SECTION TRANSAXLE & TRANSMISSION

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PRECAUTIONS

< PRECAUTION > [6MT: FS6R31A]

PRECAUTION

PRECAUTIONS FOR USA AND CANADA

FOR USA AND CANADA: Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

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

WARNING:

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

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

WARNING:

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

INFOID:0000000005452878

FOR USA AND CANADA: Precaution for Battery Service

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

FOR USA AND CANADA: Precaution Necessary for Steering Wheel Rotation after Battery Disconnect

NOTE:

- Before removing and installing any control units, first turn the push-button ignition switch to the LOCK position, then disconnect both battery cables.
- After finishing work, confirm that all control unit connectors are connected properly, then re-connect both battery cables.
- Always use CONSULT-III to perform self-diagnosis as a part of each function inspection after finishing work.
 If a DTC is detected, perform trouble diagnosis according to self-diagnosis results.

For vehicle with steering lock unit, if the battery is disconnected or discharged, the steering wheel will lock and cannot be turned.

If turning the steering wheel is required with the battery disconnected or discharged, follow the operation procedure below before starting the repair operation.

OPERATION PROCEDURE

Connect both battery cables.
 NOTE:

PRECAUTIONS

< PRECAUTION > [6MT: FS6R31A]

Supply power using jumper cables if battery is discharged.

- 2. Turn the push-button ignition switch to ACC position. (At this time, the steering lock will be released.)
- 3. Disconnect both battery cables. The steering lock will remain released with both battery cables disconnected and the steering wheel can be turned.
- 4. Perform the necessary repair operation.
- 5. When the repair work is completed, re-connect both battery cables. With the brake pedal released, turn the push-button ignition switch from ACC position to ON position, then to LOCK position. (The steering wheel will lock when the push-button ignition switch is turned to LOCK position.)
- 6. Perform self-diagnosis check of all control units using CONSULT-III.

FOR USA AND CANADA: Service Notice or Precautions for Manual Transmission

INFOID:0000000005233324

CAUTION:

- Never reuse CSC (Concentric Slave Cylinder) body and CSC tube. Because CSC slides back to the
 original position every time when removing transmission assembly. At this timing, dust on the sliding parts may damage a seal of CSC and may cause clutch fluid leakage. Refer to CL-20, "Removal
 and Installation".
- Never reuse drained gear oil.
- Check the oil level or replace oil with vehicle on level ground.
- 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 never interfere with the function of the parts they are applied.
- In principle, tighten bolts or nuts gradually in several steps working diagonally from inside to outside. If tightening sequence is specified, observe it.
- Never damage sliding surfaces and mating surfaces.
- Never hold control lever housing to prevent the bushing of control lever housing from deformation when moving transmission assembly.
- Never touch lip of oil seal.

FOR MEXICO

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

The Supplemental Restraint System such as "AIR BAG" and "SEAT BELT PRE-TENSIONER", used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. Information necessary to service the system safely is included in the "SRS AIR BAG" and "SEAT BELT" of this Service Manual.

WARNING:

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

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

WARNING:

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

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PRECAUTIONS

< PRECAUTION > [6MT: FS6R31A]

FOR MEXICO: Precaution for Battery Service

INFOID:0000000005530464

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

FOR MEXICO: Precaution Necessary for Steering Wheel Rotation after Battery Disconnect

NOTE:

- Before removing and installing any control units, first turn the push-button ignition switch to the LOCK position, then disconnect both battery cables.
- After finishing work, confirm that all control unit connectors are connected properly, then re-connect both battery cables.
- Always use CONSULT-III to perform self-diagnosis as a part of each function inspection after finishing work.
 If a DTC is detected, perform trouble diagnosis according to self-diagnosis results.

For vehicle with steering lock unit, if the battery is disconnected or discharged, the steering wheel will lock and cannot be turned.

If turning the steering wheel is required with the battery disconnected or discharged, follow the operation procedure below before starting the repair operation.

OPERATION PROCEDURE

Connect both battery cables.

NOTE:

Supply power using jumper cables if battery is discharged.

- Turn the push-button ignition switch to ACC position. (At this time, the steering lock will be released.)
- Disconnect both battery cables. The steering lock will remain released with both battery cables disconnected and the steering wheel can be turned.
- 4. Perform the necessary repair operation.
- 5. When the repair work is completed, re-connect both battery cables. With the brake pedal released, turn the push-button ignition switch from ACC position to ON position, then to LOCK position. (The steering wheel will lock when the push-button ignition switch is turned to LOCK position.)
- 6. Perform self-diagnosis check of all control units using CONSULT-III.

FOR MEXICO: Service Notice or Precautions for Manual Transmission

INFOID:0000000005530461

CAUTION:

- Never reuse CSC (Concentric Slave Cylinder) body and CSC tube. Because CSC slides back to the
 original position every time when removing transmission assembly. At this timing, dust on the sliding parts may damage a seal of CSC and may cause clutch fluid leakage. Refer to CL-20, "Removal
 and Installation".
- · Never reuse drained gear oil.
- Check the oil level or replace oil with vehicle on level ground.
- 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 never interfere with the function of the parts they are applied.
- In principle, tighten bolts or nuts gradually in several steps working diagonally from inside to outside. If tightening sequence is specified, observe it.
- Never damage sliding surfaces and mating surfaces.
- Never hold control lever housing to prevent the bushing of control lever housing from deformation when moving transmission assembly.
- Never touch lip of oil seal.

< PREPARATION > [6MT: FS6R31A]

PREPARATION

PREPARATION

Special Service Tools

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Decial Service Tools	INFOID:000000000523332
e actual shapes of Kent-Moore tools may differ from those	of special service tools illustrated here.
Tool number (Kent-Moore No.) Tool name	Description
KV381054S0 (J-34286) Puller	Removing rear oil seal
ST33400001 J-26082) Drift a: 60 mm (2.36 in) dia. b: 47 mm (1.85 in) dia.	Installing rear oil seal
ST22490000 (-) Adapter setting plate	ZZA0814D Holding an adapter plate
a: 156 mm (6.14 in) b: 220 mm (8.66 in)	S-NT407 Installing counter rear bearing
(J-26082) Drift a: 60 mm (2.36 in) dia. b: 44.5 mm (1.752 in) dia.	ZZA1002D
KV32103300 (J-46529) Press plate a: 73 mm (2.87 in)	Installing reverse synchronizer hub assembly PCIB0165J
ST01530000 (-) Drift a: 50 mm (1.97 in) dia. b: 41 mm (1.61 in) dia.	Installing reverse synchronizer hub assembly

< PREPARATION > [6MT: FS6R31A]

Tool number (Kent-Moore No.) Tool name		Description
ST23860000 (-) Drift a: 38 mm (1.50 in) dia. b: 33 mm (1.30 in) dia.	3 6 0	Installing reverse counter gear
KV38102100 (J-25803-01) Drift a: 44 mm (1.73 in) dia. b: 36 mm (1.42 in) dia. c: 24.5 mm (0.965 in) dia.	ZZA0534D	Installing front oil seal
ST33061000 (J-8107-2) Drift a: 28.5 mm (1.122 in) dia. b: 38 mm (1.50 in) dia.	ZZA1046D	Installing striking rod oil seal
KV32102700 (-) Drift a: 48.6 mm (1.913 in) dia. b: 41.6 mm (1.638 in) dia.	2ZA1023D	Installing main drive gear bearing
ST30911000 (-) Inserter a: 98 mm (3.86 in) dia. b: 40.5 mm (1.594 in) dia.	2ZA0534D a b zzA0920D	Installing 5th-6th synchronizer hub assembly Installing mainshaft bearing Installing reverse main gear bushing Installing 3rd gear bushing Installing 3rd-4th synchronizer hub assembly
ST27861000 (-) Support ring a: 62 mm (2.44 in) dia. b: 52 mm (2.05 in) dia.	a — b — b — zzaosze	Installing 1st-2nd synchronizer hub assem bly Installing 1st gear bushing
ST30022000 (-) Inserter a: 110 mm (4.33 in) dia. b: 46 mm (1.81 in) dia.	a b zzzao920D	 Installing 3rd main gear Installing 4th main gear

< PREPARATION > [6MT: FS6R31A]

Tool number (Kent-Moore No.) Tool name		Description	,
KV40100630 (J-26092) Inserter a: 67.5 mm (2.657 in) dia. b: 38.5 mm (1.516 in) dia.	a b zzaog20D	Installing 4th counter gear thrust washer	(
ST30032000 (J-26010-01) Inserter a: 80 mm (3.15 in) dia. b: 31 mm (1.22 in) dia.	a b zzA0920D	Installing counter rear bearing inner race	_
ST30031000 (J-22912-01) Puller		Measuring wear of inner baulk ring	(

Commercial Service Tools

INFOID:0000000005233326

Tool name		Description
Puller	NT077	Removing reverse main gear Removing reverse synchronizer hub Removing reverse counter gear
Puller		Removing each bearing, gear, and bushing
	ZZB0823D	

< PREPARATION > [6MT: FS6R31A]

Tool name		Description
Pin punch a: 6 mm (0.24 in) dia.		Removing and installing each retaining pin
	a	
	NT410	
Power tool		Loosening bolts and nuts
	PBIC0190E	

COMPONENT PARTS

< SYSTEM DESCRIPTION >

SYSTEM DESCRIPTION

COMPONENT PARTS

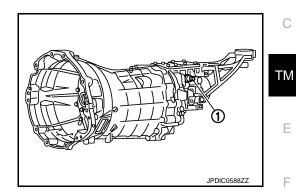
Component Parts Location

BACK-UP LAMP SWITCH

: Back-up lamp switch

PARK/NEUTRAL POSITION (PNP) SWITCH

: Park/Neutral position (PNP) switch



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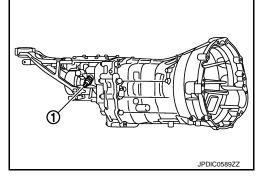
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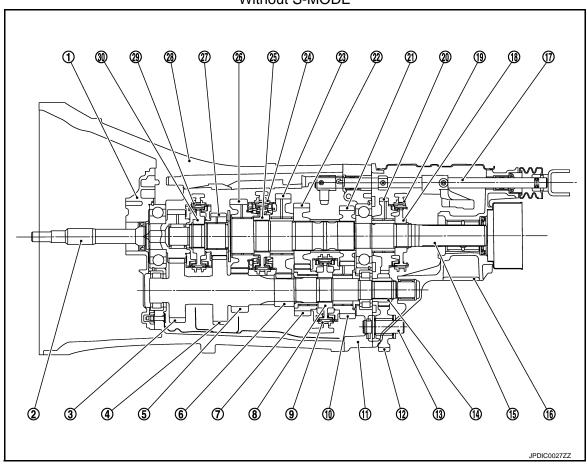


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STRUCTURE AND OPERATION

Sectional View

Without S-MODE



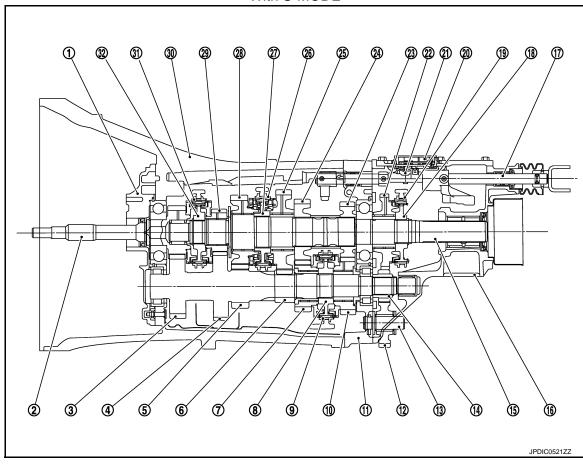
- 1. Front cover
- 4. 6th counter gear
- 7. 3rd counter gear
- 10. 4th counter gear
- 13. Reverse idler shaft
- 16. Rear extension
- 19. Reverse coupling sleeve
- 22. 3rd main gear
- 25. 1st-2nd synchronizer hub
- 28. Transmission case

- 2. Main drive gear
- 5. 2nd counter gear
- 8. 3rd-4th synchronizer hub
- 11. Adapter plate
- 14. Reverse counter gear
- 17. Striking rod
- 20. Reverse main gear
- 23. 1st main gear
- 26. 2nd main gear
- 29. 5th-6th coupling sleeve

- 3. Counter shaft
- 6. 1st counter gear
- 9. 3rd-4th coupling sleeve
- 12. Reverse idler gear
- 15. Mainshaft
- 18. Reverse synchronizer hub
- 21. 4th main gear
- 24. 1st-2nd coupling sleeve
- 27. 6th main gear
- 30. 5th-6th synchronizer hub

[6MT: FS6R31A]

With S-MODE



- 1. Front cover
- 4. 6th counter gear
- 7. 3rd counter gear
- 10. 4th counter gear
- 13. Reverse idler shaft
- 16. Rear extension
- 19. Reverse coupling sleeve
- 22. Reverse main gear
- 25. 1st main gear
- 28. 2nd main gear
- 31. 5th-6th coupling sleeve

- 2. Main drive gear
- 5. 2nd counter gear
- 8. 3rd-4th synchronizer hub
- 11. Adapter plate
- 14. Reverse counter gear
- 17. Striking rod
- 20. Gear lever position sensor
- 23. 4th main gear
- 26. 1st-2nd coupling sleeve
- 29. 6th main gear
- 32. 5th-6th synchronizer hub

- 3. Counter shaft
- 6. 1st counter gear
- 9. 3rd-4th coupling sleeve
- 12. Reverse idler gear
- 15. Mainshaft
- 18. Reverse synchronizer hub
- 21. Gear lever position sensor magnet
- 24. 3rd main gear
- 27. 1st-2nd synchronizer hub
- 30. Transmission case

Synchronizer Mechanism

DOUBLE-CONE SYNCHRONIZER

The 4th gear is equipped with a double-cone synchronizer to reduce the operating force of the control lever.

TRIPLE-CONE SYNCHRONIZER

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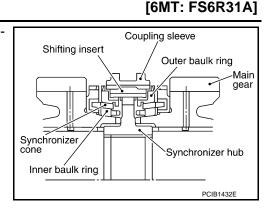
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STRUCTURE AND OPERATION

< SYSTEM DESCRIPTION >

The 1st, 2nd, and 3rd gears are equipped with a triple-cone synchronizer to reduce the operating force of the control lever.



REVERSE GEAR NOISE PREVENTION FUNCTION

Reverse gear noise prevention makes smooth operation possible and restrains the gear's grating noise by stopping the rotation of each gear when gear is shifted to reverse position.

BACK-UP LAMP SWITCH

< DTC/CIRCUIT DIAGNOSIS >

DTC/CIRCUIT DIAGNOSIS

BACK-UP LAMP SWITCH

Component Inspection

1. CHECK BACK-UP LAMP SWITCH

- 1. Disconnect back-up lamp switch connector. Refer to TM-31, "Removal and Installation".
- 2. Check continuity between back-up lamp switch terminals.

Terr	minal	Condition	Continuity
1	1 2	Reverse gear position	Existed
		Except reverse gear position	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace back-up lamp switch. Refer to TM-31, "Removal and Installation".

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PARK/NEUTRAL POSITION SWITCH

< DTC/CIRCUIT DIAGNOSIS >

PARK/NEUTRAL POSITION SWITCH

Component Inspection

INFOID:0000000005233321

[6MT: FS6R31A]

1. CHECK PARK/NEUTRAL POSITION (PNP) SWITCH

- 1. Disconnect park/neutral position (PNP) switch connector. Refer to TM-34, "Removal and Installation".
- 2. Check continuity between park/neutral position (PNP) switch terminals.

Terr	minal	Condition	Continuity
1	1 2	Neutral position	Existed
ı		Except neutral position	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace park/neutral position (PNP) switch. Refer to TM-34, "Removal and Installation".

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

[6MT: FS6R31A]

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< SYMPTOM DIAGNOSIS >

SYMPTOM DIAGNOSIS

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NVH Troubleshooting Chart

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

														С
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 (Wom or damaged)	INSERT SPRING (Damaged)	TM E F G H
Reference		TM-20			TM-49 (Without S-MODE) or TM-81 (With S-MODE)		TM-22	TM-49 (Without S-MODE) or TM-81 (With S-MODE)						K L M
Symptoms	Noise	1	2							3	3			P
	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				

PERIODIC MAINTENANCE

GEAR OIL

Inspection

OIL LEAKAGE

Make sure that gear oil is not leaking from transmission or around it.

OILLEVEL

- 1. Remove filler plug (1) and gasket from transmission case.
- 2. Check the oil level from filler plug mounting hole as shown in the figure.

CAUTION:

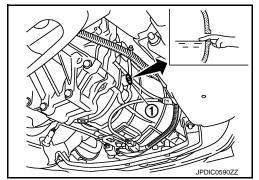
Never start engine while checking oil level.

Set a gasket on filler plug and then install it to transmission case.

CAUTION:

Never reuse gasket.

 Tighten filler plug to the specified torque. Refer to <u>TM-49</u>, "WITHOUT S-MODE : Exploded View" (Without S-MODE) or <u>TM-81</u>, "WITH S-MODE : Exploded View" (With S-MODE).



[6MT: FS6R31A]

Draining INFOID:000000005233329

- 1. Start the engine and let it run to warm up transmission.
- 2. Stop the engine.
- 3. Remove drain plug and gasket from transmission case and then drain gear oil.
- Set a gasket on drain plug and install it to transmission case. CAUTION:

Never reuse gasket.

Tighten drain plug to the specified torque. Refer to <u>TM-49</u>, "<u>WITHOUT S-MODE</u>: <u>Exploded View</u>" (With-out S-MODE) or <u>TM-81</u>, "<u>WITH S-MODE</u>: <u>Exploded View</u>" (With S-MODE).

Refilling INFOID:0000000005233330

- Remove filler plug (1) and gasket from transmission case.
- 2. Fill with new gear oil to transmission as shown in the figure.

Oil grade and : Refer to MA-14, "FOR NORTH AMERICA

: Fluids and Lubricants" (For North

America) or MA-15, "FOR MEXICO: Fluids and Lubricants" (For Mexico).

Oil capacity : Refer to TM-147, "General Specifica-

tion".

CAUTION:

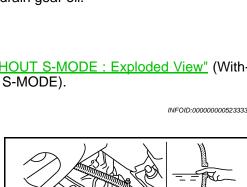
viscosity

Never reuse drained gear oil.

- 3. After refilling gear oil, check the oil level. Refer to TM-20, "Inspection".
- Set a gasket on filler plug and then install it to transmission case.
 CAUTION:

Never reuse gasket.

5. Tighten filler plug to the specified torque. Refer to <u>TM-49</u>, "<u>WITHOUT S-MODE</u>: <u>Exploded View</u>" (Without S-MODE) or <u>TM-81</u>, "<u>WITH S-MODE</u>: <u>Exploded View</u>" (With S-MODE).



REMOVAL AND INSTALLATION

REAR OIL SEAL

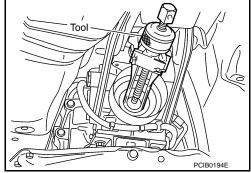
Removal and Installation

REMOVAL

- 1. Separate propeller shaft assembly. Refer to <u>DLN-7</u>, "Removal and Installation".
- 2. Remove rear oil seal from rear extension, using the puller [SST: KV381054S0 (J-34286)].

CAUTION:

Never damage rear extension.



[6MT: FS6R31A]

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INSTALLATION

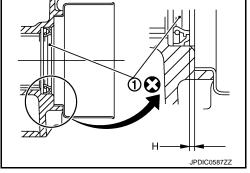
 Install rear oil seal (1) to rear extension, using the drift [SST: ST33400001 (J-26082)].

Dimension "H" : 1.2 – 2.2 mm (0.047 – 0.087 in)

CAUTION:

Never incline rear oil seal.

Install propeller shaft assembly. Refer to <u>DLN-7</u>, "<u>Removal and Installation</u>".



Inspection INFOID:0000000005233333

INSPECTION AFTER INSTALLATION

Check the oil leakage and the oil level. Refer to TM-20, "Inspection".

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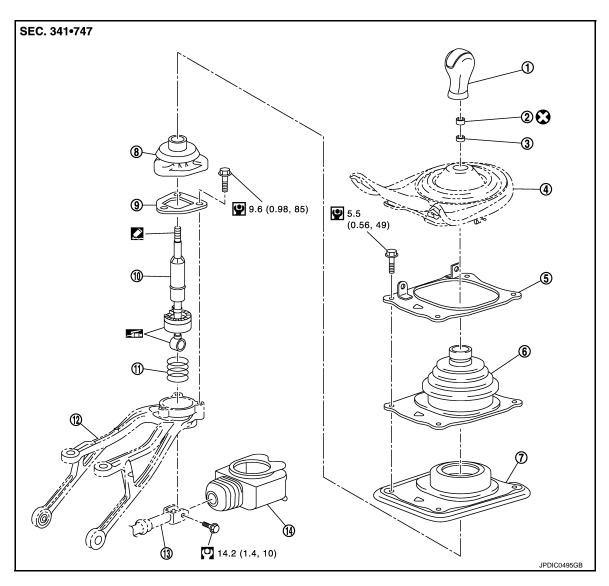
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Revision: 2009 July **TM-21** 2010 370Z

Exploded View



- 1. Shift knob
- 4. Console finisher assembly
- 7. Hole insulator
- 10. Control lever
- 13. Control rod

- 2. Insulator
- 5. Hole cover
- 8. Control lever boot A
- 11. Control lever spring
- 14. Control rod boot

- 3. Seat
- 6. Control lever boot B

[6MT: FS6R31A]

- 9. Guide plate
- 12. Control lever housing

INFOID:0000000005233335

Apply multi-purpose grease.

Apply Genuine Medium Strength Thread Locking Sealant or an equivalent. Refer to GI-18, "Recommended Chemical Products and Sealants".

Refer to GI-4, "Components" for symbols not described on the above.

Removal and Installation

REMOVAL

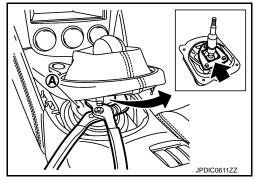
- 1. Remove shift knob with the following procedure.
- Release metal clips on console finisher assembly. Refer to <u>IP-24, "Removal and Installation"</u>.

< REMOVAL AND INSTALLATION >

 Lift console finisher assembly and then set suitable pliers to control lever.

CAUTION:

Put waste cloth (A) between a suitable pliers and control lever to avoid damaging control lever.



[6MT: FS6R31A]

Set suitable pliers to shift knob.

CAUTION:

Put waste cloth (A) between a suitable pliers and shift knob to avoid damaging shift knob.

d. Keeping control lever in place with a suitable pliers, loosen shift knob with a suitable pliers.

NOTE:

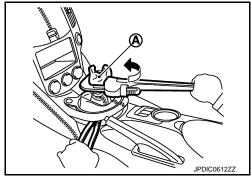
Remove shift knob from control lever keeping a suitable pliers in place because a certain power to turn shift knob is still necessary even after adhesive is peeled.

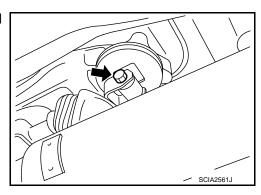
- e. Remove shift knob from control lever.
- f. Remove insulator from shift knob.
- 2. Remove seat from control lever.

CAUTION:

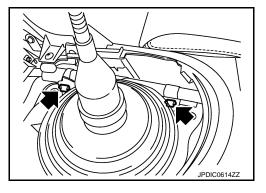
Never lose seat.

- 3. Remove console finisher assembly.
- Release control rod boot from control lever housing.
- Remove mounting bolt (←) and then separate control lever and control rod.





Remove clips (from hole cover.



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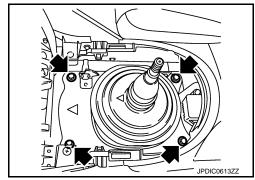
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< REMOVAL AND INSTALLATION >

Remove mounting bolts (and then remove hole cover. CAUTION:

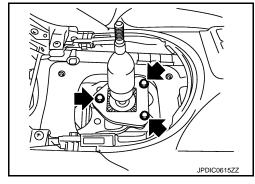
Never damage center console assembly.

8. Remove control lever boot B, hole insulator, and control lever boot A.



[6MT: FS6R31A]

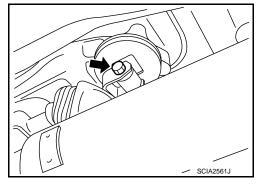
- Remove mounting bolts (while holding guide plate.
- 10. Remove guide plate, control lever, and control lever spring from control lever housing.



INSTALLATION

- 1. Apply multi-purpose grease to sliding surface of control lever.
- 2. Install control lever spring, control lever, and guide plate to control lever housing.
- 3. Temporarily tighten guide plate mounting bolts while holding guide plate.
- Install control lever to control rod and then tighten mounting bolt
 (←) to the specified torque.
- Install control rod boot to control lever housing. CAUTION:

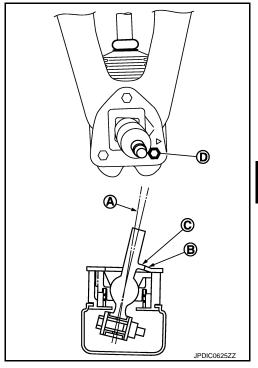
Fit control rod boot to the groove on control lever housing.



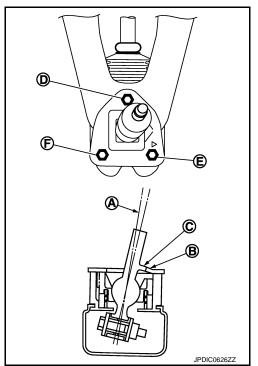
6. Install guide plate with the following procedure.

< REMOVAL AND INSTALLATION >

- Shift the control lever to 6th gear position (A).
- b. Lightly shift control lever to the reverse gear direction until it stops, and keep control lever in this position.
- c. Set guide plate so that guide plate portion (B) contacts control lever portion (C).
- Temporarily tighten mounting bolt (D).



- Shift the control lever to 5th gear position (A). e.
- Lightly shift control lever to the reverse gear direction until it stops, and keep control lever in this position.
- Set guide plate so that guide plate portion (B) contacts control lever portion (C).
- h. Tighten mounting bolt (D) to the specified torque.
- Tighten mounting bolts (E) and (F) to the specified torque.



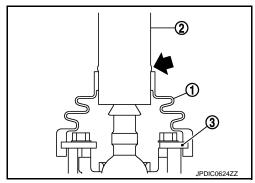
7. Install control lever boot A (1) to control lever (2).

CAUTION:

- . Check that groove of control lever boot A is engaged to guide plate (3).
- . Be careful that control lever boot A is installed according to the specified location (-).
- Install hole insulator and control lever boot B.

CAUTION:

Be careful with the orientation of hole insulator and control lever boot B.



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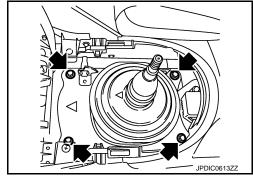
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9. Install hole cover and then tighten mounting bolts (to the specified torque.

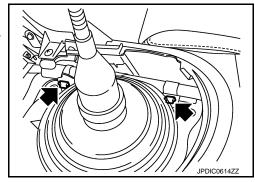
CAUTION:

- Never damage center console assembly.
- · Be careful with the orientation of hole cover.



[6MT: FS6R31A]

- 10. Install clips (←) to hole cover.
- 11. Install console finisher assembly. Refer to <u>IP-24, "Removal and Installation"</u>.



12. Install seat (1) and insulator (2) to control lever (3).

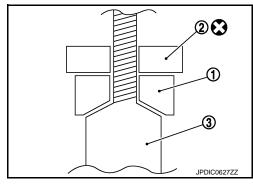
CAUTION:

- · Be careful with the orientation of seat.
- · Never lose seat.
- 13. Apply thread locking sealant to control lever threads and then install shift knob to control lever.
 - Use Genuine Medium Strength Thread Locking Sealant or an equivalent. Refer to <u>GI-18</u>, "<u>Recommended Chemical</u> <u>Products and Sealants</u>".

CAUTION:

Remove the remaining adhesive on control lever and shift knob threads.

14. Set shift knob in the correct position with the following procedure.



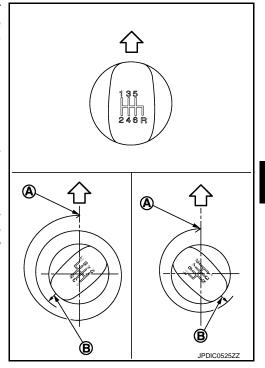
< REMOVAL AND INSTALLATION >

a. When tightening shift knob, if shift knob comes to the proper position within 1/2 turn from the position at which resistance begins to be felt, tighten it 1 more turn to set it in the proper position.

: Vehicle front
A : Proper position

B : Start position on reaction force

- If it takes more than 1/2 turn from the position at which resistance begins to be felt, tighten it to set it in the proper position.
 CAUTION:
 - Never adjust shift knob with loosing.
 - After adjusting to the proper position, until 30 minutes pass, never operate the shift knob intensely such as screwing or turning shift knob to opposite direction since a locking sealant becomes stiff.



Inspection INFOID.000000005233336

INSPECTION AFTER INSTALLATION

Control Lever

When control lever is shifted to each gear position, check that there is no interference or boot disengagement.

 When control lever is shifted to each gear position, check that there is no binding, noise, or backlash that disturbs shifting.

 When control lever is shifted to the 5th or 6th gear position by being pressed in the right side direction without being pressed downward, check that there is no binding or poor gear engagement.

 When control lever is shifted to the 1st-2nd side and released, check that control lever returns smoothly to the neutral position.

• When control lever is shifted to the 5th-6th side and released, check that control lever returns smoothly to the neutral position.

 When control lever is in a position other than the reverse gear position, check that control lever can be pressed downward.

 When control lever is pressed and held downward, check that control lever can be shifted to the reverse gear position.

 When control lever is shifted from the reverse gear position to the neutral position, check that control lever returns smoothly to the neutral position with spring power.

 When control lever is not pressed downward, check that control lever cannot be shifted to the reverse gear position.

Shift Knob

Check that there is no shift knob dislocation.

Boot

Check that there is no damage, twist, or dislocation of boot.

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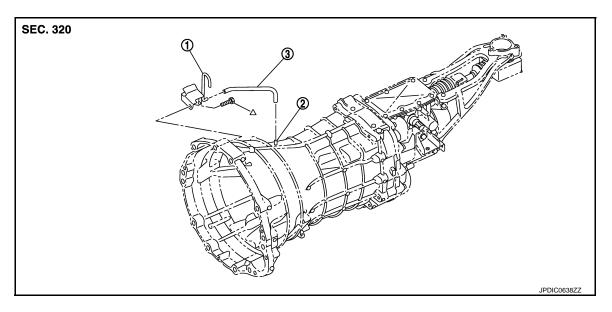
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AIR BREATHER HOSE

Exploded View INFOID:0000000005233337



1. Air breather tube

Breather tube

Air breather hose

Δ: Refer to "INSTALLATION" in TM-38, "WITHOUT S-MODE: Removal and Installation" (Without S-MODE) or TM-41, "WITH S-MODE: Removal and Installation" (With S-MODE) for the tightening torque.

Removal and Installation

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[6MT: FS6R31A]

REMOVAL

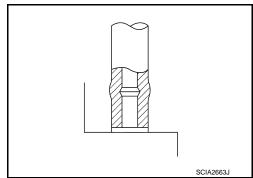
Refer to TM-28, "Exploded View" for removal procedure.

INSTALLATION

Note the following, and refer to TM-28. "Exploded View" for installation procedure.

CAUTION:

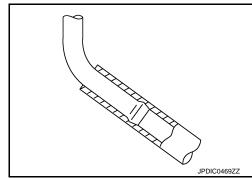
- Make sure there are no pinched or restricted areas on the air breather hose caused by bending or winding when installing it.
- · Be sure to insert air breather hose into breather tube until hose end reaches the tube's base.



AIR BREATHER HOSE

< REMOVAL AND INSTALLATION >

• Be sure to insert air breather hose into air breather tube until hose end reaches the radius curve end.



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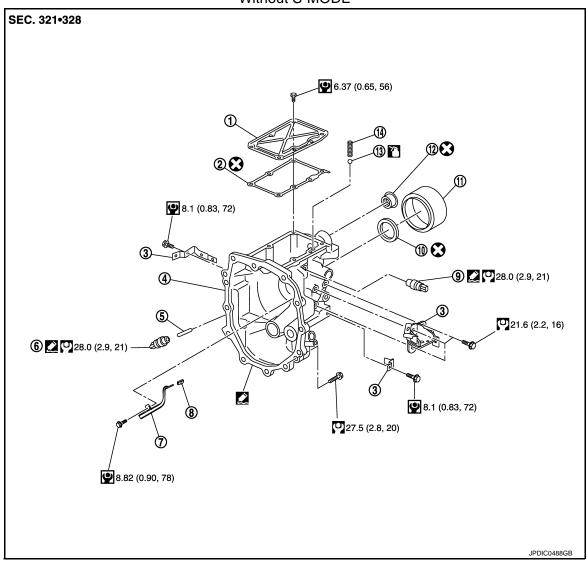
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BACK-UP LAMP SWITCH

Exploded View

Without S-MODE



- 1. Rear extension upper cover
- Rear extension
- 7. Oil gutter
- 10. Rear oil seal
- 13. Check ball

- Rear extension upper cover gasket
- 5. Plunger
- 8. Cap
- 11. Dust cover
- 14. Check select spring
- Bracket
- 6. Park/Neutral position (PNP) switch

[6MT: FS6R31A]

- 9. Back-up lamp switch
- 12. Striking rod oil seal

Apply gear oil.

Apply Genuine Silicone RTV or an equivalent. Refer to GI-18, "Recommended Chemical Products and Sealants". Refer to GI-4, "Components" for symbols not described on the above.

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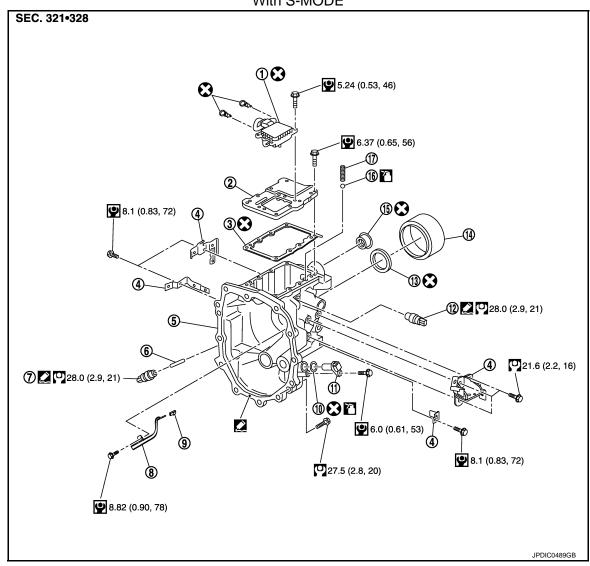
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With S-MODE



- Gear lever position sensor
- 4. Bracket
- 7. Park/Neutral position (PNP) switch
- 10. O-ring
- 13. Rear oil seal
- 16. Check ball
- Apply gear oil.

- 2. Rear extension upper cover
- 5. Rear extension
- 8. Oil gutter
- 11. Input speed sensor
- 14. Dust cover
- 17. Check select spring

- 3. Rear extension upper cover gasket
- 6. Plunger
- 9. Cap
- 12. Back-up lamp switch
- 15. Striking rod oil seal

Apply Genuine Silicone RTV or an equivalent. Refer to GI-18, "Recommended Chemical Products and Sealants".

Refer to GI-4, "Components" for symbols not described on the above.

Removal and Installation

REMOVAL

1. Disconnect the battery cable from the negative terminal.

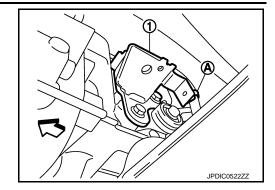
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BACK-UP LAMP SWITCH

< REMOVAL AND INSTALLATION >

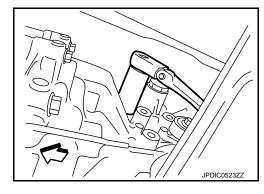
2. Disconnect clip (A) from bracket (1).

- 3. Remove bracket from rear extension.
- 4. Disconnect back-up lamp switch connector.



[6MT: FS6R31A]

5. Remove back-up lamp switch from rear extension.



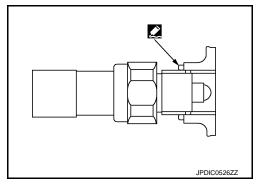
INSTALLATION

1. Temporarily tighten back-up lamp switch onto rear extension by rotating once or twice.

CAUTION:

Remove old sealant and oil adhering to threads.

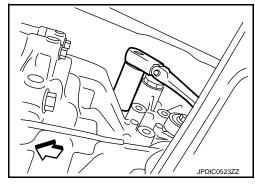
- 2. Apply recommended sealant to threads of back-up lamp switch as shown in the figure.
 - Use Genuine Silicone RTV or an equivalent. Refer to <u>GI-18</u>, "Recommended Chemical Products and Sealants".



3. Tighten back-up lamp switch to the specified torque.

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4. For the next step and after, install in the reverse order of removal.



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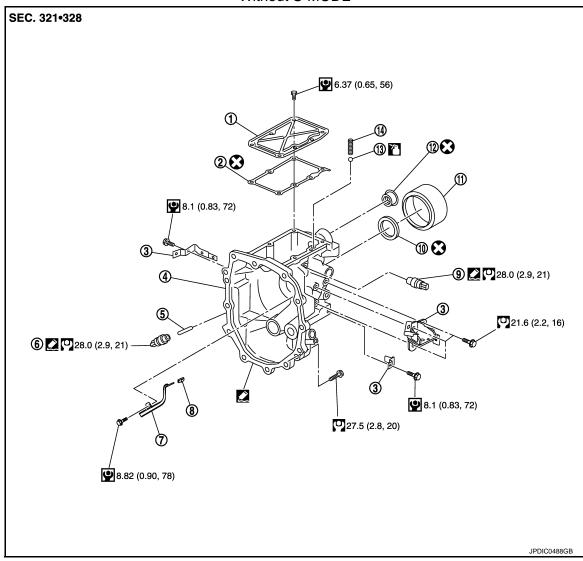
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PARK/NEUTRAL POSITION SWITCH

Exploded View

Without S-MODE



- 1. Rear extension upper cover
- 4. Rear extension
- 7. Oil gutter
- 10. Rear oil seal
- 13. Check ball

- 2. Rear extension upper cover gasket
- 5. Plunger
- 8. Cap
- 11. Dust cover
- 14. Check select spring

- 3. Bracket
- 6. Park/Neutral position (PNP) switch
- 9. Back-up lamp switch
- 12. Striking rod oil seal

Apply gear oil.

Apply Genuine Silicone RTV or an equivalent. Refer to GI-18, "Recommended Chemical Products and Sealants". Refer to GI-4, "Components" for symbols not described on the above.

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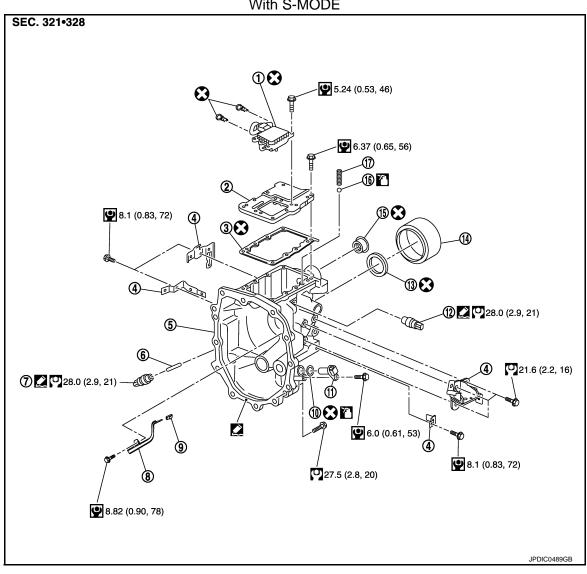
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[6MT: FS6R31A]

With S-MODE



- Gear lever position sensor
- 4. **Bracket**
- Park/Neutral position (PNP) switch 7.
- 10. O-ring
- 13. Rear oil seal

: Apply gear oil.

16. Check ball

- 2. Rear extension upper cover
- 5. Rear extension
- 8. Oil gutter
- 11. Input speed sensor
- 14. Dust cover
- 17. Check select spring

Apply Genuine Silicone RTV or an equivalent. Refer to GI-18, "Recommended Chemical Products and Sealants".

- 3. Rear extension upper cover gasket
- 6. Plunger
- 9. Cap
- 12. Back-up lamp switch
- 15. Striking rod oil seal

Removal and Installation

INFOID:0000000005233342

REMOVAL

- Disconnect the battery cable from the negative terminal.
- Disconnect park/neutral position (PNP) switch connector.

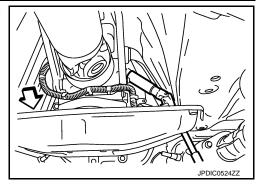
Refer to GI-4, "Components" for symbols not described on the above.

PARK/NEUTRAL POSITION SWITCH

< REMOVAL AND INSTALLATION >

3. Remove park/neutral position (PNP) switch and plunger from rear extension.

⟨⇒ : Vehicle front



[6MT: FS6R31A]

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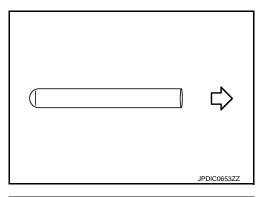
INSTALLATION

Install plunger to rear extension.

CAUTION:

Be careful with orientation of plunger.

: Park/Neutral position (PNP) switch side

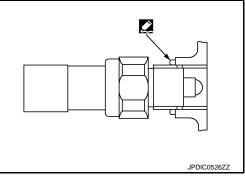


Temporarily tighten park/neutral position (PNP) switch onto rear extension by rotating once or twice.

CAUTION:

Remove old sealant and oil adhering to threads.

- 3. Apply recommended sealant to threads of park/neutral position (PNP) switch as shown in the figure.
 - Use Genuine Silicone RTV or an equivalent. Refer to GI-18, "Recommended Chemical Products and Sealants".
- 4. Tighten park/neutral position (PNP) switch to the specified torque.
- 5. For the next step and after, install in the reverse order of removal.



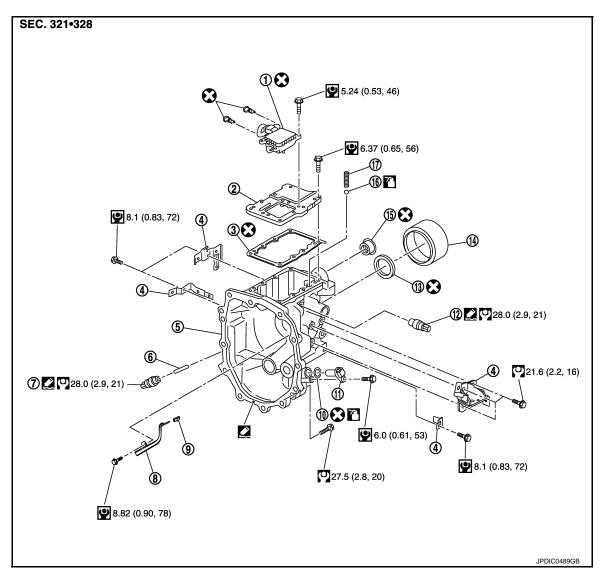
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INPUT SPEED SENSOR

Exploded View



- 1. Gear lever position sensor
- 4. Bracket
- 7. Park/Neutral position (PNP) switch
- 10. O-ring
- 13. Rear oil seal
- 16. Check ball

- 2. Rear extension upper cover
- 5. Rear extension
- 8. Oil gutter
- 11. Input speed sensor
- 14. Dust cover
- Check select spring

- 3. Rear extension upper cover gasket
- 6. Plunger
- 9. Cap
- 12. Back-up lamp switch
- 15. Striking rod oil seal

: Apply gear oil.

Apply Genuine Silicone RTV or an equivalent. Refer to GI-18. "Recommended Chemical Products and Sealants".

Refer to GI-4. "Components" for symbols not described on the above.

Removal and Installation

INFOID:0000000005233344

[6MT: FS6R31A]

REMOVAL

- Disconnect the battery cable from the negative terminal.
- 2. Disconnect input speed sensor connector.
- 3. Remove input speed sensor from rear extension.

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INPUT SPEED SENSOR

< REMOVAL AND INSTALLATION > [6MT: FS6R31A]

CAUTION:

- Never disassemble input speed sensor.
- Never impact input speed sensor by dropping or others.
- Never place input speed sensor near magnetic materials.
- 4. Remove O-ring from input speed sensor.

INSTALLATION

1. Apply gear oil to O-ring.

CAUTION:

Never reuse O-ring.

- 2. Install O-ring to input speed sensor.
- 3. Install input speed sensor to rear extension.

CAUTION:

- Never disassemble input speed sensor.
- Never impact input speed sensor by dropping or others.
- Never place input speed sensor near magnetic materials.
- Never allow foreign matter on input speed sensor.
- 4. For the next step and after, install in the reverse order of removal.

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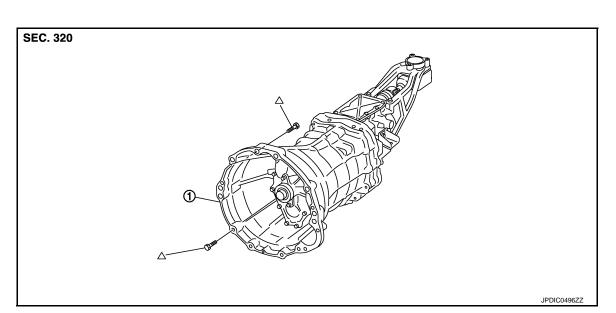
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UNIT REMOVAL AND INSTALLATION

TRANSMISSION ASSEMBLY WITHOUT S-MODE

WITHOUT S-MODE: Exploded View



1. Transmission assembly

Δ: Refer to "INSTALLATION" in TM-38, "WITHOUT S-MODE: Removal and Installation" for the locations and tightening torque.

WITHOUT S-MODE: Removal and Installation

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[6MT: FS6R31A]

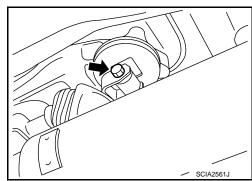
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CAUTION:

Never reuse CSC (Concentric Slave Cylinder) body and CSC tube. Because CSC slides back to the original position every time when removing transmission assembly. At this timing, dust on the sliding parts may damage a seal of CSC and may cause clutch fluid leakage. Refer to CL-20, "Removal and Installation".

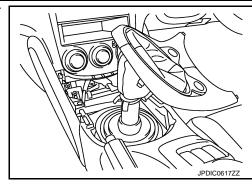
REMOVAL

- 1. Disconnect the battery cable from the negative terminal.
- 2. Remove engine cover (front) and engine cover (rear). Refer to EM-29, "Removal and Installation".
- 3. Remove control lever with the following procedure.
- a. Remove mounting bolt () and then separate control lever from control rod.



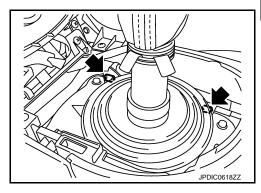
< UNIT REMOVAL AND INSTALLATION >

b. Remove console finisher assembly as shown in the figure. Refer to <u>IP-24</u>, "Removal and Installation".



[6MT: FS6R31A]

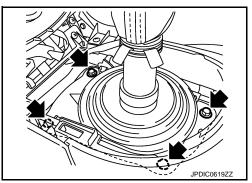
c. Remove clips (←) from hole cover.



d. Remove mounting bolts (←) and then remove hole cover. CAUTION:

Never damage center console assembly.

e. Remove control lever boot B, hole insulator, and control lever boot A.

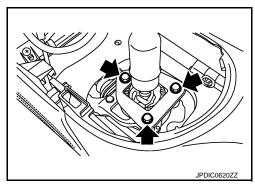


- f. Remove mounting bolts (while holding guide plate.
- g. Remove guide plate, control lever, and control lever spring from control lever housing.
- 4. Remove exhaust front tube and center muffler. Refer to <u>EX-6.</u> "Removal and Installation".
- 5. Separate propeller shaft assembly. Refer to <u>DLN-7</u>, "Removal and Installation".

NOTE:

Insert a suitable plug to rear oil seal of transmission assembly after removing propeller shaft assembly.

- 6. Remove exhaust mounting bracket. Refer to <u>EX-6, "Removal and Installation"</u>.
- 7. Remove suspension member stay. Refer to FSU-20, "Removal and Installation".



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< UNIT REMOVAL AND INSTALLATION >

8. Remove clutch tube (1), clutch hose (2), and lock plate (3). Refer to <u>CL-19</u>, "Removal and Installation".

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: Vehicle front

CAUTION:

- Keep painted surface on the body or other parts free of clutch fluid. If it spills, wipe up immediately and wash the affected area with water.
- Never depress clutch pedal during removal procedure.
 NOTF:

Insert a suitable plug to clutch hose and CSC tube after removing clutch tube.

- 9. Remove crankshaft position sensor. Refer to EM-72, "Removal and Installation".
- 10. Remove starter motor. Refer to STR-21, "M/T: Removal and Installation".
- 11. Remove rear plate cover. Refer to EM-48, "Removal and Installation".
- 12. Disconnect park/neutral position (PNP) switch connector.
- 13. Disconnect heated oxygen sensor 2 (bank 1) and heated oxygen sensor 2 (bank 2) connectors. Refer to EX-6, "Removal and Installation".
- 14. Set a suitable jack to the transmission assembly.

CAUTION:

When setting a suitable jack, be careful so that it does not contact with the wire harness. NOTE:

By placing wooden block between oil pan (upper) and front suspension member, the removal of transmission assembly from engine becomes easier.

- 15. Remove engine mounting insulator (rear) mounting nuts. Refer to EM-72, "Removal and Installation".
- 16. Remove rear engine mounting member. Refer to EM-72, "Removal and Installation".
- 17. Remove engine and transmission mounting bolts, using a power tool [Commercial service tool].
- 18. Lower a suitable jack to the position where the back-up lamp switch connector can be disconnect. Then disconnect back-up lamp switch connector.
- 19. Remove harness and harness brackets and then temporarily secure it to a position where it will not inhibit work.
- 20. Remove transmission assembly from the engine.

CAUTION:

- Secure transmission assembly to a suitable jack while removing it.
- The transmission assembly must not interfere with the three way catalyst (right bank) and three way catalyst (left bank).
- The transmission assembly must not interfere with the wire harnesses and clutch hose.
- The main drive gear must not interfere with the clutch cover.
- Never hold control lever housing to prevent the bushing of control lever housing from deformation when moving transmission assembly.
- 21. Remove CSC body and CSC tube. Refer to CL-20, "Removal and Installation".

INSTALLATION

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

CAUTION:

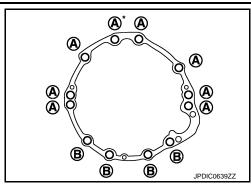
- Secure transmission assembly to a suitable jack while installing it.
- The transmission assembly must not interfere with the three way catalyst (right bank) and three way catalyst (left bank).
- The transmission assembly must not interfere with the wire harnesses and clutch hose.
- The main drive gear must not interfere with the clutch cover.
- Never hold control lever housing to prevent the bushing of control lever housing from deformation when moving transmission assembly.

[6MT: FS6R31A]

< UNIT REMOVAL AND INSTALLATION >

• Tighten transmission assembly mounting bolts to the specified torque. The figure is the view from the vehicle forward.

Bolt symbol	А	В
Insertion direction	Transmission to engine	Engine to transmission
Number of bolts	8	4
Bolt length mm (in)	65 (2.56)	35 (1.38)
Tightening torque N·m (kg-m, ft-lb)	75 (7.7, 55)	46.6 (4.8, 34)



If flywheel is removed, align dowel pin with the smallest hole of flywheel. Refer to <u>EM-117</u>, "<u>Disassembly and Assembly</u>".

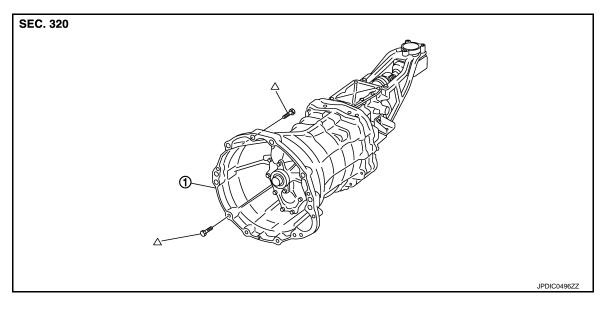
WITHOUT S-MODE: Inspection

INSPECTION AFTER INSTALLATION

- Check the shift control. Refer to <u>TM-27</u>, "Inspection".
- Check the oil leakage and the oil level. Refer to <u>TM-20</u>, "<u>Inspection</u>".

WITH S-MODE

WITH S-MODE: Exploded View



1. Transmission assembly

Δ: Refer to "INSTALLATION" in TM-41, "WITH S-MODE: Removal and Installation" for the locations and tightening torque.

WITH S-MODE: Removal and Installation

CAUTION:

Never reuse CSC (Concentric Slave Cylinder) body and CSC tube. Because CSC slides back to the original position every time when removing transmission assembly. At this timing, dust on the sliding parts may damage a seal of CSC and may cause clutch fluid leakage. Refer to CL-20, "Removal and Installation".

REMOVAL

- 1. Disconnect the battery cable from the negative terminal.
- Remove engine cover (front) and engine cover (rear). Refer to EM-29, "Removal and Installation".
- 3. Remove control lever with the following procedure.

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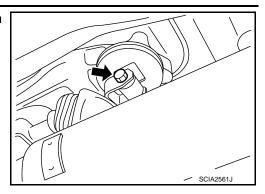
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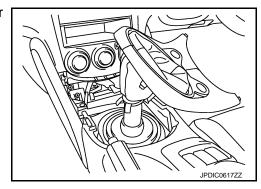
^{*:} Tightening the bolt with air breather tube.

[6MT: FS6R31A]

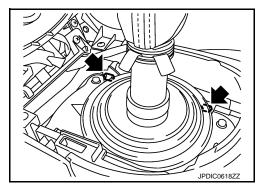
Remove mounting bolt (←) and then separate control lever from control rod.



b. Remove console finisher assembly as shown in the figure. Refer to IP-24, "Removal and Installation".



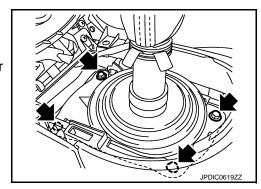
Remove clips (from hole cover.



d. Remove mounting bolts (←) and then remove hole cover.
 CAUTION:

Never damage center console assembly.

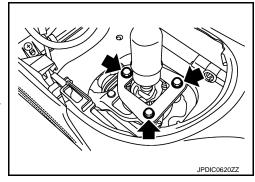
e. Remove control lever boot B, hole insulator, and control lever boot A.



- f. Remove mounting bolts (while holding guide plate.
- g. Remove guide plate, control lever, and control lever spring from control lever housing.
- 4. Remove exhaust front tube and center muffler. Refer to <u>EX-6</u>, <u>"Removal and Installation"</u>.
- 5. Separate propeller shaft assembly. Refer to <u>DLN-7</u>, "<u>Removal and Installation</u>".

NOTE:

Insert a suitable plug to rear oil seal of transmission assembly after removing propeller shaft assembly.



< UNIT REMOVAL AND INSTALLATION >

- Remove exhaust mounting bracket. Refer to EX-6, "Removal and Installation".
- 7. Remove suspension member stay. Refer to FSU-20, "Removal and Installation".
- Remove clutch tube (1), clutch hose (2), and lock plate (3). Refer to CL-19, "Removal and Installation".

 $\langle \neg$: Vehicle front

CAUTION:

- Keep painted surface on the body or other parts free of clutch fluid. If it spills, wipe up immediately and wash the affected area with water.
- Never depress clutch pedal during removal procedure. NOTE:

Insert a suitable plug to clutch hose and CSC tube after removing clutch tube.

- Remove crankshaft position sensor. Refer to EM-72, "Removal and Installation".
- 10. Remove starter motor. Refer to STR-21, "M/T: Removal and Installation".
- 11. Remove rear plate cover. Refer to EM-48, "Removal and Installation".
- 12. Disconnect park/neutral position (PNP) switch connector.
- 13. Disconnect gear lever position sensor connector (A).
 - 1 : Gear lever position sensor

CAUTION:

Never remove connector (B).

- 14. Disconnect input speed sensor connector.
- 15. Disconnect heated oxygen sensor 2 (bank 1) and heated oxygen sensor 2 (bank 2) connectors. Refer to EX-6, "Removal and Installation".
- 16. Set a suitable jack to the transmission assembly.

CAUTION:

When setting a suitable jack, be careful so that it does not contact with the wire harness. NOTE:

By placing wooden block between oil pan (upper) and front suspension member, the removal of transmission assembly from engine becomes easier.

- 17. Remove engine mounting insulator (rear) mounting nuts. Refer to EM-72, "Removal and Installation".
- 18. Remove rear engine mounting member. Refer to EM-72, "Removal and Installation".
- Remove engine and transmission mounting bolts, using a power tool [Commercial service tool].
- 20. Lower a suitable jack to the position where the back-up lamp switch connector can be disconnect. Then disconnect back-up lamp switch connector.
- 21. Remove harness and harness brackets and then temporarily secure it to a position where it will not inhibit work.
- 22. Remove transmission assembly from the engine.

CAUTION:

- Secure transmission assembly to a suitable jack while removing it.
- The transmission assembly must not interfere with the three way catalyst (right bank) and three way catalyst (left bank).
- The transmission assembly must not interfere with the wire harnesses and clutch hose.
- The main drive gear must not interfere with the clutch cover.
- Never hold control lever housing to prevent the bushing of control lever housing from deformation when moving transmission assembly.
- 23. Remove CSC body and CSC tube. Refer to CL-20, "Removal and Installation".

INSTALLATION

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

Secure transmission assembly to a suitable jack while installing it.

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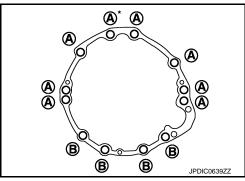
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< UNIT REMOVAL AND INSTALLATION >

- The transmission assembly must not interfere with the three way catalyst (right bank) and three way catalyst (left bank).
- The transmission assembly must not interfere with the wire harnesses and clutch hose.
- The main drive gear must not interfere with the clutch cover.
- Never hold control lever housing to prevent the bushing of control lever housing from deformation when moving transmission assembly.
- Tighten transmission assembly mounting bolts to the specified torque. The figure is the view from the vehicle forward.

Bolt symbol	А	В
Insertion direction	Transmission to engine	Engine to transmission
Number of bolts	8	4
Bolt length mm (in)	65 (2.56)	35 (1.38)
Tightening torque N⋅m (kg-m, ft-lb)	75 (7.7, 55)	46.6 (4.8, 34)



• If flywheel is removed, align dowel pin with the smallest hole of flywheel. Refer to EM-117, "Disassembly and Assembly".

WITH S-MODE: Inspection and Adjustment

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[6MT: FS6R31A]

INSPECTION AFTER INSTALLATION

- Check the shift control. Refer to TM-27, "Inspection".
- Check the oil leakage and the oil level. Refer to TM-20, "Inspection".

ADJUSTMENT AFTER INSTALLATION

When replacing the gear lever position sensor, perform the M/T neutral position learning. Refer to <u>EC-24, "M/T NEUTRAL POSITION LEARNING: Special Repair Requirement"</u>.

^{*:} Tightening the bolt with air breather tube.

FRONT OIL SEAL

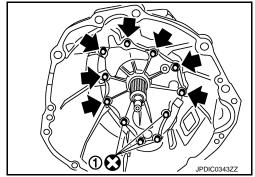
Removal and Installation

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[6MT: FS6R31A]

REMOVAL

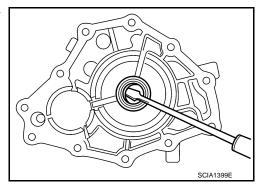
- 1. Drain gear oil. Refer to TM-20, "Draining".
- 2. Remove transmission assembly. Refer to <u>TM-38</u>, "<u>WITHOUT S-MODE</u>: <u>Removal and Installation</u>" (Without S-MODE) or <u>TM-41</u>, "<u>WITH S-MODE</u>: <u>Removal and Installation</u>" (With S-MODE).
- 3. Remove mounting bolts (and sealing bolts (1).
- Remove front cover and front cover gasket from transmission case.



Remove front oil seal from front cover, using a flat-bladed screwdriver.

CAUTION:

Never damage front cover.



INSTALLATION

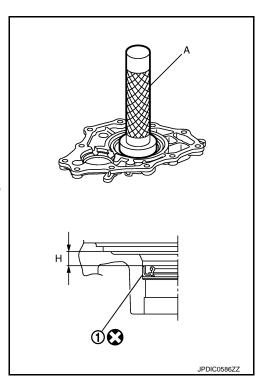
 Install front oil seal (1) to front cover, using the drift (A) [SST: KV38102100 (J-25803-01)].

Dimension "H": 8.55 – 9.55 mm (0.3366 – 0.3760 in)

CAUTION:

Never incline front oil seal.

- Install front cover gasket and front cover to transmission case.CAUTION:
 - Never reuse front cover gasket.
 - Never damage front oil seal.
 - Remove any moisture, oil, or foreign material adhering to both mating surfaces.



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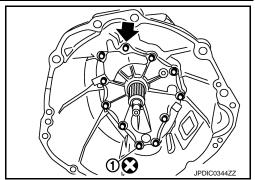
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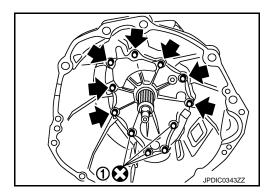
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[6MT: FS6R31A] < UNIT REMOVAL AND INSTALLATION >

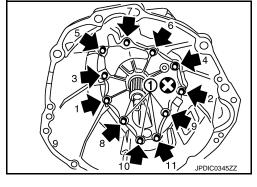
Temporarily tighten mounting bolt (and sealing bolt (1).



Temporarily tighten mounting bolts (and sealing bolts (1).



- Tighten mounting bolts (and sealing bolts (1) to the specified torque in the numerical order as shown in the figure.
- Install transmission assembly. Refer to TM-38. "WITHOUT S-MODE: Removal and Installation" (Without S-MODE) or TM-41. "WITH S-MODE: Removal and Installation" (With S-MODE).
- 7. Refill gear oil. Refer to TM-20, "Refilling".



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INSPECTION AFTER INSTALLATION

Check the oil leakage and the oil level. Refer to TM-20, "Inspection".

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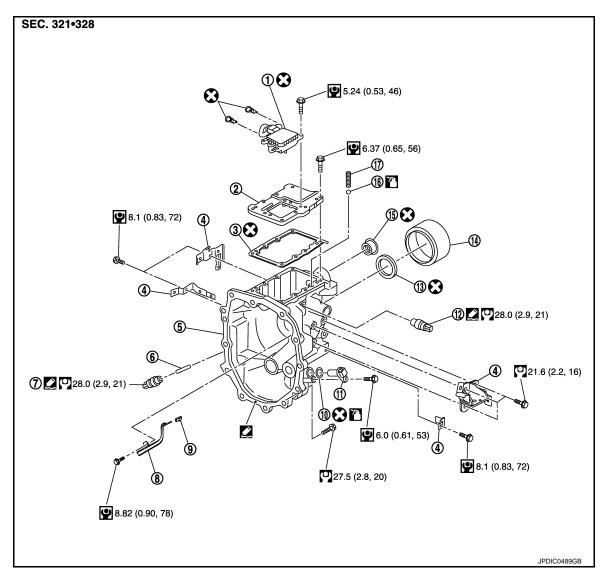
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GEAR LEVER POSITION SENSOR

Exploded View INFOID:0000000005233354



- Gear lever position sensor
- **Bracket**
- Park/Neutral position (PNP) switch 7.
- 10. O-ring
- 13. Rear oil seal
- 16. Check ball : Apply gear oil.

- Rear extension upper cover 2.
- Rear extension
- 8. Oil gutter
- 11. Input speed sensor
- 14. Dust cover
- 17. Check select spring

- Rear extension upper cover gasket 3.
- 6. Plunger
- 9. Cap
- 12. Back-up lamp switch
- 15. Striking rod oil seal

Apply Genuine Silicone RTV or an equivalent. Refer to GI-18, "Recommended Chemical Products and Sealants". Refer to GI-4, "Components" for symbols not described on the above.

Removal and Installation

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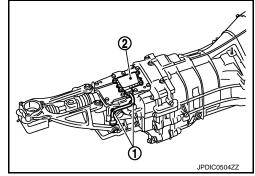
REMOVAL

Remove transmission assembly. Refer to TM-41, "WITH S-MODE: Removal and Installation".

GEAR LEVER POSITION SENSOR

< UNIT REMOVAL AND INSTALLATION >

- Remove clips (1) from gear lever position sensor (2) harness and bracket.
- 3. Remove gear lever position sensor harness from bracket.
- Remove gear lever position sensor from rear extension upper cover.



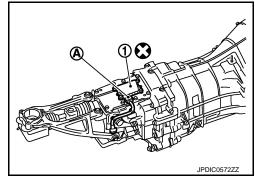
[6MT: FS6R31A]

INSTALLATION

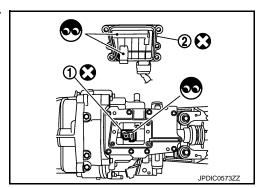
 Install gear lever position sensor (1) to rear extension upper cover.

CAUTION:

- Never disassemble gear lever position sensor.
- Never impact gear lever position sensor by dropping or others.
- Never place gear lever position sensor near magnetic materials.
- Never remove connector (A).



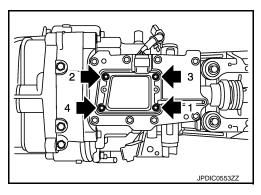
 Never allow foreign matter on gear lever position sensor magnet (1) and gear lever position sensor (2).



- 2. Tighten mounting bolts (to the specified torque in the numerical order as shown in the figure.
- Install clips to gear lever position sensor harness. CAUTION:

Never reuse clip.

- 4. Install gear lever position sensor harness to bracket.
- 5. Install transmission assembly. Refer to <u>TM-41, "WITH S-MODE : Removal and Installation"</u>.



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INSPECTION AFTER INSTALLATION

Inspection and Adjustment

Check the oil leakage and the oil level. Refer to TM-20, "Inspection".

ADJUSTMENT AFTER INSTALLATION

Perform the M/T neutral position learning. Refer to <u>EC-24</u>, "M/T NEUTRAL POSITION LEARNING : <u>Special</u> Repair Requirement".

UNIT DISASSEMBLY AND ASSEMBLY

TRANSMISSION ASSEMBLY

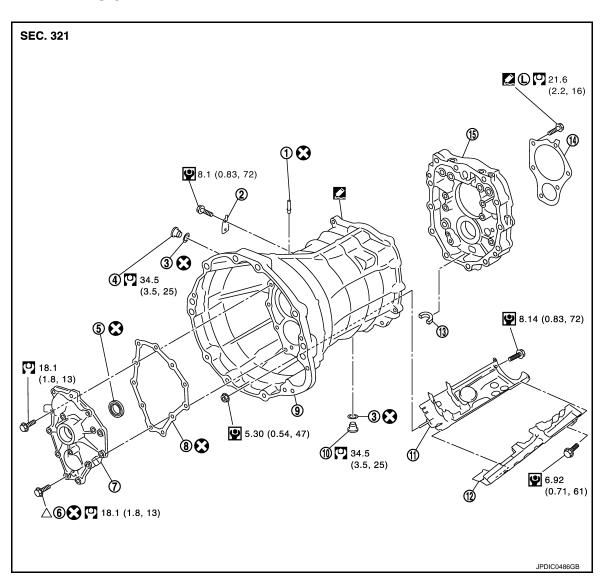
WITHOUT S-MODE

WITHOUT S-MODE: Exploded View

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[6MT: FS6R31A]

CASE AND EXTENSION



- Breather tube 1.
- 4. Filler plug
- 7. Front cover
- 10. Drain plug
- 13. Magnet

- **Bracket** 2.
- 5. Front oil seal
- Front cover gasket 8.
- 11. Baffle plate
- 14. Bearing retainer

- Gasket 3.
- 6. Sealing bolt
- 9. Transmission case
- 12. Oil gutter
- 15. Adapter plate

Apply Genuine Silicone RTV or an equivalent. Refer to GI-18, "Recommended Chemical Products and Sealants".

(L): Apply Genuine Medium Strength Thread Locking Sealant or an equivalent. Refer to GI-18, "Recommended Chemical Products and Sealants".

Δ: Refer to "CASE AND EXTENSION" in TM-63, "WITHOUT S-MODE: Assembly" for the locations.

Refer to GI-4, "Components" for symbols not described on the above.

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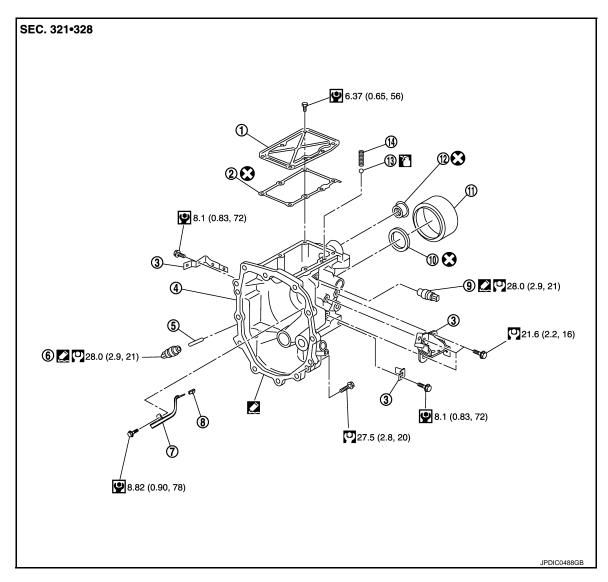
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[6MT: FS6R31A]



- 1. Rear extension upper cover
- 4. Rear extension
- 7. Oil gutter
- 10. Rear oil seal
- 13. Check ball

- 2. Rear extension upper cover gasket 3.
- 5. Plunger
- 8. Cap
- 11. Dust cover
- 14. Check select spring

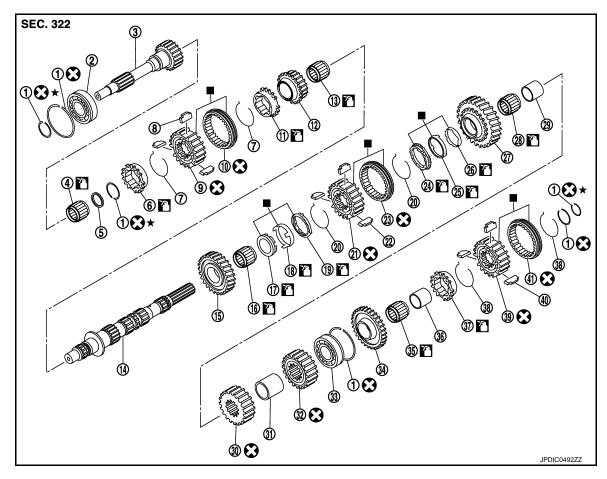
- Bracket
- 6. Park/Neutral position (PNP) switch
- 9. Back-up lamp switch
- 12. Striking rod oil seal

: Apply gear oil.

Apply Genuine Silicone RTV or an equivalent. Refer to GI-18, "Recommended Chemical Products and Sealants".

Refer to GI-4, "Components" for symbols not described on the above.

SHAFT AND GEAR



1. Snap ring

4. Main pilot bearing

5th-6th spread spring 7.

5th-6th coupling sleeve 10.

6th needle bearing 13.

16. 2nd needle bearing

19. 2nd outer baulk ring

1st-2nd shifting insert 22.

25. 1st synchronizer cone

28. 1st needle bearing

31. 3rd-4th main spacer

34. Reverse main gear Reverse baulk ring

Reverse shifting insert

: Replace the parts as a set.

: Apply gear oil.

2. Main drive gear bearing

Pilot bearing spacer 5.

8. 5th-6th shifting insert

6th baulk ring 11.

Mainshaft 14.

17. 2nd inner baulk ring

20. 1st-2nd spread spring

23. 1st-2nd coupling sleeve

26. 1st inner baulk ring

29. 1st gear bushing

32. 4th main gear

35. Reverse needle bearing

38. Reverse spread spring

Reverse coupling sleeve

3. Main drive gear

6. 5th baulk ring

9. 5th-6th synchronizer hub

6th main gear 12.

2nd main gear 15.

18. 2nd synchronizer cone

1st-2nd synchronizer hub

1st outer baulk ring 24.

27. 1st main gear

30. 3rd main gear

33. Mainshaft bearing

36. Reverse main gear bushing

Reverse synchronizer hub

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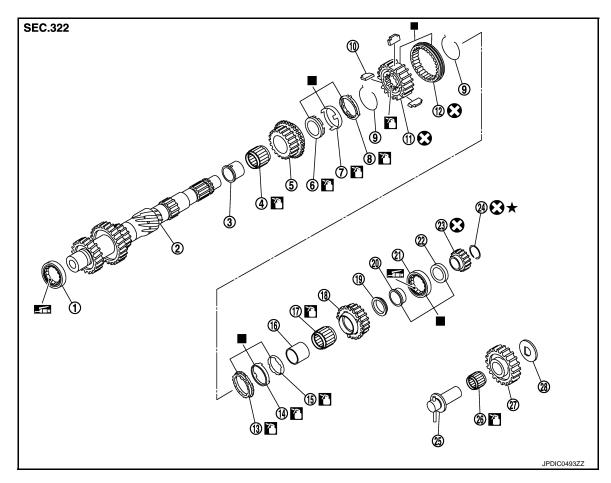
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Refer to GI-4, "Components" for symbols not described on the above.

· Apply gear oil to gears, shafts, synchronizers, and bearings when assembling.

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- 1. Counter front bearing
- 4. 3rd needle bearing
- 7. 3rd synchronizer cone
- 3rd-4th shifting insert 10.
- 13. 4th outer baulk ring
- 16. 4th gear bushing
- 19. 4th counter gear thrust washer
- 22. Counter rear bearing spacer
- 25. Reverse idler shaft
- 28. Reverse idler thrust washer
- : Replace the parts as a set.
- : Apply gear oil.
- Apply lithium-based grease including molybdenum disulphide.

Refer to GI-4, "Components" for symbols not described on the above.

• Apply gear oil to gears, shafts, synchronizers, and bearings when assembling.

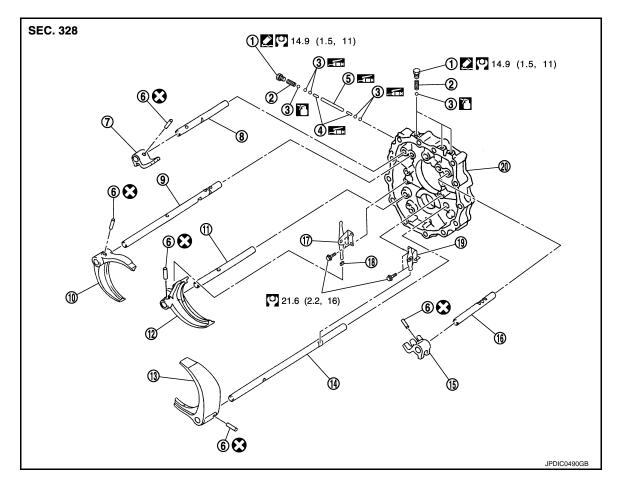
SHIFT FORK AND FORK ROD

- 2. Counter shaft 3rd counter gear
- 8. 3rd outer baulk ring

5.

- 3rd-4th synchronizer hub 11.
- 4th synchronizer cone
- 17. 4th needle bearing
- 20. Counter rear bearing inner race
- 23. Reverse counter gear
- 26. Reverse idler needle bearing

- 3. 3rd gear bushing
- 6. 3rd inner baulk ring
- 9. 3rd-4th spread spring
- 3rd-4th coupling sleeve 12.
- 4th inner baulk ring
- 18. 4th counter gear
- Counter rear bearing
- Snap ring 24.
- 27. Reverse idler gear



- 1. Check ball plug
- 4. Interlock pin
- 7. 3rd-4th fork rod bracket
- 10. 1st-2nd shift fork
- 13. 5th-6th shift fork
- 16. 5th-6th fork rod
- 19. 5th-6th control lever

- 2. Check ball spring
- 5. Interlock plunger
- 8. 3rd-4th fork rod
- 11. 3rd-4th fork rod (reversal side)
- 14. 5th-6th fork rod (reversal side)
- 17. 3rd-4th control lever
- 20. Adapter plate

- 3. Check ball
- 6. Retaining pin
- 9. 1st-2nd fork rod
- 12. 3rd-4th shift fork
- 15. 5th-6th fork rod bracket
- 18. Shifter cap

Apply gear oil.

Apply lithium-based grease including molybdenum disulphide.

Apply Genuine Silicone RTV or an equivalent. Refer to GI-18, "Recommended Chemical Products and Sealants".

Refer to GI-4, "Components" for symbols not described on the above.

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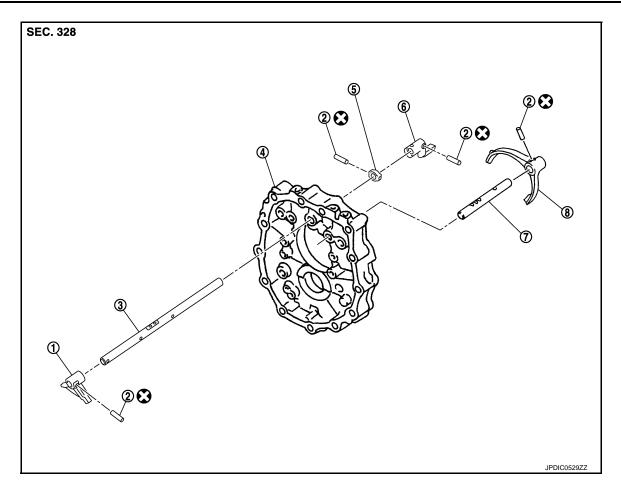
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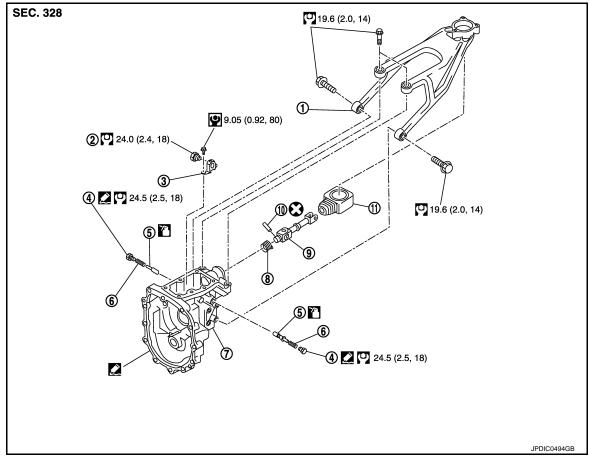




- 1. Striking lever
- 4. Adapter plate
- 7. Reverse fork rod
- 2. Retaining pin
- 5. Stopper ring
- 8. Reverse shift fork
- 3. Striking rod
- 6. Low/high control lever

Refer to GI-4, "Components" for the symbols in the figure.





- Control lever housing
- 4. Return spring plug
- 7. Rear extension
- 10. Retaining pin

- 2. Check shift pin
- 5. Return spring plunger
- 8. **Boot**
- 11. Control rod boot

- 3. Control bracket
- 6. Return spring

: Apply gear oil.

Apply Genuine Silicone RTV or an equivalent. Refer to GI-18, "Recommended Chemical Products and Sealants". Refer to GI-4, "Components" for symbols not described on the above.

WITHOUT S-MODE: Disassembly

CASE AND EXTENSION

- 1. Remove drain plug and gasket from transmission case and then drain gear oil.
- 2. Remove filler plug and gasket from transmission case.
- 3. Remove rear extension upper cover with the following procedure.
- Remove rear extension upper cover mounting bolts while holding rear extension upper cover. a.
- b. Remove rear extension upper cover and rear extension upper cover gasket from rear extension.

Control rod

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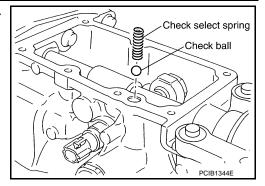
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< UNIT DISASSEMBLY AND ASSEMBLY >

Remove check select spring and check ball from rear extension.
 CAUTION:

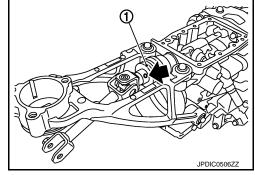
Never drop check ball.

- 5. Remove control rod with the following procedure.
- Remove control rod boot from control rod.

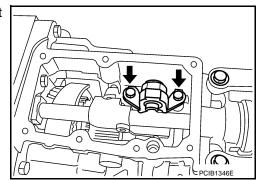


[6MT: FS6R31A]

- Remove boot (1) from control rod as shown in the figure.
- c. Remove retaining pin (from control rod, using a pin punch [Commercial service tool] and then remove control rod from striking rod.
- d. Remove boot from striking rod oil seal.
- 6. Remove park/neutral position (PNP) switch and plunger from rear extension.
- 7. Remove back-up lamp switch from rear extension.



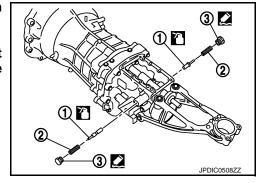
 Remove mounting bolts (←) and then remove control bracket from rear extension.



9. Remove return spring plungers (1), return springs (2), and return spring plugs (3) from rear extension.

CAUTION:

Return spring and return spring plunger have different lengths for right and left sides. Identify right and left side and then store.



10. Remove rear oil seal from rear extension, using the puller [SST: KV381054S0 (J-34286)].

CAUTION:

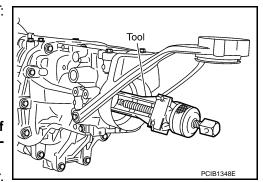
Never damage rear extension.

- 11. Remove brackets from rear extension.
- 12. Remove control lever housing from rear extension.

CAUTION:

Never hold control lever housing to prevent the bushing of control lever housing from deformation when moving transmission assembly.

13. Remove rear extension from adapter plate, using a soft hammer.



< UNIT DISASSEMBLY AND ASSEMBLY >

CAUTION:

Never drop reverse idler thrust washer.

14. Remove striking rod oil seal from rear extension.

CAUTION:

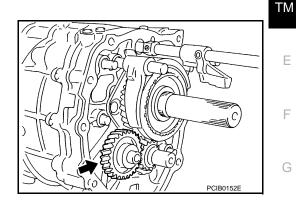
Never damage rear extension.

15. Remove dust cover from rear extension.

CAUTION:

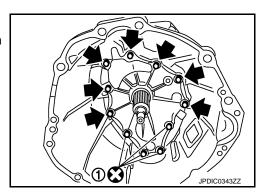
Never damage rear extension.

- 16. Remove oil gutter with the following procedure.
- a. Remove oil gutter from rear extension.
- Remove cap from oil gutter.
- 17. Remove reverse idler shaft assembly (from adapter plate.



[6MT: FS6R31A]

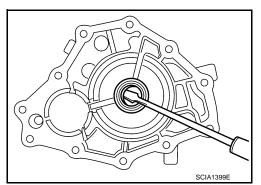
- 18. Remove front cover with the following procedure.
- Remove mounting bolts (and sealing bolts (1).
- b. Remove front cover and front cover gasket from transmission case.



Remove front oil seal from front cover, using a flat-bladed screwdriver.

CAUTION:

Never damage front cover.



19. Remove transmission case with the following procedure.

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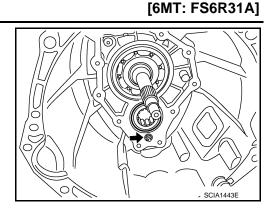
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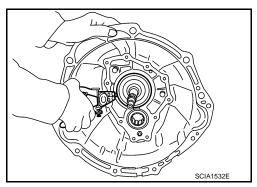
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< UNIT DISASSEMBLY AND ASSEMBLY >

a. Remove mounting nut () from transmission case.

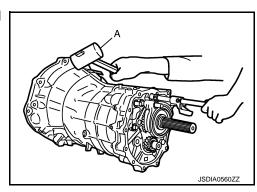


 Remove snap ring from main drive gear bearing, using snap ring pliers.



 c. Carefully tap transmission case, using a soft hammer (A) and then separate adapter plate and transmission case.
 CAUTION:

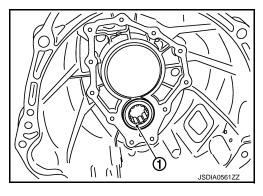
Never drop counter front bearing.



- 20. Remove counter front bearing (1) from transmission case.
- 21. Remove breather tube from transmission case. **CAUTION:**

Never damage transmission case.

22. Remove bracket from transmission case.



SHIFT FORK AND FORK ROD

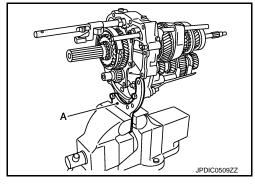
< UNIT DISASSEMBLY AND ASSEMBLY >

 Install adapter setting plate (A) [SST: ST22490000 (-)] to adapter plate and then fixing in adapter setting plate [SST: ST22490000 (-)], using a vise.

CAUTION:

Never directly secure the surface in a vise.

- 2. Remove baffle plate and oil gutter from adapter plate.
- 3. Remove magnet from adapter plate.

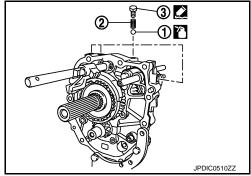


[6MT: FS6R31A]

4. Remove check balls (1), check ball springs (2), and check ball plugs (3) from adapter plate.

CAUTION:

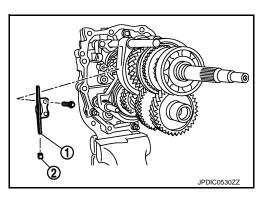
Never drop check ball.



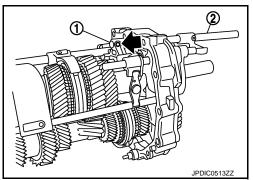
5. Remove 3rd-4th control lever (1) and shifter cap (2) from adapter plate.

CAUTION:

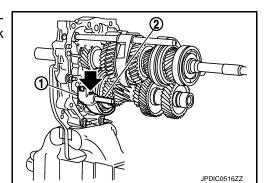
Never lose shifter cap.



6. Remove retaining pin (←), using a pin punch [Commercial service tool] and then remove striking lever (1) and striking rod (2).



7. Remove retaining pin (←), using a pin punch [Commercial service tool] and then remove 3rd-4th shift fork (1) and 3rd-4th fork rod (reversal side) (2).



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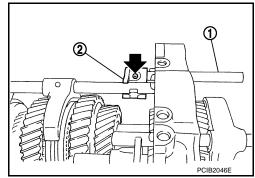
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[6MT: FS6R31A]

8. Remove retaining pin (←), using a pin punch [Commercial service tool] and then remove 3rd-4th fork rod (1) and 3rd-4th fork rod bracket (2).



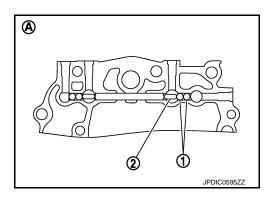
- 9. Remove check balls (1) from adapter plate.
 - A : View from transmission rear side

CAUTION:

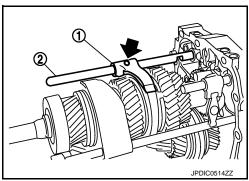
Never drop check ball.

Remove interlock pin (2) from 1st-2nd fork rod.
 CAUTION:

Never drop interlock pin.



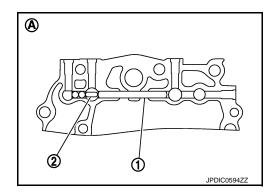
11. Remove retaining pin (←), using a pin punch [Commercial service tool] and then remove 1st-2nd shift fork (1) and 1st-2nd fork rod (2).



- 12. Remove interlock plunger (1) from adapter plate.
 - A : View from transmission rear side
- 13. Remove interlock pin (2) from reverse fork rod.

CAUTION:

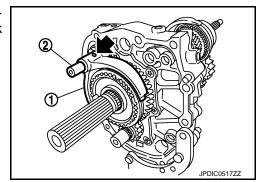
Never drop interlock pin.



14. Remove retaining pin (←), using a pin punch [Commercial service tool] and then remove reverse shift fork (1) and reverse fork rod (2).

CAUTION:

Never drop reverse coupling sleeve.



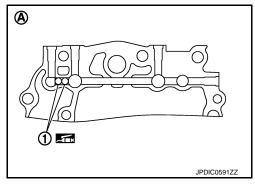
< UNIT DISASSEMBLY AND ASSEMBLY >

15. Remove check balls (1) from adapter plate.

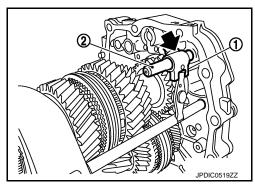
A : View from transmission rear side

CAUTION:

Never drop check ball.

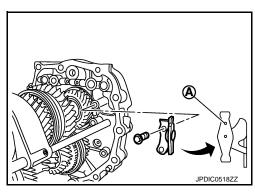


16. Remove retaining pin (←), using a pin punch [Commercial service tool] and then remove 5th-6th fork rod bracket (1) and 5th-6th fork rod (2).

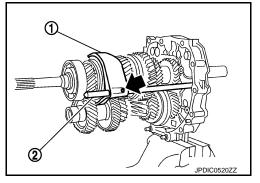


17. Remove 5th-6th control lever from adapter plate.

A: Projection



18. Remove retaining pin (←), using a pin punch [Commercial service tool] and then remove 5th-6th shift fork (1) and 5th-6th fork rod (reversal side) (2).



SHAFT AND GEAR

- 1. Remove reverse synchronizer hub with the following procedure.
- a. Remove snap ring from mainshaft.
- b. Remove snap ring from reverse synchronizer hub.
- Remove reverse spread spring, reverse shifting inserts, and reverse coupling sleeve from reverse synchronizer hub.

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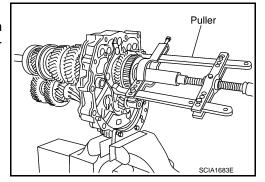
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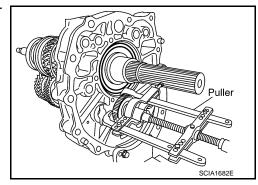
< UNIT DISASSEMBLY AND ASSEMBLY >

- d. Set a puller [Commercial service tool] to reverse main gear.
- e. Remove reverse synchronizer hub together with reverse main gear, reverse baulk ring, and reverse spread spring from main-shaft, using a puller [Commercial service tool].
- 2. Remove reverse needle bearing from mainshaft.
- 3. Remove reverse counter gear with the following procedure.
- a. Remove snap ring from counter shaft.

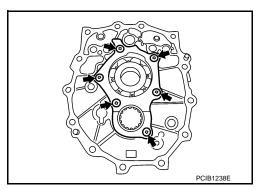


[6MT: FS6R31A]

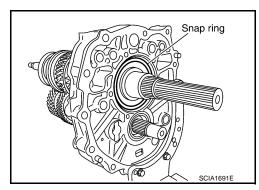
- b. Remove reverse counter gear from counter shaft, using a puller [Commercial service tool].
- 4. Remove counter rear bearing spacer from counter shaft.



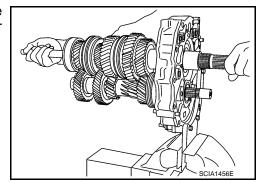
5. Remove mounting bolts (and then remove bearing retainer from adapter plate.



Remove snap ring from mainshaft bearing.

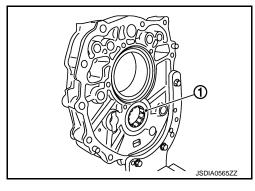


7. Carefully tap mainshaft with a plastic hammer and then remove mainshaft assembly, main drive gear assembly, and counter shaft assembly combined in one unit from adapter plate.



< UNIT DISASSEMBLY AND ASSEMBLY >

- 8. Remove counter rear bearing (1) from adapter plate.
- 9. Remove adapter plate from adapter setting plate [SST: ST22490000 (-)].



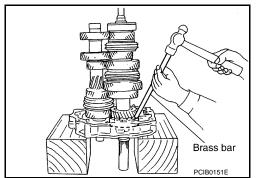
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[6MT: FS6R31A]

WITHOUT S-MODE: Assembly

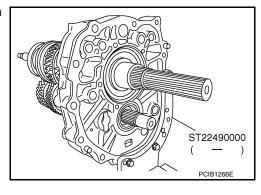
SHAFT AND GEAR

1. Install main drive gear assembly, mainshaft assembly, and counter shaft assembly combined in one unit to adapter plate, using a brass bar.



Install the adapter setting plate [SST] to adapter plate and then fixing in adapter setting plate [SST], using a vise. **CAUTION:**

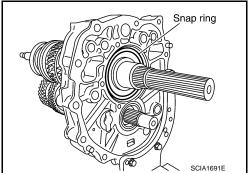
Never directly secure the surface in a vise.



3. Install snap ring to mainshaft bearing. **CAUTION:**

Never reuse snap ring.

4. Apply recommended grease to roller of counter rear bearing.



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< UNIT DISASSEMBLY AND ASSEMBLY >

Install counter rear bearing to adapter plate, using the drift [SST].

CAUTION:

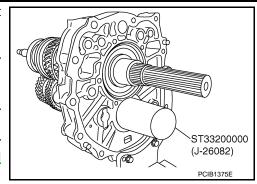
Replace counter rear bearing inner race, counter rear bearing, and counter rear bearing spacer as a set.

- 6. Install bearing retainer with the following procedure.
- a. Apply thread locking sealant to the end of bearing retainer mounting bolts (first 3 to 4 threads).
 - Use Genuine Medium Strength Thread Locking Sealant or an equivalent. Refer to <u>GI-18</u>, "<u>Recommended Chemical</u> <u>Products and Sealants</u>".

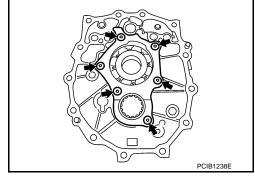
CAUTION:

Remove old sealant and oil adhering to threads.

- Install bearing retainer to adapter plate and then tighten mounting bolts (←) to the specified torque.
- 7. Install reverse synchronizer hub with the following procedure.
- a. Install reverse coupling sleeve and reverse shifting inserts to reverse synchronizer hub.



[6MT: FS6R31A]

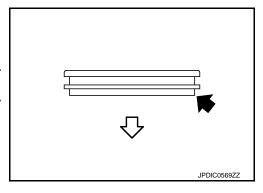


CAUTION:

• Be careful with the orientation of reverse coupling sleeve.

: Reverse main gear side

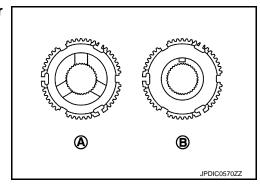
- Never reuse reverse coupling sleeve and reverse synchronizer hub.
- Replace reverse coupling sleeve and reverse synchronizer hub as a set.



 Be careful with the orientation of reverse synchronizer hub.

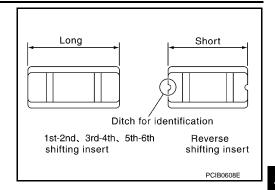
A : Reverse main gear side

B : Snap ring side



< UNIT DISASSEMBLY AND ASSEMBLY >

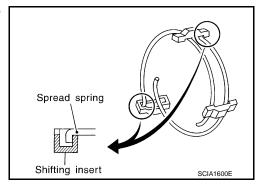
• Be careful with the shape of reverse shifting insert.



[6MT: FS6R31A]

Install reverse spread springs to reverse shifting inserts.
 CAUTION:

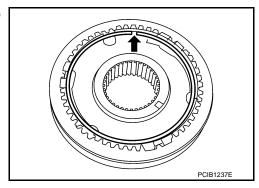
Never install reverse spread spring hook onto the same reverse shifting insert.



c. Install snap ring to reverse synchronizer hub.

CAUTION:

- Never reuse snap ring.
- Never align snap ring notch (with synchronizer hub groove when assembling.



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< UNIT DISASSEMBLY AND ASSEMBLY >

8. Install reverse synchronizer hub assembly (1) with the following procedure.

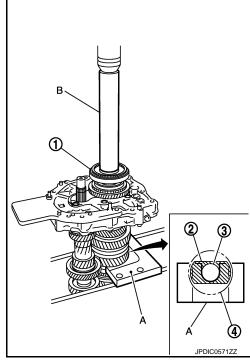
2 : Collar of mainshaft

3 : 6th main gear

4 : 2nd main gear

B : Drift [SST: ST01530000 (-)]

- a. Set the press plate (A) [SST: KV32103300 (J-46529)] to main-shaft as shown in the figure.
- b. Apply gear oil to reverse needle bearing and reverse baulk ring.
- c. Install reverse needle bearing, reverse main gear, and reverse baulk ring to mainshaft.

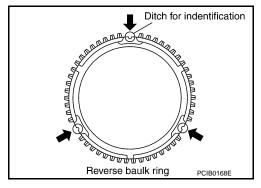


[6MT: FS6R31A]

NOTE:

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

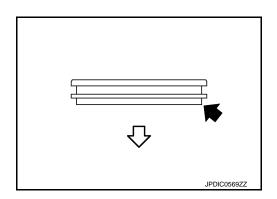
d. Install reverse synchronizer hub assembly to mainshaft with a pressing machine, using the drift [SST: ST01530000 (-)].



CAUTION:

Be careful with the orientation of reverse coupling sleeve.

: Reverse main gear side

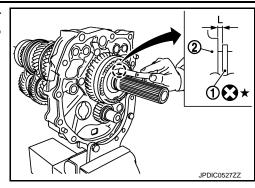


< UNIT DISASSEMBLY AND ASSEMBLY >

 Select and install snap ring (1) so that the end play "L" of mainshaft is adjusted to the standard value. For selecting snap ring, refer to the latest parts information.

2 : Reverse synchronizer hub

End play "L" : Refer to TM-148, "End Play".



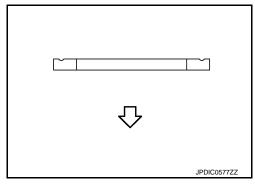
[6MT: FS6R31A]

10. Install reverse counter gear with the following procedure.

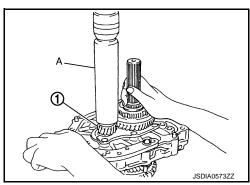
a. Install counter rear bearing spacer to counter shaft.

CAUTION:

- Be careful with the orientation of counter rear bearing spacer.
- Replace counter rear bearing inner race, counter rear bearing, and counter rear bearing spacer as a set.

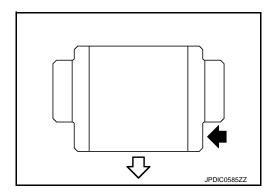


- Install reverse counter gear (1) to counter shaft with a pressing machine, using the drift (A) [SST: ST23860000 (-)].
 CAUTION:
 - Never reuse reverse counter gear.



• Be careful with the orientation of reverse counter gear.

: Counter rear bearing side



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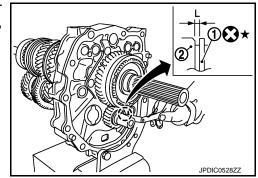
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< UNIT DISASSEMBLY AND ASSEMBLY >

11. Select and install snap ring (1) so that the end play "L" of counter shaft is adjusted to the standard value. For selecting snap ring, refer to the latest parts information.

2 : Reverse counter gear

End play "L": Refer to TM-148, "End Play".



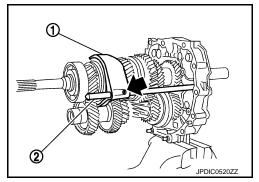
[6MT: FS6R31A]

SHIFT FORK AND FORK ROD

Install 5th-6th shift fork (1) and 5th-6th fork rod (reversal side)
 (2) and then install retaining pin (←) to 5th-6th shift fork, using a pin punch [Commercial service tool].

CAUTION:

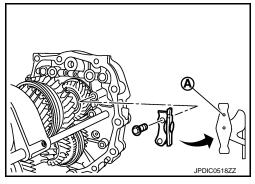
- Never reuse retaining pin.
- Be careful with the orientation of 5th-6th shift fork and 5th-6th fork rod (reversal side).
- Assemble retaining pin from the direction shown by the arrow in the figure until it becomes flush with the end surface of 5th-6th shift fork.



2. Install 5th-6th control lever to adapter plate and then tighten mounting bolts to the specified torque.

CAUTION:

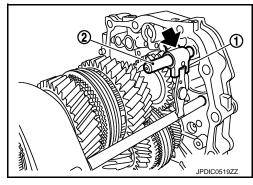
Set the projection (A) upward.



3. Install 5th-6th fork rod bracket (1) and 5th-6th fork rod (2) and then install retaining pin (←) to 5th-6th fork rod bracket, using a pin punch [Commercial service tool].

CAUTION:

- · Never reuse retaining pin.
- Be careful with the orientation of 5th-6th fork rod bracket and 5th-6th fork rod.
- Assemble retaining pin from the direction shown by the arrow in the figure until it becomes flush with the end surface of 5th-6th fork rod bracket.



< UNIT DISASSEMBLY AND ASSEMBLY >

4. Apply recommended grease to check balls (1) and then install its to adapter plate.

A : View from transmission rear side

CAUTION:

Never drop check ball.

Apply recommended grease to interlock pin and then install it to reverse fork rod.

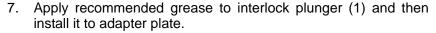
CAUTION:

Never drop interlock pin.

6. Install reverse shift fork (1) and reverse fork rod (2) and then install retaining pin (←) to reverse shift fork, using a pin punch [Commercial service tool].

CAUTION:

- · Never reuse retaining pin.
- Be careful with the orientation of reverse shift fork and reverse fork rod.
- Assemble retaining pin from the direction shown by the arrow in the figure until it becomes flush with the end surface of reverse shift fork.
- Never drop reverse coupling sleeve.



A : View from transmission rear side

8. Apply recommended grease to interlock pin and then install it to 1st-2nd fork rod.

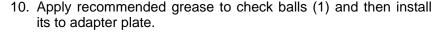
CAUTION:

Never drop interlock pin.

 Install 1st-2nd shift fork (1) and 1st-2nd fork rod (2) and then install retaining pin (←) to 1st-2nd shift fork, using a pin punch [Commercial service tool].

CAUTION:

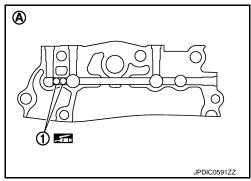
- Never reuse retaining pin.
- Be careful with the orientation of 1st-2nd shift fork and 1st-2nd fork rod.
- Assemble retaining pin from the direction shown by the arrow in the figure until it becomes flush with the end surface of 1st-2nd shift fork.



A : View from transmission rear side

CAUTION:

Never drop check ball.

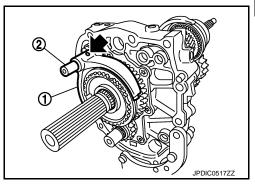


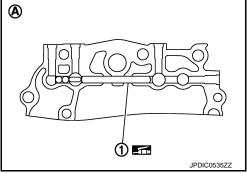
[6MT: FS6R31A]

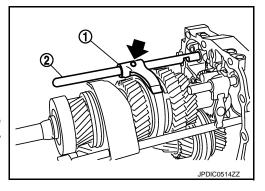
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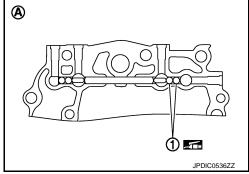
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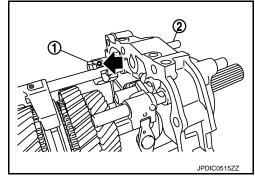


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- 11. Install 3rd-4th fork rod bracket (1) and 3rd-4th fork rod (2) and then install retaining pin (←) to 3rd-4th fork rod bracket, using a pin punch [Commercial service tool].
 - **CAUTION:**
 - · Never reuse retaining pin.
 - Be careful with the orientation of 3rd-4th fork rod bracket.
 - Assemble retaining pin from the direction shown by the arrow in the figure until it becomes flush with the end surface of 3rd-4th fork rod bracket.

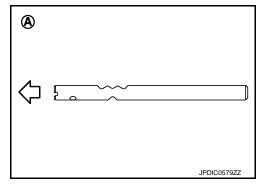


[6MT: FS6R31A]

• Be careful with the orientation of 3rd-4th fork rod.

: Transmission front

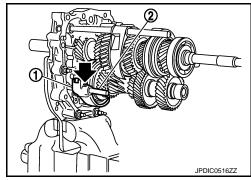
A : View from transmission top side



12. Install 3rd-4th shift fork (1) and 3rd-4th fork rod (reversal side)
(2) and then install retaining pin (←) to 3rd-4th shift fork, using a pin punch [Commercial service tool].

CAUTION:

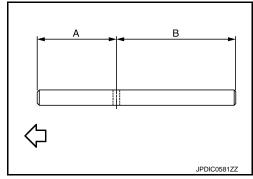
- · Never reuse retaining pin.
- Be careful with the orientation of 3rd-4th shift fork.
- Assemble retaining pin from the direction shown by the arrow in the figure until it becomes flush with the end surface of 3rd-4th shift fork.



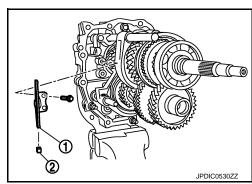
 Be careful with the orientation of 3rd-4th fork rod (reversal side).

<□ : Transmission front

A : Short B : Long



- 13. Install 3rd-4th control lever (1) and shifter cap (2) to adapter plate and then tighten mounting bolts to the specified torque. **CAUTION:**
 - Be careful with the orientation of 3rd-4th control lever.
 - Never lose shifter cap.

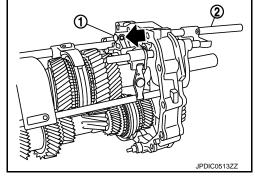


< UNIT DISASSEMBLY AND ASSEMBLY >

14. Install striking lever (1) and striking rod (2) and then install retaining pin (←) to striking lever, using a pin punch [Commercial service tool].

CAUTION:

- · Never reuse retaining pin.
- Be careful with the orientation of striking lever and striking rod.
- Assemble retaining pin from the direction shown by the arrow in the figure until it becomes flush with the end surface of striking lever.



[6MT: FS6R31A]

15. Apply gear oil to check balls (1) and then install check balls and check ball springs (2) to adapter plate.

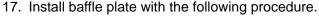
CAUTION:

Never drop check ball.

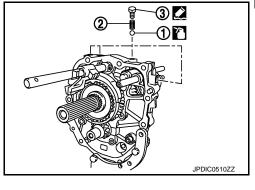
- 16. Apply recommended sealant to threads of check ball plugs (3) and then tighten its to the specified torque.
 - Use Genuine Silicone RTV or an equivalent. Refer to GI-18, "Recommended Chemical Products and Sealants".

CAUTION:

Remove old sealant and oil adhering to threads.

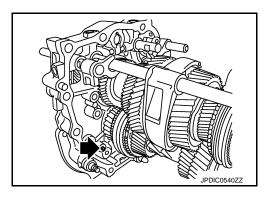


 Insert baffle plate (1) until its projection contacts groove (A) of oil gutter (2).



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b. Align baffle plate hole to adapter plate dowel pin (←).



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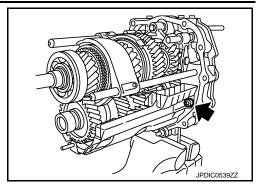
< UNIT DISASSEMBLY AND ASSEMBLY >

- c. Install mounting bolt (to adapter plate and then tighten mounting bolt to the specified torque.
- 18. Remove adapter plate assembly from vise.

CAUTION:

Never damage baffle plate.

19. Remove adapter setting plate [SST: ST22490000 (-)] from adapter plate.



[6MT: FS6R31A]

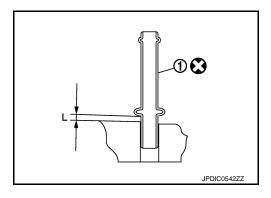
CASE AND EXTENSION

1. Install breather tube (1) to transmission case.

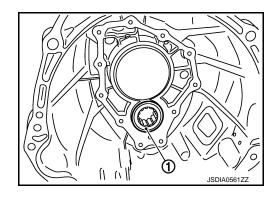
Dimension "L" : 2 mm (0.08 in) or less

CAUTION:

Never bend breather tube.



- 2. Install transmission case with the following procedure.
- a. Install counter front bearing (1) to transmission case.
- b. Apply recommended grease to roller of counter front bearing.



< UNIT DISASSEMBLY AND ASSEMBLY >

Apply recommended sealant to mating surface of transmission case as shown in the figure.

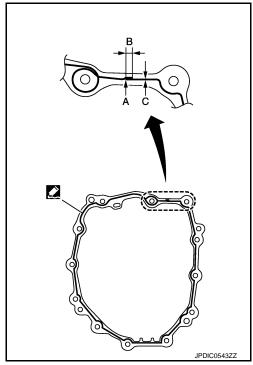
A : Start and finish point shall be in the center of two bolts.

Dimension "B" : 3 - 5 mm (0.12 - 0.20 in)Sealant width "C" : 1 - 2 mm (0.04 - 0.08 in)Sealant height "C" : 0.4 - 1 mm (0.016 - 0.04 in)

• Use Genuine Silicone RTV or an equivalent. Refer to GI-18, "Recommended Chemical Products and Sealants".

CAUTION:

- Remove old sealant adhering to the mounting surfaces. Also remove any moisture, oil, or foreign material adhering to both mounting surfaces.
- Apply sealant so as not to break the bead.
- d. Install magnet to adapter plate.



e. Install transmission case to adapter plate.

CAUTION:

- Check for baffle plate weld bolt location while installing.
- Check that magnet is within the specified area of adapter plate while installing.
- Never drop counter front bearing.

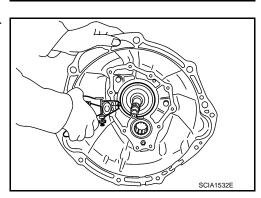
NOTE:

Apply grease to magnet if it is difficult to keep magnet within the specified area of adapter plate.

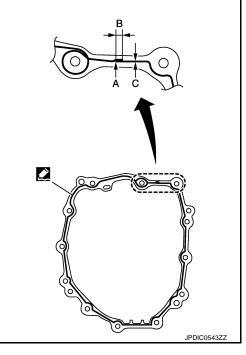
f. Install snap ring to main drive gear bearing, using snap ring pli-

CAUTION:

Never reuse snap ring.



Install baffle plate with the following procedure.



[6MT: FS6R31A]

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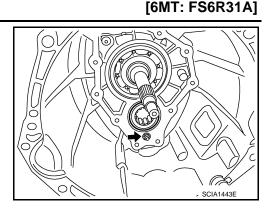
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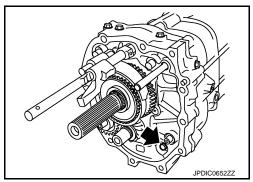
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< UNIT DISASSEMBLY AND ASSEMBLY >

a. Tighten mounting nut (to the specified torque.



b. Install mounting bolt (to adapter plate and then tighten mounting bolt to the specified torque.



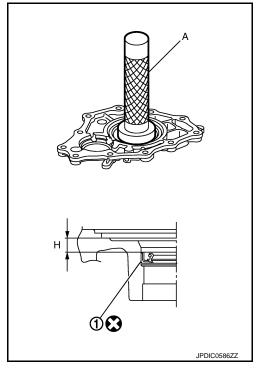
- 4. Install front cover with the following procedure.
- a. Install front oil seal (1) to front cover, using the drift (A) [SST: KV38102100 (J-25803-01)].

Dimension "H": 8.55 – 9.55 mm (0.3366 – 0.3760 in)

CAUTION:

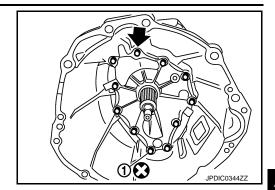
Never incline front oil seal.

- b. Install front cover gasket and front cover to transmission case. **CAUTION:**
 - Never reuse front cover gasket.
 - Never damage front oil seal.
 - Remove any moisture, oil, or foreign material adhering to both mating surfaces.



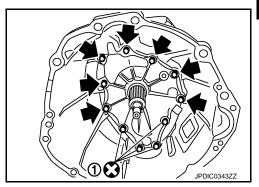
< UNIT DISASSEMBLY AND ASSEMBLY >

c. Temporarily tighten mounting bolt (and sealing bolt (1).

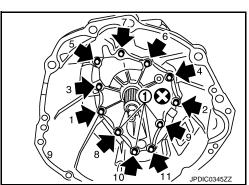


[6MT: FS6R31A]

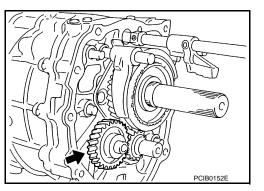
d. Temporarily tighten mounting bolts (←) and sealing bolts (1).



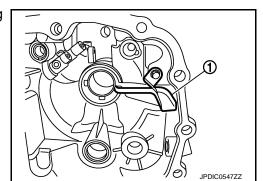
e. Tighten mounting bolts (←) and sealing bolts (1) to the specified torque in the numerical order as shown in the figure.



- 5. Install reverse idler shaft assembly (to adapter plate.
- 6. Install rear extension with the following procedure.
- a. Install oil gutter with the following procedure.
- i. Seat the prong of oil gutter in the groove on cap.



 Install oil gutter (1) to rear extension and then tighten mounting bolt to the specified torque.



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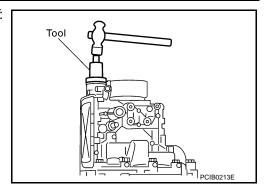
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[6MT: FS6R31A] < UNIT DISASSEMBLY AND ASSEMBLY >

Install striking rod oil seal to rear extension, using the drift [SST: ST33061000 (J-8107-2)].

CAUTION:

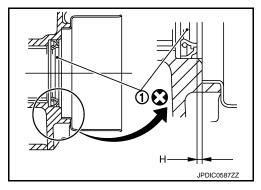
- Never reuse striking rod oil seal.
- Never incline striking rod oil seal.
- Install dust cover to rear extension.



d. Install rear oil seal (1) to rear extension, using the drift [SST: ST33400001 (J-26082)].

CAUTION:

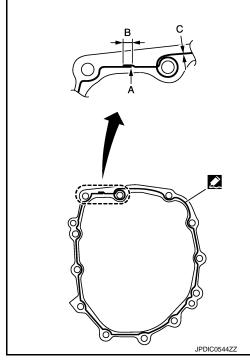
Never incline rear oil seal.



- Apply recommended sealant to mating surface of rear extension as shown in the figure.
 - A : Start and finish point shall be in the center of two bolts.

Dimension "B" : 3 – 5 mm (0.12 – 0.20 in) : 1 - 2 mm (0.04 - 0.08 in)Sealant width "C" : 0.4 – 1 mm (0.016 – 0.04 in) Sealant height "C"

- Use Genuine Silicone RTV or an equivalent. Refer to GI-18, "Recommended Chemical Products and Sealants". **CAUTION:**
- Remove old sealant adhering to the mounting surfaces. Also remove any moisture, oil, or foreign material adhering to both mounting surfaces.
- · Apply sealant so as not to break the bead.



Install rear extension to adapter plate and then tighten mounting bolts (+) to the specified torque in the numerical order as shown in the figure.

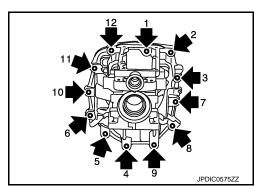
CAUTION:

Never damage rear oil seal and striking rod oil seal.

Install control lever housing to rear extension and then tighten mounting bolts to the specified torque.

CAUTION:

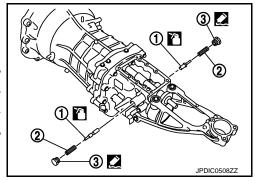
Never hold control lever housing to prevent the bushing of control lever housing from deformation when moving transmission assembly.



< UNIT DISASSEMBLY AND ASSEMBLY >

- 8. Install return spring plug with the following procedure.
- a. Apply gear oil to return spring plungers (1).
- Install return spring plungers and return springs (2) to rear extension.

Region	Return spring identification mark	Plunger groove
RH	Brown	Without
LH	Blue	With



[6MT: FS6R31A]

CAUTION:

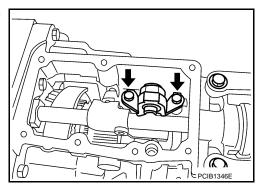
The right and left return springs and return spring plungers are different, so make sure they are installed correctly.

- c. Apply recommended sealant to threads of return spring plugs (3) and then tighten its to the specified torque.
 - Use Genuine Silicone RTV or an equivalent. Refer to <u>GI-18</u>, "<u>Recommended Chemical Products and Sealants"</u>.

CAUTION:

Remove old sealant and oil adhering to threads.

Install control bracket to rear extension and then tighten mounting bolts (←) to the specified torque.

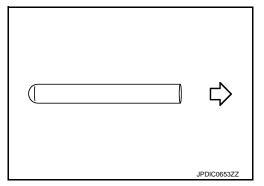


- 10. Install park/neutral position (PNP) switch with the following procedure.
- a. Install plunger to rear extension.

CAUTION:

Be careful with orientation of plunger.

⟨□ : Park/Neutral position (PNP) switch side

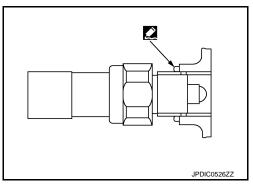


b. Temporarily tighten back-up lamp switch onto rear extension by rotating once or twice.

CAUTION:

Remove old sealant and oil adhering to threads.

- c. Apply recommended sealant to threads of park/neutral position (PNP) switch as shown in the figure.
 - Use Genuine Silicone RTV or an equivalent. Refer to GI-18, "Recommended Chemical Products and Sealants".
- d. Tighten park/neutral position (PNP) switch to the specified torque.



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< UNIT DISASSEMBLY AND ASSEMBLY >

- 11. Install back-up lamp switch with the following procedure.
- a. Temporarily tighten back-up lamp switch onto rear extension by rotating once or twice.

CAUTION:

Remove old sealant and oil adhering to threads.

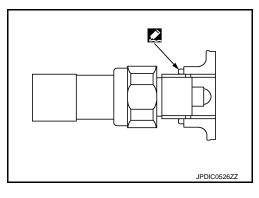
- b. Apply recommended sealant to threads of back-up lamp switch as shown in the figure.
 - Use Genuine Silicone RTV or an equivalent. Refer to GI-18, "Recommended Chemical Products and Sealants".
- c. Tighten back-up lamp switch to the specified torque.
- 12. Install control rod with the following procedure.
- a. Install boot to striking rod oil seal and then install control rod to striking rod.

CAUTION:

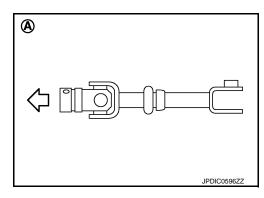
· Be careful with the orientation of control rod.

: Transmission front

A : View from transmission top side

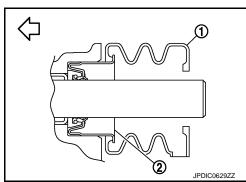


[6MT: FS6R31A]



• Be careful with the orientation of boot (1).

: Transmission front: Striking rod oil seal



- Install retaining pin (←) to control rod, using a pin punch [Commercial service tool].
 - 1 : Boot

CAUTION:

- Never reuse retaining pin.
- Assemble retaining pin from the direction shown by the arrow in the figure until it becomes flush with the end surface of control rod.
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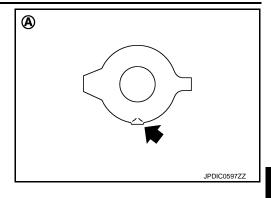
c. Install boot to control rod.CAUTION:

< UNIT DISASSEMBLY AND ASSEMBLY >

- Be careful with the orientation of boot.
 - A : View from transmission rear side
- Fit control rod boot to the groove on control rod.
- d. Install control rod boot to control rod.

CAUTION:

Fit control rod boot to the groove on control rod.



[6MT: FS6R31A]

- 13. Install brackets with the following procedure.
- Install bracket (1) so that it contacts transmission case rib (A) and then tighten mounting bolt to the specified torque.
 CAUTION:

Be careful with orientation of bracket.

- b. Install bracket (2) so that it contacts the projection (B) of rear extension and then tighten mounting bolt to the specified torque.
- c. Install bracket (3) to rear extension and then tighten mounting bolt to the specified torque.
- d. Install bracket to rear extension and then tighten mounting bolt to the specified torque.
- 14. Install rear extension upper cover with the following procedure.
- a. Apply gear oil to check ball.

CAUTION:

Never drop check ball.

- b. Install check ball and check select spring to rear extension.
- c. Install rear extension upper cover gasket and rear extension upper cover to rear extension.

CAUTION:

- Never reuse rear extension upper cover gasket.
- Remove any moisture, oil, or foreign material adhering to both mating surfaces.
- Temporarily tighten rear extension upper cover mounting bolts while holding rear extension upper cover.

CAUTION:

Avoid tangling check select spring.

- e. Tighten mounting bolts () to the specified torque in the numerical order as shown in the figure.
- 15. Install drain plug with the following procedure.
- Install gasket to drain plug and then install it to transmission case.

CAUTION:

Never reuse gasket.

- b. Tighten drain plug to the specified torque.
- 16. Install filler plug with the following procedure.
- Install gasket to filler plug and then install it to transmission case.

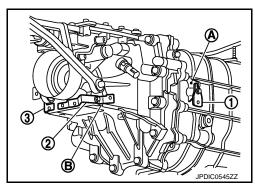
CAUTION:

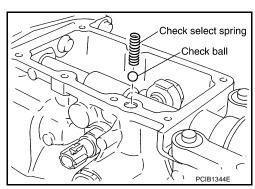
Never reuse gasket.

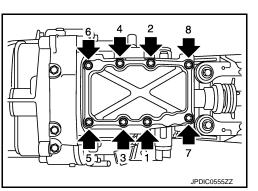
b. Tighten filler plug to the specified torque.

CAUTION:

After gear oil is filled, tighten filler plug to the specified torque.







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< UNIT DISASSEMBLY AND ASSEMBLY >

WITHOUT S-MODE: Inspection

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[6MT: FS6R31A]

INSPECTION BEFORE DISASSEMBLY

Shaft

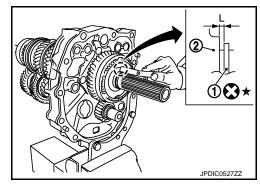
Before disassembly, measure the end play "L" for each position. If the end play is outside the standard value, disassemble and inspect.

Mainshaft

1 : Snap ring

2 : Reverse synchronizer hub

End play "L" : Refer to TM-148, "End Play".

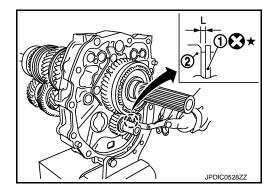


Counter shaft

1 : Snap ring

2 : Reverse counter gear

End play "L": Refer to TM-148, "End Play".



INSPECTION AFTER DISASSEMBLY

Case and Plate

- Check the bearing mounting surface for wear, cracks, and damages. Replace if necessary.
- Check the mating surface for wear, cracks, and damages. Replace if necessary.

Extension and Cover

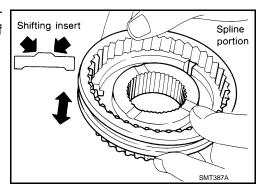
- Check the oil seal mounting surface for wear, cracks, and damages. Replace if necessary.
- Check the mating surface for wear, cracks, and damages. Replace if necessary.

Gear

Check the gears for any damage, scaling, or uneven wear. Replace if necessary.

Synchronizer Hub and Coupling Sleeve

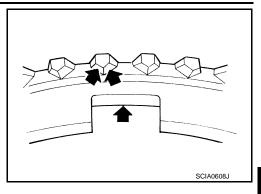
- Check the contact surface of the coupling sleeve, synchronizer hub, and shifting inserts for damage and uneven wear. Replace if necessary.
- The coupling sleeve and synchronizer hub moves smoothly.



Baulk Ring and Spread Spring

< UNIT DISASSEMBLY AND ASSEMBLY >

- Check the cam surface and contact surface of the baulk ring for damage and uneven wear. Replace if necessary.
- Check the spread springs for damage. Replace if necessary.



[6MT: FS6R31A]

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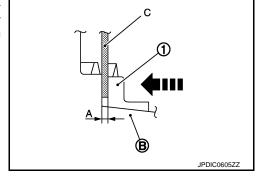
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Baulk Ring Clearance for Single Cone Synchronizer (Reverse) Measure the clearance "A" when pressing the baulk ring (1) against the cone (B) of clutch gear by hands at 2 points or more on the opposite side, using a feeler gauge (C), and then calculate the mean value. Replace if outside the limit value.

Clearance "A": Refer to <u>TM-148</u>, "Baulk Ring Clearance".



Bearing

Check the bearing for damage and unsmooth rotation. Replace if necessary.

WITH S-MODE

WITH S-MODE: Exploded View

CASE AND EXTENSION

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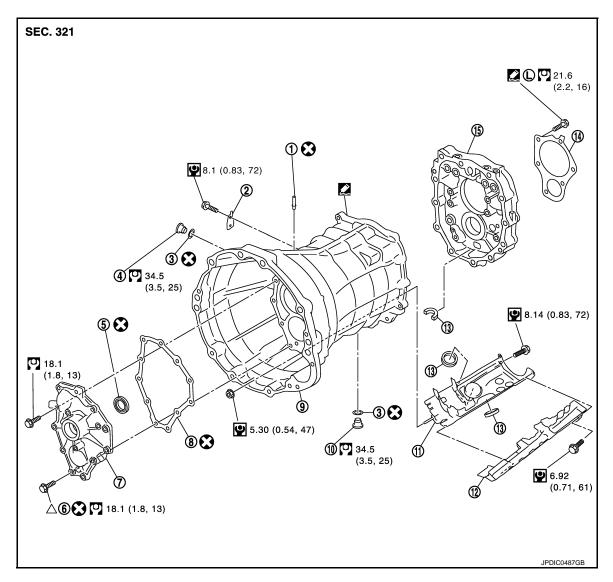
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- 1. Breather tube
- 4. Filler plug
- 7. Front cover
- 10. Drain plug
- 13. Magnet

- 2. Bracket
- 5. Front oil seal
- 8. Front cover gasket
- 11. Baffle plate
- 14. Bearing retainer

- 3. Gasket
- 6. Sealing bolt
- 9. Transmission case
- 12. Oil gutter
- 15. Adapter plate
- Apply Genuine Silicone RTV or an equivalent. Refer to GI-18, "Recommended Chemical Products and Sealants".

Apply Genuine Medium Strength Thread Locking Sealant or an equivalent. Refer to GI-18, "Recommended Chemical Products and Sealants".

 Δ : Refer to "CASE AND EXTENSION" in $\underline{\mathsf{TM-96}}$, "WITH S-MODE : Assembly" for the locations.

Refer to GI-4, "Components" for symbols not described on the above.

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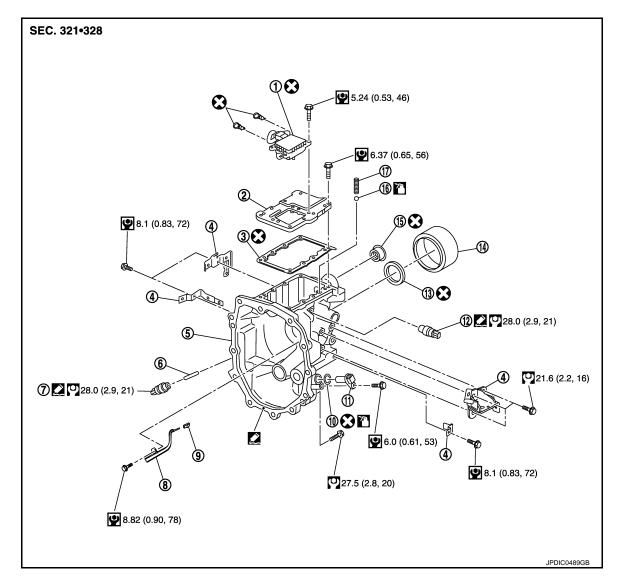
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- 1. Gear lever position sensor
- 4. Bracket
- 7. Park/Neutral position (PNP) switch

Refer to GI-4, "Components" for symbols not described on the above.

- 10. O-ring
- 13. Rear oil seal

: Apply gear oil.

- 16. Check ball
- 2. Rear extension upper cover
- 5. Rear extension
- 8. Oil gutter
- 11. Input speed sensor
- 14. Dust cover
- 17. Check select spring

Apply Genuine Silicone RTV or an equivalent. Refer to GI-18, "Recommended Chemical Products and Sealants".

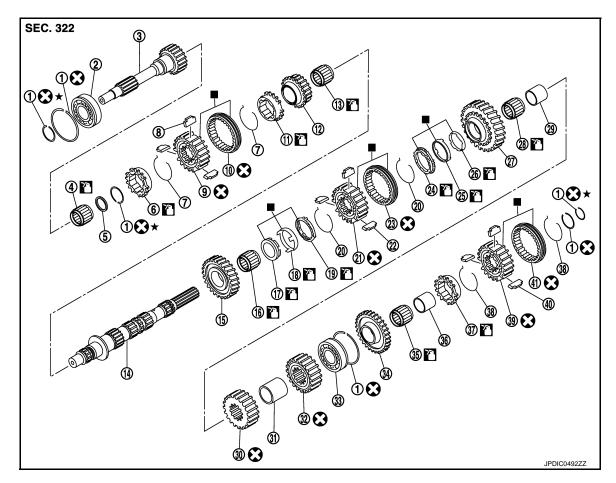
- 3. Rear extension upper cover gasket
- 6. Plunger
- 9. Cap
- 12. Back-up lamp switch
- 15. Striking rod oil seal

SHAFT AND GEAR

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[6MT: FS6R31A]



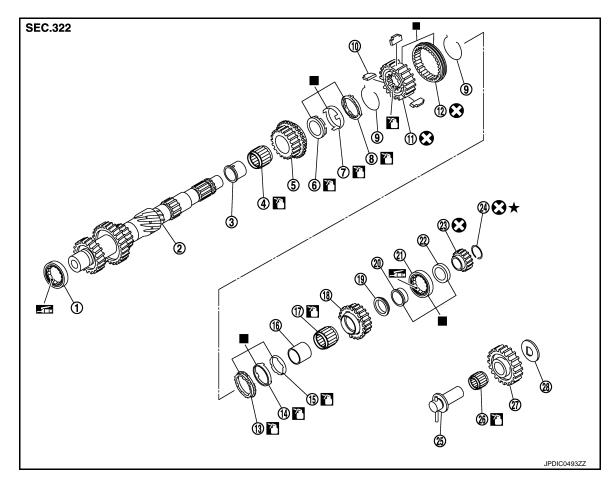
- 1. Snap ring
- 4. Main pilot bearing
- 5th-6th spread spring 7.
- 5th-6th coupling sleeve 10.
- 6th needle bearing 13.
- 2nd needle bearing
- 19. 2nd outer baulk ring
- 22. 1st-2nd shifting insert
- 25. 1st synchronizer cone
- 28. 1st needle bearing
- 31. 3rd-4th main spacer
- 34. Reverse main gear
- 37. Reverse baulk ring
- 40. Reverse shifting insert
- : Replace the parts as a set.
- : Apply gear oil.

- 2. Main drive gear bearing
- 5. Pilot bearing spacer
- 8. 5th-6th shifting insert
- 6th baulk ring 11.
- Mainshaft 14.
- 17. 2nd inner baulk ring
- 1st-2nd spread spring
- 23. 1st-2nd coupling sleeve
- 26. 1st inner baulk ring
- 29. 1st gear bushing
- 32. 4th main gear
- 35. Reverse needle bearing
- 38. Reverse spread spring
- 41. Reverse coupling sleeve

- 3. Main drive gear
- 6. 5th baulk ring
- 9. 5th-6th synchronizer hub
- 6th main gear 12.
- 2nd main gear
- 2nd synchronizer cone
- 1st-2nd synchronizer hub
- 1st outer baulk ring 24.
- 27. 1st main gear
- 30. 3rd main gear
- 33. Mainshaft bearing
- 36. Reverse main gear bushing
- Reverse synchronizer hub 39.

Refer to GI-4, "Components" for symbols not described on the above.

· Apply gear oil to gears, shafts, synchronizers, and bearings when assembling.



1. Counter front bearing

4. 3rd needle bearing

7. 3rd synchronizer cone

10. 3rd-4th shifting insert

13. 4th outer baulk ring

16. 4th gear bushing

19. 4th counter gear thrust washer

22. Counter rear bearing spacer

25. Reverse idler shaft

28. Reverse idler thrust washer

: Replace the parts as a set.

: Apply gear oil.

Apply lithium-based grease including molybdenum disulphide.

Refer to GI-4, "Components" for symbols not described on the above.

· Apply gear oil to gears, shafts, synchronizers, and bearings when assembling.

SHIFT FORK AND FORK ROD

2. Counter shaft

5. 3rd counter gear

8. 3rd outer baulk ring

11. 3rd-4th synchronizer hub

14. 4th synchronizer cone

17. 4th needle bearing

20. Counter rear bearing inner race

23. Reverse counter gear

26. Reverse idler needle bearing

3. 3rd gear bushing

6. 3rd inner baulk ring

9. 3rd-4th spread spring

12. 3rd-4th coupling sleeve

15. 4th inner baulk ring

18. 4th counter gear

21. Counter rear bearing

24. Snap ring

27. Reverse idler gear

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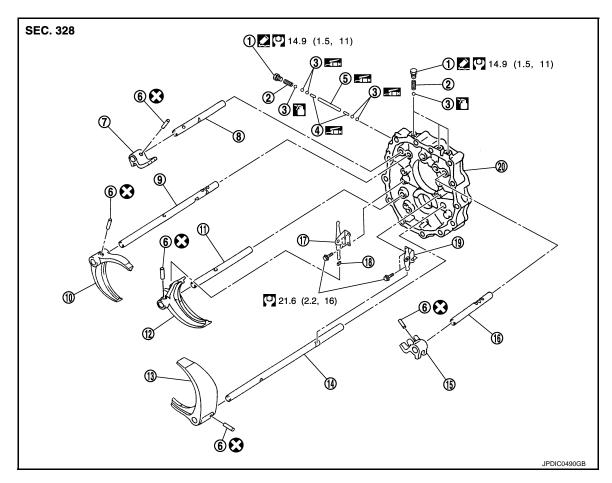
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[6MT: FS6R31A]



- 1. Check ball plug
- 4. Interlock pin
- 7. 3rd-4th fork rod bracket
- 10. 1st-2nd shift fork
- 13. 5th-6th shift fork
- 16. 5th-6th fork rod
- 19. 5th-6th control lever

- 2. Check ball spring
- Interlock plunger
- 8. 3rd-4th fork rod
- 11. 3rd-4th fork rod (reversal side)
- 14. 5th-6th fork rod (reversal side)
- 17. 3rd-4th control lever
- 20. Adapter plate

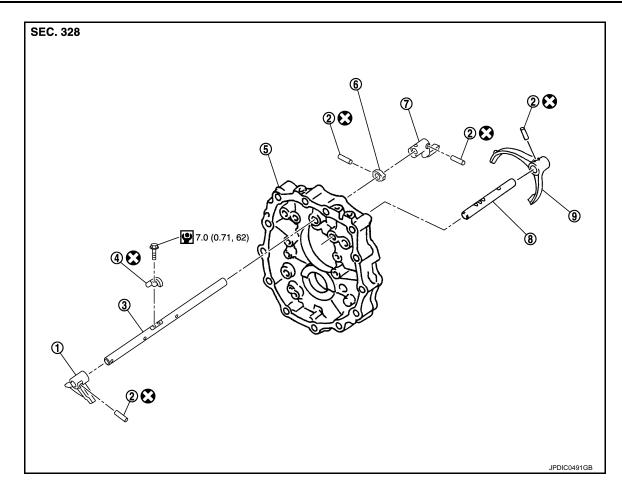
- 3. Check ball
- 6. Retaining pin
- 9. 1st-2nd fork rod
- 12. 3rd-4th shift fork
- 15. 5th-6th fork rod bracket
- 18. Shifter cap

: Apply gear oil.

Apply lithium-based grease including molybdenum disulphide.

Apply Genuine Silicone RTV or an equivalent. Refer to GI-18, "Recommended Chemical Products and Sealants".

Refer to GI-4, "Components" for symbols not described on the above.



- 1. Striking lever
- 4. Gear lever position sensor magnet
- 7. Low/high control lever
- 2. Retaining pin
- 5. Adapter plate
- 8. Reverse fork rod
- Refer to GI-4, "Components" for the symbols in the figure.

- 3. Striking rod
- 6. Stopper ring
- 9. Reverse shift fork

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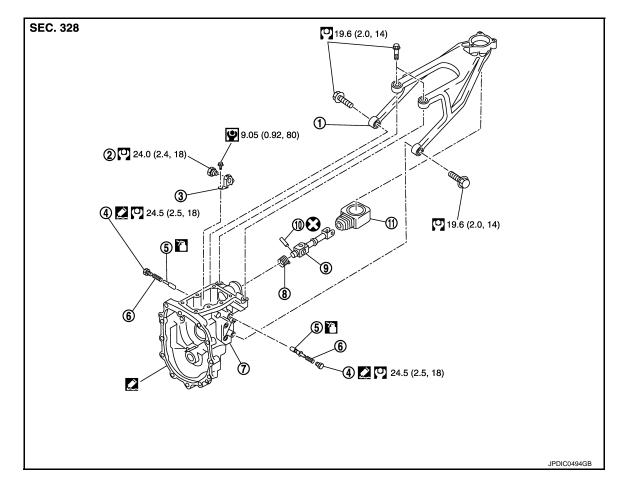
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- 1. Control lever housing
- 4. Return spring plug
- 7. Rear extension
- 10. Retaining pinApply gear oil.

- 2. Check shift pin
- 5. Return spring plunger
- 8. Boot
- 11. Control rod boot

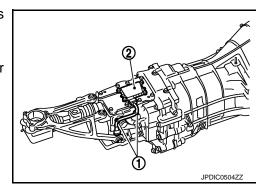
- 3. Control bracket
- 6. Return spring
- Control rod

WITH S-MODE: Disassembly

Apply Genuine Silicone RTV or an equivalent. Refer to <u>GI-18</u>, "<u>Recommended Chemical Products and Sealants</u>". Refer to <u>GI-4</u>, "<u>Components</u>" for symbols not described on the above.

CASE AND EXTENSION

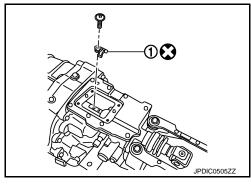
- 1. Remove drain plug and gasket from transmission case and then drain gear oil.
- 2. Remove filler plug and gasket from transmission case.
- 3. Remove gear lever position sensor with the following procedure.
- a. Remove clips (1) from gear lever position sensor (2) harness and bracket.
- b. Remove gear lever position sensor harness from bracket.
- Remove gear lever position sensor from rear extension upper cover.



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< UNIT DISASSEMBLY AND ASSEMBLY >

- 4. Remove gear lever position sensor magnet (1) from striking rod.
- Remove rear extension upper cover with the following procedure.
- a. Remove rear extension upper cover mounting bolts while holding rear extension upper cover.
- Remove rear extension upper cover and rear extension upper cover gasket from rear extension.

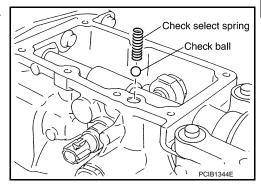


[6MT: FS6R31A]

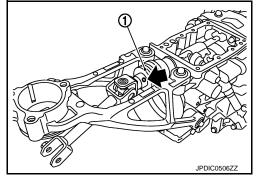
Remove check select spring and check ball from rear extension. CAUTION:

Never drop check ball.

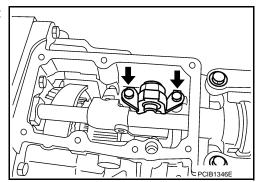
- 7. Remove control rod with the following procedure.
- Remove control rod boot from control rod.



- b. Remove boot (1) from control rod as shown in the figure.
- Remove retaining pin () from control rod, using a pin punch [Commercial service tool] and then remove control rod from striking rod.
- d. Remove boot from striking rod oil seal.
- 8. Remove park/neutral position (PNP) switch and plunger from rear extension.
- 9. Remove back-up lamp switch from rear extension.



10. Remove mounting bolts (←) and then remove control bracket from rear extension.

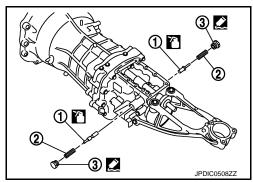


11. Remove return spring plungers (1), return springs (2), and return spring plugs (3) from rear extension.

CAUTION:

Return spring and return spring plunger have different lengths for right and left sides. Identify right and left side and then store.

- 12. Remove input speed sensor with the following procedure.
- a. Remove input speed sensor from rear extension. **CAUTION:**
 - Never disassemble input speed sensor.
 - Never impact input speed sensor by dropping or others.



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< UNIT DISASSEMBLY AND ASSEMBLY >

- Never place input speed sensor near magnetic materials.
- b. Remove O-ring from input speed sensor.
- 13. Remove rear oil seal from rear extension, using the puller [SST: KV381054S0 (J-34286)].

CAUTION:

Never damage rear extension.

- 14. Remove brackets from rear extension.
- 15. Remove control lever housing from rear extension.

CAUTION:

Never hold control lever housing to prevent the bushing of control lever housing from deformation when moving transmission assembly.

16. Remove rear extension from adapter plate, using a soft hammer. CAUTION:

Never drop reverse idler thrust washer.

17. Remove striking rod oil seal from rear extension.

CAUTION:

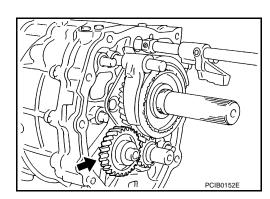
Never damage rear extension.

18. Remove dust cover from rear extension.

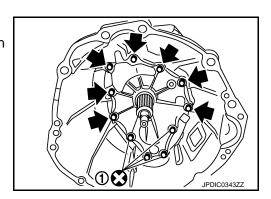
CAUTION:

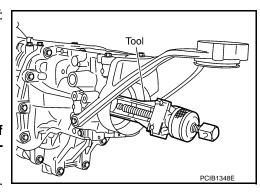
Never damage rear extension.

- 19. Remove oil gutter with the following procedure.
- a. Remove oil gutter from rear extension.
- b. Remove cap from oil gutter.
- 20. Remove reverse idler shaft assembly (from adapter plate.



- 21. Remove front cover with the following procedure.
- a. Remove mounting bolts (and sealing bolts (1).
- Remove front cover and front cover gasket from transmission case.





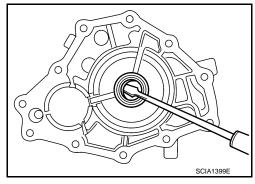
[6MT: FS6R31A]

< UNIT DISASSEMBLY AND ASSEMBLY >

 Remove front oil seal from front cover, using a flat-bladed screwdriver.

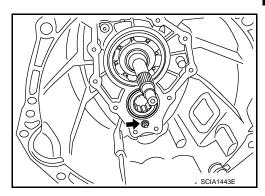
CAUTION:

Never damage front cover.

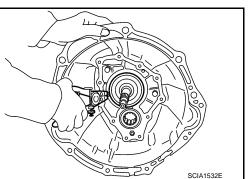


[6MT: FS6R31A]

- 22. Remove transmission case with the following procedure.
- a. Remove mounting nut (from transmission case.

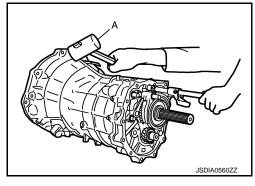


b. Remove snap ring from main drive gear bearing, using snap ring pliers.



 c. Carefully tap transmission case, using a soft hammer (A) and then separate adapter plate and transmission case.
 CAUTION:

Never drop counter front bearing.



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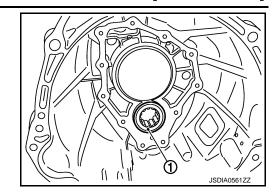
< UNIT DISASSEMBLY AND ASSEMBLY >

- 23. Remove counter front bearing (1) from transmission case.
- 24. Remove breather tube from transmission case.

CAUTION:

Never damage transmission case.

25. Remove bracket from transmission case.



[6MT: FS6R31A]

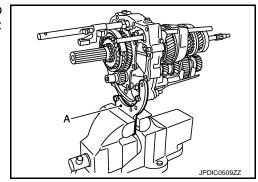
SHIFT FORK AND FORK ROD

1. Install adapter setting plate (A) [SST: ST22490000 (-)] to adapter plate and then fixing in adapter setting plate [SST: ST22490000 (-)], using a vise.

CAUTION:

Never directly secure the surface in a vise.

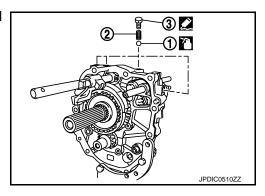
- 2. Remove baffle plate and oil gutter from adapter plate.
- 3. Remove magnets from baffle plate.
- 4. Remove magnet from adapter plate.



Remove check balls (1), check ball springs (2), and check ball plugs (3) from adapter plate.

CAUTION:

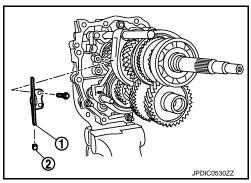
Never drop check ball.



6. Remove 3rd-4th control lever (1) and shifter cap (2) from adapter plate.

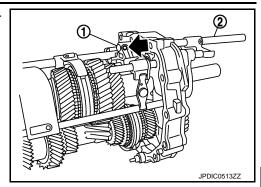
CAUTION:

Never lose shifter cap.



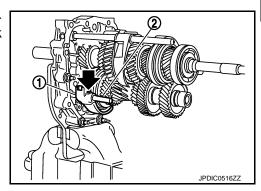
< UNIT DISASSEMBLY AND ASSEMBLY >

Remove retaining pin (←), using a pin punch [Commercial service tool] and then remove striking lever (1) and striking rod (2).

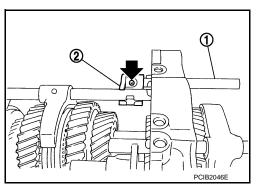


[6MT: FS6R31A]

8. Remove retaining pin (←), using a pin punch [Commercial service tool] and then remove 3rd-4th shift fork (1) and 3rd-4th fork rod (reversal side) (2).



Remove retaining pin (←), using a pin punch [Commercial service tool] and then remove 3rd-4th fork rod (1) and 3rd-4th fork rod bracket (2).



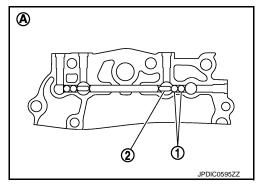
- 10. Remove check balls (1) from adapter plate.
 - A : View from transmission rear side

CAUTION:

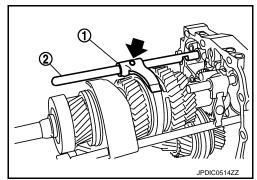
Never drop check ball.

11. Remove interlock pin (2) from 1st-2nd fork rod. CAUTION:

Never drop interlock pin.



Remove retaining pin (←), using a pin punch [Commercial service tool] and then remove 1st-2nd shift fork (1) and 1st-2nd fork rod (2).



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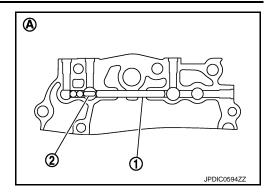
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< UNIT DISASSEMBLY AND ASSEMBLY >

- 13. Remove interlock plunger (1) from adapter plate.
 - A : View from transmission rear side
- 14. Remove interlock pin (2) from reverse fork rod.

CAUTION:

Never drop interlock pin.

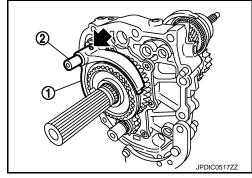


[6MT: FS6R31A]

15. Remove retaining pin (←), using a pin punch [Commercial service tool] and then remove reverse shift fork (1) and reverse fork rod (2).

CAUTION:

Never drop reverse coupling sleeve.

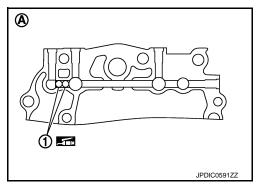


16. Remove check balls (1) from adapter plate.

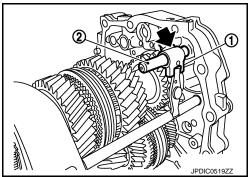
A : View from transmission rear side

CAUTION:

Never drop check ball.

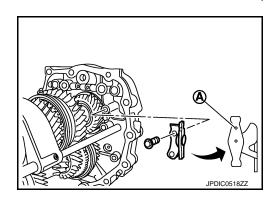


17. Remove retaining pin (), using a pin punch [Commercial service tool] and then remove 5th-6th fork rod bracket (1) and 5th-6th fork rod (2).



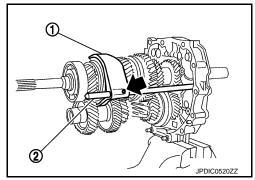
18. Remove 5th-6th control lever from adapter plate.

A : Projection



< UNIT DISASSEMBLY AND ASSEMBLY >

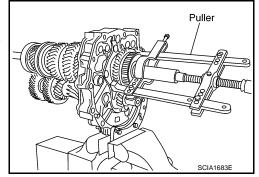
19. Remove retaining pin (←), using a pin punch [Commercial service tool] and then remove 5th-6th shift fork (1) and 5th-6th fork rod (reversal side) (2).



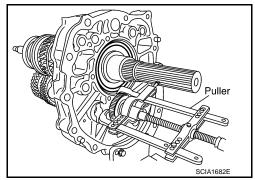
[6MT: FS6R31A]

SHAFT AND GEAR

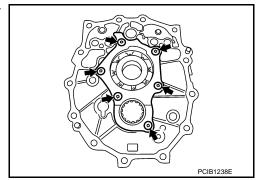
- 1. Remove reverse synchronizer hub with the following procedure.
- Remove snap ring from mainshaft.
- Remove snap ring from reverse synchronizer hub. b.
- Remove reverse spread spring, reverse shifting inserts, and reverse coupling sleeve from reverse synchronizer hub.
- Set a puller [Commercial service tool] to reverse main gear. d.
- Remove reverse synchronizer hub together with reverse main gear, reverse baulk ring, and reverse spread spring from mainshaft, using a puller [Commercial service tool].
- Remove reverse needle bearing from mainshaft. 2.
- 3. Remove reverse counter gear with the following procedure.
- Remove snap ring from counter shaft. a.



- Remove reverse counter gear from counter shaft, using a puller [Commercial service tool].
- Remove counter rear bearing spacer from counter shaft.



Remove mounting bolts (and then remove bearing retainer from adapter plate.



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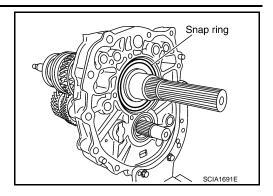
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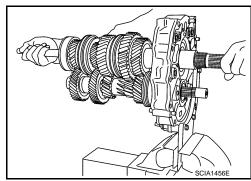
< UNIT DISASSEMBLY AND ASSEMBLY >

6. Remove snap ring from mainshaft bearing.

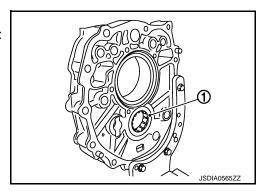


[6MT: FS6R31A]

7. Carefully tap mainshaft with a plastic hammer and then remove mainshaft assembly, main drive gear assembly, and counter shaft assembly combined in one unit from adapter plate.



- 8. Remove counter rear bearing (1) from adapter plate.
- 9. Remove adapter plate from adapter setting plate [SST: ST22490000 ()].

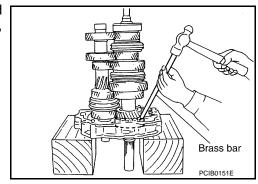


WITH S-MODE: Assembly

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SHAFT AND GEAR

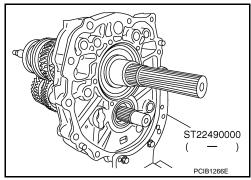
1. Install main drive gear assembly, mainshaft assembly, and counter shaft assembly combined in one unit to adapter plate, using a brass bar.



< UNIT DISASSEMBLY AND ASSEMBLY >

 Install the adapter setting plate [SST] to adapter plate and then fixing in adapter setting plate [SST], using a vise.
 CAUTION:

Never directly secure the surface in a vise.



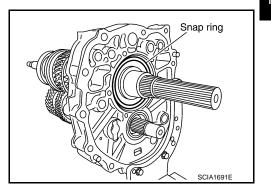
[6MT: FS6R31A]

3. Install snap ring to mainshaft bearing.

CAUTION:

Never reuse snap ring.

4. Apply recommended grease to roller of counter rear bearing.



Install counter rear bearing to adapter plate, using the drift [SST].

CAUTION:

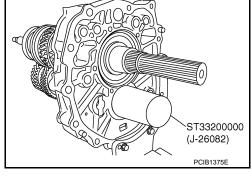
Replace counter rear bearing inner race, counter rear bearing, and counter rear bearing spacer as a set.

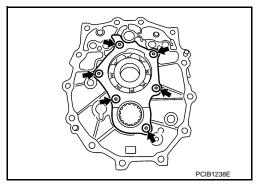
- 6. Install bearing retainer with the following procedure.
- Apply thread locking sealant to the end of bearing retainer mounting bolts (first 3 to 4 threads).
 - Use Genuine Medium Strength Thread Locking Sealant or an equivalent. Refer to <u>GI-18</u>, "<u>Recommended Chemical</u> <u>Products and Sealants</u>".

CAUTION:

Remove old sealant and oil adhering to threads.

- b. Install bearing retainer to adapter plate and then tighten mounting bolts (to the specified torque.
- 7. Install reverse synchronizer hub with the following procedure.
- Install reverse coupling sleeve and reverse shifting inserts to reverse synchronizer hub.





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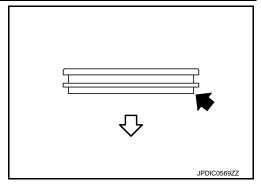
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< UNIT DISASSEMBLY AND ASSEMBLY >

• Be careful with the orientation of reverse coupling sleeve.

- Never reuse reverse coupling sleeve and reverse synchronizer hub.
- Replace reverse coupling sleeve and reverse synchronizer hub as a set.

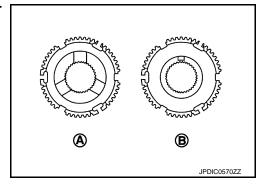


[6MT: FS6R31A]

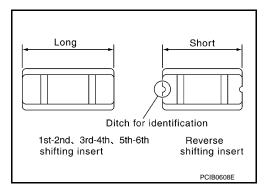
 Be careful with the orientation of reverse synchronizer hub.

A : Reverse main gear side

B : Snap ring side



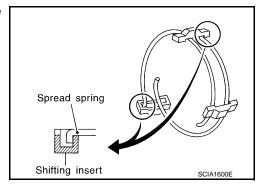
• Be careful with the shape of reverse shifting insert.



b. Install reverse spread springs to reverse shifting inserts.

CAUTION:

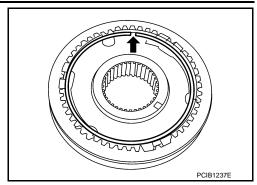
Never install reverse spread spring hook onto the same reverse shifting insert.



- c. Install snap ring to reverse synchronizer hub. **CAUTION:**
 - Never reuse snap ring.

< UNIT DISASSEMBLY AND ASSEMBLY >

 Never align snap ring notch (with synchronizer hub groove when assembling.



[6MT: FS6R31A]

Install reverse synchronizer hub assembly (1) with the following procedure.

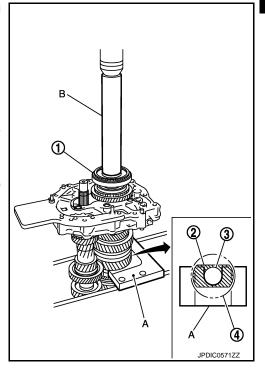
2 : Collar of mainshaft

3 : 6th main gear

4 : 2nd main gear

B : Drift [SST: ST01530000 (-)]

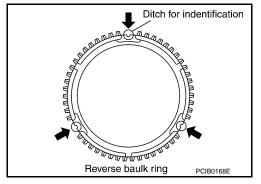
- a. Set the press plate (A) [SST: KV32103300 (J-46529)] to main-shaft as shown in the figure.
- b. Apply gear oil to reverse needle bearing and reverse baulk ring.
- c. Install reverse needle bearing, reverse main gear, and reverse baulk ring to mainshaft.



NOTE:

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

d. Install reverse synchronizer hub assembly to mainshaft with a pressing machine, using the drift [SST: ST01530000 (-)].



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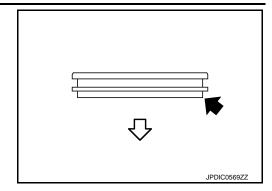
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[6MT: FS6R31A]

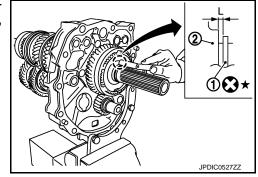
Be careful with the orientation of reverse coupling sleeve.

: Reverse main gear side



- 9. Select and install snap ring (1) so that the end play "L" of mainshaft is adjusted to the standard value. For selecting snap ring, refer to the latest parts information.
 - 2 : Reverse synchronizer hub

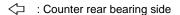
End play "L": Refer to TM-148, "End Play".



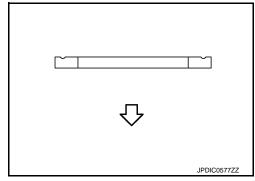
- 10. Install reverse counter gear with the following procedure.
- a. Install counter rear bearing spacer to counter shaft.

CAUTION:

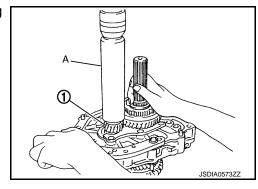
 Be careful with the orientation of counter rear bearing spacer.



 Replace counter rear bearing inner race, counter rear bearing, and counter rear bearing spacer as a set.



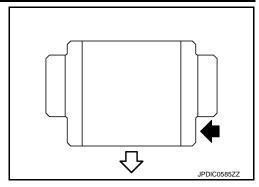
- Install reverse counter gear (1) to counter shaft with a pressing machine, using the drift (A) [SST: ST23860000 (-)].
 CAUTION:
 - Never reuse reverse counter gear.



< UNIT DISASSEMBLY AND ASSEMBLY >

· Be careful with the orientation of reverse counter gear.

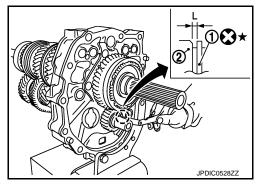
: Counter rear bearing side



11. Select and install snap ring (1) so that the end play "L" of counter shaft is adjusted to the standard value. For selecting snap ring, refer to the latest parts information.

2 : Reverse counter gear

End play "L" : Refer to TM-148, "End Play".

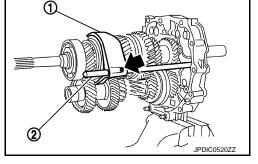


SHIFT FORK AND FORK ROD

Install 5th-6th shift fork (1) and 5th-6th fork rod (reversal side)
 (2) and then install retaining pin (←) to 5th-6th shift fork, using a pin punch [Commercial service tool].

CAUTION:

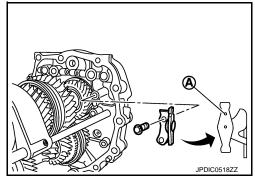
- Never reuse retaining pin.
- Be careful with the orientation of 5th-6th shift fork and 5th-6th fork rod (reversal side).
- Assemble retaining pin from the direction shown by the arrow in the figure until it becomes flush with the end surface of 5th-6th shift fork.



2. Install 5th-6th control lever to adapter plate and then tighten mounting bolts to the specified torque.

CAUTION:

Set the projection (A) upward.



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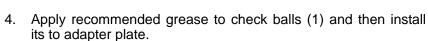
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< UNIT DISASSEMBLY AND ASSEMBLY >

 Install 5th-6th fork rod bracket (1) and 5th-6th fork rod (2) and then install retaining pin (←) to 5th-6th fork rod bracket, using a pin punch [Commercial service tool].

CAUTION:

- Never reuse retaining pin.
- Be careful with the orientation of 5th-6th fork rod bracket and 5th-6th fork rod.
- Assemble retaining pin from the direction shown by the arrow in the figure until it becomes flush with the end surface of 5th-6th fork rod bracket.



A : View from transmission rear side

CAUTION:

Never drop check ball.

5. Apply recommended grease to interlock pin and then install it to reverse fork rod.

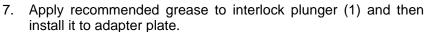
CAUTION:

Never drop interlock pin.

6. Install reverse shift fork (1) and reverse fork rod (2) and then install retaining pin (←) to reverse shift fork, using a pin punch [Commercial service tool].

CAUTION:

- Never reuse retaining pin.
- Be careful with the orientation of reverse shift fork and reverse fork rod.
- Assemble retaining pin from the direction shown by the arrow in the figure until it becomes flush with the end surface of reverse shift fork.
- Never drop reverse coupling sleeve.



A : View from transmission rear side

8. Apply recommended grease to interlock pin and then install it to 1st-2nd fork rod.

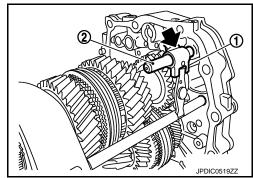
CAUTION:

Never drop interlock pin.

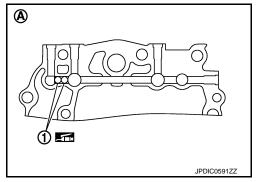
9. Install 1st-2nd shift fork (1) and 1st-2nd fork rod (2) and then install retaining pin (←) to 1st-2nd shift fork, using a pin punch [Commercial service tool].

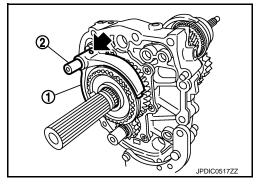
CAUTION:

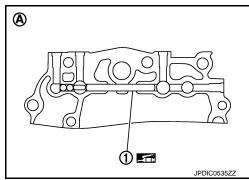
- · Never reuse retaining pin.
- Be careful with the orientation of 1st-2nd shift fork and 1st-2nd fork rod.
- Assemble retaining pin from the direction shown by the arrow in the figure until it becomes flush with the end surface of 1st-2nd shift fork.

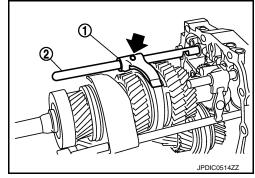


[6MT: FS6R31A]









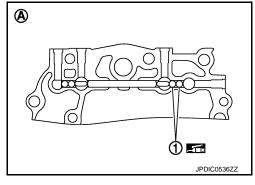
< UNIT DISASSEMBLY AND ASSEMBLY >

10. Apply recommended grease to check balls (1) and then install its to adapter plate.

A : View from transmission rear side

CAUTION:

Never drop check ball.

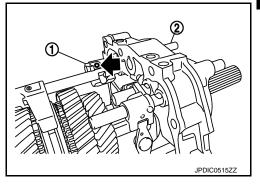


[6MT: FS6R31A]

11. Install 3rd-4th fork rod bracket (1) and 3rd-4th fork rod (2) and then install retaining pin (to 3rd-4th fork rod bracket, using a pin punch [Commercial service tool].

CAUTION:

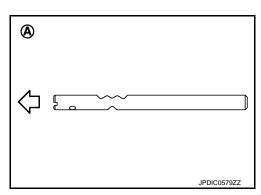
- Never reuse retaining pin.
- Be careful with the orientation of 3rd-4th fork rod bracket.
- Assemble retaining pin from the direction shown by the arrow in the figure until it becomes flush with the end surface of 3rd-4th fork rod bracket.



• Be careful with the orientation of 3rd-4th fork rod.

: Transmission front

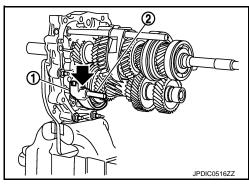
Α : View from transmission top side



12. Install 3rd-4th shift fork (1) and 3rd-4th fork rod (reversal side) (2) and then install retaining pin (to 3rd-4th shift fork, using a pin punch [Commercial service tool].

CAUTION:

- Never reuse retaining pin.
- Be careful with the orientation of 3rd-4th shift fork.
- Assemble retaining pin from the direction shown by the arrow in the figure until it becomes flush with the end surface of 3rd-4th shift fork.



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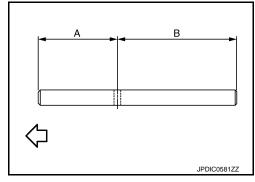
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< UNIT DISASSEMBLY AND ASSEMBLY >

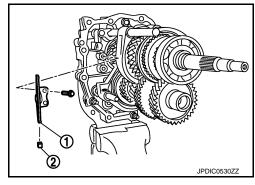
 Be careful with the orientation of 3rd-4th fork rod (reversal side).

A : Short B : Long



[6MT: FS6R31A]

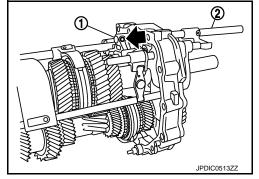
- 13. Install 3rd-4th control lever (1) and shifter cap (2) to adapter plate and then tighten mounting bolts to the specified torque. CAUTION:
 - Be careful with the orientation of 3rd-4th control lever.
 - Never lose shifter cap.



14. Install striking lever (1) and striking rod (2) and then install retaining pin (←) to striking lever, using a pin punch [Commercial service tool].

CAUTION:

- Never reuse retaining pin.
- Be careful with the orientation of striking lever and striking rod.
- Assemble retaining pin from the direction shown by the arrow in the figure until it becomes flush with the end surface of striking lever.



15. Apply gear oil to check balls (1) and then install check balls and check ball springs (2) to adapter plate.

CAUTION:

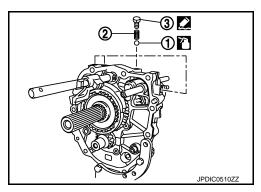
Never drop check ball.

- 16. Apply recommended sealant to threads of check ball plugs (3) and then tighten its to the specified torque.
 - Use Genuine Silicone RTV or an equivalent. Refer to GI-18, "Recommended Chemical Products and Sealants".

CAUTION:

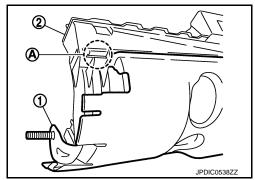
Remove old sealant and oil adhering to threads.

17. Install baffle plate with the following procedure.



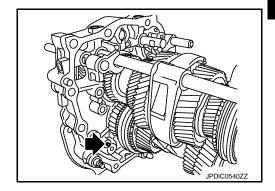
< UNIT DISASSEMBLY AND ASSEMBLY >

 Insert baffle plate (1) until its projection contacts groove (A) of oil gutter (2).



[6MT: FS6R31A]

b. Align baffle plate hole to adapter plate dowel pin (-).

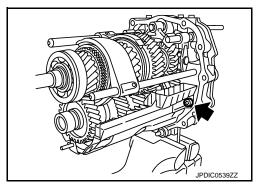


- c. Install mounting bolt (to adapter plate and then tighten mounting bolt to the specified torque.
- 18. Install magnets to baffle plate.
- 19. Remove adapter plate assembly from vise.

CAUTION:

Never damage baffle plate.

20. Remove adapter setting plate [SST: ST22490000 (-)] from adapter plate.



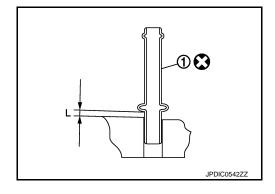
CASE AND EXTENSION

1. Install breather tube (1) to transmission case.

Dimension "L" : 2 mm (0.08 in) or less

CAUTION:

Never bend breather tube.



2. Install transmission case with the following procedure.

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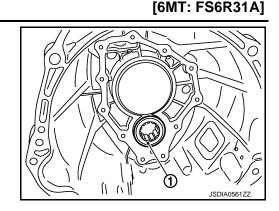
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< UNIT DISASSEMBLY AND ASSEMBLY >

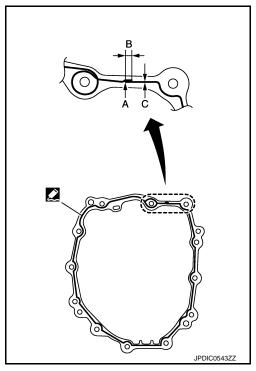
- a. Install counter front bearing (1) to transmission case.
- b. Apply recommended grease to roller of counter front bearing.



- c. Apply recommended sealant to mating surface of transmission case as shown in the figure.
 - A : Start and finish point shall be in the center of two bolts.

Dimension "B" : 3-5 mm (0.12-0.20 in)Sealant width "C" : 1-2 mm (0.04-0.08 in)Sealant height "C" : 0.4-1 mm (0.016-0.04 in)

- Use Genuine Silicone RTV or an equivalent. Refer to GI-18, "Recommended Chemical Products and Sealants".
 CAUTION:
- Remove old sealant adhering to the mounting surfaces.
 Also remove any moisture, oil, or foreign material adhering to both mounting surfaces.
- Apply sealant so as not to break the bead.
- d. Install magnet to adapter plate.



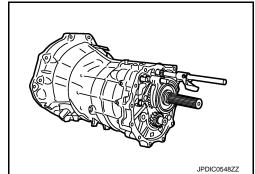
e. Install transmission case to adapter plate.

CAUTION:

- Check for baffle plate weld bolt location while installing.
- Check that magnet is within the specified area of adapter plate while installing.
- Never drop counter front bearing.

NOTE:

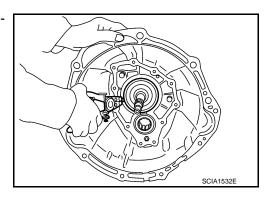
Apply grease to magnet if it is difficult to keep magnet within the specified area of adapter plate.



 Install snap ring to main drive gear bearing, using snap ring pliers.

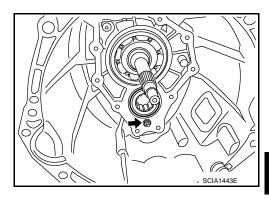
CAUTION:

Never reuse snap ring.

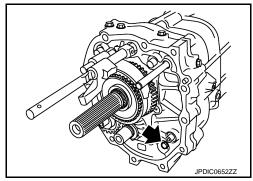


< UNIT DISASSEMBLY AND ASSEMBLY >

- 3. Install baffle plate with the following procedure.
- Tighten mounting nut (to the specified torque.



 b. Install mounting bolt (←) to adapter plate and then tighten mounting bolt to the specified torque.



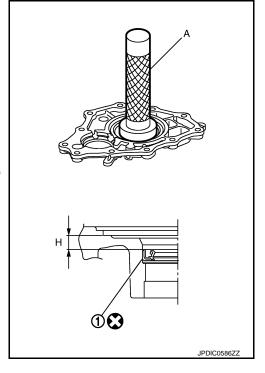
- 4. Install front cover with the following procedure.
- a. Install front oil seal (1) to front cover, using the drift (A) [SST: KV38102100 (J-25803-01)].

Dimension "H": 8.55 – 9.55 mm (0.3366 – 0.3760 in)

CAUTION:

Never incline front oil seal.

- Install front cover gasket and front cover to transmission case.
 CAUTION:
 - Never reuse front cover gasket.
 - Never damage front oil seal.
 - Remove any moisture, oil, or foreign material adhering to both mating surfaces.



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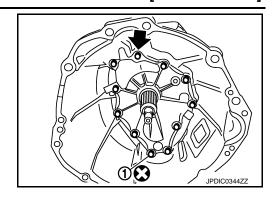
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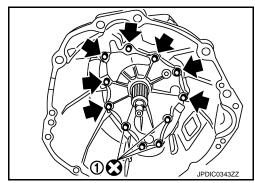
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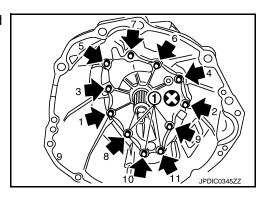
c. Temporarily tighten mounting bolt (←) and sealing bolt (1).



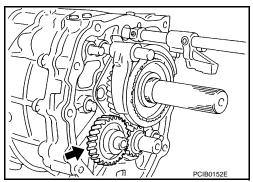
d. Temporarily tighten mounting bolts (and sealing bolts (1).



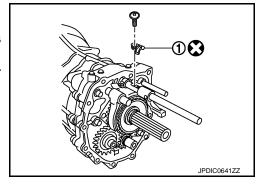
e. Tighten mounting bolts () and sealing bolts (1) to the specified torque in the numerical order as shown in the figure.



Install reverse idler shaft assembly (←) to adapter plate.

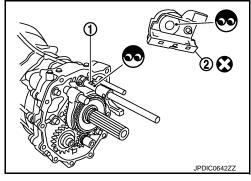


- 6. Install gear lever position sensor magnet (1) to striking rod. **CAUTION:**
 - Replace gear lever position sensor magnet when it is dropped.
 - Never place gear lever position sensor magnet near magnetic materials.



< UNIT DISASSEMBLY AND ASSEMBLY >

- Never allow foreign matter on striking rod (1) mounting surface and gear lever position sensor magnet (2).
- 7. Install rear extension with the following procedure.
- a. Install oil gutter with the following procedure.
- i. Seat the prong of oil gutter in the groove on cap.



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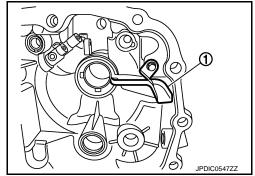
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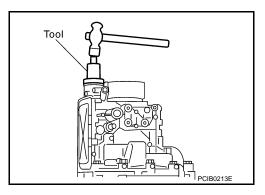
ii. Install oil gutter (1) to rear extension and then tighten mounting bolt to the specified torque.



b. Install striking rod oil seal to rear extension, using the drift [SST: ST33061000 (J-8107-2)].

CAUTION:

- Never reuse striking rod oil seal.
- Never incline striking rod oil seal.
- c. Install dust cover to rear extension.

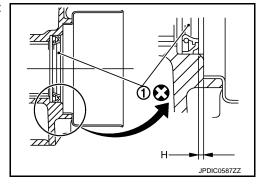


d. Install rear oil seal (1) to rear extension, using the drift [SST: ST33400001 (J-26082)].

Dimension "H" : 1.2 - 2.2 mm (0.047 - 0.087 in)

CAUTION:

Never incline rear oil seal.



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< UNIT DISASSEMBLY AND ASSEMBLY >

e. Apply recommended sealant to mating surface of rear extension as shown in the figure.

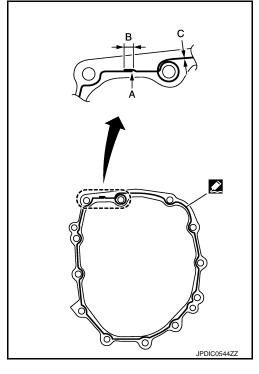
A : Start and finish point shall be in the center of two bolts.

Dimension "B" : 3-5 mm (0.12-0.20 in)Sealant width "C" : 1-2 mm (0.04-0.08 in)Sealant height "C" : 0.4-1 mm (0.016-0.04 in)

• Use Genuine Silicone RTV or an equivalent. Refer to GI-18, "Recommended Chemical Products and Sealants".

CAUTION:

- Remove old sealant adhering to the mounting surfaces.
 Also remove any moisture, oil, or foreign material adhering to both mounting surfaces.
- Apply sealant so as not to break the bead.



[6MT: FS6R31A]

f. Install rear extension to adapter plate and then tighten mounting bolts (—) to the specified torque in the numerical order as shown in the figure.

CAUTION:

- Never impact rear oil seal and striking rod oil seal.
- Never damage rear oil seal and striking rod oil seal.
- 8. Install control lever housing to rear extension and then tighten mounting bolts to the specified torque.

CAUTION:

Never hold control lever housing to prevent the bushing of control lever housing from deformation when moving transmission assembly.

9. Install return spring plug with the following procedure.

a. Apply gear oil to return spring plungers (1).

Install return spring plungers and return springs (2) to rear extension.

Region	Return spring identification mark	Plunger groove
RH	Brown	Without
LH	Blue	With

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CAUTION:

The right and left return springs and return spring plungers are different, so make sure they are installed correctly.

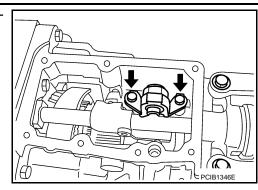
- c. Apply recommended sealant to threads of return spring plugs (3) and then tighten its to the specified torque.
 - Use Genuine Silicone RTV or an equivalent. Refer to <u>GI-18</u>, "<u>Recommended Chemical Products and Sealants"</u>.

CAUTION:

Remove old sealant and oil adhering to threads.

< UNIT DISASSEMBLY AND ASSEMBLY >

10. Install control bracket to rear extension and then tighten mounting bolts (←) to the specified torque.



[6MT: FS6R31A]

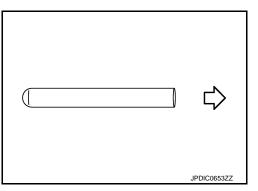
11. Install park/neutral position (PNP) switch with the following procedure.

Install plunger to rear extension.

CAUTION:

Be careful with orientation of plunger.

: Park/Neutral position (PNP) switch side

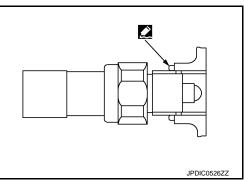


b. Temporarily tighten back-up lamp switch onto rear extension by rotating once or twice.

CAUTION:

Remove old sealant and oil adhering to threads.

- Apply recommended sealant to threads of park/neutral position (PNP) switch as shown in the figure.
 - Use Genuine Silicone RTV or an equivalent. Refer to GI-18, "Recommended Chemical Products and Sealants".
- d. Tighten park/neutral position (PNP) switch to the specified torque.



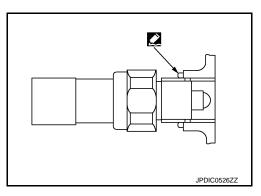
- 12. Install back-up lamp switch with the following procedure.
- Temporarily tighten back-up lamp switch onto rear extension by rotating once or twice.

CAUTION:

Remove old sealant and oil adhering to threads.

- b. Apply recommended sealant to threads of back-up lamp switch as shown in the figure.
 - Use Genuine Silicone RTV or an equivalent. Refer to GI-18, "Recommended Chemical Products and Sealants".
- c. Tighten back-up lamp switch to the specified torque.
- 13. Install control rod with the following procedure.
- Install boot to striking rod oil seal and then install control rod to striking rod.

CAUTION:



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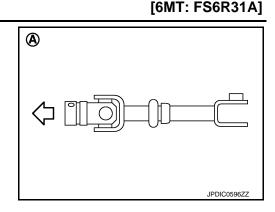
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< UNIT DISASSEMBLY AND ASSEMBLY >

· Be careful with the orientation of control rod.

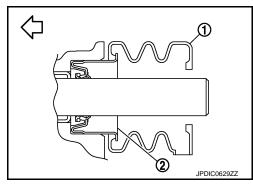
: Transmission front

A : View from transmission top side



• Be careful with the orientation of boot (1).

: Transmission front: Striking rod oil seal

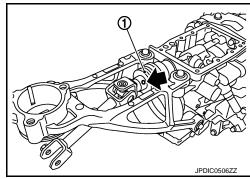


Install retaining pin (←) to control rod, using a pin punch [Commercial service tool].

1 : Boot

CAUTION:

- · Never reuse retaining pin.
- Assemble retaining pin from the direction shown by the arrow in the figure until it becomes flush with the end surface of control rod.



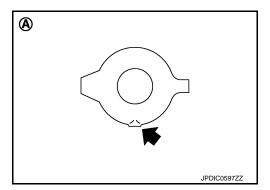
c. Install boot to control rod.

CAUTION:

- · Be careful with the orientation of boot.
 - A : View from transmission rear side
- Fit control rod boot to the groove on control rod.
- d. Install control rod boot to control rod.

CAUTION:

Fit control rod boot to the groove on control rod.



14. Install brackets with the following procedure.

< UNIT DISASSEMBLY AND ASSEMBLY >

Install bracket (1) so that it contacts transmission case rib (A) and then tighten mounting bolt to the specified torque.
 CAUTION:

Be careful with orientation of bracket.

- b. Install bracket (2) so that it contacts the projection (B) of rear extension and then tighten mounting bolt to the specified torque.
- c. Install bracket (3) to rear extension and then tighten mounting bolt to the specified torque.
- d. Install bracket to rear extension and then tighten mounting bolt to the specified torque.
- e. Install bracket (4) so that it contacts the projection (C) of rear extension and then tighten bracket mounting bolt to the specified torque.
- 15. Install rear extension upper cover with the following procedure.
- a. Apply gear oil to check ball.

CAUTION:

Never drop check ball.

- b. Install check ball and check select spring to rear extension.
- c. Install rear extension upper cover gasket and rear extension upper cover to rear extension.

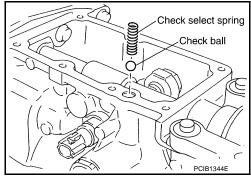
CAUTION:

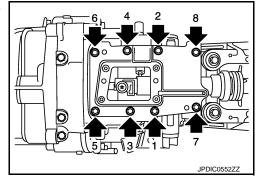
- Never reuse rear extension upper cover gasket.
- Remove any moisture, oil, or foreign material adhering to both mating surfaces.
- Temporarily tighten rear extension upper cover mounting bolts while holding rear extension upper cover.

CAUTION:

Avoid tangling check select spring.

e. Tighten mounting bolts (←) to the specified torque in the numerical order as shown in the figure.

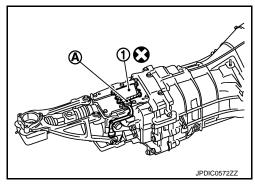




- 16. Install gear lever position sensor with the following procedure.
- Install gear lever position sensor (1) to rear extension upper cover.

CAUTION:

- Never disassemble gear lever position sensor.
- Never impact gear lever position sensor by dropping or others.
- Never place gear lever position sensor near magnetic materials.
- Never remove connector (A).



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[6MT: FS6R31A]

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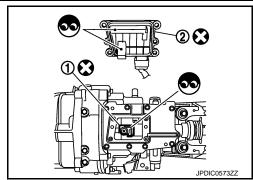
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< UNIT DISASSEMBLY AND ASSEMBLY >

 Never allow foreign matter on gear lever position sensor magnet (1) and gear lever position sensor (2).



[6MT: FS6R31A]

- b. Tighten mounting bolts (to the specified torque in the numerical order as shown in the figure.
- c. Install clips to gear lever position sensor harness.

CAUTION:

Never reuse clip.

- d. Install gear lever position sensor harness to bracket.
- 17. Install input speed sensor with the following procedure.
- a. Apply gear oil to O-ring.

CAUTION:

Never reuse O-ring.

- b. Install O-ring to input speed sensor.
- c. Install input speed sensor to rear extension.

CAUTION:

- Never disassemble input speed sensor.
- Never impact input speed sensor by dropping or others.
- Never place input speed sensor near magnetic materials.
- Never allow foreign matter on input speed sensor.
- 18. Install drain plug with the following procedure.
- a. Install gasket to drain plug and then install it to transmission case.

CAUTION:

Never reuse gasket.

- b. Tighten drain plug to the specified torque.
- 19. Install filler plug with the following procedure.
- a. Install gasket to filler plug and then install it to transmission case.

CAUTION:

Never reuse gasket.

b. Tighten filler plug to the specified torque.

CAUTION:

After gear oil is filled, tighten filler plug to the specified torque.

WITH S-MODE: Inspection and Adjustment

INFOID:0000000005233364

INSPECTION BEFORE DISASSEMBLY

Shaft

Before disassembly, measure the end play "L" for each position. If the end play is outside the standard value, disassemble and inspect.

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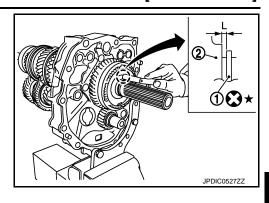
< UNIT DISASSEMBLY AND ASSEMBLY >

Mainshaft

1 : Snap ring

2 : Reverse synchronizer hub

End play "L" : Refer to TM-148, "End Play".



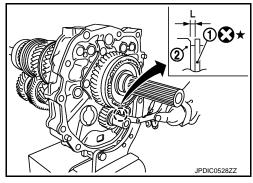
[6MT: FS6R31A]

· Counter shaft

1 : Snap ring

2 : Reverse counter gear

End play "L": Refer to TM-148, "End Play".



INSPECTION AFTER DISASSEMBLY

Case and Plate

- Check the bearing mounting surface for wear, cracks, and damages. Replace if necessary.
- Check the mating surface for wear, cracks, and damages. Replace if necessary.

Extension and Cover

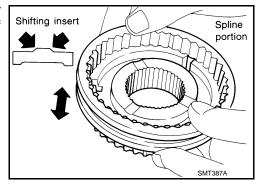
- Check the oil seal mounting surface for wear, cracks, and damages. Replace if necessary.
- Check the mating surface for wear, cracks, and damages. Replace if necessary.

Gear

Check the gears for any damage, scaling, or uneven wear. Replace if necessary.

Synchronizer Hub and Coupling Sleeve

- Check the contact surface of the coupling sleeve, synchronizer hub, and shifting inserts for damage and uneven wear. Replace if necessary.
- The coupling sleeve and synchronizer hub moves smoothly.



Baulk Ring and Spread Spring

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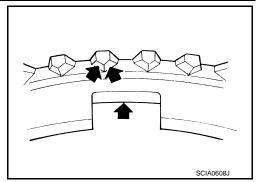
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< UNIT DISASSEMBLY AND ASSEMBLY >

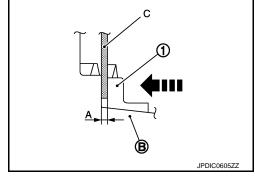
- Check the cam surface and contact surface of the baulk ring for damage and uneven wear. Replace if necessary.
- · Check the spread springs for damage. Replace if necessary.



[6MT: FS6R31A]

Baulk Ring Clearance for Single Cone Synchronizer (Reverse) Measure the clearance "A" when pressing the baulk ring (1) against the cone (B) of clutch gear by hands at 2 points or more on the opposite side, using a feeler gauge (C), and then calculate the mean value. Replace if outside the limit value.

Clearance "A" : Refer to TM-148, "Baulk Ring Clearance".



Bearing

Check the bearing for damage and unsmooth rotation. Replace if necessary.

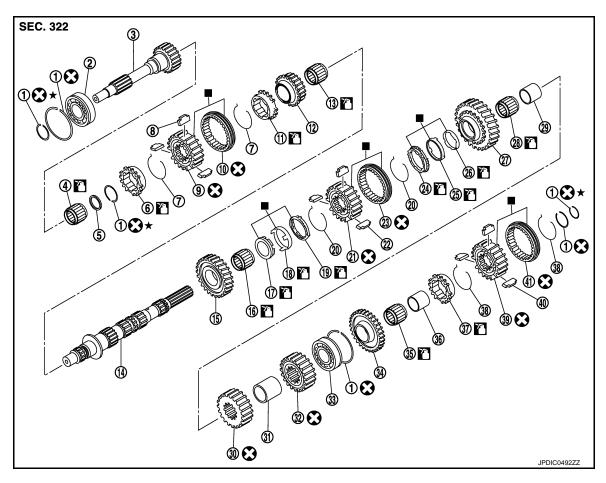
ADJUSTMENT AFTER ASSEMBLY

Gear Lever Position Sensor

When replacing the gear lever position sensor, perform the M/T neutral position learning after installing transmission assembly. Refer to <u>EC-24</u>, "M/T NEUTRAL POSITION LEARNING: Special Repair Requirement".

MAIN DRIVE GEAR

Exploded View INFOID:0000000005233365



- 1. Snap ring
- 4. Main pilot bearing
- 7. 5th-6th spread spring
- 5th-6th coupling sleeve 10.
- 13. 6th needle bearing
- 16. 2nd needle bearing
- 19. 2nd outer baulk ring
- 22. 1st-2nd shifting insert
- 1st synchronizer cone 25.
- 28. 1st needle bearing
- 3rd-4th main spacer
- Reverse main gear
- Reverse baulk ring
- 40. Reverse shifting insert
- : Replace the parts as a set.

- 2. Main drive gear bearing
- 5. Pilot bearing spacer
- 8. 5th-6th shifting insert
- 6th baulk ring 11.
- Mainshaft 14.
- 2nd inner baulk ring 17.
- 20. 1st-2nd spread spring
- 23. 1st-2nd coupling sleeve
- 26. 1st inner baulk ring
- 29. 1st gear bushing
- 32. 4th main gear
- 35. Reverse needle bearing
- 38. Reverse spread spring
- 41. Reverse coupling sleeve

- 3. Main drive gear
- 6. 5th baulk ring
- 9. 5th-6th synchronizer hub
- 12. 6th main gear
- 15. 2nd main gear
- 18. 2nd synchronizer cone
- 21. 1st-2nd synchronizer hub
- 24. 1st outer baulk ring
- 1st main gear 27.
- 30. 3rd main gear
- 33. Mainshaft bearing
- Reverse main gear bushing
- Reverse synchronizer hub

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: Apply gear oil.

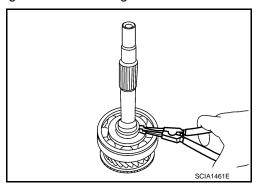
Refer to GI-4, "Components" for symbols not described on the above.

· Apply gear oil to gears, shafts, synchronizers, and bearings when assembling.

Disassembly NFOID:0000000005233366

1. Remove 5th baulk ring, pilot bearing spacer, and main pilot bearing from main drive gear.

Remove snap ring from main drive gear, using snap ring pliers.

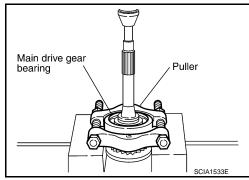


[6MT: FS6R31A]

- 3. Remove main drive gear bearing with the following procedure.
- a. Set a puller [Commercial service tool] to main drive gear bearing.
- b. Remove main drive gear bearing from main drive gear with a pressing machine.

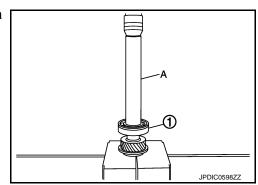
CAUTION:

Never drop main drive gear.



Assembly

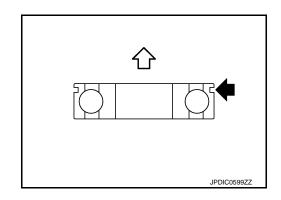
1. Install main drive gear bearing (1) to main drive gear with a pressing machine, using the drift (A) [SST: KV32102700 (-)].



CAUTION:

Be careful with the orientation of main drive gear bearing.





MAIN DRIVE GEAR

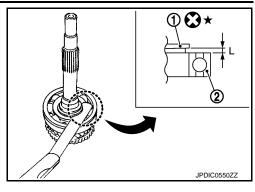
< UNIT DISASSEMBLY AND ASSEMBLY >

 Select and install snap ring (1) to main drive gear so that the end play "L" is adjusted to the standard value. For selecting snap ring, refer to the latest parts information.

2 : Main drive gear bearing

End play "L": Refer to TM-148, "End Play".

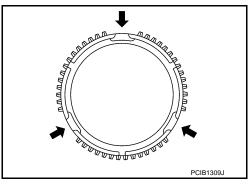
3. Apply gear oil to main pilot bearing and 5th baulk ring.



[6MT: FS6R31A]

Install main pilot bearing, pilot bearing spacer, and 5th baulk ring to main drive gear.
 NOTE:

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



Inspection INFOID:000000005233368

INSPECTION BEFORE DISASSEMBLY

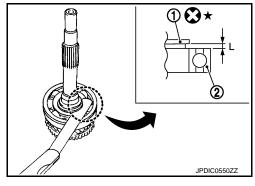
Gear

Before disassembly, measure the end play "L". If the end play is outside the standard value, disassemble and inspect.

1 : Snap ring

2 : Main drive gear bearing

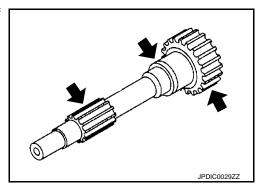
End play "L": Refer to TM-148, "End Play".



INSPECTION AFTER DISASSEMBLY

Gear

Check the gear for any damage, scaling, or uneven wear. Replace if necessary.



Baulk Ring

Revision: 2009 July **TM-119** 2010 370Z

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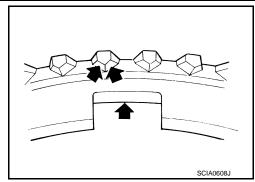
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MAIN DRIVE GEAR

< UNIT DISASSEMBLY AND ASSEMBLY >

Check the cam surface and contact surface of the baulk ring for damage and uneven wear. Replace if necessary.

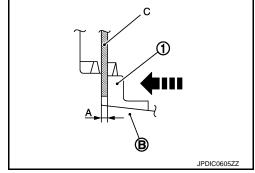


[6MT: FS6R31A]

Baulk Ring Clearance for Single Cone Synchronizer (5th)

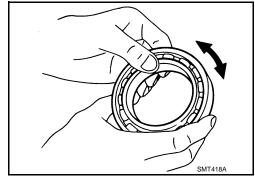
Measure the clearance "A" when pressing the baulk ring (1) against the cone (B) of clutch gear by hands at 2 points or more on the opposite side, using a feeler gauge (C), and then calculate the mean value. Replace if outside the limit value.

Clearance "A" : Refer to TM-148, "Baulk Ring Clearance".

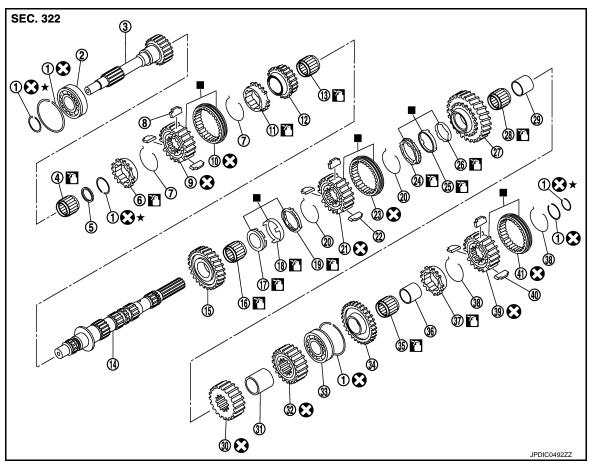


Bearing

Check the bearing for damage and unsmooth rotation. Replace if necessary.



Exploded View INFOID:0000000005233369



- 1. Snap ring
- 4. Main pilot bearing
- 5th-6th spread spring 7.
- 5th-6th coupling sleeve 10.
- 13. 6th needle bearing
- 16. 2nd needle bearing
- 19. 2nd outer baulk ring
- 22. 1st-2nd shifting insert
- 1st synchronizer cone 25.
- 28. 1st needle bearing
- 3rd-4th main spacer
- Reverse main gear
- Reverse baulk ring
- 40. Reverse shifting insert
- : Replace the parts as a set.

- 2. Main drive gear bearing
- 5. Pilot bearing spacer
- 8. 5th-6th shifting insert
- 6th baulk ring 11.
- Mainshaft 14.
- 2nd inner baulk ring 17.
- 20. 1st-2nd spread spring
- 23. 1st-2nd coupling sleeve
- 26. 1st inner baulk ring
- 29. 1st gear bushing
- 32. 4th main gear
- 35. Reverse needle bearing
- 38. Reverse spread spring
- 41. Reverse coupling sleeve

- 3. Main drive gear
- 6. 5th baulk ring
- 9. 5th-6th synchronizer hub
- 12. 6th main gear
- 15. 2nd main gear
- 18. 2nd synchronizer cone
- 1st-2nd synchronizer hub 21.
- 24. 1st outer baulk ring
- 1st main gear 27.
- 30. 3rd main gear
- 33. Mainshaft bearing
- Reverse main gear bushing
- Reverse synchronizer hub

: Apply gear oil. Refer to GI-4, "Components" for symbols not described on the above.

· Apply gear oil to gears, shafts, synchronizers, and bearings when assembling.

[6MT: FS6R31A]

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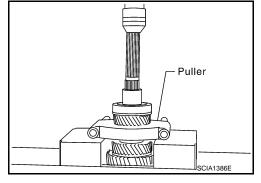
TM-121 Revision: 2009 July 2010 370Z Disassembly INFOID:0000000005233370

- 1. Remove 4th main gear with the following procedure.
- Set a puller [Commercial service tool] to 4th main gear.
- Remove mainshaft bearing and reverse main gear bushing together with 4th main gear from mainshaft with a pressing machine.

CAUTION:

Never drop mainshaft.

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

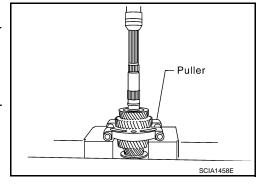


[6MT: FS6R31A]

- 3. Remove 1st main gear with the following procedure.
- a. Set a puller [Commercial service tool] to 1st main gear.
- b. Remove 3rd main gear together with 1st main gear from mainshaft with a pressing machine.

CAUTION:

- · Never damage 1st outer baulk ring.
- Never drop mainshaft.
- 4. Remove 1st outer baulk ring, 1st synchronizer cone, 1st inner baulk ring, and 1st needle bearing from mainshaft.



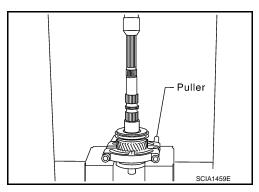
- 5. Remove 2nd main gear with the following procedure.
- Set a puller [Commercial service tool] to 2nd main gear.
 CAUTION:

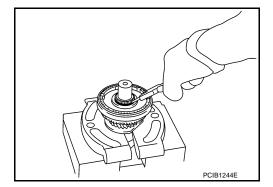
Set V-block in the position where V-block does not contact with collar of mainshaft.

b. Remove 1st gear bushing, 1st-2nd synchronizer hub assembly, 2nd outer baulk ring, 2nd synchronizer cone, and 2nd inner baulk together with 2nd main gear from mainshaft with a pressing machine.

CAUTION:

- · Never damage mainshaft.
- Never drop mainshaft.
- 6. Remove 1st-2nd spread springs, 1st-2nd shifting inserts, and 1st-2nd coupling sleeve from 1st-2nd synchronizer hub.
- 7. Remove 2nd needle bearing from mainshaft.
- 8. Remove snap ring from mainshaft.





9. Remove 6th main gear with the following procedure.

< UNIT DISASSEMBLY AND ASSEMBLY >

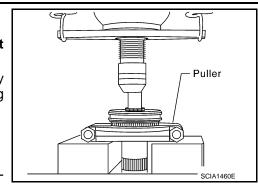
Set a puller [Commercial service tool] to 6th main gear. **CAUTION:**

Set V-block in the position where V-block does not contact with collar of mainshaft.

b. Remove 6th baulk ring and 5th-6th synchronizer hub assembly together with 6th main gear from mainshaft with a pressing machine.

CAUTION:

- Never damage mainshaft.
- Never drop mainshaft.
- 10. Remove 5th-6th spread springs, 5th-6th shifting inserts, and 5th-6th coupling sleeve from 5th-6th synchronizer hub.
- 11. Remove 6th needle bearing from mainshaft.



[6MT: FS6R31A]

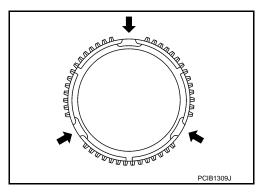
INFOID:0000000005233371

Assembly

1. Apply gear oil to 6th needle bearing and 6th baulk ring.

Install 6th needle bearing, 6th main gear, and 6th baulk ring to mainshaft. NOTE:

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



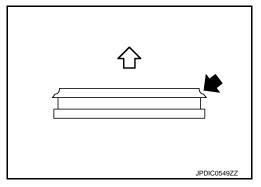
3. Install 5th-6th synchronizer hub assembly with the following procedure.

Install 5th-6th coupling sleeve and 5th-6th shifting inserts to 5th-6th synchronizer hub.

CAUTION:

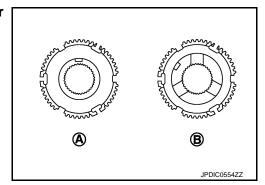
Be careful with the orientation of 5th-6th coupling sleeve.

- Never reuse 5th-6th coupling sleeve and 5th-6th synchro-
- Replace 5th-6th coupling sleeve and 5th-6th synchronizer hub as a set.



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

: 5th main gear side : 6th main gear side



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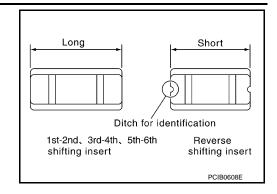
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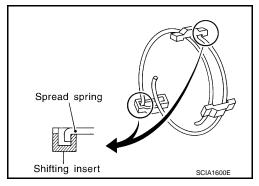
[6MT: FS6R31A]

• Be careful with the shape of 5th-6th shifting insert.

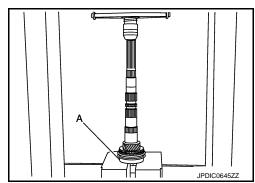


Install 5th-6th spread springs to 5th-6th shifting inserts.
 CAUTION:

Never install 5th-6th spread spring hook onto the same 5th-6th shifting insert.

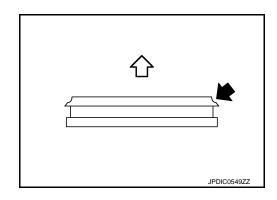


Install 5th-6th synchronizer hub assembly to mainshaft with a pressing machine, using the inserter (A) [SST: ST30911000 (-)].



CAUTION:

Be careful with the orientation of 5th-6th coupling sleeve.



< UNIT DISASSEMBLY AND ASSEMBLY >

4. Select and install snap ring (1) to mainshaft so that the end play "L" of mainshaft is adjusted to the standard value. For selecting snap ring, refer to the latest parts information.

2 : 5th-6th synchronizer hub

End play "L": Refer to TM-148, "End Play".

5. Apply gear oil to 2nd needle bearing, 2nd inner baulk ring, 2nd synchronizer cone, and 2nd outer baulk ring.

CAUTION:

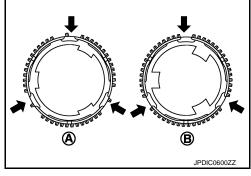
Replace 2nd inner baulk ring, 2nd synchronizer cone, and 2nd outer baulk ring as a set.

Install 2nd needle bearing, 2nd main gear, 2nd inner baulk ring, 2nd synchronizer cone, and 2nd outer baulk ring to mainshaft.

NOTE:

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

A : 1st outer baulk ring
B : 2nd outer baulk ring

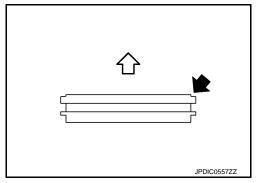


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- 7. Install 1st-2nd synchronizer hub assembly with the following procedure.
- a. Install 1st-2nd coupling sleeve and 1st-2nd shifting inserts to 1st-2nd synchronizer hub.

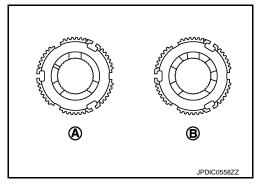
CAUTION:

- Be careful with the orientation of 1st-2nd coupling sleeve.
 - : 2nd main gear side
- Never reuse 1st-2nd coupling sleeve and 1st-2nd synchronizer hub.
- Replace 1st-2nd coupling sleeve and 1st-2nd synchronizer hub as a set.



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

A : 2nd main gear sideB : 1st main gear side



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[6MT: FS6R31A]

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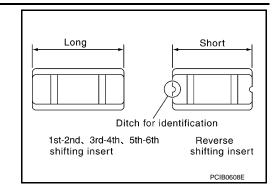
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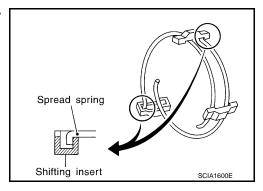
[6MT: FS6R31A]

• Be careful with the shape of 1st-2nd shifting insert.

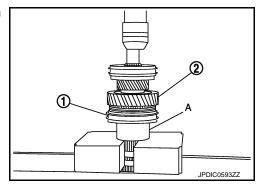


b. Install 1st-2nd spread springs to 1st-2nd shifting inserts. **CAUTION:**

Never install 1st-2nd spread spring hook onto the same 1st-2nd shifting insert.

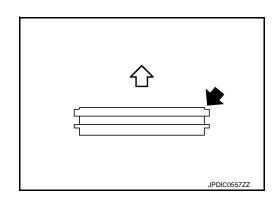


- c. Install 1st-2nd synchronizer hub assembly (1) to mainshaft with a pressing machine, using the support ring (A) [SST: ST27861000 ()].
 - 2 : 2nd main gear



CAUTION:

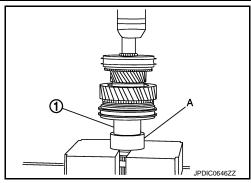
Be careful with the orientation of 1st-2nd coupling sleeve.



< UNIT DISASSEMBLY AND ASSEMBLY >

- 8. Install 1st gear bushing (1) to mainshaft with a pressing machine, using the support ring (A) [SST: ST27861000 ()].
- Apply gear oil to 1st needle bearing, 1st outer baulk ring, 1st synchronizer cone, and 1st inner baulk ring. CAUTION:

Replace 1st outer baulk ring, 1st synchronizer cone, and 1st inner baulk ring as a set.



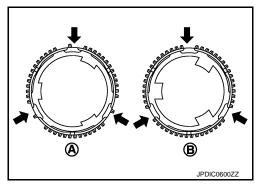
[6MT: FS6R31A]

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

NOTE:

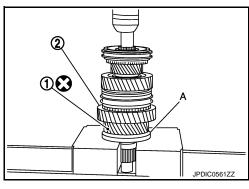
1st outer baulk ring has three spaces that four gear teeth are missing and 2nd outer baulk ring has three spaces that two gear teeth are missing.

A : 1st outer baulk ring
B : 2nd outer baulk ring



11. Install 3rd main gear (1) to mainshaft with a pressing machine, using the inserter (A) [SST: ST30022000 (-)].

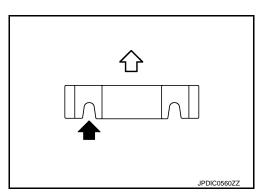
2 : 1st main gear



CAUTION:

Be careful with the orientation of 3rd main gear.

: 1st main gear side



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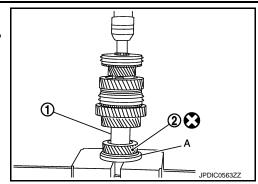
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< UNIT DISASSEMBLY AND ASSEMBLY >

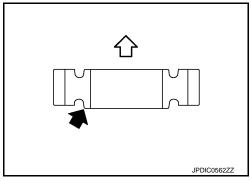
- 12. Install 3rd-4th main spacer (1) to mainshaft.
- 13. Install 4th main gear (2) to mainshaft with a pressing machine, using the inserter (A) [SST: ST30022000 ()].



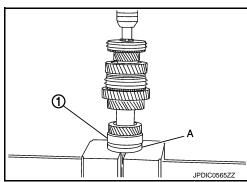
[6MT: FS6R31A]

CAUTION:

Be careful with the orientation of 4th main gear.

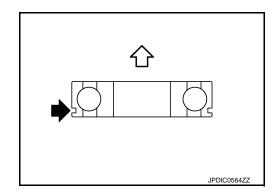


14. Install mainshaft bearing (1) to mainshaft with a pressing machine, using the inserter (A) [SST: ST30911000 (-)].



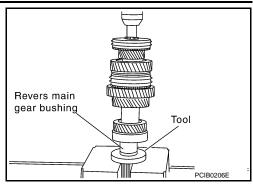
CAUTION:

Be careful with the orientation of mainshaft bearing.



< UNIT DISASSEMBLY AND ASSEMBLY >

15. Install reverse main gear bushing to mainshaft with a pressing machine, using the inserter [SST: ST30911000 (-)].



[6MT: FS6R31A]

Inspection

INSPECTION BEFORE DISASSEMBLY

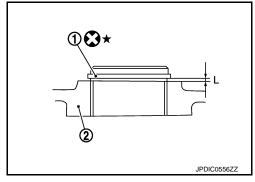
Shaft

Before disassembly, measure the end play "L". If the end play is outside the standard value, disassemble and inspect.

1 : Snap ring

: 5th-6th synchronizer hub

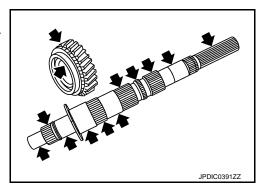
End play "L" : Refer to TM-148, "End Play".



INSPECTION AFTER DISASSEMBLY

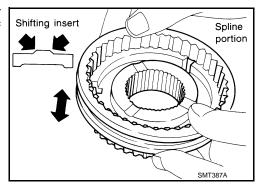
Shaft and Gear

- · Check the shaft for damage or bend. Replace if necessary.
- Check the gears for any damage, scaling, or uneven wear. Replace if necessary.



Synchronizer Hub and Coupling Sleeve

- · Check the contact surface of the coupling sleeve, synchronizer hub, and shifting inserts for damage and uneven wear. Replace if necessary.
- The coupling sleeve and synchronizer hub moves smoothly.



Baulk Ring and Spread Spring

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TM-129 Revision: 2009 July 2010 370Z

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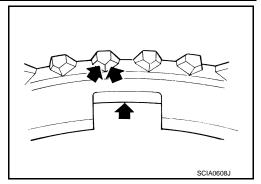
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< UNIT DISASSEMBLY AND ASSEMBLY >

- Check the cam surface and contact surface of the baulk ring for damage and uneven wear. Replace if necessary.
- Check the spread springs for damage. Replace if necessary.

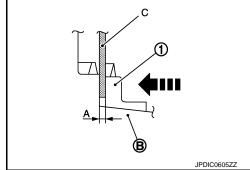


[6MT: FS6R31A]

Baulk Ring Clearance for Single Cone Synchronizer (6th)

Measure the clearance "A" when pressing the baulk ring (1) against the cone (B) of clutch gear by hands at 2 points or more on the opposite side, using a feeler gauge (C), and then calculate the mean value. Replace if outside the limit value.

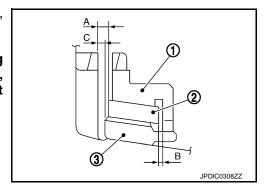
Clearance "A": Refer to <u>TM-148, "Baulk Ring Clearance"</u>.



Baulk Ring Clearance for Triple Cone Synchronizer (1st and 2nd) Measure the clearance of outer baulk ring (1), synchronizer cone (2), and inner baulk ring (3) with the following procedure.

CAUTION:

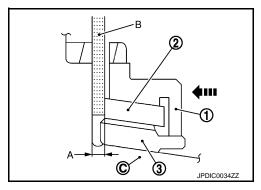
The outer baulk ring, synchronizer cone, and inner baulk ring manage the clearances "A", "B", and "C" as a set. Therefore, replace them as a set if the clearances are outside the limit value.



Measure the clearance "A" when pressing the outer baulk ring
 (1) against the cone (C) of clutch gear by hands at 2 points or
 more on the opposite side, using a feeler gauge (B), and then
 calculate the mean value.

2 : Synchronizer cone3 : Inner baulk ring

Clearance "A" : Refer to TM-148, "Baulk Ring Clearance".



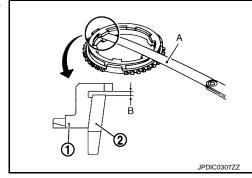
< UNIT DISASSEMBLY AND ASSEMBLY >

2. Measure the clearance "B" at 2 points or more on the opposite side, using a feeler gauge (A), and then calculate the mean value.

1 : Outer baulk ring2 : Synchronizer cone

Clearance "B" : Refer to TM-148, "Baulk Ring Clear-

ance".



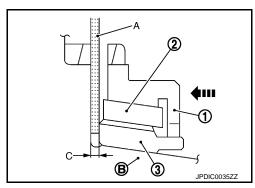
[6MT: FS6R31A]

3. Measure the clearance "C" when pressing the outer baulk ring (1) against the cone (B) of clutch gear by hands at 2 points or more on the opposite side, using a feeler gauge (A), and then calculate the mean value.

2 : Synchronizer cone3 : Inner baulk ring

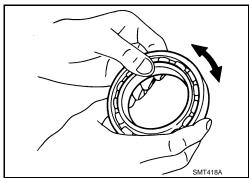
Clearance "C" : Refer to TM-148, "Baulk Ring Clear-

ance".



Bearing

Check the bearing for damage and unsmooth rotation. Replace if necessary.



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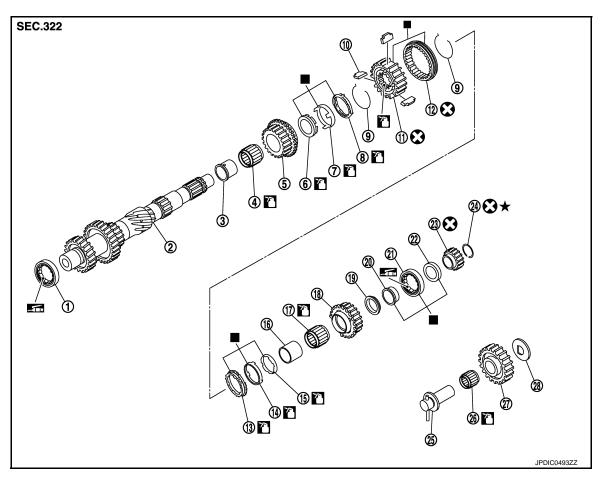
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Exploded View



- 1. Counter front bearing
- 4. 3rd needle bearing
- 7. 3rd synchronizer cone
- 10. 3rd-4th shifting insert
- 13. 4th outer baulk ring
- 16. 4th gear bushing
- 19. 4th counter gear thrust washer
- 22. Counter rear bearing spacer
- 25. Reverse idler shaft
- 28. Reverse idler thrust washer
- : Replace the parts as a set.
- Apply gear oil.
- : Apply lithium-based grease including molybdenum disulphide.

Refer to GI-4, "Components" for symbols not described on the above.

• Apply gear oil to gears, shafts, synchronizers, and bearings when assembling.

Disassembly

1. Remove 3rd counter gear with the following procedure.

- Counter shaft 3.
- 5. 3rd counter gear

2.

- 8. 3rd outer baulk ring
- 11. 3rd-4th synchronizer hub
- 14. 4th synchronizer cone
- 17. 4th needle bearing
- 20. Counter rear bearing inner race
- 23. Reverse counter gear
- 26. Reverse idler needle bearing

- 3. 3rd gear bushing
- 6. 3rd inner baulk ring
- 9. 3rd-4th spread spring
- 12. 3rd-4th coupling sleeve
- 15. 4th inner baulk ring
- 18. 4th counter gear
- 21. Counter rear bearing
- 24. Snap ring
- 27. Reverse idler gear

INFOID:0000000005233374

[6MT: FS6R31A]

< UNIT DISASSEMBLY AND ASSEMBLY >

- a. Set a puller [Commercial service tool] to 3rd counter gear.
- b. Remove the parts below together with 3rd counter gear from counter shaft with a pressing machine.
 - ·Counter rear bearing inner race
 - ·4th counter gear thrust washer
 - ·4th counter gear
 - ·4th needle bearing
 - ·4th gear bushing
 - ·4th inner baulk ring
 - ·4th synchronizer cone
 - ·4th outer baulk ring
 - ·3rd-4th synchronizer hub assembly
 - ·3rd outer baulk ring
 - ·3rd synchronizer cone
 - ·3rd inner baulk ring

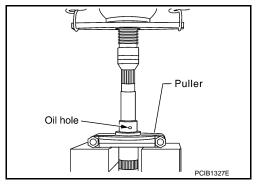


Never drop counter shaft.

- 2. Remove 3rd-4th spread springs, 3rd-4th shifting inserts, and 3rd-4th coupling sleeve from 3rd-4th synchronizer hub.
- 3. Remove 3rd needle bearing from counter shaft.
- 4. Remove 3rd gear bushing with the following procedure.
- a. Set a puller [Commercial service tool] to 3rd gear bushing.
- Remove 3rd gear bushing from counter shaft with a pressing machine.

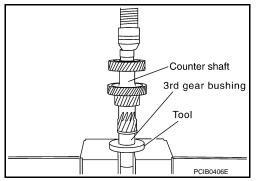
CAUTION:

- Never use oil hole of 3rd gear bushing when press out.
- Never drop counter shaft.



Assembly INFOID:0000000005233375

1. Install 3rd gear bushing to counter shaft with a pressing machine, using the inserter [SST: ST30911000 (-)].



CAUTION:

Puller SCIA1389E

[6MT: FS6R31A]

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< UNIT DISASSEMBLY AND ASSEMBLY >

Be careful with the orientation of 3rd gear bushing.

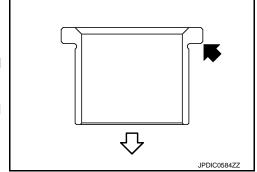
: 4th counter gear side

2. Apply gear oil to 3rd needle bearing, 3rd inner baulk ring, 3rd synchronizer cone, and 3rd outer baulk ring.

CAUTION:

Replace 3rd inner baulk ring, 3rd synchronizer cone, and 3rd outer baulk ring as a set.

3. Install 3rd needle bearing, 3rd counter gear, 3rd inner baulk ring, 3rd synchronizer cone, and 3rd outer baulk ring to counter shaft.

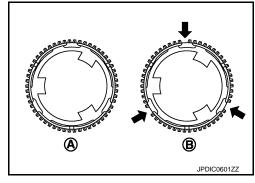


[6MT: FS6R31A]

NOTE:

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

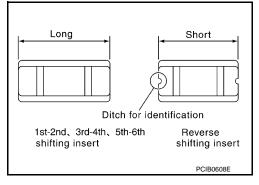
A : 3rd outer baulk ring
B : 4th outer baulk ring



- 4. Install 3rd-4th synchronizer hub assembly with the following procedure.
- a. Install 3rd-4th coupling sleeve and 3rd-4th shifting inserts to 3rd-4th synchronizer hub.

CAUTION:

- Be careful with the shape of 3rd-4th shifting insert.
- Never reuse 3rd-4th coupling sleeve and 3rd-4th synchronizer hub.
- Replace 3rd-4th coupling sleeve and 3rd-4th synchronizer hub as a set.

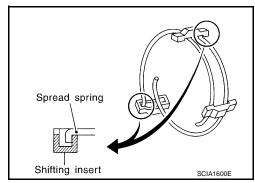


b. Install 3rd-4th spread springs to 3rd-4th shifting inserts.

CAUTION:

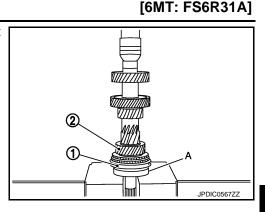
Never install 3rd-4th spread spring hook onto the same 3rd-4th shifting insert.

c. Apply gear oil to the hole spline press fitting side of 3rd-4th synchronizer hub.



< UNIT DISASSEMBLY AND ASSEMBLY >

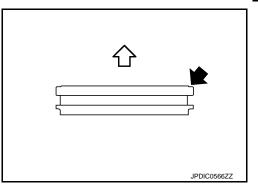
- Install 3rd-4th synchronizer hub assembly (1) to counter shaft with a pressing machine, using the inserter (A) [SST: ST30911000 (-)].
 - 2 : 3rd counter gear



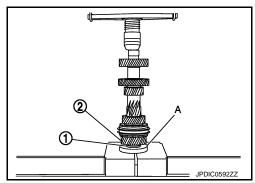
CAUTION:

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

: 3rd counter gear side



- 5. Install 4th counter gear thrust washer with the following procedure.
- a. Set 4th counter gear thrust washer (1), 4th gear bushing, 4th needle bearing, and 4th counter gear to the inserter (A) [SST: KV40100630 (J-26092)].
 - 2 : 4th counter gear



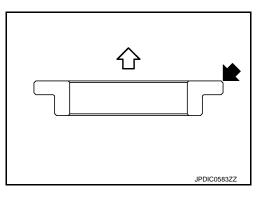
CAUTION:

Be careful with the orientation of 4th counter gear thrust washer.

- : 4th counter gear side
- Apply gear oil to 4th needle bearing, 4th outer baulk ring, 4th synchronizer cone, and 4th inner baulk ring.
 CAUTION:

Replace 4th outer baulk ring, 4th synchronizer cone, and 4th inner baulk ring as a set.

Install 4th outer baulk ring, 4th synchronizer cone, and 4th inner baulk ring to 4th counter gear.
 NOTE:



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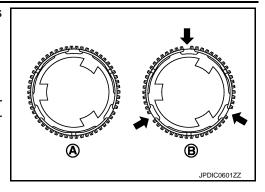
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< UNIT DISASSEMBLY AND ASSEMBLY >

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

A : 3rd outer baulk ring
B : 4th outer baulk ring

d. Install 4th gear bushing, 4th needle bearing, and 4th counter gear together with 4th counter gear thrust washer to counter shaft with a pressing machine.

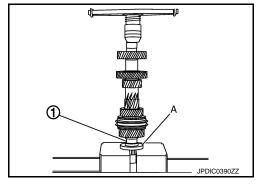


[6MT: FS6R31A]

 Install counter rear bearing inner race (1) to counter shaft with a pressing machine, using the inserter (A) [SST: ST30032000 (J-26010-01)].

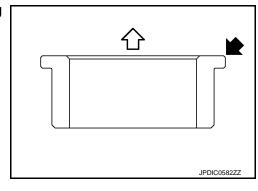
CAUTION:

 Replace counter rear bearing inner race, counter rear bearing, and counter rear bearing spacer as a set.



 Be careful with the orientation of counter rear bearing inner race.

: 4th counter gear side

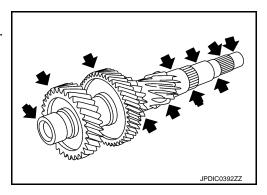


Inspection INFOID:000000005233376

INSPECTION AFTER DISASSEMBLY

Shaft and Gear

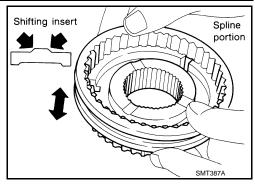
- Check the shaft for damage or bend. Replace if necessary.
- Check the gears for any damage, scaling, or uneven wear.
 Replace if necessary.



Synchronizer Hub and Coupling Sleeve

< UNIT DISASSEMBLY AND ASSEMBLY >

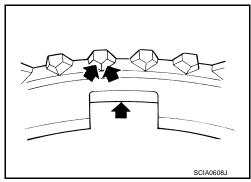
- Check the contact surface of the coupling sleeve, synchronizer hub, and shifting inserts for damage and uneven wear. Replace if necessary.
- The coupling sleeve and synchronizer hub moves smoothly.



[6MT: FS6R31A]

Baulk Ring and Spread Spring

- Check the cam surface and contact surface of the baulk ring for damage and uneven wear. Replace if necessary.
- Check the spread springs for damage. Replace if necessary.

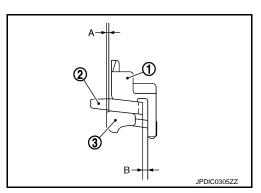


Baulk Ring Clearance for Double Cone Synchronizer (4th)

Measure the clearance of outer baulk ring (1), synchronizer cone (2), and inner baulk ring (3) with the following procedure.

CAUTION:

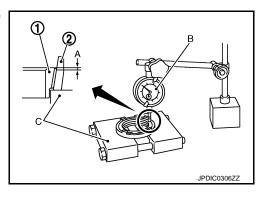
The outer baulk ring, synchronizer cone, and inner baulk ring manage the clearances "A" and "B" as a set. Therefore, replace them as a set if the clearances are outside the limit value.



 Measure the clearance "A" at 2 points or more on the opposite side, using a dial indicator (B) and the puller (C) [SST: ST30031000 (J-22912-01)], and then calculate the mean value.

1 : Inner baulk ring2 : Synchronizer cone

Clearance "A": Refer to <u>TM-148</u>, "Baulk Ring Clearance".



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< UNIT DISASSEMBLY AND ASSEMBLY >

Measure the clearance "B" at 2 points or more on the opposite side, using a feeler gauge (A), and then calculate the mean value.

> : Outer baulk ring 1 : Synchronizer cone

Clearance "B" : Refer to TM-148, "Baulk Ring Clear-

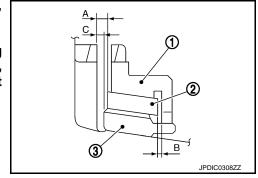
ance".

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[6MT: FS6R31A]

Baulk Ring Clearance for Triple Cone Synchronizer (3rd) Measure the clearance of outer baulk ring (1), synchronizer cone (2), and inner baulk ring (3) with the following procedure. **CAUTION:**

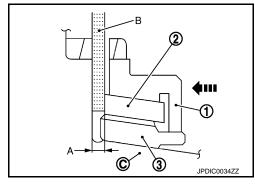
The outer baulk ring, synchronizer cone, and inner baulk ring manage the clearances "A", "B", and "C" as a set. Therefore, replace them as a set if the clearances are outside the limit value.



1. Measure the clearance "A" when pressing the outer baulk ring (1) against the cone (C) of clutch gear by hands at 2 points or more on the opposite side, using a feeler gauge (B), and then calculate the mean value.

> : Synchronizer cone : Inner baulk ring

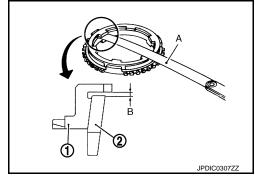
Clearance "A" : Refer to TM-148, "Baulk Ring Clearance".



Measure the clearance "B" at 2 points or more on the opposite side, using a feeler gauge (A), and then calculate the mean value.

: Outer baulk ring : Synchronizer cone

Clearance "B" : Refer to TM-148, "Baulk Ring Clearance".



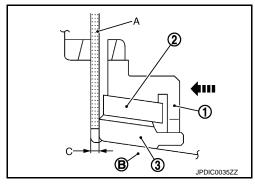
< UNIT DISASSEMBLY AND ASSEMBLY >

3. Measure the clearance "C" when pressing the outer baulk ring (1) against the cone (B) of clutch gear by hands at 2 points or more on the opposite side, using a feeler gauge (A), and then calculate the mean value.

2 : Synchronizer cone3 : Inner baulk ring

Clearance "C" : Refer to TM-148, "Baulk Ring Clear-

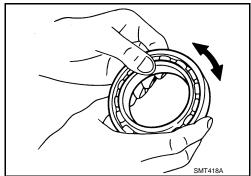
ance".



[6MT: FS6R31A]

Bearing

Check the bearing for damage and unsmooth rotation. Replace if necessary.



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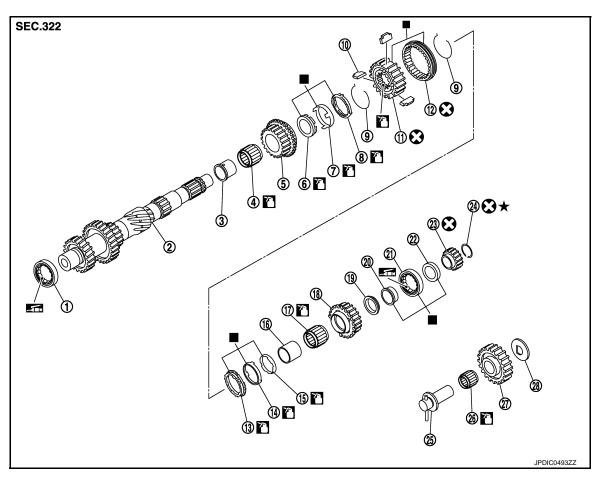
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Revision: 2009 July **TM-139** 2010 370Z

REVERSE IDLER SHAFT AND GEAR

Exploded View



- Counter front bearing
- 4. 3rd needle bearing
- 7. 3rd synchronizer cone
- 10. 3rd-4th shifting insert
- 13. 4th outer baulk ring
- 16. 4th gear bushing
- 19. 4th counter gear thrust washer
- 22. Counter rear bearing spacer
- 25. Reverse idler shaft
- 28. Reverse idler thrust washer
- : Replace the parts as a set.
- Apply gear oil.
- Apply lithium-based grease including molybdenum disulphide.

Refer to GI-4, "Components" for symbols not described on the above.

• Apply gear oil to gears, shafts, synchronizers, and bearings when assembling.

2.

5.

26. Reverse idler needle bearing

3rd counter gear

14. 4th synchronizer cone

23. Reverse counter gear

17. 4th needle bearing

3rd outer baulk ring

3rd-4th synchronizer hub

20. Counter rear bearing inner race

- Counter shaft 3. 3rd gear bushing
 - 3rd inner baulk ring
 - 9. 3rd-4th spread spring

[6MT: FS6R31A]

- 12. 3rd-4th coupling sleeve
- 15. 4th inner baulk ring
- 18. 4th counter gear
- 21. Counter rear bearing
- 24. Snap ring
- 27. Reverse idler gear

Disassembly

JISASSEMDIY INFOID:000000005233378

- 1. Remove reverse idler thrust washer from reverse idler shaft.
- 2. Remove reverse idler gear from reverse idler shaft.
- 3. Remove reverse idler needle bearing from reverse idler shaft.

REVERSE IDLER SHAFT AND GEAR [6MT: FS6R31A] < UNIT DISASSEMBLY AND ASSEMBLY > Assembly INFOID:0000000005233379 Α Note the following, and assemble in the reverse order of disassembly. **CAUTION:** Apply gear oil to reverse idler needle bearing. В Inspection INFOID:0000000005233380 INSPECTION AFTER DISASSEMBLY C Shaft and Gear · Check the shaft for damage or bend. Replace if necessary. TΜ Check the gear for any damage, scaling, or uneven wear. Replace if necessary. Bearing Check the bearing for damage and unsmooth rotation. Replace if necessary. Е F Н K L M Ν

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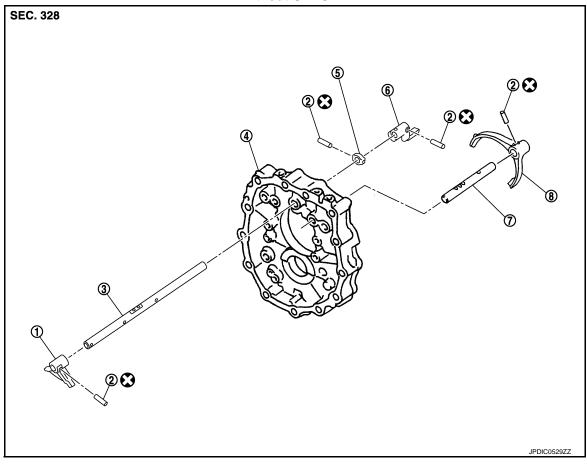
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[6MT: FS6R31A]

SHIFT FORK AND FORK ROD

Exploded View

Without S-MODE



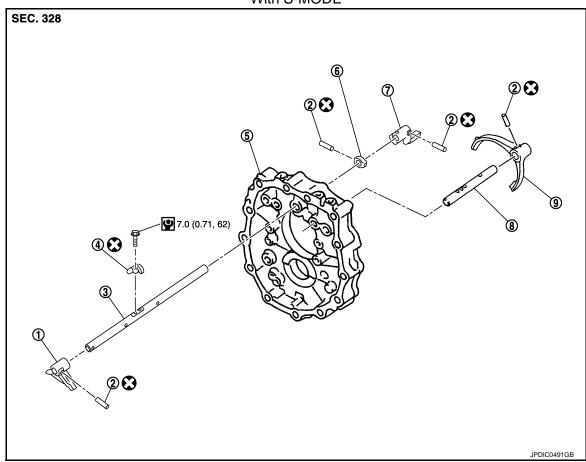
- 1. Striking lever
- 4. Adapter plate
- 7. Reverse fork rod
- 2. Retaining pin
- 5. Stopper ring
- 8. Reverse shift fork

Refer to GI-4, "Components" for the symbols in the figure.

- 3. Striking rod
- 6. Low/high control lever

[6MT: FS6R31A]

With S-MODE



- 1. Striking lever
- 4. Gear lever position sensor magnet
- 7. Low/high control lever
- 2. Retaining pin
- 5. Adapter plate
- 8. Reverse fork rod
- Refer to GI-4, "Components" for the symbols in the figure.

- 3. Striking rod
- 6. Stopper ring
- 9. Reverse shift fork

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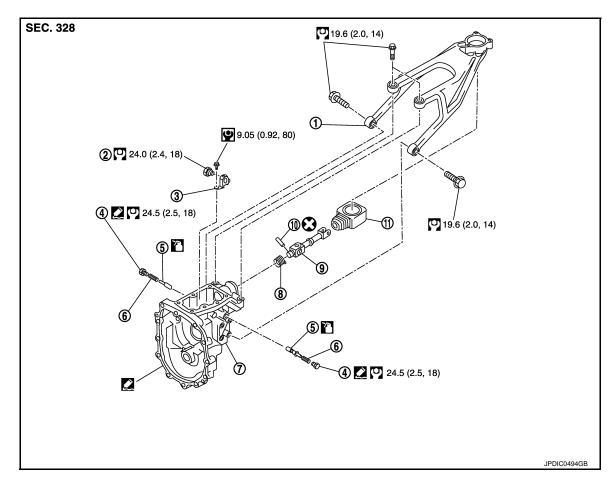
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- 1. Control lever housing
- 4. Return spring plug
- 7. Rear extension
- 10. Retaining pinApply gear oil.

- 2. Check shift pin
- 5. Return spring plunger
- 8. Boot
- 11. Control rod boot

- 3. Control bracket
- 6. Return spring
- Control rod

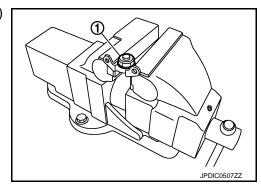
Apply Genuine Silicone RTV or an equivalent. Refer to GI-18, "Recommended Chemical Products and Sealants". Refer to GI-4, "Components" for symbols not described on the above.

Disassembly

For disassembly procedures other than the following items, refer to "SHIFT FORK AND FORK ROD" in TM-55, "WITHOUT S-MODE: Disassembly" (Without S-MODE) or TM-88, "WITH S-MODE: Disassembly" (With S-MODE).

CHECK SHIFT PIN

Set the control bracket to a vise and then remove check shift pin (1) from control bracket.



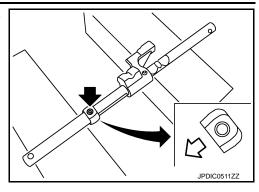
STRIKING ROD

SHIFT FORK AND FORK ROD

< UNIT DISASSEMBLY AND ASSEMBLY >

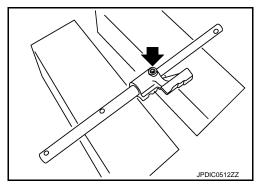
Remove retaining pin (), using a pin punch [Commercial service tool] and then remove stopper ring from striking rod.

: Transmission front



[6MT: FS6R31A]

Remove retaining pin (←), using a pin punch [Commercial service tool] and then remove low/high control lever from striking rod.



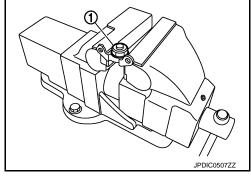
Assembly

For assembly procedures other than the following items, refer to "SHIFT FORK AND FORK ROD" in <u>TM-63</u>, "<u>WITHOUT S-MODE</u>: <u>Assembly</u>" (Without S-MODE) or <u>TM-96</u>, "<u>WITH S-MODE</u>: <u>Assembly</u>" (With S-MODE).

CHECK SHIFT PIN

- Set the control bracket to a vise and then install check shift pin

 (1) to control bracket.
- 2. Tighten check shift pin to the specified torque.

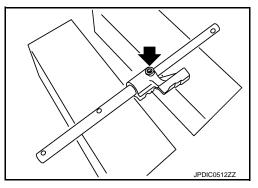


STRIKING ROD

1. Install low/high control lever to striking rod and then install retaining pin (←) to low/high control lever, using a pin punch [Commercial service tool].

CAUTION:

- Never reuse retaining pin.
- Be careful with the orientation of low/high control lever and striking rod.
- Assemble retaining pin from the direction shown by the arrow in the figure until it becomes flush with the end surface of low/high control lever.



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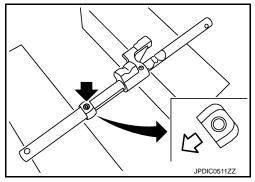
SHIFT FORK AND FORK ROD

< UNIT DISASSEMBLY AND ASSEMBLY >

Install stopper ring to striking rod and then install retaining pin
 (←) to stopper ring, using a pin punch [Commercial service tool].

CAUTION:

- · Never reuse retaining pin.
- Be careful with the orientation of stopper ring and striking rod.
- Assemble retaining pin from the direction shown by the arrow in the figure until it becomes flush with the end surface of stopper ring.



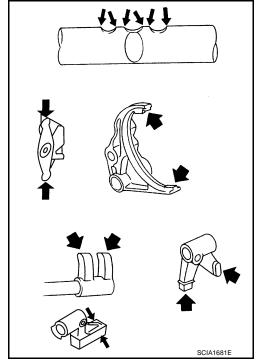
[6MT: FS6R31A]

Inspection INFOID:0000000052333884

INSPECTION AFTER DISASSEMBLY

Shift Fork and Fork Rod

 Check the contact surface of each forks, rods, levers, and brackets for excessive wear, uneven wear, bend, and damage. Replace if necessary.



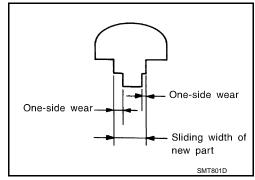
• Check if the width of shift fork hook (sliding area with coupling sleeve) is within allowable specification below.

One-side wear specification : Refer to TM-148, "Shift

Fork".

Sliding width of new part : Refer to TM-148, "Shift

Fork".



SERVICE DATA AND SPECIFICATIONS (SDS)

[6MT: FS6R31A]

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< SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

General Specification

Transmission type	type		FS6R31A	
Engine type			VQ37VHR	
Axle type			2WD	
Model code number			1EA0A	1EA0B
Number of speed				6
Shift pattern				
			1 3 1 N 1 2 4	5 1 6 R
O			\A/	SCIA0955E
Synchromesh type	104			arner
Gear ratio	1st 2nd			794 324
	3rd			624
	4th			271
	5th			000
	6th		0.794	
	Reverse		3.446	
Number of teeth	Main gear	Drive		26
		1st	37	
		2nd		34
		3rd		33
		4th		31
		6th		31
		Reverse		42
	Counter gear	Drive		32
		1st		12
		2nd		18
		3rd		25
		4th		30
		6th		48
		Reverse		15
	Reverse idler gear			26
Oil capacity (Reference)	T	ℓ (US pt, Imp pt)		2.83 (6, 5)
Remarks	Reverse synchronize			talled
	Double cone synchro		4th	
	Triple cone synchror			d, and 3rd
	SynchroRev Match mode (S-MODE)		Not installed	Installed

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

[6MT: FS6R31A]

End Play

Unit: mm (in)

Item	Standard value
Counter shaft	0 – 0.1 (0 – 0.004)
Main drive gear	0 – 0.1 (0 – 0.004)
Mainshaft	0 – 0.1 (0 – 0.004)

Baulk Ring Clearance

INFOID:0000000005233387

Unit: mm (in)

Meas	surement point	Standard value	Limit value
4th (Double-cone synchronizer)	Clearance between synchronizer cone and inner baulk ring end face "A"	0.50 - 0.70 (0.020 - 0.028)	0.3 (0.012)
A PCIB0249E	Clearance between outer baulk ring pawl and synchronizer cone "B"	0.85 - 1.35 (0.033 - 0.053)	0.7 (0.028)
1st, 2nd, and 3rd	Clearance between synchronizer cone	1st: 0.65 – 1.25 (0.026 – 0.049)	0.3 (0.012)
(Triple-cone synchronizer)	and clutch gear end face "A"	2nd: 0.60 - 1.30 (0.024 - 0.051)	0.3 (0.012)
~ 		3rd: 0.60 - 1.30 (0.024 - 0.051)	0.3 (0.012)
	Clearance between outer baulk ring pawl and synchronizer cone "B"	0.85 - 1.35 (0.033 - 0.053)	0.7 (0.028)
	Clearance between inner baulk ring	1st: 0.80 – 1.20 (0.031 – 0.047)	0.3 (0.012)
C B _{PCIB0835} J	and clutch gear end face "C"	2nd: 0.75 – 1.25 (0.030 – 0.049)	0.3 (0.012)
		3rd: 0.75 – 1.25 (0.030 – 0.049)	0.3 (0.012)
5th and 6th		0.70 - 1.35 (0.028 - 0.053)	0.5 (0.020)
Reverse		0.75 - 1.20 (0.030 - 0.047)	0.5 (0.020)

Shift Fork

Unit: mm (in)

Measurement point		One-side wear specification	Sliding width of new part
	1st-2nd	0.2 (0.008)	7.80 – 7.93 (0.3071 – 0.3122)
	3rd-4th	0.2 (0.008)	7.80 – 7.93 (0.3071 – 0.3122)
	5th-6th	0.2 (0.008)	7.80 – 7.93 (0.3071 – 0.3122)
One-side wear One-side wear Sliding width of new part SMT801D	Reverse	0.2 (0.008)	7.80 – 7.93 (0.3071 – 0.3122)

DIAGNOSIS AND REPAIR WORK FLOW

[7AT: RE7R01A] < BASIC INSPECTION >

BASIC INSPECTION

DIAGNOSIS AND REPAIR WORK FLOW

Diagnosis Flow INFOID:0000000005233389

$oldsymbol{1}$ -OBTAIN INFORMATION ABOUT SYMPTOM

- Refer to TM-150, "Question sheet" and interview the customer to obtain the malfunction information (conditions and environment when the malfunction occurred) as much as possible when the customer brings in the vehicle.
- 2. Check the following:
- Service history
- Harnesses and connectors malfunction. Refer to GI-39, "Intermittent Incident".

>> GO TO 2.

2.check dtc

- 1. Before checking the malfunction, check whether any DTC exists.
- 2. If DTC exists, perform the following operations.
- Record the DTC and freeze frame data. (Print out the data using CONSULT-III and affix them to the Work Order Sheet.)
- Erase DTCs.
- Check the relationship between the cause that is clarified with DTC and the malfunction information described by the customer. TM-289, "Symptom Table" is effective.
- 3. Check the information of related service bulletins and others also.

Do malfunction information and DTC exist?

Malfunction information and DTC exists. >>GO TO 3.

Malfunction information exists, but no DTC. >>GO TO 4.

No malfunction information, but DTC exists. >>GO TO 5.

3.REPRODUCE MALFUNCTION SYMPTOM

Check any malfunction described by a customer, except those with DTC on the vehicle.

Also investigate whether the symptom is a fail-safe or normal operation. Refer to TM-282, "Fail-Safe".

When a malfunction symptom is reproduced, the question sheet is effective. Refer to TM-150, "Question

Verify the relationship between the symptom and the conditions in which the malfunction described by the customer occurs.

>> GO TO 5.

4. REPRODUCE MALFUNCTION SYMPTOM

Check the malfunction described by the customer on the vehicle.

Also investigate whether the symptom is a fail-safe or normal operation. Refer to TM-282, "Fail-Safe".

When a malfunction symptom is reproduced, the question sheet is effective. Refer to TM-150, "Question

Verify the relationship between the symptom and the conditions in which the malfunction described by the customer occurs.

>> GO TO 6.

${f 5}$.PERFORM "DTC CONFIRMATION PROCEDURE"

Perform "DTC CONFIRMATION PROCEDURE" of the appropriate DTC to check if DTC is detected again. Refer to TM-286, "DTC Inspection Priority Chart" when multiple DTCs are detected, and then determine the order for performing the diagnosis.

NOTE:

If no DTC is detected, refer to the freeze frame data.

Is any DTC detected?

>> GO TO 7. YES

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DIAGNOSIS AND REPAIR WORK FLOW

< BASIC INSPECTION > [7AT: RE7R01A]

NO >> Check according to GI-39, "Intermittent Incident".

$oldsymbol{6}.$ IDENTIFY MALFUNCTIONING SYSTEM WITH "DIAGNOSIS CHART BY SYMPTOM"

Use <u>TM-289</u>, "Symptom Table" from the symptom inspection result in step 4. Then identify where to start performing the diagnosis based on possible causes and symptoms.

>> GO TO 8.

7. REPAIR OR REPLACE THE MALFUNCTIONING PARTS

Repair or replace the detected malfunctioning parts.

Reconnect parts or connector after repairing or replacing, and then erase DTC if necessary.

>> GO TO 8.

8. FINAL CHECK

Perform "DTC CONFIRMATION PROCEDURE" again to make sure that the repair is correctly performed. Check that malfunctions are not reproduced when obtaining the malfunction information from the customer, referring to the symptom inspection result in step 3 or 4.

Is DTC or malfunction symptom reproduced?

YES-1 (DTC is reproduced)>>GO TO 5.

YES-2 (Malfunction symptom is reproduced)>>GO TO 6.

NO >> Before delivering the vehicle to the customer, make sure that DTC is erased.

Question sheet

DESCRIPTION

There are many operating conditions that may cause a malfunction of the transmission parts. By understanding those conditions properly, a quick and exact diagnosis can be achieved.

In general, customers have their own criteria for a problem. Therefore, it is important to understand the symptom and status well enough by asking the customer about the concerns carefully. In order to systemize all the information for the diagnosis, prepare the question sheet referring to the question points.

KEY POINTS

WHAT Vehicle & engine model
WHEN Date, Frequencies
WHERE..... Road conditions
HOW Operating conditions,
Weather conditions,
Symptoms

SEF907L

WORKSHEET SAMPLE

Question Sheet				
Customer name	MR/MS	Engine #	Manuf. Da	te
		Incident Date	VIN	
		Model & Year	In Service	Date
		Trans.	Mileage	km / Mile

DIAGNOSIS AND REPAIR WORK FLOW

< BASIC INSPECTION > [7AT: RE7R01A]

			Questi	on Sheet				٨
Symptoms		☐ Vehicle does	not move (□ A	Any position 🔲	Particular position)	Α
	•	□ No up-shift 6GR □ 6GR -		2GR → 3GF	R □ 3GR → 4GF	R □ 4GR → 5GR	5 □ 5GR →	В
☐ No down-sh 2GR ☐ 2GR				GR □ 6GR → 50	GR □ 5GR → 40	GR □ 4GR → 3G	R □ 3GR →	D
		☐ Lock-up malf	Lock-up malfunction					С
	•	☐ Shift point too	high or too low					
	•	☐ Shift shock o	r slip					
	•	☐ Noise or vibra	ation					TM
	•	☐ No kick down	1					
		☐ No pattern se	elect					Е
		☐ Others					<u> </u>	_
Frequency		☐ All the time	☐ Under certair	conditions	☐ Sometimes (times a day)		F
Weather conditions		☐ Not affected						
	Weather	☐ Fine	☐ Clouding	☐ Raining	☐ Snowing	☐ Other ()	
	Temp.	□ Hot	□ Warm	□ Cool	□ Cold	☐ Temp. [Approx °F)]	°C (G
	Humidity	☐ High	☐ Middle	□ Low				Н
Transmission condit	ions	□ Not affected						111
	•	□ Cold	☐ During warm	-up	☐ After warm-up)		
	•	☐ Engine speed) t	rpm)			<u> </u>	
Road conditions		☐ Not affected						
		☐ In town	☐ In suburbs	☐ Freeway	☐ Off road (Up /	Down)		
Driving conditions		☐ Not affected						J
		☐ At starting	☐ While idling	☐ While engine	racing	II At racing	While cruis- ng	K
		☐ While accele	rating	☐ While decele	rating	☐ While turning (Right / Left)	11
		☐ Vehicle spee	d [km/h (MPH)]			
Other conditions							_	L
								D. A
								M

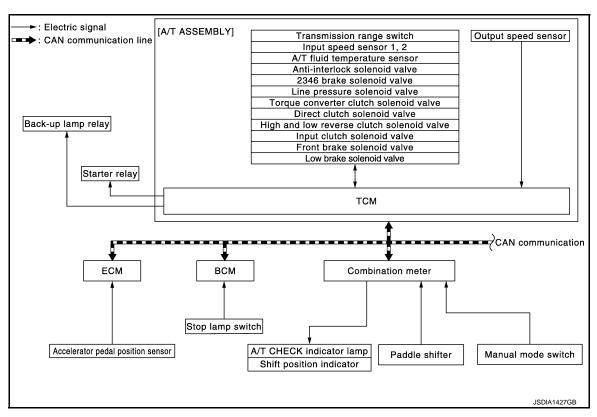
Revision: 2009 July **TM-151** 2010 370Z

INFOID:0000000005233391

SYSTEM DESCRIPTION

A/T CONTROL SYSTEM

System Diagram



System Description

INFOID:0000000005233392

INPUT/OUTPUT SIGNAL CHART

Sensor (or signal)	TCM function	Actuator
 Transmission range switch Accelerator pedal position signal Closed throttle position signal Wide open throttle position signal Engine speed signal A/T fluid temperature sensor Output speed sensor Vehicle speed signal Manual mode switch signal Stop lamp switch signal Input speed sensor 1, 2 	Line pressure control (TM-155) Shift change control (TM-159) Shift pattern control Shift pattern (TM-164) Manual mode (TM-167) Lock-up control (TM-170) Fail-safe control (TM-282) Self-diagnosis (TM-203) CONSULT-III communication line (TM-203) CAN communication line (TM-209)	Input clutch solenoid valve Direct clutch solenoid valve Front brake solenoid valve High and low reverse clutch solenoid valve Low brake solenoid valve Torque converter clutch solenoid valve Line pressure solenoid valve Anti-interlock solenoid valve 2346 brake solenoid valve A/T CHECK indicator lamp Back-up lamp relay Starter relay

SYSTEM DESCRIPTION

- 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.
- Receive input signals transmitted from various switches and sensors.
- Determine required line pressure, shifting point, lock-up operation, etc.
- Transmit required output signals to the respective solenoids.

Component Parts Location

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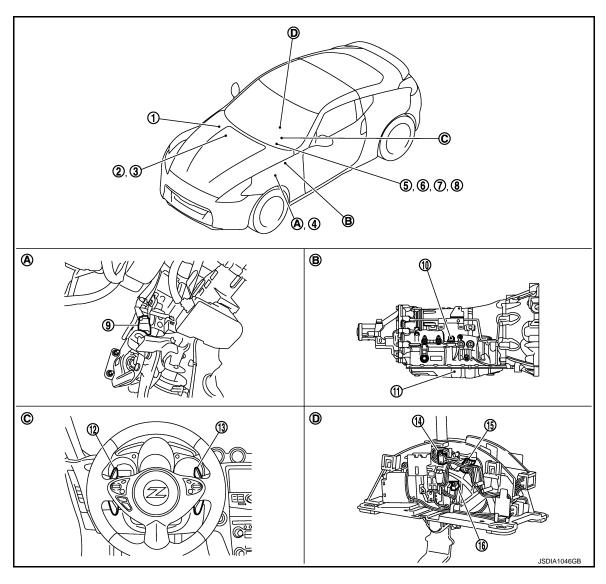
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- IPDM E/R
 Refer to PCS-6, "Component Parts
 Location".
- Accelerator pedal position sensor Refer to <u>EC-27</u>, "Component Parts <u>Location"</u>.
- 7. Shift position indicator (On the combination meter)
- 10. A/T assembly connector
- 13. Paddle shifter (shift-up)
- 16. Manual mode select switch
- A. Brake pedal
- D. A/T shift selector assembly

- 2. ECM
 - Refer to <u>EC-27</u>, "Component Parts <u>Location"</u>.
- 5. Combination meter
- Manual mode indicator (On the combination meter)
- 11. Control valve with TCM*
- 14. Manual mode position select switch (shift-up)
- B. A/T assembly

- 3. BCM
 Refer to BCS-9, "Component Parts
 Location".
- A/T CHECK indicator lamp (On the combination meter)
- 9. Stop lamp switch
- 12. Paddle shifter (shift-down)
- Manual mode position select switch (shift-down)
- C. Steering wheel

NOTE:

The following components are included in control valve with TCM.

- TCM
- Input speed sensor 1, 2
- · Output speed sensor

A/T CONTROL SYSTEM

< SYSTEM DESCRIPTION >

- A/T fluid temperature sensor
- Transmission range switch
- · Direct clutch solenoid valve
- High and low reverse clutch solenoid valve
- Input clutch solenoid valve
- · Front brake solenoid valve
- · Low brake solenoid valve
- · Anti-interlock solenoid valve
- 2346 brake solenoid valve
- · Line pressure solenoid valve
- Torque converter clutch solenoid valve
- *: Control valve with TCM is included in A/T assembly.

Component Description

INFOID:0000000005233394

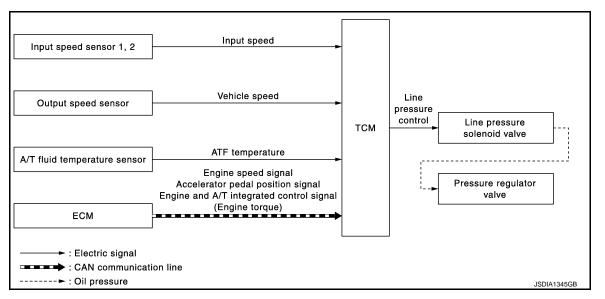
[7AT: RE7R01A]

Name	Function
TCM	The TCM consists of a microcomputer and connectors for signal input and output and for power supply. The TCM controls the A/T.
Transmission range switch	TM-212, "Description"
Output speed sensor	TM-217, "Description"
Input speed sensor 1	TM 245 "Description"
Input speed sensor 2	TM-215, "Description"
A/T fluid temperature sensor	TM-213, "Description"
Input clutch solenoid valve	TM-239, "Description"
Front brake solenoid valve	TM-242, "Description"
Direct clutch solenoid valve	TM-260, "Description"
High and low reverse clutch solenoid valve	TM-257, "Description"
Low brake solenoid valve	TM-258, "Description"
Anti-interlock solenoid valve	TM-238, "Description"
2346 brake solenoid valve	TM-259, "Description"
Torque converter clutch solenoid valve	TM-234, "Description"
Line pressure solenoid valve	TM-237, "Description"
Accelerator pedal position sensor	TM-243, "Description"
Manual mode switch	TM-251, "Description"
Paddle shifter	TM-251, "Description"
Starter relay	TM-210, "Description"
A/T CHECK indicator lamp	When the ignition switch is pushed to the ON position, the light comes on for 2 seconds.
Stop lamp switch	TM-264, "Description"
ECM	EC-27, "System Description"
BCM	BCS-8, "System Description"
Combination meter	MWI-6, "METER SYSTEM : System Description"

INFOID:0000000005233395

LINE PRESSURE CONTROL

System Diagram



System Description

INPUT/OUTPUT SIGNAL CHART

Sensor	Input signal to TCM	TCM function	Actuator
Input speed sensor 1, 2	Input speed		
Output speed sensor	Vehicle speed		
A/T fluid temperature sensor	ATF temperature	Line pressure control	Line pressure solenoid valve
ECM	Engine speed signal*		
	Accelerator pedal position signal*		Pressure regulator valve
	Engine and A/T integrated control signal (Engine torque)*		

^{*:} This signal is transmitted via CAN communication line.

SYSTEM DESCRIPTION

- When an engine and A/T integrated control signal (engine torque) equivalent to the engine drive force is transmitted from the ECM to the TCM, the TCM controls the line pressure solenoid valve.

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

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Revision: 2009 July **TM-155** 2010 370Z

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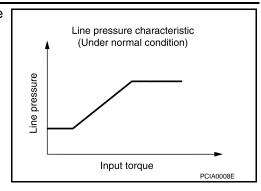
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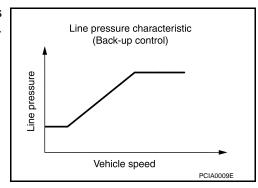
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Each clutch is adjusted to the necessary pressure to match the engine drive force.



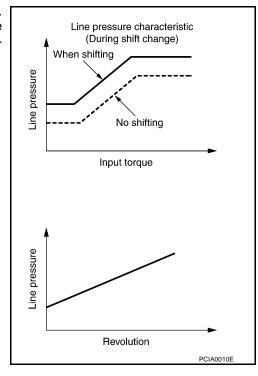
Back-up Control (Engine Brake)

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



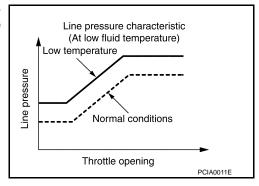
During Shift Change

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



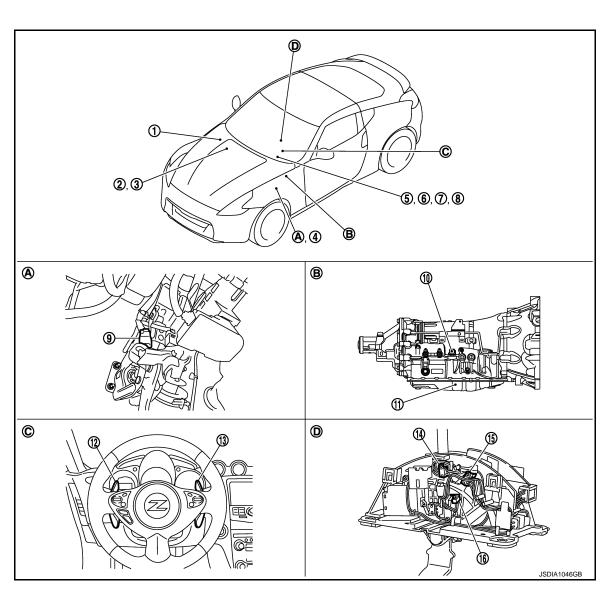
At Low Fluid Temperature

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.



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Component Parts Location



- IPDM E/R
 Refer to PCS-6, "Component Parts
 Location".
- Accelerator pedal position sensor Refer to <u>EC-27</u>, "Component Parts <u>Location"</u>.
- Shift position indicator (On the combination meter)
- 10. A/T assembly connector

- ECM
 Refer to EC-27, "Component Parts
 Location".
- Combination meter
- 8. Manual mode indicator (On the combination meter)
- 11. Control valve with TCM*

- 3. BCM Refer to BCS-9, "Component Parts Location".
- A/T CHECK indicator lamp (On the combination meter)
- Stop lamp switch
- 12. Paddle shifter (shift-down)

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LINE PRESSURE CONTROL

[7AT: RE7R01A] < SYSTEM DESCRIPTION >

13. Paddle shifter (shift-up)

(shift-up)

14. Manual mode position select switch 15. Manual mode position select switch (shift-down)

16. Manual mode select switch

Brake pedal A.

A/T assembly

C. Steering wheel

A/T shift selector assembly

NOTE:

The following components are included in control valve with TCM.

- TCM
- Input speed sensor 1, 2
- · Output speed sensor
- · A/T fluid temperature sensor
- Transmission range switch
- · Direct clutch solenoid valve
- · High and low reverse clutch solenoid valve
- · Input clutch solenoid valve
- · Front brake solenoid valve
- · Low brake solenoid valve
- · Anti-interlock solenoid valve
- · 2346 brake solenoid valve
- · Line pressure solenoid valve
- · Torque converter clutch solenoid valve
- *: Control valve with TCM is included in A/T assembly.

Component Description

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Name	Function	
TCM	The TCM consists of a microcomputer and connectors for signal input and output and for power supply. The TCM controls the A/T.	
Output speed sensor	TM-217, "Description"	
Input speed sensor 1	TALOAS IIDaaasistaali	
Input speed sensor 2	TM-215, "Description"	
A/T fluid temperature sensor	TM-213, "Description"	
Line pressure solenoid valve	TM-237, "Description"	
Pressure regulator valve	Adjusts the oil discharged from the oil pump to the optimum pressure (line pressure) for the driving state.	
ECM	EC-27, "System Description"	

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SHIFT CHANGE CONTROL

System Diagram

High and low reverse clutch Input speed Input speed sensor 1, 2 solenoid valve Direct clutch solenoid valve Vehicle speed Output speed sensor Input clutch solenoid valve Low brake solenoid valve Shift change ATF temperature control A/T fluid temperature sensor TCM 2436 brake solenoid valve Engine speed signal Accelerator pedal position signal Front brake solenoid valve Closed throttle position signal Engine and A/T integrated control signal (Engine torque) Torque converter clutch **ECM** solenoid valve Line pressure solenoid valve Stop lamp switch signal **BCM** Anti-interlock solenoid valve → : Electric signal : CAN communication line JSDIA1346GB

System Description

INPUT/OUTPUT SIGNAL CHART

Sensor	Input signal to TCM	TCM function	Actuator		
Input speed sensor 1, 2	Input speed		High and low reverse		
Output speed sensor	Vehicle speed		clutch solenoid valveDirect clutch solenoid		
A/T fluid temperature sensor	ATF temperature	valve			
	Endine speed signal"		 Input clutch solenoid valve Low brake solenoid valve 		
	Accelerator pedal position signal*	Shift change control	2346 brake solenoid valve		
ECM	Closed throttle position signal*				
	Engine and A/T integrated control signal (Engine torque)*		lenoid valve • Line pressure solenoid		
ВСМ	Stop lamp switch signal*		valveAnti-interlock solenoid valve		

^{*:} This signal is transmitted via CAN communication line.

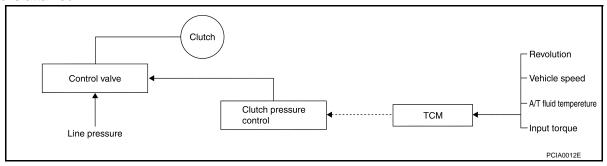
SYSTEM DESCRIPTION

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

SHIFT CHANGE CONTROL

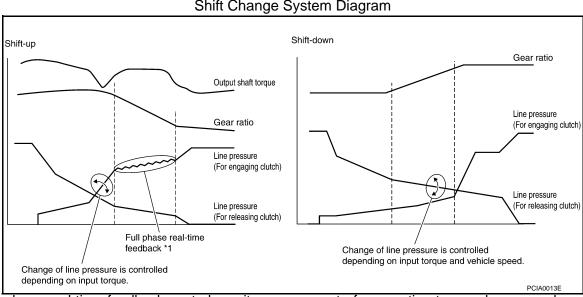
[7AT: RE7R01A]

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.



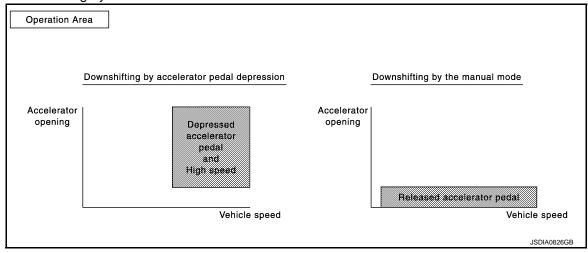
Shift Change System Diagram

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

Blipping Control

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

- "BLIPPING CONTROL" functions.
- When downshifting by accelerator pedal depression.
- When downshifting by the manual mode.



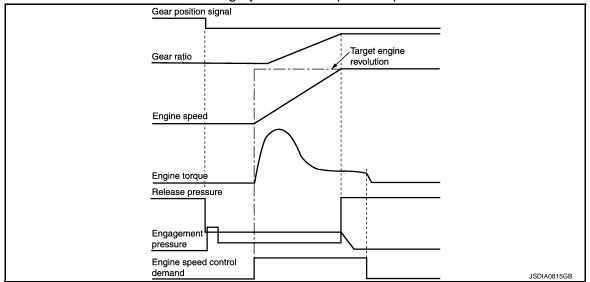
SHIFT CHANGE CONTROL

< SYSTEM DESCRIPTION >

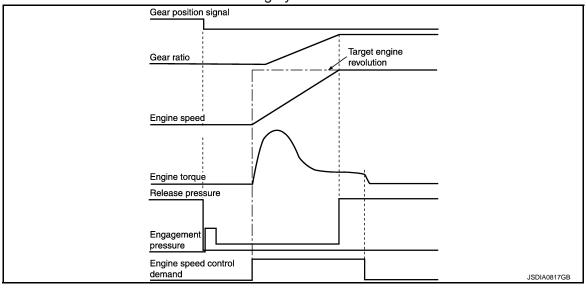
[7AT: RE7R01A]

- TCM selects "BLIPPING CONTROL" or "NORMAL SHIFT CONTROL" according to the gear position, the selector lever position, the engine torque and the speed when accelerating by pedal depression.
- Engine speed control demand signal is transmitted from TCM to ECM under "BLIPPING CONTROL".
- ECM synchronizes the engine speed according to the engine speed control demand signal.

Downshifting by accelerator pedal depression



Downshifting by the manual mode



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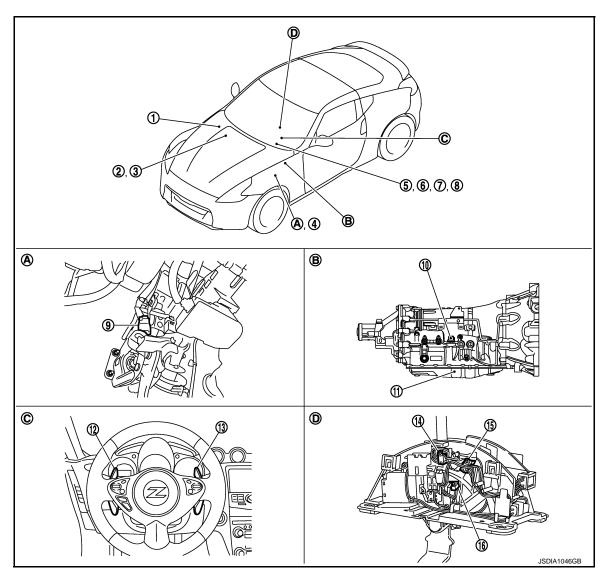
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Component Parts Location

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- IPDM E/R
 Refer to PCS-6, "Component Parts
 Location".
- Accelerator pedal position sensor Refer to <u>EC-27</u>, "Component Parts <u>Location"</u>.
- 7. Shift position indicator (On the combination meter)
- 10. A/T assembly connector
- 13. Paddle shifter (shift-up)
- 16. Manual mode select switch
- A. Brake pedal
- D. A/T shift selector assembly

2. ECM

Refer to EC-27, "Component Parts Location".

- 5. Combination meter
- 8. Manual mode indicator (On the combination meter)
- 11. Control valve with TCM*
- 14. Manual mode position select switch (shift-up)
- B. A/T assembly

3. BCM

Refer to BCS-9, "Component Parts Location".

- A/T CHECK indicator lamp (On the combination meter)
- 9. Stop lamp switch
- 12. Paddle shifter (shift-down)
- 15. Manual mode position select switch (shift-down)
- C. Steering wheel

NOTE:

The following components are included in control valve with TCM.

- TCM
- Input speed sensor 1, 2
- · Output speed sensor

SHIFT CHANGE CONTROL

< SYSTEM DESCRIPTION > [7AT: RE7R01A]

- A/T fluid temperature sensor
- Transmission range switch
- · Direct clutch solenoid valve
- High and low reverse clutch solenoid valve
- Input clutch solenoid valve
- · Front brake solenoid valve
- Low brake solenoid valve
- · Anti-interlock solenoid valve
- 2346 brake solenoid valve
- · Line pressure solenoid valve
- Torque converter clutch solenoid valve
- *: Control valve with TCM is included in A/T assembly.

Component Description

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Name	Function
ТСМ	The TCM consists of a microcomputer and connectors for signal input and output and for power supply. The TCM controls the A/T.
Output speed sensor	TM-217, "Description"
Input speed sensor 1	TM-215, "Description"
Input speed sensor 2	TWI-215, Description
A/T fluid temperature sensor	TM-213, "Description"
Input clutch solenoid valve	TM-239, "Description"
Front brake solenoid valve	TM-242, "Description"
Direct clutch solenoid valve	TM-260, "Description"
High and low reverse clutch solenoid valve	TM-257, "Description"
Low brake solenoid valve	TM-258, "Description"
Anti-interlock solenoid valve	TM-238, "Description"
2346 brake solenoid valve	TM-259, "Description"
Line pressure solenoid valve	TM-237, "Description"
Torque converter clutch solenoid valve	TM-234, "Description"
ECM	EC-27, "System Description"
BCM	BCS-8, "System Description"

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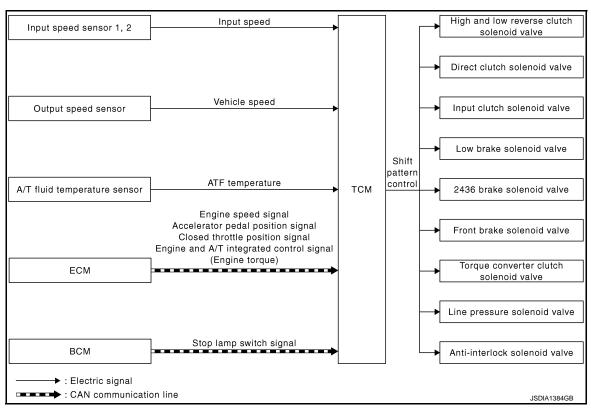
Revision: 2009 July **TM-163** 2010 370Z

SHIFT PATTERN CONTROL SHIFT PATTERN

SHIFT PATTERN : System Diagram

INFOID:0000000005233403

[7AT: RE7R01A]



SHIFT PATTERN: System Description

INFOID:0000000005233404

INPUT/OUTPUT SIGNAL CHART

Sensor	Input signal to TCM	TCM function	Actuator				
Input speed sensor 1, 2	Input speed		High and low reverse				
Output speed sensor	Vehicle speed		clutch solenoid valveDirect clutch solenoid valve				
A/T fluid temperature sensor	ATF temperature						
	Engine speed signal*		Input clutch solenoid valveLow brake solenoid valve2346 brake solenoid valve				
	Accelerator pedal position signal*	Shift pattern control					
ECM	Closed throttle position signal*	Shiit pattern control	Front brake solenoid valveTorque converter clutch so-				
	Engine and A/T integrated control signal (engine torque)*		lenoid valve Line pressure solenoid valve Anti-interlock solenoid valve				
ВСМ	Stop lamp switch signal*						

^{*:} This signal is transmitted via CAN communication line.

SYSTEM DESCRIPTION

It automatically selects the shift pattern (such as road environment and driving style) suitable for the various situations so as to allow the vehicle to be driven efficiently and smoothly.

TCM judges up/down slope according to engine torque data transmitted from the ECM and vehicle speed. Fixing at 4GR, 5GR or 6GR on an up-slope prevents shift hunting and controls the vehicle to gain optimum driving force. On a down-slope, automatic shift-down to 4GR, 5GR or 6GR controls to gain optimum engine brake.

SHIFT PATTERN: Component Parts Location

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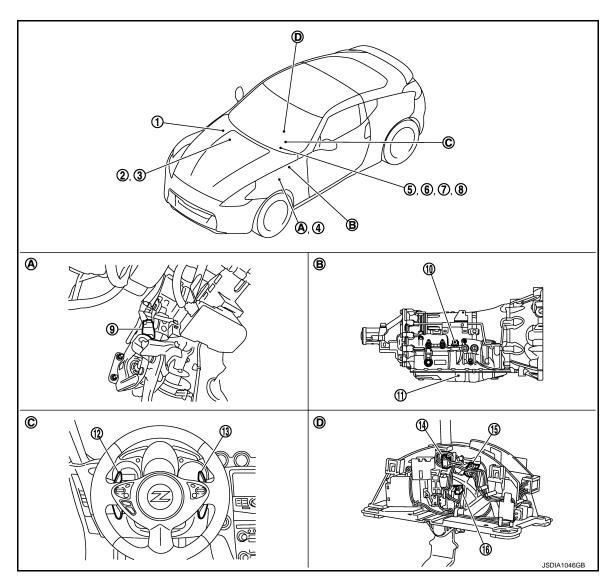
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- IPDM E/R
 Refer to PCS-6, "Component Parts
 Location".
- Accelerator pedal position sensor Refer to <u>EC-27</u>, "Component Parts <u>Location"</u>.
- 7. Shift position indicator (On the combination meter)
- 10. A/T assembly connector
- 13. Paddle shifter (shift-up)
- 16. Manual mode select switch
- A. Brake pedal
- D. A/T shift selector assembly

- ECM
 Refer to <u>EC-27</u>, "Component Parts Location".
- 5. Combination meter
- Manual mode indicator (On the combination meter)
- 11. Control valve with TCM*
- 14. Manual mode position select switch (shift-up)
- B. A/T assembly

- 3. BCM Refer to BCS-9, "Component Parts Location".
- A/T CHECK indicator lamp (On the combination meter)
- 9. Stop lamp switch
- 12. Paddle shifter (shift-down)
- Manual mode position select switch (shift-down)
- C. Steering wheel

NOTE:

The following components are included in control valve with TCM.

- TCM
- Input speed sensor 1, 2
- · Output speed sensor

SHIFT PATTERN CONTROL

< SYSTEM DESCRIPTION >

- A/T fluid temperature sensor
- Transmission range switch
- · Direct clutch solenoid valve
- High and low reverse clutch solenoid valve
- Input clutch solenoid valve
- · Front brake solenoid valve
- · Low brake solenoid valve
- · Anti-interlock solenoid valve
- 2346 brake solenoid valve
- · Line pressure solenoid valve
- Torque converter clutch solenoid valve
- *: Control valve with TCM is included in A/T assembly.

SHIFT PATTERN: Component Description

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[7AT: RE7R01A]

Name	Function
TCM	The TCM consists of a microcomputer and connectors for signal input and output and for power supply. The TCM controls the A/T.
Output speed sensor	TM-217, "Description"
Input speed sensor 1	TM 245 "Description"
Input speed sensor 2	TM-215, "Description"
A/T fluid temperature sensor	TM-213, "Description"
Input clutch solenoid valve	TM-239, "Description"
Front brake solenoid valve	TM-242, "Description"
Direct clutch solenoid valve	TM-260, "Description"
High and low reverse clutch solenoid valve	TM-257, "Description"
Low brake solenoid valve	TM-258, "Description"
Anti-interlock solenoid valve	TM-238, "Description"
2346 brake solenoid valve	TM-259, "Description"
Line pressure solenoid valve	TM-237, "Description"
Torque converter clutch solenoid valve	TM-234, "Description"
ECM	EC-27, "System Description"
BCM	BCS-8, "System Description"

MANUAL MODE

MANUAL MODE: System Diagram

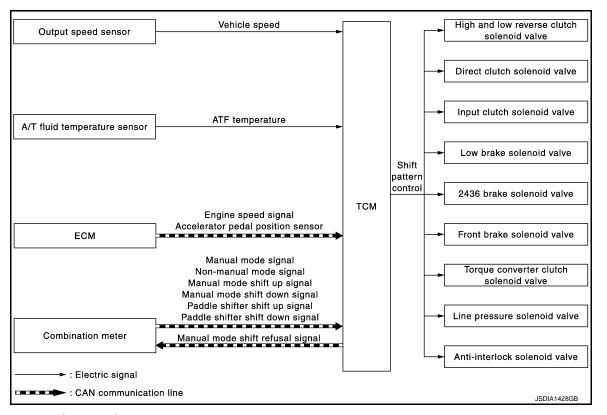
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MANUAL MODE: System Description

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INPUT/OUTPUT SIGNAL CHART

Sensor	Input signal to TCM	TCM function	Actuator			
Output speed sensor	Vehicle speed					
A/T fluid temperature sensor	ATF temperature		High and low reverse clutch			
	Engine speed signal*		solenoid valve			
ECM	Accelerator pedal position signal*		 Direct clutch solenoid valve Input clutch solenoid valve Low brake solenoid valve 			
	Manual mode signal*	Shift pattern control	2346 brake solenoid valveFront brake solenoid valve			
	Non-manual mode signal*					
Combination mater	Manual mode shift up signal*		 Torque converter clutch sole- noid valve 			
Combination meter	Manual mode shift down signal*		Line pressure solenoid valve			
	Paddle shifter shift up signal*		Anti-interlock solenoid valve			
	Paddle shifter shift down signal*					

^{*:} This signal is transmitted via CAN communication line.

SYSTEM DESCRIPTION

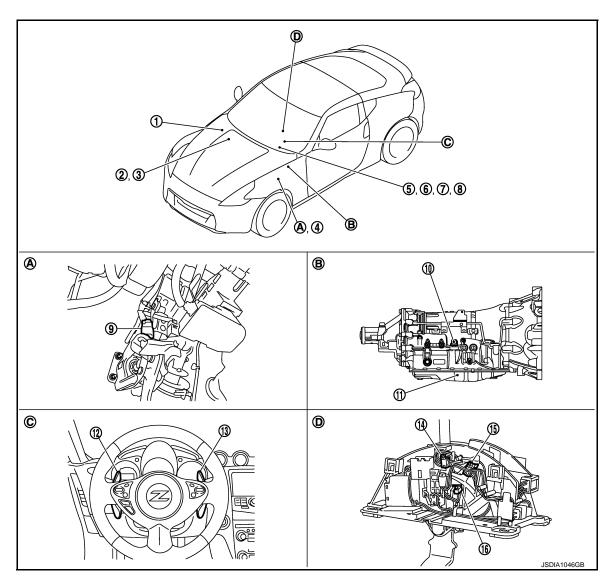
Manual Mode

- The TCM receives the manual mode signal, non-manual mode signal, manual mode shift up signal, manual
 mode shift down signal, paddle shifter shift up signal and paddle shifter shift down signal from combination
 meter via CAN communication line. The TCM shifts shift pattern control to the manual mode based on these
 signals, and then shifts the A/T by operating each solenoid valve according to the shift operation of the
 driver.
- The TCM prohibits the manual mode while being in fail-safe mode due to an A/T malfunction, etc. Refer to TM-282, "Fail-Safe".

- The TCM transmits the manual mode shift refusal signal to the combination meter if the TCM refuses the transmission from the driving status of vehicle when the selector lever or paddle shifter shifts to "UP (+ side)" or "DOWN (- side)" side. The combination meter blinks shift indicator on the combination meter and sounds the buzzer to indicate the driver that the shifting is not performed when receiving this signal. However, the TCM does not transmit the manual mode shift refusal signal in the conditions as per the following.
- When the selector lever or the paddle shifter shifts to "DOWN (- side)" side while driving in 1GR.
- When the selector lever or the paddle shifter shifts to "UP (+ side)" side while driving in 7GR.

MANUAL MODE: Component Parts Location

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- 1. IPDM E/R Refer to PCS-6, "Component Parts Location".
- Accelerator pedal position sensor Refer to EC-27, "Component Parts Location".
- Shift position indicator (On the combination meter)
- 10. A/T assembly connector
- 13. Paddle shifter (shift-up)
- 16. Manual mode select switch

- **ECM** Refer to EC-27, "Component Parts Location".
- Combination meter 5.
- Manual mode indicator (On the combination meter)
- 11. Control valve with TCM*
- (shift-up)
- 3. BCM Refer to BCS-9, "Component Parts Location".
- A/T CHECK indicator lamp (On the combination meter)
- 9. Stop lamp switch
- 12. Paddle shifter (shift-down)
- 14. Manual mode position select switch 15. Manual mode position select switch (shift-down)

SHIFT PATTERN CONTROL

< SYSTEM DESCRIPTION > [7AT: RE7R01A]

A. Brake pedal B. A/T assembly C. Steering wheel

D. A/T shift selector assembly

NOTE:

The following components are included in control valve with TCM.

- TCM
- Input speed sensor 1, 2
- · Output speed sensor
- · A/T fluid temperature sensor
- · Transmission range switch
- · Direct clutch solenoid valve
- · High and low reverse clutch solenoid valve
- · Input clutch solenoid valve
- · Front brake solenoid valve
- · Low brake solenoid valve
- · Anti-interlock solenoid valve
- 2346 brake solenoid valve
- Line pressure solenoid valve
- Torque converter clutch solenoid valve
- *: Control valve with TCM is included in A/T assembly.

MANUAL MODE: Component Description

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Name	Function
TCM	The TCM consists of a microcomputer and connectors for signal input and output and for power supply. The TCM controls the A/T.
Output speed sensor	TM-217, "Description"
A/T fluid temperature sensor	TM-213, "Description"
Input clutch solenoid valve	TM-239, "Description"
Front brake solenoid valve	TM-242, "Description"
Direct clutch solenoid valve	TM-260, "Description"
High and low reverse clutch solenoid valve	TM-257, "Description"
Low brake solenoid valve	TM-258, "Description"
Anti-interlock solenoid valve	TM-238, "Description"
2346 brake solenoid valve	TM-259, "Description"
Line pressure solenoid valve	TM-237, "Description"
Torque converter clutch solenoid valve	TM-234, "Description"
ECM	EC-27, "System Description"
Combination meter	MWI-6, "METER SYSTEM : System Description"

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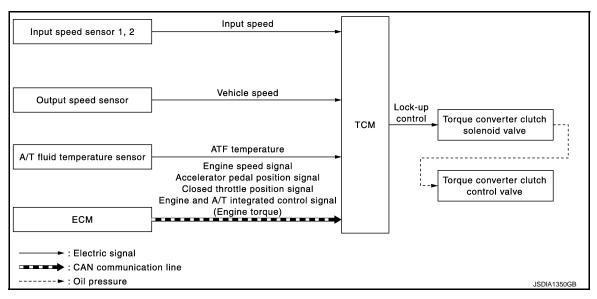
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LOCK-UP CONTROL

System Diagram

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[7AT: RE7R01A]



System Description

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INPUT/OUTPUT SIGNAL CHART

Sensor	Input signal to TCM	TCM function	Actuator	
Input speed sensor 1, 2	Input speed			
Output speed sensor	Vehicle speed		Torque converter clutch sole- noid valve	
A/T fluid temperature sensor	ATF temperature			
	Engine speed signal*	Lock-up control		
	Accelerator pedal position signal*	200K up 00110.	Torque converter clutch con-	
ECM	Closed throttle position signal*		trol valve	
	Engine and A/T integrated control signal (Engine torque)*			

^{*:} This signal is transmitted via CAN communication line.

SYSTEM DESCRIPTION

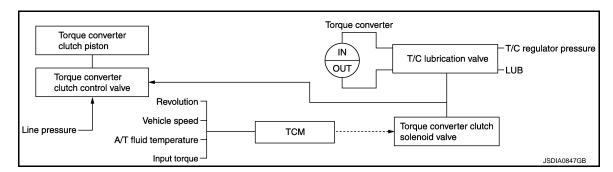
The torque converter clutch piston in the torque converter is engaged to eliminate torque converter slip to increase power transmission efficiency.

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

Lock-up operation condition table

Selector lever			"D" p	osition		"M" position						
Gear position	7	6	5	4	3	2	7	6	5	4	3	2
Lock-up	×	_	_	_	_	_	×	×	×	×	×	×
Slip lock-up	×	×	×	×	×	×	×	×	×	×	×	×

Torque Converter Clutch Control Valve Control Lock-up control system diagram



Lock-up released

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

Lock-up Applied

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

Smooth Lock-up Control

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

Half-clutched State

The current output from the TCM to the torque converter clutch solenoid is varied to steadily increase the
torque converter clutch solenoid pressure.
 In this way, the lock-up apply pressure gradually rises and while the torque converter clutch piston is put into
half-clutched states, 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 2GR, 3GR, 4GR, 5GR, 6GR and 7GR.

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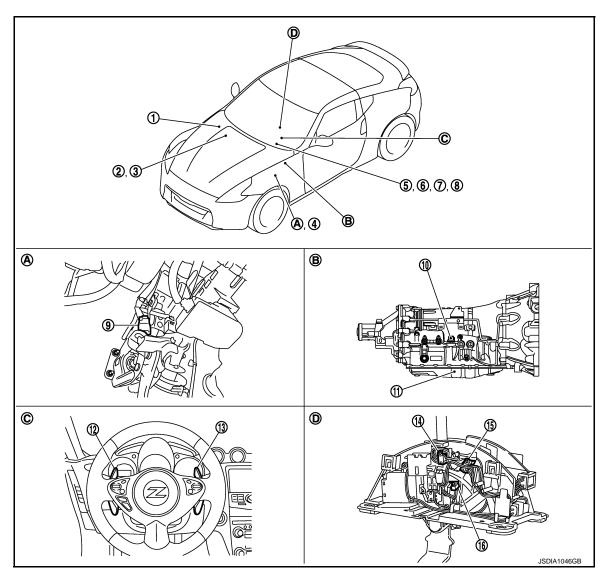
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Component Parts Location

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- IPDM E/R
 Refer to PCS-6, "Component Parts
 Location".
- Accelerator pedal position sensor Refer to <u>EC-27</u>, "Component Parts <u>Location"</u>.
- 7. Shift position indicator (On the combination meter)
- 10. A/T assembly connector
- 13. Paddle shifter (shift-up)
- 16. Manual mode select switch
- A. Brake pedal
- D. A/T shift selector assembly

ECM

Refer to EC-27, "Component Parts Location".

- 5. Combination meter
- 8. Manual mode indicator (On the combination meter)
- 11. Control valve with TCM*
- 14. Manual mode position select switch (shift-up)
- B. A/T assembly

3. BCM

Refer to <u>BCS-9</u>, "Component Parts <u>Location"</u>.

- A/T CHECK indicator lamp (On the combination meter)
- 9. Stop lamp switch
- 12. Paddle shifter (shift-down)
- 15. Manual mode position select switch (shift-down)
- C. Steering wheel

NOTE:

The following components are included in control valve with TCM.

- TCM
- Input speed sensor 1, 2
- · Output speed sensor

LOCK-UP CONTROL

[7AT: RE7R01A] < SYSTEM DESCRIPTION >

- A/T fluid temperature sensor
- Transmission range switch
- Direct clutch solenoid valve
- · High and low reverse clutch solenoid valve
- Input clutch solenoid valve
- · Front brake solenoid valve
- · Low brake solenoid valve
- · Anti-interlock solenoid valve
- 2346 brake solenoid valve
- · Line pressure solenoid valve
- Torque converter clutch solenoid valve
- *: Control valve with TCM is included in A/T assembly.

Component Description

INFOID:0000000005233414

Name	Function				
ТСМ	The TCM consists of a microcomputer and connectors for signal input and output and for power supply. The TCM controls the A/T.				
Output speed sensor	TM-217, "Description"				
Input speed sensor 1					
Input speed sensor 2	TM-215, "Description"				
A/T fluid temperature sensor	TM-213, "Description"				
Torque converter clutch solenoid valve	TM-234, "Description"				
Torque converter clutch control valve	Switches the lock-up to operating or released. Also, by performing the lock-up operation transiently, lock-up smoothly.				
ECM	EC-27, "System Description"				

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TM-173 Revision: 2009 July 2010 370Z

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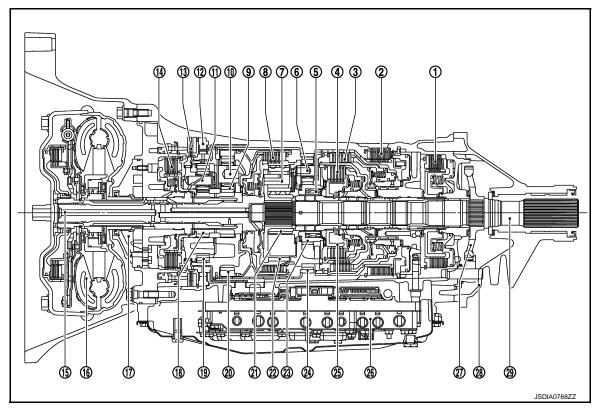
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SHIFT MECHANISM

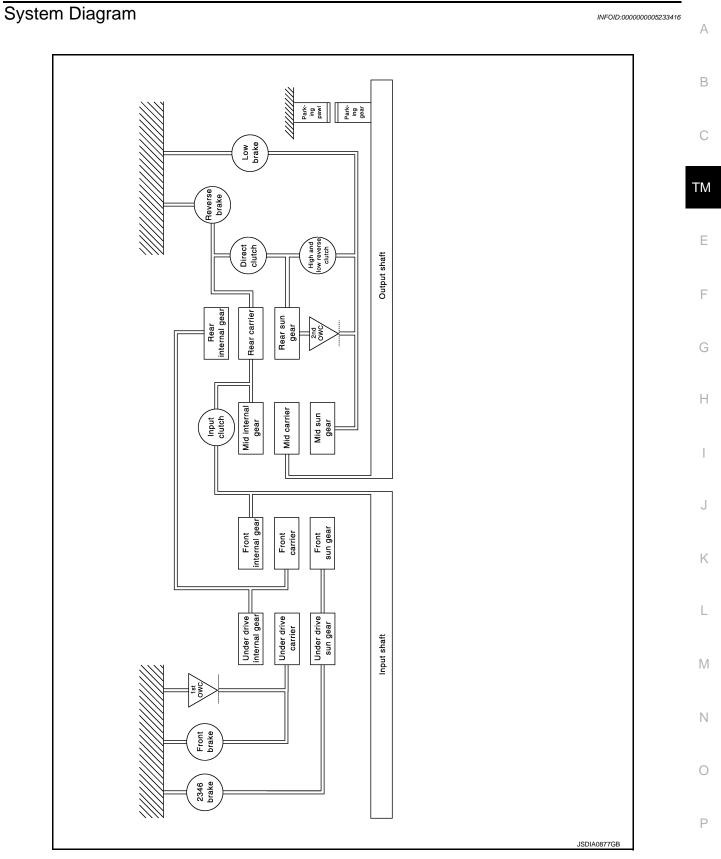
Cross-Sectional View



- 1. Low brake
- 4. High and low reverse clutch
- 7. Mid carrier
- 10.*3 Front carrier
- 13. Front brake
- 16. Torque converter
- 19.*3 Under drive internal gear
- 22.*1 Mid internal gear
- 25. High and low reverse clutch hub
- 28. Rear extension
- *1: 6 and 22 are one unit.
- *2: 9 and 18 are one unit.
- *3: 10 and 19 are one unit.
- *4: 15 and 20 are one unit.

- 2. Reverse brake
- 5. 2nd one-way clutch
- 8. Input clutch
- 11. Under drive carrier
- 14. 2346 brake
- 17. Oil pump
- 20.*4 Front internal gear
- 23. Rear sun gear
- 26. Control valve with TCM
- 29. Output shaft

- 3. Direct clutch
- 6.*1 Rear carrier
- 9.*2 Front sun gear
- 12. 1st one-way clutch
- 15.*4 Input shaft
- 18.*2 Under drive sun gear
- 21. Mid sun gear
- 24. Rear internal gear
- 27. Parking gear



System Description

INFOID:0000000005233417

DESCRIPTION

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

With the use of 4 sets of planetary gears, A/T enables 7-speed transmission for forward and 1-speed transmission for backward, depending on the combination of 3 sets of multiple-disc clutches, 4 sets of multiple-disc brakes and 2 sets of one-way clutches.

CLUTCH AND BAND CHART

Name of the part			D	D/C			L,	/B					
Shift		I/C	FRONT	REAR	H&LR/C	F/B	INNER	OUTER	2346/B	REV/B	1st OWC	2nd OWC	Remarks
	P				Δ	Δ							Park position
	3				\Diamond	\Diamond				0	0	0	Reverse position
ı	N				Δ	Δ							Neutral position
	1st				☆	☆	0	0			0	0	
	2nd						0	0	0			0	
	3rd		0	0			0		0				Automatic shift
D	4th		0	0	0				0				1⇔2⇔3⇔4⇔5⇔6⇔7
	5th	0		0	0								
	6th	0			0				0				
	7th	0			0	0							
7M	7th	0			0	0							Locks* (held stationary) in 7GR
6M	6th	0			0				0				Locks* (held stationary) in 6GR
5M	5th	0		0	0								Locks* (held stationary) in 5GR
4M	4th		0	0	0				0				Locks* (held stationary) in 4GR
зм	3rd		0	0			0		0				Locks* (held stationary) in 3GR
2M	2nd				\Diamond		0	0	0			0	Locks* (held stationary) in 2GR
1M	1st				\Diamond	\Diamond	0	0			0	0	Locks (held stationary) in 1GR

O - Operates

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[7AT: RE7R01A]

POWER TRANSMISSION

"N" Position

^{*:} Down shift automatically according to the vehicle speed.

O – Operates during "progressive" acceleration.
 O – Operates and affects power transmission while coasting.

 $[\]triangle$ – Line pressure is applied but does not affect power transmission.

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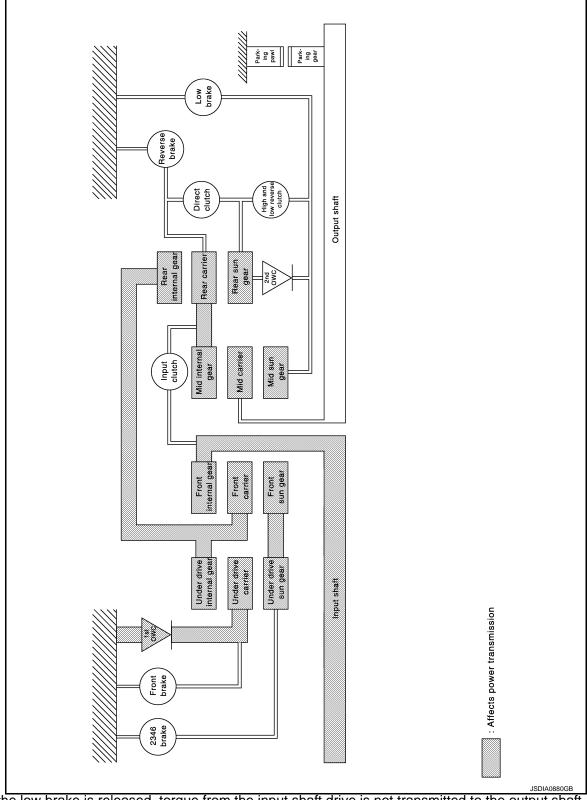
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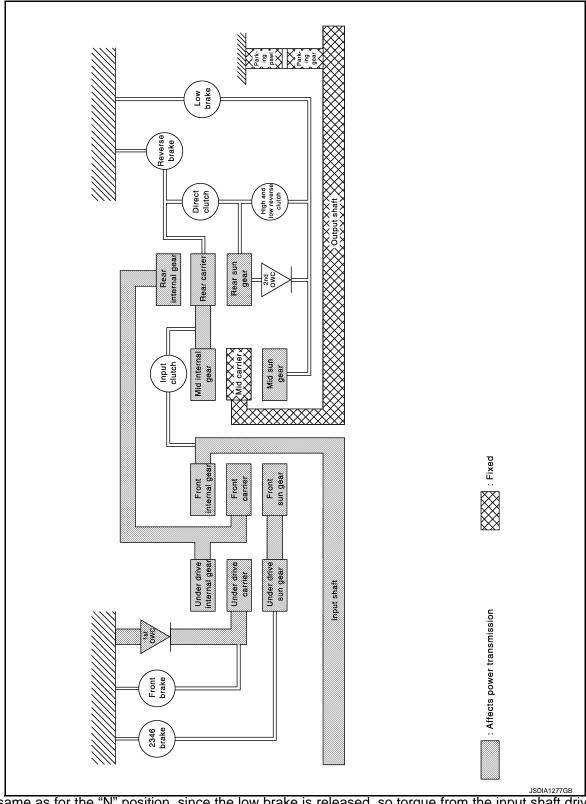
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Since the low brake is released, torque from the input shaft drive is not transmitted to the output shaft.

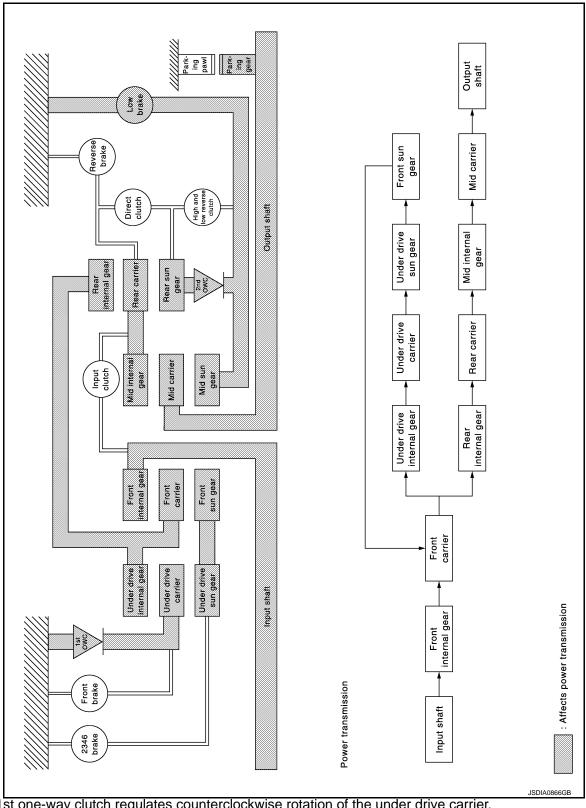
"P" Position



• The same as for the "N" position, since the low brake is released, so torque from the input shaft drive is not transmitted to the output shaft.

• The parking pawl linked with the selector lever meshes with the parking gear and fastens the output shaft mechanically.

"D1" and "DS1" Positions



• The 1st one-way clutch regulates counterclockwise rotation of the under drive carrier.

The 2nd one-way clutch regulates counterclockwise rotation of the rear sun gear.

• The mid sun gear is fixed by the low brake.

Each planetary gear enters the state described below.

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SHIFT MECHANISM

[7AT: RE7R01A]

< SYSTEM DESCRIPTION >

Front planetary gear Name Front sun gear Front carrier Front internal gear Condition Output Input Direction of rotation Clockwise revolution Counterclockwise revolution Clockwise revolution Deceleration from front internal Deceleration from front internal Same number of revolution as the Number of revolutions input shaft gear gear Under drive planetary gear Name Under drive sun gear Under drive carrier Under drive internal gear Input/Output Condition Fixed Direction of rotation Counterclockwise revolution Clockwise revolution Acceleration from under drive in-Same number of revolution as the Number of revolutions ternal gear front carrier Rear planetary gear Name Rear carrier Rear internal gear Rear sun gear Condition Fixed Output Input Direction of rotation Clockwise revolution Clockwise revolution Deceleration from rear internal Same number of revolution as the Number of revolutions gear under drive internal gear Mid planetary gear Name Mid sun gear Mid carrier Mid internal gear Condition Fixed Output Input Direction of rotation Clockwise revolution Clockwise revolution Deceleration from mid internal Same number of revolution as the Number of revolutions gear rear carrier

[&]quot;M1" Position

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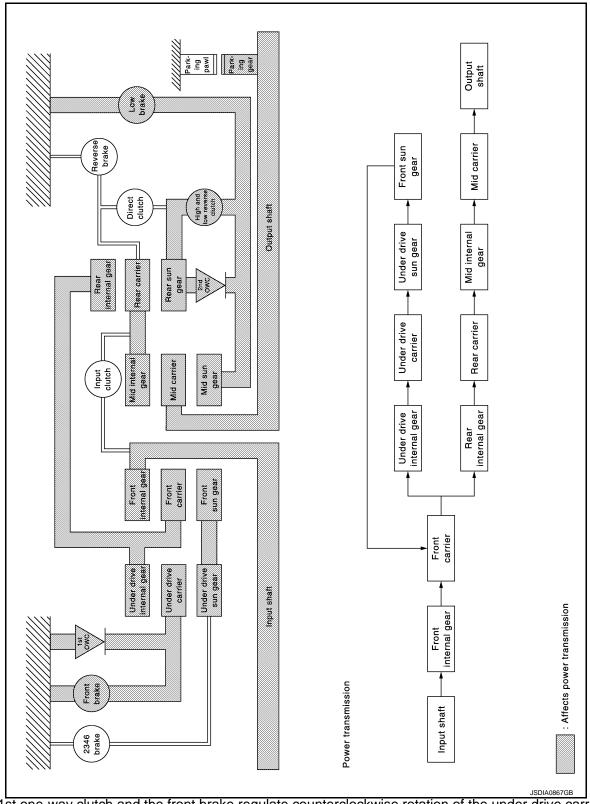
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The 1st one-way clutch and the front brake regulate counterclockwise rotation of the under drive carrier.
 NOTE:

The front brake operates only while coasting.

• The 2nd one-way clutch and the high and low reverse clutch regulate counterclockwise rotation of the rear sun gear.

NOTE:

The high and low reverse clutch operates only while coasting.

The mid sun gear is fixed by the low brake.

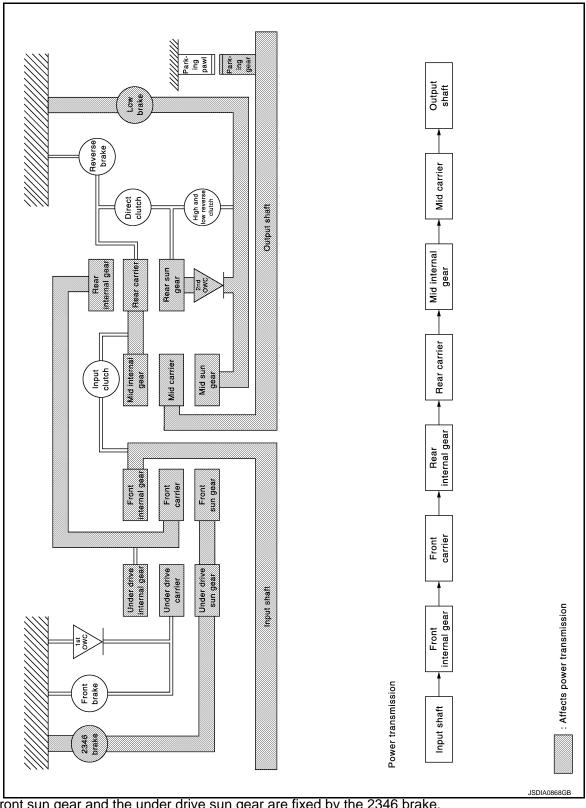
[7AT: RE7R01A]

< SYSTEM DESCRIPTION >

Each planetary gear enters the state described below.

Front planetary gear				
Name	Front sun gear	Front carrier	Front internal gear	
Condition	_	Output	Input	
Direction of rotation	Counterclockwise revolution	Clockwise revolution	Clockwise revolution	
Number of revolutions	Deceleration from front internal gear	Deceleration from front internal gear	Same number of revolution as the input shaft	
Under drive planetary ge	ear			
Name	Under drive sun gear	Under drive carrier	Under drive internal gear	
Condition	_	Fixed	Input/Output	
Direction of rotation	Counterclockwise revolution	-	Clockwise revolution	
Number of revolutions	Acceleration from under drive internal gear	_	Same number of revolution as the front carrier	
Rear planetary gear	·			
Name	Rear sun gear	Rear carrier	Rear internal gear	
Condition	Fixed	Output	Input	
Direction of rotation	_	Clockwise revolution	Clockwise revolution	
Number of revolutions	_	Deceleration from rear internal gear	Same number of revolution as the under drive internal gear	
Mid planetary gear				
Name	Mid sun gear	Mid carrier	Mid internal gear	
Condition	Fixed	Output	Input	
Direction of rotation	_	Clockwise revolution	Clockwise revolution	
Number of revolutions	_	Deceleration from mid internal gear	Same number of revolution as the rear carrier	

[&]quot;D2" and "DS2" Positions



• The front sun gear and the under drive sun gear are fixed by the 2346 brake.

• The 2nd one-way clutch regulates counterclockwise rotation of the rear sun gear.

• The mid sun gear is fixed by the low brake.

Each planetary gear enters the state described below.

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< SYSTEM DESCRIPTION >

Front planetary gear Name Front sun gear Front carrier Front internal gear Condition Fixed Output Input Clockwise revolution Clockwise revolution Direction of rotation Deceleration from front internal Same number of revolution as the Number of revolutions input shaft gear Under drive planetary gear Name Under drive sun gear Under drive carrier Under drive internal gear Input/Output Condition Fixed Direction of rotation Clockwise revolution Clockwise revolution Deceleration from under drive in-Same number of revolution as the Number of revolutions ternal gear front carrier Rear planetary gear Name Rear carrier Rear internal gear Rear sun gear Condition Fixed Output Input Direction of rotation Clockwise revolution Clockwise revolution Deceleration from rear internal Same number of revolution as the Number of revolutions gear under drive internal gear Mid planetary gear Name Mid sun gear Mid carrier Mid internal gear Condition Fixed Output Input Direction of rotation Clockwise revolution Clockwise revolution Deceleration from mid internal Same number of revolution as the Number of revolutions gear rear carrier

[&]quot;M2" Position

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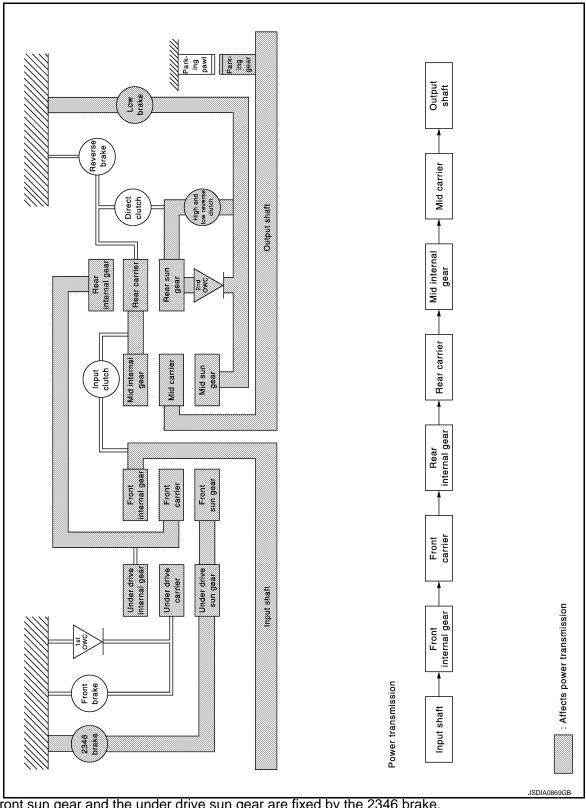
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The front sun gear and the under drive sun gear are fixed by the 2346 brake.

The 2nd one-way clutch and the high and low reverse clutch regulate counterclockwise rotation of the rear sun gear.

NOTE:

The high and low reverse clutch operates only while coasting.

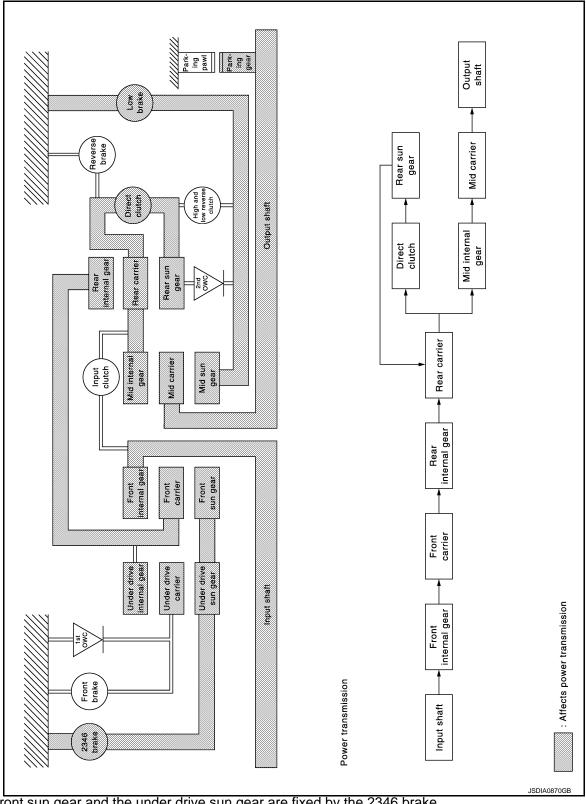
- · The mid sun gear is fixed by the low brake.
- Each planetary gear enters the state described below.

[7AT: RE7R01A]

< SYSTEM DESCRIPTION >

Front planetary gear Name Front sun gear Front carrier Front internal gear Condition Fixed Output Input Direction of rotation Clockwise revolution Clockwise revolution Deceleration from front internal Same number of revolution as the Number of revolutions input shaft gear Under drive planetary gear Name Under drive sun gear Under drive carrier Under drive internal gear Input/Output Condition Fixed Direction of rotation Clockwise revolution Clockwise revolution Deceleration from under drive in-Same number of revolution as the Number of revolutions ternal gear front carrier Rear planetary gear Name Rear carrier Rear internal gear Rear sun gear Condition Fixed Output Input Direction of rotation Clockwise revolution Clockwise revolution Deceleration from rear internal Same number of revolution as the Number of revolutions gear under drive internal gear Mid planetary gear Name Mid sun gear Mid carrier Mid internal gear Condition Fixed Output Input Direction of rotation Clockwise revolution Clockwise revolution Same number of revolution as the Deceleration from mid internal gear Number of revolutions rear carrier

[&]quot;D3", "DS3" and "M3" Positions



• The front sun gear and the under drive sun gear are fixed by the 2346 brake.

The direct clutch gets engaged and connects the rear sun gear with the rear carrier.

• The mid sun gear is fixed by the low brake.

Each planetary gear enters the state described below.

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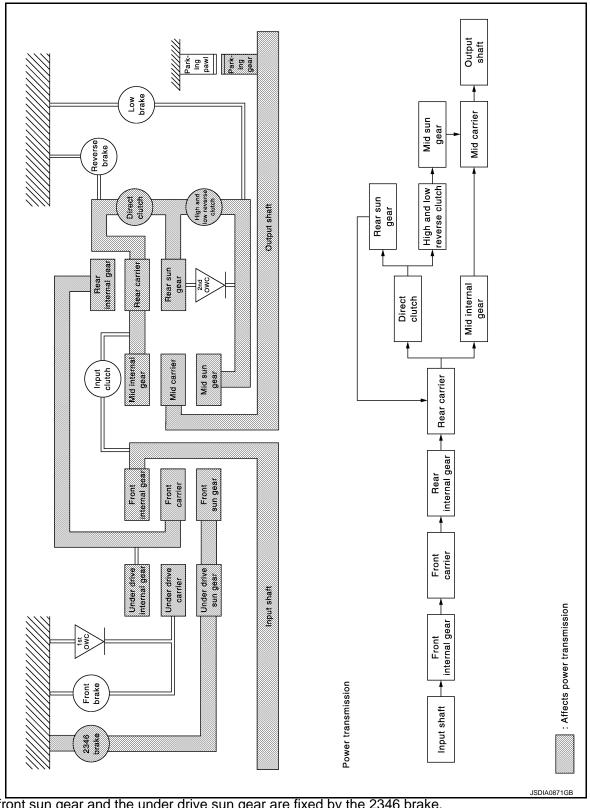
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< SYSTEM DESCRIPTION >

Front planetary gear Name Front sun gear Front carrier Front internal gear Condition Fixed Output Input Direction of rotation Clockwise revolution Clockwise revolution Deceleration from front internal Same number of revolution as the Number of revolutions input shaft gear Under drive planetary gear Name Under drive sun gear Under drive carrier Under drive internal gear Condition Fixed Input/Output Direction of rotation Clockwise revolution Clockwise revolution Deceleration from under drive in-Same number of revolution as the Number of revolutions ternal gear front carrier Rear planetary gear Name Rear carrier Rear internal gear Rear sun gear Condition Output Input Direction of rotation Clockwise revolution Clockwise revolution Clockwise revolution Same number of revolution as the Same number of revolution as the Same number of revolution as the Number of revolutions rear internal gear rear internal gear under drive internal gear Mid planetary gear Name Mid sun gear Mid carrier Mid internal gear Condition Output Fixed Input Direction of rotation Clockwise revolution Clockwise revolution Same number of revolution as the Deceleration from mid internal gear Number of revolutions rear carrier

[&]quot;D4", "DS4" and "M4" Positions



• The front sun gear and the under drive sun gear are fixed by the 2346 brake.

The direct clutch gets engaged and connects the rear sun gear with the rear carrier.

• The high and low reverse clutch gets engaged and connects the rear sun gear with the mid sun gear.

Each planetary gear enters the state described below.

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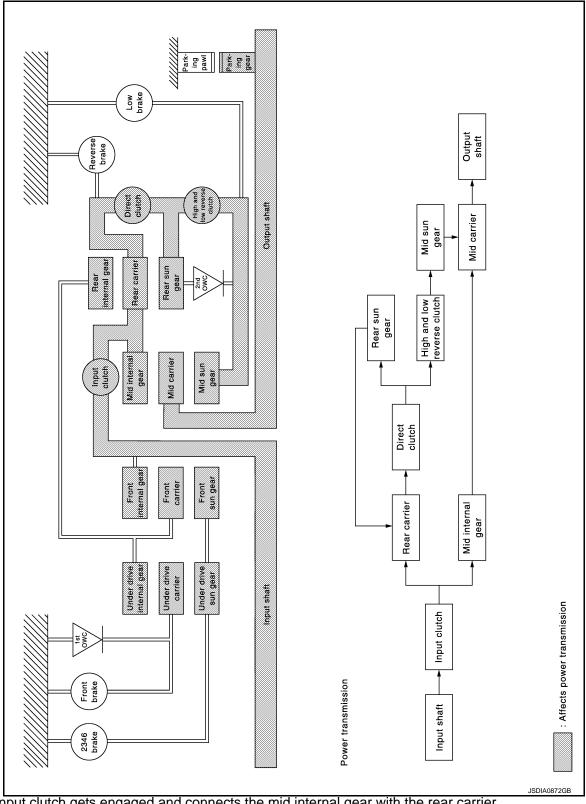
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[7AT: RE7R01A]

< SYSTEM DESCRIPTION >

Front planetary gear			
Name	Front sun gear	Front carrier	Front internal gear
Condition	Fixed	Output	Input
Direction of rotation	_	Clockwise revolution	Clockwise revolution
Number of revolutions	_	Deceleration from front internal gear	Same number of revolution as the input shaft
Under drive planetary g	ear		
Name	Under drive sun gear	Under drive carrier	Under drive internal gear
Condition	Fixed	_	Input/Output
Direction of rotation	_	Clockwise revolution	Clockwise revolution
Number of revolutions	_	Deceleration from under drive in- ternal gear	Same number of revolution as the front carrier
Rear planetary gear			
Name	Rear sun gear	Rear carrier	Rear internal gear
Condition	_	Output	Input
Direction of rotation	Clockwise revolution	Clockwise revolution	Clockwise revolution
Number of revolutions	Same number of revolution as the rear internal gear	Same number of revolution as the rear internal gear	Same number of revolution as the under drive internal gear
Mid planetary gear			
Name	Mid sun gear	Mid carrier	Mid internal gear
Condition	_	Output	Input
Direction of rotation	Clockwise revolution	Clockwise revolution	Clockwise revolution
Number of revolutions	Same number of revolution as the mid internal gear	Same number of revolution as the mid internal gear	Same number of revolution as the rear carrier

[&]quot;D5", "DS5" and "M5" Positions



• The input clutch gets engaged and connects the mid internal gear with the rear carrier.

• The direct clutch gets engaged and connects the rear sun gear with the rear carrier.

• The high and low reverse clutch gets engaged and connects the rear sun gear with the mid sun gear.

• Each planetary gear enters the state described below.

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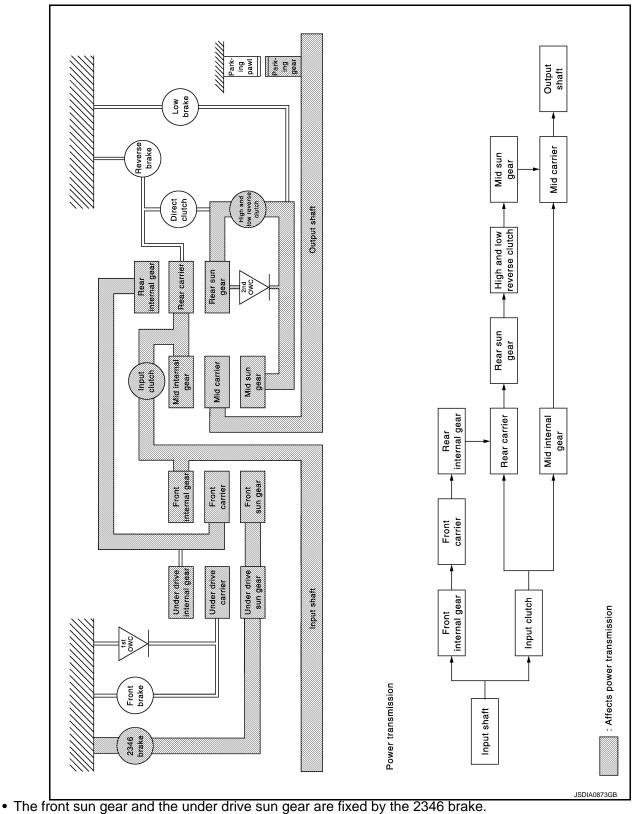
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< SYSTEM DESCRIPTION >

Rear planetary gear				
Name	Rear sun gear	Rear carrier	Rear internal gear	
Condition	_	input/Output	_	
Direction of rotation	Clockwise revolution	Clockwise revolution	Clockwise revolution	
Number of revolutions	Same number of revolution as the rear carrier	Same number of revolution as the input shaft	Same number of revolution as the rear carrier	
Mid planetary gear				
Name	Mid sun gear	Mid carrier	Mid internal gear	
Condition	_	Output	Input	
Direction of rotation	Clockwise revolution	Clockwise revolution	Clockwise revolution	
Number of revolutions	Same number of revolution as the mid internal gear	Same number of revolution as the mid internal gear	Same number of revolution as the input shaft	

[&]quot;D6", "DS6" and "M6" Positions

[7AT: RE7R01A]



The input clutch gets engaged and connects the mid internal gear with the rear carrier.

• The high and low reverse clutch gets engaged and connects the rear sun gear with the mid sun gear.

• Each planetary gear enters the state described below.

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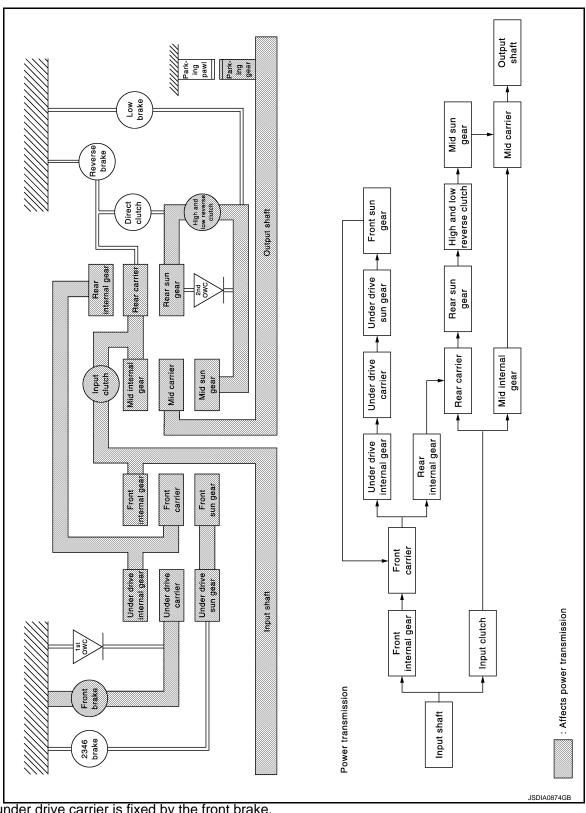
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Front planetary gear				
Name	Front sun gear	Front carrier	Front internal gear	
Condition	Fixed	Output	Input	
Direction of rotation	_	Clockwise revolution	Clockwise revolution	
Number of revolutions	_	Deceleration from front internal gear	Same number of revolution as the input shaft	
Rear planetary gear				
Name	Rear sun gear	Rear carrier	Rear internal gear	
Condition	_	Input/Output	Input	
Direction of rotation	Clockwise revolution	Clockwise revolution	Clockwise revolution	
Number of revolutions	Acceleration from rear carrier	Same number of revolution as the input shaft	Same number of revolution as the front carrier	
Mid planetary gear				
Name	Mid sun gear	Mid carrier	Mid internal gear	
Condition	_	Output	Input	
Direction of rotation	Clockwise revolution	Clockwise revolution	Clockwise revolution	
Number of revolutions	Acceleration from mid internal gear	Acceleration from mid internal gear	Same number of revolution as the input shaft	

[&]quot;D7", "DS7" and "M7" Positions



The under drive carrier is fixed by the front brake.

The input clutch gets engaged and connects the mid internal gear with the rear carrier.

• The high and low reverse clutch gets engaged and connects the rear sun gear with the mid sun gear.

Each planetary gear enters state described below.

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< SYSTEM DESCRIPTION >

Front planetary gear Name Front sun gear Front carrier Front internal gear Condition Output Input Direction of rotation Counterclockwise revolution Clockwise revolution Clockwise revolution Deceleration from front internal Deceleration from front internal Same number of revolution as the Number of revolutions input shaft gear gear Under drive planetary gear Name Under drive sun gear Under drive carrier Under drive internal gear Condition Fixed Input/Output Direction of rotation Counterclockwise revolution Clockwise revolution Acceleration from under drive inter-Same number of revolution as the Number of revolutions nal gear front carrier Rear planetary gear Rear carrier Name Rear internal gear Rear sun gear Condition Input/Output Input Direction of rotation Clockwise revolution Clockwise revolution Clockwise revolution Same number of revolution as the Same number of revolution as the Number of revolutions Acceleration from rear carrier input shaft under drive internal gear Mid planetary gear Name Mid sun gear Mid carrier Mid internal gear Condition Output Input Direction of rotation Clockwise revolution Clockwise revolution Clockwise revolution Same number of revolution as the Acceleration from mid internal gear Number of revolutions Acceleration from mid internal gear input shaft

[&]quot;R" Position

[7AT: RE7R01A]

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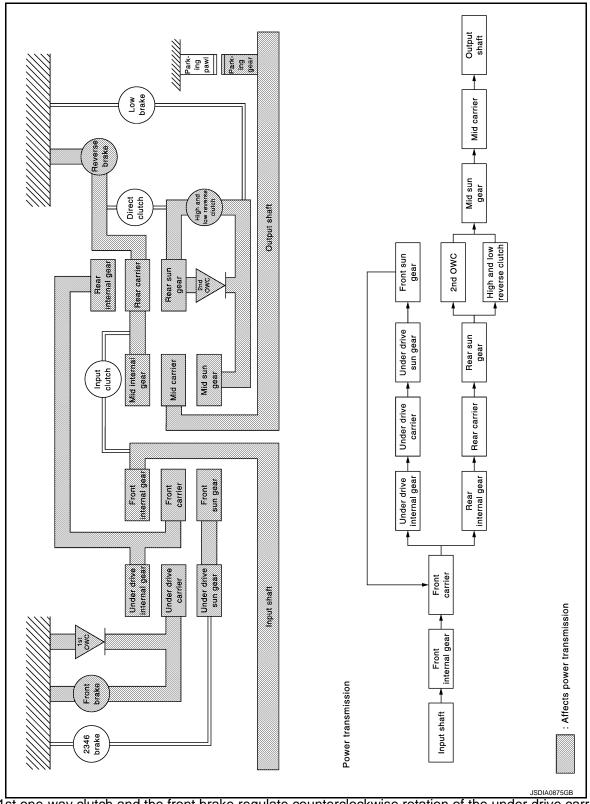
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The 1st one-way clutch and the front brake regulate counterclockwise rotation of the under drive carrier.
 NOTE:

The front brake operates at the fixed speed or less.

- The rear carrier and the mid internal gear are fixed by the reverse brake.
- The mid sun gear rotates at the same speed as the rear sun gear by operation of the 2nd one-way clutch and the high and low reverse clutch.

NOTE:

The high and low reverse clutch operates at the fixed speed or less.

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< SYSTEM DESCRIPTION >

• Each planetary gear enters the state described below.

Front planetary gear			
Name	Front sun gear	Front carrier	Front internal gear
Condition	_	Output	Input
Direction of rotation	Counterclockwise revolution	Clockwise revolution	Clockwise revolution
Number of revolutions	Deceleration from front internal gear	Deceleration from front internal gear	Same number of revolution as the input shaft
Under drive planetary g	ear		
Name	Under drive sun gear	Under drive carrier	Under drive internal gear
Condition	_	Fixed	Input/Output
Direction of rotation	Counterclockwise revolution	_	Clockwise revolution
Number of revolutions	s Acceleration from under drive inter- nal gear		Same number of revolution as the front carrier
Rear planetary gear			
Name	Rear sun gear	Rear carrier	Rear internal gear
Condition	Output	Fixed	Input
Direction of rotation	Counterclockwise revolution	_	Clockwise revolution
Number of revolutions	volutions Acceleration from rear internal		Same number of revolution as the under drive internal gear
Mid planetary gear			
Name	Mid sun gear	Mid carrier	Mid internal gear
Condition	Input	Output	Fixed
Direction of rotation	Counterclockwise revolution	Counterclockwise revolution	_
Number of revolutions	Same number of revolution as the rear sun gear	Deceleration from mid sun gear	_

Component Parts Location

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[7AT: RE7R01A]

Refer to TM-174, "Cross-Sectional View".

Component Description

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Name of the Part (Abbreviation)	Function			
Front brake (FR/B)	Fastens the under drive carrier.			
Input clutch (I/C)	Connects the input shaft, the mid internal gear and the rear carrier.			
Direct clutch (D/C)	Connects the rear carrier and the rear sun gear.			
High and low reverse clutch (HLR/C)	Connects the rear sun gear and the mid sun gear.			
Reverse brake (R/B)	Fastens the rear carrier.			
Low brake (L/B)	Fastens the mid sun gear.			
2346 brake (2346/B)	Fastens the under drive sun gear.			
1st one-way clutch (1st OWC)	Allows the under drive carrier to turn freely in the forward direction but fastens it for reverse rotation.			
2nd one-way clutch (2nd OWC)	Allows the rear sun gear to turn freely in the forward direction but fastens it for reverse rotation.			
Torque converter	Amplifies driving force the engine, and transmits it to transmission input shaft.			
Oil pump	Driven by the engine, oil pump supplies oil to torque converter, control valve assembly, and each lubricating system.			

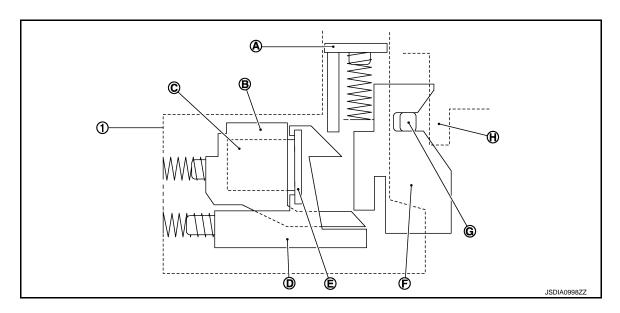
SHIFT LOCK SYSTEM

System Description

• Shift lock prevents an unintentional start of the vehicle that may be caused by an incorrect operation while selector lever is in the "P" position.

- Selector lever can be shifted from the "P" position to another position when the following conditions are satisfied
- Ignition switch ON
- Stop lamp switch is ON (brake pedal is depressed)
- Selector lever knob button is pressed

SHIFT LOCK MECHANISM



- 1. Shift lock unit
- A. Shift lock release button
 - Stopper E.
- G. Detent pin

D.

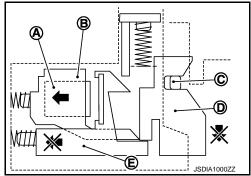
- B. Slider
- E. Iron plate
- H. Detent gate

- C. Electromagnet
- F. Plate

SHIFT LOCK OPERATION

When brake pedal is not depressed and selector lever is in "P" position. (Unable to shift selector lever.)

Without brake pedal depressed and with ignition switch ON, electromagnet (A) of slider (B) is not magnetized because of non electrical current. When selector lever knob button is pressed in this situation, detent pin (C) lowers. According to the movement of detent pin, plate (D) also lowers while pressing slider into shift lock unit. However, stopper (E) pressed by spring comes underneath plate. Plate cannot lower further when it contacts stopper, and detent pin cannot lower to the point that releases selector lever. Thus selector lever stays in the "P" position and selector lever is unable to shift.



When brake pedal is depressed and selector lever is in "P" position. (Able to shift selector lever.)

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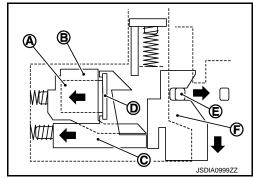
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With brake pedal depressed and with ignition switch ON, electromagnet (A) of slider (B) becomes magnetized because of live electricity. stopper (C) has an iron plate (D) to unify stopper with slider when electromagnet becomes magnetized. When selector lever knob button is pressed in this situation, detent pin (E) lowers. According to the movement of detent pin, plate (F) also lowers while pressing slider into shift lock unit. Because stopper is unified with slider, the slider unit moves into shift lock unit. Detent pin lowers to the point that releases selector lever from the "P" position and selector lever becomes able to shift.



FORCIBLE RELEASE OF SHIFT LOCK

When an electrical or mechanical malfunction occurs in shift lock system, selector lever shift operation from the "P" position becomes impossible. When shift lock release button (A) is pressed in this state, stopper (B) is forcibly pressed into shift lock unit, and then it becomes possible to release shift lock. By this operation, shift operation becomes possible when a malfunction occurs in shift lock system.

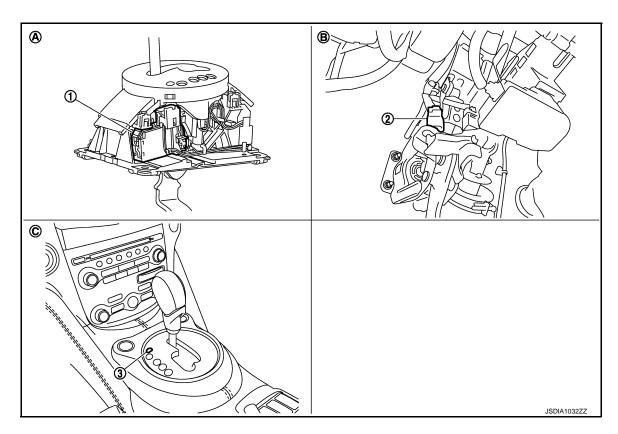
CAUTION:

Never use shift lock release button except when select lever is inoperative when depressing brake pedal while ignition switch is ON.

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Component Parts Location



1. Shift lock unit

- 2. Stop lamp switch
- B. Brake pedal, upper
- 3. Shift lock cover

A. A/T shift selector assembly

- C. Center console
- *: Shift lock release button becomes operative by removing shift lock cover.

SHIFT LOCK SYSTEM

< SYSTEM DESCRIPTION >

[7AT: RE7R01A]

Component	December
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Component	Function
Slider	 Electromagnet is built into slider. When electromagnet of slider is magnetized, stopper is unified with slider.
Stopper	Iron plate is built into stopper.Restricts plate moving.
Detent pin	Links with selector knob button and restricts selector lever shift operation.
Plate	Restricts detent pin moving.
Shift lock release button When shift lock release button is pressed, shift lock is forcibly released	
Stop lamp switch	 When brake pedal is depressed, stop lamp switch turns ON. When stop lamp switch turns ON, power is supplied to shift lock unit.

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ON BOARD DIAGNOSTIC (OBD) SYSTEM

< SYSTEM DESCRIPTION >

ON BOARD DIAGNOSTIC (OBD) SYSTEM

Diagnosis Description

INFOID:0000000005233423

[7AT: RE7R01A]

The A/T system has two self-diagnostic systems.

The first is the emission-related on board diagnostic system (OBD-II) performed by the TCM in combination with the ECM. A malfunction is indicated by the MIL (malfunction indicator lamp) and is stored as a DTC in the ECM memory and in the TCM memory.

The second is the TCM original self-diagnosis indicated by the TCM. A malfunction history is stored in the TCM memory. The detected items are overlapped with OBD-II self-diagnostic items. For details, refer to TM-286, "DTC Index".

OBD FUNCTION

The ECM provides emission-related on board diagnostic (OBD-II) functions for the A/T system.

One function is to receive a signal from the TCM used with OBD-related parts of the A/T system. The signal is sent to the ECM when a malfunction occurs in the corresponding OBD-related part.

The other function is to indicate a diagnostic result by means of the MIL (malfunction indicator lamp) on the instrument panel. Sensors, switches and solenoid valves are used as sensing elements.

The MIL automatically illuminates in "One or Two Trip Detection Logic" when a malfunction is sensed in relation to A/T system parts. For details, refer to <u>EC-123</u>, "<u>Diagnosis Description</u>".

DIAGNOSIS SYSTEM (TCM)

< SYSTEM DESCRIPTION >

DIAGNOSIS SYSTEM (TCM)

CONSULT-III Function (TRANSMISSION)

INFOID:0000000005233424

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[7AT: RE7R01A]

CONSULT-III APPLICATION ITEMS

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

^{*:} Although "Function Test" and "Special Function" are selectable, do not use its.

SELF DIAGNOSTIC RESULTS

Display Items List

Refer to TM-286, "DTC Index".

DATA MONITOR

Display Items List

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

					X: Standard, —: Not applicable, ▼: Option	
		Mor	nitor Item Sele	ction		
Monitored ite	em (Unit)	ECU IN- PUT SIG- NALS	MAIN SIG- NALS	SELEC- TION FROM ITEM	Remarks	
VHCL/S SE-A/T	(km/h or mph)	Х	Х	▼	Displays the vehicle speed calculated by the TCM from the output shaft revolution.	
ESTM VSP SIG	(km/h or mph)	Х	_	▼	Displays the vehicle speed signal received via CAN communication.	
OUTPUT REV	(rpm)	Х	Х	▼	Displays the output shaft revolution calculated from the pulse signal of output speed sensor.	
INPUT SPEED	(rpm)	Х	Х	•	Displays the input speed calculated from front sun gear revolution and front carrier revolution.	
F SUN GR REV	(rpm)	_	_	•	Displays the front sun gear revolution calculated from the pulse signal of input speed sensor 1.	
F CARR GR REV	(rpm)	_	_	•	Displays the front carrier gear revolution cal- culated from the pulse signal of input speed sensor 2.	
ENGINE SPEED	(rpm)	Х	Х	▼	Displays the engine speed received via CAN communication.	
TC SLIP SPEED	(rpm)	_	Х	•	Displays the revolution difference between input speed and engine speed.	
ACCELE POSI	(0.0/8)	Х	_	•	Displays the accelerator position estimated value received via CAN communication.	
THROTTLE POSI	(0.0/8)	Х	Х	•	Displays the throttle position received via CAN communication.	

[7AT: RE7R01A] < SYSTEM DESCRIPTION > Monitor Item Selection SELEC-ECU IN-Monitored item (Unit) Remarks MAIN SIG-TION **PUT SIG-FROM** NALS NALS **ITEM** Displays the ATF temperature of oil pan calcu-ATF TEMP 1 (°C or °F) Χ Χ lated from the signal voltage of A/T fluid temperature sensor. Displays the ATF temperature estimated value ATF TEMP 2 Χ (°C or °F) Х of torque converter outlet calculated from the signal voltage of A/T fluid temperature sensor. Displays the signal voltage of A/T fluid temper-ATF TEMP SE 1 (V) ature sensor. **BATTERY VOLT** (V) Displays the power supply voltage of TCM. Χ Displays the command current from TCM to LINE PRES SOL (A) Χ the line pressure solenoid. Displays the command current from TCM to TCC SOLENOID (A) Χ the torque converter clutch solenoid. Displays the command current from TCM to L/B SOLENOID (A) Х the low brake solenoid. Displays the command current from TCM to FR/B SOLENOID (A) Χ the front brake solenoid. Displays the command current from TCM to HLR/C SOL (A) Χ the high and low reverse clutch solenoid. Displays the command current from TCM to I/C SOLENOID (A) Χ the input clutch solenoid. Displays the command current from TCM to D/C SOLENOID (A) Χ the direct clutch solenoid. Displays the command current from TCM to 2346/B SOL (A) Χ the 2346 brake solenoid. Monitors the command current from TCM to L/P SOL MON (A) the line pressure solenoid, and displays the monitor value. Monitors the command current from TCM to TCC SOL MON (A) the torque converter clutch solenoid, and displays the monitor value. Monitors the command current from TCM to L/B SOL MON the low brake solenoid, and displays the mon-(A) itor value. Monitors the command current from TCM to FR/B SOL MON (A) the front brake solenoid, and displays the Monitors the command current from TCM to HLR/C SOL MON (A) the high and low reverse clutch solenoid, and displays the monitor value. Monitors the command current from TCM to I/C SOL MON (A) the input clutch solenoid, and displays the monitor value. Monitors the command current from TCM to D/C SOL MON (A) the direct clutch solenoid, and displays the monitor value. Monitors the command current from TCM to 2346/B SOL MON the 2346 brake solenoid, and displays the (A) monitor value.

Χ

GEAR RATIO

Displays the gear ratio calculated from input

speed and output revolution.

DIAGNOSIS SYSTEM (TCM)

[7AT: RE7R01A]

< SYSTEM DESCRIPTION >

Monitored item (Unit)		Mo	nitor Item Sele	ction	
		ECU IN- PUT SIG- NALS	MAIN SIG- NALS	SELEC- TION FROM ITEM	Remarks
ENGINE TORQUE	(Nm)	_	_	•	Displays the engine torque estimated value received via CAN communication.
ENG TORQUE D	(Nm)	_	_	•	Displays the engine torque estimated value reflected the requested torque of each control unit received via CAN communication.
INPUT TRQ S	(Nm)	_	_	•	Displays the input torque using for the oil pressure calculation process of shift change control.
INPUT TRQ L/P	(Nm)	_	_	•	Displays the input torque using for the oil pressure calculation process of line pressure control.
TRGT PRES L/P	(kPa, kg/cm ² or psi)	_	_	•	Displays the target oil pressure value of torque converter clutch solenoid valve calculated by the oil pressure calculation process of lock-up control.
TRGT PRES TCC	(kPa, kg/cm ² or psi)	_	_	•	Displays the target oil pressure value of torque converter clutch solenoid valve calculated by the oil pressure calculation process of shift change control.
TRGT PRES L/B	(kPa, kg/cm ² or psi)	_	_	•	Displays the target oil pressure value of low brake solenoid valve calculated by the oil pressure calculation process of shift change control.
TRGT PRE FR/B	(kPa, kg/cm ² or psi)	_	_	•	Displays the target oil pressure value of front brake solenoid valve calculated by the oil pressure calculation process of shift change control.
TRG PRE HLR/C	(kPa, kg/cm ² or psi)	_	_	•	Displays the target oil pressure value of high and low reverse clutch solenoid valve calculated by the oil pressure calculation process of shift change control.
TRGT PRES I/C	(kPa, kg/cm ² or psi)	_	_	•	Displays the target oil pressure value of input clutch solenoid valve calculated by the oil pressure calculation process of shift change control.
TRGT PRES D/C	(kPa, kg/cm ² or psi)	_	_	•	Displays the target oil pressure value of direct clutch solenoid valve calculated by the oil pressure calculation process of shift change control.
TRG PRE 2346/B	(kPa, kg/cm ² or psi)	-	_	•	Displays the target oil pressure value of 2346 brake solenoid valve calculated by the oil pressure calculation process of shift change control.
SHIFT PATTERN		_	_	•	Displays the gear change data using the shift pattern control.
VEHICLE SPEED	(km/h or mph)	_	_	•	Displays the vehicle speed for control using the control of TCM.
RANGE SW 4	(ON/OFF)	Х	_	•	Displays the operation status of transmission range switch 4.
RANGE SW 3	(ON/OFF)	Х	_	•	Displays the operation status of transmission range switch 3.
RANGE SW 2	(ON/OFF)	Х	_	•	Displays the operation status of transmission range switch 2.

[7AT: RE7R01A] Monitor Item Selection SELEC-ECU IN-Monitored item (Unit) Remarks MAIN SIG-TION **PUT SIG-**NALS FROM **NALS ITEM** Displays the operation status of transmission RANGE SW 1 (ON/OFF) Χ range switch 1. Displays the operation status of paddle shifter Χ SFT DWN ST SW (ON/OFF) (down switch). Displays the operation status of paddle shifter SFT UP ST SW (ON/OFF) Χ (up switch). Displays the operation status of selector lever DOWN SW LEVER (ON/OFF) Χ (down switch). Displays the operation status of selector lever **UP SW LEVER** (ON/OFF) Χ (up switch). Displays whether the selector lever is in any NON M-MODE SW (ON/OFF) Χ position other than manual shift gate position. Displays whether the selector lever is in the MANU MODE SW Χ (ON/OFF) manual shift gate position. · Displays whether it is the DS mode. **DS RANGE** (ON/OFF) · Not mounted but displayed. Displays the reception status of 1 position switch signal received via CAN communica-1 POSITION SW (ON/OFF) Х · Not mounted but displayed. · Displays the reception status of overdrive control switch signal received via CAN com-**OD CONT SW** (ON/OFF) Χ munication. · Not mounted but displayed. Displays the reception status of stop lamp **BRAKESW** (ON/OFF) Χ switch signal received via CAN communication. Displays the reception status of POWER mode signal received via CAN communica-**POWERSHIFT SW** (ON/OFF) Χ · Not mounted but displayed. Displays the reception status of ASCD OD ASCD-OD CUT Χ cancel request signal received via CAN com-(ON/OFF) munication. Displays the reception status of ASCD opera-ASCD-CRUISE (ON/OFF) Χ tion signal received via CAN communication. Displays the reception status of ABS operation **ABS SIGNAL** Χ (ON/OFF) signal received via CAN communication. Displays the reception status of TCS gear TCS GR/P KEEP (ON/OFF) Χ keep request signal received via CAN communication. Displays whether the reception value of A/T shift schedule change demand signal received TCS SIGNAL 2 (ON/OFF) Χ via CAN communication is "cold". Displays whether the reception value of A/T TCS SIGNAL 1 (ON/OFF) shift schedule change demand signal received Х via CAN communication is "warm". Displays whether the identified malfunction LOW/B PARTS (FAIL/NOTFAIL) point judged by TCM is the related parts of low

brake

DIAGNOSIS SYSTEM (TCM)

< SYSTEM DESCRIPTION >

Monitored item (Unit)		Monitor Item Selection			
		ECU IN- PUT SIG- NALS	MAIN SIG- NALS	SELEC- TION FROM ITEM	Remarks
HC/IC/FRB PARTS	(FAIL/NOTFAIL)	_	_	•	Displays whether the identified malfunction point judged by TCM is the related parts of high and low reversed clutch, input clutch or front brake.
IC/FRB PARTS	(FAIL/NOTFAIL)	_	_	▼	Displays whether the identified malfunction point judged by TCM is the related parts of input clutch or front brake.
HLR/C PARTS	(FAIL/NOTFAIL)	_	_	•	Displays whether the identified malfunction point judged by TCM is the related parts of high and low reversed clutch.
W/O THL POS	(ON/OFF)	Х	_	▼	Displays the kickdown condition signal status received via CAN communication.
CLSD THL POS	(ON/OFF)	Х	_	•	Displays the idling status signal status received via CAN communication.
DRV CST JUDGE	(DRIVE/COAST)	_	_	▼	Displays the judgment results of "driving" or "coasting" judged by TCM.
SHIFT IND SIGNAL		_	_	▼	Displays the transmission value of shift position signal transmitted via CAN communication.
STARTER RELAY	(ON/OFF)	_	_	▼	Displays the command status from TCM to starter relay.
F-SAFE IND/L	(ON/OFF)	_	_	▼	Displays the transmission status of A/T CHECK indicator lamp signal transmitted via CAN communication.
ATF WARN LAMP	(ON/OFF)	_	_	▼	Displays the transmission status of ATF temperature signal transmitted via CAN communication. Not mounted but displayed.
MANU MODE IND	(ON/OFF)	_	_	▼	Displays the transmission status of manual mode signal transmitted via CAN communication.
ON OFF SOL MON	(ON/OFF)	_	_	•	Monitors the command value from TCM to the anti-interlock solenoid, and displays the monitor status.
START RLY MON	(ON/OFF)	_	_	▼	Monitors the command value from TCM to the starter relay, and displays the monitor status.
ON OFF SOL	(ON/OFF)	_	_	▼	Displays the command status from TCM to anti-interlock solenoid.
SLCT LVR POSI		_	Х	▼	Displays the shift positions recognized by TCM.
GEAR		_	Х	•	Displays the current transmission gear position recognized by TCM.
NEXT GR POSI		_	_	▼	Displays the target gear position of gear change that is calculated based on the vehicle speed information and throttle information.
SHIFT MODE		_	_	•	Displays the transmission driving mode recognized by TCM.
D/C PARTS	(FAIL/NOTFAIL)	_	_	•	Displays whether the identified malfunction point judged by TCM is the related parts of direct clutch.

[7AT: RE7R01A]

DIAGNOSIS SYSTEM (TCM)

[7AT: RE7R01A]

< SYSTEM DESCRIPTION >

Monitored item (Unit)		Monitor Item Selection			
		ECU IN- PUT SIG- NALS	MAIN SIG- NALS	SELEC- TION FROM ITEM	Remarks
FR/B PARTS	(FAIL/NOTFAIL)	_	_	▼	Displays whether the identified malfunction point judged by TCM is the related parts of front brake.
2346/B PARTS	(FAIL/NOTFAIL)	_	_	▼	Displays whether the identified malfunction point judged by TCM is the related parts of 2346 brake.
2346B/DC PARTS	(FAIL/NOTFAIL)	_	_	▼	Displays whether the identified malfunction point judged by TCM is the related parts of 2346 brake or direct clutch.

DTC & SRT CONFIRMATION

DTC Work Support

Item name	Description	Check item	
1ST GR FNCTN P0731	Following items for "1GR incorrect ratio" can be confirmed. • Self-diagnosis status (whether the diagnosis is being performed or not) • Self-diagnostic results (OK or NG)	Input clutch solenoid valve	
2ND GR FNCTN P0732	Following items for "2GR incorrect ratio" can be confirmed. • Self-diagnosis status (whether the diagnosis is being performed or not) • Self-diagnostic results (OK or NG)	Front brake solenoid valve Direct clutch solenoid	
3RD GR FNCTN P0733	Following items for "3GR incorrect ratio" can be confirmed. • Self-diagnosis status (whether the diagnosis is being performed or not) • Self-diagnostic results (OK or NG)	valve High and low reverse clutch solenoid valve Low brake solenoid	
4TH GR FNCTN P0734	Following items for "4GR incorrect ratio" can be confirmed.		
5TH GR FNCTN P0735	Following items for "5GR incorrect ratio" can be confirmed. • Self-diagnosis status (whether the diagnosis is being performed or not) • Self-diagnostic results (OK or NG)	valve • Anti-interlock sole- noid valve • Each clutch and brake • Output speed sensor • Input speed sensor 1, 2 • Hydraulic control cir-	
6TH GR FNCTN P0729	Following items for "6GR incorrect ratio" can be confirmed. • Self-diagnosis status (whether the diagnosis is being performed or not) • Self-diagnostic results (OK or NG)		
7TH GR FNCTN P1734	Following items for "7GR incorrect ratio" can be confirmed. • Self-diagnosis status (whether the diagnosis is being performed or not) • Self-diagnostic results (OK or NG)	cuit	
TCC SOL FUNCTN CHECK	Following items for "TCC solenoid function" can be confirmed. • Self-diagnosis status (whether the diagnosis is being performed or not) • Self-diagnostic results (OK or NG)	Harness or connectors Torque converter clutch solenoid valve Torque converter Input speed sensor 1, 2 Hydraulic control circuit	

U1000 CAN COMM CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

DTC/CIRCUIT DIAGNOSIS

U1000 CAN COMM CIRCUIT

Description INFOID:0000000005233425

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 independently). 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.

DTC Logic INFOID:0000000005233426

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
U1000	CAN Communication Line	TCM cannot transmit or receive CAN communication signals continuously for 2 seconds or more when the ignition switch is ON.	Harness or connectors (CAN communication line is open or shorted.) TCM

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

>> GO TO 2

2. CHECK DTC DETECTION

(P) With CONSULT-III

- Start the engine.
- 2. Run engine for at least 2 consecutive seconds at idle speed.
- Perform "Self Diagnostic Results" in "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III"

Is "U1000" detected?

YES >> Go to TM-209, "Diagnosis Procedure".

>> INSPECTION END NO

Diagnosis Procedure

Go to LAN-16, "Trouble Diagnosis Flow Chart".

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[7AT: RE7R01A]

INFOID:0000000005233430

P0615 STARTER RELAY

Description INFOID:000000005233428

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

DTC Logic

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P0615	Starter Relay Circuit	The starter monitor value is OFF when the ignition switch is ON at the "P" and "N" positions.	Harness or connectors (Starter relay and TCM circuit is open or shorted.) Starter relay circuit

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

>> GO TO 2.

2.CHECK DTC DETECTION

(P) With CONSULT-III

- 1. Shift the selector lever to "P" and "N" positions.
- Turn ignition switch ON and wait 2 seconds or more.
- Perform "Self Diagnostic Results" in "TRANSMISSION".

Is "P0615" detected?

YES >> Go to TM-210, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK STARTER RELAY SIGNAL

Turn ignition switch ON.

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

IPDM E/R connector			Condition	Voltage (Approx.)
Connector	Terminal		Condition	vollage (Approx.)
F.c*1	*1*1		Selector lever in "P" and "N" positions.	Battery voltage
E5 ^{*1}	30 ^{*1}	Ground	Selector lever in other positions.	0 V
E7*2	72 ^{*2}		Selector lever in "P" and "N" positions.	Battery voltage
E/ -	72-		Selector lever in other positions.	0 V

^{*1:} Roadster models

Is the inspection result normal?

YES >> Check starter relay circuit. Refer to <u>STR-11</u>, "Wiring <u>Diagram - STARTING SYSTEM -"</u>.

NO >> GO TO 2.

$2.\,$ CHECK HARNESS BETWEEN A/T ASSEMBLY AND IPDM E/R (PART 1)

1. Turn ignition switch OFF.

^{*2:} Coupe models

P0615 STARTER RELAY

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A]

Disconnect A/T assembly connector and IPDM E/R connector.

Check continuity between A/T assembly vehicle side harness connector terminal and IPDM E/R vehicle side harness connector terminal.

A/T assembly vehicle side harness connector		IPDM E/R vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F51 9	E5 ^{*1}	30 ^{*1}	Existed	
	9	F7*2	72 ^{*2}	LXISIEU

*1: Roadster models

*2: Coupe models

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace damaged parts.

${\bf 3.}$ CHECK HARNESS BETWEEN A/T ASSEMBLY AND IPDM E/R (PART 2)

Check continuity between A/T assembly vehicle side harness connector terminal and ground.

A/T assembly vehicle	side harness connector		Continuity
Connector	Terminal	Ground	Continuity
F51	9		Not existed

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace damaged parts.

4. CHECK INTERMITTENT INCIDENT

Refer to GI-39, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to TM-318, "Exploded View".

NO >> Repair or replace damaged parts. TM

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P0705 TRANSMISSION RANGE SWITCH A

< DTC/CIRCUIT DIAGNOSIS >

P0705 TRANSMISSION RANGE SWITCH A

Description INFOID:000000005233431

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

DTC Logic

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P0705	Transmission Range Sensor A Circuit (PRNDL Input)	Transmission range switch signals input with impossible pattern.	 Harness or connectors (Transmission range switches 1, 2, 3, 4 and TCM circuit is open or shorted.) Transmission range switches 1, 2, 3 and 4

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

>> GO TO 2.

2. CHECK DTC DETECTION

(P) With CONSULT-III

- Start the engine.
- Select "ACCELE POSI" and "VHCL/S SE-A/T" in "Data Monitor" in "TRANSMISSION".
- Shift the selector lever throughout the entire shift position from "P" to "D". (Hold the selector lever at each position for 2 seconds or more)
- 4. Drive vehicle and maintain the following conditions for 2 seconds or more.

ACCELE POSI : More than 1.0/8

VHCL/S SE-A/T : 10 km/h (7 MPH) or more

- 5. Perform "Self Diagnostic Results" in "TRANSMISSION".
- With GST

Follow the procedure "With CONSULT-III".

Is "P0705" detected?

YES >> Go to TM-212, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000005233433

[7AT: RE7R01A]

1. CHECK INTERMITTENT INCIDENT

Refer to GI-39, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to TM-318, "Exploded View".

NO >> Repair or replace damaged parts.

P0710 TRANSMISSION FLUID TEMPERATURE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

P0710 TRANSMISSION FLUID TEMPERATURE SENSOR A

Description

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

DTC Logic

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
		TCM judges that the A/T fluid temperature is -40 °C (-40 °F) or less continuously for 5 seconds while driving at 10 km/h (7 MPH) or more.	Harness or connectors (Sensor circuit is open.) A/T fluid temperature sensor
		TCM judges that the A/T fluid temperature is 180 °C (356 °F) or more continuously for 5 seconds.	Harness or connectors (Sensor circuit is short.) A/T fluid temperature sensor
P0710	Transmission Fluid Temperature Sensor A Circuit	TCM judges the following conditions while driving the vehicle at 10 km/h (7 MPH) or more: • The time required for A/T fluid temperature to rise by 1 °C (1.8 °F) exceeds 14 minutes when A/T fluid temperature is -20 °C (-4 °F) or less. • The time required for A/T fluid temperature to rise by 1 °C (1.8 °F) exceeds 7 minutes when A/T fluid temperature is between -19 °C (-2 °F) and 0 °C (32 °F). • The time required for A/T fluid temperature to rise by 1 °C (1.8 °F) exceeds 4 minutes when A/T fluid temperature is between 1 °C (34 °F) and 20 °C (68 °F).	Harness or connectors (Sensor circuit is stuck.) A/T fluid temperature sensor

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

1.PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

>> GO TO 2.

2. CHECK DTC DETECTION

(P) With CONSULT-III

- 1. Start the engine.
- 2. Select "SLCT LVR POSI" and "VHCL/S SE-A/T" in "Data Monitor" in "TRANSMISSION".
- Drive vehicle and maintain the following conditions for 14 minutes or more.

SLCT LVR POSI : D

VHCL/S SE-A/T : 10 km/h (7 MPH) or more

Perform "Self Diagnostic Results" in "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P0710" detected?

YES >> Go to TM-214, "Diagnosis Procedure".

NO >> INSPECTION END

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Revision: 2009 July **TM-213** 2010 370Z

P0710 TRANSMISSION FLUID TEMPERATURE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A]

Diagnosis Procedure

INFOID:0000000005233436

1. CHECK INTERMITTENT INCIDENT

Refer to GI-39, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to TM-318. "Exploded View".

NO >> Repair or replace damaged parts.

P0717 INPUT SPEED SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

P0717 INPUT SPEED SENSOR A

Description INFOID:0000000005233437

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

DTC Logic INFOID:0000000005233438

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P0717	Input/Turbine Speed Sensor A Circuit No Signal	The revolution of input speed sensor 1 and/or 2 is 270 rpm or less.	Harness or connectors (Sensor circuit is open.) Input speed sensor 1 and/or 2

DTC CONFIRMATION PROCEDURE

Always drive vehicle at a safe speed.

1.PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

>> GO TO 2.

2.check dtc detection

(I) With CONSULT-III

- Start the engine.
- Select "SLCT LVR POSI", "GEAR", "VHCL/S SE-A/T", "CLSD THL POS" and "ENGINE SPEED" in "Data Monitor" in "TRANSMISSION".
- Drive vehicle and maintain the following conditions for 5 seconds or more.

CAUTION:

Keep the same gear position.

NOTE:

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

SLCT LVR POSI : D

GEAR : 2nd, 3rd, 4th, 5th or 6th VHCL/S SE-A/T : More than 40 km/h (25 MPH)

CLSD THL POS

ENGINE SPEED : More than 1,500 rpm

Perform "Self Diagnostic Results" in "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P0717" detected?

YES >> Go to TM-215, "Diagnosis Procedure".

>> INSPECTION END NO

Diagnosis Procedure

1. CHECK INTERMITTENT INCIDENT

Refer to GI-39, "Intermittent Incident".

Is the inspection result normal?

>> Replace A/T assembly. Refer to TM-318, "Exploded View". YES

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INFOID:0000000005233439

P0717 INPUT SPEED SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A]

NO >> Repair or replace damaged parts.

P0720 OUTPUT SPEED SENSOR

< DTC/CIRCUIT DIAGNOSIS >

P0720 OUTPUT SPEED SENSOR

Description INFOID:0000000005233440

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

DTC Logic INFOID:0000000005233441

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause	TM		
		The vehicle speed detected by the output speed sensor is 5 km/h (3MPH) or less when the vehicle speed transmitted	by the output speed sensor is 5 km/h (3MPH) or less when the vehicle speed transmitted	by the output speed sensor is 5 km/h (3MPH) or less when the vehicle speed transmitted		Е
		from the combination meter to TCM is 20 km/h or more. (Only when starts after the ignition switch is turned ON.) The vehicle speed transmit-		F		
P0720	Output Speed Sensor Circuit	ted from the combination meter to TCM does not de- crease despite the 36 km/h (23 MPH) or more of deceler-	Harness or connectors (Sensor circuit is open.) Output speed sensor	G		
		ation in vehicle speed detect- ed by the output speed sensor. when the vehicle speed detected by the output		Н		
		speed sensor is 36 km/h (23 MPH) or more and the vehicle speed transmitted from the combination meter to TCM is		I		
		24 (15 MPH) or more.		J		

DTC CONFIRMATION PROCEDURE

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

1.PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

>> GO TO 2.

CHECK DTC DETECTION

(II) With CONSULT-III

- Start the engine.
- Select "ESTM VSP SIG" in "Data Monitor" in "TRANSMISSION".
- Drive vehicle and maintain the following conditions for 60 seconds or more.

ESTM VSP SIG : 40 km/h (25 MPH) or more

Perform "Self Diagnostic Results" in "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P0720" detected?

>> Go to TM-218, "Diagnosis Procedure". YES

NO >> INSPECTION END

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P0720 OUTPUT SPEED SENSOR

< DTC/CIRCUIT DIAGNOSIS >

Diagnosis Procedure

INFOID:0000000005233442

[7AT: RE7R01A]

1. CHECK INTERMITTENT INCIDENT

Refer to GI-39, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to <u>TM-318. "Exploded View"</u>.

NO >> Repair or replace damaged parts.

P0725 ENGINE SPEED

< DTC/CIRCUIT DIAGNOSIS >

P0725 ENGINE SPEED

Description INFOID:0000000005233443

The engine speed signal is transmitted from the ECM to the TCM via CAN communication line.

DTC Logic INFOID:0000000005233444

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P0725	Engine Speed Input Circuit	TCM does not receive the CAN communication signal from the ECM. The engine speed is more less 150 rpm even if the vehicle speed is more than 10 km/h (7 MPH).	Harness or connectors (ECM to TCM circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

1.PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

>> GO TO 2.

2.CHECK DTC DETECTION

(P) With CONSULT-III

- 1. Start the engine.
- Select "SLCT LVR POSI" and "VHCL/S SE-A/T" in "Data Monitor" in "TRANSMISSION".
- Drive vehicle and maintain the following conditions for 5 seconds or more.

SLCT LVR POSI : D

: More than 10 km/h (7 MPH) VHCL/S SE-A/T

Perform "Self Diagnostic Results" in "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P0725" detected?

YES >> Go to TM-219, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK DTC OF ECM

(P) With CONSULT-III

- Turn ignition switch ON.
- Perform "Self Diagnostic Results" in "ENGINE".

Is any DTC detected?

YES >> Check DTC detected item. Refer to EC-560, "DTC Index".

NO >> GO TO 2.

2.CHECK DTC OF TCM

(P) With CONSULT-III

Perform "Self Diagnostic Results" in "TRANSMISSION".

Is any DTC other than "P0725" detected?

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P0725 ENGINE SPEED

[7AT: RE7R01A]

< DTC/CIRCUIT DIAGNOSIS >

YES >> Check DTC detected item. Refer to TM-286, "DTC Index".

NO >> GO TO 3.

3. CHECK INTERMITTENT INCIDENT

Refer to GI-39, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to TM-318, "Exploded View".

NO >> Repair or replace damaged parts.

P0729 6GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

P0729 6GR INCORRECT RATIO

Description INFOID:000000005233446

This malfunction is detected when the A/T does not shift into 6GR position as instructed by TCM. This is not only caused by electrical malfunction (circuits open or shorted) but by mechanical malfunction such as control valve sticking, improper solenoid valve operation, etc.

DTC Logic

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P0729	Gear 6 Incorrect Ratio	The gear ratio is: • 0.914 or more • 0.810 or less	Input clutch solenoid valve Direct clutch solenoid valve High and low reverse clutch solenoid valve Front brake solenoid valve Low brake solenoid valve 2346 brake solenoid valve Anti-interlock solenoid valve Each clutch and brake Output speed sensor Input speed sensor 1, 2 Hydraulic control circuit

DTC CONFIRMATION PROCEDURE

CAUTION:

- "TM-222, "Diagnosis Procedure" must be performed before starting "DTC CONFIRMATION PROCEDURE".
- Never perform "DTC CONFIRMATION PROCEDURE" before completing the repair, which may cause secondary malfunction.
- Always drive vehicle at a safe speed.

1.PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

>> GO TO 2.

2.CHECK ATF TEMPERATURE

(P) With CONSULT-III

- 1. Start the engine.
- 2. Select "ATF TEMP 1" in "Data Monitor" in "TRANSMISSION".
- Check ATF temperature is in the following range.

ATF TEMP 1 : 20°C (68°F) – 140°C (284°F)

With GST

- Start the engine.
- 2. Drive vehicle for approximately 5 minutes in urban areas.

Is ATF temperature within specified range?

YES >> GO TO 3.

NO >> Drive vehicle to warm ATF or stop engine to cool ATF.

3.CHECK SYMPTOM (PART 1)

(II) With CONSULT-III

- 1. Select "6TH GR FNCTN P0729" in "DTC & SRT confirmation" in "TRANSMISSION".
- 2. Drive vehicle with manual mode and maintain the following conditions.

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P0729 6GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

GEAR : 6th

ACCELE POSI : 0.7/8 or more

VEHICLE SPEED : 10 km/h (7 MPH) or more

Keep the current driving status for 2 seconds or more if CONSULT-III screen changes from "OUT OF CONDITION" to "TESTING".

CAUTION:

When "TESTING" is not indicated on CONSULT-III for a long time, check "Self Diagnostic Results" in "TRANSMISSION". When a DTC other than "P0729" is detected, check the DTC. Refer to TM-286, "DTC Index".

With GST

1. Drive vehicle and maintain the following conditions for 2 seconds or more.

Selector lever : "M" position

Gear position : 6th

Accelerator pedal opening : 0.7/8 or more

Vehicle speed : 10 km/h (7 MPH) or more

2. Check DTC.

<u>Is "OUT OF CONDITION", "STOP VEHICLE" or "COMPLETED RESULT NG" displayed? / Is "P0729" detected?</u>

YES-1 (OUT OF CONDITION)>>Perform "Step 3" again.

YES-2 (STOP VEHICLE)>>GO TO 4.

YES-3 (COMPLETED RESULT NG)>>Go to TM-222, "Diagnosis Procedure".

YES-4 ("P0729" is detected)>>Go to TM-222, "Diagnosis Procedure".

NO >> GO TO 4.

4. CHECK SYMPTOM (PART 2)

1. Stop vehicle.

2. Drive vehicle in "D" position allowing it to shift from 1GR to 7GR and check shift timing and shift shock.

>> INSPECTION END

Diagnosis Procedure

INFOID:0000000005233448

[7AT: RE7R01A]

1. CHECK INTERMITTENT INCIDENT

Refer to GI-39, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to TM-318, "Exploded View".

NO >> Repair or replace damaged parts.

P0730 INCORRECT GEAR RATIO

< DTC/CIRCUIT DIAGNOSIS >

P0730 INCORRECT GEAR RATIO

Description INFOID:0000000005233449

The TCM detects a high-rpm state of the under drive sun gear.

The number of revolutions of the under drive sun gear is calculated with the input speed sensor 1 and 2.

DTC Logic INFOID:0000000005233450

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P0730	Incorrect Gear Ratio	The revolution of under drive sun gear is 8,000 rpm or more. NOTE: Not detected when in "P" or "N" position and during a shift to "P" or "N" position.	 2346 brake solenoid valve Front brake solenoid valve Input speed sensor 1, 2

DTC CONFIRMATION PROCEDURE

CAUTION:

- "TM-223, "Diagnosis Procedure" must be performed before starting "DTC CONFIRMATION PROCE-DURE".
- Never perform "DTC CONFIRMATION PROCEDURE" before completing the repair, which may cause secondary malfunction.
- Always drive vehicle at a safe speed.

1.PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

>> GO TO 2.

2. CHECK DTC DETECTION

(P) With CONSULT-III

- 1. Start the engine.
- Select "Self Diagnostic Results" in "ENGINE".
- Drive vehicle under the similar conditions to (1st trip) Freeze Frame Data for 10 minutes. Refer to the table below.

Hold the accelerator pedal as steady as possible.

ENGINE SPEED	Same value as the Freeze Frame Data.	
VEHICLE SPEED	Same value as the Freeze Frame Data.	
B/FUEL SCHDL	Same value as the Freeze Frame Data.	

With GST

Follow the procedure "With CONSULT-III".

Is "P0730" detected?

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YES >> Go to TM-223, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK INTERMITTENT INCIDENT

Refer to GI-39, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to TM-318, "Exploded View".

NO >> Repair or replace damaged parts.

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INFOID:0000000005233451

P0731 1GR INCORRECT RATIO

[7AT: RE7R01A]

< DTC/CIRCUIT DIAGNOSIS >

P0731 1GR INCORRECT RATIO

Description

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

DTC Logic

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P0731	Gear 1 Incorrect Ratio	The gear ratio is: • 5.219 or more • 4.629 or less	Input clutch solenoid valve Direct clutch solenoid valve High and low reverse clutch solenoid valve Front brake solenoid valve Low brake solenoid valve 2346 brake solenoid valve Anti-interlock solenoid valve Each clutch and brake Output speed sensor Input speed sensor 1, 2 Hydraulic control circuit

DTC CONFIRMATION PROCEDURE

CAUTION:

- "TM-225, "Diagnosis Procedure" must be performed before starting "DTC CONFIRMATION PROCEDURE".
- Never perform "DTC CONFIRMATION PROCEDURE" before completing the repair, which may cause secondary malfunction.
- Always drive vehicle at a safe speed.

1.PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

>> GO TO 2.

2.CHECK ATF TEMPERATURE

(P) With CONSULT-III

- 1. Start the engine.
- Select "ATF TEMP 1" in "Data Monitor" in "TRANSMISSION".
- Check ATF temperature is in the following range.

ATF TEMP 1 : 20°C (68°F) – 140°C (284°F)

With GST

- Start the engine.
- 2. Drive vehicle for approximately 5 minutes in urban areas.

Is ATF temperature within specified range?

YES >> GO TO 3.

NO >> Drive vehicle to warm ATF or stop engine to cool ATF.

3.CHECK SYMPTOM (PART 1)

(II) With CONSULT-III

- 1. Select "1ST GR FNCTN P0731" in "DTC & SRT confirmation" in "TRANSMISSION".
- Drive vehicle with manual mode and maintain the following conditions.

P0731 1GR INCORRECT RATIO

[7AT: RE7R01A] < DTC/CIRCUIT DIAGNOSIS >

GEAR : 1st

ACCELE POSI : 0.7/8 or more

VEHICLE SPEED : 10 km/h (7 MPH) or more

Keep the current driving status for 2 seconds or more if CONSULT-III screen changes from "OUT OF CONDITION" to "TESTING".

CAUTION:

When "TESTING" is not indicated on CONSULT-III for a long time, check "Self Diagnostic Results" in "TRANSMISSION". When a DTC other than "P0731" is detected, check the DTC. Refer to TM-286, "DTC Index".

With GST

Drive vehicle and maintain the following conditions for 2 seconds or more.

Selector lever : "M" position

Gear position : 1st

Accelerator pedal opening : 0.7/8 or more

Vehicle speed : 10 km/h (7 MPH) or more

Check DTC.

Is "OUT OF CONDITION", "STOP VEHICLE" or "COMPLETED RESULT NG" displayed? / Is "P0731" detected?

YES-1 (OUT OF CONDITION)>>Perform "Step 3" again.

YES-2 (STOP VEHICLE)>>GO TO 4.

YES-3 (COMPLETED RESULT NG)>>Go to TM-225, "Diagnosis Procedure".

YES-4 ("P0731" is detected)>>Go to TM-225, "Diagnosis Procedure".

>> GO TO 4. NO

4.CHECK SYMPTOM (PART 2)

Stop vehicle.

2. Drive vehicle in "D" position allowing it to shift from 1GR to 7GR and check shift timing and shift shock.

>> INSPECTION END

Diagnosis Procedure

INFOID:0000000005233454

1. CHECK INTERMITTENT INCIDENT

Refer to GI-39, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to TM-318, "Exploded View".

NO >> Repair or replace damaged parts.

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P0732 2GR INCORRECT RATIO

[7AT: RE7R01A]

< DTC/CIRCUIT DIAGNOSIS >

P0732 2GR INCORRECT RATIO

Description

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

DTC Logic

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P0732	Gear 2 Incorrect Ratio	The gear ratio is: • 3.386 or more • 3.002 or less	Input clutch solenoid valve Direct clutch solenoid valve High and low reverse clutch solenoid valve Front brake solenoid valve Low brake solenoid valve 2346 brake solenoid valve Anti-interlock solenoid valve Each clutch and brake Output speed sensor Input speed sensor 1, 2 Hydraulic control circuit

DTC CONFIRMATION PROCEDURE

CAUTION:

- "TM-227, "Diagnosis Procedure" must be performed before starting "DTC CONFIRMATION PROCEDURE".
- Never perform "DTC CONFIRMATION PROCEDURE" before completing the repair, which may cause secondary malfunction.
- Always drive vehicle at a safe speed.

1.PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

>> GO TO 2.

2. CHECK ATF TEMPERATURE

(P) With CONSULT-III

- 1. Start the engine.
- Select "ATF TEMP 1" in "Data Monitor" in "TRANSMISSION".
- Check ATF temperature is in the following range.

ATF TEMP 1 : 20°C (68°F) – 140°C (284°F)

With GST

- Start the engine.
- 2. Drive vehicle for approximately 5 minutes in urban areas.

Is ATF temperature within specified range?

YES >> GO TO 3.

NO >> Drive vehicle to warm ATF or stop engine to cool ATF.

3.CHECK SYMPTOM (PART 1)

(I) With CONSULT-III

- 1. Select "2ND GR FNCTN P0732" in "DTC & SRT confirmation" in "TRANSMISSION".
- Drive vehicle with manual mode and maintain the following conditions.

P0732 2GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS > [7AT: RE7R01A]

GEAR : 2nd

ACCELE POSI : 0.7/8 or more

VEHICLE SPEED : 10 km/h (7 MPH) or more

Keep the current driving status for 2 seconds or more if CONSULT-III screen changes from "OUT OF CONDITION" to "TESTING".

CAUTION:

When "TESTING" is not indicated on CONSULT-III for a long time, check "Self Diagnostic Results" in "TRANSMISSION". When a DTC other than "P0732" is detected, check the DTC. Refer to TM-286, "DTC Index".

With GST

1. Drive vehicle and maintain the following conditions for 2 seconds or more.

Selector lever : "M" position

Gear position : 2nd

Accelerator pedal opening : 0.7/8 or more

Vehicle speed : 10 km/h (7 MPH) or more

2. Check DTC.

Is "OUT OF CONDITION", "STOP VEHICLE" or "COMPLETED RESULT NG" displayed? / Is "P0732" detected?

YES-1 (OUT OF CONDITION)>>Perform "Step 3" again.

YES-2 (STOP VEHICLE)>>GO TO 4.

YES-3 (COMPLETED RESULT NG)>>Go to TM-227, "Diagnosis Procedure".

YES-4 ("P0732" is detected)>>Go to TM-227, "Diagnosis Procedure".

NO >> GO TO 4.

4.CHECK SYMPTOM (PART 2)

1. Stop vehicle.

2. Drive vehicle in "D" position allowing it to shift from 1GR to 7GR and check shift timing and shift shock.

>> INSPECTION END

Diagnosis Procedure

agnosis Procedure

1. CHECK INTERMITTENT INCIDENT

Refer to GI-39, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to TM-318, "Exploded View".

NO >> Repair or replace damaged parts.

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P0733 3GR INCORRECT RATIO

[7AT: RE7R01A]

< DTC/CIRCUIT DIAGNOSIS >

P0733 3GR INCORRECT RATIO

Description

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

DTC Logic

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P0733	Gear 3 Incorrect Ratio	The gear ratio is: • 2.166 or more • 1.920 or less	Input clutch solenoid valve Direct clutch solenoid valve High and low reverse clutch solenoid valve Front brake solenoid valve Low brake solenoid valve 2346 brake solenoid valve Anti-interlock solenoid valve Each clutch and brake Output speed sensor Input speed sensor 1, 2 Hydraulic control circuit

DTC CONFIRMATION PROCEDURE

CAUTION:

- "TM-229, "Diagnosis Procedure"" must be performed before starting "DTC CONFIRMATION PROCEDURE".
- Never perform "DTC CONFIRMATION PROCEDURE" before completing the repair, which may cause secondary malfunction.
- · Always drive vehicle at a safe speed.

1.PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

>> GO TO 2.

2. CHECK ATF TEMPERATURE

(P) With CONSULT-III

- 1. Start the engine.
- Select "ATF TEMP 1" in "Data Monitor" in "TRANSMISSION".
- Check ATF temperature is in the following range.

ATF TEMP 1 : 20°C (68°F) – 140°C (284°F)

With GST

- 1. Start the engine.
- 2. Drive vehicle for approximately 5 minutes in urban areas.

Is ATF temperature within specified range?

YES >> GO TO 3.

NO >> Drive vehicle to warm ATF or stop engine to cool ATF.

3.CHECK SYMPTOM (PART 1)

(I) With CONSULT-III

- 1. Select "3RD GR FNCTN P0733" in "DTC & SRT confirmation" in "TRANSMISSION".
- Drive vehicle with manual mode and maintain the following conditions.

P0733 3GR INCORRECT RATIO

[7AT: RE7R01A] < DTC/CIRCUIT DIAGNOSIS >

GEAR : 3rd

ACCELE POSI : 0.7/8 or more

VEHICLE SPEED : 10 km/h (7 MPH) or more

Keep the current driving status for 2 seconds or more if CONSULT-III screen changes from "OUT OF CONDITION" to "TESTING".

CAUTION:

When "TESTING" is not indicated on CONSULT-III for a long time, check "Self Diagnostic Results" in "TRANSMISSION". When a DTC other than "P0733" is detected, check the DTC. Refer to TM-286, "DTC Index".

With GST

Drive vehicle and maintain the following conditions for 2 seconds or more.

Selector lever : "M" position

Gear position : 3rd

Accelerator pedal opening : 0.7/8 or more

Vehicle speed : 10 km/h (7 MPH) or more

Check DTC.

Is "OUT OF CONDITION", "STOP VEHICLE" or "COMPLETED RESULT NG" displayed? / Is "P0733" detected?

YES-1 (OUT OF CONDITION)>>Perform "Step 3" again.

YES-2 (STOP VEHICLE)>>GO TO 4.

YES-3 (COMPLETED RESULT NG)>>Go to TM-229, "Diagnosis Procedure".

YES-4 ("P0733" is detected)>>Go to TM-229, "Diagnosis Procedure".

>> GO TO 4. NO

4.CHECK SYMPTOM (PART 2)

Stop vehicle.

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2. Drive vehicle in "D" position allowing it to shift from 1GR to 7GR and check shift timing and shift shock.

>> INSPECTION END

Diagnosis Procedure

INFOID:0000000005233460

1. CHECK INTERMITTENT INCIDENT

Refer to GI-39, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to TM-318, "Exploded View".

NO >> Repair or replace damaged parts.

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P0734 4GR INCORRECT RATIO

[7AT: RE7R01A]

< DTC/CIRCUIT DIAGNOSIS >

P0734 4GR INCORRECT RATIO

Description INFOID:000000005233461

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

DTC Logic (INFOID:0000000005233462

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P0734	Gear 4 Incorrect Ratio	The gear ratio is: • 1.497 or more • 1.327 or less	Input clutch solenoid valve Direct clutch solenoid valve High and low reverse clutch solenoid valve Front brake solenoid valve Low brake solenoid valve 2346 brake solenoid valve Anti-interlock solenoid valve Each clutch and brake Output speed sensor Input speed sensor 1, 2 Hydraulic control circuit

DTC CONFIRMATION PROCEDURE

CAUTION:

- "TM-231, "Diagnosis Procedure" must be performed before starting "DTC CONFIRMATION PROCEDURE".
- Never perform "DTC CONFIRMATION PROCEDURE" before completing the repair, which may cause secondary malfunction.
- · Always drive vehicle at a safe speed.

1.PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

>> GO TO 2.

2. CHECK ATF TEMPERATURE

(P) With CONSULT-III

- 1. Start the engine.
- Select "ATF TEMP 1" in "Data Monitor" in "TRANSMISSION".
- 3. Check ATF temperature is in the following range.

ATF TEMP 1 : 20°C (68°F) – 140°C (284°F)

With GST

- 1. Start the engine.
- 2. Drive vehicle for approximately 5 minutes in urban areas.

Is ATF temperature within specified range?

YES >> GO TO 3.

NO >> Drive vehicle to warm ATF or stop engine to cool ATF.

3.CHECK SYMPTOM (PART 1)

(II) With CONSULT-III

- 1. Select "4TH GR FNCTN P0734" in "DTC & SRT confirmation" in "TRANSMISSION".
- Drive vehicle with manual mode and maintain the following conditions.

P0734 4GR INCORRECT RATIO

[7AT: RE7R01A] < DTC/CIRCUIT DIAGNOSIS >

GEAR : 4th

ACCELE POSI : 0.7/8 or more

VEHICLE SPEED : 10 km/h (7 MPH) or more

Keep the current driving status for 2 seconds or more if CONSULT-III screen changes from "OUT OF CONDITION" to "TESTING".

CAUTION:

When "TESTING" is not indicated on CONSULT-III for a long time, check "Self Diagnostic Results" in "TRANSMISSION". When a DTC other than "P0734" is detected, check the DTC. Refer to TM-286, "DTC Index".

With GST

Drive vehicle and maintain the following conditions for 2 seconds or more.

Selector lever : "M" position

Gear position : 4th

Accelerator pedal opening : 0.7/8 or more

Vehicle speed : 10 km/h (7 MPH) or more

Check DTC.

Is "OUT OF CONDITION", "STOP VEHICLE" or "COMPLETED RESULT NG" displayed? / Is "P0734" detected?

YES-1 (OUT OF CONDITION)>>Perform "Step 3" again.

YES-2 (STOP VEHICLE)>>GO TO 4.

YES-3 (COMPLETED RESULT NG)>>Go to TM-231, "Diagnosis Procedure".

YES-4 ("P0734" is detected)>>Go to TM-231, "Diagnosis Procedure".

NO >> GO TO 4.

4.CHECK SYMPTOM (PART 2)

Stop vehicle.

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2. Drive vehicle in "D" position allowing it to shift from 1GR to 7GR and check shift timing and shift shock.

>> INSPECTION END

Diagnosis Procedure

INFOID:0000000005233463

1. CHECK INTERMITTENT INCIDENT

Refer to GI-39, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to TM-318, "Exploded View".

NO >> Repair or replace damaged parts.

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2010 370Z

P0735 5GR INCORRECT RATIO

[7AT: RE7R01A]

< DTC/CIRCUIT DIAGNOSIS >

P0735 5GR INCORRECT RATIO

Description

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

DTC Logic

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P0735	Gear 5 Incorrect Ratio	The gear ratio is: • 1.060 or more • 0.940 or less	Input clutch solenoid valve Direct clutch solenoid valve High and low reverse clutch solenoid valve Front brake solenoid valve Low brake solenoid valve 2346 brake solenoid valve Anti-interlock solenoid valve Each clutch and brake Output speed sensor Input speed sensor 1, 2 Hydraulic control circuit

DTC CONFIRMATION PROCEDURE

CAUTION:

- "TM-233, "Diagnosis Procedure"" must be performed before starting "DTC CONFIRMATION PROCEDURE".
- Never perform "DTC CONFIRMATION PROCEDURE" before completing the repair, which may cause secondary malfunction.
- · Always drive vehicle at a safe speed.

1.PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

>> GO TO 2.

2. CHECK ATF TEMPERATURE

(P) With CONSULT-III

- 1. Start the engine.
- Select "ATF TEMP 1" in "Data Monitor" in "TRANSMISSION".
- Check ATF temperature is in the following range.

ATF TEMP 1 : 20°C (68°F) – 140°C (284°F)

With GST

- Start the engine.
- 2. Drive vehicle for approximately 5 minutes in urban areas.

Is ATF temperature within specified range?

YES >> GO TO 3.

NO >> Drive vehicle to warm ATF or stop engine to cool ATF.

3.CHECK SYMPTOM (PART 1)

(I) With CONSULT-III

- 1. Select "5TH GR FNCTN P0735" in "DTC & SRT confirmation" in "TRANSMISSION".
- Drive vehicle with manual mode and maintain the following conditions.

P0735 5GR INCORRECT RATIO

[7AT: RE7R01A] < DTC/CIRCUIT DIAGNOSIS >

GEAR : 5th

ACCELE POSI : 0.7/8 or more

VEHICLE SPEED : 10 km/h (7 MPH) or more

Keep the current driving status for 2 seconds or more if CONSULT-III screen changes from "OUT OF CONDITION" to "TESTING".

CAUTION:

When "TESTING" is not indicated on CONSULT-III for a long time, check "Self Diagnostic Results" in "TRANSMISSION". When a DTC other than "P0735" is detected, check the DTC. Refer to TM-286, "DTC Index".

With GST

Drive vehicle and maintain the following conditions for 2 seconds or more.

Selector lever : "M" position

Gear position : 5th

Accelerator pedal opening : 0.7/8 or more

Vehicle speed : 10 km/h (7 MPH) or more

Check DTC.

Is "OUT OF CONDITION", "STOP VEHICLE" or "COMPLETED RESULT NG" displayed? / Is "P0735" detected?

YES-1 (OUT OF CONDITION)>>Perform "Step 3" again.

YES-2 (STOP VEHICLE)>>GO TO 4.

YES-3 (COMPLETED RESULT NG)>>Go to TM-233, "Diagnosis Procedure".

YES-4 ("P0735" is detected)>>Go to TM-233, "Diagnosis Procedure".

>> GO TO 4. NO

4.CHECK SYMPTOM (PART 2)

Stop vehicle.

2. Drive vehicle in "D" position allowing it to shift from 1GR to 7GR and check shift timing and shift shock.

>> INSPECTION END

Diagnosis Procedure

INFOID:0000000005233466

1. CHECK INTERMITTENT INCIDENT

Refer to GI-39, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to TM-318, "Exploded View".

NO >> Repair or replace damaged parts.

TM-233 2010 370Z TM

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Revision: 2009 July

P0740 TORQUE CONVERTER

Description INFOID:000000005233467

- The torque converter clutch solenoid valve is activated, with the gear in D2, D3, D4, D5, D6, D7, M2, M3, M4, M5, M6 and M7 by the TCM in response to signals transmitted from the output speed sensor and accelerator pedal position sensor. Torque converter clutch piston operation will then be controlled.
- Lock-up operation, however, is prohibited when A/T fluid temperature is too low.
- When the accelerator pedal is depressed (less than 1.0/8) in lock-up condition, the engine speed should not change abruptly. If there is a big jump in engine speed, there is no lock-up.

DTC Logic

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P0740	Torque Converter Clutch Circuit/Open	The torque converter clutch solenoid valve monitor value is 0.4 A or less when the torque converter clutch solenoid valve command value is more than 0.75 A.	Harness or connectors (Solenoid valve circuit is open or shorted.) Torque converter clutch solenoid valve

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

1.PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

>> GO TO 2.

2. CHECK DTC DETECTION

(I) With CONSULT-III

- 1. Start the engine.
- 2. Select "BATTERY VOLT", "MANU MODE SW", "GEAR" and "VEHICLE SPEED" in "Data Monitor" in "TRANSMISSION".
- 3. Drive vehicle and maintain the following conditions for 30 seconds or more.

NOTE:

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

BATTERY VOLT : 9 V or more

MANU MODE SW : ON GEAR : 2nd

VEHICLE SPEED : 40 km/h (25 MPH) or more

4. Perform "Self Diagnostic Results" in "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P0740" detected?

YES >> Go to TM-234, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000005233469

[7AT: RE7R01A]

1. CHECK INTERMITTENT INCIDENT

Refer to GI-39, "Intermittent Incident".

Revision: 2009 July **TM-234** 2010 370Z

P0740 TORQUE CONVERTER

< DTC/CIRCUIT DIAGNOSIS > [7AT: RE7R01A]

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to TM-318, "Exploded View".

NO >> Repair or replace damaged parts.

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P0744 TORQUE CONVERTER

[7AT: RE7R01A]

INFOID:0000000005233472

< DTC/CIRCUIT DIAGNOSIS >

P0744 TORQUE CONVERTER

Description INFOID:000000005233470

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.

DTC Logic

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P0744	Torque Converter Clutch Circuit Intermittent	The lock-up is not performed in spite of within the lock-up area.	Harness or connectors Torque converter clutch sole- noid valve Torque converter Input speed sensor 1, 2 Hydraulic control circuit

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

1.PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

>> GO TO 2.

2. CHECK DTC DETECTION

(I) With CONSULT-III

- 1. Start the engine.
- 2. Select "MANU MODE SW", "GEAR" and "VEHICLE SPEED" in "Data Monitor" in "TRANSMISSION".
- 3. Drive vehicle and maintain the following conditions for 10 seconds or more.

NOTE:

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

MANU MODE SW : ON GEAR : 2nd

VEHICLE SPEED : 40 km/h (25 MPH) or more

4. Perform "Self Diagnostic Results" in "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P0744" detected?

YES >> Go to TM-236, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK INTERMITTENT INCIDENT

Refer to GI-39, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to TM-318, "Exploded View".

NO >> Repair or replace damaged parts.

Revision: 2009 July **TM-236** 2010 370Z

P0745 PRESSURE CONTROL SOLENOID A

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A]

P0745 PRESSURE CONTROL SOLENOID A

Description INFOID:0000000005233473

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

DTC Logic

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P0745	Pressure Control Solenoid A	The line pressure solenoid valve monitor value is 0.4 A or less when the line pressure solenoid valve command value is more than 0.75 A.	Harness or connectors (Solenoid valve circuit is open or shorted.) Line pressure solenoid valve

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

>> GO TO 2.

2. CHECK DTC DETECTION

(P) With CONSULT-III

- Start the engine.
- Select "BATTERY VOLT" and "SLCT LVR POSI" in "Data Monitor" in "TRANSMISSION".
- 3. Shift the selector lever to "N" position.
- 4. Maintain the following conditions for 5 seconds or more.

BATTERY VOLT : 9 V or more SLCT LVR POSI : N/P

5. Perform "Self Diagnostic Results" in "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P0745" detected?

YES >> Go to TM-237, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK INTERMITTENT INCIDENT

Refer to GI-39, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to <u>TM-318, "Exploded View"</u>.

NO >> Repair or replace damaged parts.

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Revision: 2009 July **TM-237** 2010 370Z

P0750 SHIFT SOLENOID A

Description INFOID:0000000005233476

- Anti-interlock solenoid valve prevents the simultaneous activation of the input clutch and the low brake.
- The anti-interlock solenoid valve is an ON/OFF type solenoid valve.

DTC Logic

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P0750	Shift Solenoid A	The anti-interlock solenoid valve monitor value is ON when the anti-interlock solenoid valve command value is OFF. The anti-interlock solenoid valve monitor value is OFF when the anti-interlock solenoid valve command value is ON.	 Harness or connectors (Solenoid valve circuit is open or shorted.) Anti-interlock solenoid valve

DTC CONFIRMATION PROCEDURE

CAUTION

Always drive vehicle at a safe speed.

1.PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

>> GO TO 2.

2. CHECK DTC DETECTION

(II) With CONSULT-III

- Start the engine.
- Select "BATTERY VOLT", "MANU MODE SW", "GEAR" and "VHCL/S SE-A/T" in "Data Monitor" in "TRANSMISSION".
- Drive vehicle and maintain the following conditions for 5 seconds or more.

BATTERY VOLT : 9 V or more

MANU MODE SW : ON GEAR : 1st

VHCL/S SE-A/T : 10 km/h (7 MPH) or more

4. Perform "Self Diagnostic Results" in "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P0750" detected?

YES >> Go to TM-238, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK INTERMITTENT INCIDENT

Refer to GI-39, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to TM-318, "Exploded View".

NO >> Repair or replace damaged parts.

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INFOID:0000000005233478

[7AT: RE7R01A]

P0775 PRESSURE CONTROL SOLENOID B

< DTC/CIRCUIT DIAGNOSIS >

P0775 PRESSURE CONTROL SOLENOID B

Description INFOID:0000000005233479

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

 The Input clutch solenoid valve controls the input clutch control valve in response to a signal transmitted from the TCM.

DTC Logic INFOID:0000000005233480

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P0775	Pressure Control Solenoid B	The input clutch solenoid valve monitor value is 0.4 A or less when the input clutch solenoid valve command value is more than 0.75 A.	Harness or connectors (Solenoid valve circuit is open or shorted.) Input clutch solenoid valve

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

1.PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

>> GO TO 2.

2. CHECK DTC DETECTION

(P) With CONSULT-III

- Start the engine.
- Select "BATTERY VOLT", "MANU MODE SW", "GEAR" and "VHCL/S SE-A/T" in "Data Monitor" in "TRANSMISSION".
- Drive vehicle and maintain the following conditions for 5 seconds or more.

BATTERY VOLT : 9 V or more

MANU MODE SW: ON **GEAR** · 1st

VHCL/S SE-A/T : 10 km/h (7 MPH) or more

Perform "Self Diagnostic Results" in "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P0775" detected?

YES >> Go to TM-239, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK INTERMITTENT INCIDENT Refer to GI-39, "Intermittent Incident".

Is the inspection result normal?

>> Replace A/T assembly. Refer to TM-318, "Exploded View". YES

>> Repair or replace damaged parts. NO

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INFOID:0000000005233481

P0780 SHIFT

Description

The TCM detects the malfunction of low brake solenoid valve. 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.

DTC Logic

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P0780	Shift Error	 TCM judges that the gear ratio is not switched to that of 4GR (1.412) while shifting from 3GR to 4GR in "D" position. TCM judges that the engine speed is more than the specified one while shifting from 5GR to 6GR or from 6GR to 7GR in "D" position. 	Anti-interlock solenoid valve Low brake solenoid valve Hydraulic control circuit

DTC CONFIRMATION PROCEDURE

CAUTION:

- "TM-240, "Diagnosis Procedure" must be performed before starting "DTC CONFIRMATION PROCEDURE".
- Never perform "DTC CONFIRMATION PROCEDURE" before completing the repair, which may cause secondary malfunction.
- · Always drive vehicle at a safe speed.

1.PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

>> GO TO 2.

2.CHECK DTC DETECTION

(II) With CONSULT-III

- 1. Start the engine.
- 2. Select "SLCT LVR POSI", "ACCELE POSI" and "GEAR" in "Data Monitor" in "TRANSMISSION".
- 3. Drive vehicle and maintain the following conditions.

SLCT LVR POSI : D

ACCELE POSI : More than 1.0/8 GEAR : $3rd \rightarrow 4th$

4. Perform "Self Diagnostic Results" in "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P0780" detected?

YES >> Go to TM-240, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000005233484

[7AT: RE7R01A]

1. CHECK INTERMITTENT INCIDENT

Refer to GI-39, "Intermittent Incident".

Is the inspection result normal?

P0780 SHIFT

< DTC/CIRCUIT DIAGNOSIS >	[7AT: RE7R01A]
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>> Replace A/T assembly. Refer to $\underline{\text{TM-318. "Exploded View"}}$. >> Repair or replace damaged parts. YES

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P0795 PRESSURE CONTROL SOLENOID C

[7AT: RE7R01A]

< DTC/CIRCUIT DIAGNOSIS >

P0795 PRESSURE CONTROL SOLENOID C

Description INFOID:0000000005233485

- The front brake solenoid valve is controlled by the TCM in response to signals transmitted from the transmission range switch, output speed sensor and accelerator pedal position sensor. Gears will then be shifted to the optimum position.
- The front brake solenoid valve controls the front brake control valve in response to a signal transmitted from the TCM.

DTC Logic INFOID:0000000005233486

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P0795	Pressure Control Solenoid C	The front brake solenoid valve monitor value is 0.4 A or less when the front brake solenoid valve command value is more than 0.75 A.	Harness or connectors (Solenoid valve circuit is open or shorted.) Front brake solenoid valve

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

1.PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

>> GO TO 2.

2. CHECK DTC DETECTION

(II) With CONSULT-III

- Start the engine.
- Select "BATTERY VOLT", "MANU MODE SW", "GEAR" and "VHCL/S SE-A/T" in "Data Monitor" in "TRANSMISSION".
- Drive vehicle and maintain the following conditions for 5 seconds or more.

BATTERY VOLT : 9 V or more

MANU MODE SW: ON **GEAR** : 7th

VHCL/S SE-A/T : 10 km/h (7 MPH) or more

4. Perform "Self Diagnostic Results" in "TRANSMISSION".

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Follow the procedure "With CONSULT-III".

Is "P0795" detected?

>> Go to TM-242, "Diagnosis Procedure". YES

>> INSPECTION END

Diagnosis Procedure

INFOID:0000000005233487

1. CHECK INTERMITTENT INCIDENT

Refer to GI-39, "Intermittent Incident".

Is the inspection result normal?

>> Replace A/T assembly. Refer to TM-318, "Exploded View". YES

>> Repair or replace damaged parts. NO

P1705 TP SENSOR

< DTC/CIRCUIT DIAGNOSIS >

P1705 TP SENSOR

Description INFOID:0000000005233488

The accelerator pedal position sensor is installed on the upper end of the accelerator pedal assembly.

- The accelerator pedal position sensor detects the accelerator position.
- The accelerator pedal position sensor transform the accelerator pedal position into output voltage, and emit the voltage signal to the ECM.
- The TCM receives accelerator pedal position signal from the ECM via CAN communication.

DTC Logic INFOID:0000000005233489

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P1705	Accelerator Pedal Position Sensor Signal Circuit	TCM detects the difference be- tween two accelerator pedal po- sition signals received from ECM via CAN communication.	Harness or connectors (Sensor circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

>> GO TO 2.

2.CHECK DTC DETECTION

(II) With CONSULT-III

- Start the engine.
- Select "SLCT LVR POSI" and "VHCL/S SE-A/T" in "Data Monitor" in "TRANSMISSION".
- Drive vehicle and maintain the following conditions for 5 seconds or more.

SLCT LVR POSI

VHCL/S SE-A/T : 5 km/h (3 MPH) or more

Perform "Self Diagnostic Results" in "TRANSMISSION".

Is "P1705" detected?

YES >> Go to TM-243, "Diagnosis Procedure".

>> INSPECTION END NO

Diagnosis Procedure

1. CHECK DTC OF ECM

(P) With CONSULT-III

- Turn ignition switch ON.
- Perform "Self Diagnostic Results" in "ENGINE".

Is any DTC detected?

YES >> Check DTC detected item. Refer to EC-560, "DTC Index".

NO >> GO TO 2.

2.CHECK DTC OF TCM

(P) With CONSULT-III

Perform "Self Diagnostic Results" in "TRANSMISSION".

Is any DTC other than "P1705" detected?

YES >> Check DTC detected item. Refer to TM-286, "DTC Index".

NO >> GO TO 3.

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P1705 TP SENSOR

[7AT: RE7R01A]

< DTC/CIRCUIT DIAGNOSIS >

3. CHECK INTERMITTENT INCIDENT

Refer to GI-39, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to TM-318, "Exploded View".

NO >> Repair or replace damaged parts.

P1721 VEHICLE SPEED SIGNAL

< DTC/CIRCUIT DIAGNOSIS >

P1721 VEHICLE SPEED SIGNAL

Description INFOID:000000005233491

The vehicle speed signal is transmitted from combination meter to TCM via 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.

DTC Logic

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P1721	Vehicle Speed Signal Circuit	The vehicle speed transmitted from the combination meter to TCM is 5 km/h (3MPH) or less when the vehicle speed detected by the output speed sensor is 20 km/h or more. (Only when starts after the ignition switch is turned ON.) The vehicle speed detected by the output speed sensor does not decrease despite the 36 km/h (23 MPH) or more of deceleration in vehicle speed received from the combination meter when the vehicle speed transmitted from the combination meter to TCM is 36 km/h (23 MPH) or more and the vehicle speed detected by the output speed sensor is 24 (15 MPH) or more.	Harness or connectors (Sensor circuit is open or short ed.)

DTC CONFIRMATION PROCEDURE

CAUTION:

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

1.PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

>> GO TO 2.

2.CHECK DTC DETECTION

(P) With CONSULT-III

- 1. Start the engine.
- Select "ESTM VSP SIG" in "Data Monitor" in "TRANSMISSION".
- 3. Drive vehicle and maintain the following conditions for 60 seconds or more.

ESTM VSP SIG : 40 km/h (25 MPH) or more

4. Perform "Self Diagnostic Results" in "TRANSMISSION".

Is "P1721" detected?

YES >> Go to TM-246, "Diagnosis Procedure".

NO >> INSPECTION END

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P1721 VEHICLE SPEED SIGNAL

< DTC/CIRCUIT DIAGNOSIS >

Diagnosis Procedure

INFOID:0000000005233493

[7AT: RE7R01A]

1. CHECK DTC OF COMBINATION METER

(I) With CONSULT-III

- 1. Turn ignition switch ON.
- 2. Perform "Self Diagnostic Results" in "METER/M&A".

Is any DTC detected?

YES >> Check DTC detected item. Refer to MWI-77, "DTC Index".

NO >> GO TO 2.

2. CHECK DTC OF TCM

(P) With CONSULT-III

Perform "Self Diagnostic Results" in "TRANSMISSION".

Is any DTC other than "P1721" detected?

YES >> Check DTC detected item. Refer to <u>TM-286, "DTC Index"</u>.

NO >> GO TO 3.

3. CHECK INTERMITTENT INCIDENT

Refer to GI-39, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to TM-318, "Exploded View".

NO >> Repair or replace damaged parts.

P1730 INTERLOCK

Description INFOID:0000000005233494

Fail-safe function to detect interlock conditions.

DTC Logic INFOID:0000000005233495

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P1730	Interlock	The output speed sensor detects the deceleration of 12 km/h (7 MPH) or more for 1 second.	Harness or connectors (Solenoid valve circuit is oper or shorted.) Input clutch solenoid valve Direct clutch solenoid valve High and low reverse clutch solenoid valve Front brake solenoid valve Low brake solenoid valve 2346 brake solenoid valve Anti-interlock solenoid valve Each clutch and brake Hydraulic control circuit

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

DTC CONFIRMATION PROCEDURE

CAUTION:

- "TM-248, "Diagnosis Procedure" must be performed before starting "DTC CONFIRMATION PROCE-DURE".
- Never perform "DTC CONFIRMATION PROCEDURE" before completing the repair, which may cause secondary malfunction.
- Always drive vehicle at a safe speed.

1.PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

>> GO TO 2.

2.check dtc detection

(P) With CONSULT-III

- Start the engine.
- Select "SLCT LVR POSI" and "GEAR" in "Data Monitor" in "TRANSMISSION".
- Drive vehicle the following condition.

SLCT LVR POSI : D

GEAR : 1st through 7th

Perform "Self Diagnostic Results" in "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P1730" detected?

YES >> Go to TM-248, "Diagnosis Procedure".

NO >> INSPECTION END

Judgment of A/T Interlock

Refer to TM-282, "Fail-Safe".

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INFOID:0000000005233496

P1730 INTERLOCK

< DTC/CIRCUIT DIAGNOSIS >

Diagnosis Procedure

INFOID:0000000005233497

[7AT: RE7R01A]

1. CHECK INTERMITTENT INCIDENT

Refer to GI-39, "Intermittent Incident".

Is the inspection result normal?

>> Replace A/T assembly. Refer to $\underline{\sf TM-318}$, "Exploded View". >> Repair or replace damaged parts. YES

NO

P1734 7GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

P1734 7GR INCORRECT RATIO

Description INFOID:0000000005233498

This malfunction is detected when the A/T does not shift into 7GR position as instructed by TCM. This is not only caused by electrical malfunction (circuits open or shorted) but by mechanical malfunction such as control valve sticking, improper solenoid valve operation, etc.

DTC Logic INFOID:0000000005233499

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P1734	Gear 7 Incorrect Ratio	The gear ratio is: • 0.818 or more • 0.726 or less	Input clutch solenoid valve Direct clutch solenoid valve High and low reverse clutc solenoid valve Front brake solenoid valve Low brake solenoid valve 2346 brake solenoid valve Anti-interlock solenoid valve Each clutch and brake Output speed sensor Input speed sensor 1, 2 Hydraulic control circuit

DTC CONFIRMATION PROCEDURE

CAUTION:

- "TM-250, "Diagnosis Procedure"" must be performed before starting "DTC CONFIRMATION PROCE-
- Never perform "DTC CONFIRMATION PROCEDURE" before completing the repair, which may cause secondary malfunction.
- Always drive vehicle at a safe speed.

1.PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

>> GO TO 2.

2.CHECK ATF TEMPERATURE

(P) With CONSULT-III

- Start the engine.
- Select "ATF TEMP 1" in "Data Monitor" in "TRANSMISSION".
- Check ATF temperature is in the following range.

ATF TEMP 1 : 20°C (68°F) - 140°C (284°F)

With GST

- Start the engine.
- Drive vehicle for approximately 5 minutes in urban areas.

Is ATF temperature within specified range?

YES >> GO TO 3.

NO >> Drive vehicle to warm ATF or stop engine to cool ATF.

3.CHECK SYMPTOM (PART 1)

(P) With CONSULT-III

- Select "7TH GR FNCTN P1734" in "DTC & SRT confirmation" in "TRANSMISSION".
- Drive vehicle with manual mode and maintain the following conditions.

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P1734 7GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

GEAR : 7th

ACCELE POSI : 0.7/8 or more

VEHICLE SPEED : 10 km/h (7 MPH) or more

Keep the current driving status for 2 seconds or more if CONSULT-III screen changes from "OUT OF CONDITION" to "TESTING".

CAUTION:

When "TESTING" is not indicated on CONSULT-III for a long time, check "Self Diagnostic Results" in "TRANSMISSION". When a DTC other than "P1734" is detected, check the DTC. Refer to TM-286, "DTC Index".

With GST

1. Drive vehicle and maintain the following conditions for 2 seconds or more.

Selector lever : "M" position

Gear position : 7th

Accelerator pedal opening : 0.7/8 or more

Vehicle speed : 10 km/h (7 MPH) or more

2. Check DTC.

<u>Is "OUT OF CONDITION", "STOP VEHICLE" or "COMPLETED RESULT NG" displayed? / Is "P1734" detected?</u>

YES-1 (OUT OF CONDITION)>>Perform "Step 3" again.

YES-2 (STOP VEHICLE)>>GO TO 4.

YES-3 (COMPLETED RESULT NG)>>Go to TM-250, "Diagnosis Procedure".

YES-4 ("P1734" is detected)>>Go to TM-250, "Diagnosis Procedure".

NO >> GO TO 4.

4. CHECK SYMPTOM (PART 2)

- 1. Stop vehicle.
- 2. Drive vehicle in "D" position allowing it to shift from 1GR to 7GR and check shift timing and shift shock.

>> INSPECTION END

Diagnosis Procedure

INFOID:0000000005233500

[7AT: RE7R01A]

1. CHECK INTERMITTENT INCIDENT

Refer to GI-39, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to TM-318, "Exploded View".

NO >> Repair or replace damaged parts.

P1815 M-MODE SWITCH

Description INFOID:0000000005233501

 The manual mode switch [manual mode select switch and manual mode position select switch (shift-up/shiftdown)] is installed in the A/T shift selector assembly.

• The manual mode select switch detects the position (the main shift gate side or manual shift gate side) of the selector lever and transmits a manual mode signal or a not manual mode signal to the combination meter Then, the TCM receives a manual mode signal or non-manual mode signal from the combination meter.

 The manual mode position select switch (shift-up) detects that the selector lever is shifted to the shift-up side of the manual shift gate and transmits a manual mode shift up signal to the combination meter. Then, the TCM receives a manual mode shift up signal from the combination meter.

• The manual mode position select switch (shift-down) detects that the selector lever is shifted to the shiftdown side of the manual shift gate and transmits a manual mode shift down signal to the combination meter. Then, the TCM receives a manual mode shift down signal from the combination meter.

 The paddle shifter transmits shift up and shift down switch signals to the combination meter. Then TCM receives signals from the combination meter via CAN communication.

DTC Logic INFOID:0000000005233502

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P1815	Manual Mode Switch Circuit	 TCM monitors manual mode, non manual mode, up or down switch signal, and detects as irregular when impossible input pattern occurs 2 seconds or more. Shift up/down signal of paddle shifter continuously remains ON for 60 seconds. 	 Harness or connectors (These switches circuit is open or shorted.) Manual mode select switch (Into A/T shift selector) Manual mode position select switch (Into A/T shift selector) Paddle shifter

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

>> GO TO 2.

2.check dtc detection

(P) With CONSULT-III

Turn ignition switch ON.

- Select "SLCT LVR POSI" and "MANU MODE SW" in "Data Monitor" in "TRANSMISSION".
- Maintain the following each conditions more than 60 seconds.

SLCT LVR POSI : D MANU MODE SW: ON

4. Perform "Self Diagnostic Results" in "TRANSMISSION".

Is "P1815" detected?

YES >> Go to TM-251, "Diagnosis Procedure".

>> INSPECTION END NO

Diagnosis Procedure

CHECK INPUT SIGNAL

(P) With CONSULT-III

Turn ignition switch ON.

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INFOID:0000000005233503

P1815 M-MODE SWITCH

[7AT: RE7R01A]

< DTC/CIRCUIT DIAGNOSIS >

Select "MANU MODE SW", "NON M MODE SW", "UP SW LEVER", "DOWN SW LEVER", "SFT UP ST SW" and "SFT DWN ST SW" in "Data Monitor" in "TRANSMISSION".

3. Check the ON/OFF operations of each monitor item.

Item	Monitor Item	Condition	Status
	MANU MODE SW	Selector lever is shifted to manual shift gate side	ON
	WAND WODE SW	Other than the above	OFF
NON M-MODE SW	NON M MODE CW	Selector lever is shifted to manual shift gate side	OFF
Manual mode switch	NON W-WODE SW	Other than the above	ON
Manual mode switch	UP SW LEVER	Selector lever is shifted to + side	ON
	UP SW LEVER	Other than the above	OFF
DOWN SW LEVER	DOWN CM LEVED	Selector lever is shifted to – side	ON
	DOWN SW LEVER	Other than the above	OFF
	SFT UP ST SW	Paddle shifter (shift-up) is pulled	ON
	3F1 UP 31 3W	Other than the above	OFF
Paddle shifter	SFT DWN ST SW	Paddle shifter (shift-down) is pulled	ON
	SEL DAMIN SLOW	Other than the above	OFF

⋈ Without CONSULT-III

Drive the vehicle in the manual mode, and then check that the indication of the shift position indicator matches with the actual gear position.

- 1. Shift the selector lever to UP side, and then accelerate from 1GR to 7GR.
- 2. Shift the selector lever to DOWN side, and then decelerate from 7GR to 1GR.
- 3. Shift the paddle shifter to UP side, and then accelerate from 1GR to 7GR.
- 4. Shift the paddle shifter to DOWN side, and then decelerate from 7GR to 1GR.

Which item is abnormal?

Manual mode switch>>GO TO 2.

Paddle shifter>>GO TO 7.

2. CHECK MANUAL MODE SWITCH CIRCUIT

- 1. Turn ignition switch OFF.
- Disconnect A/T shift selector connector.
- 3. Turn ignition switch ON.
- Check voltage between A/T shift selector vehicle side harness connector terminals.

A/T shift selector vehicle side harness connector			
Connector	Terminal		Voltage (Approx.)
	+	_	
M137	1	4	Battery voltage
	2		
	3		
	5		

Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 4.

3.CHECK MANUAL MODE SWITCH

- Turn ignition switch OFF.
- Check manual mode switch. Refer to TM-255, "Component Inspection (Manual Mode Switch)".

Is the inspection result normal?

YES >> GO TO 12.

NO >> Repair or replace damaged parts.

< DTC/CIRCUIT DIAGNOSIS >

4. CHECK GROUND CIRCUIT (MANUAL MODE SWITCH CIRCUIT)

Turn ignition switch OFF.

Check continuity between A/T shift selector vehicle side harness connector terminal and ground.

A/T shift selector vehicle side harness connector			Continuity
Connector	Terminal	Ground	Continuity
M137	4		Existed

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace damaged parts.

${f 5.}$ CHECK HARNESS BETWEEN A/T SHIFT SELECTOR AND COMBINATION METER (PART 1)

Disconnect combination meter connector.

Check continuity between A/T shift selector vehicle side harness connector terminals and combination meter vehicle side harness connector terminals.

A/T shift selector vehicle	A/T shift selector vehicle side harness connector		Combination meter vehicle side harness connector	
Connector	Terminal	Connector	Terminal	Continuity
	1		40	
M137	2	M54	38	Existed
WI137	3		39	LAISIGU
	5		37	

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace damaged parts.

$oldsymbol{6}$.CHECK HARNESS BETWEEN A/T SHIFT SELECTOR AND COMBINATION METER (PART 2)

Check continuity between A/T shift selector vehicle side harness connector terminals and ground.

A/T shift selector vehicle	A/T shift selector vehicle side harness connector		Continuity
Connector	Terminal		Continuity
	1	Ground Not ex	
M137	2		Not existed
WITO	3		Not existed
	5		

Is the inspection result normal?

YES >> GO TO 12.

NO >> Repair or replace damaged parts.

7.CHECK PADDLE SHIFTER CIRCUIT

Turn ignition switch OFF.

- 2. Disconnect paddle shifter connectors.
- Turn ignition switch ON. 3.
- Check voltage between paddle shifter vehicle side harness connector terminals.

Padd	Paddle shifter vehicle side harness connector		
Connector	Terminal		
Connector	+	_	
M32	2 1		Rattory voltago
M39	3	ı	Battery voltage

Is the inspection result normal?

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< DTC/CIRCUIT DIAGNOSIS >

YES >> GO TO 8. NO >> GO TO 9.

8.CHECK PADDLE SHIFTER

1. Turn ignition switch OFF.

Check paddle shifter. Refer to <u>TM-255</u>, "Component Inspection [Paddle Shifter (Shift-up)]", <u>TM-255</u>, "Component Inspection [Paddle Shifter (Shift-down)]".

Is the inspection result normal?

YES >> GO TO 12.

NO >> Replace paddle shifter. Refer to <u>TM-255</u>, "<u>Component Inspection [Paddle Shifter (Shift-up)]</u>", <u>TM-255</u>, "<u>Component Inspection [Paddle Shifter (Shift-down)]</u>"

9. CHECK GROUND CIRCUIT (PADDLE SHIFTER CIRCUIT)

1. Turn ignition switch OFF.

2. Check continuity between paddle shifter vehicle side harness connector terminals and ground.

Paddle shifter vehicle side harness connector			Continuity
Connector	Terminal	Ground	Continuity
M32	1	Ground	Existed
M39	I		Existed

Is the inspection result normal?

YES >> GO TO 10.

NO >> Repair or replace damaged parts.

$10. \mathsf{check}$ harness between paddle shifter and combination meter (part 1)

- 1. Disconnect combination meter connector.
- Check continuity between paddle shifter vehicle side harness connector terminals and combination meter vehicle side harness connector terminals.

Paddle shifter vehicle s	side harness connector	Combination meter vehic	ombination meter vehicle side harness connector	
Connector	Terminal	Connector	Terminal	Continuity
M32	2	M54	32	Existed
M39	3	10134	33	LXISIEU

Is the inspection result normal?

YES >> GO TO 11.

NO >> Repair or replace damaged parts.

11. CHECK HARNESS BETWEEN PADDLE SHIFTER AND COMBINATION METER (PART 2)

Check continuity between paddle shifter vehicle side harness connector terminals and ground.

Paddle shifter vehicle side harness connector			Continuity
Connector	Terminal	Ground	Continuity
M32	2	Ground	Not existed
M39	3		INOL EXISTED

Is the inspection result normal?

YES >> GO TO 12.

NO >> Repair or replace damaged parts.

12. CHECK INTERMITTENT INCIDENT

Refer to GI-39, "Intermittent Incident".

Is the inspection result normal?

YES >> GO TO 13.

NO >> Repair or replace damaged parts.

13. CHECK COMBINATION METER

< DTC/CIRCUIT DIAGNOSIS >

- Reconnect all the connectors.
- Turn ignition switch ON. 2.
- Select "M RANGE SW", "NM RANGE SW", "AT SFT UP SW", "AT SFT DWN SW", "ST SFT UP SW" and "ST SFT DWN SW" in "Data Monitor" in "METER/M&A".
- Check the ON/OFF operations of each monitor item. Refer to MWI-57, "Reference Value".

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to TM-318, "Exploded View".

NO >> Replace combination meter. Refer to MWI-103, "Exploded View".

Component Inspection (Manual Mode Switch)

INFOID:0000000005233504

[7AT: RE7R01A]

1. CHECK MANUAL MODE SWITCH

Check continuity between A/T shift selector connector terminals.

A/T shift selector connector		Condition	Continuity	
Connector	Term	ninal	Condition	Continuity
	1		Selector lever is shifted to manual shift gate side	Existed
			Other than the above	Not existed
	2		Selector lever is shifted to – side	Existed
N4407	2	4	Other than the above	Not existed
M137	2	4	Selector lever is shifted to + side	Existed
	3		Other than the above	Not existed
	5		Selector lever is shifted to manual shift gate side	Not existed
			Other than the above	Existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace A/T shift selector harness assembly. Refer to TM-307, "Exploded View".

Component Inspection [Paddle Shifter (Shift-up)]

INFOID:0000000005233505

1. CHECK PADDLE SHIFTER (SHIFT-UP)

Check continuity between paddle shifter (shift-up) connector terminals.

Pad	Paddle shifter (shift-up) connector			Continuity
Connector	Terminal		Condition	Continuity
M39	1	3	Paddle shifter (shift-up) is pulled.	Existed
			Other than the above	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace paddle shifter (shift-up). Refer to TM-311, "Exploded View".

Component Inspection [Paddle Shifter (Shift-down)]

INFOID:0000000005233506

CHECK PADDLE SHIFTER (SHIFT-DOWN)

Check continuity between paddle shifter (shift-down) connector terminals.

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< DTC/CIRCUIT DIAGNOSIS >

Pad	Paddle shifter (shift-down) connector		Condition	Continuity
Connector	Terminal		Condition	Continuity
M32	1	3	Paddle shifter (shift-down) is pulled.	Existed
			Other than the above	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace paddle shifter (shift-down). Refer to TM-311, "Exploded View".

P2713 PRESSURE CONTROL SOLENOID D

< DTC/CIRCUIT DIAGNOSIS >

P2713 PRESSURE CONTROL SOLENOID D

Description INFOID:0000000005233507

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

 The high and low reverse clutch solenoid valve controls the high and low reverse clutch control valve in response to a signal transmitted from the TCM.

DTC Logic INFOID:0000000005233508

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P2713	Pressure Control Solenoid D	The high and low reverse clutch solenoid valve monitor value is 0.4 A or less when the high and low reverse clutch solenoid valve command value is more than 0.75 A.	 Harness or connectors (Solenoid valve circuit is open or shorted.) High and low reverse clutch solenoid valve

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

1.PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

>> GO TO 2.

2.check dtc detection

(P) With CONSULT-III

- Start the engine.
- Select "BATTERY VOLT", "MANU MODE SW", "GEAR" and "VHCL/S SE-A/T" in "Data Monitor" in "TRANSMISSION".

TM-257

Drive the vehicle and maintain the following conditions for 5 seconds or more.

BATTERY VOLT : 9 V or more

MANU MODE SW: ON **GEAR** : 3rd

VHCL/S SE-A/T : 10 km/h (7 MPH) or more

Perform "Self Diagnostic Results" in "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P2713" detected?

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YES >> Go to TM-257, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK INTERMITTENT INCIDENT Refer to GI-39, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to TM-318, "Exploded View".

>> Repair or replace damaged parts. NO

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P2722 PRESSURE CONTROL SOLENOID E

[7AT: RE7R01A]

< DTC/CIRCUIT DIAGNOSIS >

P2722 PRESSURE CONTROL SOLENOID E

Description INFOID:0000000005233510

 The low brake solenoid valve is controlled by the TCM in response to signals transmitted from the transmission range switch, output speed sensor and accelerator pedal position sensor. Gears will then be shifted to the optimum position.

 The low brake solenoid valve controls the low brake control valve in response to a signal transmitted from the TCM.

DTC Logic INFOID:0000000005233511

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P2722	Pressure Control Solenoid E	The low brake solenoid valve monitor value is 0.4 A or less when the low brake solenoid valve command value is more than 0.75 A.	Harness or connectors (Solenoid valve circuit is open or shorted.) Low brake solenoid valve

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

1.PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

>> GO TO 2.

2. CHECK DTC DETECTION

(II) With CONSULT-III

- Start the engine.
- Select "BATTERY VOLT", "MANU MODE SW", "GEAR" and "VHCL/S SE-A/T" in "Data Monitor" in "TRANSMISSION".
- Drive vehicle and maintain the following conditions for 5 seconds or more.

BATTERY VOLT : 9 V or more

MANU MODE SW: ON **GEAR** · 1st

VHCL/S SE-A/T : 10 km/h (7 MPH) or more

4. Perform "Self Diagnostic Results" in "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P2722" detected?

YES >> Go to TM-258, "Diagnosis Procedure".

>> INSPECTION END

Diagnosis Procedure

INFOID:0000000005233512

1. CHECK INTERMITTENT INCIDENT

Refer to GI-39, "Intermittent Incident".

Is the inspection result normal?

>> Replace A/T assembly. Refer to TM-318, "Exploded View". YES

>> Repair or replace damaged parts. NO

P2731 PRESSURE CONTROL SOLENOID F

< DTC/CIRCUIT DIAGNOSIS >

P2731 PRESSURE CONTROL SOLENOID F

Description INFOID:0000000005233513

 The 2346 brake solenoid valve is controlled by the TCM in response to signals transmitted from the transmission range switch, output speed sensor and accelerator pedal position sensor. Gears will then be shifted to the optimum position.

 The 2346 brake solenoid valve controls the 2346 brake control valve in response to a signal transmitted from the TCM.

DTC Logic INFOID:0000000005233514

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P2731	Pressure Control Solenoid F	The 2346 brake solenoid valve monitor value is 0.4 A or less when the 2346 brake solenoid valve command value is more than 0.75 A.	Harness or connectors (Solenoid valve circuit is open or shorted.) 2346 brake solenoid valve

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

1.PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

>> GO TO 2.

2. CHECK DTC DETECTION

(P) With CONSULT-III

- Start the engine.
- Select "BATTERY VOLT", "MANU MODE SW", "GEAR" and "VHCL/S SE-A/T" in "Data Monitor" in "TRANSMISSION".
- Drive vehicle and maintain the following conditions for 5 seconds or more.

BATTERY VOLT : 9 V or more

MANU MODE SW: ON : 2nd **GEAR**

VHCL/S SE-A/T : 10 km/h (7 MPH) or more

Perform "Self Diagnostic Results" in "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P2731" detected?

YES >> Go to TM-259, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK INTERMITTENT INCIDENT

Refer to GI-39, "Intermittent Incident".

Is the inspection result normal?

>> Replace A/T assembly. Refer to TM-318, "Exploded View". YES

>> Repair or replace damaged parts. NO

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P2807 PRESSURE CONTROL SOLENOID G

[7AT: RE7R01A]

INFOID:0000000005233518

< DTC/CIRCUIT DIAGNOSIS >

P2807 PRESSURE CONTROL SOLENOID G

Description INFOID:0000000005233516

The direct clutch solenoid valve is controlled by the TCM in response to signals transmitted from the transmission range switch, output speed sensor and accelerator pedal position sensor. Gears will then be shifted to the optimum position.

• The direct clutch solenoid valve controls the direct clutch control valve in response to a signal transmitted from the TCM.

DTC Logic

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected is	Possible cause
P2807	Pressure Control Solenoid G	The direct clutch solenoid valve monitor value is 0.4 A or less when the direct clutch solenoid valve command value is more than 0.75 A.	Harness or connectors (Solenoid valve circuit is open or shorted.) Direct clutch solenoid valve

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

1.PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

>> GO TO 2.

2. CHECK DTC DETECTION

(II) With CONSULT-III

- Start the engine.
- Select "BATTERY VOLT", "MANU MODE SW", "GEAR" and "VHCL/S SE-A/T" in "Data Monitor" in "TRANSMISSION".
- 3. Drive vehicle and maintain the following conditions for 5 seconds or more.

BATTERY VOLT : 9 V or more

MANU MODE SW : ON GEAR : 1st

VHCL/S SE-A/T : 10 km/h (7 MPH) or more

4. Perform "Self Diagnostic Results" in "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P2807" detected?

YES >> Go to TM-260, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK INTERMITTENT INCIDENT

Refer to GI-39, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to TM-318, "Exploded View".

NO >> Repair or replace damaged parts.

MAIN POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

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MAIN POWER SUPPLY AND GROUND CIRCUIT

Description INFOID:0000000005233519

Supply power to the TCM.

Diagnosis Procedure

INFOID:0000000005233520

1. CHECK TCM POWER SOURCE (PART 1)

- 1. Turn ignition switch OFF.
- 2. Disconnect A/T assembly connector.
- Check voltage between A/T assembly vehicle side harness connector terminal and ground.

A/T assembly vehicle	side harness connector		Condition	Voltage (Approx.)
Connector	Terminal	Ground	Condition	voltage (Approx.)
F51	2		Always	Battery voltage

Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 4.

2.CHECK TCM POWER SOURCE (PART 2)

Check voltage between A/T assembly vehicle side harness connector terminals and ground.

A/T assembly vehicle s	ide harness connector		Condition	Voltage (Approx.)
Connector	Terminal		Condition	
	4	Ground	Turn ignition switch ON	Battery voltage
F51	ı	Giodila	Turn ignition switch OFF	0 V
F31			Turn ignition switch ON	Battery voltage
	6		Turn ignition switch OFF	0 V

Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 5.

3.CHECK TCM GROUND CIRCUIT

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

A/T assembly vehicle	side harness connector		Continuity	
Connector	Terminal	Ground	Continuity	
F51	5	Ground	Existed	
F31	10		Existed	

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

NO >> Repair or replace damaged parts.

4. DETECT MALFUNCTIONING ITEM

Check the following.

- Harness for short or open between battery positive terminal and A/T assembly vehicle side harness connector terminal 2. Refer to PG-6, "Wiring Diagram - BATTERY POWER SUPPLY -".
- 10A fuse (No.36, located in the fuse, fusible link and relay box). Refer to PG-113, "Fuse and Fusible Link Arrangement".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

NO >> Repair or replace damaged parts.

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MAIN POWER SUPPLY AND GROUND CIRCUIT

[7AT: RE7R01A]

< DTC/CIRCUIT DIAGNOSIS >

5. CHECK HARNESS BETWEEN IPDM E/R AND A/T ASSEMBLY (PART 1)

- 1. Turn ignition switch OFF.
- 2. Disconnect IPDM E/R connector.
- Check continuity between IPDM E/R vehicle side harness connector terminal and A/T assembly vehicle side harness connector terminals.

IPDM E/R vehicle si	de harness connector	A/T assembly vehicle s	side harness connector	Continuity
Connector	Terminal	Connector	Terminal	Continuity
E7	58	F51	1	Existed
Li	30	131	6	LXISTEG

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace damaged parts.

6. CHECK HARNESS BETWEEN IPDM E/R AND A/T ASSEMBLY (PART 2)

Check continuity between A/T assembly vehicle side harness connector terminal and ground.

A/T assembly vehicle	side harness connector		Continuity
Connector	Terminal	Ground	Continuity
E51	1	Ground	Not existed
LJI	6		NOT EXISTED

Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair or replace damaged parts.

7. DETECT MALFUNCTIONING ITEM

Check the following.

- Harness for short or open between ignition switch and IPDM E/R. Refer to PG-55, "Wiring Diagram IGNI-TION POWER SUPPLY -".
- · Ignition switch
- 10A fuse (No.43, located in the IPDM E/R). Refer to PG-114, "Fuse, Connector and Terminal Arrangement".
- IPDM E/R

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

NO >> Repair or replace damaged parts.

SHIFT POSITION INDICATOR CIRCUIT

< DTC/CIRCUIT DIAGNOSIS > [7AT: RE7R01A]

SHIFT POSITION INDICATOR CIRCUIT

Description

The TCM transmits shift position signal to the combination meter via CAN communication line.

Component Function Check

1. CHECK A/T INDICATOR

CAUTION:

Always drive vehicle at a safe speed.

- 1. Start the engine.
- 2. Check the actual selector lever position ("P", "R", "N" and "D") and the indication of the shift position indicator mutually coincide.
- Drive vehicle in the manual mode, and then check that the actual gear position and the indication of the shift position indicator mutually coincide when the selector lever is shifted to "UP (+ side)" or "DOWN (− side)" side (1GR ⇔ 7GR).

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to TM-263, "Diagnosis Procedure".

Diagnosis Procedure

1. CHECK INPUT SIGNALS

I CHECK INPUT SIGNAL

- With CONSULT-IIIStart the engine.
- 2. Select "SLCT LVR POSI" in "Data Monitor" in "TRANSMISSION".
- Check the actual selector lever position ("P", "R", "N" and "D") and the indication of the "SLCT LVR POSI" mutually coincide. Refer to <u>TM-271</u>, "<u>Reference Value</u>".
- 4. Drive vehicle in the manual mode, and then check that the actual gear position and the indication of the "SLCT LVR POSI" mutually coincide when the selector lever is shifted to the "UP (+ side)" or "DOWN (− side)" side (1GR ⇔ 7GR). Refer to TM-271, "Reference Value".

Is the inspection result normal?

YES >> INSPECTION END

NO-1 [The actual gear position does not change, or shifting into the manual mode is not possible (no gear shifting in the manual mode possible). Or the shift position indicator is not indicated.]>>•Check manual mode switch. Refer to TM-255, "Component Inspection (Manual Mode Switch)".

- Check A/T main system (Fail-safe function actuated).
- Perform "Self Diagnostic Results" in "TRANSMISSION". Refer to TM-286, "DTC Index".
- NO-2 (The actual gear position changes, but the shift position indicator is not indicated.)>>Perform Diagnostic Results" in "TRANSMISSION". Refer to TM-286, "DTC Index".
- NO-3 (The actual gear position and the indication on the shift position indicator do not coincide.)>>Perform "Self Diagnostic Results" in "TRANSMISSION". Refer to <a href="https://example.com/the-position/linear-notation-notatio
- NO-4 (Only a specific position or positions is/are not indicated on the shift position indicator.)>>Check the combination meter. Refer to MWI-4, "Work flow".

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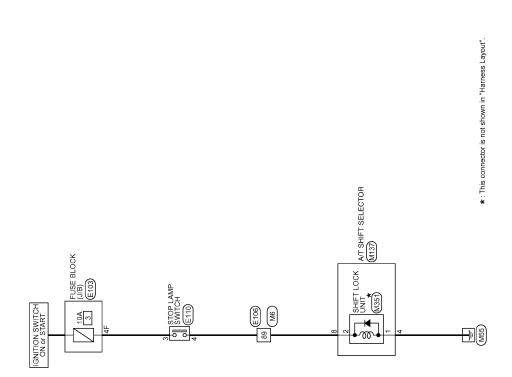
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SHIFT LOCK SYSTEM

Description

Refer to TM-199, "System Description".

Wiring Diagram - A/T SHIFT LOCK SYSTEM -



A/T SHIFT LOCK SYSTEM

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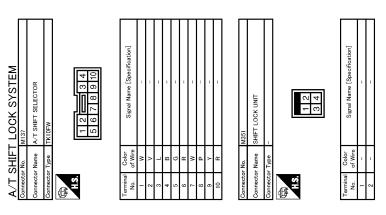
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Revision: 2009 July **TM-265** 2010 370Z



1.CHECK A/T SHIFT LOCK OPERATION (PART 1)

- Turn ignition switch ON.
- Shift the selector lever to "P" position.

Component Function Check

Attempt to shift the selector lever to any other position with the brake pedal released.

Can the selector lever be shifted to any other position?

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< DTC/CIRCUIT DIAGNOSIS >

YES >> Go to TM-267, "Diagnosis Procedure".

NO >> GO TO 2.

2.CHECK A/T SHIFT LOCK OPERATION (PART 2)

Attempt to shift the selector lever to any other position with the brake pedal depressed.

Can the selector lever be shifted to any other position?

YES >> INSPECTION END

NO >> Go to TM-267, "Diagnosis Procedure".

Diagnosis Procedure

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[7AT: RE7R01A]

1. CHECK POWER SOURCE (PART 1)

- 1. Turn ignition switch OFF.
- 2. Disconnect A/T shift selector connector.
- 3. Turn ignition switch ON.
- 4. Check voltage between A/T shift selector vehicle side harness connector terminal and ground.

A/T shift selector vehicle	e side harness connector		Condition	Voltage (Approx.)
Connector	Terminal	Cround	Condition	vollage (Approx.)
M137	0	Ground	Depressed brake pedal.	Battery voltage
IVI 137	O		Released brake pedal.	0 V

Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 5.

2.CHECK GROUND CIRCUIT

Check continuity between A/T shift selector vehicle side harness connector terminal and ground.

A/T shift selector vehicle	e side harness connector		Continuity
Connector	Terminal	Ground	Continuity
M137	4		Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace damaged parts.

3.CHECK HARNESS BETWEEN A/T SHIFT SELECTOR AND SHIFT LOCK UNIT

- 1. Disconnect shift lock unit connector.
- Check continuity between A/T shift selector connector terminals and shift lock unit A/T shift selector side connector terminals.

A/T shift sele	ctor connector	Shift lock unit A/T shift	selector side connector	Continuity
Connector	Terminal	Connector	Terminal	Continuity
M137	8	M351	2	Existed
M137	4	IVISS I	1	LXISIEG

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace damaged parts.

4. CHECK SHIFT LOCK UNIT

- 1. Remove shift lock unit. Refer to TM-307, "Exploded View".
- Check shift lock unit. Refer to TM-269, "Component Inspection (Shift Lock Unit)".

Is the inspection result normal?

- YES >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".
- NO >> Replace shift lock unit. Refer to TM-307, "Exploded View".

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< DTC/CIRCUIT DIAGNOSIS >

5. CHECK POWER SOURCE (PART 2)

- 1. Turn ignition switch OFF.
- 2. Disconnect stop lamp switch connector.
- 3. Turn ignition switch ON.
- 4. Check voltage between stop lamp switch vehicle side harness connector terminal and ground.

Stop lamp switch vehicle side harness connector			Voltage (Approx.)
Connector	Terminal	Ground	vollage (Approx.)
E110	3		Battery voltage

Is the inspection result normal?

YES >> GO TO 6. NO >> GO TO 9.

6.CHECK STOP LAMP SWITCH (PART 1)

Check stop lamp switch. Refer to TM-269, "Component Inspection (Stop Lamp Switch)".

Is the inspection result normal?

YES >> GO TO 7. NO >> GO TO 12.

7.CHECK HARNESS BETWEEN STOP LAMP SWITCH AND A/T SHIFT SELECTOR (PART 1)

Check continuity between stop lamp switch vehicle side harness connector terminal and A/T shift selector vehicle side harness connector terminal.

Stop lamp switch vehicle side harness connector		A/T shift selector vehicle side harness connector		Continuity	
Connector	Terminal	Connector	Terminal	Continuity	
E110	4	M137	8	Existed	

Is the inspection result normal?

YES >> GO TO 8.

NO >> Repair or replace damaged parts.

8.CHECK HARNESS BETWEEN STOP LAMP SWITCH AND A/T SHIFT SELECTOR (PART 2)

Check continuity between stop lamp switch vehicle side harness connector terminal and ground.

Stop lamp switch vehicle	Stop lamp switch vehicle side harness connector		Continuity
Connector	Terminal	Ground	Continuity
E110	4		Not existed

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

NO >> Repair or replace damaged parts.

$9.\mathsf{check}$ harness between fuse block (J/B) and stop Lamp switch (part 1)

- Turn ignition switch OFF.
- Disconnect fuse block (J/B) connector.
- Check continuity between fuse block (J/B) vehicle side harness connector terminal and stop lamp switch vehicle side harness connector terminal.

Fuse block (J/B) vehicle side harness connector		Stop lamp switch vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	Continuity
E103	4F	E110	3	Existed

Is the inspection result normal?

YES >> GO TO 10.

NO >> Repair or replace damaged parts.

10.CHECK HARNESS BETWEEN FUSE BLOCK (J/B) AND STOP LAMP SWITCH (PART 2)

< DTC/CIRCUIT DIAGNOSIS >

Check continuity between fuse block (J/B) vehicle side harness connector terminal and ground.

Fuse block (J/B) vehicle	Fuse block (J/B) vehicle side harness connector		Continuity
Connector	Terminal	Ground	Continuity
E103	4F		Not existed

Is the inspection result normal?

YES >> GO TO 11.

NO >> Repair or replace damaged parts.

11. DETECT MALFUNCTIONING ITEM

Check the following.

- Harness for short or open between ignition switch and fuse block (J/B). Refer to PG-55, "Wiring Diagram IGNITION POWER SUPPLY -".
- Ignition switch
- 10A fuse [No.3, located in the fuse block (J/B)]. Refer to <u>PG-112, "Fuse, Connector and Terminal Arrangement"</u>.
- Fuse block (J/B)

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-39, "Intermittent Incident".

NO >> Repair or replace damaged parts.

12.CHECK INSTALLATION POSITION OF STOP LAMP SWITCH

Adjust stop lamp switch position. Refer to BR-9, "Inspection and Adjustment".

>> GO TO 13.

13. CHECK STOP LAMP SWITCH (PART 2)

Check stop lamp switch. Refer to TM-269, "Component Inspection (Stop Lamp Switch)".

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace stop lamp switch. Refer to <u>BR-20</u>, "Exploded View".

Component Inspection (Shift Lock Unit)

1. CHECK SHIFT LOCK UNIT

Apply voltage to terminals 1 and 2 of shift lock unit connector, and then check that shift lock unit is activated. **CAUTION:**

Connect the fuse between the terminals when applying the voltage.

	Shift lock unit connector			
Connector	Connector		Condition	Status
Connector	+ (fuse)	_		
M351	2	1	Apply 12 V direct current between terminals 1 and 2.	

Can the plate be moved up and down?

YES >> INSPECTION END

NO >> Replace shift lock unit. Refer to TM-307, "Exploded View".

Component Inspection (Stop Lamp Switch)

1. CHECK STOP LAMP SWITCH

Check continuity between stop lamp switch connector terminals.

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< DTC/CIRCUIT DIAGNOSIS >

Stop lamp switch connector		Condition	Continuity	
Connector	Terminal		Condition	Continuity
E110	2	4	Depressed brake pedal.	Existed
LIIU	3	4	Released brake pedal.	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace stop lamp switch. Refer to <u>BR-20, "Exploded View"</u>.

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ECU DIAGNOSIS INFORMATION

TCM

Reference Value INFOID:0000000005233530

VALUES ON DIAGNOSIS TOOL

NOTE:

1. The CONSULT-III electrically displays shift timing and lock-up timing (that is, operation timing of each solenoid).

Check for time difference between actual shift timing and the CONSULT-III display. If the difference is noticeable, mechanical parts (except solenoids, sensors, etc.) may be malfunctioning. Check mechanical parts in accordance with the specified diagnostic procedures.

- 2. Shift schedule (that implies gear position) on CONSULT-III may slightly differ from that is described in Service Manual. This occurs because of the reasons as per the following:
- Actual shift schedule has more or less tolerance or allowance
- Shift schedule in Service Manual refers to the point where shifting starts
- Gear position on CONSULT-III indicates the point where shifting completes
- 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).

CONSULT-III MONITOR ITEM

Item name	Condition	Value (Approx.) / Status
VHCL/S SE-A/T	During driving	Approximately equals the speed-ometer reading.
ESTM VSP SIG	During driving	Approximately equals the speed-ometer reading.
OUTPUT REV	During driving (lock-up ON)	Tachometer / Gear ratio
INPUT SPEED	During driving (lock-up ON)	Approximately equals the engine speed.
F SUN GR REV	During driving	Revolution of front sun gear is indicated.
F CARR GR REV	During driving	Revolution of front carrier is indicated.
ENGINE SPEED	Engine running	Closely equals the tachometer reading.
TC SLIP SPEED	During driving	Engine speed – Input speed
ACCELE POSI	Accelerator pedal is released	0.0/8
ACCELE POSI	Accelerator pedal is fully depressed	8.0/8
THROTTLE POSI	Accelerator pedal is released	0.0/8
INKOTTLE POSI	Accelerator pedal is fully depressed	8.0/8
ATF TEMP 1	Ignition switch ON	Temperature of ATF in the oil pan is indicated.
ATF TEMP 2	Ignition switch ON	Temperature of ATF at the exit of torque converter.
ATF TEMP SE 1	0°C (32° F) – 20°C (68°F) – 80°C (176°F)	3.3 – 2.7 – 0.9 V
BATTERY VOLT	Ignition switch ON	Battery voltage (11 V – 14 V)
LINE PRES SOL	During driving	0.2 – 0.6 A
	Slip lock-up is active	0.2 – 0.8 A
TCC SOLENOID	Lock-up is active	0.8 A
	Other than the above	0 A
L/B SOLENOID	Low brake is engaged	0.6 – 0.8 A
L/B SOLENOID	Low brake is disengaged	0 – 0.05 A

ECU DIAGNOSIS INFO		[/AI: RE/RUI/
Item name	Condition	Value (Approx.) / Status
FR/B SOLENOID	Front brake is engaged	0.6 – 0.8 A
	Front brake is disengaged	0 – 0.05 A
HLR/C SOL	High and low reverse clutch is disengaged	0.6 – 0.8 A
	High and low reverse clutch is engaged	0 – 0.05 A
I/C SOLENOID	Input clutch is disengaged	0.6 – 0.8 A
	Input clutch is engaged	0 – 0.05 A
D/C SOLENOID	Direct clutch is disengaged	0.6 – 0.8 A
DIO GOLLIVOID	Direct clutch is engaged	0 – 0.05 A
2346/B SOL	2346 brake is engaged	0.6 – 0.8 A
2340/D 30L	2346 brake is disengaged	0 – 0.05 A
L/P SOL MON	During driving	0.2 – 0.6 A
	Slip lock-up is active	0.2 – 0.8 A
TCC SOL MON	Lock-up is active	0.8 A
	Other than the above	0 A
	Low brake is engaged	0.6 – 0.8 A
L/B SOL MON	Low brake is disengaged	0 – 0.05 A
	Front brake is engaged	0.6 – 0.8 A
FR/B SOL MON	Front brake is disengaged	0 – 0.05 A
	High and low reverse clutch is disengaged	0.6 – 0.8 A
HLR/C SOL MON	High and low reverse clutch is engaged	0 – 0.05 A
	Input clutch is disengaged	0.6 – 0.8 A
I/C SOL MON	Input clutch is engaged	0 – 0.05 A
	Direct clutch is disengaged	0.6 – 0.8 A
D/C SOL MON	Direct clutch is engaged	0 – 0.05 A
	2346 brake is engaged	0.6 – 0.8 A
2346/B SOL MON	2346 brake is disengaged	0 – 0.05 A
	Driving with 1GR	4.924
	Driving with 2GR	3.194
	Driving with 3GR	2.043
GEAR RATIO	Driving with 4GR	1.412
OLANNAHO	Driving with 5GR	1.000
	Driving with 6GR	0.862
		0.862
	Driving with 7GR	
ENGINE TORQUE	During driving	Changes the value according to the acceleration or deceleration.
ENG TORQUE D	During driving	Changes the value according to the acceleration or deceleration.
INPUT TRQ S	During driving	Changes the value according to the acceleration or deceleration.
INPUT TRQ L/P	During driving	Changes the value according to the acceleration or deceleration.
TDOT DDEC L/D	Selector lever in "P" and "N" positions	490 kPa
TRGT PRES L/P	Other than the above	490 – 1370 kPa
	Slip lock-up is active	0 – 600 kPa
TRGT PRES TCC	Lock-up is active	600 kPa
	Other than the above	0 kPa

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Item name	Condition	Value (Approx.) / Status
FDCT DDES L/D	Low brake is engaged	1370 kPa
FRGT PRES L/B	Low brake is disengaged	0 kPa
	Front brake is engaged	1370 kPa
FRGT PRES FR/B	Front brake is disengaged	0 kPa
	High and low reverse clutch is disengaged	1370 kPa
TRG PRE HLR/C	High and low reverse clutch is engaged	0 kPa
	Input clutch is disengaged	1370 kPa
TRGT PRES I/C	Input clutch is engaged	0 kPa
	Direct clutch is disengaged	1370 kPa
TRGT PRES D/C	Direct clutch is engaged	0 kPa
	2346 brake is engaged	1370 kPa
TRG PRE 2346/B	2346 brake is disengaged	0 kPa
SHIFT PATTERN	During normal driving (without shift changes)	FF
VEHICLE SPEED	During driving	Approximately equals the speed- ometer reading.
24105 014 4	Selector lever in "P" and "N" positions	ON
RANGE SW 4	Other than the above	OFF
24105 014 0	Selector lever in "P", "R" and "N" positions	ON
RANGE SW 3	Other than the above	OFF
	Selector lever in "P" and "R" positions	ON
RANGE SW 2	Other than the above	OFF
24105 014 :	Selector lever in "P" position	ON
RANGE SW 1	Other than the above	OFF
	Paddle shifter (shift-down) is pulled	ON
SFT DWN ST SW	Other than the above	OFF
	Paddle shifter (shift-up) is pulled	ON
SFT UP ST SW	Other than the above	OFF
	Selector lever is shifted to – side	ON
DOWN SW LEVER	Other than the above	OFF
	Selector lever is shifted to + side	ON
JP SW LEVER	Other than the above	OFF
	Selector lever is shifted to manual shift gate side	OFF
NON M-MODE SW	Other than the above	ON
	Selector lever is shifted to manual shift gate side	ON
MANU MODE SW	Other than the above	OFF
*	Driving with DS mode	ON
DS RANGE*	Other than the above	OFF
	Selector lever in "1" position	ON
POSITION SW*	Other than the above	OFF
	When overdrive control switch is depressed	ON
OD CONT SW [*]	When overdrive control switch is released	OFF
	Brake pedal is depressed	ON
BRAKESW	Brake pedal is released	OFF
	Power mode	ON
POWERSHIFT SW [*]	Other than the above	OFF

TCM

[7AT: RE7R01A]

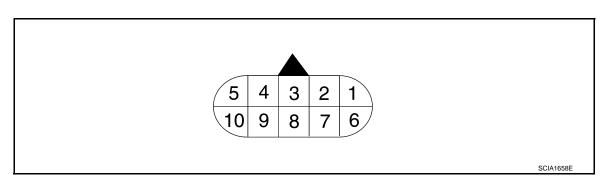
Item name	Condition	Value (Approx.) / Status
ACCD OD CLIT	When TCM receives ASCD OD cancel request signal	ON
ASCD-OD CUT	Other than the above	OFF
ACCD CDUICE	ASCD operate	ON
ASCD-CRUISE	Other than the above	OFF
ABS SIGNAL	ABS operate	ON
ADS SIGNAL	Other than the above	OFF
TCS GR/P KEEP	When TCM receives TCS gear keep request signal	ON
ICS GR/P REEP	Other than the above	OFF
TCS SIGNAL 2	When the reception value of A/T shift schedule change demand signal is "cold"	ON
	Other than the above	OFF
TCS SIGNAL 1	When the reception value of A/T shift schedule change demand signal is "warm"	ON
	Other than the above	OFF
OM/D DADTO	At 4GR - 5GR - 6GR shift control	FAIL
_OW/B PARTS	Other than the above	NOTFAIL
HC/IC/FRB PARTS	At 1GR - 2GR - 3GR shift control	FAIL
HC/IC/FRB PARTS	Other than the above	NOTFAIL
C/FRB PARTS	At 4GR - 5GR - 6GR shift control	FAIL
O/FRD FARTS	Other than the above	NOTFAIL
HLR/C PARTS	At 4GR - 5GR - 6GR shift control	FAIL
ILIVO PARTO	Other than the above	NOTFAIL
W/O THL POS	Accelerator pedal is fully depressed	ON
W/O TILFOO	Accelerator pedal is released	OFF
CLSD THL POS	Accelerator pedal is released	ON
DESD THE FOS	Accelerator pedal is fully depressed	OFF
DRV CST JUDGE	Accelerator pedal is depressed	DRIVE
DIV COL JUDGE	Accelerator pedal is released	COAST

Item name	Condition	Value (Approx.) / Status
	When the selector lever is positioned in between each position.	OFF
	Selector lever in "P" position	Р
	Selector lever in "R" position	R
	Selector lever in "N" position	N
	Selector lever in "D" position	
	Selector lever in "D" position: 7GR	D
	Selector lever in "D" position: 6GR	6
	Selector lever in "D" position: 5GR	5
	Selector lever in "D" position: 4GR	4
SHIFT IND SIGNAL	Selector lever in "D" position: 3GR	3
	Selector lever in "D" position: 2GR	2
	Selector lever in "D" position: 1GR	1
	Selector lever in "M" position: 1GR	M1
	Selector lever in "M" position: 2GR	M2
	Selector lever in "M" position: 3GR	M3
	Selector lever in "M" position: 4GR	M4
	Selector lever in "M" position: 5GR	M5
	Selector lever in "M" position: 6GR	M6
	Selector lever in "M" position: 7GR	M7
STARTER RELAV	Selector lever in "P" and "N" positions	ON
STARTER RELAY	Other than the above	OFF
F-SAFE IND/L	For 2 seconds after the ignition switch is turned ON	ON
SAFE IND/L	Other than the above	OFF
ATE 14/4 DALL AMD*	When TCM transmits the ATF indicator lamp signal	ON
ATF WARN LAMP [*]	Other than the above	OFF
MANU MODE IND	Driving with manual mode	ON
WANO WODE IND	Other than the above	OFF
	Selector lever in "P" and "N" positions	ON
ON OFF SOL MON	Driving with 1GR to 3GR	ON
	Other than the above	OFF
ETART RIV MON	Selector lever in "P" and "N" positions	ON
START RLY MON	Other than the above	OFF
ON OFF SOL	Selector lever in "P" and "N" positions	ON
	Driving with 1GR to 3GR	ON
	Other than the above	OFF

Item name	Condition	Value (Approx.) / Status
	Selector lever in "N" and "P" positions	N/P
	Selector lever in "R" position	R
	Selector lever in "D" positions	D
	Selector lever in "M" position: 7GR	U
SLCT LVR POSI	Selector lever in "M" position: 6GR	6
	Selector lever in "M" position: 5GR	5
	Selector lever in "M" position: 4GR	4
	Selector lever in "M" position: 3GR	3
	Selector lever in "M" position: 2GR	2
	Selector lever in "M" position: 1GR	1
GEAR	During driving	1st, 2nd, 3rd, 4th, 5th, 6th, 7th
NEXT GR POSI	During driving	1st, 2nd, 3rd, 4th, 5th, 6th, 7th
SHIFT MODE	Driving with the D position	0 or 3
SHIFT MODE	Driving with the manual mode	4 or 8
D/C PARTS	At 1GR - 2GR shift control	FAIL
D/C PARTS	Other than the above	NOTFAIL
FR/B PARTS	At control fixed to 1GR	FAIL
FR/D FARTS	Other than the above	NOTFAIL
2346/B PARTS	At control fixed to 1GR	FAIL
2040/D FAN IO	Other than the above	NOTFAIL
2346B/DC PARTS	At 2GR - 3GR - 4GR shift control	FAIL
2040D/DC FARTO	Other than the above	NOTFAIL

^{*:} Not mounted but always display as OFF.

TERMINAL LAYOUT



PHYSICAL VALUES

	ninal color)	Description	n	Condition	Value (Approx.)
+	_	Signal name	Input/ Output	Condition	value (Approx.)
1	Ground	Power cupply Input	Ignition switch ON	Battery voltage	
(Y)	Ground	Power supply	Input	Ignition switch OFF	0 V
2 (BR)	Ground	Power supply (Memory back-up)	Input	Always	Battery voltage
3 (L)	_	CAN-H	Input/ Output	_	_

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_						
	minal color)	Description	1		Condition	Value (Approx.)
+	-	Signal name	Input/ Output		Condition	value (Approx.)
4 (V)	_	K-line	Input/ Output		_	_
5 (B)	Ground	Ground	Output		Always	0 V
6	Ground	Power supply	Input	Ignition switch ON		Battery voltage
(Y)	Ground	Power supply	IIIput	Ignition switch OFF		0 V
7					Selector lever in "R" position.	0 V
7 (W)	Ground	Back-up lamp relay	Input	Ignition switch ON	Selector lever in other than above.	Battery voltage
8 (P)	_	CAN-L	Input/ Output		_	_
9	Cround	Storter relev	Output	Ignition quitab ON	Selector lever in "N" and "P" positions.	Battery voltage
(GR)	Ground	Starter relay	Output	Ignition switch ON	Selector lever in other than above.	0 V
10 (B)	Ground	Ground	Output		Always	0 V

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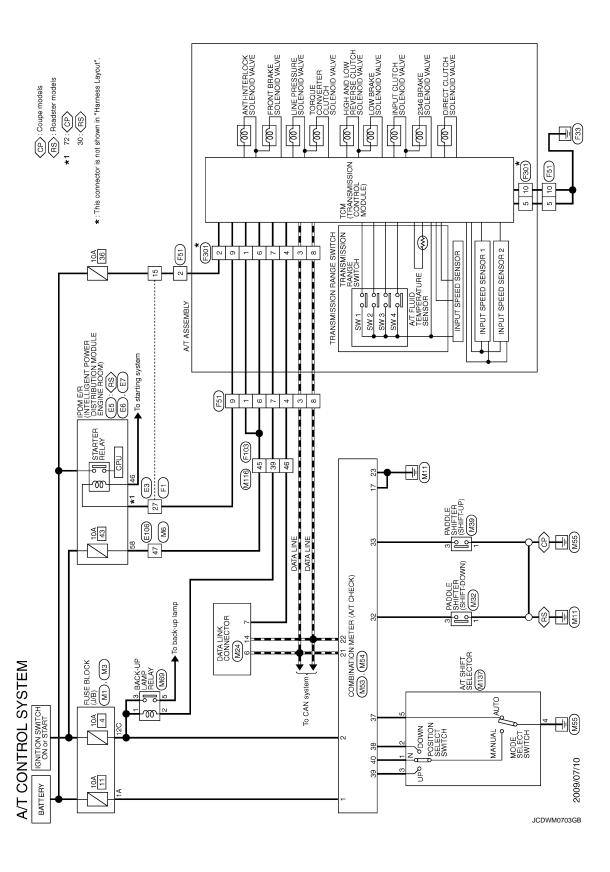
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Wiring Diagram - A/T CONTROL SYSTEM -

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73 GR	A B
Connector No. E6 Connector No. E6 Connector Name Place is entruction route Connector Type T100FW-NH	E F G
40 RR	J
A/T CONTROL SYSTEM Connector No. E3 Connector No. E3 Connector No. E3 Connector No. E3 Connector Type SAA36NB R38-5H28 Connector Type SAA36NB R38-5H28 Connector Type SAA36NB R38-5H28 Connector Type Con	L M N
Colorector No. Connector No. Connector No. Connector No. Connector Type Color No. Connector Type Color No. C	JCDWM0704GB

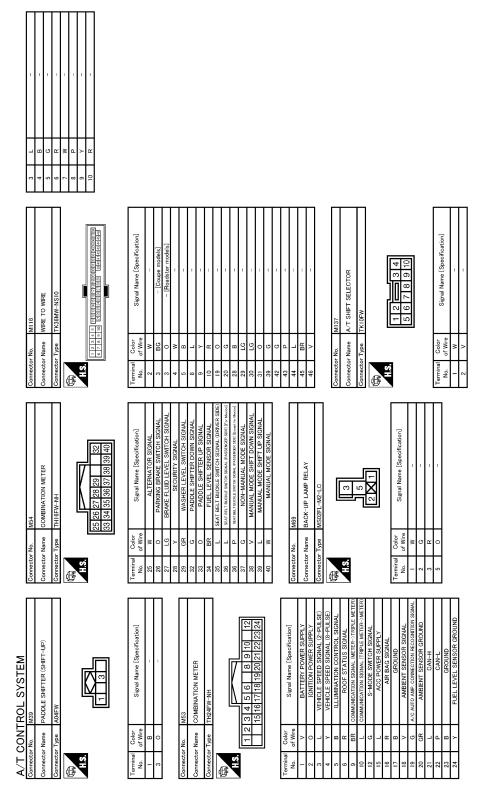
Revision: 2009 July **TM-279** 2010 370Z

A/T COI	A/T CONTROL SYSTEM										
Connector No.	E106	70	۵	ı	16	>	1	Terminal	_	Signal Name [Specification]	
Connector Name	WIRE TO WIRE	80	м	t	17	х	I	No.	of Wire		
	┪	81	۵	1	82	EG F	I		>	ı	
Connector Type	■ TH80FW-CS16-TM4	85	5	1	19	۵	1	2	æ	Î.	
4		83	>	1	20	BG	- [Coupe models]	က	-	Î	
李	L	84	-	i	20	٥	 [Roadster models] 	4	>	î	_
E.S.	1 01 02 03 03 03 03 03 03 03 03 03 03 03 03 03	82	BG	- [Coupe models]	21	æ	I	2	ш	İ	
		82	0	- [Roadster models]	22	g	1	9	>-	I	
		98	9	1	23	>	1	_	>	I	
		87	~	1	24	ΓC	-	80	Ь	1	
	8	88	۵	1	25	^	-	6	GR	1	
	I	91	W	1	27	GR	-	10	В	1	
len	Or Simal Nama [Spacification]	95	٦	1	28	BR	-				
No. of Wire		93	5	1	29	٦	-				
Τ .	1	94	>	1	30	ď	1	Conne	Connector No.	F103	
3 L	1	96	>		31	Д	1	9000	Connector Name	WIRE TO WIRE	
4 L	_	97	BR	_	32	Μ	1				
7 B	_	86	GR	1	33	SB	-	Conne	Connector Type	TK36FW-NS10	
8	1	66	57	1	34	BG	- [Coupe models]	þ			
6	- [Coupe models]	100	BG	- [Coupe models]	34	0	- [Roadster models]	厚			
9 B	- [Roadster models]	100	0	- [Roadster models]	36	GR	1	S	vi		
11	1				37	SHIELD	- [Coupe models]		느	and	
12 R	1				37	ш	- [Roadster models]		46 45 44 4	46 65 64 63 62 61 60 63 63 62 62 62 62 62 62 62 62 62 62 62 62 62	
13 L		Connector No.	tor No.	ш	88	*	1				
14 GR					33	>	1				
┝		Connec	Connector Name	WIRE TO WIRE	40	G	1				
16 W		Connect	Connector Type	SAA36FB-RS8-SHZ8	4	В	1	Terminal	_		_
H		١			45	æ	1	No.	of Wire	Signal Name [Specification]	
20 LG	1	唐		ľ	43	œ	1	2	5	ι	_
21 BR	R - [Coupe models]	Š		2 1	45	SB	ı	9	*	ı	_
21 G	- [Roadster models]			-	46	SHIELD	1	4	~	1	_
31 L	1			25/24/23/22/12/19/18/17	47	M/L		5	В	-	_
32 Y	1			0	48	PC		8	7	1	_
33 P	-			5251504948471464544	49	0/L		6	Υ	-	_
34 L	-				20	ΓV		10	Н	-	_
35 BR		Terminal	_	Cimpl Name [Cassification]	21	W	-	19	BG	- [Coupe models]	_
36 ^	_	No.	of Wire		52	F/G	1	19	0	- [Roadster models]	_
37 Y	-	-	ΓΛ	1				20	٨	1	_
38 R		2	SHIELD					28	В	_	_
_	_	3	ΓB	-	Connec	Connector No.	F51	29	ΓG	1	
40 W		4	SHIELD	1	Jonney	Connector Name	A/T ASSEMBLY	30	ď	1	
_		5	BR	1				31	BG	- [Coupe models]	
42 SB		7	9	-	Connec	tor Type	Connector Type RK10FG-DGY	31	0	- [Roadster models]	
43 G		8	М	-	ą			39	W	-	
44 R	P [Roadster models with M/T]	6	Μ	-	唐		<	45	5	=	
44 GR	R - [Except for roadster models with M/T]	10	9	-			«	43	Д	-	
45 BG	Н	Ξ	œ					44	7	-	
Н	- [Roadster models]	12	۵	1			N	42	Н	1	
\dashv		13	BG	- [Coupe models]			9 2 8 6 0	46	>	1	_
Ħ	1	13	0	[Roadster models]							
58 SHIELD	OTI	14	Н	ı							
59 L	1	15	BR	1							

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Sification] Sification] Solvens Sification]	А
Connector No. M24 Connector Name DATA LINK CONNECTOR Connector Name BD16FW DATA LINK CONNECTOR DATA LINK DATA LINK CONNECTOR NAME DA	С
Connector No.	TM
	Е
- [Caupe models] - [Readster models with M/T] - [Except for readster models with M/T] - [With M/T] - [With M/T] - [Wath M/T] - [Wath M/T] - [Readster models with M/T] - [Readster models with M/T] - [Except for readster models with M/T] - [- [- [- [- [- [- [- [- [- [- [- [- [-	F
x x 0 6 7 2 2 4 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	G
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Н
Signal Name [Specification] - [Coupe models] - [Roadster models] - [Coupe models]	I
2F B L C C C C C C C C C C C C C C C C C C	J
Color No. Color К	
	L
Signal Name [Specification] Sign	M
NOL SYST TOM (TANISMISSION OF SPIDEG Signal Nam Signal	N
A T CONTROL SYSTEM Connector Name Total (TRANSMISSION CONTROL SIGnal Name Total (TRANSMISSION CONTROL SIGnal Name Total Name	0
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JCDWM0707GB

Fail-Safe

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TCM has the electrical fail-safe mode. The mode is divided into a maximum of 3 phases (1st Fail-Safe, 2nd Fail-Safe and Final Fail-Safe) and functions so that the operation can be continued even if the signal circuit of the main electronically controlled input/output parts is damaged.

Even if the electronic circuit is normal, the fail-safe mode may start under special conditions (such as when the brake pedal is depressed suddenly from a hard wheel spin status to stop the rotation of wheels). In this case, turn the ignition switch OFF and back to ON after 5 seconds to resume the normal shift pattern.

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Consequently, the customer's vehicle may already return to the normal condition. Refer to <u>TM-149</u>, "<u>Diagnosis Flow"</u>.

1st fail-safe	The mode that the vehicle can stop safely, to prompt the driver to stop if the malfunction occurs and to shift to 2nd Fail-Safe early. It shifts to 2nd Fail-Safe or Final Fail-Safe after the vehicle stopped.
2nd fail-safe	The mode that the vehicle shifts to Final Fail-Safe without changing the behavior, by identifying the malfunctioning parts in the condition that the driving force required for the driving is secured.
Final fail-safe	 Selects the shifting pattern that the malfunctioning parts identified at 1st and 2nd Fail-Safe are not used, and then secure the driving force that is required for the driving. The mode that the shifting performance does not decrease by normal shift control.

FAIL-SAFE FUNCTION

DTC	Vehicle condition	Vehicle behavior for 1st fail-safe	Vehicle behavior for 2nd fail-safe	Vehicle behavior for final fail-safe	
P0615	_	Starter is disabled	_	Starter is disabled	
P0705	_	 Fixed in the "D" position (The shifting can be performed) 30 km/h (19MPH) or less Lock-up is prohibited The shifting between the gears of 3 - 4 - 5 - 6 - 7 can be performed Manual mode is prohibited Shift position indicator is switched OFF Starter relay is switched OFF (starter is disabled) Back-up lamp is OFF Large shift shock 		Fixed in the "D" position (The shifting can be performed) Method (19 MPH) or less Lock-up is prohibited The shifting between the gears of 3 - 4 - 5 - 6 - 7 can be performed Manual mode is prohibited Shift position indicator is switched OFF Starter relay is switched OFF (starter is disabled) Back-up lamp is OFF Large shift shock	
P0710	Between the gears of 1 - 2 - 3	The shifting between the gears of 1 - 2 - 3 can be performed Manual mode is prohibited	_	The shifting between the gears of 1 - 2 - 3 can be performed	
10/10	Between the gears of 4 - 5 - 6 - 7	Fix the gear while driving Manual mode is prohibited	_	Manual mode is prohibited	
P0717	Between the gears of 1 - 2 - 3	The shifting between the gears of 1 - 2 - 3 can be performed Manual mode is prohibited	_	The shifting between the gears of 1 - 2 - 3 can be performed	
1 07 17	Between the gears of 4 - 5 - 6 - 7	Fix the gear while driving Manual mode is prohibited	_	Manual mode is prohibited	
P0720	Between the gears of 1 - 2 - 3	Only downshift can be performed Manual mode is prohibited Treat the vehicle speed that the vehicle speed signal receives as positive	_	The shifting between the gears of 1 - 2 - 3 can be performed	
	Between the gears of 4 - 5 - 6 - 7	Fix the gear at driving Manual mode is prohibited Treat the vehicle speed that the vehicle speed signal receives as positive	_	Manual mode is prohibited	

DTC	Vehicle condition	Vehicle behavior for 1st fail-safe	Vehicle behavior for 2nd fail-safe	Vehicle behavior for final fail-safe
P0729 P0731	Neutral malfunction between the gears of 1 - 2 - 3 and 7	Locks in 4GRManual mode is prohibitedNeutral	_	 Locks in 1GR The shifting between the gears of 1 - 2 can be performed The shifting between the gears of 1 - 2 - 3 can be performed The shifting between the gears of 4 - 5 - 6 can be performed Manual mode is prohibited
P0731 P0732 P0733 P0734 P0735 P1734	Other than the above	 Driving with the gear ratio between 1GR and 2GR Driving with the gear ratio between 2GR and 3GR Locks in 3GR Locks in 4GR Fix the gear while driving Manual mode is prohibited Neutral 	 The shifting between the gears of 1 - 2 - 3 can be performed Manual mode is prohibited 	 Locks in 1GR The shifting between the gears of 1 - 2 can be performed The shifting between the gears of 1 - 2 - 3 can be performed The shifting between the gears of 2 - 3 - 4 can be performed The shifting between the gears of 3 - 4 can be performed The shifting between the gears of 3 - 4 can be performed The shifting between the gears of 4 - 5 - 6 can be performed Manual mode is prohibited
P0730	_	Manual mode is prohibited Neutral	 The shifting between the gears of 1 - 2 - 3 can be performed Manual mode is prohibited 	 Locks in 1GR The shifting between the gears of 1 - 2 can be performed The shifting between the gears of 1 - 2 - 3 can be performed Manual mode is prohibited
P0740	_	Lock-up is prohibited Slip lock-up is prohibited	_	Lock-up is prohibited Slip lock-up is prohibited
P0744	_	Lock-up is prohibitedSlip lock-up is prohibited	_	Lock-up is prohibitedSlip lock-up is prohibited
P0750 P0775 P0795 P2713 P2722 P2731 P2807	_	 Locks in 2GR, 3GR, 4GR, 5GR, 6GR or 7GR Manual mode is prohibited 	_	 Locks in 1GR The shifting between the gears of 1 - 2 - 3 can be performed The shifting between the gears of 3 - 4 - 5 can be performed The shifting between the gears of 4 - 5 - 6 can be performed The shifting between the gears of 1 - 2 - 3 - 4 - 5 - 6 can be performed Manual mode is prohibited
P0780	_	Manual mode is prohibited Neutral	_	The shifting between the gears of 1 - 2 - 3 can be performed Manual mode is prohibited
P1705	_	 Downshift when accelerator pedal is depressed is prohibited Upshift when accelerator pedal is released is prohibited Manual mode is prohibited 	 Downshift when accelerator pedal is depressed is prohibited Upshift when accelerator pedal is released is prohibited Manual mode is prohibited 	 Downshift when accelerator ped al is depressed is prohibited Upshift when accelerator pedal is released is prohibited Manual mode is prohibited
P1730	_	 Neutral Driving with the gear ratio between 2GR and 3GR Locks in 5GR, 6GR or 7GR Manual mode is prohibited 	 The shifting between the gears of 1 - 2 - 3 can be performed Manual mode is prohibited 	 Locks in 1GR The shifting between the gears of 2 - 3 - 4 can be performed The shifting between the gears of 3 - 4 can be performed The shifting between the gears of 4 - 5 - 6 can be performed Manual mode is prohibited

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DTC	Vehicle condition	Vehicle behavior for 1st fail-safe	Vehicle behavior for 2nd fail-safe	Vehicle behavior for final fail-safe	
	Paddle switch mal- function	Only the paddle switch is prohibited	_	Only the paddle switch is prohibited	
P1815	Gate switch malfunction	Only the gate switch is prohibited	_	Only the gate switch is prohibited	
	Malfunction of both switches	Manual mode is prohibited	_	Manual mode is prohibited	
U1000	Between the gears of 1 - 2 - 3	 The shifting between the gears of 1 - 2 - 3 can be performed Manual mode is prohibited 	_	The shifting between the gears of 1 - 2 - 3 can be performed Line pressure is set to the maxi-	Т
01000	Between the gears of 4 - 5 - 6 - 7	Fix the gear at driving Manual mode is prohibited	_	mum hydraulic pressure Manual mode is prohibited	
P0720 and	_	Locks in 5GR	_	Locks in 5GR	

Protection Control

The TCM becomes the protection control status temporarily to protect the safety when the safety of TCM and transmission is lost. It automatically returns to the normal status if the safety is secured. The TCM has the following protection control.

REVERSE INHIBIT CONTROL

and P1721

Intercepts the torque transmission and shift to the neutral status if the selector lever is shifted to "R" position while the vehicle moves forward at the vehicle speed 10 km/h (7 MPH) or more.

Malfunction detection condition	Vehicle speed: 10 km/h (7 MPH) or more
Control at malfunction	Neutral
Normal return condition	Vehicle speed: 8 km/h (5 MPH) or less and Engine speed: 2,200 rpm or less
Vehicle behavior	The torque transmission cannot be performed There is a shock just before a vehicle stop

1ST ENGINE BRAKE PROTECTION CONTROL

Controls the engine brake so as not to make effective by turning the front brake solenoid output to OFF when each solenoid becomes the electricity pattern of 1st engine brake during driving at the vehicle speed 25 km/h or more in any positions other than "R" position and 1GR.

Malfunction detection condition	Select lever and gear: Any position other than "R" position and 1GR and Vehicle speed: More than 25 km/h (16 MPH)
Control at malfunction	Front brake solenoid output signal; OFF
Normal return condition	Other than detection condition of malfunction
Vehicle behavior	Does not exist

TCM HIGH TEMPERATURE PROTECTION CONTROL

Limit the accelerator opening and forcibly control the vehicle to the low torque driving when the electronic substrate in TCM reaches the high temperature.

Malfunction detection condition	TCM electronic substrate temperature • 145°C (293°F) and 120 seconds or • 150°C (302°F)
Control at malfunction	Accelerator opening: 0.5/8 or less
Normal return condition	TCM electronic substrate temperature: Less than 140°C (284°F) and Vehicle speed: 5 km/h (3 MPH) or less
Vehicle behavior	Accelerator opening: output torque of approximately 0.5/8

DTC Inspection Priority Chart

INFOID:0000000005233534

[7AT: RE7R01A]

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

Priority	Detected items (DTC)	Reference
1	U1000 CAN COMM CIRCUIT	TM-209, "DTC Logic"
	P0615 STARTER RELAY	TM-210, "DTC Logic"
	P0705 T/M RANGE SWITCH A	TM-212, "DTC Logic"
	P0710 FLUID TEMP SENSOR A	TM-213, "DTC Logic"
	P0717 INPUT SPEED SENSOR A	TM-215, "DTC Logic"
	P0720 OUTPUT SPEED SENSOR	TM-217, "DTC Logic"
	P0740 TORQUE CONVERTER	TM-234, "DTC Logic"
2	P0745 PC SOLENOID A	TM-237, "DTC Logic"
2	P0750 SHIFT SOLENOID A	TM-238, "DTC Logic"
	P0775 PC SOLENOID B	TM-239, "DTC Logic"
	P0795 PC SOLENOID C	TM-242, "DTC Logic"
	P2713 PC SOLENOID D	TM-257, "DTC Logic"
	P2722 PC SOLENOID E	TM-258, "DTC Logic"
	P2731 PC SOLENOID F	TM-259, "DTC Logic"
	P2807 PC SOLENOID G	TM-260, "DTC Logic"
	P0729 6GR INCORRECT RATIO	TM-221, "DTC Logic"
	P0730 INCORRECT GR RATIO	TM-223, "DTC Logic"
	P0731 1GR INCORRECT RATIO	TM-224, "DTC Logic"
	P0732 2GR INCORRECT RATIO	TM-226, "DTC Logic"
	P0733 3GR INCORRECT RATIO	TM-228, "DTC Logic"
3	P0734 4GR INCORRECT RATIO	TM-230, "DTC Logic"
	P0735 5GR INCORRECT RATIO	TM-232, "DTC Logic"
	P0744 TORQUE CONVERTER	TM-236, "DTC Logic"
	P0780 SHIFT	TM-240, "DTC Logic"
	P1730 INTERLOCK	TM-247, "DTC Logic"
	P1734 7GR INCORRECT RATIO	TM-249, "DTC Logic"
	P0725 ENGINE SPEED	TM-219, "DTC Logic"
4	P1705 TP SENSOR	TM-243, "DTC Logic"
	P1721 VEHICLE SPEED SIGNAL	TM-245, "DTC Logic"
	P1815 M-MODE SWITCH	TM-251, "DTC Logic"

DTC Index

NOTE:

If some DTCs are displayed at the same time, perform inspections one by one based on the priority as per the following list. Refer to TM-286, "DTC Inspection Priority Chart".

Items (CONSULT-III screen terms)	DTC*2		
	MIL*1, "ENGINE" with CONSULT-III or GST	CONSULT-III only "TRANSMISSION"	Reference
STARTER RELAY	_	P0615	TM-210, "Description"
T/M RANGE SWITCH A	P0705	P0705	TM-212, "Description"
FLUID TEMP SENSOR A	P0710	P0710	TM-213, "Description"
INPUT SPEED SENSOR A	P0717	P0717	TM-215, "Description"
OUTPUT SPEED SENSOR	P0720	P0720	TM-217, "Description"
ENGINE SPEED	_	P0725	TM-219, "Description"
6GR INCORRECT RATIO	P0729	P0729	TM-221, "Description"
INCORRECT GR RATIO	P0730	P0730	TM-223, "Description"
1GR INCORRECT RATIO	P0731	P0731	TM-224, "Description"
2 GR INCORRECT RATIO	P0732	P0732	TM-226, "Description"
3GR INCORRECT RATIO	P0733	P0733	TM-228, "Description"
4GR INCORRECT RATIO	P0734	P0734	TM-230, "Description"
5GR INCORRECT RATIO	P0735	P0735	TM-232, "Description"
TORQUE CONVERTER	P0740	P0740	TM-234, "Description"
TORQUE CONVERTER	P0744	P0744	TM-236, "Description"
PC SOLENOID A	P0745	P0745	TM-237, "Description"
SHIFT SOLENOID A	P0750	P0750	TM-238, "Description"
PC SOLENOID B	P0775	P0775	TM-239, "Description"
SHIFT	P0780	P0780	TM-240, "Description"
PC SOLENOID C	P0795	P0795	TM-242, "Description"
TP SENSOR	_	P1705	TM-243, "Description"
VEHICLE SPEED SIGNAL	_	P1721	TM-245, "Description"
INTERLOCK	P1730	P1730	TM-247, "Description"
7 GR INCORRECT RATIO	P1734	P1734	TM-249, "Description"
M-MODE SWITCH	_	P1815	TM-251, "Description"
PC SOLENOID D	P2713	P2713	TM-257, "Description"
PC SOLENOID E	P2722	P2722	TM-258, "Description"
PC SOLENOID F	P2731	P2731	TM-259, "Description"
PC SOLENOID G	P2807	P2807	TM-260, "Description"
CAN COMM CIRCUIT	U1000	U1000	TM-209, "Description"

^{*1:} Refer to TM-202, "Diagnosis Description".

IGN COUNTER

IGN counter indicates the number of items that ignition switch is turned ON after DTC is detected.

- CAN malfunction
- The number is 0 when a malfunction is detected now.
- The number increases like $1 \rightarrow 2 \rightarrow 3...38 \rightarrow 39$ after returning to the normal condition whenever ignition switch OFF \rightarrow ON.
- The number is fixed to 39 until the self-diagnosis results are erased if it is over 39.
- Other than CAN malfunction
- The number is 0 when a malfunction is detected now.
- The number increases like $1 \rightarrow 2 \rightarrow 3...254 \rightarrow 255$ after returning to the normal condition whenever ignition switch OFF \rightarrow ON.

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^{*2:} These numbers are prescribed by SAE J2012.

< ECU DIAGNOSIS INFORMATION >
- The number is fixed to 255 until the self-diagnosis results are erased if it is over 255.

SYSTEM SYMPTOM

[7AT: RE7R01A]

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SYMPTOM DIAGNOSIS

SYSTEM SYMPTOM

Symptom Table

The diagnostics item numbers show the sequence for inspection. Inspect in order from item 1. **CAUTION:**

If any malfunction occurs in the RE7R01A transmission, replace the A/T assembly.

												Dia	gno	stic	iten	1							
		S	ymptom		Control linkage	Output speed sensor	Vehicle speed signal	Accelerator pedal position sensor	Engine speed signal	Input speed sensor	A/T fluid temperature sensor	Transmission range switch	Line pressure solenoid valve	Torque converter solenoid valve	Low brake solenoid valve	Front brake solenoid valve	High and low reverse clutch solenoid valve	Input clutch solenoid valve	Direct clutch solenoid valve	2346 brake solenoid valve	Anti-interlock solenoid valve	CAN communication	TM E F G
					1M-306	TM-217	TM-245	TM-243	TM-219	TM-215	TM-213 /	TM-212	TM-237	TM-234	TM-258	TM-242	TM-257	TM-239	TM-260	TM-259	TM-238	TM-209 (ı
		Shift po	oint is high	n in "D" position.		1		2			3												
		Shift po	oint is low	in "D" position.		1		2															
				→ "D" position	3			6	5		5	4	2		1						2	5	J
				→ "R" position	3			6	5		5	4	2						1			5	
				1GR ⇔ 2GR		3		1	5	3	3									2		4	K
				2GR ⇔ 3GR		3		1	5	3	3								2			4	1
				3GR ⇔ 4GR		3		1	5	3	3				2		2					4	
	Driving perfor-		When	4GR ⇔ 5GR		3		1	5	3	3							2		2		4	L
	mance	Large shock	shift- ing	5GR ⇔ 6GR		3		1	5	3	3								2	2		4	
Poor perfor-			gears	6GR ⇔ 7GR		3		1	5	3	3					2				2		4	M
mance				Downshift when accelerator pedal is depressed		2		1	4	2	2											3	
				Upshift when accelerator pedal is released		2		1	4	2	2											3	Ν
				Lock-up		3		1	3	3	3			2								4	0
		Judder		Lock-up				2	1	1	4			3									0
				In "R" position		2			1														
	Strange	noise		In "N" position		2			1														Р
	Change	110100		In "D" position		2			1														
				Engine at idle		2			1														

											Dia	igno	stic	item	1						
		Sympton	n	∠ Output speed sensor	9 Engine speed signal	5 Input speed sensor	3 A/T fluid temperature sensor	1 Battery voltage	2 Transmission range switch	1 Manual mode switch	9 Stop lamp switch	Z Line pressure solenoid valve	4 Torque converter solenoid valve	8 Low brake solenoid valve	2 Front brake solenoid valve	High and low reverse clutch solenoid valve	9 Input clutch solenoid valve	O Direct clutch solenoid valve	9 2346 brake solenoid valve	8 Anti-interlock solenoid valve	9 CAN communication
				TM-217	TM-219	TM-215	TM-213	TM-261	TM-212	TM-251	TM-269	TM-237	TM-234	TM-258	TM-242	TM-257	TM-239	TM-260	TM-259	TM-238	TM-209
			Locks in 1GR	1											1		1		1		
			Locks in 5GR					1													
			1GR → 2GR	1											1		1		1		
			2GR → 3GR															1			
			3GR → 4GR	1		1	1							1	1	1	1				1
		<i>"</i>	4GR → 5GR															1	1		
		"D" posi- tion	5GR → 6GR															1			
			6GR → 7GR											1	1	1	1			1	
Func-	Gear		5GR → 4GR														1				
tion trou-	does no		4GR → 3GR											1		1				1	
ble	change		3GR → 2GR						1									1			
			2GR → 1GR						1									1	1		
			Does not lock-up	1	1	1	1	3	4		2	1	1	1	1	1	1	1	1	1	1
			1GR ⇔ 2GR	2		2	2		2	1		2	2	2	2	2	2	2	2	2	2
			2GR ⇔ 3GR	2		2	2		2	1		2	2	2	2	2	2	2	2	2	2
		"M" posi-	3GR ⇔ 4GR	2		2	2		2	1		2	2	2	2	2	2	2	2	2	2
		tion	4GR ⇔ 5GR	2		2	2		2	1		2	2	2	2	2	2	2	2	2	2
			5GR ⇔ 6GR	2		2	2		2	1		2	2	2	2	2	2	2	2	2	2
			6GR ⇔ 7GR	2		2	2		2	1		2	2	2	2	2	2	2	2	2	2

											D	iagr	nost	ic ite	em						
			Symptom		Control linkage	Output speed sensor	Engine speed signal	Input speed sensor	A/T fluid temperature sensor	Transmission range switch	Manual mode switch	Line pressure solenoid valve	Torque converter clutch solenoid valve	Low brake solenoid valve	Front brake solenoid valve	High and low reverse clutch solenoid valve	Input clutch solenoid valve	Direct clutch solenoid valve	2346 brake solenoid valve	Anti-interlock solenoid valve	CAN communication
					TM-306	TM-217	TM-219	TM-215	TM-213	TM-212	TM-251	TM-237	TM-234	TM-258	TM-242	TM-257	TM-239	TM-260	TM-259	TM-238	TM-209
				1GR ⇔ 2GR		3	3	3	4			1							1		2
				2GR ⇔ 3GR		3	3	3	4			1						1			2
		Slip	When shift-	3GR ⇔ 4GR		3	3	3	4			1		1		1				1	2
		Slip	ing gears	4GR ⇔ 5GR		3	3	3	4			1					1		1		2
				5GR ⇔ 6GR		3	3	3	4			1						1	1		2
	_			6GR ⇔ 7GR		3	3	3	4			1			1				1		2
	Poor shifting		"D" position -	"M" position		4	4	4	5	3	1	2									3
	J	_		$7GR \rightarrow 6GR$		4	4	4	5	3	1	2			2				2		3
		En- gine		6GR → 5GR		4	4	4	5	3	1	2						2	2		3
		brake	"M" position	5GR → 4GR		4	4	4	5	3	1	2					2		2		3
		does not	IVI POSITION	4GR → 3GR		4	4	4	5	3	1	2		2		2				2	3
		work		$3GR \rightarrow 2GR$		4	4	4	5	3	1	2						2			3
Func-				2GR → 1GR		4	4	4	5	3	1	2							2		3
tion trou- ble				With selector lever in "D" position, acceleration is extremely poor.	5	3	3	3	4			1		1						1	2
				With selector lever in "R" position, acceleration is extremely poor.	5	3	3	3	4			1						1		1	2
	Poor power trans-		Slip	While starting off by accelerating in 1GR, engine races.		3	3	3	4			1		1						1	2
	mis- sion		,	While accelerating in 2GR, engine races.		3	3	3	4			1		1					1	1	2
				While accelerating in 3GR, engine races.		3	3	3	4			1		1				1	1		2
				While accelerating in 4GR, engine races.		3	3	3	4			1				1		1	1		2
				While accelerating in 5GR, engine races.		3	3	3	4			1				1	1	1		1	2

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		Symptom		Control linkage	Output speed sensor	Engine speed signal	Input speed sensor	A/T fluid temperature sensor	Transmission range switch	Manual mode switch	Line pressure solenoid valve	Torque converter clutch solenoid valve	Low brake solenoid valve	Front brake solenoid valve	High and low reverse clutch solenoid valve	Input clutch solenoid valve	Direct clutch solenoid valve	2346 brake solenoid valve	Anti-interlock solenoid valve	CAN communication
				TM-306	TM-217	TM-219	TM-215	TM-213	TM-212	TM-251	TM-237	TM-234	TM-258	TM-242	TM-257	TM-239	TM-260	TM-259	TM-238	TM-209
			While accelerating in 6GR, engine races.		3	3	3	4			1				1	1		1	1	2
Func-	Poor power		While accelerating in 7GR, engine races.		3	3	3	4			1			1	1	1			1	2
tion trou- ble	trans- mis-	Slip	Lock-up		3	3	3	4			1	1								2
	sion		No creep at all.								1	1	1	1	1	1	1	1	1	
			Extremely large creep.			1														

									D	iagr	nosti	ic ite	em							
	S	ymptom	TM-306 Control linkage	TM-217 Output speed sensor	TM-243 Accelerator pedal position sensor	TM-219 Engine speed signal	TM-261 Battery voltage	TM-212 Transmission range switch	TM-269 Stop lamp switch	TM-237 Line pressure solenoid valve	TM-234 Torque converter clutch solenoid valve	TM-258 Low brake solenoid valve	TM-242 Front brake solenoid valve	TM-257 High and low reverse clutch solenoid valve	TM-239 Input clutch solenoid valve	TM-260 Direct clutch solenoid valve	TM-259 2346 brake solenoid valve	TM-238 Anti-interlock solenoid valve	TM-210 Starter relay	T
		Vehicle cannot run in all position.	3					2		1	1	1	1	1	1	1	1	1		
		Driving is not possible in "D" position.	3					2		1	1	1	1	1	1	1	1	1		
		Driving is not possible in "R" position.	3					2		1						1		1		
	Power transmis- sion cannot be	Engine stall		3	4	4	5		2		1									
	performed	Engine stalls when selector lever shifted "N" \rightarrow "D" or "R".		3	4	4		2			1									
		Engine does not start in "N" or "P" position.	3				1	2											1	
Function trouble		Engine starts in position other than "N" or "P".	3					2											1	
		Vehicle does not enter parking condition.	1					2												
		Parking condition is not cancelled.	1					2												
		Vehicle runs with A/T in "P" position.	1					2												
	Poor operation	Vehicle moves forward with the "R" position.	1					2												
		Vehicle runs with A/T in "P" position.	1					2												
		Vehicle moves backward with the "D" position.	1					2												ı

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< PRECAUTION > [7AT: RE7R01A]

PRECAUTION

PRECAUTIONS FOR USA AND CANADA

FOR USA AND CANADA: Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

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

WARNING:

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

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

WARNING:

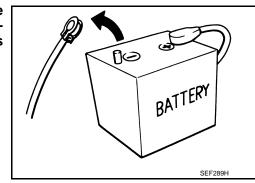
- When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious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

FOR USA AND CANADA: Precaution for Battery Service

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

FOR USA AND CANADA: General Precautions

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



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Revision: 2009 July **TM-294** 2010 370Z

< PRECAUTION > [7AT: RE7R01A]

 Perform "DTC (Diagnostic Trouble Code) CONFIRMATION PROCEDURE" after performing each TROUBLE DIAGNOSIS.
 If the repair is completed DTC should not be displayed in the "DTC CONFIRMATION PROCEDURE".

- Always use the specified brand of ATF. Refer to MA-14, "FOR NORTH AMERICA: Fluids and Lubricants".
- Use lint-free paper not cloth rags during work.
- Dispose of the waste oil using the methods prescribed by law, ordinance, etc. after replacing the ATF.
- 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 A/T is disassembled.
- It is very important to perform functional tests whenever they are indicated.
- The valve body contains precision parts and requires extreme care when parts are removed and serviced.
 Place disassembled valve body parts in order for easier and proper assembly. Care will also prevent springs and small parts from becoming scattered or lost.
- Properly installed valves, sleeves, plugs, etc. will slide along bores in valve body under their own weight.
- Before assembly, apply a coat of recommended ATF to all parts. Apply petroleum jelly to protect O-rings and seals, or hold bearings and washers in place during assembly. Never use grease.
- Extreme care should be taken to avoid damage to O-rings, seals and gaskets when assembling.
- Clean or replace ATF cooler if excessive foreign material is found in oil pan or clogging strainer. Refer to TM-295, "FOR USA AND CANADA: Service Notice or Precaution".
- When the A/T drain plug is removed, only some of the ATF is drained. Old ATF will remain in torque converter and ATF cooling system.
 - Always follow the procedures under "Changing" when changing ATF. Refer to TM-299, "Changing".
- Occasionally, the parking gear may be locked with the torque insufficiently released, when stopping the vehicle by shifting the selector lever from "D" or "R" to "P" position with the brake pedal depressed.
 In this case, the shock with a thud caused by the abrupt release of torque may occur when shifting the selector lever from "P" position to other positions.

However, this symptom is not a malfunction which results in the damage of parts.

FOR USA AND CANADA: Service Notice or Precaution

ATF COOLER SERVICE

If ATF contains frictional material (clutches, bands, etc.), or if an A/T is repaired, overhauled, or replaced, inspect and clean the A/T fluid cooler mounted in the radiator or replace the radiator. Flush cooler lines using cleaning solvent and compressed air after repair. For A/T fluid cooler cleaning procedure, refer to TM-302. "Cleaning". For radiator replacement, refer to CO-14, "Exploded View".

FOR MEXICO

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

The Supplemental Restraint System such as "AIR BAG" and "SEAT BELT PRE-TENSIONER", used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. Information necessary to service the system safely is included in the "SRS AIR BAG" and "SEAT BELT" 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.

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Revision: 2009 July **TM-295** 2010 370Z

[7AT: RE7R01A] < PRECAUTION >

 Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the "SRS AIR BAG".

 Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.

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

WARNING:

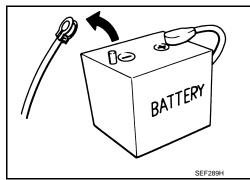
- When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious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

FOR MEXICO: Precaution for Battery Service

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

FOR MEXICO: General Precautions

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

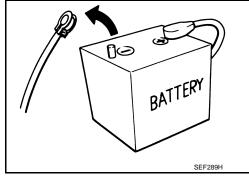


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- Perform "DTC (Diagnostic Trouble Code) CONFIRMATION PROCEDURE" after performing each TROUBLE DIAGNOSIS. If the repair is completed DTC should not be displayed in the "DTC CONFIRMATION PROCEDURE".
- Always use the specified brand of ATF. Refer to MA-15, "FOR MEXICO: Fluids and Lubricants".
- Use lint-free paper not cloth rags during work.
- Dispose of the waste oil using the methods prescribed by law, ordinance, etc. after replacing the ATF.
- 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 A/T is disassembled.
- It is very important to perform functional tests whenever they are indicated.
- The valve body contains precision parts and requires extreme care when parts are removed and serviced. Place disassembled valve body parts in order for easier and proper assembly. Care will also prevent springs and small parts from becoming scattered or lost.
- Properly installed valves, sleeves, plugs, etc. will slide along bores in valve body under their own weight.



< PRECAUTION > [7AT: RE7R01A]

• 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. Never use grease.

- Extreme care should be taken to avoid damage to O-rings, seals and gaskets when assembling.
- Clean or replace ATF cooler if excessive foreign material is found in oil pan or clogging strainer. Refer to TM-297, "FOR MEXICO: Service Notice or Precaution".
- When the A/T drain plug is removed, only some of the ATF is drained. Old ATF will remain in torque converter and ATF cooling system.

Always follow the procedures under "Changing" when changing ATF. Refer to TM-299, "Changing".

Occasionally, the parking gear may be locked with the torque insufficiently released, when stopping the vehicle by shifting the selector lever from "D" or "R" to "P" position with the brake pedal depressed.
 In this case, the shock with a thud caused by the abrupt release of torque may occur when shifting the selector lever from "P" position to other positions.

However, this symptom is not a malfunction which results in the damage of parts.

FOR MEXICO: Service Notice or Precaution

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ATF COOLER SERVICE

If ATF contains frictional material (clutches, bands, etc.), or if an A/T is repaired, overhauled, or replaced, inspect and clean the A/T fluid cooler mounted in the radiator or replace the radiator. Flush cooler lines using cleaning solvent and compressed air after repair. For A/T fluid cooler cleaning procedure, refer to TM-302. "Cleaning". For radiator replacement, refer to CO-14, "Exploded View".

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Revision: 2009 July **TM-297** 2010 370Z

PREPARATION

< PREPARATION > [7AT: RE7R01A]

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PREPARATION

Commercial Service Tool

INFOID:0000000005233541

Tool number Tool name		Description
 315268E000* O-ring 310811EA5A* Charging pipe 	JSDIA1332ZZ	A/T fluid changing and adjustment
Power tool	PBIC0190E	Loosening bolts and nuts

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

PERIODIC MAINTENANCE

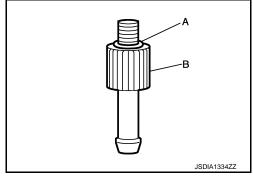
A/T FLUID

Changing INFOID:0000000005233542

ATF : Refer to <u>TM-321, "General Specification"</u>.
Fluid capacity : Refer to <u>TM-321, "General Specification"</u>.

CAUTION:

- Use only Genuine NISSAN Matic S ATF. Never mix with other ATF.
- Using ATF other than Genuine NISSAN Matic S ATF will cause deterioration in driveability and A/T durability, and may damage the A/T, which is not covered by the NISSAN new vehicle limited warranty.
- When filling ATF, be careful not to scatter heat generating parts such as exhaust.
- Step 1
- a. Install the O-ring (315268E000) (A) to the charging pipe (310811EA5A) (B).



- 2. Step 2
- Use CONSULT-III to check that the ATF temperature is 40°C (104°F) or less.
- b. Lift up the vehicle.
- c. Remove the drain plug from the oil pan, and then drain the ATF.
- d. When the ATF starts to drip, temporarily tighten the drain plug to the oil pan.

NOTE:

Never replace drain plug and drain plug gasket with new ones yet.

- e. Remove overflow plug from oil pan.
- f. Install the charging pipe (A) to the overflow plug hole. CAUTION:

Tighten the charging pipe by hand.

g. Install the bucket pump hose (B) to the charging pipe.

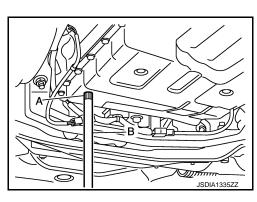
CAUTION:

Insert the bucket pump hose all the way to the end of the charging pipe.

- h. Fill approximately 3 liters (3-1/8 US qt, 2-5/8 lmp qt) of the ATF.
- Remove the bucket pump hose to remove the charging pipe, and then temporarily tighten the overflow plug to the oil pan.
 CAUTION:

Quickly perform the procedure to avoid ATF leakage from the oil pan.

- j. Lift down the vehicle.
- k. Start the engine and wait for approximately 3 minutes.
- I. Stop the engine.
- 3. Step 3
- a. Repeat "Step 2".
- 4. Final Step



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- a. Use CONSULT-III to check that the ATF temperature is 40°C (104°F) or less.
- b. Lift up the vehicle.
- c. Remove the drain plug from the oil pan, and then drain the ATF.
- d. When the ATF starts to drip, tighten the drain plug to the oil pan to the specified torque. Refer to <u>TM-312</u>. "Exploded View".

CAUTION:

Never reuse drain plug and drain plug gasket.

- e. Remove overflow plug from oil pan.
- f. Install the charging pipe (A) to the overflow plug hole. CAUTION:

Tighten the charging pipe by hand.

g. Install the bucket pump hose (B) to the charging pipe.

CAUTION:

Insert the bucket pump hose all the way to the end of the charging pipe.

- h. Fill approximately 3 liters (3-1/8 US qt, 2-5/8 lmp qt) of the ATF.
- Remove the bucket pump hose to remove the charging pipe, and then temporarily tighten the overflow plug to the oil pan.
 CAUTION:

Quickly perform the procedure to avoid ATF leakage from the oil pan.

- j. Lift down the vehicle.
- k. Start the engine.
- I. Make the ATF temperature approximately 40°C (104°F).

NOTE:

The ATF level is greatly affected by the temperature. Always check the ATF temperature on "ATF TEMP 1" of "Data Monitor" using CONSULT-III.

- m. Park vehicle on level surface and set parking brake.
- n. Shift the selector lever through each gear position. Leave selector lever in "P" position.
- o. Lift up the vehicle when the ATF temperature reaches 40°C (104°F), and then remove the overflow plug from the oil pan.
- p. When the ATF starts to drip, tighten the overflow plug to the oil pan to the specified torque. Refer to TM-312, "Exploded View".

CAUTION:

Never reuse overflow plug.

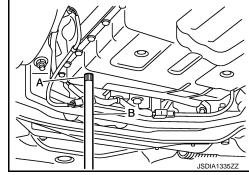
Adjustment

ATF : Refer to TM-321, "General Specification".

Fluid capacity : Refer to TM-321, "General Specification".

CAUTION:

- Use only Genuine NISSAN Matic S ATF. Never mix with other ATF.
- Using ATF other than Genuine NISSAN Matic S ATF will cause deterioration in driveability and A/T durability, and may damage the A/T, which is not covered by the NISSAN new vehicle limited warranty.
- When filling ATF, be careful not to scatter heat generating parts such as exhaust.
- Always maintain the ATF temperature within between 35°C (95°F) and 45°C (113°F) while checking with CONSULT-III when the ATF level adjustment is performed.



[7AT: RE7R01A]

< PERIODIC MAINTENANCE >

- Install the O-ring (315268E000) (A) to the charging pipe (310811EA5A) (B).
- Start the engine.
- 3. Make the ATF temperature approximately 40°C (104°F). NOTE:

The ATF level is greatly affected by the temperature. Always check the ATF temperature on "ATF TEMP 1" of "Data Monitor" using CONSULT-III.

- 4. Park vehicle on level surface and set parking brake.
- 5. Shift the selector lever through each gear position. Leave selector lever in "P" position.
- Lift up the vehicle.
- 7. Check the ATF leakage from transmission.
- 8. Remove overflow plug from oil pan.
- 9. Install the charging pipe (A) to the overflow plug hole. **CAUTION:**

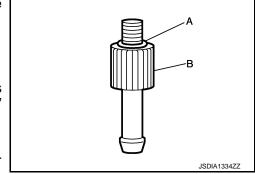
Tighten the charging pipe by hand.

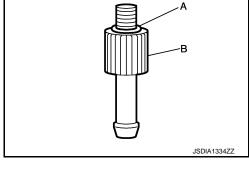
10. Install the bucket pump hose (B) to the charging pipe. **CAUTION:**

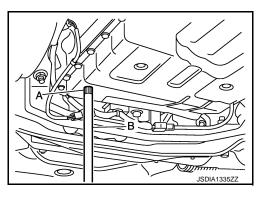
Insert the bucket pump hose all the way to the end of the charging pipe.

- 11. Fill approximately 0.5 liters (1/2 US qt, 1/2 lmp qt) of the ATF.
- 12. Check that the ATF leaks when removing the charging pipe and the bucket pump hose. If the ATF does not leak, refill the ATF.
- 13. When the ATF starts to drip, tighten the overflow plug to the oil pan to the specified torque. Refer to TM-312, "Exploded View". **CAUTION:**

Never reuse overflow plug.







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[7AT: RE7R01A]

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A/T FLUID COOLER

Cleaning INFOID:0000000005233544

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

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

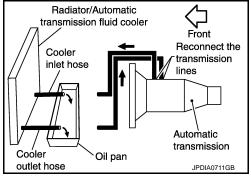
CLEANING PROCEDURE

- 1. Position an oil pan under the A/T inlet and outlet cooler hoses.
- 2. Identify the inlet and outlet fluid cooler hoses.
- 3. Disconnect the A/T fluid cooler inlet and outlet rubber hoses from the steel cooler tubes or by-pass valve.

NOTE:

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

Allow any ATF that remains in the cooler hoses to drain into the oil pan.

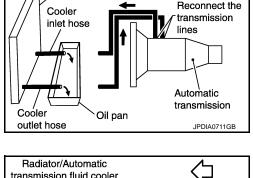


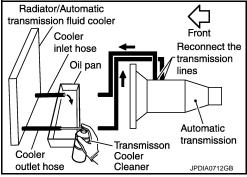
[7AT: RE7R01A]

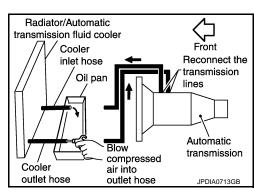
Insert the extension adapter hose of a can of Transmission Cooler Cleaner (Nissan P/N 999MP-AM006) into the cooler outlet hose.

CAUTION:

- Wear safety glasses and rubber gloves when spraying the **Transmission Cooler Cleaner.**
- Spray Transmission Cooler Cleaner only with adequate ventilation.
- · Avoid contact with eyes and skin.
- Never breathe vapors or spray mist.
- 6. Hold the hose and can as high as possible and spray Transmission Cooler Cleaner in a continuous stream into the cooler outlet hose until ATF flows out of the cooler inlet hose for 5 seconds.
- 7. Insert the tip of an air gun into the end of the cooler outlet hose.
- Wrap a shop rag around the air gun tip and of the cooler outlet
- Blow compressed air regulated to 5 to 9 kg/cm² (71 to 128 psi) through the cooler outlet hose for 10 seconds to force out any remaining ATF.
- 10. Repeat steps 5 through 9 three additional times.
- 11. Position an oil pan under the banjo bolts that connect the A/T fluid cooler steel lines to the A/T.
- 12. Remove the banjo bolts.
- 13. Flush each steel line from the cooler side back toward the A/T by spraying Transmission Cooler Cleaner in a continuous stream for 5 seconds.
- 14. Blow compressed air regulated to 5 to 9 kg/cm² (71 to 128 psi) through each steel line from the cooler side back toward the A/T for 10 seconds to force out any remaining ATF.
- 15. Ensure all debris is removed from the steel cooler lines.
- 16. Ensure all debris is removed from the banjo bolts and fittings.
- 17. Perform "DIAGNOSIS PROCEDURE".







DIAGNOSIS PROCEDURE

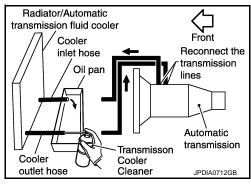
NOTE:

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

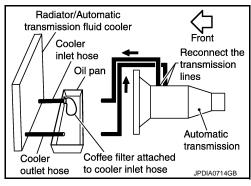
- 1. Position an oil pan under the A/T inlet and outlet cooler hoses.
- Clean the exterior and tip of the cooler inlet hose.
- Insert the extension adapter hose of a can of Transmission Cooler Cleaner (Nissan P/N 999MP-AM006) into the cooler outlet hose.

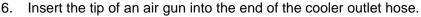
CAUTION:

- Wear safety glasses and rubber gloves when spraying the Transmission Cooler Cleaner.
- Spray Transmission Cooler Cleaner only with adequate ventilation.
- Avoid contact with eyes and skin.
- Never breathe vapors or spray mist.
- 4. Hold the hose and can as high as possible and spray Transmission Cooler Cleaner in a continuous stream into the cooler outlet hose until ATF flows out of the cooler inlet hose for 5 seconds.
- 5. Tie a common white, basket-type coffee filter to the end of the cooler inlet hose.



[7AT: RE7R01A]

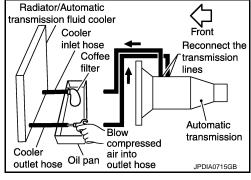


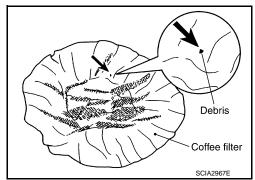


- Wrap a shop rag around the air gun tip and end of cooler outlet hose.
- 8. Blow compressed air regulated to 5 to 9 kg/cm² (71 to 128 psi) through the cooler outlet hose to force any remaining ATF into the coffee filter.
- 9. Remove the coffee filter from the end of the cooler inlet hose.
- 10. Perform "INSPECTION PROCEDURE".

INSPECTION PROCEDURE

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





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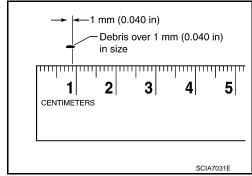
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A/T FLUID COOLER

< PERIODIC MAINTENANCE >

[7AT: RE7R01A]

b. If one or more pieces of debris are found that are over 1 mm (0.040 in) in size and/or peeled clutch facing material is found in the coffee filter, the A/T fluid cooler is not serviceable. The A/T fluid cooler/radiator must be replaced and the inspection procedure is ended. Refer to CO-14, "Exploded View".



Inspection INFOID:0000000005233545

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

STALL TEST

Inspection and Judgment

INFOID:0000000005233546

[7AT: RE7R01A]

INSPECTION

- Inspect the amount of engine oil. Replenish the engine oil if necessary.
- 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.
- Securely engage the parking brake so that the tires do not turn.
- 4. Start the engine, apply foot brake, and place selector lever in "D" position.
- 5. Gradually press down the accelerator pedal while holding down the foot brake.
- 6. Quickly read off the stall speed, and then quickly release the accelerator pedal. **CAUTION:**

Never hold down the accelerator pedal for more than 5 seconds during this test.

Stall speed: Refer to TM-322, "Stall Speed".

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

CAUTION:

Run the engine at idle for at least 1 minute.

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

JUDGMENT OF STALL TEST

<u> </u>	Selector le	ver position	Possible location of malfunction
	"D" and "M"	"R"	- Possible location of manufiction
	Н	0	Low brake 1st one-way clutch 2nd one-way clutch
Stall speed	0	н	Reverse brake 1st one-way clutch 2nd one-way clutch
	L	L	Engine and torque converter one-way clutch
	Н	Н	Line pressure low

O: Stall speed within standard value position

Stall test standard value position

Stall test stalluard value position		
Does not shift-up "D" or "M" position $1 \rightarrow 2$	Slipping in 2GR, 3GR 4GR or 6GR	2346 brake slippage
Does not shift-up "D" or "M" position $2 \rightarrow 3$	Slipping in 3GR, 4GR or 5GR	Direct clutch slippage
Does not shift-up "D" or "M" position $3 \rightarrow 4$	Slipping in 4GR, 5GR, 6GR or 7GR	High and low reverse clutch slippage
Does not shift-up "D" or "M" position $4 \rightarrow 5$	Slipping in 5GR, 6GR or 7GR	Input clutch slippage
Does not shift-up "D" or "M" position $5 \rightarrow 6$	Slipping in 2GR, 3GR, 4GR or 6GR	2346 brake slippage
Does not shift-up "D" or "M" position $6 \rightarrow 7$	Slipping in 7GR	Front brake slippage

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H: Stall speed higher than standard value

L: Stall speed lower than standard value

A/T POSITION

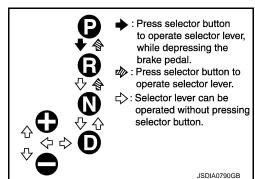
Inspection and Adjustment

INFOID:0000000005233547

[7AT: RE7R01A]

INSPECTION

- 1. Place selector lever in "P" position, and turn ignition switch ON (engine stop).
- 2. Check that selector lever can be shifted to other than "P" position when brake pedal is depressed. Also check that selector lever can be shifted from "P" position only when brake pedal is depressed.
- Shift the selector lever and check for excessive effort, sticking, noise or rattle.
- 4. Confirm that the selector lever stops at each position by feeling the engagement when it is moved through all the positions. Check whether or not the actual position the selector lever matches the position shown by the shift position indicator and the A/T body.
- 5. The method of operating the lever to individual positions correctly is shown in the figure.
- 6. When selector button is pressed in "P", "R", or "N" position without applying forward/backward force to selector lever, check button operation for sticking.
- Confirm that the back-up lamps illuminate only when lever is placed in the "R" position. Confirm that the back-up lamps does not illuminate when selector lever is pushed against "R" position in the "P" or "N" position.
- 8. Confirm that the engine can only be started with the selector lever in the "P" and "N" positions. (With selector lever in the "P" position, engine can be started even when selector lever is moved forward and backward.)



- 9. Make sure that A/T is locked completely in "P" position.
- 10. When selector lever is set to manual shift gate, make sure that manual mode is displayed on combination meter.

In addition, a set shift position must be changed when the selector lever is shifted to the "+" or "-" side in the manual mode. (Only while driving.)

ADJUSTMENT

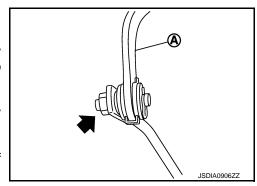
- Loosen nut (←).
- 2. Place manual lever and selector lever in "P" position.
- While pressing lower lever (A) of A/T shift selector assembly toward rear of vehicle (in "P" position direction), tighten nut to specified torque. Refer to <u>TM-307</u>, "Exploded View".

CAUTION:

Be careful not to touch the control rod while pressing lower lever of A/T shift selector assembly.

NOTE:

Press lower lever of A/T shift selector assembly with a force of approximately 1 kg (9.8 N).

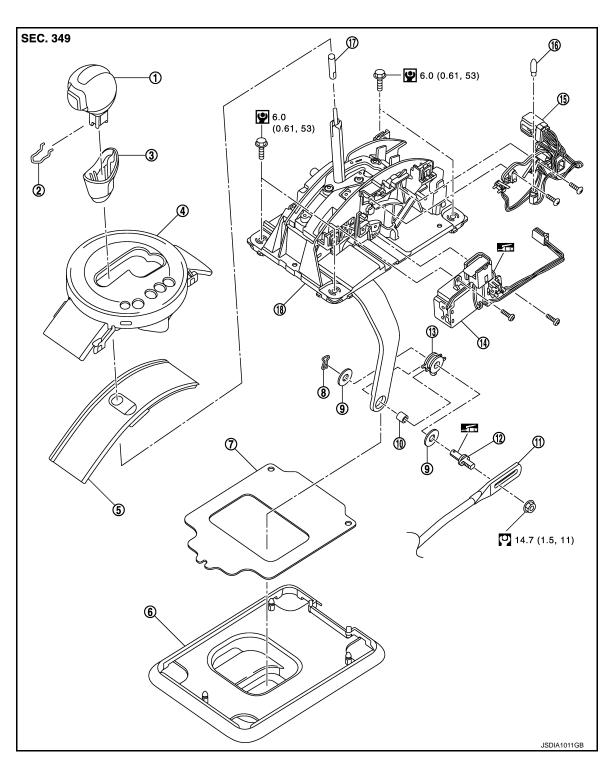


INFOID:0000000005233548

REMOVAL AND INSTALLATION

A/T SHIFT SELECTOR

Exploded View



- 1. Selector lever knob
- 4. Position indicator plate
- 7. Dust cover plate
- 10. Collar
- 13. Insulator

- 2. Lock pin
- Slide cover
- 8. Snap pin
- 11. Control rod
- 14. Shift lock unit

- 3. Knob cover
- Dust cover
- 9. Washer
- 12. Pivot pin
- 15. A/T shift selector harness assembly

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A/T SHIFT SELECTOR

< REMOVAL AND INSTALLATION >

[7AT: RE7R01A]

16. Position lamp

17. Adapter

18. A/T shift selector assembly

: Apply multi-purpose grease.

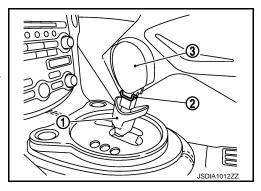
Refer to GI-4, "Components" for symbols not described on the above.

Removal and Installation

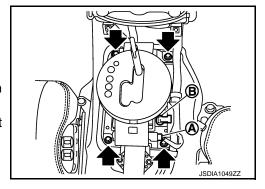
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REMOVAL

- 1. Shift the selector lever to "P" position.
- 2. Remove the control rod from the A/T shift selector assembly.
- 3. Shift the selector lever to "N" position.
- 4. Remove the knob cover (1) below the selector lever downward.
- 5. Pull the lock pin (2) out of the selector lever knob (3).
- Remove the selector lever knob and the knob cover.
- Remove the center console assembly. Refer to <u>IP-23, "Exploded View"</u>.
- 8. Shift the selector lever to "P" position.



- 9. Disconnect the A/T shift selector connector (A).
- 10. Remove mounting bolts (←).
- 11. Remove the main harness clip (B).
- 12. Remove the A/T shift selector assembly from the vehicle.
- 13. Remove the snap pin, washers, insulator, collar and pivot pin from the A/T shift selector assembly.
- 14. Remove the dust cover and dust cover plate from the A/T shift selector assembly.



INSTALLATION

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

CAUTION:

Apply multi-purpose grease on the pin surface (that slides after installing a collar) of the pivot pin.

- Refer to the followings when installing the selector lever knob to the A/T shift selector assembly.
- 1. Install the lock pin to the selector lever knob.
- Install the knob cover to the selector lever knob.
- Insert the shift lever knob into the shift lever until it clicks.

CAUTION:

- Install it straight, and never tap or apply any shock to install it.
- Never press selector button.

Disassembly and Assembly

INFOID:0000000005233550

DISASSEMBLY

- Remove the position lamp.
- 2. Remove the adapter from the A/T shift selector assembly.

A/T SHIFT SELECTOR

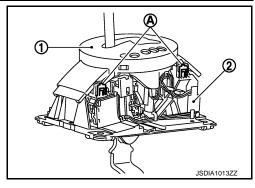
< REMOVAL AND INSTALLATION >

3. Insert a flat-bladed screwdriver into pawls (A: 4 locations), and remove the position indicator plate (1) from the A/T shift selector assembly (2) while lifting it up.

CAUTION:

The pawls crack easily. Be careful when removing.

4. Remove the slide cover from the A/T shift selector assembly.



[7AT: RE7R01A]

Remove the shift lock unit (1) from the A/T shift selector assembly.

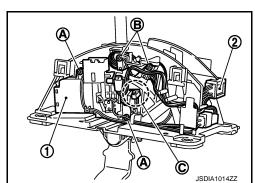
A : Screw

Remove the A/T shift selector harness assembly (2) from the A/ T shift selector assembly.

B : Screw

CAUTION:

Be careful not to break the pawl when remove the mode select switch (C) from the A/T shift selector assembly.



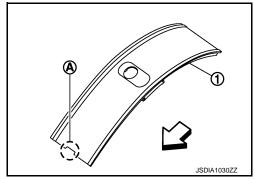
ASSEMBLY

Note the following, and assembly in the reverse order of disassembly. **CAUTION:**

Apply multi-purpose grease on the surface that the shift lock unit plate slides vertically.

• Face the concave (A) of the slide cover (1) forward of the A/T shift selector assembly to install.

: Front side



Inspection and Adjustment

INSPECTION AFTER INSTALLATION

Check A/T position. Refer to TM-306, "Inspection and Adjustment".

ADJUSTMENT AFTER INSTALLATION

Adjust A/T position. Refer to TM-306, "Inspection and Adjustment".

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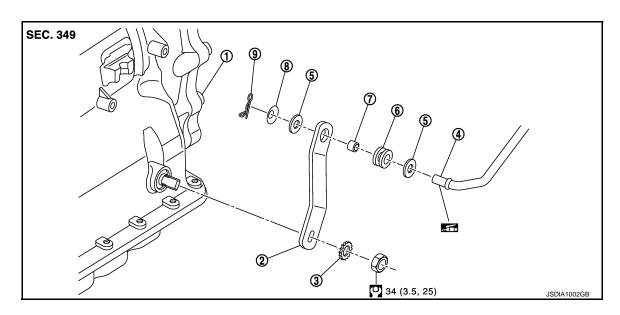
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CONTROL ROD

Exploded View



- 1. A/T assembly
- Control rod
- 7. Collar

- 2. Manual lever
- 5. Washer
- 8. Conical washer

- 3. Lock washer
- 6. Insulator
- Snap pin

: Apply multi-purpose grease.

Refer to GI-4, "Components" for symbols not described on the above.

Removal and Installation

INFOID:0000000005233553

REMOVAL

- 1. Shift the selector lever to "P" position.
- 2. Remove the control rod from the A/T shift selector assembly. Refer to TM-307, "Exploded View".
- 3. Remove the manual lever from the A/T assembly.
- 4. Remove the control rod from the manual lever.
- 5. Remove the insulator and collar from manual lever.

INSTALLATION

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

CAUTION:

Apply multi-purpose grease on the pin surface (that slides after installing collar) of the tip of the control rod.

Inspection and Adjustment

INFOID:0000000005233554

INSPECTION AFTER INSTALLATION

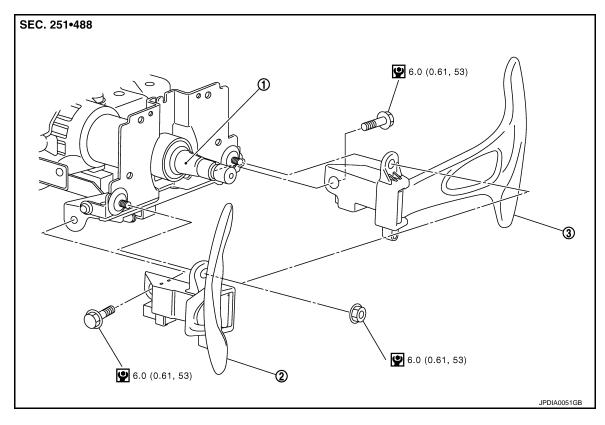
Check A/T position. Refer to TM-306, "Inspection and Adjustment".

ADJUSTMENT AFTER INSTALLATION

Adjust A/T position. Refer to TM-306, "Inspection and Adjustment".

PADDLE SHIFTER

Exploded View INFOID:0000000005233555



- Steering column assembly Refer to GI-4, "Components" for symbols in the figure.
- Paddle shifter (shift-down)
- Paddle shifter (shift-up)

Removal and Installation

REMOVAL

- Remove the steering column cover. Refer to IP-12, "Exploded View".
- Disconnect the paddle shifter connectors from each paddle shifter.
- Remove paddle shifter mounting bolts and nuts. 3.
- Remove each paddle shifter from the steering column assembly.

INSTALLATION

Install in the reverse order of removal.

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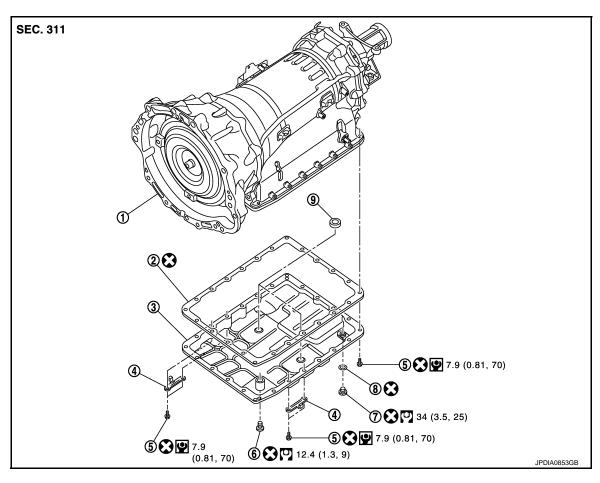
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OIL PAN

Exploded View



- 1. A/T
- 4. Clip
- 7. Drain plug

- 2. Oil pan gasket
- 5. Oil pan mounting bolt
- Drain plug gasket
- 3. Oil pan
- 6. Overflow plug
- 9. Magnet

Refer to GI-4, "Components" for symbols in the figure.

Removal and Installation

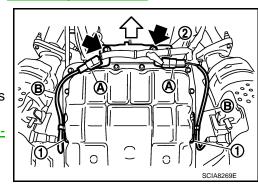
REMOVAL

- 1. Drain ATF through the drain plug.
- Remove the exhaust mounting bracket with power tool. Refer to <u>EX-5, "Exploded View"</u>.
- 3. Disconnect the heated oxygen sensor 2 connectors (A).

: Vehicle front

: Bolt

- 4. Remove the heated oxygen sensor 2 harness (B) from the clips (1).
- 5. Remove the bracket (2) from the A/T assembly. Refer to TM-318, "Exploded View".



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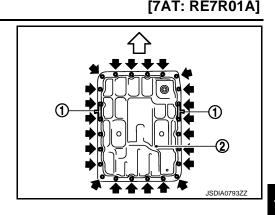
< REMOVAL AND INSTALLATION >

Remove the clips (1).

: Vehicle front

: Oil pan mounting bolt

- 7. Remove the oil pan (2) and oil pan gasket.
- 8. Remove the magnets from the oil pan.

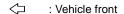


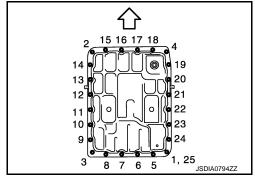
INSTALLATION

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

CAUTION:

- Clean foreign materials (gear wear particles) that adhere on the inside of the oil pan and on the magnet, and then assembly.
- Completely remove all moisture, oil and old gasket, etc. from oil pan gasket mounting surface of transmission case and oil pan.
- Never reuse oil pan gasket and oil pan mounting bolts.
- Install oil pan gasket in the direction to align hole position.
- Never reuse drain plug and drain plug gasket. In addition, install new drain plug and drain plug gasket after adjustment of A/T fluid filling.
- Tighten the oil pan mounting bolts to the specified torque in the numerical order as shown in the figure after temporarily tightening them.



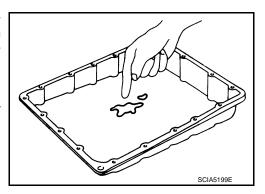


Inspection and Adjustment

INSPECTION AFTER REMOVAL

Check foreign materials in oil pan to help determine causes of malfunction. If the ATF is very dark, smells burned, or contains foreign particles, the frictional material (clutches, band) may need replacement. A tacky film that will not wipe clean indicates varnish build up. Varnish can cause valves, servo, and clutches to stick and can inhibit pump pressure.

 If frictional material is detected, perform A/T fluid cooler cleaning. Refer to <u>TM-302</u>, "<u>Cleaning</u>".



INSPECTION AFTER INSTALLATION

Check A/T fluid leakage.

ADJUSTMENT AFTER INSTALLATION

Adjust A/T fluid level. Refer to TM-300, "Adjustment".

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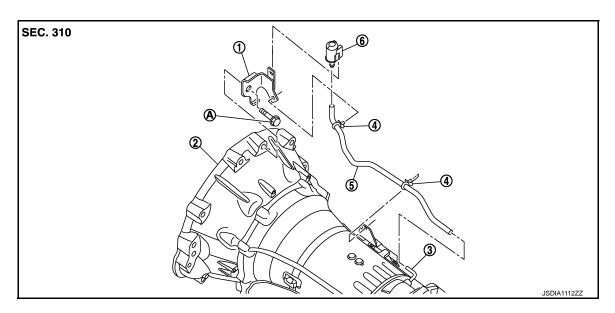
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AIR BREATHER HOSE

Exploded View



1. Bracket

2. A/T assembly

3. Air breather tube

1. Clip

- Air breather hose
- 6. Air breather box
- A. Tightening must be done following the installation procedure. Refer to TM-318, "Removal and Installation".

Removal and Installation

INFOID:0000000005233561

[7AT: RE7R01A]

REMOVAL

- Remove the three way catalyst (bank 1). Refer to <u>EX-5</u>, "Exploded View".
- 2. Remove the clips of air breather hose from the brackets.
- Remove the air breather box from the bracket.
- 4. Remove the air breather box from the air breather hose.
- 5. Remove the air breather hose from the A/T assembly.
- Separate the propeller shaft assembly. Refer to <u>DLN-7</u>, "Exploded View".
- 7. Remove the control rod from the A/T shift selector assembly. Refer to TM-307, "Exploded View".
- 8. Support the A/T assembly with a transmission jack.

CAUTION:

Be careful not to allow it to collide against the drain plug and overflow plug when setting the transmission jack.

- 9. Remove the rear engine mounting member with power tool. Refer to EM-72, "Exploded View".
- 10. Remove the bolt fixing the A/T assembly to the engine with a power tool.
- 11. Remove the bracket.

INSTALLATION

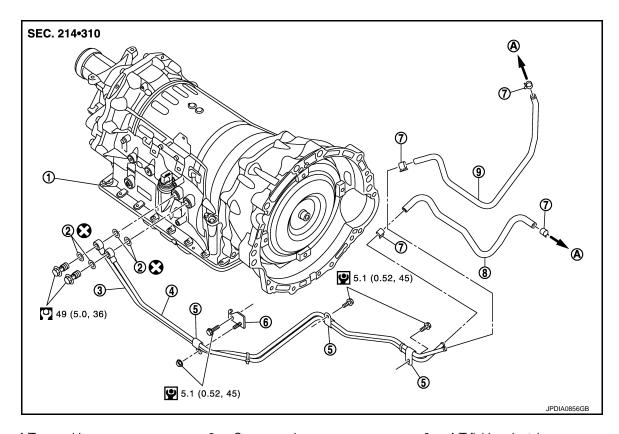
Note the following, and install in the reverse order of removal.

CAUTION:

- Be careful not to be crushed or blocked by folding or bending the hose when installing the air breather hose.
- Be sure to insert it fully until its end reaches the radius curve end when inserting the air breather hose to the air breather tube.
- Be sure to insert it fully until its end reaches the stop when inserting the air breather hose to the air breather box.
- Install the air breather hose to the air breather box so that the paint mark is facing backward.
- Ensure the clips are securely installed to the brackets when installing the air breather hose to the brackets.

FLUID COOLER SYSTEM

Exploded View INFOID:0000000005233562



- 1. A/T assembly
- A/T fluid cooler tube
- Hose clamp 7.
- To radiator Α.

- Copper washer 2.
- 5. Clip
- A/T fluid cooler hose B
- A/T fluid cooler tube 3.
- 6. **Bracket**
- A/T fluid cooler hose A

Refer to GI-4, "Components" for symbols in the figure.

Removal and Installation

REMOVAL

- Remove the air cleaner case (LH). Refer to EM-31, "Exploded View".
- Remove the engine cover (front). Refer to EM-29, "Exploded View". 2.
- Remove the floor under cover with a power tool. Refer to EXT-29, "ENGINE UNDER COVER: Exploded View".
- 4. Remove the A/T fluid cooler hose A and A/T fluid cooler hose B.
- 5. Remove the exhaust mounting bracket with power tool. Refer to EX-5. "Exploded View".
- 6. Remove the A/T fluid cooler tube mounting bolts and bracket.
- 7. Remove the band fixing two A/T fluid cooler tubes.
- 8. Remove the stabilizer clamp from the front suspension member. Refer to FSU-20. "Exploded View".
- Remove the lower mounting nuts for the engine mounting insulators (RH and LH). Refer to EM-72. <u>"Exploded View"</u>.
- 10. Set a jack under the engine to lift it to the position where the A/T fluid cooler tube can be removed. CAUTION:
 - Never set a jack on the engine oil pan.
 - Never pull the harnesses, hoses, etc. excessively.
- 11. Remove the A/T fluid cooler tubes one at a time from the vehicle.

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FLUID COOLER SYSTEM

CAUTION:

Be careful not to bend A/T fluid cooler tubes.

12. Plug up opening such as the A/T fluid cooler tube holes.

INSTALLATION

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

CAUTION:

Never reuse copper washers.

• Refer to the following when installing the A/T fluid cooler hoses.

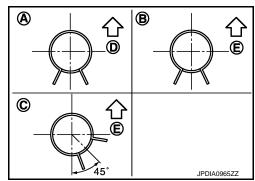
Hose name	Hose end	Paint mark	Position of hose clamp*
A/T fluid cooler hose A	Radiator assembly side	Facing backward	A
A/ I IIulu coolei IIose A	A/T fluid cooler tube side	Facing downward	В
A/T fluid cooler hose B	Radiator assembly side	Facing downward	С
A/ I IIuiu coolei IIose b	A/T fluid cooler tube side	Facing downward	В

^{*:} Refer to the illustrations for the specific position each hose clamp tab.

- The illustrations indicate the view from the hose ends.

⟨¬□ D : Vehicle front
⟨¬□ E : Vehicle upper

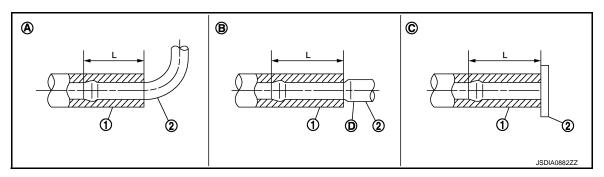
- When installing the hose clamps center line of each hose clamp tab should be positioned as shown in the figure.



[7AT: RE7R01A]

- Insert the A/T fluid cooler hoses according to dimension "L" described below.

(1)	(2)	Tube type	Dimension "L"
	Radiator assembly side	А	End reaches the radius curve end.
A/T fluid cooler hose A	A/T fluid cooler tube side	В	30 mm (1.18 in) [End reaches the 2-stage bulge (D).]
	Radiator assembly side	С	Insert the hose until the hose touches the radiator.
A/T fluid cooler hose B	A/T fluid cooler tube side	В	30 mm (1.18 in) [End reaches the 2-stage bulge (D).]



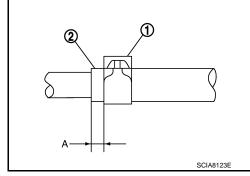
FLUID COOLER SYSTEM

< REMOVAL AND INSTALLATION >

- Set the hose clamps (1) at the both ends of A/T fluid cooler hoses (2) with dimension "A" from the hose edge.

Dimension "A" : 5 - 9 mm (0.20 - 0.35 in)

- The hose clamp should not interfere with the bulge of fluid cooler tube.



INFOID:0000000005233564

[7AT: RE7R01A]

Inspection and Adjustment

INSPECTION AFTER INSTALLATION Check A/T fluid leakage.

ADJUSTMENT AFTER INSTALLATION

Adjust A/T fluid level. Refer to TM-300, "Adjustment".

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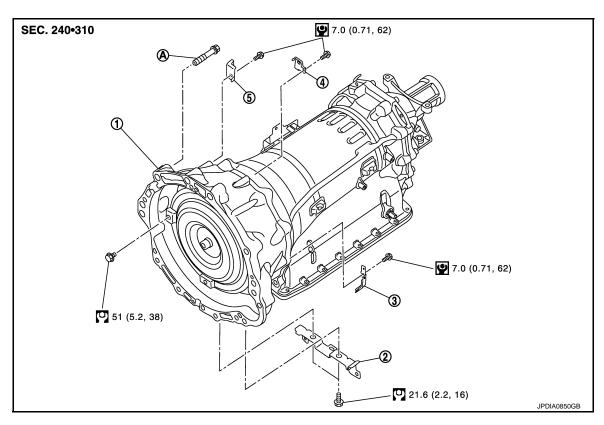
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UNIT REMOVAL AND INSTALLATION

TRANSMISSION ASSEMBLY

Exploded View



1. A/T assembly

2. Bracket

3. Bracket

Bracket

- Bracket
- A. Tightening must be done following the installation procedure. Refer to TM-318, "Removal and Installation". Refer to GI-4, "Components" for symbols in the figure.

Removal and Installation

INFOID:0000000005233566

[7AT: RE7R01A]

REMOVAL

CAUTION:

- When removing the A/T assembly from engine, first remove the crankshaft position sensor (POS) from the A/T assembly.
- Be careful not to damage sensor edge.
- 1. Shift the selector lever to "P" position, and then release the parking brake.
- 2. Disconnect the battery cable from the negative terminal.
- 3. Remove the control rod from the A/T shift selector assembly. Refer to TM-307, "Exploded View".
- 4. Remove the engine cover (front and rear). Refer to EM-29, "Exploded View".
- 5. Separate the propeller shaft assembly. Refer to DLN-7, "Exploded View".
- Remove the manual lever from the A/T assembly. Refer to <u>TM-310, "Exploded View"</u>.
- 7. Remove the floor under cover with a power tool. Refer to <u>EXT-29</u>, "<u>ENGINE UNDER COVER</u>: <u>Exploded View</u>".
- 8. Remove the suspension member stay. Refer to FSU-20, "Exploded View".
- 9. Remove the exhaust mounting bracket with power tool. Refer to EX-5. "Exploded View".
- Remove the crankshaft position sensor (POS) from the A/T assembly. Refer to <u>EM-116, "Exploded View"</u>.

TRANSMISSION ASSEMBLY

< UNIT REMOVAL AND INSTALLATION >

- Never subject it to impact by dropping or hitting it.
- · Never disassemble.
- Never allow metal filings, etc. to get on the sensor's front edge magnetic area.
- Never place in an area affected by magnetism.
- 11. Remove the starter motor. Refer to STR-20, "Exploded View".
- 12. Remove the rear plate cover. Refer to EM-48, "Exploded View".
- 13. Turn the crankshaft, and remove the tightening bolts for drive plate and torque converter. **CAUTION:**

When turning the crankshaft, turn it clockwise as viewed from the front of the engine.

- 14. Remove the A/T fluid cooler tubes from the A/T assembly. Refer to TM-315, "Exploded View".
- 15. Plug up openings such as the A/T fluid cooler tube holes.
- 16. Support the A/T assembly with a transmission jack.

CAUTION:

Be careful not to allow it to collide against the drain plug and overflow plug when setting the transmission jack.

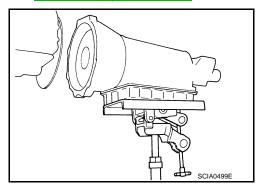
NOTE:

Be placing wooden block between oil pan (upper) and front suspension member, the removal of A/T assembly from engine becomes easier.

- 17. Remove the rear engine mounting member and engine mounting insulator (rear) with a power tool. Refer to EM-72, "Exploded View".
- 18. Disconnect the A/T assembly connector.
- 19. Remove the harness and brackets.
- 20. Remove the bolts fixing A/T assembly to the engine with a power tool.
- 21. Remove the air breather hose, air breather box and bracket. Refer to TM-314, "Exploded View".
- 22. Remove the A/T assembly from the engine.

CAUTION:

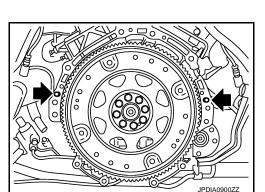
- Secure torque converter to prevent it from dropping.
- Secure A/T assembly to a transmission jack.



INSTALLATION

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

Check fitting of the dowel pins (—).



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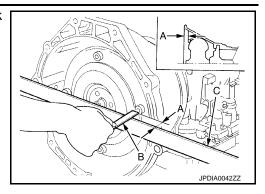
TRANSMISSION ASSEMBLY

< UNIT REMOVAL AND INSTALLATION >

• When installing the A/T assembly to the engine, be sure to check dimension "A" to ensure it is within the reference value limit.

B : ScaleC : Straightedge

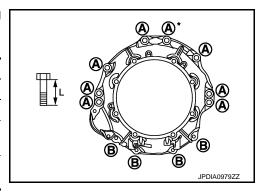
Dimension "A" : Refer to TM-322, "Torque Converter".



[7AT: RE7R01A]

• When installing the A/T assembly to the engine, attach the fixing bolts in accordance with the following standard.

Bolt symbol	А	В
Insertion direction	A/T assembly to engine	Engine to A/T assembly
Number of bolts	8	4
Bolt length (L) mm (in)	65 (2.56)	35 (1.38)
Tightening torque N·m (kg-m, ft-lb)	75 (7.7, 55)	46.6 (4.8, 34)



- Align the positions of tightening bolts for drive plate with those of the torque converter, and temporarily tighten the bolts. Then, tighten the bolts with the specified torque.
 CAUTION:
 - When turning crankshaft, turn it clockwise as viewed from the front of the engine.
 - When tightening the tightening bolts for the torque converter after fixing the crankshaft pulley bolts, be sure to confirm the tightening torque of the crankshaft pulley mounting bolts. Refer to EM-54, "Exploded View".
 - Rotate crankshaft several turns and check to be sure that A/T rotates freely without binding after converter is installed to drive plate.

Inspection and Adjustment

INFOID:0000000005233567

INSPECTION AFTER INSTALLATION

- · Check A/T fluid leakage.
- Check A/T position. Refer to TM-306, "Inspection and Adjustment".

ADJUSTMENT AFTER INSTALLATION

- Adjust A/T fluid level. Refer to <u>TM-300</u>, "Adjustment".
- Adjust A/T position. Refer to TM-306, "Inspection and Adjustment"

^{*:} Tightening the bolt with bracket.

SERVICE DATA AND SPECIFICATIONS (SDS)

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SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

General Specification

Transmission model code numbe	r	1XJ9E
Stall torque ratio		1.92 : 1
	1st	4.924
	2nd	3.194
	3rd	2.043
Transmission as as satis	4th	1.412
Transmission gear ratio	5th	1.000
	6th	0.862
	7th	0.772
	Reverse	3.972
Recommended fluid		Genuine NISSAN Matic S ATF*1
Fluid capacity		9.2 liter (9-3/4 US qt, 8-1/8 lmp qt)*2

CAUTION:

- Use only Genuine NISSAN Matic S ATF. Never mix with other ATF.
- Using ATF other than Genuine NISSAN Matic S ATF will cause deterioration driveability and A/T durability, and may damage the A/T, which is not covered by the NISSAN new vehicle limited warranty.
- *1: Refer to MA-14, "FOR NORTH AMERICA: Fluids and Lubricants" (For North America), MA-15, "FOR MEXICO: Fluids and Lubricants" (For Mexico).
- *2: The fluid capacity is the reference value.

Vehicle Speed at Which Gear Shifting Occurs

INFOID:0000000005233569
Unit: km/h (MPH)

Gear position	Throttle position	
	Full throttle	Half throttle
$D1 \rightarrow D2$	50 - 54 (32 - 33)	38 – 42 (24 – 26)
$D2 \rightarrow D3$	79 – 87 (50 – 54)	65 – 73 (41 – 45)
$D3 \rightarrow D4$	124 – 134 (78 – 83)	94 – 104 (59 – 64)
$D4 \rightarrow D5$	181 – 191 (113 – 118)	139 – 149 (87 – 92)
$D5 \rightarrow D6$	250 – 260 (156 – 161)	182 – 192 (114 – 119)
$D6 \rightarrow D7$	250 – 260 (156 – 161)	214 – 224 (133 – 139)
$D7 \rightarrow D6$	240 – 250 (150 – 155)	169 – 179 (105 – 111)
$D6 \rightarrow D5$	240 – 250 (150 – 155)	139 – 149 (87 – 92)
$D5 \rightarrow D4$	171 – 181 (107 – 112)	69 – 79 (43 – 49)
$D4 \rightarrow D3$	109 – 119 (68 – 73)	37 – 47 (23 – 29)
$D3 \rightarrow D2$	52 - 60 (33 - 37)	10 – 18 (7 – 11)
$D2 \rightarrow D1$	8 – 12 (5 – 7)	5 – 9 (4 – 5)

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

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[7AT: RE7R01A]

Vehicle Speed at Which Lock-up Occurs/Releases

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Unit: km/h (MPH)

Throttle position	Vehicle speed	
	Lock-up ON	Lock-up OFF
Closed throttle	36 – 44 (23 – 27)	33 – 41 (21 – 25)
Half throttle	64 – 72 (40 – 44)	61 – 69 (38 – 42)

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

Stall Speed INFOID:0000000005233571

Stall speed	2,475 – 2,775 rpm
Torque Converter	INFOID:000000005233572
Dimension between end of converter housing and torque converte	r 25.0 mm (0.98 in)