded View"](#).
8. Install the center console (front and rear). Refer to [IP-16. "Exploded View"](#).
9. Install lower glove box. Refer to [IP-10. "Exploded View"](#).



AIR BREATHER HOSE

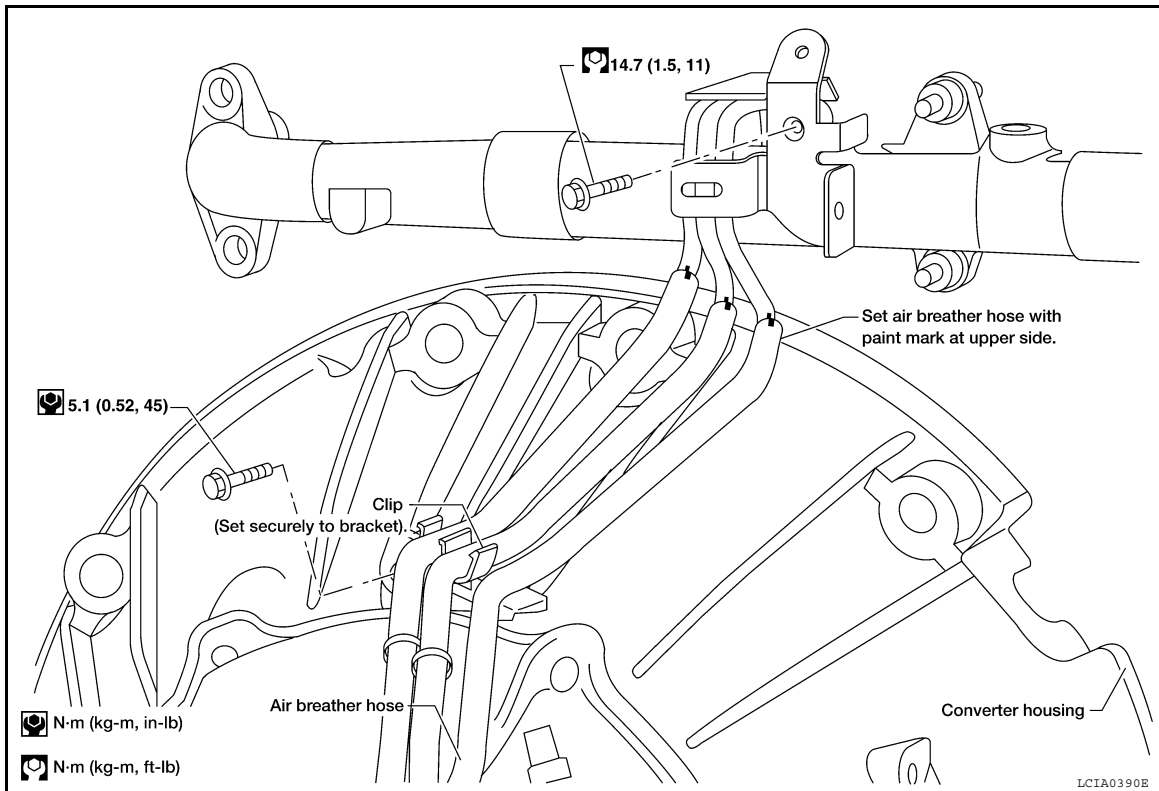
< ON-VEHICLE REPAIR >

[5AT: RE5R05A]

AIR BREATHER HOSE

Component

INFOID:000000005280806



Removal and Installation

INFOID:000000005280807

CAUTION:

- When installing an air breather hose, do not to crush or block by folding or bending the hose.
- When inserting a hose to the transmission tube, be sure to insert it fully until its end reaches the tube bend portion.

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TRANSMISSION ASSEMBLY

< REMOVAL AND INSTALLATION >

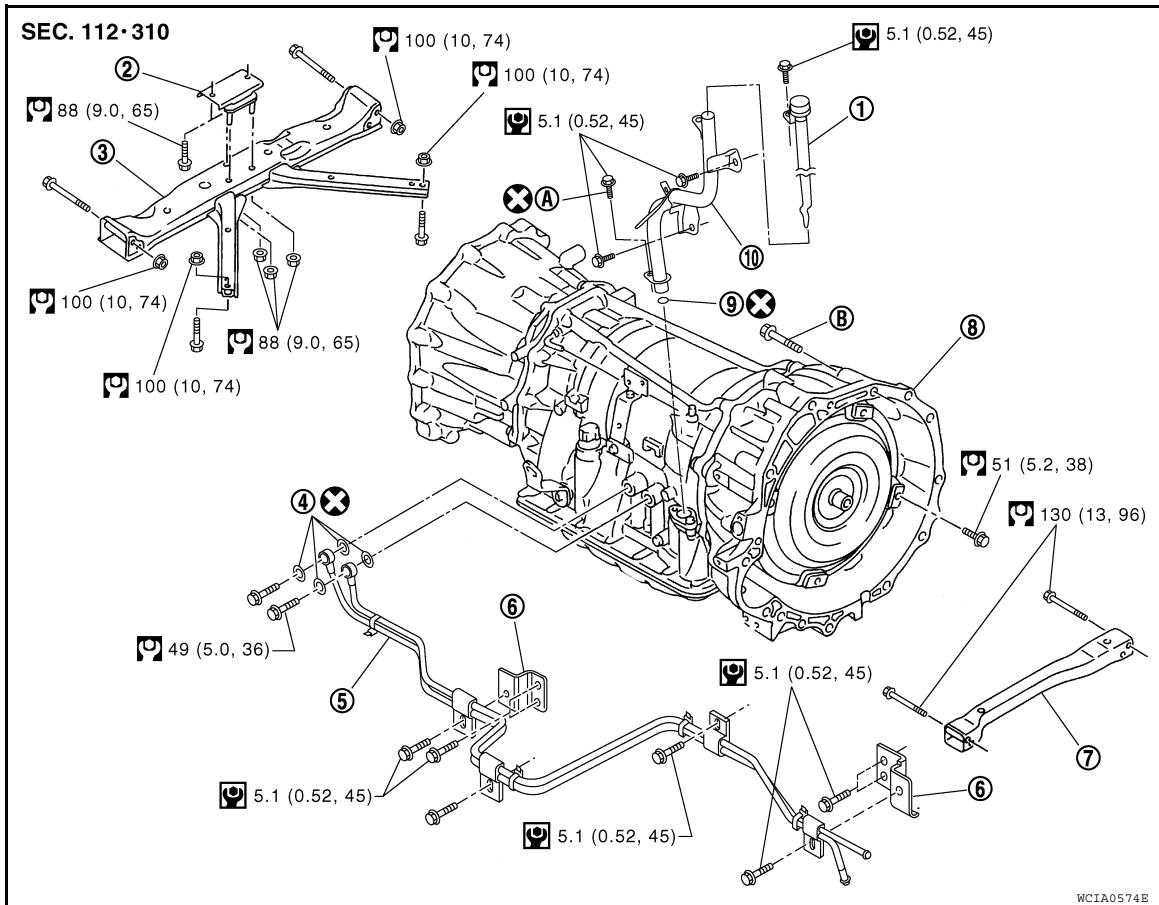
[5AT: RE5R05A]

REMOVAL AND INSTALLATION

TRANSMISSION ASSEMBLY

Exploded View

INFOID:000000005280810



- | | | |
|-----------------------------|--------------------------|---------------------------|
| 1. A/T fluid level gauge | 2. Insulator | 3. A/T crossmember |
| 4. Copper washers | 5. A/T fluid cooler tube | 6. Bracket |
| 7. Front crossmember | 8. Transmission assembly | 9. O-ring |
| 10. A/T fluid charging pipe | A. Self-sealing bolt | B. Refer to installation. |

Removal and Installation

INFOID:000000005280811

REMOVAL

CAUTION:

When removing the A/T assembly from engine, first remove the crankshaft position sensor (POS) from the A/T assembly.

1. Disconnect the negative battery terminal.
2. Remove the A/T fluid level gauge.
3. Remove the LH wheel and tire assembly. Refer to [WT-45, "Adjustment"](#).
4. Remove the LH mud flap. Refer to [EXT-21, "Removal and Installation"](#)
5. Remove the LH fender protector. Refer to [EXT-19, "Removal and Installation"](#).

TRANSMISSION ASSEMBLY

< REMOVAL AND INSTALLATION >

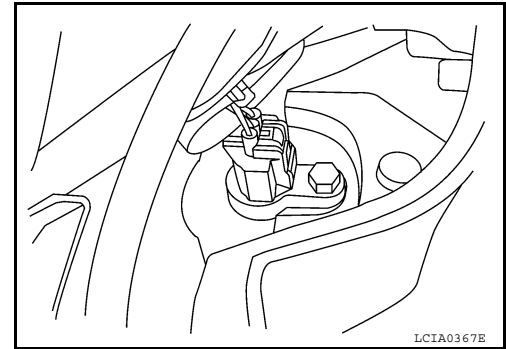
[5AT: RE5R05A]

6. Remove the 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 or foreign material to get on the sensor's front edge magnetic area.
- Do not place in an area affected by magnetism.

7. Remove the undercovers using power tool.
8. Partially drain the A/T fluid. Refer to [TM-205, "Changing the A/T Fluid \(ATF\)"](#).



9. Remove the front crossmember using power tool.
10. Remove the starter motor.
11. Remove the front and rear propeller shafts. Refer to [DLN-133, "Removal and Installation"](#) for front and [DLN-142, "Removal and Installation"](#) (2S1330-BJ100) for rear.
12. Remove the left and right front exhaust tubes. Refer to [EX-5, "Exploded View"](#).

13. Remove the A/T selector control cable and bracket from the A/T.
14. Disconnect the fluid cooler tubes from the A/T assembly.
15. Remove the dust cover from the converter housing.
16. Turn the crankshaft to access and remove the four bolts for the drive plate and torque converter.

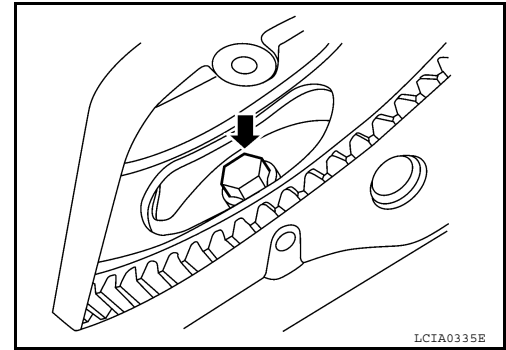
CAUTION:

When turning the crankshaft, turn it clockwise as viewed from the front of the engine.

17. Support the A/T assembly using a transmission jack.

CAUTION:

When setting the transmission jack, be careful not to allow it to collide against the drain plug.



18. Remove the nuts securing the insulator to the crossmember.
19. Remove the crossmember using power tool.
20. Tilt the transmission slightly to gain clearance between the body and the transmission, then disconnect the air breather hose.
21. Disconnect the following:
 - A/T assembly harness connector
 - 4LO switch connector
 - Wait detection switch connector
 - ATP switch connector
 - Transfer control device connector
22. Remove the wiring harness from the retainers.
23. Remove the A/T fluid charging pipe.
24. Plug any openings such as the fluid charging pipe hole.
25. Remove the A/T assembly to engine bolts using power tool.
26. Remove A/T assembly with transfer from the vehicle using Tool.

Tool number : — (J-47002)

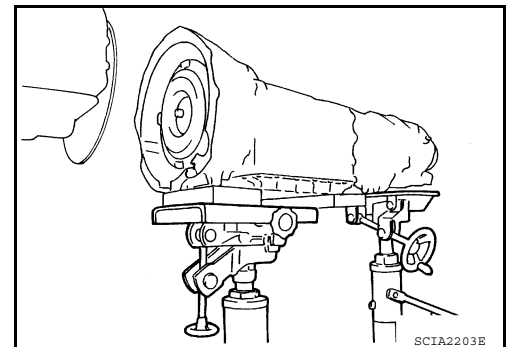
CAUTION:

- Secure the torque converter to prevent it from dropping.
- Secure the A/T assembly to the transmission jack.

NOTE:

The actual special service Tool may differ from Tool shown.

27. Remove the transfer from the A/T assembly. Refer to [DLN-101, "Removal and Installation"](#).



INSPECTION

TRANSMISSION ASSEMBLY

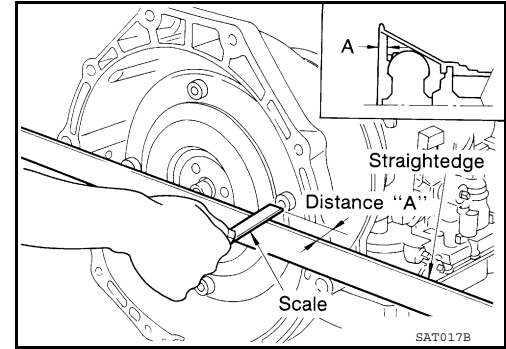
< REMOVAL AND INSTALLATION >

[5AT: RE5R05A]

Installation and Inspection of Torque Converter

- After inserting the torque converter to the transmission, be sure to check dimension (A) to ensure it is within the reference value limit.

Dimension (A) : 25.0 mm (0.98 in) or more



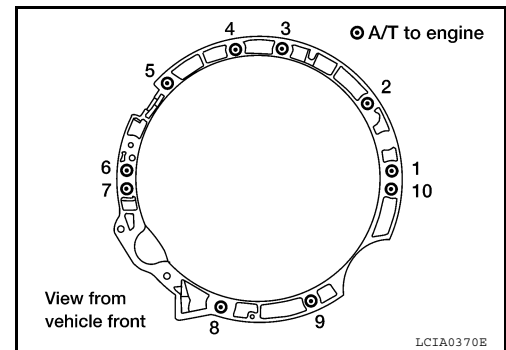
INSTALLATION

Installation is in the reverse order of removal.

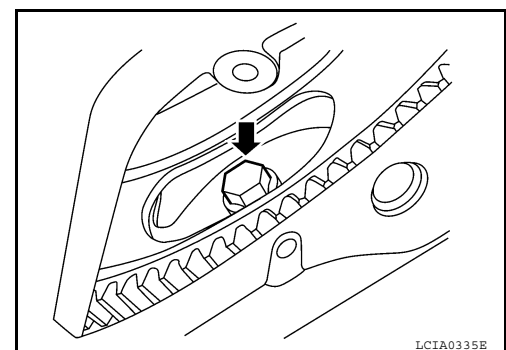
CAUTION:

- When replacing an engine or transmission you must make sure the dowels are installed correctly during re-assembly.
- Improper alignment caused by missing dowels may cause vibration, oil leaks or breakage of drivetrain components.
- Do not reuse O-rings and copper washers.
- When turning crankshaft, turn it clockwise as viewed from the front of the engine.
- After converter is installed to drive plate, rotate crankshaft several turns and check to be sure that transmission rotates freely without binding.
- When tightening the bolts for the torque converter while securing the crankshaft pulley bolt, be sure to confirm the tightening torque of the crankshaft pulley bolt. Refer to [EM-58, "Exploded View"](#).
- When installing transmission to the engine, tighten the bolts to the specified torque using sequence shown.

Transmission bolts : 75 N·m (7.6 kg-m, 55 ft-lb)



- When installing the drive plate to torque converter bolts, align the positions of bolts for drive plate with those of the torque converter and temporarily tighten the bolts. Then tighten the bolts with the specified torque.
- After completing installation, fill A/T with fluid and check fluid leakage, fluid level, and the positions of A/T. Refer to [TM-204, "Checking the A/T Fluid \(ATF\)"](#), [TM-217, "Checking of A/T Position"](#) and [TM-217, "Adjustment of A/T Position"](#).



OVERHAUL

< DISASSEMBLY AND ASSEMBLY >

[5AT: RE5R05A]

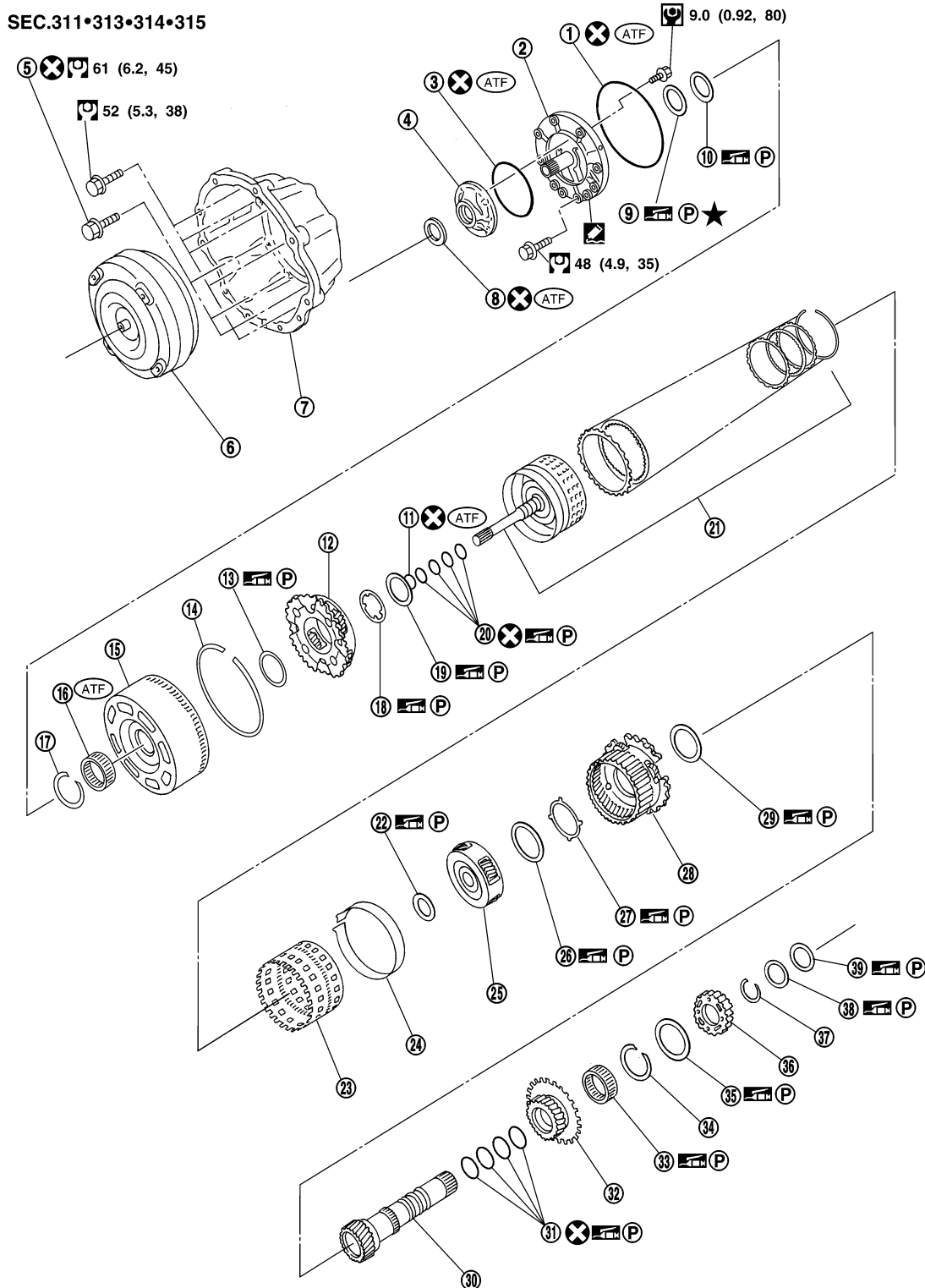
DISASSEMBLY AND ASSEMBLY

OVERHAUL

Exploded View

INFOID:000000005280812

Bell Housing Components



WCIA0661E

OVERHAUL

< DISASSEMBLY AND ASSEMBLY >

[5AT: RE5R05A]

1. O-ring	2. Oil pump cover	3. O-ring	A
4. Oil pump housing	5. Self-sealing bolts	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	B
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	C
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	TM
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	E

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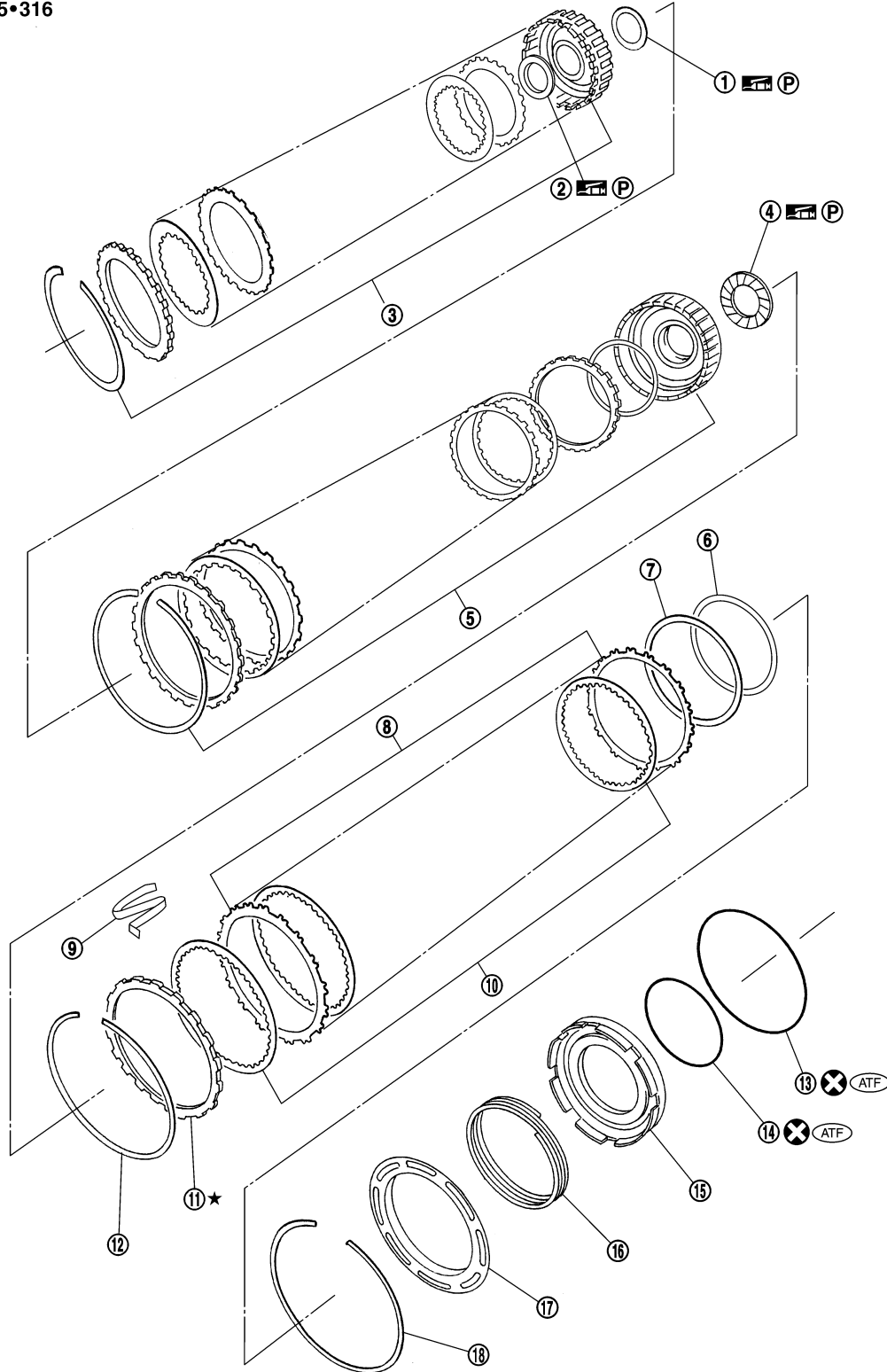
OVERHAUL

< DISASSEMBLY AND ASSEMBLY >

[5AT: RE5R05A]

Clutch Pack Components

SEC.315•316



SCIA7001E

- | | | |
|-------------------------------|-----------------------------------|---|
| 1. Needle bearing | 2. Bearing race | 3. High and low reverse clutch assembly |
| 4. Needle bearing | 5. Direct clutch assembly | 6. Reverse brake dish plate |
| 7. Reverse brake dish plate | 8. Reverse brake driven plate | 9. N-spring |
| 10. Reverse brake drive plate | 11. Reverse brake retaining plate | 12. Snap ring |

OVERHAUL

< DISASSEMBLY AND ASSEMBLY >

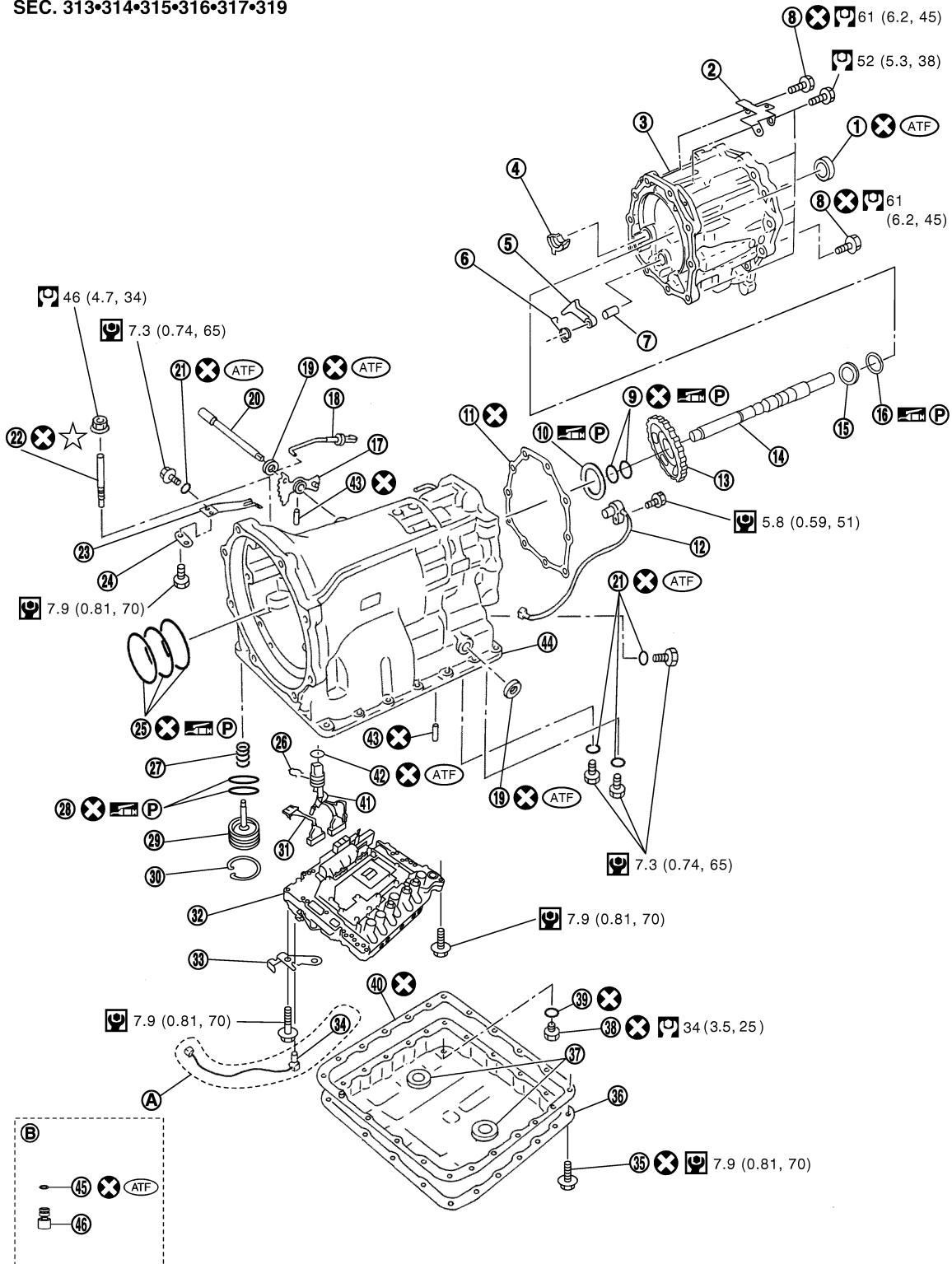
[5AT: RE5R05A]

- 13. D-ring
- 16. Return spring

- 14. D-ring
- 17. Spring retainer

- 15. Reverse brake piston
- 18. Snap ring

SEC. 313•314•315•316•317•319



- 1. Rear oil seal
- 4. Parking actuator support
- 7. Pawl shaft
- 10. Needle bearing

- 2. Bracket
- 5. Parking pawl
- 8. Self-sealing bolt
- 11. Gasket

- 3. Adapter case
- 6. Return spring
- 9. Seal ring
- 12. Output speed sensor

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OVERHAUL

< DISASSEMBLY AND ASSEMBLY >

[5AT: RE5R05A]

-
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|---------------------------------------|----------------------------|-----------------------|
| 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 bolt | 36. Oil pan |
| 37. Magnet | 38. Drain plug | 39. Drain plug gasket |
| 40. Oil pan gasket | 41. Terminal cord assembly | 42. O-ring |
| 43. Retaining pin | 44. Transmission case | 45. O-ring |
| 46. Plug | | |

A/T fluid temperature sensor 2 (A) can be changed to plug (B), depending on vehicles.

OVERHAUL

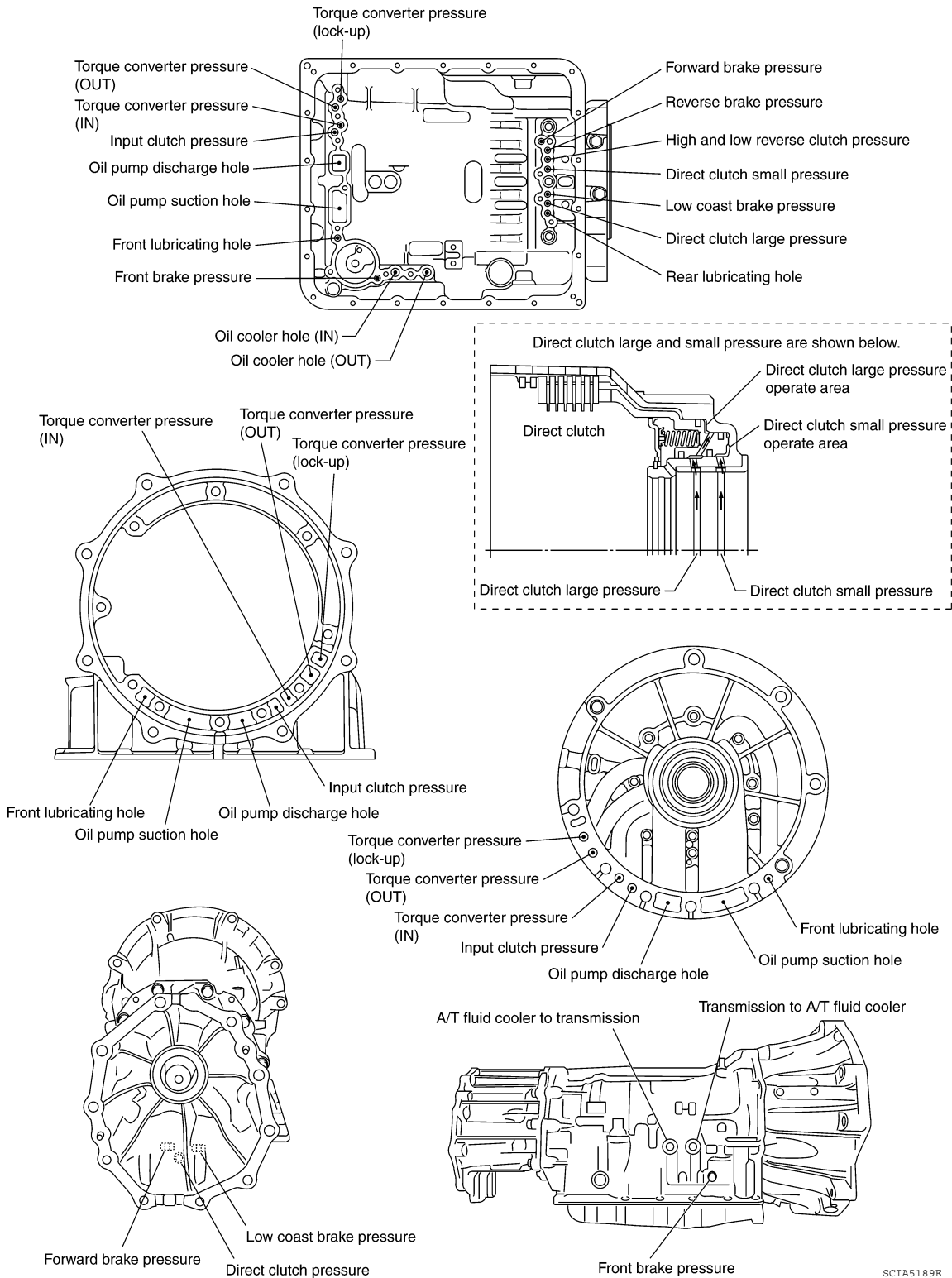
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[5AT: RE5R05A]

Oil Channel

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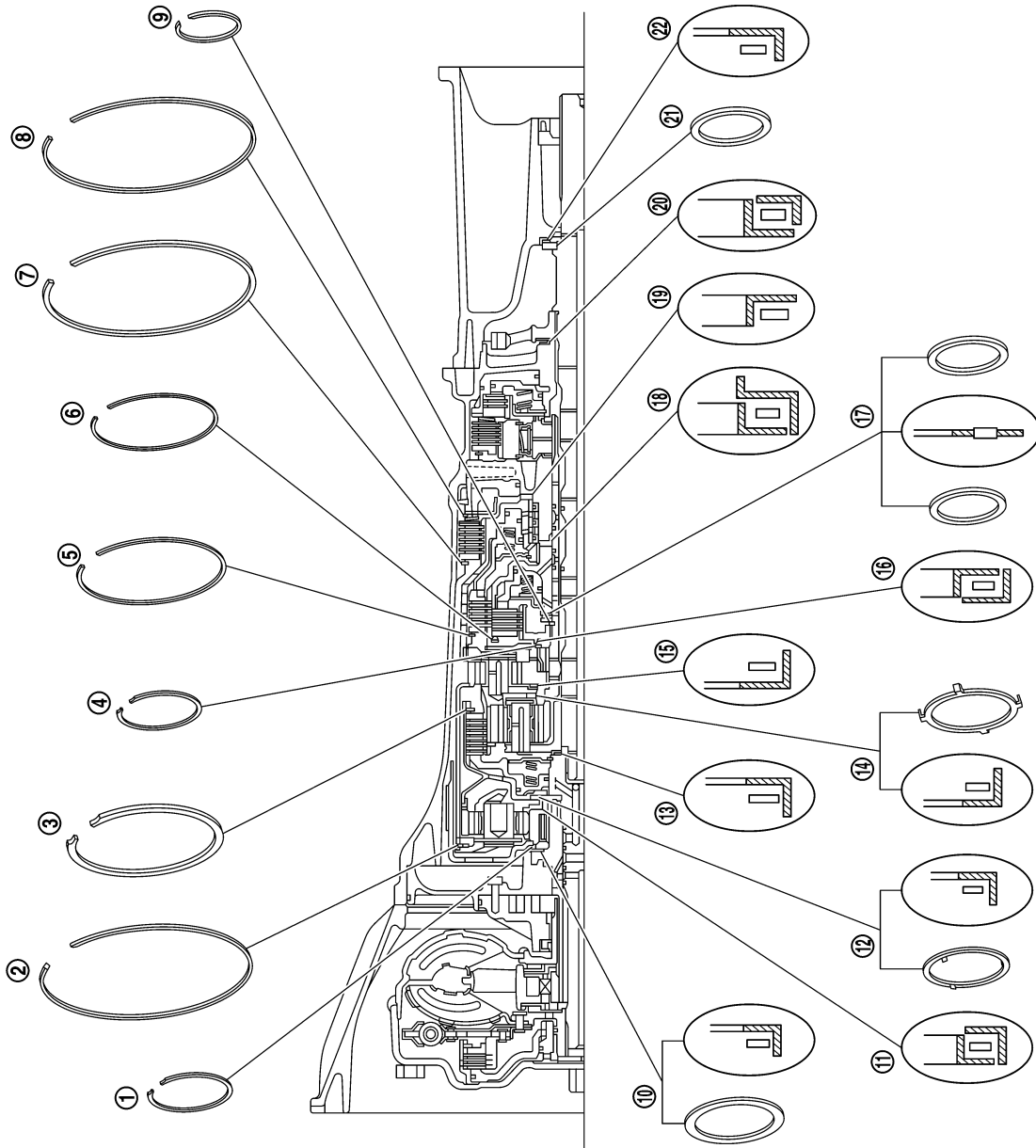
OVERHAUL

< DISASSEMBLY AND ASSEMBLY >

[5AT: RE5R05A]

Location of Adjusting Shims, Needle Bearings, Thrust Washers and Snap Rings

INFOID:000000005280814



Outer diameter of snap rings

Item number	Outer diameter mm (in)
1	63 (2.48)
2	183 (7.20)
3	173 (6.81)
4	70 (2.76)
5	170 (6.69)
6	135 (5.31)
7	180 (7.09)
8	185 (7.28)
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)

SCIA7020E

DISASSEMBLY

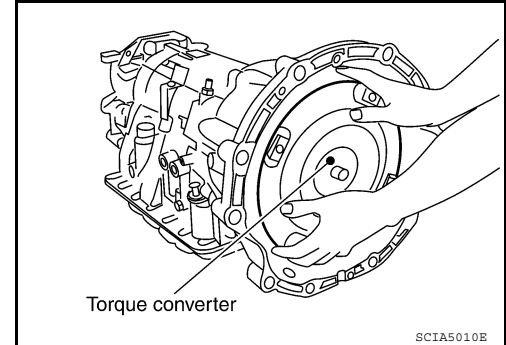
Disassembly

INFOID:000000005280815

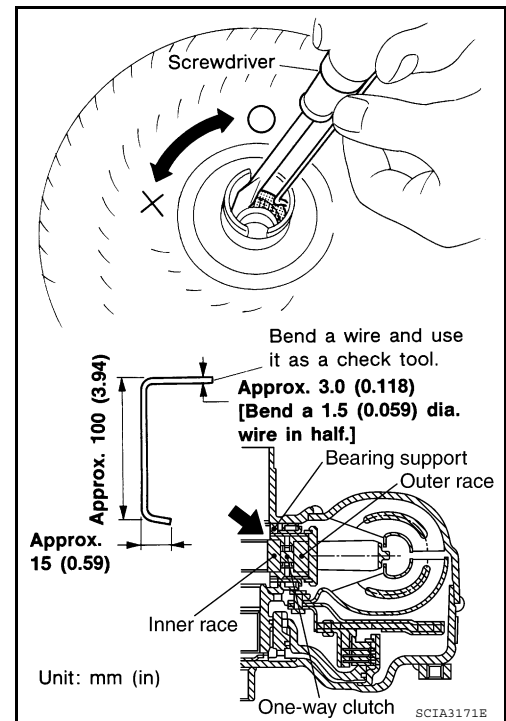
CAUTION:

Do not disassemble parts behind Drum Support. Refer to [TM-74, "Cross-Sectional View"](#).

1. Drain A/T fluid through drain plug.
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.
 - a. Insert a check tool into the groove of bearing support built into one-way clutch outer race.
 - b. While holding bearing support with a check tool, rotate one-way clutch spline using suitable tool.
 - c. Make sure that inner race rotates clockwise only. If not, replace torque converter assembly.

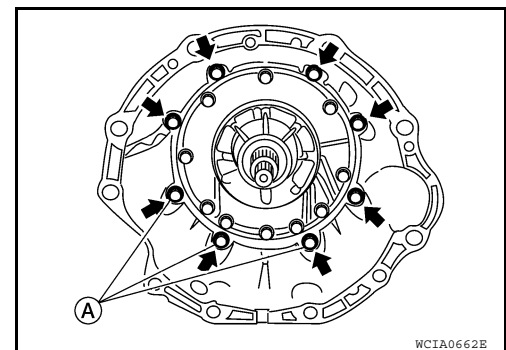


4. Remove bolts and converter housing from transmission case.

CAUTION:

Do not scratch converter housing.

- Self-sealing bolt (A)



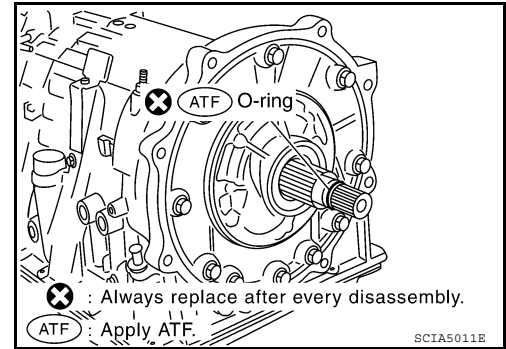
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DISASSEMBLY

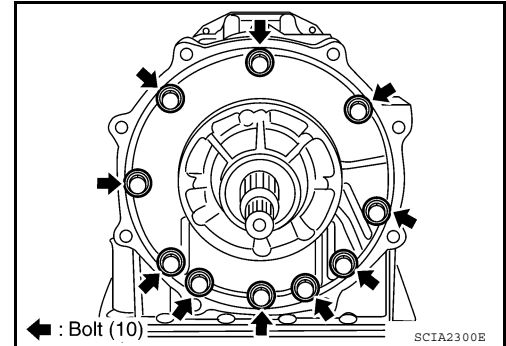
< DISASSEMBLY AND ASSEMBLY >

[5AT: RE5R05A]

5. Remove O-ring from input clutch assembly.



6. Remove oil pump assembly to transmission case bolts.

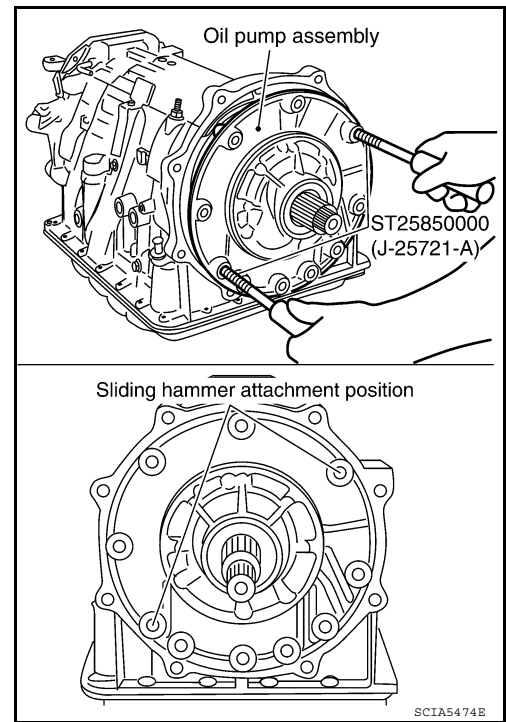


7. Remove the oil pump assembly evenly from the transmission case using Tools.

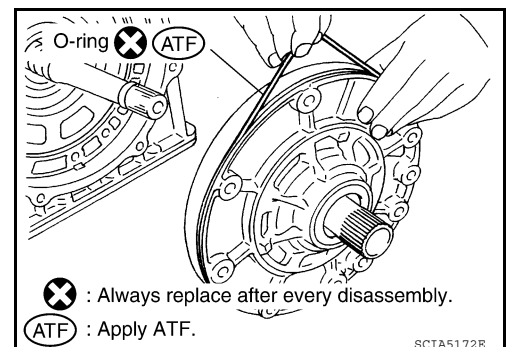
Tool number : ST25850000 (J-25721-A)

CAUTION:

- Fully tighten the sliding hammer screws.
- Make sure that bearing race is installed to the oil pump assembly edge surface.



8. Remove O-ring from oil pump assembly.

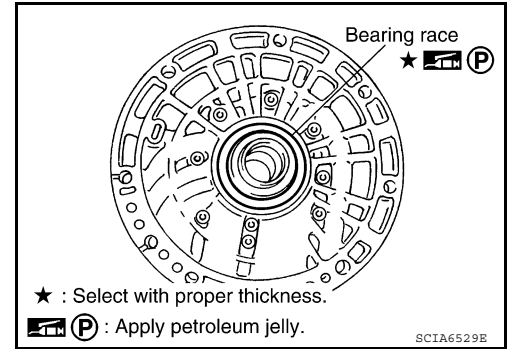


DISASSEMBLY

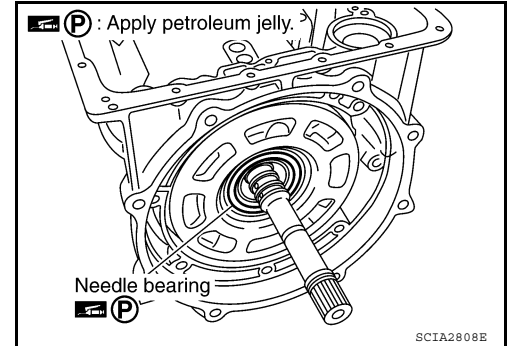
< DISASSEMBLY AND ASSEMBLY >

[5AT: RE5R05A]

9. Remove bearing race from oil pump assembly.



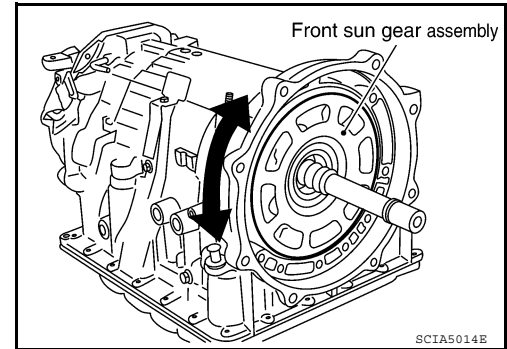
10. Remove needle bearing from front sun gear.



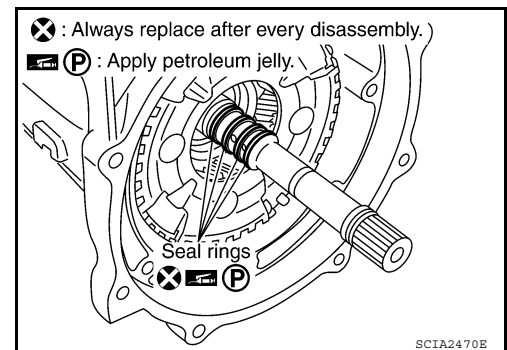
11. Remove front sun gear assembly from front carrier assembly.

NOTE:

Remove front sun gear by rotating it left and right.



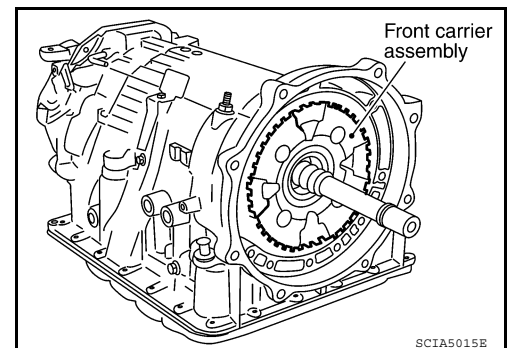
12. Remove seal rings from input clutch assembly.



13. Remove front carrier assembly (with input clutch assembly and rear internal gear) from rear carrier assembly.

CAUTION:

Do not remove it with needle bearing.



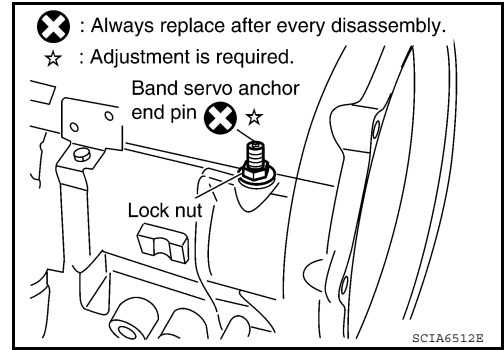
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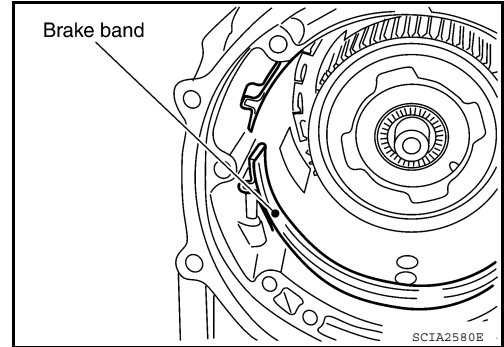
< DISASSEMBLY AND ASSEMBLY >

[5AT: RE5R05A]

14. Loosen lock nut and remove band servo anchor end pin from transmission case.

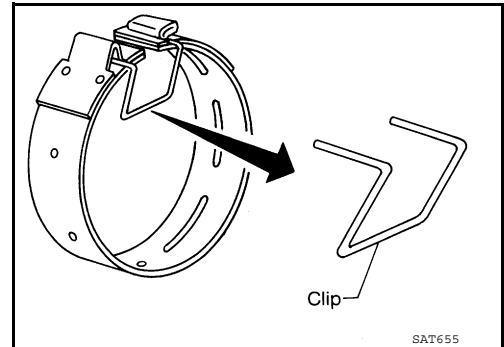


15. Remove brake band from transmission case.

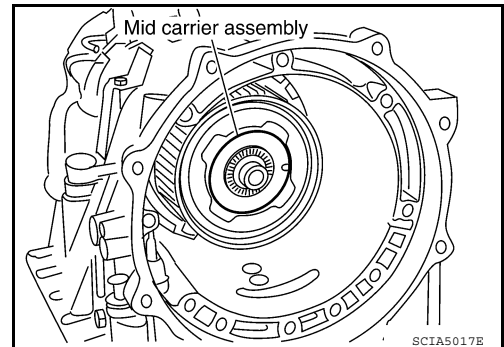


CAUTION:

- To prevent brake linings from cracking or peeling, do not stretch the flexible band unnecessarily. When removing the brake band, always secure it with a clip as shown.
- Check brake band facing for damage, cracks, wear or burns.



16. Remove mid carrier assembly and rear carrier assembly as a unit.

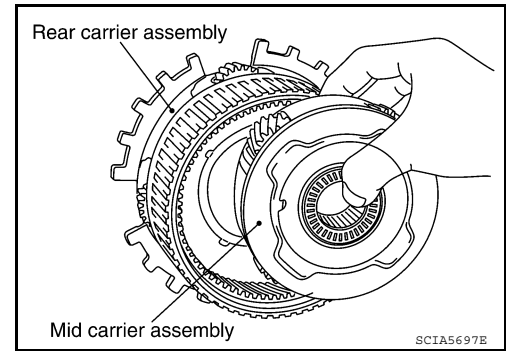


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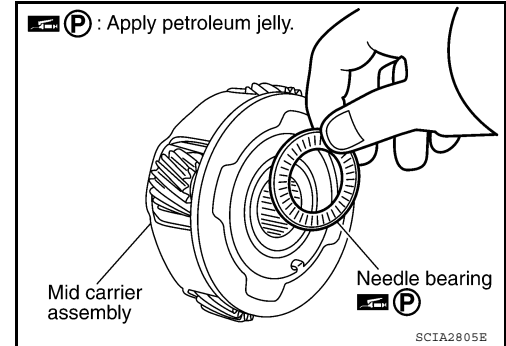
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[5AT: RE5R05A]

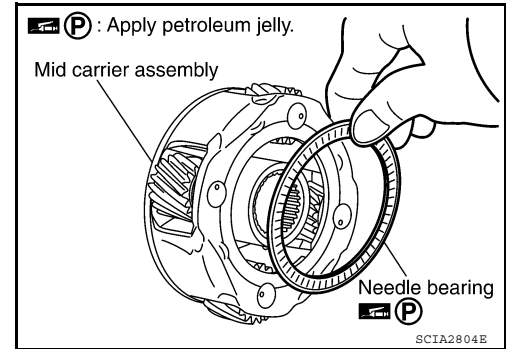
17. Remove mid carrier assembly from rear carrier assembly.



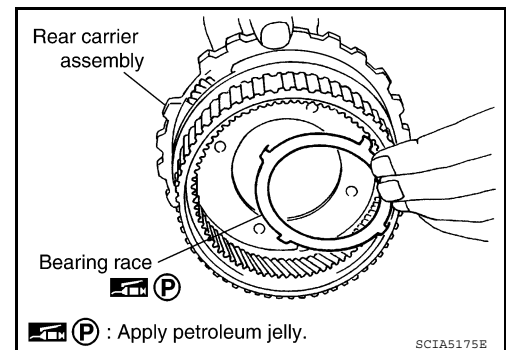
18. Remove needle bearing (front side) from mid carrier assembly.



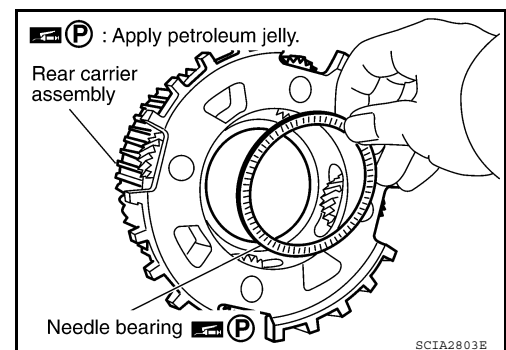
19. Remove needle bearing (rear side) from mid carrier assembly.



20. Remove bearing race from rear carrier assembly.



21. Remove needle bearing from rear carrier assembly.



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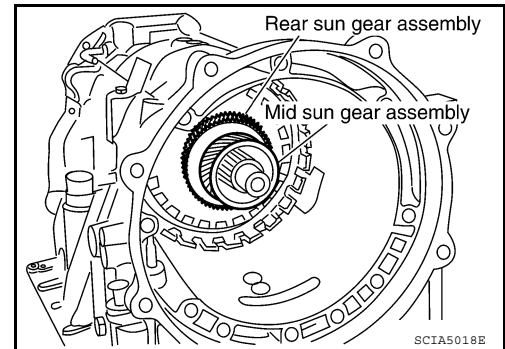
< DISASSEMBLY AND ASSEMBLY >

[5AT: RE5R05A]

22. Remove mid sun gear assembly, rear sun gear assembly and high and low reverse clutch hub as a unit.

CAUTION:

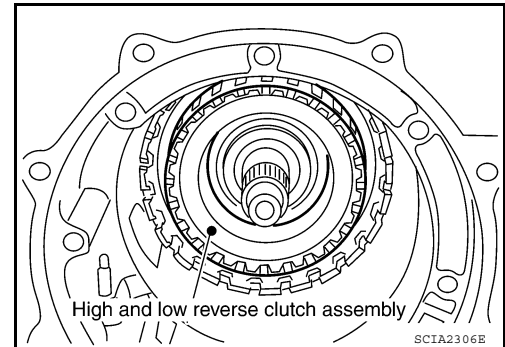
Remove them with bearing race and needle bearing.



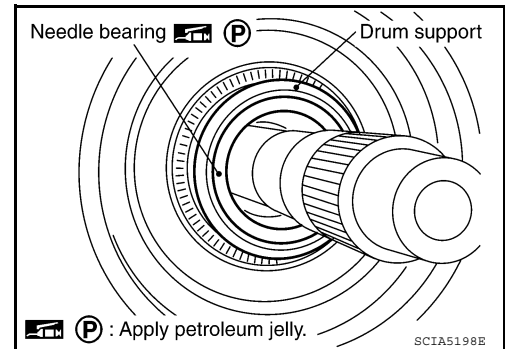
23. Remove high and low reverse clutch assembly from direct clutch assembly.

CAUTION:

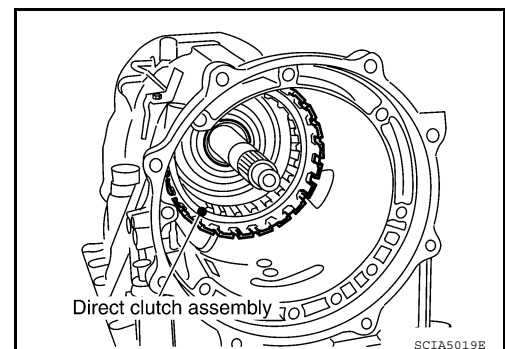
Make sure that needle bearing is installed to the high and low reverse clutch assembly edge surface.



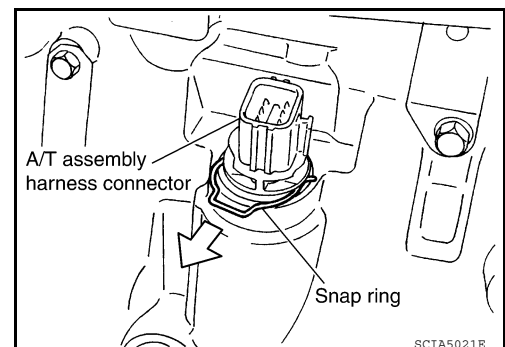
24. Remove needle bearing from drum support.



25. Remove direct clutch assembly from reverse brake.



26. Remove snap ring from A/T assembly harness connector.



DISASSEMBLY

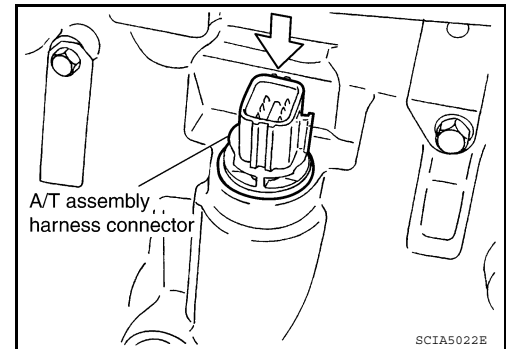
< DISASSEMBLY AND ASSEMBLY >

[5AT: RE5R05A]

27. Push A/T assembly harness connector.

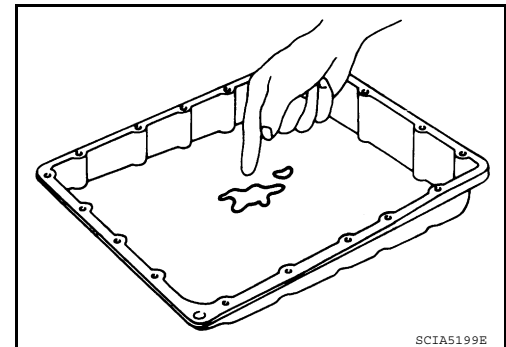
CAUTION:

Do not damage connector.

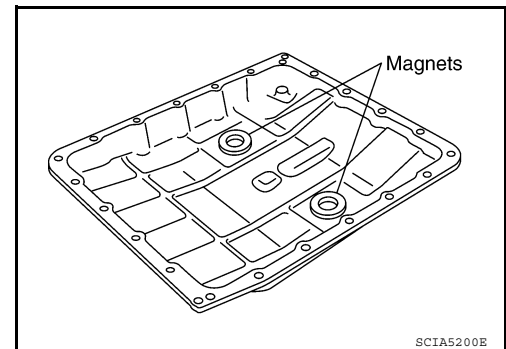


28. Remove oil pan and oil pan gasket. Refer to [TM-218, "Removal and Installation"](#).

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.



30. Remove magnets from oil pan.



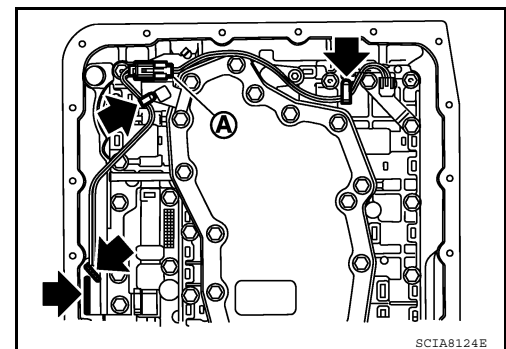
31. If an A/T fluid temperature sensor 2 is attached, disconnect the A/T fluid temperature sensor 2 connector as shown below.

a. Disconnect A/T fluid temperature sensor 2 connector (A).

CAUTION:

Do not damage connector.

b. Straighten terminal clips (➡) to free terminal cord assembly and A/T fluid temperature sensor 2 harness.



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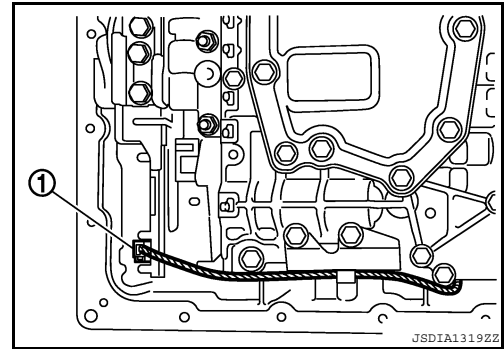
DISASSEMBLY

< DISASSEMBLY AND ASSEMBLY >

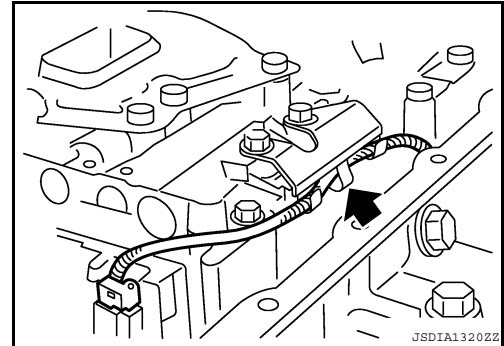
[5AT: RE5R05A]

32. Disconnect output speed sensor connector (1).

CAUTION:
Do not damage connector.



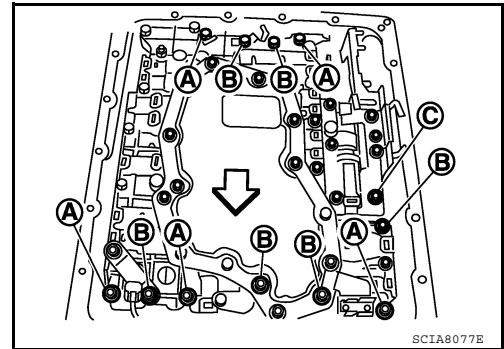
33. Straighten terminal clip (←) to free output speed sensor harness.



34. Remove bolts (A), (B) and (C) from control valve with TCM.

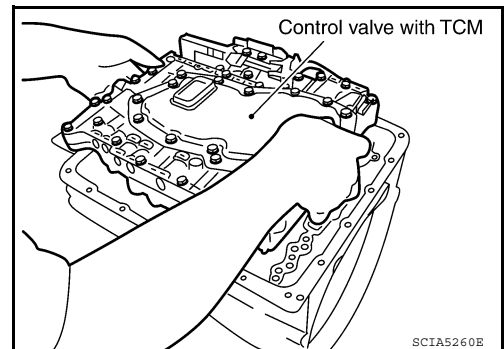
← : Front

Bolt symbol	Length mm (in)	Number of bolts
A	42 (1.65)	5
B	55 (2.17)	6
C	40 (1.57)	1



35. 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.



36. Remove the A/T fluid temperature sensor 2 or plug as shown below.

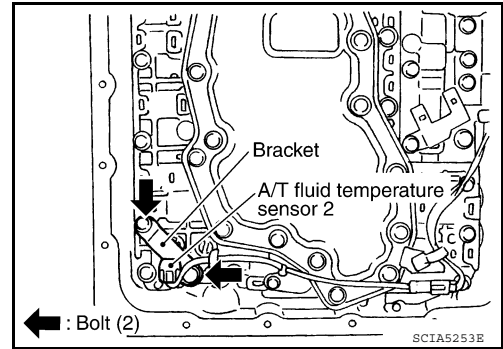
a. A/T fluid temperature sensor 2

DISASSEMBLY

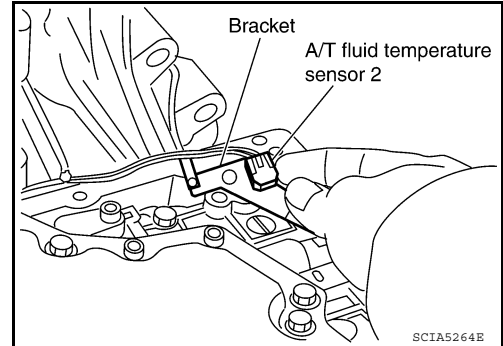
< DISASSEMBLY AND ASSEMBLY >

[5AT: RE5R05A]

- i. Remove A/T fluid temperature sensor 2 with bracket from control valve with TCM.

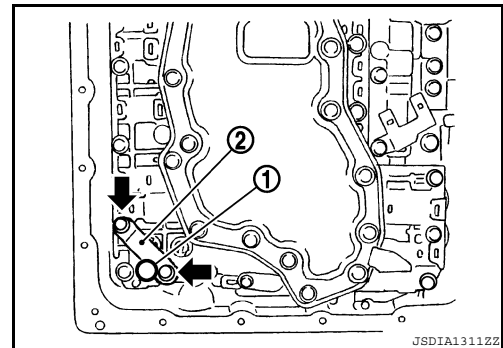


- ii. Remove bracket from A/T fluid temperature sensor 2.

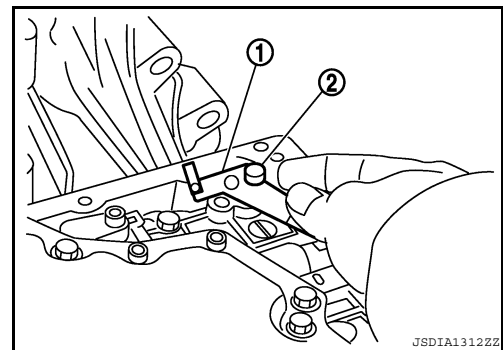


b. Plug

- i. Remove plug (1) with bracket (2) from control valve with TCM.



- ii. Remove bracket (1) from plug (2).



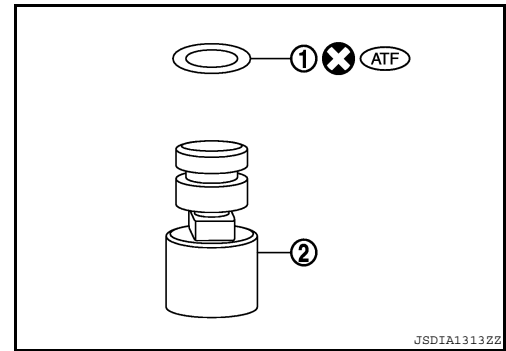
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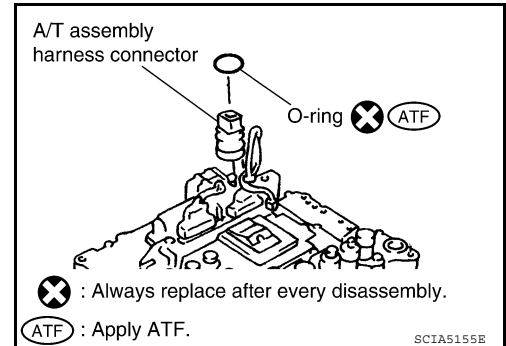
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[5AT: RE5R05A]

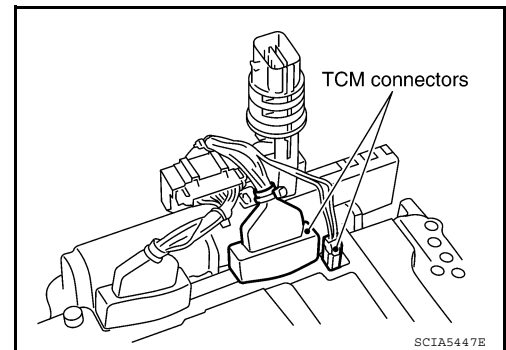
iii. Remove O-ring (1) from plug (2).



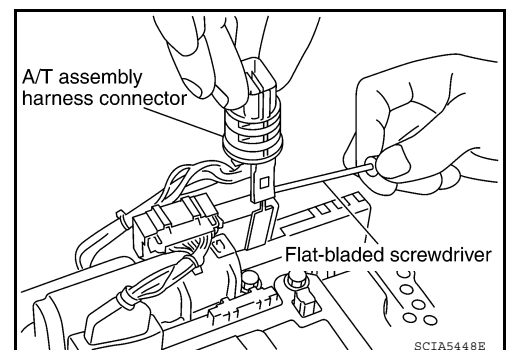
37. Remove O-ring from A/T assembly harness connector.



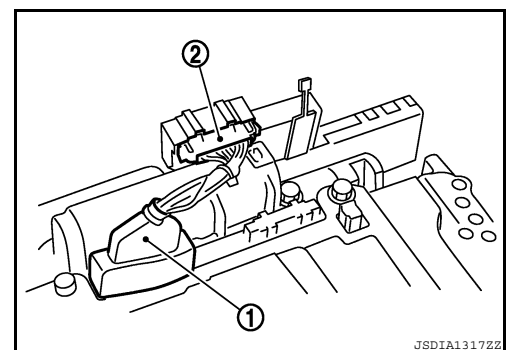
38. Disconnect TCM connectors.
CAUTION:
Do not damage connectors.



39. Remove A/T assembly harness connector from control valve with TCM using suitable tool.



40. Disconnect TCM connector (1) and transmission range switch connector (2).
CAUTION:
Do not damage connectors.



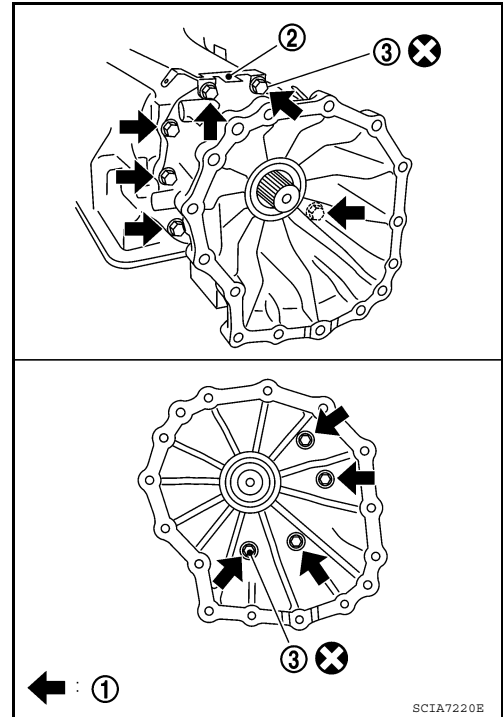
DISASSEMBLY

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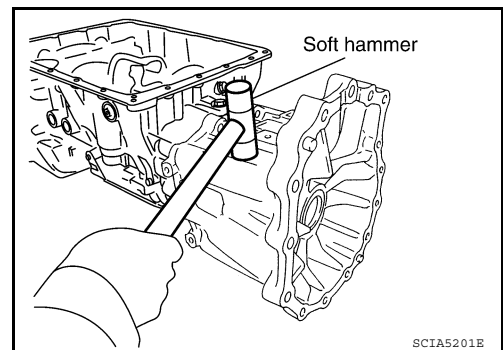
[5AT: RE5R05A]

41. Remove adapter case assembly according to the following procedure.

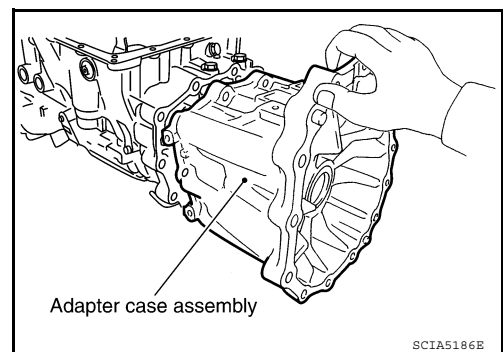
- a. Remove adapter case to transmission case bolts (1) and terminal bracket (2).
- Self-sealing bolt (3)



- b. Tap adapter case assembly using suitable tool.



- c. Remove adapter case assembly (with needle bearing) from transmission case.

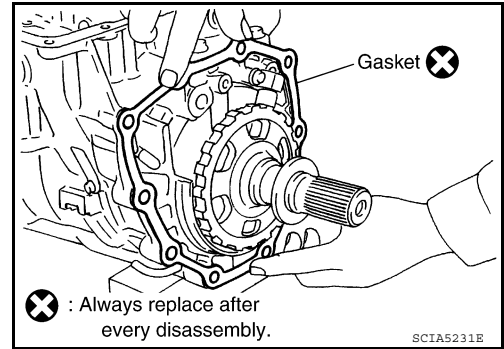


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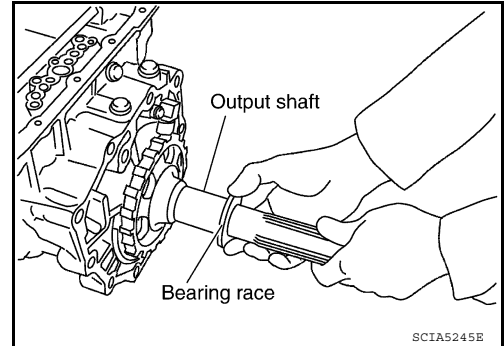
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[5AT: RE5R05A]

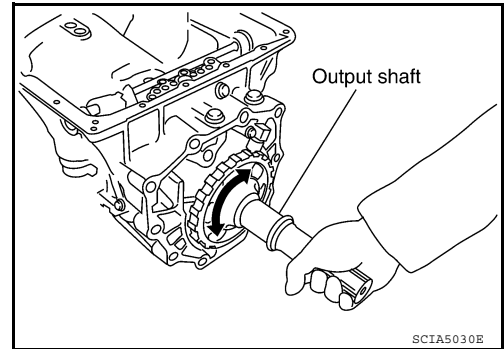
d. Remove gasket from transmission case.



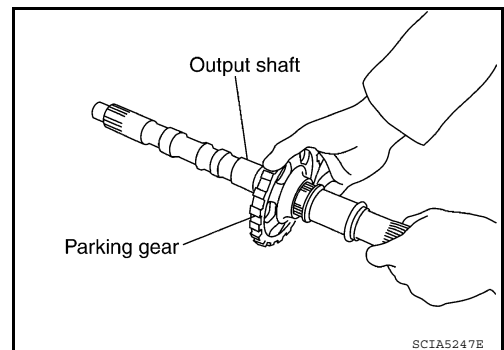
42. Remove bearing race from output shaft.



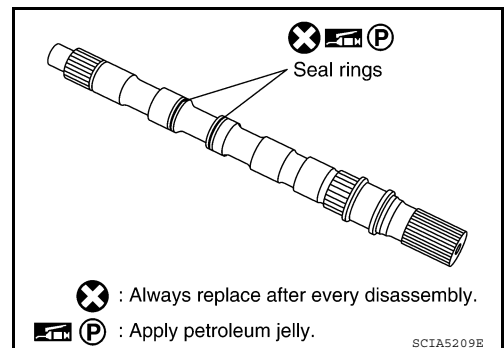
43. Remove output shaft from transmission case by rotating left and right.



44. Remove parking gear from output shaft.



45. Remove seal rings from output shaft.

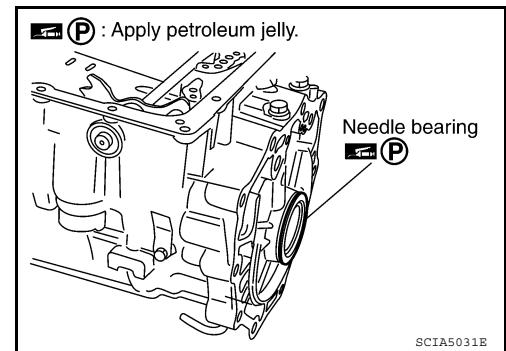


DISASSEMBLY

< DISASSEMBLY AND ASSEMBLY >

[5AT: RE5R05A]

46. Remove needle bearing from transmission case.

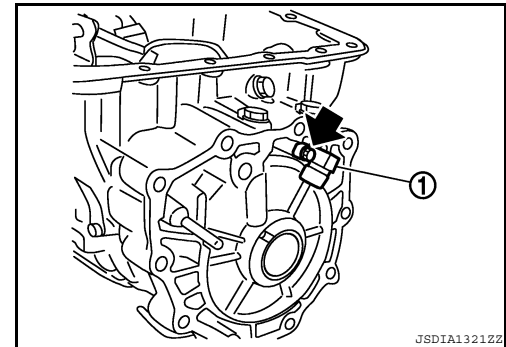


47. Remove output speed sensor (1) from transmission case.

← : Bolt

CAUTION:

- Do not subject it to impact by dropping or hitting it.
- Do not disassemble.
- Do not allow metal filings or any foreign material to get on the sensor's front edge magnetic area.
- Do not place in an area affected by magnetism.



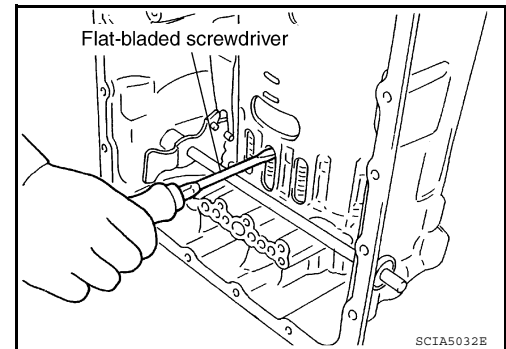
48. Remove reverse brake snap ring using two flat-bladed screwdrivers.

NOTE:

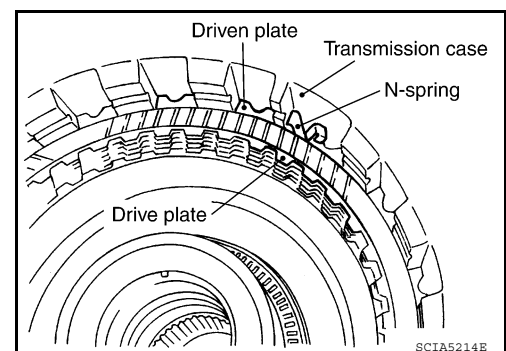
Press out snap ring from the transmission case oil pan side gap using a flat-bladed screwdriver, and remove it using a another screwdriver.

49. Remove reverse brake retaining plate from transmission case.

- Check facing for burns, cracks or damage. If necessary, replace the plate.

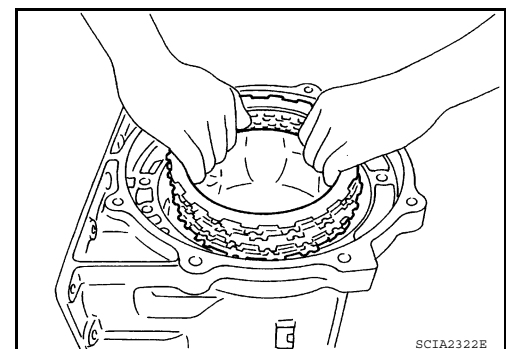


50. Remove N-spring from transmission case.



51. 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.



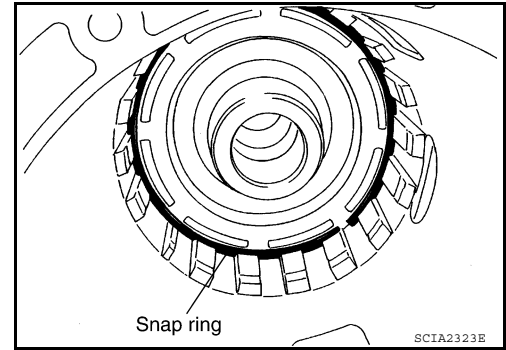
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DISASSEMBLY

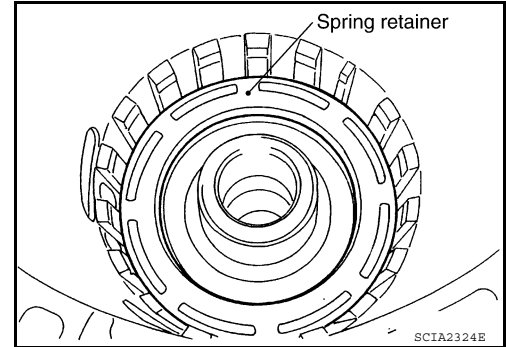
< DISASSEMBLY AND ASSEMBLY >

[5AT: RE5R05A]

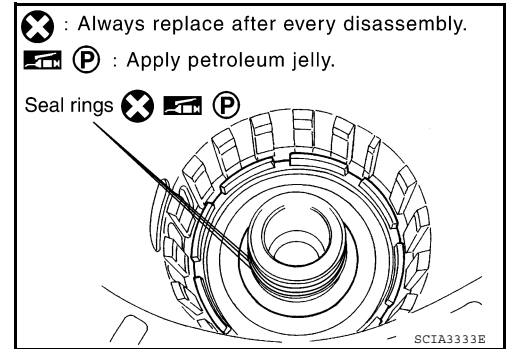
52. Remove snap ring using suitable tool.



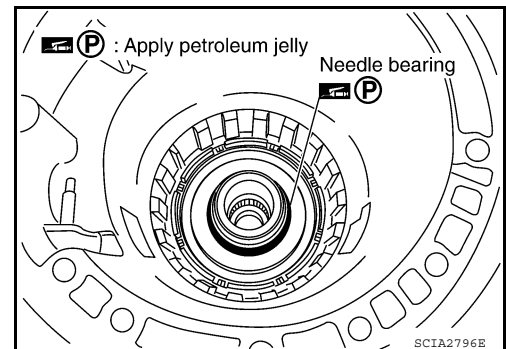
53. Remove spring retainer and return spring from transmission case.



54. Remove seal rings from drum support.



55. Remove needle bearing from drum support edge surface.



DISASSEMBLY

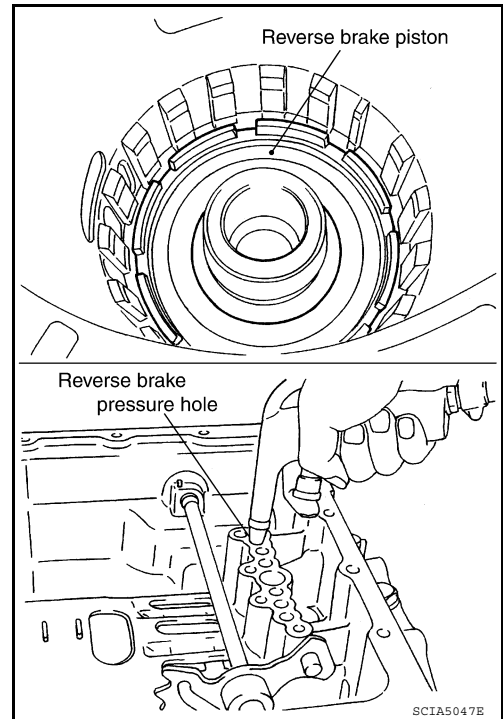
< DISASSEMBLY AND ASSEMBLY >

[5AT: RE5R05A]

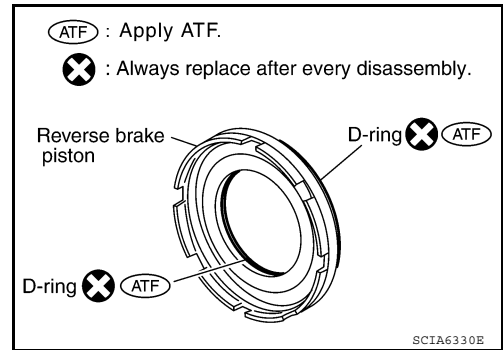
56. Remove reverse brake piston from transmission case using compressed air. Refer to [TM-243, "Oil Channel"](#).

CAUTION:

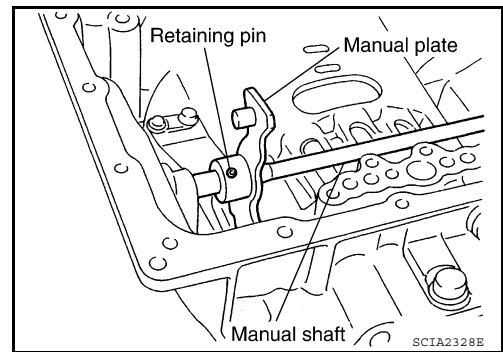
Care should be taken not to abruptly blow air. It makes the piston incline, and as a result, it becomes hard to disassemble the pistons.



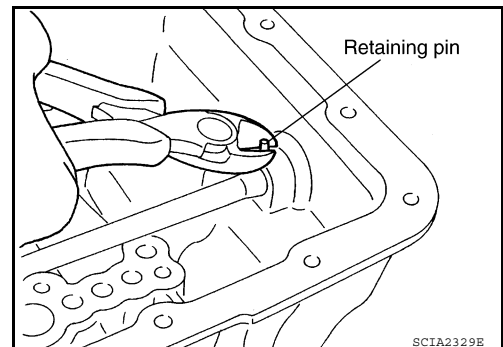
57. Remove D-rings from reverse brake piston.



58. Knock out retaining pin using suitable tool.



59. Remove manual shaft retaining pin using suitable tool.



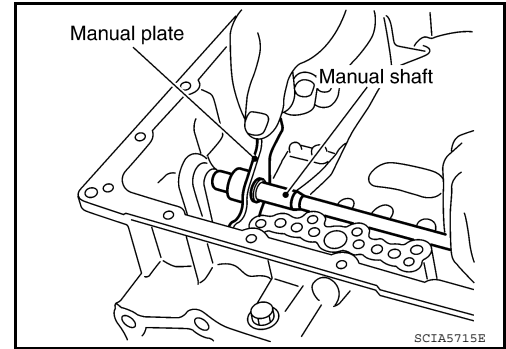
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DISASSEMBLY

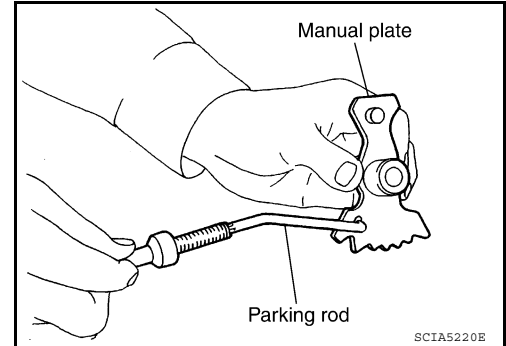
< DISASSEMBLY AND ASSEMBLY >

[5AT: RE5R05A]

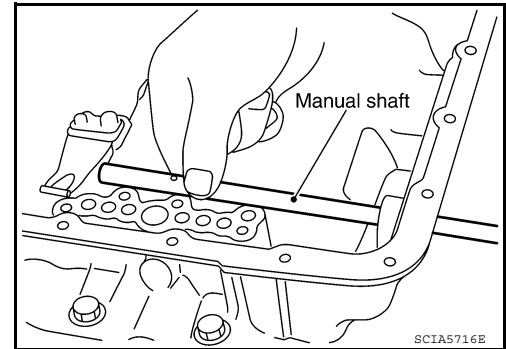
60. Remove manual plate (with parking rod) from manual shaft.



61. Remove parking rod from manual plate.

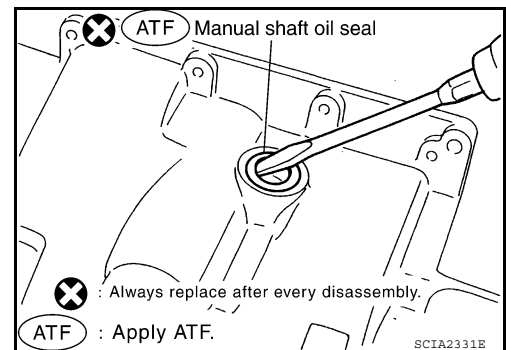


62. Remove manual shaft from transmission case.

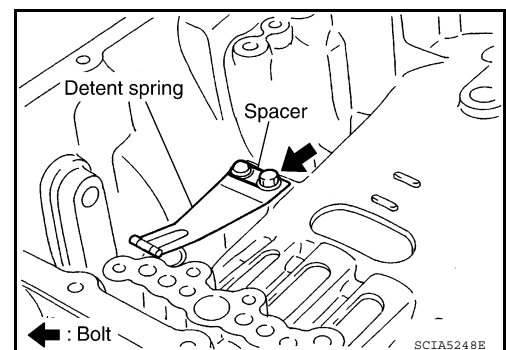


63. Remove manual shaft oil seals using suitable tool.

CAUTION:
Do not scratch transmission case.



64. Remove detent spring and spacer from transmission case.

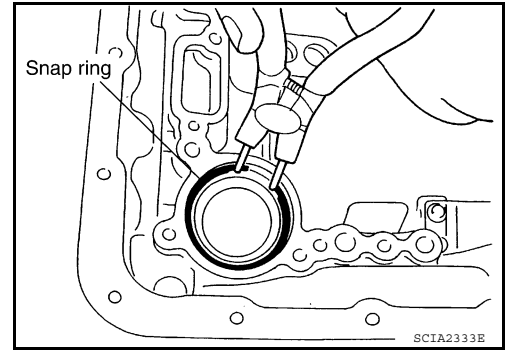


DISASSEMBLY

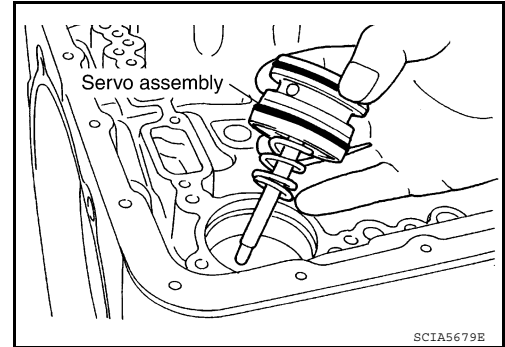
< DISASSEMBLY AND ASSEMBLY >

[5AT: RE5R05A]

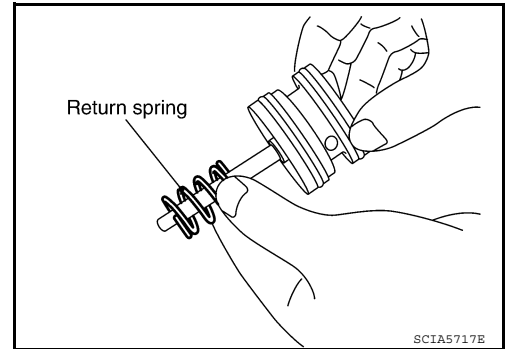
65. Remove snap ring from transmission case using suitable tool.



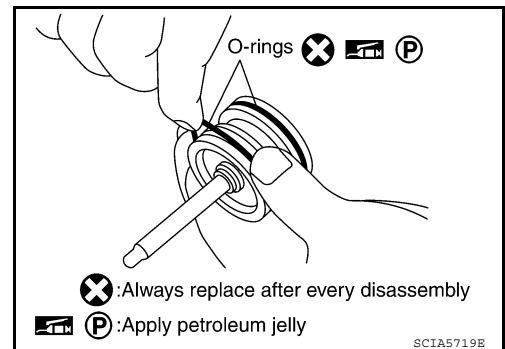
66. Remove servo assembly (with return spring) from transmission case.



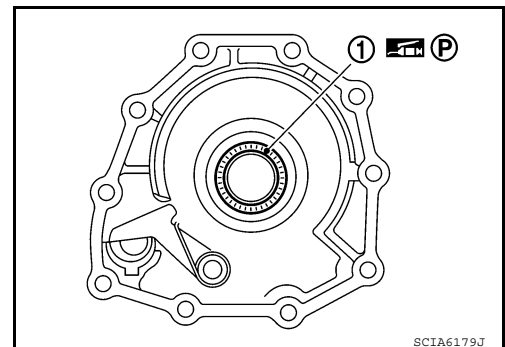
67. Remove return spring from servo assembly.



68. Remove O-rings from servo assembly.



69. Remove needle bearing (1) from adapter case.



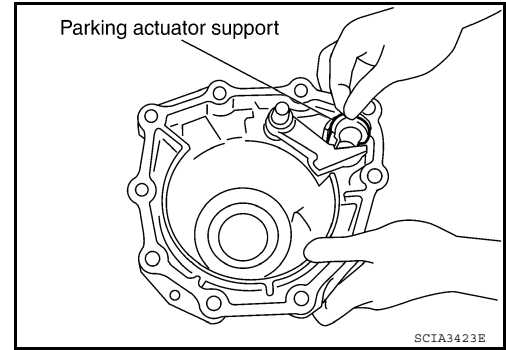
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DISASSEMBLY

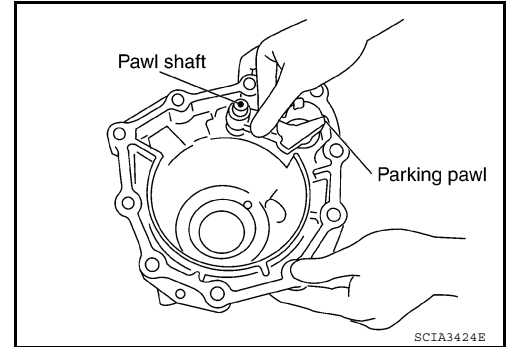
< DISASSEMBLY AND ASSEMBLY >

[5AT: RE5R05A]

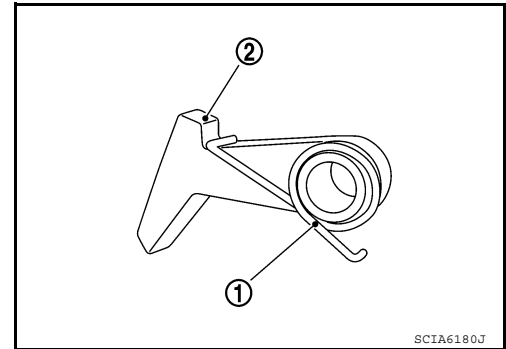
70. Remove parking actuator support from adapter case.



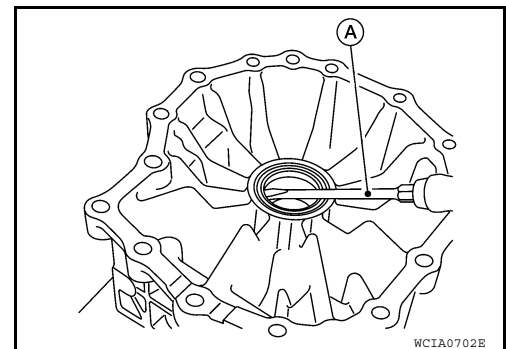
71. Remove parking pawl (with return spring) and pawl shaft from adapter case.



72. Remove return spring (1) from parking pawl (2).



73. Remove rear oil seal from adapter case using suitable tool (A).
CAUTION:
Do not scratch adapter case.



OIL PUMP

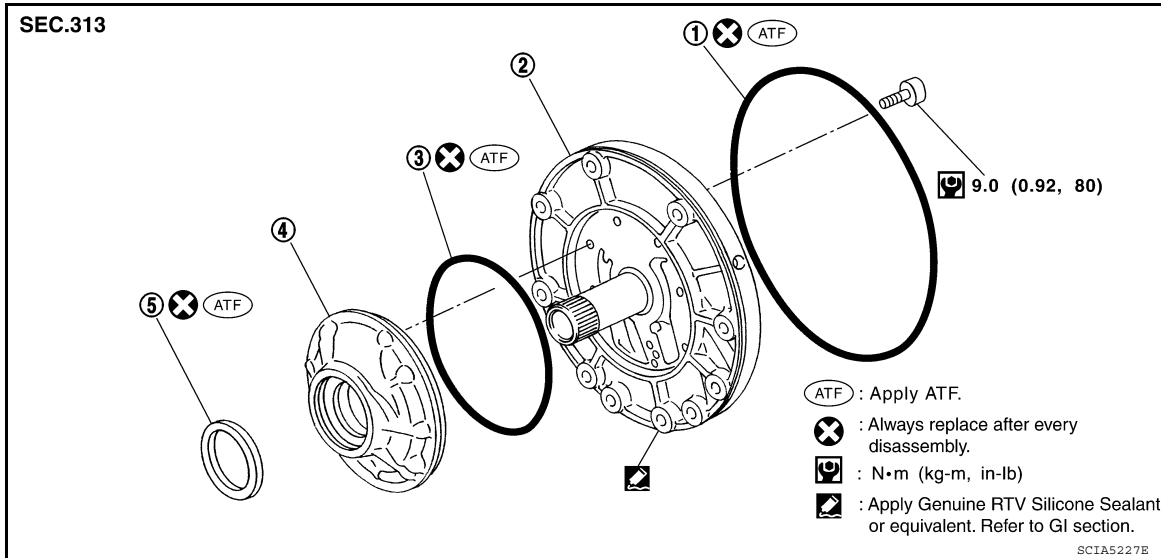
< DISASSEMBLY AND ASSEMBLY >

[5AT: RE5R05A]

OIL PUMP

Exploded View

INFOID:000000005280816



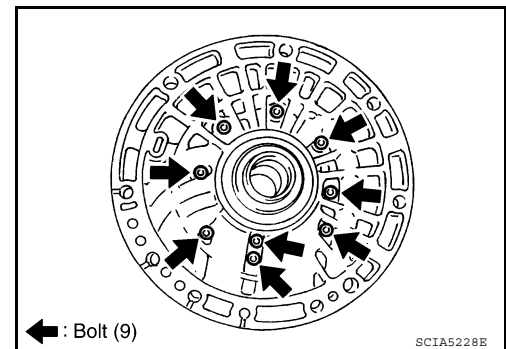
1. O-ring
2. Oil pump cover
3. O-ring
4. Oil pump housing
5. Oil pump housing oil seal

Disassembly and Assembly

INFOID:000000005280817

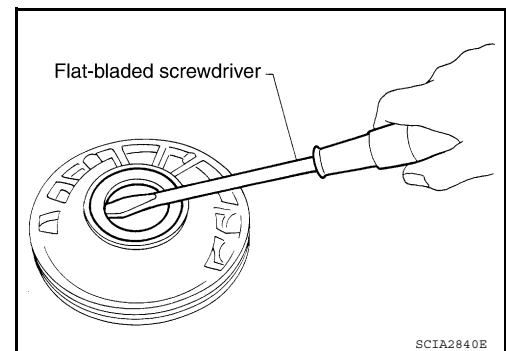
DISASSEMBLY

1. Remove oil pump housing from oil pump cover.



2. Remove oil pump housing oil seal using suitable tool.

CAUTION:
Do not scratch oil pump housing.

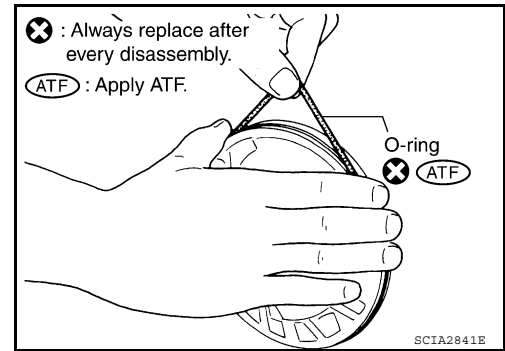


OIL PUMP

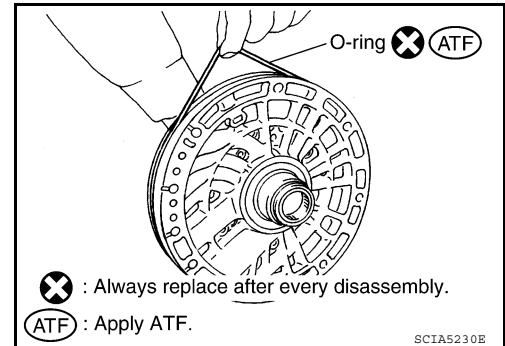
< DISASSEMBLY AND ASSEMBLY >

[5AT: RE5R05A]

3. Remove O-ring from oil pump housing.



4. Remove O-ring from oil pump cover.

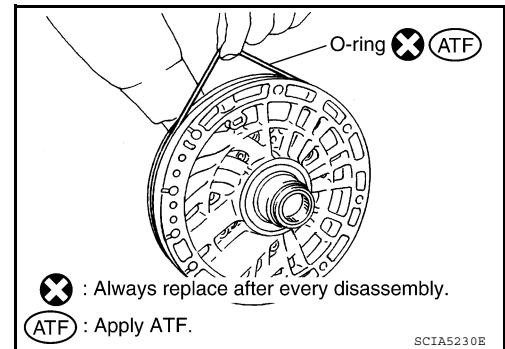


ASSEMBLY

1. Install O-ring to oil pump cover.

CAUTION:

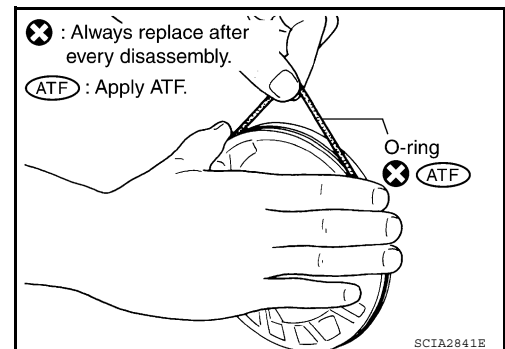
- Do not reuse O-ring.
- Apply ATF to O-ring.



2. Install O-ring to oil pump housing.

CAUTION:

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



OIL PUMP

< DISASSEMBLY AND ASSEMBLY >

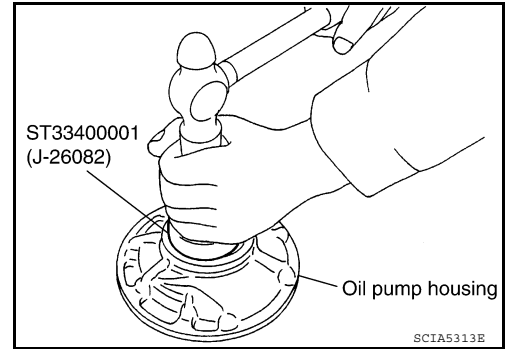
[5AT: RE5R05A]

3. Install oil pump housing oil seal to the oil pump housing until it is flush using Tool.

Tool number : ST33400001 (J-26082)

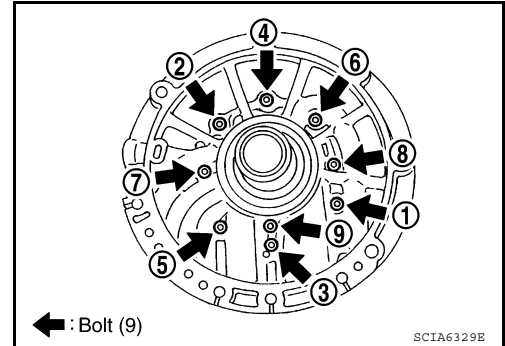
CAUTION:

- Do not reuse oil seal.
- Apply ATF to oil seal.



4. After temporarily tightening the bolts for the oil pump housing to the oil pump cover, tighten them to the specified torque in the sequence shown.

Oil pump housing bolts : 9.0 N-m (0.92 kg-m, 80 in-lb)



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FRONT SUN GEAR, 3RD ONE-WAY CLUTCH

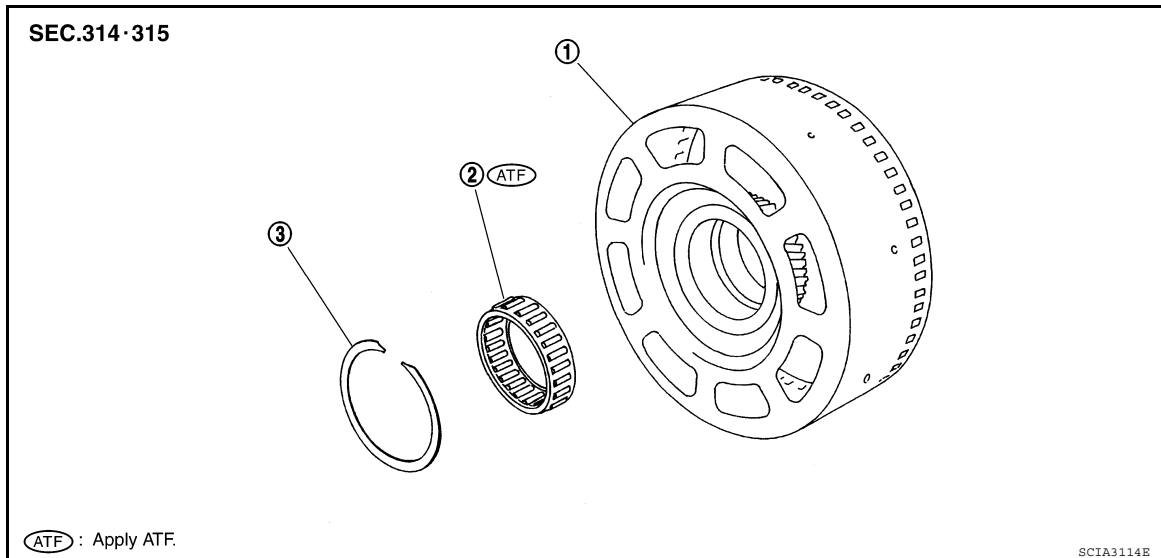
< DISASSEMBLY AND ASSEMBLY >

[5AT: RE5R05A]

FRONT SUN GEAR, 3RD ONE-WAY CLUTCH

Exploded View

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1. Front sun gear

2. 3rd one-way clutch

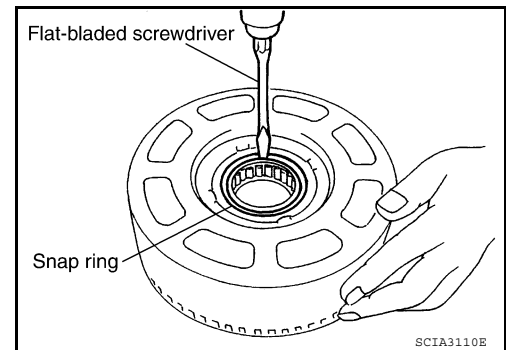
3. Snap ring

Disassembly and Assembly

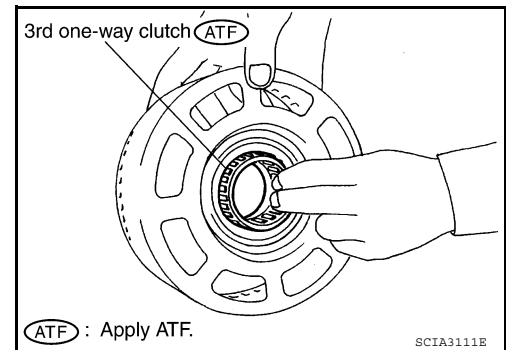
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DISASSEMBLY

1. Remove snap ring from front sun gear using suitable tool.



2. Remove 3rd one-way clutch from front sun gear.



INSPECTION

3rd One-way Clutch

- Check frictional surface for wear or damage.

CAUTION:

If necessary, replace the 3rd one-way clutch.

FRONT SUN GEAR, 3RD ONE-WAY CLUTCH

< DISASSEMBLY AND ASSEMBLY >

[5AT: RE5R05A]

Front Sun Gear Snap Ring

- Check for deformation, fatigue or damage.

CAUTION:

If necessary, replace the snap ring.

Front Sun Gear

- Check for deformation, fatigue or damage.

CAUTION:

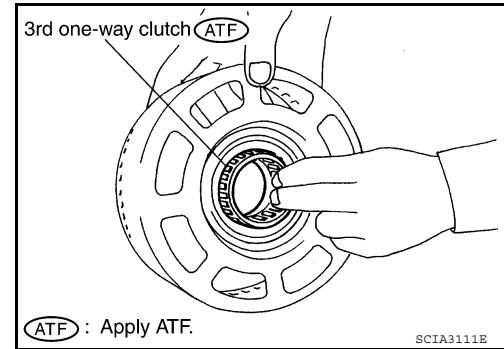
If necessary, replace the front sun gear.

ASSEMBLY

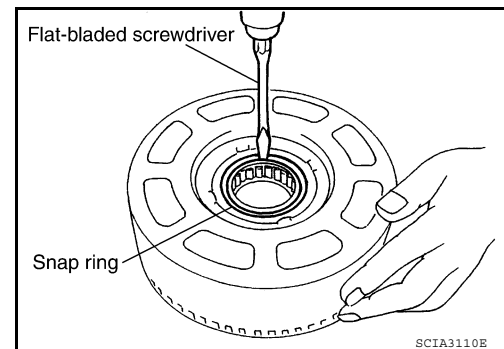
1. Install 3rd one-way clutch in front sun gear.

CAUTION:

Apply ATF to 3rd one-way clutch.



2. Install snap ring in front sun gear using suitable tool.



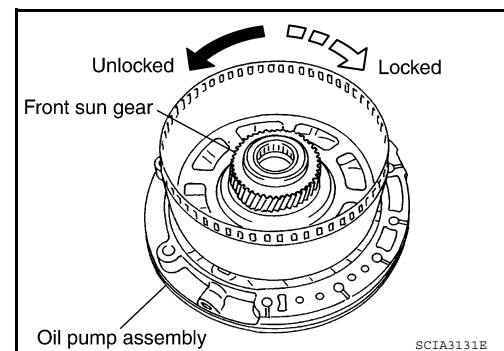
3. Check operation of 3rd one-way clutch.

- a. Hold oil pump assembly and turn front sun gear.

- b. Check 3rd one-way clutch for correct locking and unlocking directions.

CAUTION:

If not as shown, check installation direction of 3rd one-way clutch.



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FRONT CARRIER, INPUT CLUTCH, REAR INTERNAL GEAR

< DISASSEMBLY AND ASSEMBLY >

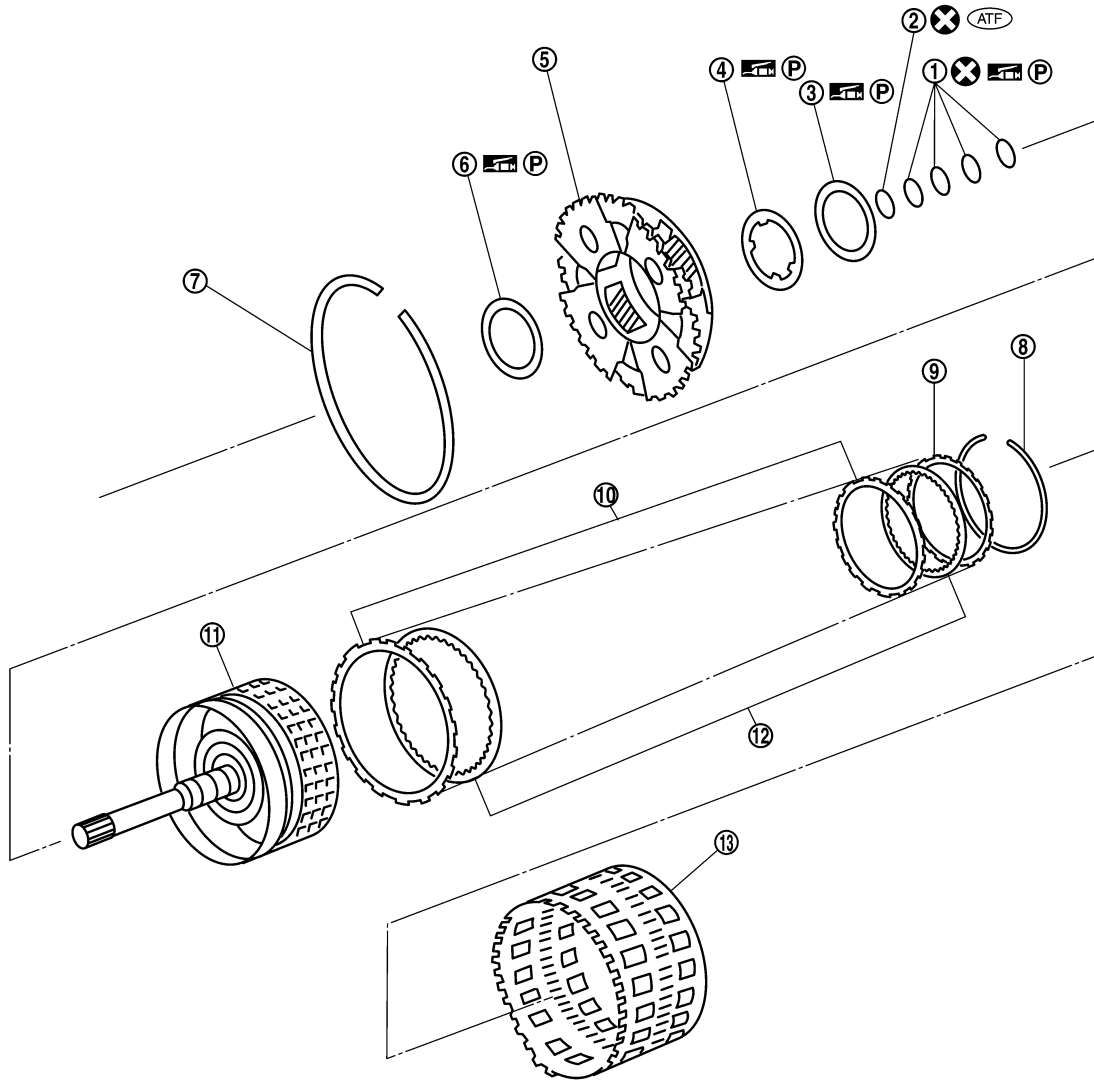
[5AT: RE5R05A]

FRONT CARRIER, INPUT CLUTCH, REAR INTERNAL GEAR

Exploded View

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- | | | |
|------------------------|---------------------------|--------------------|
| 1. Seal ring | 2. O-ring | 3. Needle bearing |
| 4. Bearing race | 5. Front carrier assembly | 6. Needle bearing |
| 7. Snap ring | 8. Snap ring | 9. Retaining plate |
| 10. Driven plate | 11. Input clutch drum | 12. Drive plate |
| 13. Rear internal gear | | |

Disassembly and Assembly

INFOID:000000005280821

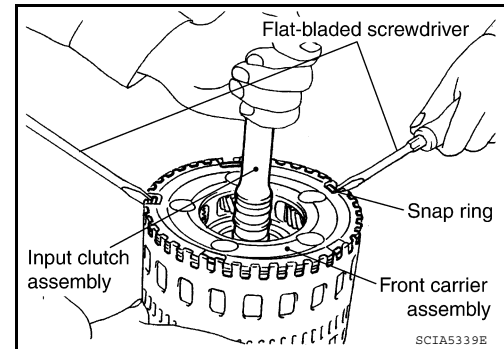
DISASSEMBLY

FRONT CARRIER, INPUT CLUTCH, REAR INTERNAL GEAR

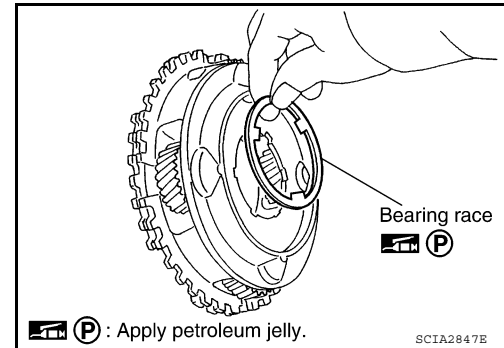
< DISASSEMBLY AND ASSEMBLY >

[5AT: RE5R05A]

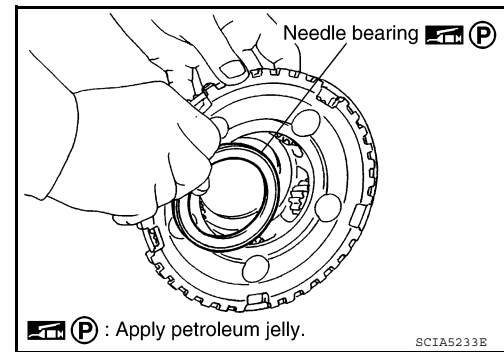
1. Compress snap ring using 2 flat-bladed screwdrivers.
2. Remove front carrier assembly and input clutch assembly from rear internal gear.



3. Remove front carrier assembly from input clutch assembly.
 - a. Remove bearing race from front carrier assembly.

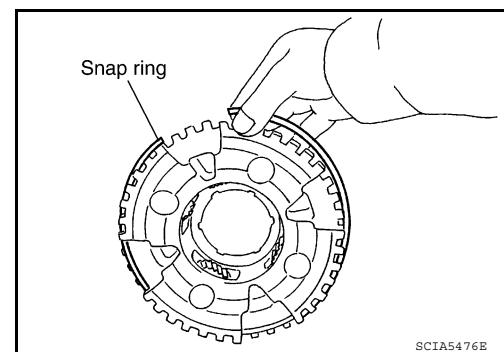


- b. Remove needle bearing from front carrier assembly.

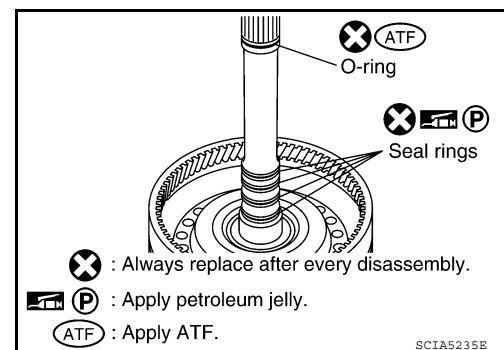


- c. Remove snap ring from front carrier assembly.

CAUTION:
Do not excessively expand snap ring.



4. Disassemble input clutch assembly.
 - a. Remove O-ring and seal rings from input clutch assembly.



⊗ : Always replace after every disassembly.
 🛠️ (P) : Apply petroleum jelly.
 (ATF) : Apply ATF.

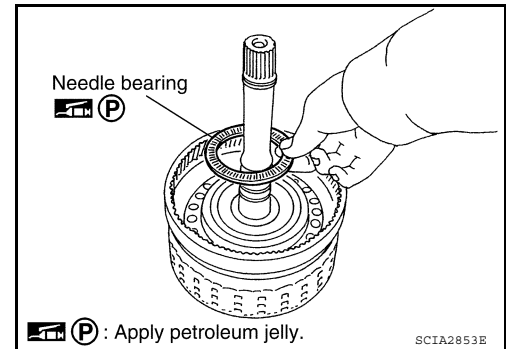
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FRONT CARRIER, INPUT CLUTCH, REAR INTERNAL GEAR

< DISASSEMBLY AND ASSEMBLY >

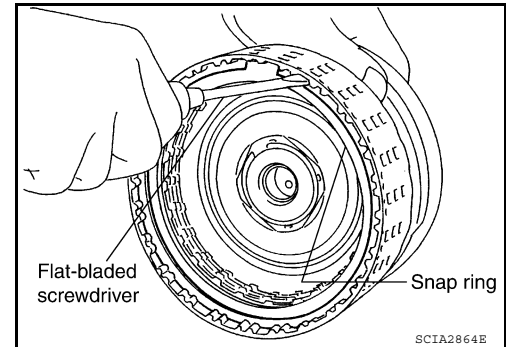
[5AT: RE5R05A]

b. Remove needle bearing from input clutch assembly.



c. Remove snap ring from input clutch drum using suitable tool.

d. Remove drive plates, driven plates and retaining plate from input clutch drum.



INSPECTION

Front Carrier Snap Ring

- Check for deformation, fatigue or damage.

CAUTION:

If necessary, replace the snap ring.

Input Clutch Snap Ring

- Check for deformation, fatigue or damage.

CAUTION:

If necessary, replace the input clutch assembly.

Input Clutch Drum

- Check for deformation, fatigue or damage or burns.

CAUTION:

If necessary, replace the input clutch assembly.

Input Clutch Drive Plates

- Check facing for burns, cracks or damage.

CAUTION:

If necessary, replace the input clutch assembly.

Input Clutch Retaining Plate and Driven Plates

- Check facing for burns, cracks or damage.

CAUTION:

If necessary, replace the input clutch assembly.

Front Carrier

- Check for deformation, fatigue or damage.

CAUTION:

If necessary, replace the front carrier assembly.

Rear Internal Gear

- Check for deformation, fatigue or damage.

CAUTION:

If necessary, replace the rear internal gear assembly.

ASSEMBLY

FRONT CARRIER, INPUT CLUTCH, REAR INTERNAL GEAR

< DISASSEMBLY AND ASSEMBLY >

[5AT: RE5R05A]

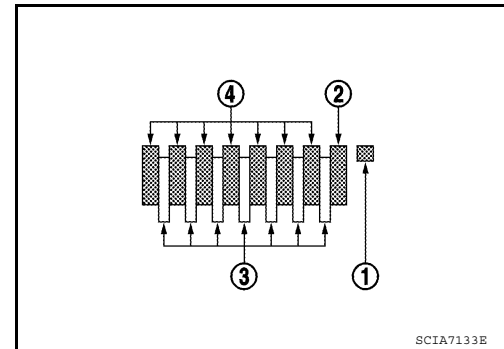
1. Install input clutch.
- a. Install drive plates (3), driven plates (4) and retaining plate (2) in input clutch drum.
 - Snap ring (1)

CAUTION:

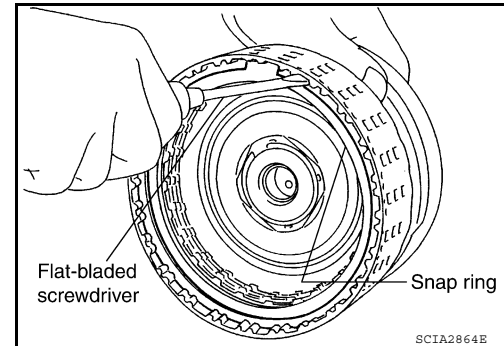
Take care with order of plates.

NOTE:

There are 7 drive plates and 7 driven plates.



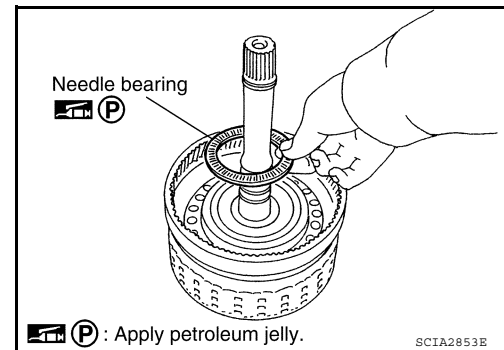
- b. Install snap ring in input clutch drum using suitable tool.



- c. Install needle bearing in input clutch assembly.

CAUTION:

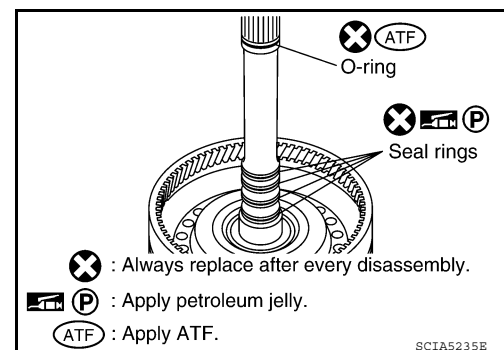
Apply petroleum jelly to needle bearing.



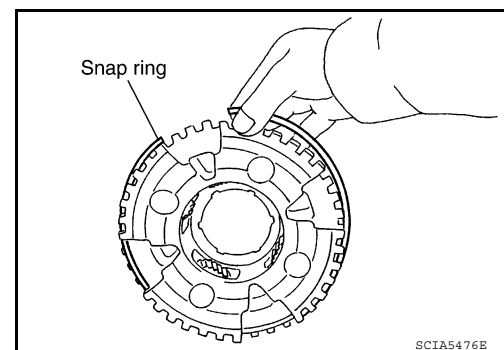
- d. Install O-ring and seal rings in input clutch assembly.

CAUTION:

- Do not reuse O-ring and seal rings.
- Apply ATF to O-ring.
- Apply petroleum jelly to seal rings.



2. Install front carrier assembly.
 - a. Install snap ring to front carrier assembly.
- CAUTION:**
Do not excessively expand snap ring.



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FRONT CARRIER, INPUT CLUTCH, REAR INTERNAL GEAR

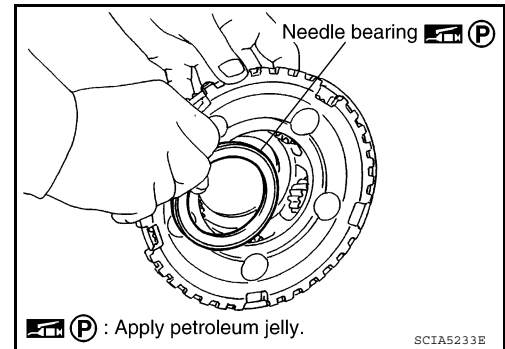
< DISASSEMBLY AND ASSEMBLY >

[5AT: RE5R05A]

- b. Install needle bearing in front carrier assembly.

CAUTION:

- Take care with the direction of needle bearing. Refer to [TM-244, "Location of Adjusting Shims, Needle Bearings, Thrust Washers and Snap Rings"](#).
- Apply petroleum jelly to bearing race.

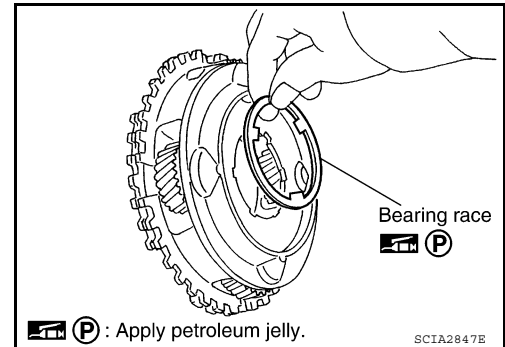


- c. Install bearing race in front carrier assembly.

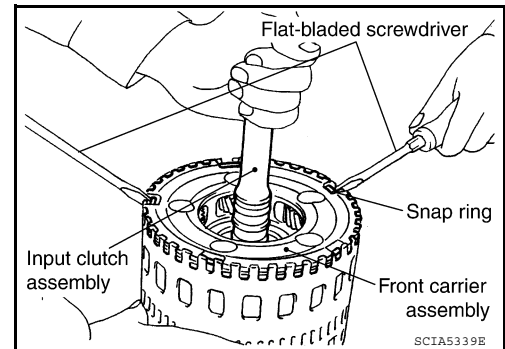
CAUTION:

Apply petroleum jelly to bearing race.

- d. Install front carrier assembly to input clutch assembly.



3. Compress snap ring using 2 flat-bladed screwdrivers.



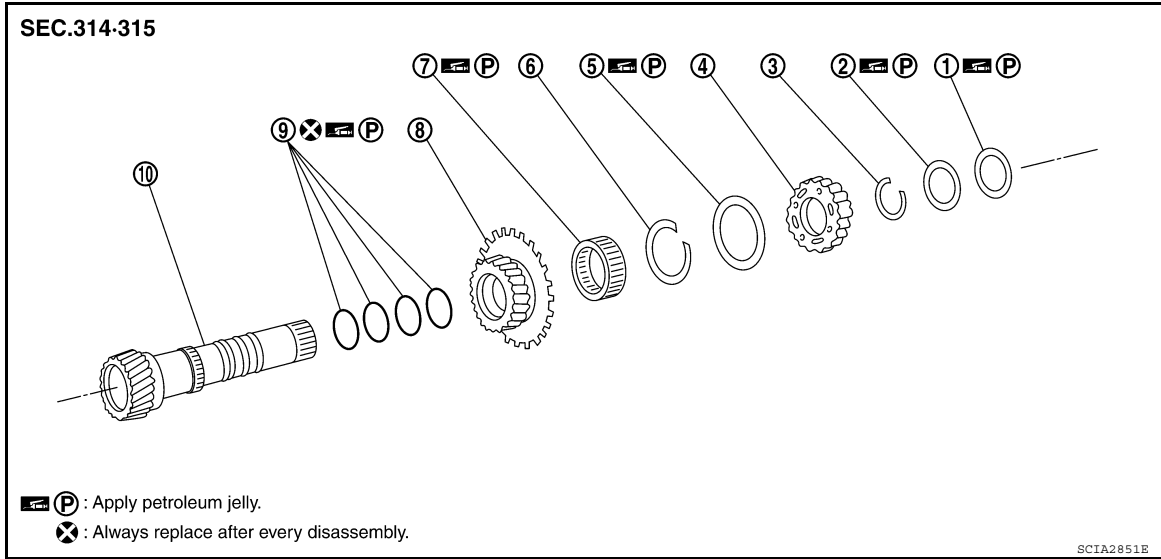
4. Install front carrier assembly and input clutch assembly to rear internal gear.

MID SUN GEAR, REAR SUN GEAR, HIGH AND LOW REVERSE CLUTCH HUB
 < DISASSEMBLY AND ASSEMBLY > [5AT: RE5R05A]

MID SUN GEAR, REAR SUN GEAR, HIGH AND LOW REVERSE CLUTCH HUB

Exploded View

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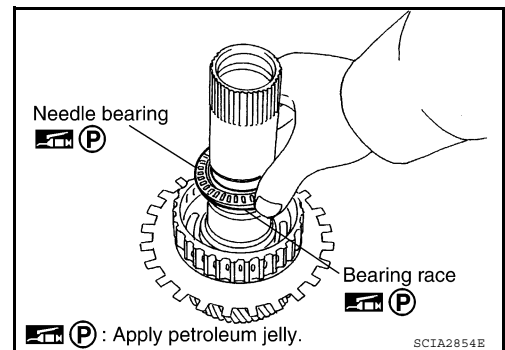
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|------------------------------------|-------------------|--------------|
| 1. Needle bearing | 2. Bearing race | 3. Snap ring |
| 4. High and low reverse clutch hub | 5. Needle bearing | 6. Snap ring |
| 7. 1st one-way clutch | 8. Rear sun gear | 9. Seal ring |
| 10. Mid sun gear | | |

Disassembly and Assembly

INFOID:000000005280823

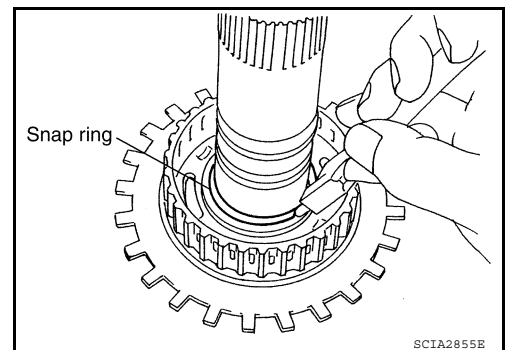
DISASSEMBLY

1. Remove needle bearing and bearing race from high and low reverse clutch hub.



2. Remove snap ring from mid sun gear assembly using suitable tool.

CAUTION:
 Do not excessively expand snap ring.



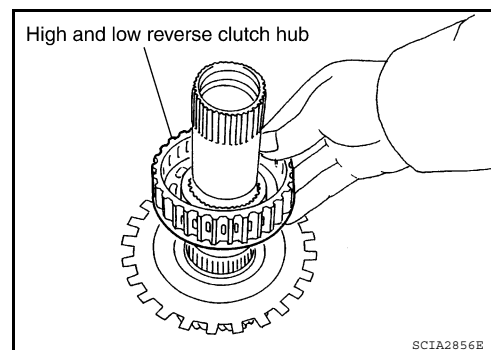
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MID SUN GEAR, REAR SUN GEAR, HIGH AND LOW REVERSE CLUTCH HUB

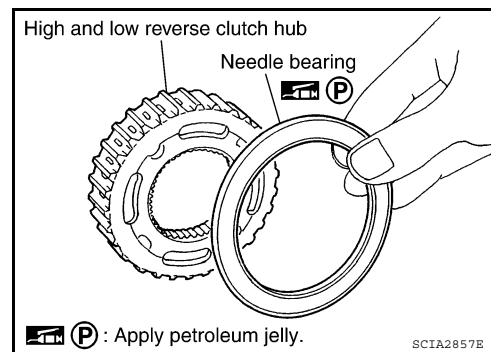
< DISASSEMBLY AND ASSEMBLY >

[5AT: RE5R05A]

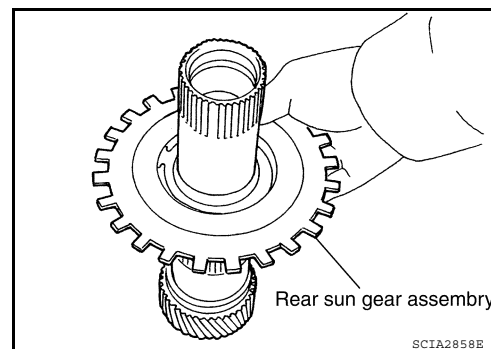
3. Remove high and low reverse clutch hub from mid sun gear assembly.



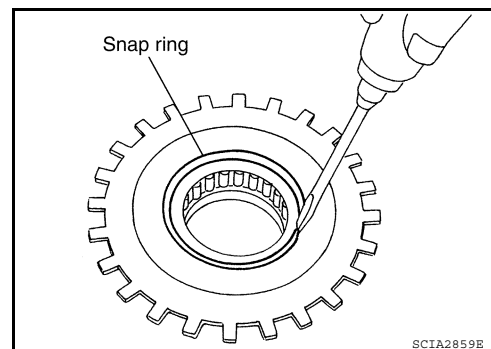
- a. Remove needle bearing from high and low reverse clutch hub.



4. Remove rear sun gear assembly from mid sun gear assembly.



- a. Remove snap ring from rear sun gear using suitable tool.

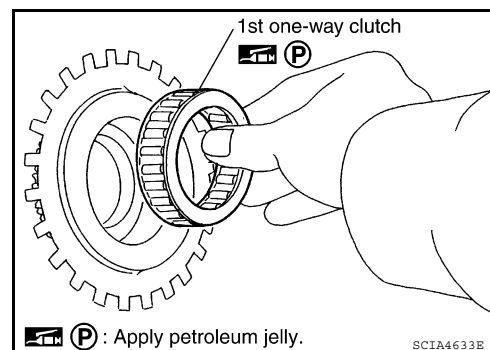


MID SUN GEAR, REAR SUN GEAR, HIGH AND LOW REVERSE CLUTCH HUB

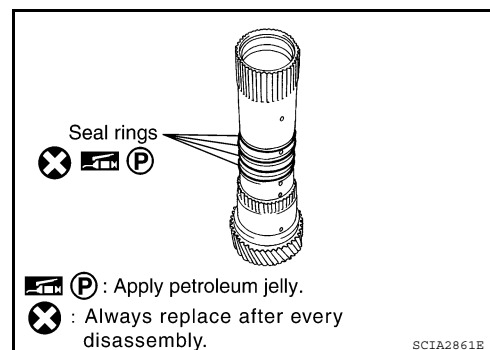
< DISASSEMBLY AND ASSEMBLY >

[5AT: RE5R05A]

- b. Remove 1st one-way clutch from rear sun gear.



5. Remove seal rings from mid sun gear.



INSPECTION

High and Low Reverse Clutch Hub Snap Ring, Rear Sun Gear Snap Ring

- Check for deformation, fatigue or damage.

CAUTION:

If necessary, replace the snap ring.

1st One-way Clutch

- Check frictional surface for wear or damage.

CAUTION:

If necessary, replace the 1st one-way clutch.

Mid Sun Gear

- Check for deformation, fatigue or damage.

CAUTION:

If necessary, replace the mid sun gear.

Rear Sun Gear

- Check for deformation, fatigue or damage.

CAUTION:

If necessary, replace the rear sun gear.

High and Low Reverse Clutch Hub

- Check for deformation, fatigue or damage.

CAUTION:

If necessary, replace the high and low reverse clutch hub.

ASSEMBLY

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MID SUN GEAR, REAR SUN GEAR, HIGH AND LOW REVERSE CLUTCH HUB

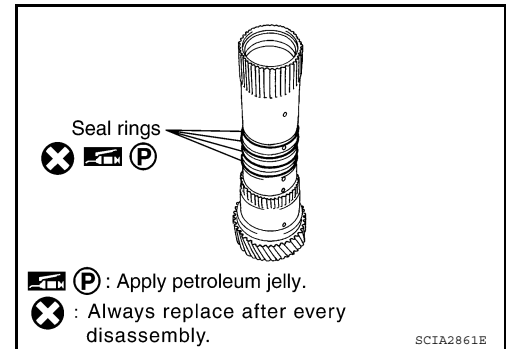
< DISASSEMBLY AND ASSEMBLY >

[5AT: RE5R05A]

1. Install seal rings to mid sun gear.

CAUTION:

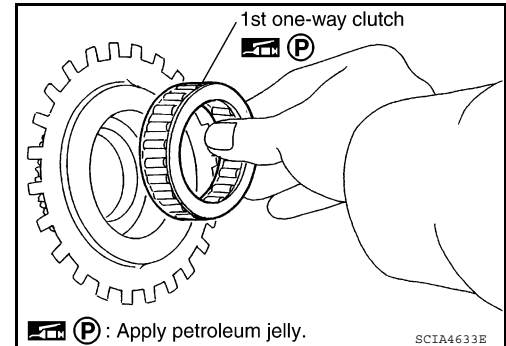
- Do not reuse seal rings.
- Apply petroleum jelly to seal rings.



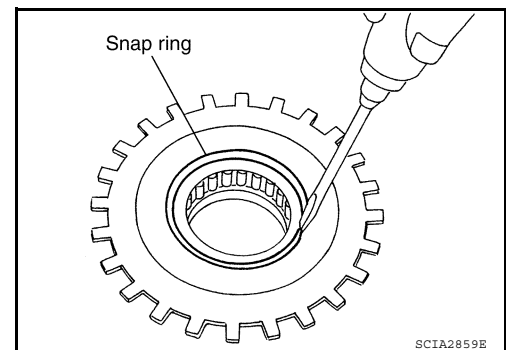
2. Install 1st one-way clutch to rear sun gear.

CAUTION:

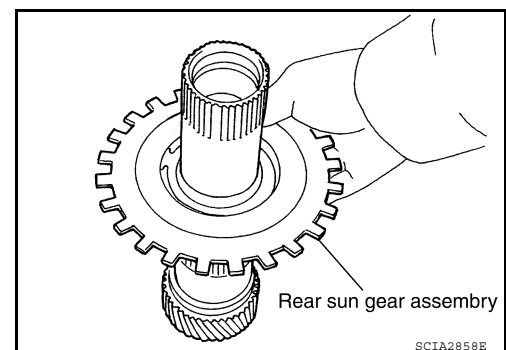
- Apply petroleum jelly to 1st one-way clutch.



3. Install snap ring to rear sun gear using suitable tool.



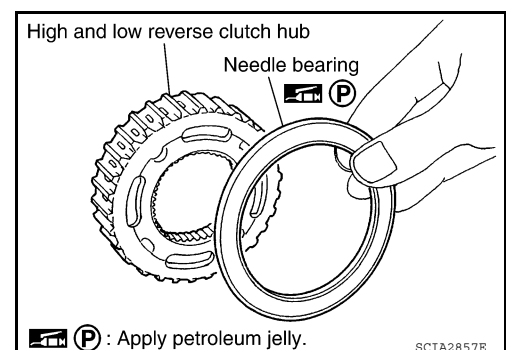
4. Install rear sun gear assembly to mid sun gear assembly.



5. Install needle bearing to high and low reverse clutch hub.

CAUTION:

- Apply petroleum jelly to needle bearing.

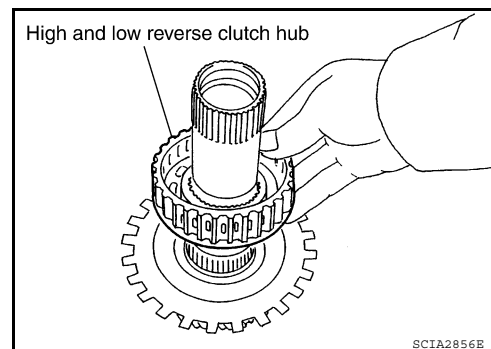


MID SUN GEAR, REAR SUN GEAR, HIGH AND LOW REVERSE CLUTCH HUB

< DISASSEMBLY AND ASSEMBLY >

[5AT: RE5R05A]

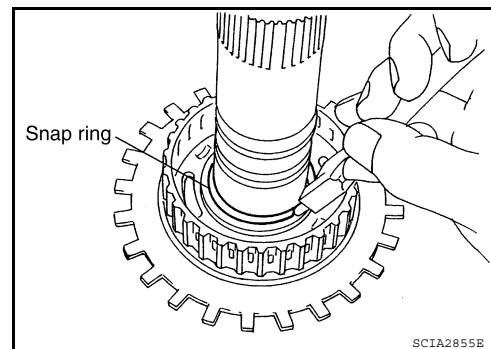
6. Install high and low reverse clutch hub to mid sun gear assembly.



7. Install snap ring to mid sun gear assembly using suitable tool.

CAUTION:

Do not excessively expand snap ring.



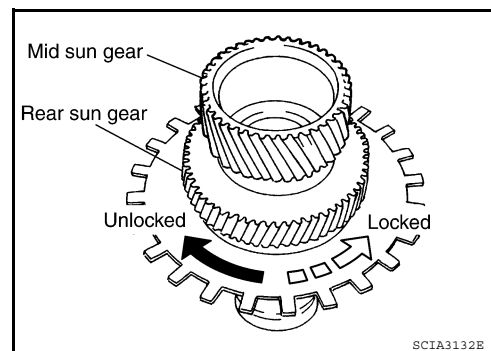
8. Check operation of 1st one-way clutch.

a. Hold mid sun gear and turn rear sun gear.

- b. Check 1st one-way clutch for correct locking and unlocking directions.

CAUTION:

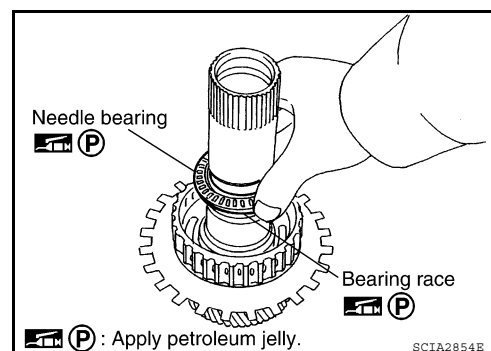
If not as shown, check installation direction of 1st one-way clutch.



9. Install needle bearing and bearing race to high and low reverse clutch hub.

CAUTION:

Apply petroleum jelly to needle bearing and bearing race.



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HIGH AND LOW REVERSE CLUTCH

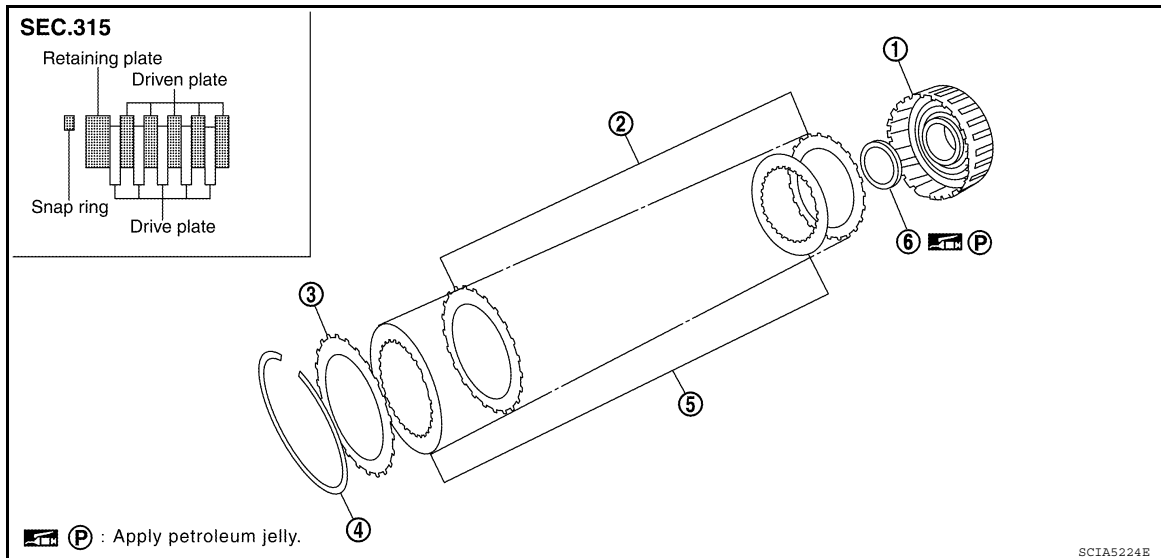
< DISASSEMBLY AND ASSEMBLY >

[5AT: RE5R05A]

HIGH AND LOW REVERSE CLUTCH

Exploded View

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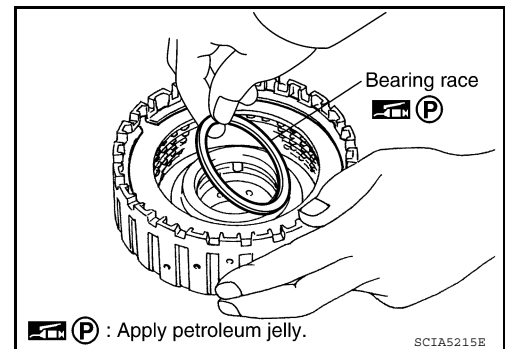
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|-------------------------------------|-----------------|--------------------|
| 1. High and low reverse clutch drum | 2. Driven plate | 3. Retaining plate |
| 4. Snap ring | 5. Drive plate | 6. Bearing race |

Disassembly and Assembly

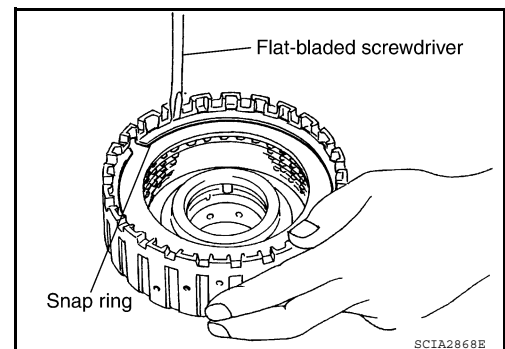
INFOID:000000005280825

DISASSEMBLY

1. Remove bearing race from high and low reverse clutch drum.



2. Remove snap ring from high and low reverse clutch drum using suitable tool.
3. Remove drive plates, driven plates and retaining plate from high and low reverse clutch drum.



INSPECTION

- Check the following, and replace high and low reverse clutch assembly if necessary.

High and Low Reverse Clutch Snap Ring

- Check for deformation, fatigue or damage.

High and Low Reverse Clutch Drive Plates

HIGH AND LOW REVERSE CLUTCH

< DISASSEMBLY AND ASSEMBLY >

[5AT: RE5R05A]

- Check facing for burns, cracks or damage.

High and Low Reverse Clutch Retaining Plate and Driven Plates

- Check facing for burns, cracks or damage.

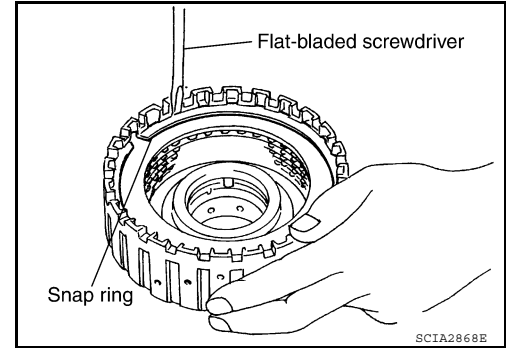
ASSEMBLY

1. Install drive plates, driven plates and retaining plate in high and low reverse clutch drum.

CAUTION:

Take care with order of plates.

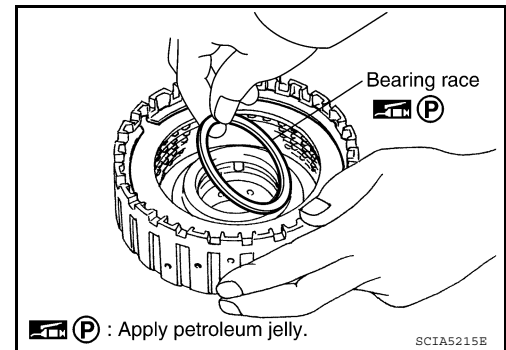
2. Install snap ring in high and low reverse clutch drum using suitable tool.



3. Install bearing race to high and low reverse clutch drum.

CAUTION:

Apply petroleum jelly to bearing race.



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DIRECT CLUTCH

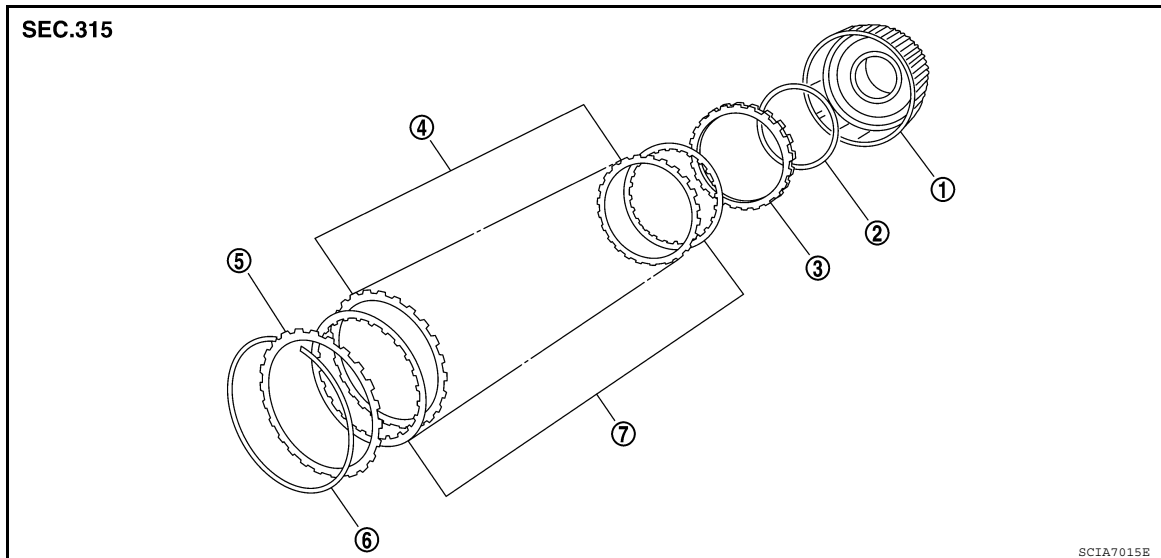
< DISASSEMBLY AND ASSEMBLY >

[5AT: RE5R05A]

DIRECT CLUTCH

Exploded View

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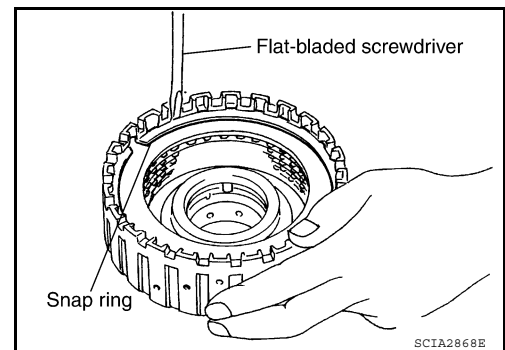
- | | | |
|-----------------------|--------------------|--------------------|
| 1. Direct clutch drum | 2. Dish plate | 3. Retaining plate |
| 4. Driven plate | 5. Retaining plate | 6. Snap ring |
| 7. Drive plate | | |

Disassembly and Assembly

INFOID:000000005280827

DISASSEMBLY

1. Remove snap ring from direct clutch drum using suitable tool.
2. Remove retaining plates, drive plates, driven plates and dish plate from direct clutch drum.



INSPECTION

- **Check the following, and replace direct clutch assembly if necessary.**

Direct Clutch Snap Ring

- Check for deformation, fatigue or damage.

Direct Clutch Drive Plates

- Check facing for burns, cracks or damage.

Direct Clutch Retaining Plate and Driven Plates

- Check facing for burns, cracks or damage.

ASSEMBLY

DIRECT CLUTCH

< DISASSEMBLY AND ASSEMBLY >

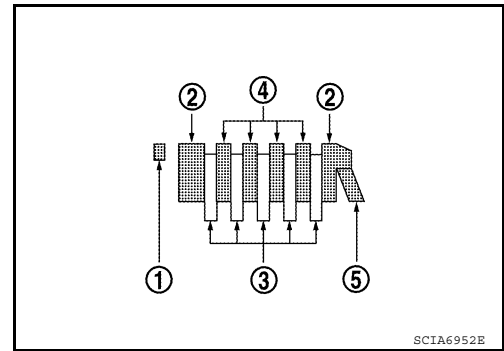
[5AT: RE5R05A]

1. Install dish plate retaining plates drive plates and driven plates in direct clutch drum.

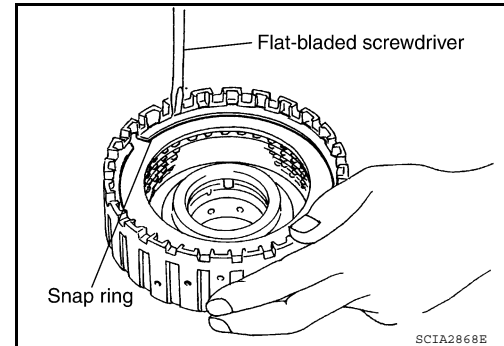
CAUTION:

Take care with order of plates.

- Snap ring (1)
- Retaining plate (2)
- Drive plate (3)
- Driven plate (4)
- Dish plate (5)
- Driveplate/Driven plate: 5/4



2. Install snap ring in direct clutch drum using suitable tool.



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ASSEMBLY

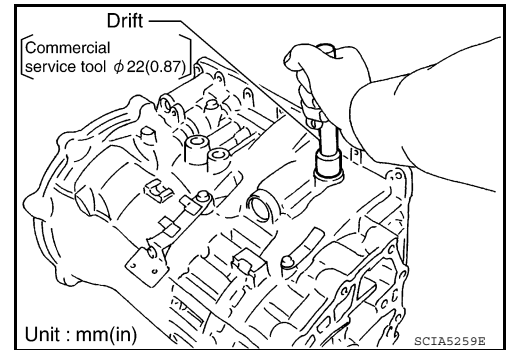
Assembly (1)

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1. Drive manual shaft oil seals into the transmission case until they are flush using suitable tool.

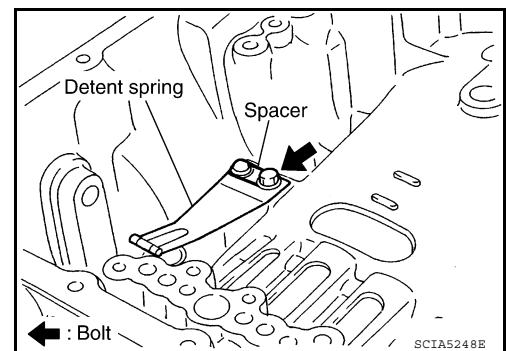
CAUTION:

- Apply ATF to manual shaft oil seals.
- Do not reuse manual shaft oil seals.

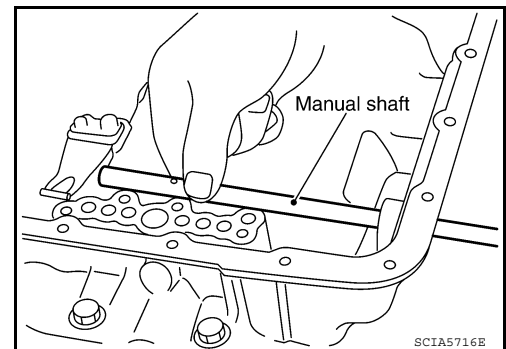


2. Install detent spring and spacer in transmission case and secure with the bolt.

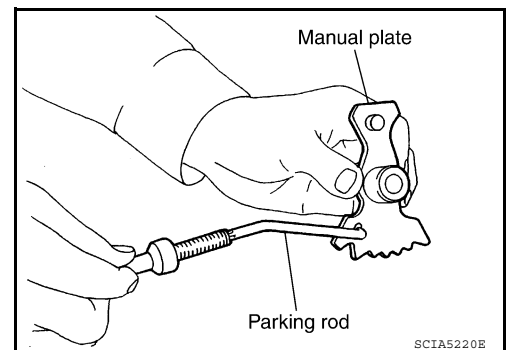
Bolt : 7.9 N·m (0.81 kg·m, 70 in·lb)



3. Install manual shaft to transmission case.



4. Install parking rod to manual plate.

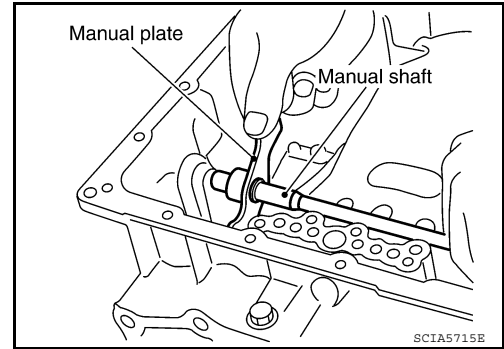


ASSEMBLY

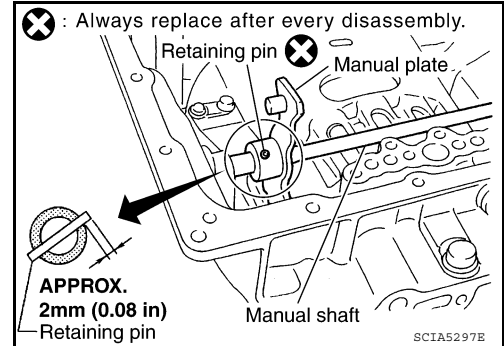
< DISASSEMBLY AND ASSEMBLY >

[5AT: RE5R05A]

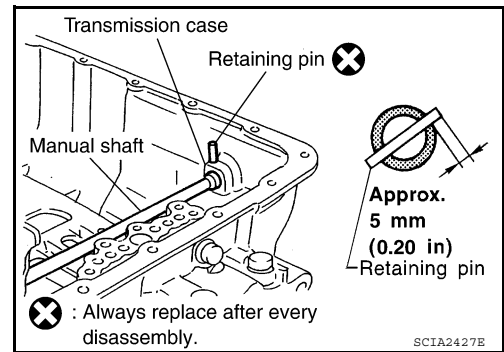
5. Install manual plate (with parking rod) to manual shaft.



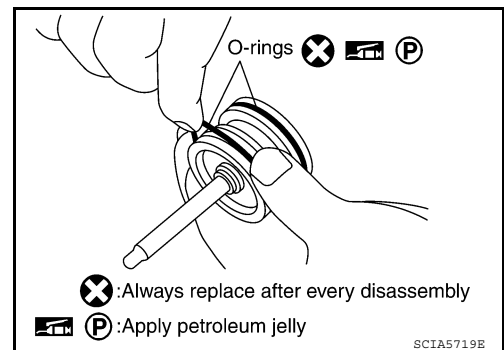
6. Install retaining pin into the manual plate and manual shaft.
- Align pinhole of the manual plate to pinhole of the manual shaft using suitable tool.
 - Tap the retaining pin into the manual plate using suitable tool.
- CAUTION:**
- Drive retaining pin to 2 ± 0.5 mm (0.08 ± 0.020 in) over the manual plate.
 - Do not reuse retaining pin.



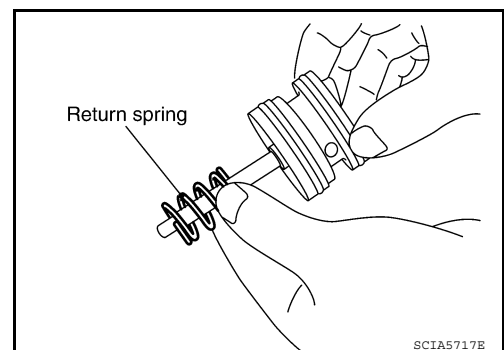
7. Install retaining pin into the transmission case and manual shaft.
- Align pinhole of the transmission case to pinhole of the manual shaft using suitable tool.
 - Tap the retaining pin into the transmission case using suitable tool.
- CAUTION:**
- Drive retaining pin to 5 ± 1 mm (0.20 ± 0.04 in) over the transmission case.
 - Do not reuse retaining pin.



8. Install O-rings to servo assembly.
- CAUTION:**
- Do not reuse O-rings.
 - Apply petroleum jelly to O-rings.



9. Install return spring to servo assembly.



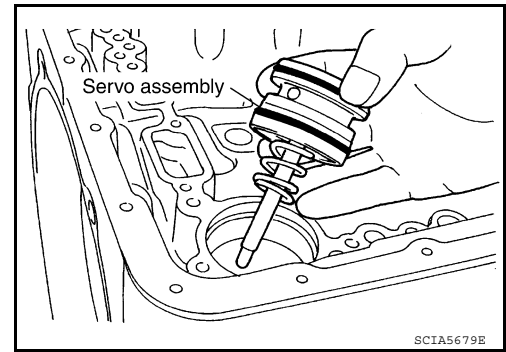
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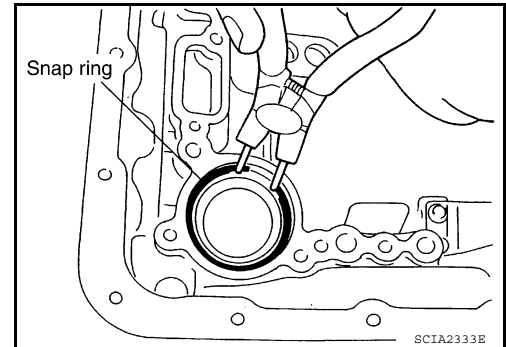
< DISASSEMBLY AND ASSEMBLY >

[5AT: RE5R05A]

10. Install servo assembly in transmission case.



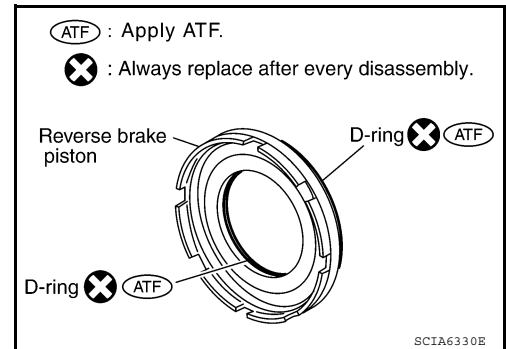
11. Install snap ring to transmission case using suitable tool.



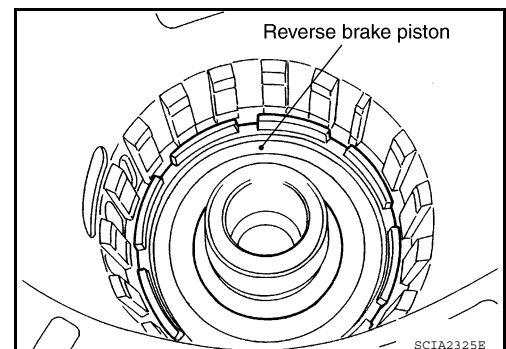
12. Install D-rings in reverse brake piston.

CAUTION:

- Do not reuse D-rings.
- Apply ATF to D-rings.



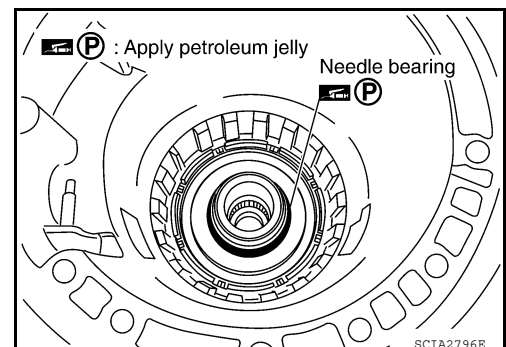
13. Install reverse brake piston in transmission case.



14. Install needle bearing to drum support edge surface.

CAUTION:

- Apply petroleum jelly to needle bearing.



ASSEMBLY

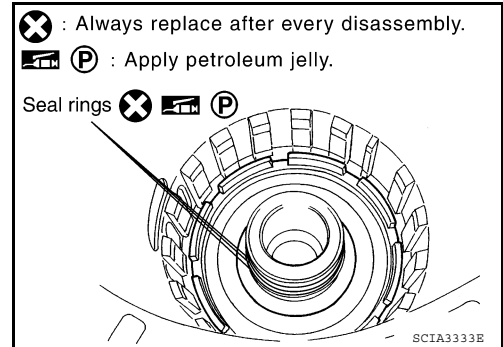
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[5AT: RE5R05A]

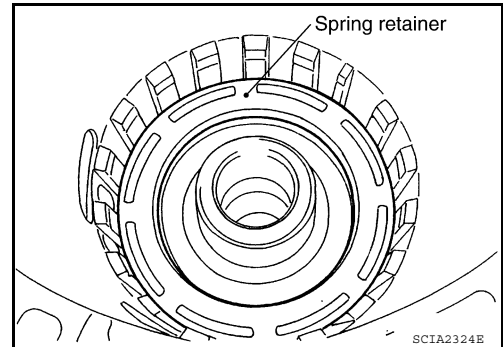
15. Install seal rings to drum support.

CAUTION:

- Do not reuse seal rings.
- Apply petroleum jelly to seal rings.



16. Install spring retainer and return spring in transmission case.

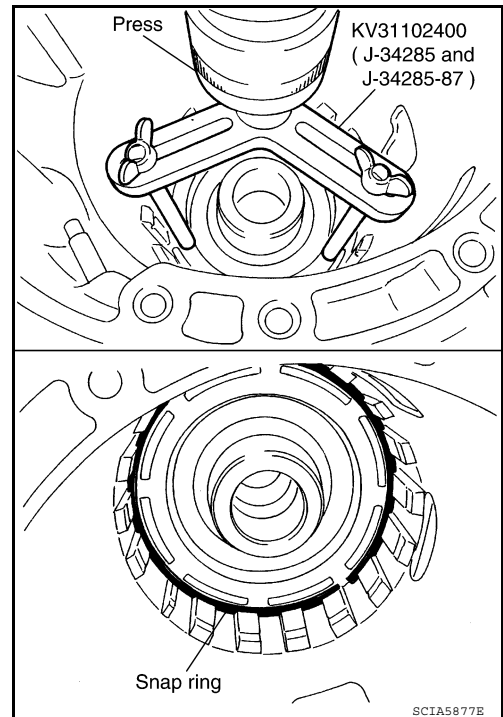


17. Install snap ring in transmission case while compressing return spring using Tool.

Tool number : KV31102400 (J-34285 and J-34285-87)

CAUTION:

Securely assemble them using a flat-bladed screwdriver so that snap ring tension is slightly weak.

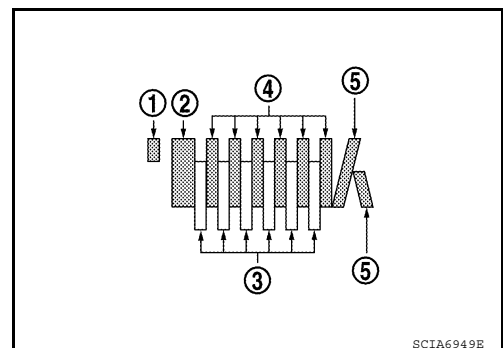


18. Install reverse brake drive plates driven plates and dish plates in transmission case.

CAUTION:

Take care with order of plates.

- Snap ring (1)
- Retaining plate (2)
- Drive plate (3)
- Driven plate (4)
- Dish plate (5)
- Driveplate/Driven plate:6/6



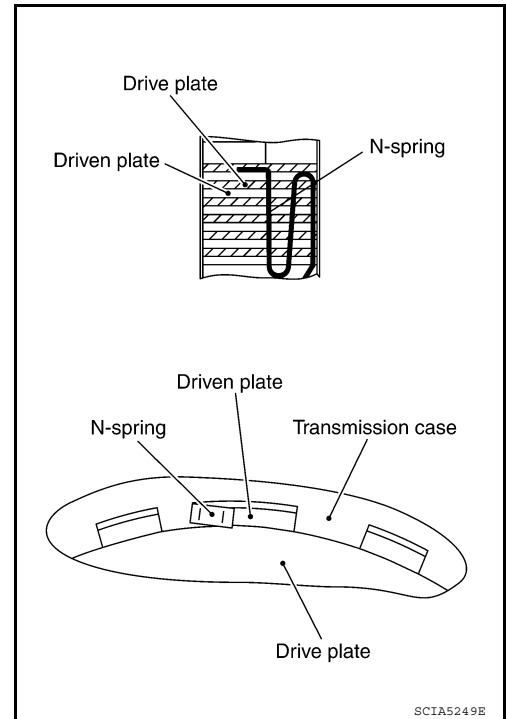
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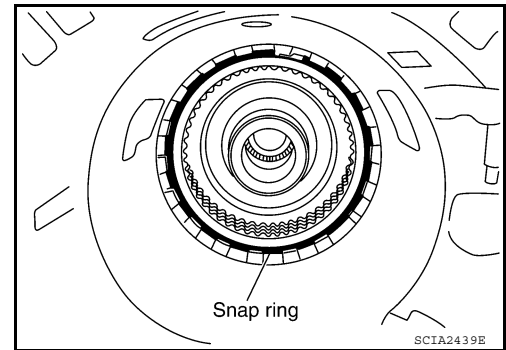
< DISASSEMBLY AND ASSEMBLY >

[5AT: RE5R05A]

- 19. Assemble N-spring.
- 20. Install reverse brake retaining plate in transmission case.



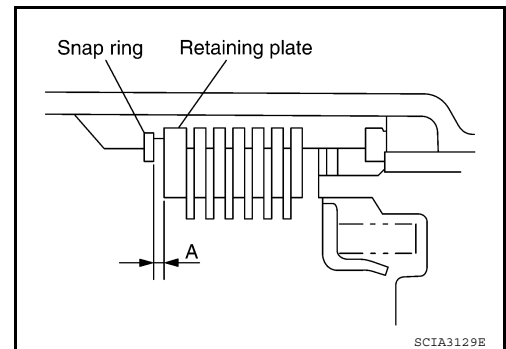
- 21. Install snap ring in transmission case.



- 22. Measure clearance (A) between retaining plate and snap ring. If not within specified clearance, select proper retaining plate.

Clearance "A" : 0.7 - 1.1mm (0.028 - 0.043 in)

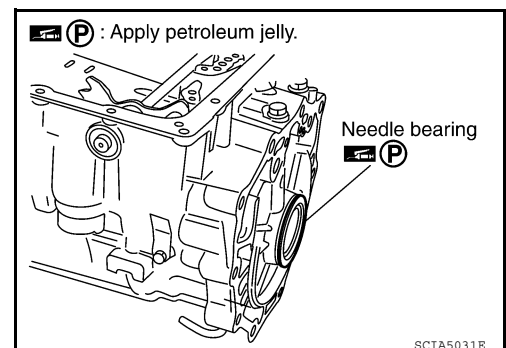
Retaining plate : Refer to [TM-305, "Reverse brake"](#).



- 23. Install needle bearing to transmission case.

CAUTION:

- Take care with the direction of needle bearing. Refer to [TM-244, "Location of Adjusting Shims, Needle Bearings, Thrust Washers and Snap Rings"](#).
- Apply petroleum jelly to needle bearing.



ASSEMBLY

< DISASSEMBLY AND ASSEMBLY >

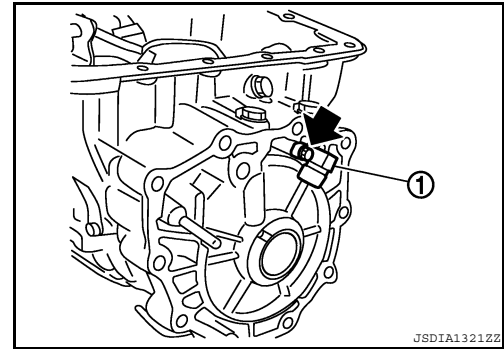
[5AT: RE5R05A]

24. Install output speed sensor (1) to transmission case and tighten bolt (←) to specified torque.

Output speed sensor bolt : 5.8 N·m (0.59 kg-m, 51 in-lb)

CAUTION:

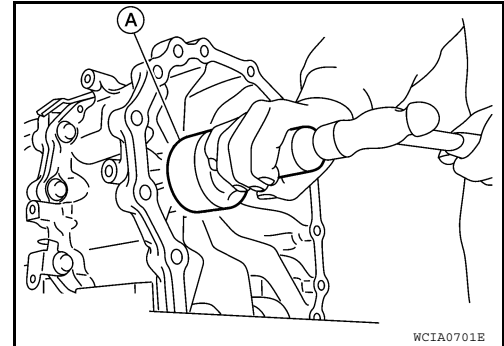
- Do not subject sensor to impact by dropping or hitting it.
- Do not disassemble sensor.
- Do not allow metal filings or any foreign material to get on the sensor's front edge magnetic area.
- Do not place sensor in an area affected by magnetism.



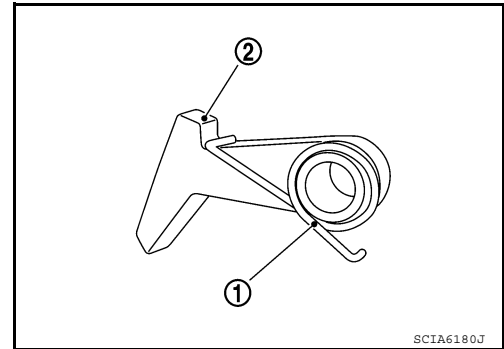
25. Install new rear oil seal until it is flush into the adapter case using suitable tool (A).

CAUTION:

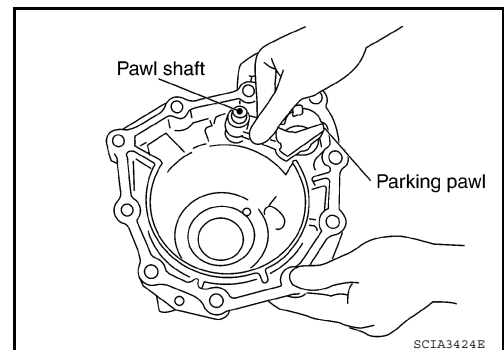
- Apply ATF to rear oil seal.
- Do not reuse rear oil seal.



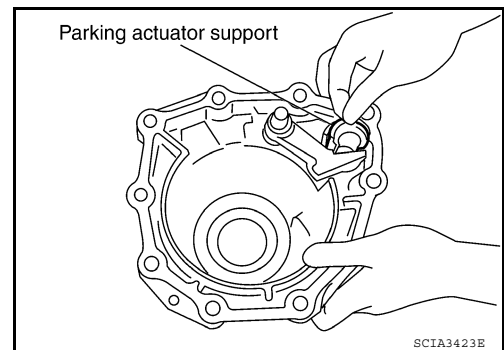
26. Install return spring (1) to parking pawl (2).



27. Install parking pawl (with return spring) and pawl shaft to adapter case.



28. Install parking actuator support to adapter case.



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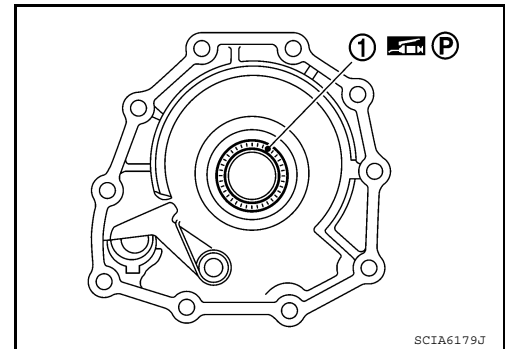
< DISASSEMBLY AND ASSEMBLY >

[5AT: RE5R05A]

29. Install needle bearing (1) to adapter case.

CAUTION:

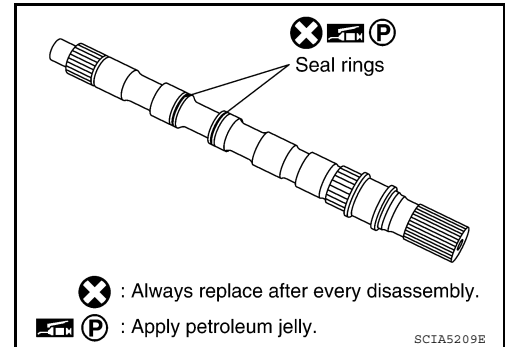
Apply petroleum jelly to needle bearing.



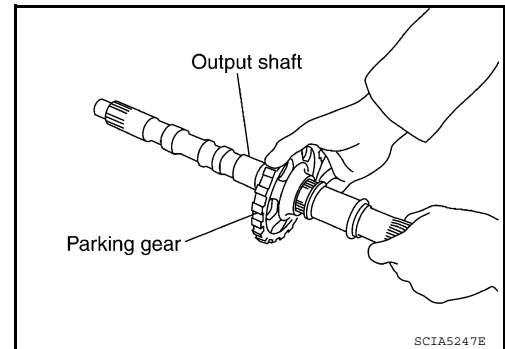
30. Install seal rings to output shaft.

CAUTION:

- Do not reuse seal rings.
- Apply petroleum jelly to seal rings.



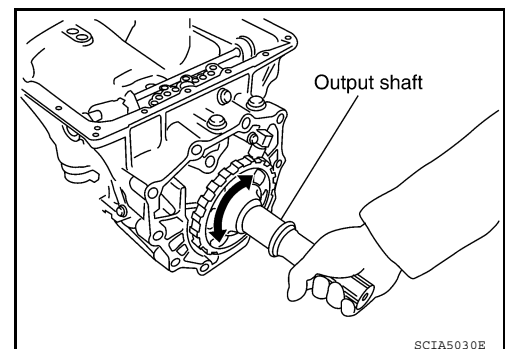
31. Install parking gear to output shaft.



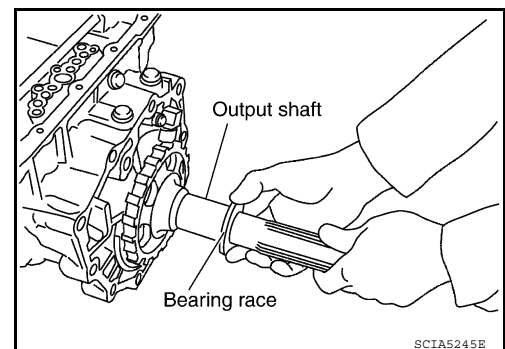
32. Install output shaft in transmission case.

CAUTION:

Do not mistake front of shaft for rear because both sides look similar (thinner end is front side).



33. Install bearing race to output shaft.



ASSEMBLY

< DISASSEMBLY AND ASSEMBLY >

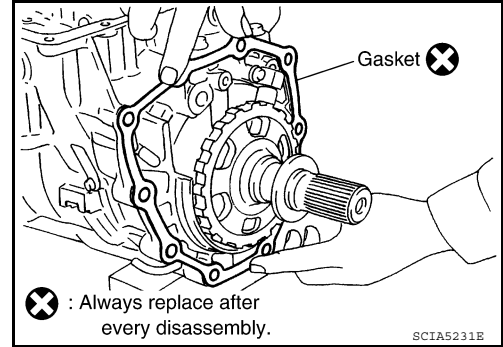
[5AT: RE5R05A]

34. Install adapter case assembly according to the following procedure.

a. Install gasket onto transmission case.

CAUTION:

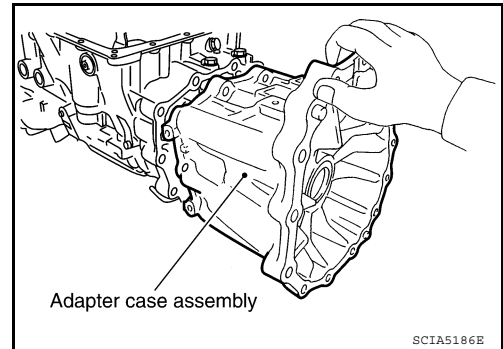
- Completely remove all moisture, oil, old gasket and any foreign material from the transmission case and adapter case assembly mating surfaces.
- Do not reuse gasket.



b. Install adapter case assembly to transmission case.

CAUTION:

Insert the tip of parking rod between the parking pawl and the parking actuator support when assembling the adapter case assembly.



c. Install the bracket (2) and adapter case assembly bolts (1) and tighten to the specified torque.

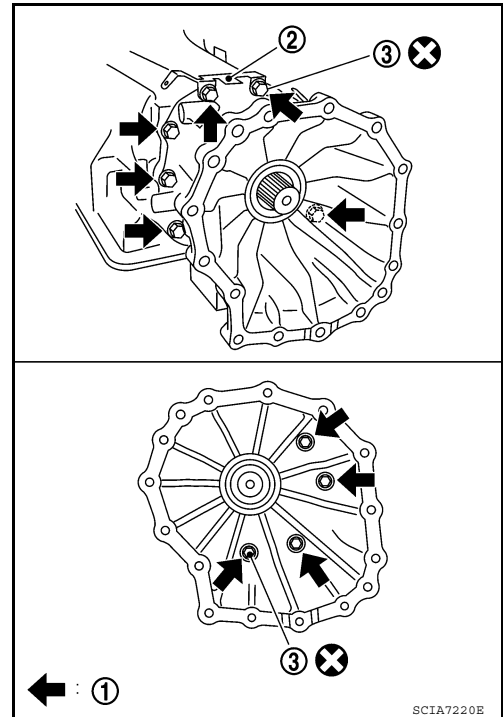
- Self-sealing bolts (3)

Adapter case assembly bolt : 52 N·m (5.3 kg-m, 38 ft-lb)

Self-sealing bolt : 61 N·m (6.2 kg-m, 45 ft-lb)

CAUTION:

Do not reuse self-sealing bolt (3).



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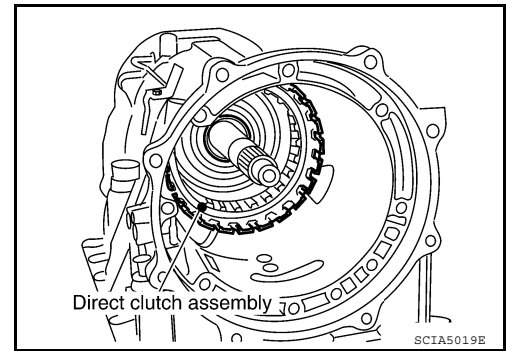
< DISASSEMBLY AND ASSEMBLY >

[5AT: RE5R05A]

35. Install direct clutch assembly in reverse brake.

CAUTION:

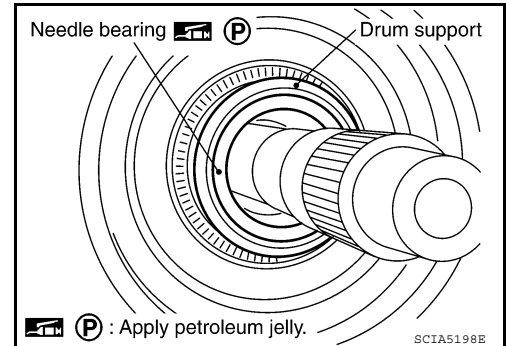
Make sure that drum support edge surface and direct clutch inner boss edge surface come to almost same place.



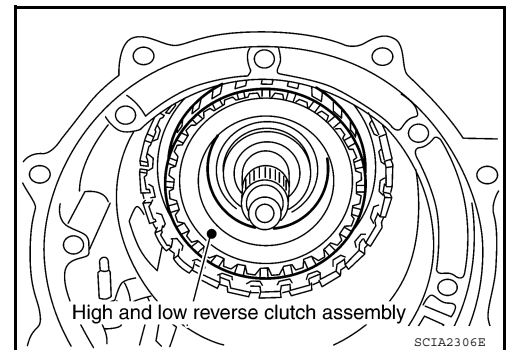
36. Install needle bearing in drum support.

CAUTION:

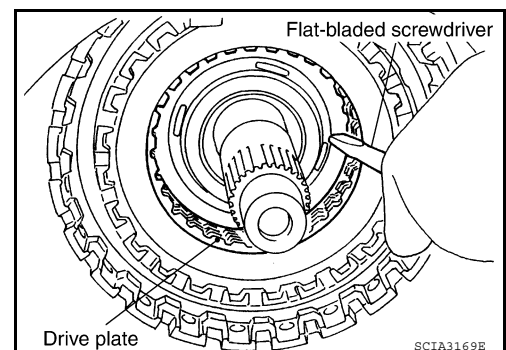
Apply petroleum jelly to needle bearing.



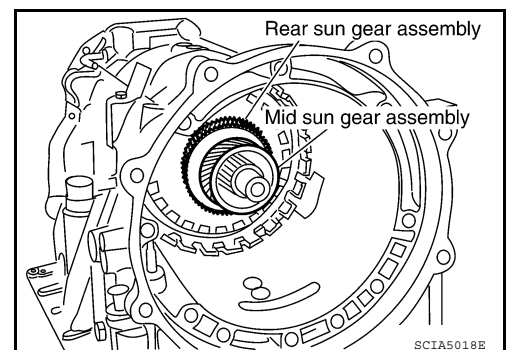
37. Install high and low reverse clutch assembly in direct clutch.



38. Align the drive plate using suitable tool.



39. Install high and low reverse clutch hub, mid sun gear assembly and rear sun gear assembly as a unit.



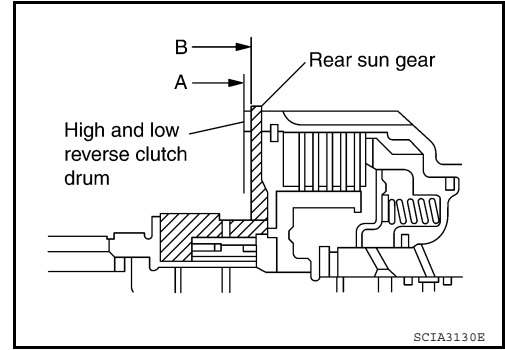
ASSEMBLY

< DISASSEMBLY AND ASSEMBLY >

[5AT: RE5R05A]

CAUTION:

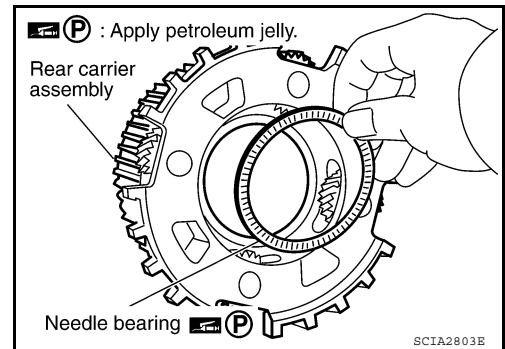
Make sure that portion "A" of high and low reverse clutch drum protrudes approximately 2 mm (0.08 in) beyond portion "B" of rear sun gear.



40. Install needle bearing in rear carrier assembly.

CAUTION:

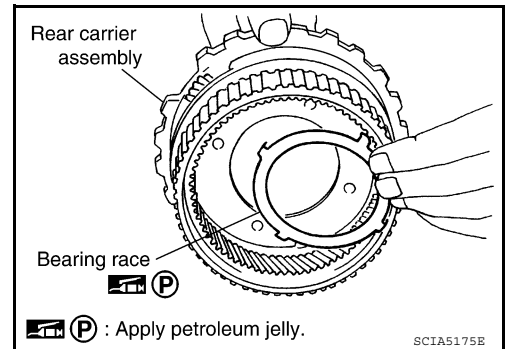
Apply petroleum jelly to needle bearing.



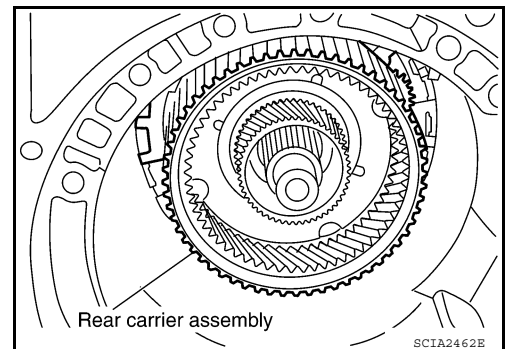
41. Install bearing race in rear carrier assembly.

CAUTION:

Apply petroleum jelly to bearing race.



42. Install rear carrier assembly in direct clutch drum.



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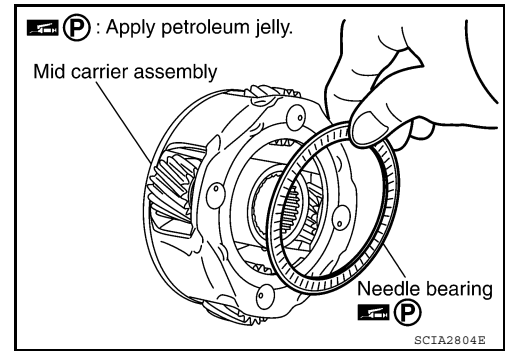
< DISASSEMBLY AND ASSEMBLY >

[5AT: RE5R05A]

43. Install needle bearing (rear side) to mid carrier assembly.

CAUTION:

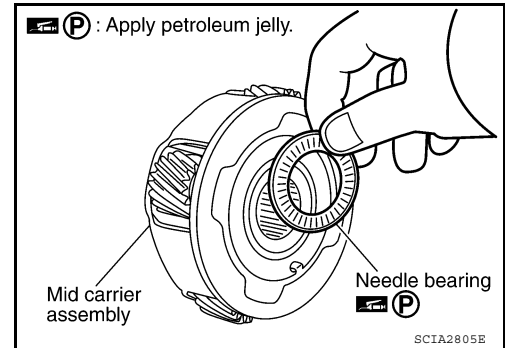
Apply petroleum jelly to needle bearing.



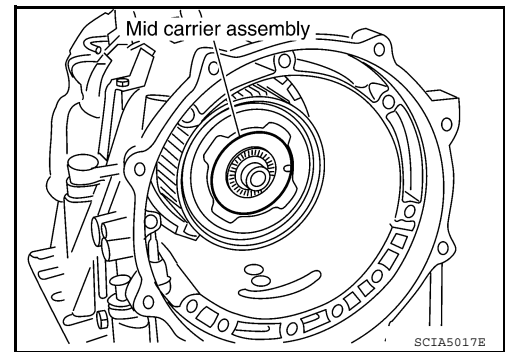
44. Install needle bearing (front side) to mid carrier assembly.

CAUTION:

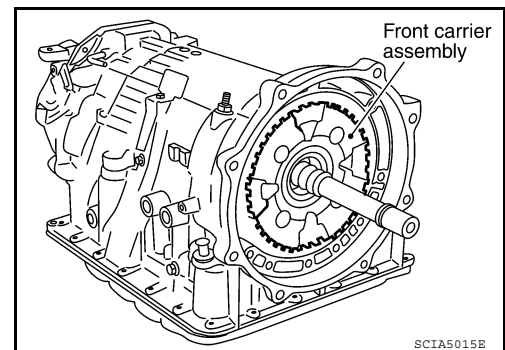
Apply petroleum jelly to needle bearing.



45. Install mid carrier assembly in rear carrier assembly.



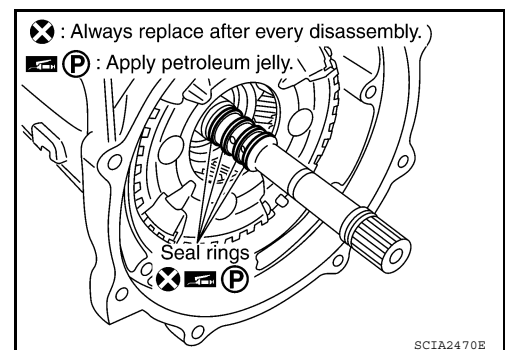
46. Install front carrier assembly, input clutch assembly and rear internal gear as a unit.



47. Install seal rings in input clutch assembly.

CAUTION:

- Do not reuse seal rings.
- Apply petroleum jelly to seal rings.



ASSEMBLY

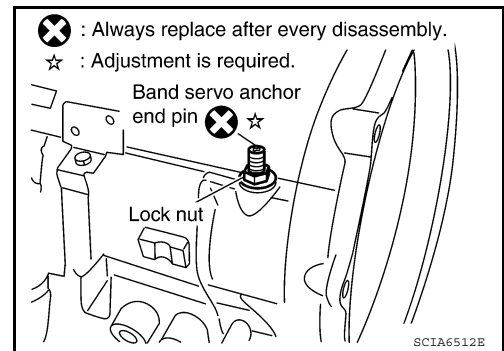
< DISASSEMBLY AND ASSEMBLY >

[5AT: RE5R05A]

48. Install band servo anchor end pin and lock nut in transmission case.

CAUTION:

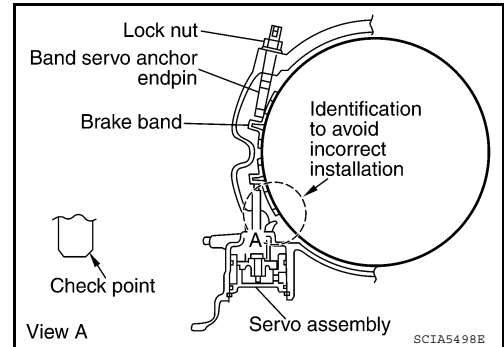
Do not reuse band servo anchor end pin.



49. Install brake band in transmission case.

CAUTION:

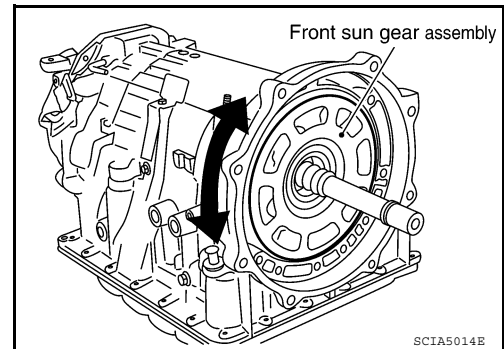
Install it so that the identification to avoid incorrect installation faces the servo side.



50. Install front sun gear to front carrier assembly.

CAUTION:

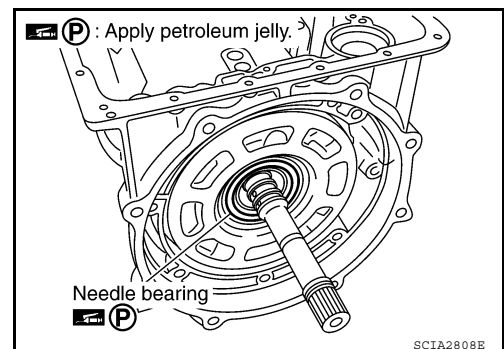
Apply ATF to front sun gear bearing and 3rd one-way clutch end bearing.



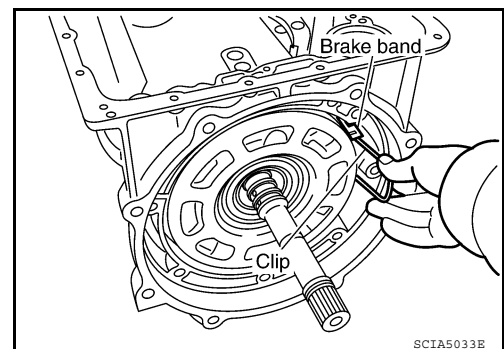
51. Install needle bearing to front sun gear.

CAUTION:

Apply petroleum jelly to needle bearing.



52. Adjust brake band tilting using a clip so that brake band contacts front sun gear drum evenly.



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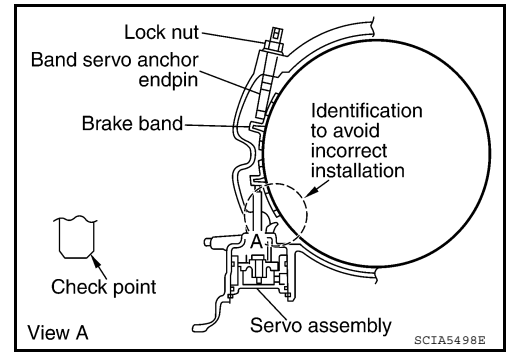
[5AT: RE5R05A]

53. Adjust brake band according to the following procedure.
- Loosen lock nut.
 - Tighten band servo anchor end pin to specified torque.

Anchor end pin : 5.0 N·m (0.51 kg·m, 44 in-lb)

- Back off band servo anchor end pin three turns.
- Holding band servo anchor end pin, tighten lock nut to specified torque.

Lock nut : 46 N·m (4.7 kg·m, 34 ft-lb)

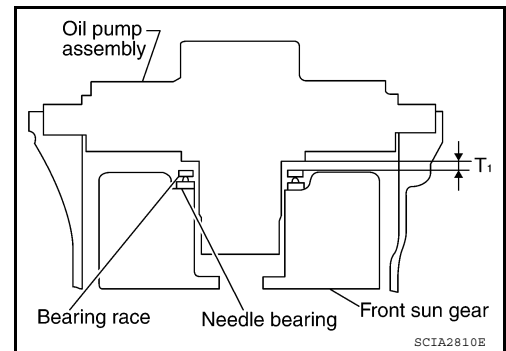


Adjustment

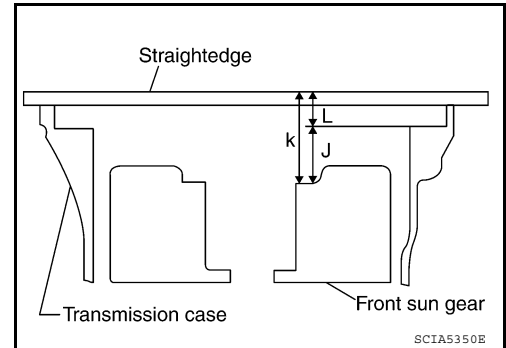
INFOID:000000005280829

TOTAL END PLAY

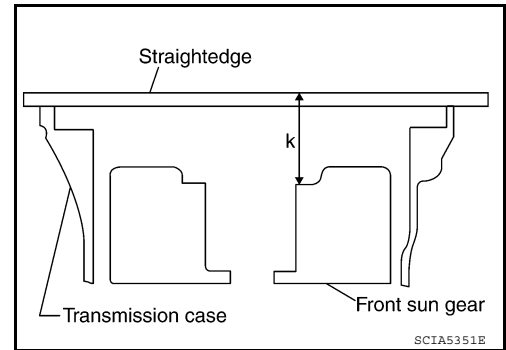
- Measure clearance between front sun gear and bearing race for oil pump cover.
- Select proper thickness of bearing race so that end play is within specifications.



- Measure dimensions "K" and "L" and then calculate dimension "J".



- Measure dimension "K".



ASSEMBLY

< DISASSEMBLY AND ASSEMBLY >

[5AT: RE5R05A]

- b. Measure dimension "L".
- c. Calculate dimension "J".

"J": Distance between oil pump fitting surface of transmission case and needle bearing mating surface of front sun gear.

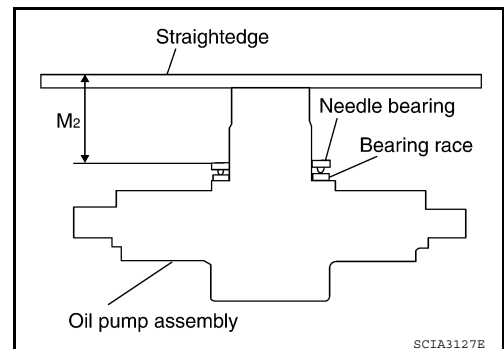
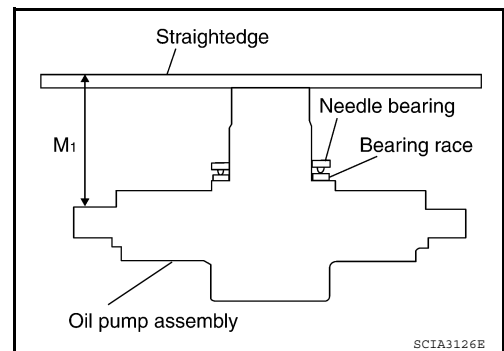
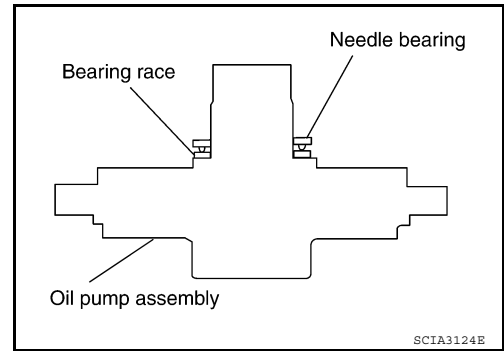
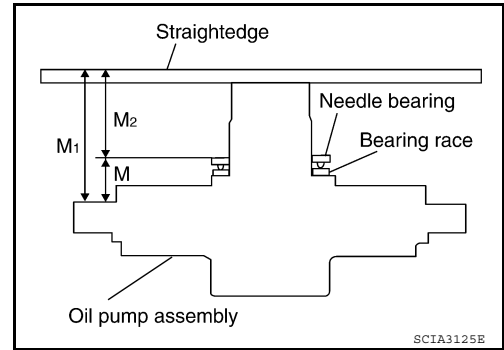
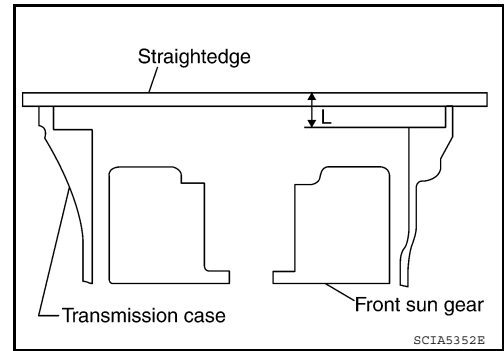
$$J = K - L$$

- 2. Measure dimensions "M1" and "M2" and then calculate dimension "M".

- a. Place bearing race and needle bearing on oil pump assembly.

- b. Measure dimension "M1".

- c. Measure dimension "M2".



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[5AT: RE5R05A]

d. Calculate dimension "M".

"M": Distance between transmission case fitting surface of oil pump and needle bearing on oil pump.

$$M = M_1 - M_2$$

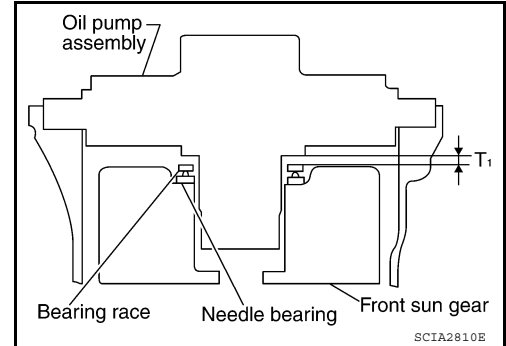
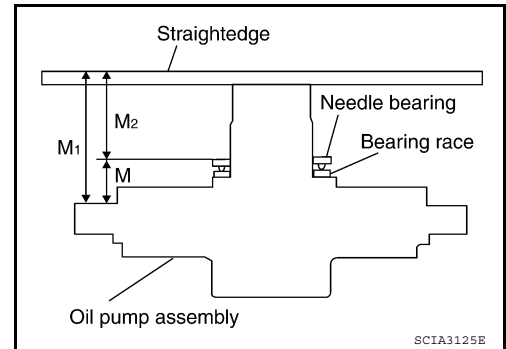
3. Adjust total end play "T1".

$$T_1 = J - M$$

Total end play "T1" : 0.25 - 0.55 mm (0.0098 - 0.0217 in)

- Select proper thickness of bearing race so that total end play is within specifications.

Bearing races :Refer to [TM-305, "Total End Play"](#).



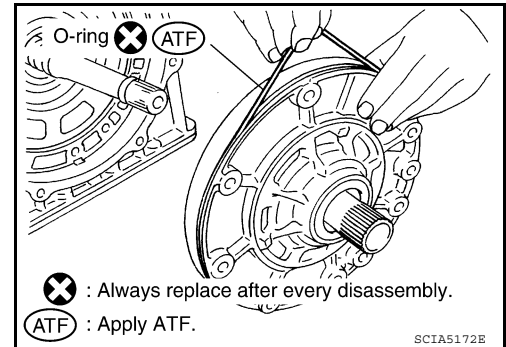
Assembly (2)

INFOID:000000005280830

1. Install O-ring to oil pump assembly.

CAUTION:

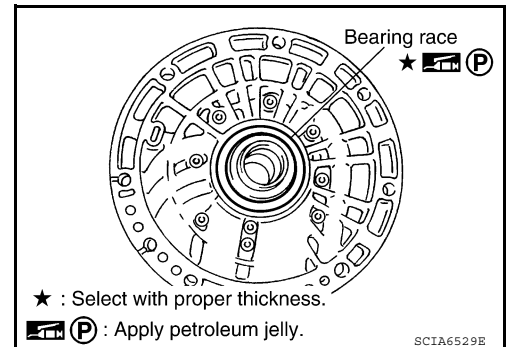
- Do not reuse O-ring.
- Apply ATF to O-ring.



2. Install bearing race to oil pump assembly.

CAUTION:

Apply petroleum jelly to bearing race.



ASSEMBLY

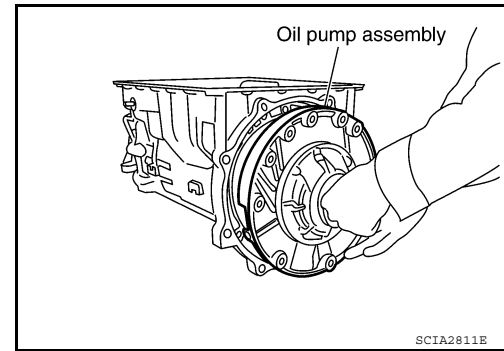
< DISASSEMBLY AND ASSEMBLY >

[5AT: RE5R05A]

3. Install oil pump assembly in transmission case.

CAUTION:

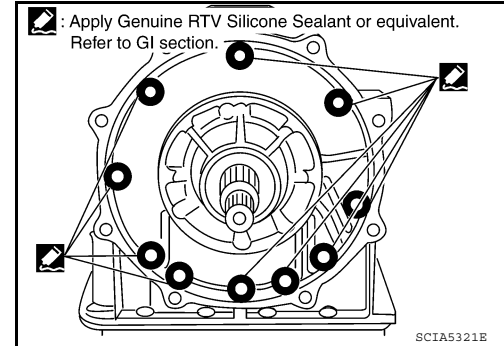
Apply ATF to oil pump bearing.



4. Apply recommended sealant (Genuine RTV Silicone Sealant or equivalent. Refer to [GI-14, "Recommended Chemical Products and Sealants"](#).) to oil pump assembly as shown.

CAUTION:

Completely remove all moisture, oil, old sealant and any foreign material from the oil pump bolts and oil pump bolt mating surfaces.

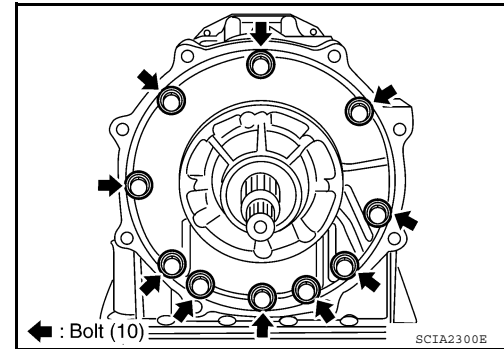


5. Tighten oil pump bolts to specified torque.

Oil pump bolts : 48 N-m (4.9 kg-m, 35 ft-lb)

CAUTION:

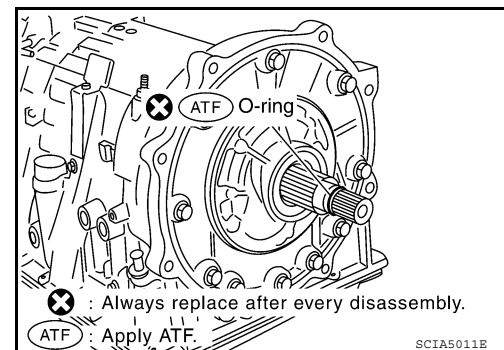
Apply ATF to oil pump bushing.



6. Install O-ring to input clutch assembly.

CAUTION:

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



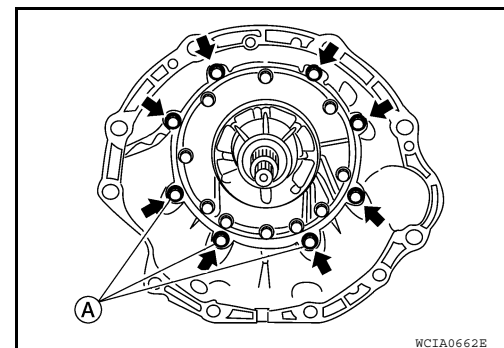
7. Install converter housing to transmission case and tighten bolts to specified torque.

Converter housing bolt : 52 N-m (5.3 kg-m, 38 ft-lb)

Self-sealing bolt (A) : 61 N-m (6.2 kg-m, 45 ft-lb)

CAUTION:

Do not reuse self-sealing bolt (A).



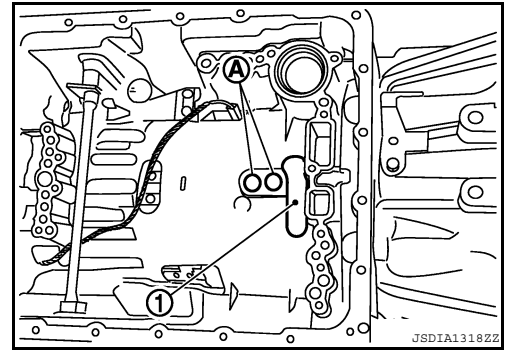
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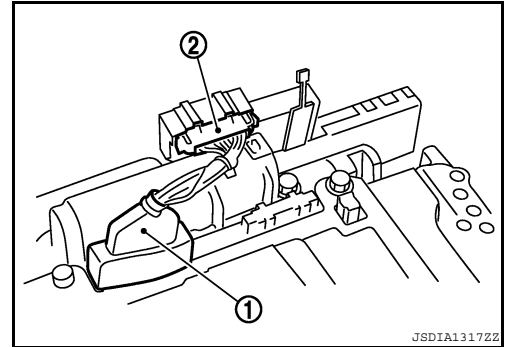
< DISASSEMBLY AND ASSEMBLY >

[5AT: RE5R05A]

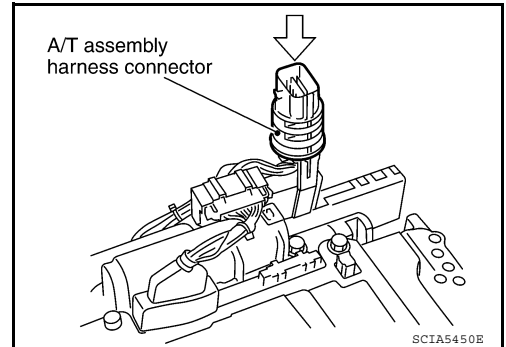
8. Make sure that brake band (1) does not close input speed sensor hole (A).



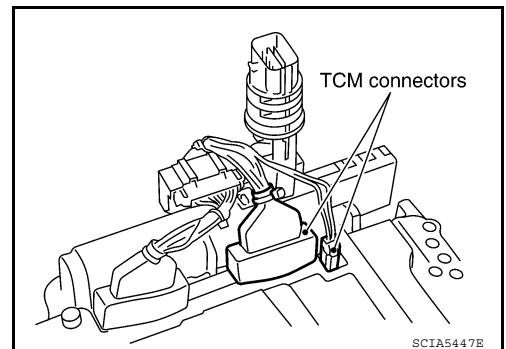
9. Connect TCM connector (1) and transmission range switch connector (2).



10. Install A/T assembly harness connector to control valve with TCM.



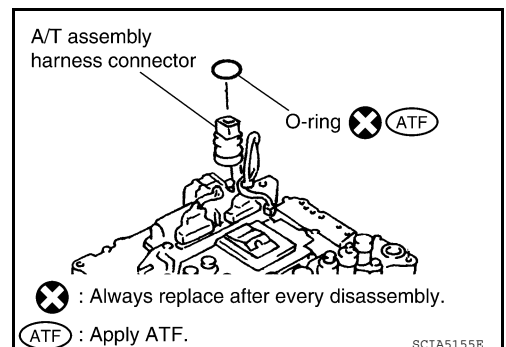
11. Connect TCM connectors.



12. Install O-ring to A/T assembly harness connector.

CAUTION:

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



ASSEMBLY

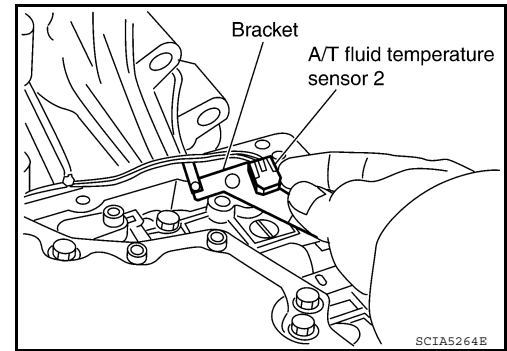
< DISASSEMBLY AND ASSEMBLY >

[5AT: RE5R05A]

13. Install the A/T fluid temperature sensor 2 or plug as shown below.

a. **A/T fluid temperature sensor 2**

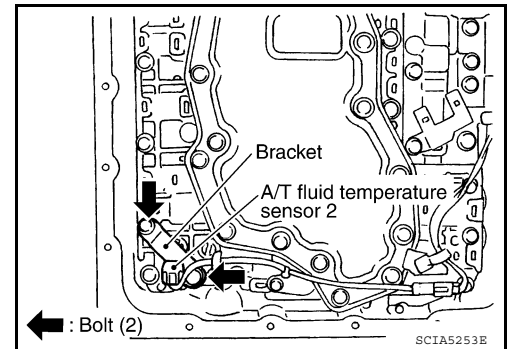
i. Install A/T fluid temperature sensor 2 to bracket.



ii. Install A/T fluid temperature sensor 2 (with bracket) to control valve with TCM and tighten bolt to specified torque.

Bracket bolt : 7.9 N-m (0.81 kg-m, 70 in-lb)

CAUTION:
Adjust bolt hole of bracket to bolt hole of control valve.



b. **Plug**

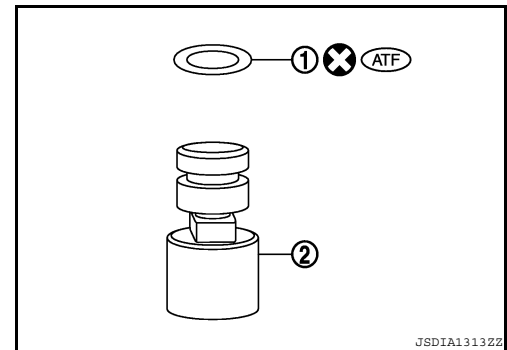
NOTE:

- When replacing the A/T fluid temperature sensor 2 with the plug, the A/T fluid temperature sensor 2 connector should not be connected.
- Fold the terminal clips.

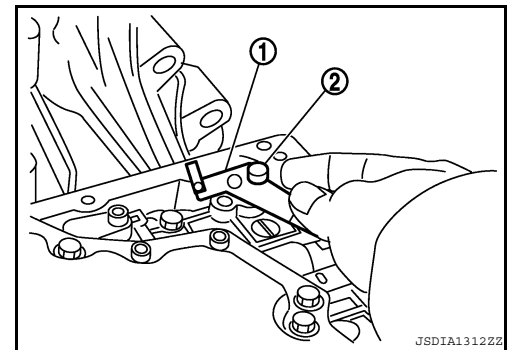
i. Install new O-ring (1) in plug (2).

CAUTION:

- **Do not reuse O-ring.**
- **Apply ATF to O-ring.**
- **O-ring should be free of contamination.**



ii. Install plug (2) to bracket (1).



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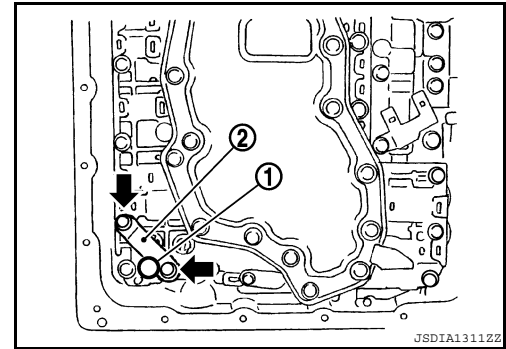
< DISASSEMBLY AND ASSEMBLY >

[5AT: RE5R05A]

iii. Install plug (1) [with bracket (2)] to control valve with TCM and tighten bolt (←) to specified torque.

Bracket bolt : 7.9 N-m (0.81 kg-m, 70 in-lb)

CAUTION:
Adjust bolt hole of bracket to bolt hole of control valve.

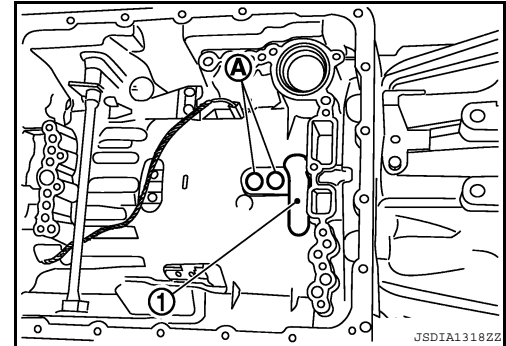


14. Install control valve with TCM in transmission case.

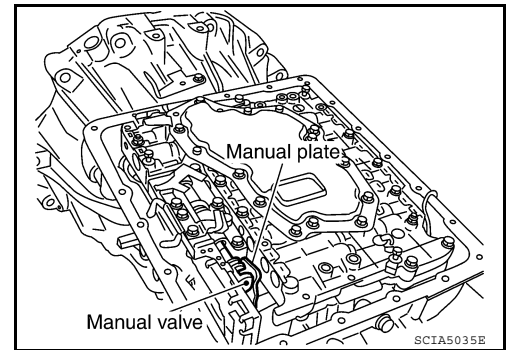
1 : Brake band

CAUTION:

- Make sure that input speed sensor is securely installed into input speed sensor hole (A).
- Hang down output speed sensor harness toward outside so as not to disturb installation of control valve with TCM.
- Adjust A/T assembly harness connector of control valve with TCM to terminal hole of transmission case.



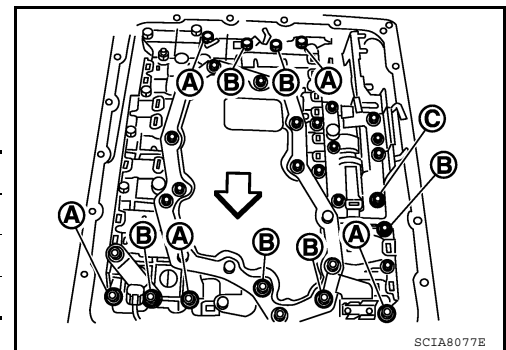
- Assemble it so that manual valve cutout is engaged with manual plate projection.



15. Install bolts (A), (B) and (C) to control valve with TCM.

← : Front

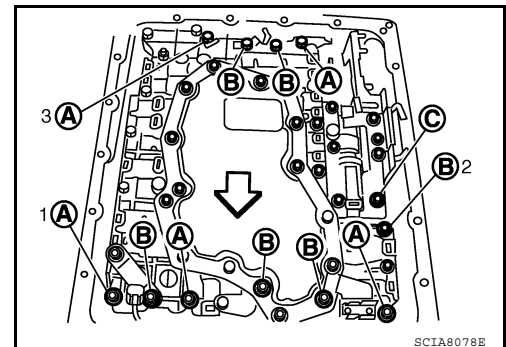
Bolt symbol	Length mm (in)	Number of bolts
A	42 (1.65)	5
B	55 (2.17)	6
C	40 (1.57)	1



16. Tighten bolt (1), (2) and (3) temporarily to prevent dislocation. After that tighten them in order (A → B → C), and then tighten other bolts.

← : Front

Bolt symbol	A	B	C
Number of bolts	5	6	1
Length mm (in)	42 (1.65)	55 (2.17)	40 (1.57)



ASSEMBLY

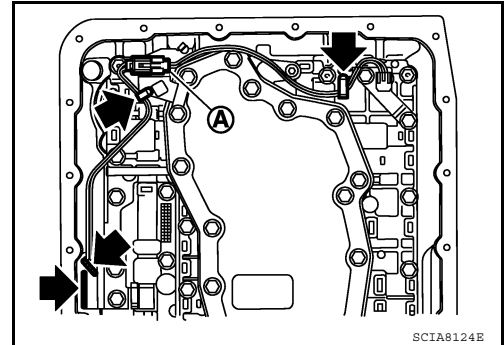
< DISASSEMBLY AND ASSEMBLY >

[5AT: RE5R05A]

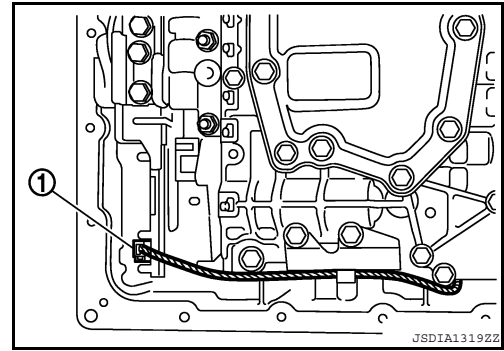
Tightening torque N·m (km-g, in-lb)	7.9 (0.81, 70)	With ATF applied
		7.9 (0.81, 70)

17. After installing the A/T fluid temperature sensor 2, connect the A/T fluid temperature sensor 2 connector as shown below.

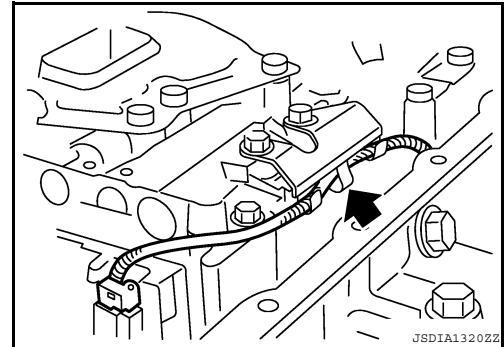
- a. Connect A/T fluid temperature sensor 2 connector (A).
- b. Securely fasten terminal cord assembly and A/T fluid temperature sensor 2 harness with terminal clips.



18. Connect output speed sensor connector (1).

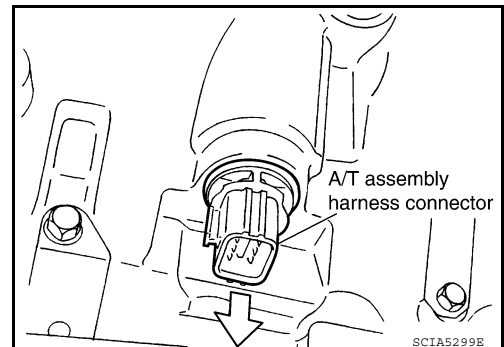


19. Securely fasten output speed sensor harness with terminal clip (←).



20. Pull down A/T assembly harness connector.

CAUTION:
Do not damage connector.



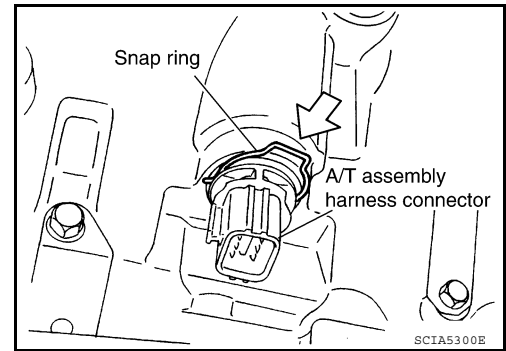
A
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ASSEMBLY

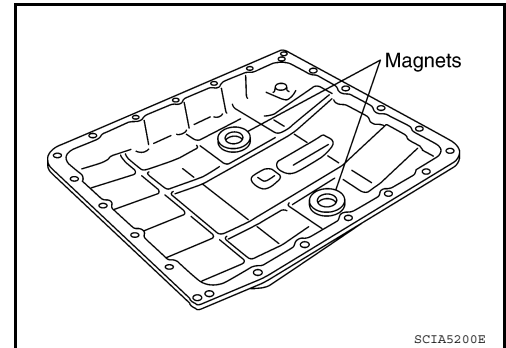
< DISASSEMBLY AND ASSEMBLY >

[5AT: RE5R05A]

21. Install snap ring to A/T assembly harness connector.



22. Install magnets in oil pan.



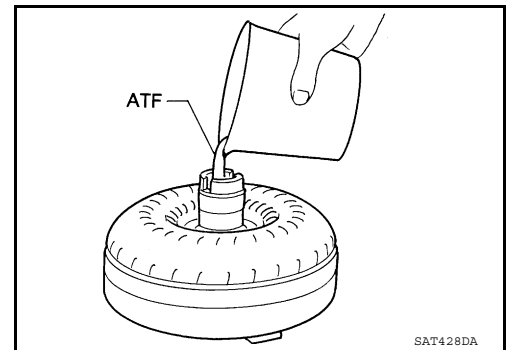
23. Install oil pan to transmission case. Refer to [TM-218, "Removal and Installation"](#).

24. Install torque converter.

a. Pour ATF into torque converter.

NOTE:

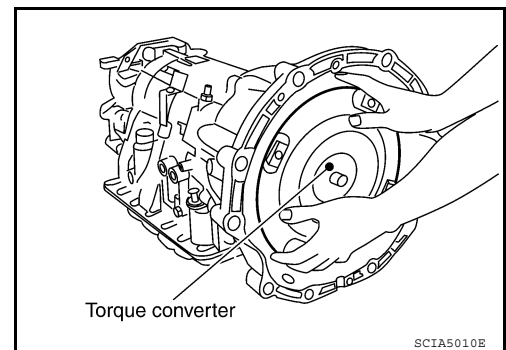
- Approximately 2 liters (1-3/4 Imp qt) of fluid is required for a new torque converter.
- When reusing old torque converter, add the same amount of fluid as was drained.



b. Install torque converter while aligning notches of torque converter with notches of oil pump.

CAUTION:

Install torque converter while rotating it.



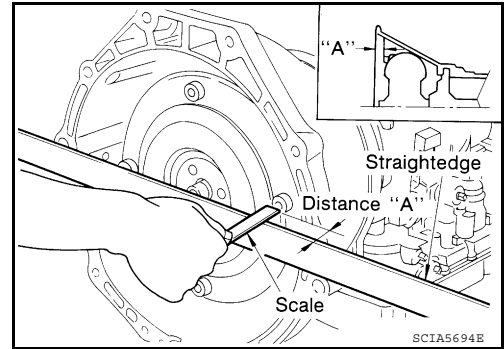
ASSEMBLY

< DISASSEMBLY AND ASSEMBLY >

[5AT: RE5R05A]

- c. Measure distance "A" to make sure that torque converter is in proper position.

Distance "A" : 25.0 mm (0.98 in) or more



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SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

[5AT: RE5R05A]

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

General Specification

INFOID:000000005280831

Automatic transmission model		RE5R05A
Transmission model code number		3FX3B
Stall torque ratio		1.76: 1
Transmission gear ratio	1st	3.842
	2nd	2.353
	3rd	1.529
	4th	1.000
	5th	0.839
	Reverse	2.765
Recommended fluid		Genuine NISSAN Matic S ATF*1
Fluid capacity		10.3 liter (9-1/8 Imp qt)

CAUTION:

- If Genuine NISSAN Matic S ATF is not available NISSAN Matic J ATF can be used, Using automatic transmission fluid other than Genuine NISSAN Matic S ATF or Matic J ATF will deteriorate in driveability and automatic transmission durability, and may damage the automatic transmission, which is not covered by the warranty.

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

Vehicle Speed at Which Gear Shifting Occurs

INFOID:000000005280832

Throttle position	Vehicle speed km/h (MPH)							
	D1 →D2	D2 →D3	D3 →D4	D4 →D5	D5 →D4	D4 →D3	D3 →D2	D2 →D1
Full throttle	62 - 66 (39 - 41)	100 - 108 (63 - 67)	156 - 166 (97 - 103)	241 - 251 (150 - 155)	237 - 247 (148 - 153)	145 - 155 (91 - 96)	88 - 96 (55 - 59)	42 - 46 (27 - 28)
Half throttle	50 - 54 (32 - 33)	82 - 88 (51 - 54)	126 - 134 (77 - 83)	155 - 163 (97 - 101)	126 - 134 (79 - 83)	71 - 79 (45 - 49)	50 - 56 (32 - 34)	11 - 15 (7 - 9)

- At half throttle, the accelerator opening is 1/2 of the full opening.

Vehicle Speed at Which Lock-up Occurs/Releases

INFOID:000000005280833

Throttle position	Vehicle speed km/h (MPH)	
	Lock-up "ON"	Lock-up "OFF"
Closed throttle	52 - 60 (33 - 37)	49 - 57 (31 - 35)
Half throttle	172 - 180 (107 - 111)	126 - 134 (79 - 83)

- At closed throttle, the accelerator opening is less than 1/8 condition. (Closed throttle position signal: OFF)
- At half throttle, the accelerator opening is 1/2 of the full opening.

Stall Speed

INFOID:000000005280834

Stall speed	2,600 - 2,900 rpm
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SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

[5AT: RE5R05A]

Line Pressure

INFOID:000000005280835

Engine speed	Line pressure [kPa (bar, kg/cm ² , 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)

A/T Fluid Temperature Sensor

INFOID:000000005280836

Name	Condition	CONSULT-III "DATA MONITOR" (Approx.) (V)	Resistance (Approx.) (kΩ)
A/T fluid temperature sensor 1	0°C (32°F)	3.3	15
	20°C (68°F)	2.7	6.5
	80°C (176°F)	0.9	0.9

Input Speed Sensor

INFOID:000000005280837

Name	Condition	Data (Approx.)
Input speed sensor 1	When running at 50 km/h (31 MPH) in 4th speed with the closed throttle position signal "OFF".	1.3 (kHz)
Input speed sensor 2	When moving at 20 km/h (12 MPH) in 1st speed with the closed throttle position signal "OFF".	

Output Speed Sensor

INFOID:000000005280838

Name	Condition	Data (Approx.)
Output speed sensor	When moving at 20 km/h (12 MPH).	185 (Hz)

Reverse brake

INFOID:000000005280839

Number of drive plates	6	
Number of driven plates	6	
Clearance [mm (in)]	Standard	0.7 - 1.1 (0.028 - 0.043)
Thickness of retaining plates	Thickness mm (in)	Part number*
	4.2 (0.165)	31667 90X14
	4.4 (0.173)	31667 90X15
	4.6 (0.181)	31667 90X16
	4.8 (0.189)	31667 90X17
	5.0 (0.197)	31667 90X18
5.2 (0.205)	31667 90X19	

*: Always check with the Parts Department for the latest parts information.

Total End Play

INFOID:000000005280840

Total end play mm (in)	0.25 - 0.55 (0.0098 - 0.0217)
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BEARING RACE FOR ADJUSTING TOTAL END PLAY

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

[5AT: RE5R05A]

Thickness mm (in)	Part number*
0.8 (0.031)	31435 95X00
1.0 (0.039)	31435 95X01
1.2 (0.047)	31435 95X02
1.4 (0.055)	31435 95X03
1.6 (0.063)	31435 95X04
1.8 (0.071)	31435 95X05

*: Always check with the Parts Department for the latest parts information.