SECTION TRANSAXLE & TRANSMISSION

CONTENTS

6MT: FS6R31A

PRECAUTION7
PRECAUTIONS7
FOR USA AND CANADA 7 FOR USA AND CANADA : Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER" "SEAT BELT PRE-TENSIONER" 7 FOR USA AND CANADA : Precaution for Battery 7 Service 7 FOR USA AND CANADA : Precaution for Procedure without Cowl Top Cover 7 FOR USA AND CANADA : Service Notice or Precautions for Manual Transmission 8 FOR USA AND CANADA : Precautions for Removing Battery Terminal 8
FOR MEXICO 8 FOR MEXICO : Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER" 8 FOR MEXICO : Precaution for Battery Service 9 FOR MEXICO : Precaution for Procedure without 0 Cowl Top Cover 9 FOR MEXICO : Service Notice or Precautions for Manual Transmission 9 FOR MEXICO : Precautions for Removing Battery Terminal 9
PREPARATION11
PREPARATION11 Special Service Tools11 Commercial Service Tools13
SYSTEM DESCRIPTION15
COMPONENT PARTS15 Component Parts Location

STRUCTURE AND OPERATION	F
DTC/CIRCUIT DIAGNOSIS19	G
BACK-UP LAMP SWITCH19 Component Inspection19	Н
PARK/NEUTRAL POSITION SWITCH	I
SYMPTOM DIAGNOSIS21	
NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING21 NVH Troubleshooting Chart	J
PERIODIC MAINTENANCE22	K
GEAR OIL22Inspection22Draining22Refilling22	L
REMOVAL AND INSTALLATION23	M
REAR OIL SEAL 23 Removal and Installation 23 Inspection 23	Ν
SHIFT CONTROL24Exploded View24Removal and Installation24Inspection29	0
AIR BREATHER HOSE	Ρ
BACK-UP LAMP SWITCH	

А

В

С

ТΜ

Е

PARK/NEUTRAL POSITION SWITCH
INPUT SPEED SENSOR
UNIT REMOVAL AND INSTALLATION 40
TRANSMISSION ASSEMBLY 40
WITHOUT S-MODE40WITHOUT S-MODE : Exploded View40WITHOUT S-MODE : Removal and Installation40WITHOUT S-MODE : Inspection43
WITH S-MODE43WITH S-MODE : Exploded View43WITH S-MODE : Removal and Installation43WITH S-MODE : Inspection and Adjustment46
FRONT OIL SEAL47Removal and Installation47Inspection48
GEAR LEVER POSITION SENSOR49Exploded View49Removal and Installation49Inspection and Adjustment50
UNIT DISASSEMBLY AND ASSEMBLY 51
TRANSMISSION ASSEMBLY51
WITHOUT S-MODE51WITHOUT S-MODE : Exploded View51WITHOUT S-MODE : Disassembly57WITHOUT S-MODE : Assembly65WITHOUT S-MODE : Inspection82
WITH S-MODE83WITH S-MODE : Exploded View83WITH S-MODE : Disassembly90WITH S-MODE : Assembly98WITH S-MODE : Inspection and Adjustment116
MAIN DRIVE GEAR119Exploded View119Disassembly120Assembly120Inspection121
MAINSHAFT AND GEAR123Exploded View123Disassembly124Assembly125Inspection131
COUNTER SHAFT AND GEAR

Assembly
REVERSE IDLER SHAFT AND GEAR142Exploded View
Inspection
SHIFT FORK AND FORK ROD
SERVICE DATA AND SPECIFICATIONS (SDS)
SERVICE DATA AND SPECIFICATIONS
(SDS)149
General Specification149
End Play 150
Baulk Ring Clearance 150
Shift Fork 150
7AT: RE7R01A
BASIC INSPECTION151
DIAGNOSIS AND REPAIR WORK FLOW151
Work Flow 151
Diagnostic Work Sheet 152
SYSTEM DESCRIPTION154
A/T CONTROL SYSTEM154
System Diagram
System Description
Component Parts Location
Component Description
LINE PRESSURE CONTROL
System Diagram
System Description
Component Description
SHIFT CHANGE CONTROL161
System Diagram 161
System Description
Component Parts Location
Component Description165
SHIFT PATTERN CONTROL166
SHIFT PATTERN
SHIFT PATTERN : System Diagram 166
SHIFT PATTERN : System Description 166
SHIFT PATTERN : Component Parts Location 167
SHIFT PATTERN : Component Parts Location 168
SHIFT PATTERN : Component Description 169

MANUAL MODE MANUAL MODE : System Diagram	
MANUAL MODE : System Description MANUAL MODE : Component Parts Location MANUAL MODE : Component Description	170 170 171
LOCK-UP CONTROL System Diagram System Description Component Parts Location Component Description	 173 173 173 175
SHIFT MECHANISM Cross-Sectional View System Diagram System Description Component Parts Location Component Description	177 178 178 201
SHIFT LOCK SYSTEM System Description Component Parts Location Component Description	202 203
ON BOARD DIAGNOSTIC (OBD) SYSTEM . Diagnosis Description	
DIAGNOSIS SYSTEM (TCM) CONSULT Function	 206 206
DTC/CIRCUIT DIAGNOSIS	. 213
U0100 LOST COMMUNICATION (ECM A) DTC Logic Diagnosis Procedure	213
U0300 CAN COMMUNICATION DATA Description DTC Logic Diagnosis Procedure	214 214
	045
U1000 CAN COMM CIRCUIT Description DTC Logic Diagnosis Procedure	215 215
Description DTC Logic	215 215 215 216 216 216
Description DTC Logic Diagnosis Procedure P0615 STARTER RELAY Description DTC Logic	215 215 215 216 216 216 216 218 218 218

P0717 INPUT SPEED SENSOR A223Description223DTC Logic223Diagnosis Procedure223	A
P0720 OUTPUT SPEED SENSOR 225 Description 225 DTC Logic 225	В
Diagnosis Procedure	С
DTC Logic	TM
Description	F
P0730 INCORRECT GEAR RATIO 231 Description 231 DTC Logic 231	G
Diagnosis Procedure	Н
DTC Logic	I
Description	J
P0733 3GR INCORRECT RATIO	K
P0734 4GR INCORRECT RATIO 239 Description 239 DTC Logic 239	L
Diagnosis Procedure 240 P0735 5GR INCORRECT RATIO 241 Description 241 DTC Logic 241 Diagnosis Procedure 242	Ν
P0740 TORQUE CONVERTER243Description243DTC Logic243Diagnosis Procedure243	O P
P0744 TORQUE CONVERTER245Description245DTC Logic245Diagnosis Procedure245	
P0745 PRESSURE CONTROL SOLENOID A. 247 Description	

Revision: 2015 June

DTC Logic2 Diagnosis Procedure	
P0750 SHIFT SOLENOID A	010
Description	
DTC Logic	
Diagnosis Procedure	
P0775 PRESSURE CONTROL SOLENOID B. 2	249
Description	
DTC Logic	
Diagnosis Procedure	249
P0780 SHIFT	250
Description	250
DTC Logic	250
Diagnosis Procedure	250
P0795 PRESSURE CONTROL SOLENOID C. 2	252
Description	252
DTC Logic	
Diagnosis Procedure	252
P1705 TP SENSOR	253
Description	253
DTC Logic	253
Diagnosis Procedure	253
P1721 VEHICLE SPEED SIGNAL	255
Description	
DTC Logic	
Diagnosis Procedure	256
P1730 INTERLOCK	257
Description	
DTC Logic	
Judgment of A/T Interlock	
Diagnosis Procedure	258
P1734 7GR INCORRECT RATIO	259
Description	
DTC Logic	
Diagnosis Procedure	260
P1815 M-MODE SWITCH	261
Description	261
DTC Logic	
Diagnosis Procedure	
Component Inspection (Manual Mode Switch)2	
Component Inspection [Paddle Shifter (Shift-up)]2	265
Component Inspection [Paddle Shifter (Shift- down)]	265
P2713 PRESSURE CONTROL SOLENOID D. 2	267
Description	
DTC Logic	
Diagnosis Procedure	
P2722 PRESSURE CONTROL SOLENOID E. 2	268
Description	

DTC Logic268

Diagnosis Procedure26	8
P2731 PRESSURE CONTROL SOLENOID F26 Description	9
Diagnosis Procedure	
P2807 PRESSURE CONTROL SOLENOID G.27 Description	0
Diagnosis Procedure	
MAIN POWER SUPPLY AND GROUND CIR-	
CUIT27	'1
Description27	'1
Diagnosis Procedure27	
SHIFT POSITION INDICATOR CIRCUIT27	
Description27	
Component Function Check27	
Diagnosis Procedure27	
SHIFT LOCK SYSTEM27	′5
Description27	
Wiring Diagram - A/T SHIFT LOCK SYSTEM 27	
Component Function Check 27	7
Diagnosis Procedure 27	
Component Inspection (Shift Lock Unit)	0
Component Inspection (Stop Lamp Switch) 28	80
ECU DIAGNOSIS INFORMATION28	2
ECU DIAGNOSIS INFORMATION	
TCM	2
TCM	2
TCM	2 2 88
TCM28Reference Value28Wiring Diagram - A/T CONTROL SYSTEM	2 2 8 8 2
TCM28Reference Value28Wiring Diagram - A/T CONTROL SYSTEM -28Fail-Safe29Protection Control29	2 8 8 9 2 9 5
TCM28Reference Value28Wiring Diagram - A/T CONTROL SYSTEM	2 88 92 95 96
TCM28Reference Value28Wiring Diagram - A/T CONTROL SYSTEM -28Fail-Safe29Protection Control29DTC Inspection Priority Chart29	2 32 38 32 35 36 37
TCM28Reference Value28Wiring Diagram - A/T CONTROL SYSTEM -28Fail-Safe29Protection Control29DTC Inspection Priority Chart29DTC Index29SYMPTOM DIAGNOSIS29	2 32 38 32 35 36 37 99
TCM28Reference Value28Wiring Diagram - A/T CONTROL SYSTEM -28Fail-Safe29Protection Control29DTC Inspection Priority Chart29DTC Index29SYMPTOM DIAGNOSIS29SYSTEM SYMPTOM29	2 32 38 32 35 36 37 9 99
TCM28Reference Value28Wiring Diagram - A/T CONTROL SYSTEM -28Fail-Safe29Protection Control29DTC Inspection Priority Chart29DTC Index29SYMPTOM DIAGNOSIS29SYSTEM SYMPTOM29Symptom Table29	32 38 39 39 30 30 30 30 30 30 30 30 30 30 30 30 30
TCM28Reference Value28Wiring Diagram - A/T CONTROL SYSTEM -28Fail-Safe29Protection Control29DTC Inspection Priority Chart29DTC Index29SYMPTOM DIAGNOSIS29SYSTEM SYMPTOM29	32 38 39 39 30 30 30 30 30 30 30 30 30 30 30 30 30
TCM28Reference Value28Wiring Diagram - A/T CONTROL SYSTEM -28Fail-Safe29Protection Control29DTC Inspection Priority Chart29DTC Index29SYMPTOM DIAGNOSIS29SYSTEM SYMPTOM29Symptom Table29	32 32 38 32 35 36 37 99 99 99 99 99
TCM28Reference Value28Wiring Diagram - A/T CONTROL SYSTEM -28Fail-Safe29Protection Control29DTC Inspection Priority Chart29DTC Index29SYMPTOM DIAGNOSIS29SYSTEM SYMPTOM29Symptom Table29PRECAUTION30PRECAUTIONS30FOR USA AND CANADA30	238 3238 325 36 37 99 99 99 99
TCM28Reference Value28Wiring Diagram - A/T CONTROL SYSTEM -28Fail-Safe29Protection Control29DTC Inspection Priority Chart29DTC Index29SYMPTOM DIAGNOSIS29SYSTEM SYMPTOM29Symptom Table29PRECAUTION30PRECAUTIONS30FOR USA AND CANADA30FOR USA AND CANADA : Precaution for Supple-	238 3238 325 36 37 99 99 99 99
TCM28Reference Value28Wiring Diagram - A/T CONTROL SYSTEM -28Fail-Safe29Protection Control29DTC Inspection Priority Chart29DTC Index29SYMPTOM DIAGNOSIS29SYSTEM SYMPTOM29Symptom Table29PRECAUTION30PRECAUTIONS30FOR USA AND CANADA30FOR USA AND CANADA : Precaution for Supplemental Restraint System (SRS) "AIR BAG" and	2 32 38 32 38 32 39 39 39 39 39 39 39 39 39 39
TCM28Reference Value28Wiring Diagram - A/T CONTROL SYSTEM -28Fail-Safe29Protection Control29DTC Inspection Priority Chart29DTC Index29SYMPTOM DIAGNOSIS29SYSTEM SYMPTOM29Symptom Table29PRECAUTION30PRECAUTION30FOR USA AND CANADA30FOR USA AND CANADA30FOR USA AND CANADA30FOR USA AND CANADA30SEAT BELT PRE-TENSIONER"30	2 32 38 32 38 32 39 39 39 39 39 39 39 39 39 39
TCM28Reference Value28Wiring Diagram - A/T CONTROL SYSTEM -28Fail-Safe29Protection Control29DTC Inspection Priority Chart29DTC Index29SYMPTOM DIAGNOSIS29SYSTEM SYMPTOM29Symptom Table29PRECAUTION30PRECAUTIONS30FOR USA AND CANADA30FOR USA AND CANADA : Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"30FOR USA AND CANADA : Precaution for Battery30	2 3 3 3 3 3 3 5 6 7 9 9 9 9 9 9 9 9
TCM28Reference Value28Wiring Diagram - A/T CONTROL SYSTEM -28Fail-Safe29Protection Control29DTC Inspection Priority Chart29DTC Index29SYMPTOM DIAGNOSIS29SYSTEM SYMPTOM29Symptom Table29PRECAUTION30PRECAUTIONS30FOR USA AND CANADA30FOR USA AND CANADA : Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"30FOR USA AND CANADA : Precaution for Battery Service30	32 32 38 32 35 36 37 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 1 1 1 1 1 1 1
TCM28Reference Value28Wiring Diagram - A/T CONTROL SYSTEM -28Fail-Safe29Protection Control29DTC Inspection Priority Chart29DTC Index29SYMPTOM DIAGNOSIS29SYSTEM SYMPTOM29Symptom Table29PRECAUTION30PRECAUTION30FOR USA AND CANADA30FOR USA AND CANADA : Precaution for Supplemental Restraint System (SRS) "AIR BAG" and"SEAT BELT PRE-TENSIONER"30FOR USA AND CANADA : Precaution for Battery30FOR USA AND CANADA : On Board Diagnostic30	32 32 38 32 36 30 30 30 30 30 30 30 30 30 30
TCM28Reference Value28Wiring Diagram - A/T CONTROL SYSTEM -28Fail-Safe29Protection Control29DTC Inspection Priority Chart29DTC Index29SYMPTOM DIAGNOSIS29SYSTEM SYMPTOM29Symptom Table29PRECAUTION30PRECAUTION30FOR USA AND CANADA30FOR USA AND CANADA : Precaution for Supplemental Restraint System (SRS) "AIR BAG" and"SEAT BELT PRE-TENSIONER"30FOR USA AND CANADA : Precaution for Battery30FOR USA AND CANADA : On Board Diagnostic30FOR USA AND CANADA : On Board Diagnostic30	;2 32 38 32 50 67 99 99 99 99 99 99 99 99 99 99 99 99 99
TCM28Reference Value28Wiring Diagram - A/T CONTROL SYSTEM -28Fail-Safe29Protection Control29DTC Inspection Priority Chart29DTC Index29SYMPTOM DIAGNOSIS29SYSTEM SYMPTOM29Symptom Table29PRECAUTION30PRECAUTION30FOR USA AND CANADA30FOR USA AND CANADA : Precaution for Supplemental Restraint System (SRS) "AIR BAG" and"SEAT BELT PRE-TENSIONER"30FOR USA AND CANADA : Precaution for Battery30FOR USA AND CANADA : On Board Diagnostic30FOR USA AND CANADA : On Board Diagnostic30FOR USA AND CANADA : On Board Diagnostic30FOR USA AND CANADA : General Precautions . 31	32 32 38 32 35 36 37 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 19
TCM28Reference Value28Wiring Diagram - A/T CONTROL SYSTEM -28Fail-Safe29Protection Control29DTC Inspection Priority Chart29DTC Index29SYMPTOM DIAGNOSIS29SYSTEM SYMPTOM29Symptom Table29PRECAUTION30PRECAUTION30FOR USA AND CANADA30FOR USA AND CANADA : Precaution for Supplemental Restraint System (SRS) "AIR BAG" and"SEAT BELT PRE-TENSIONER"30FOR USA AND CANADA : Precaution for Battery30FOR USA AND CANADA : On Board Diagnostic30FOR USA AND CANADA : On Board Diagnostic30	;2 ;2;38;29:50;67 ;9 ;9;9;9;9;9;9;9;9;9;9;9;9;9;9;9;9;9;9

FOR USA AND CANADA : Precaution for Proce- dure without Cowl Top Cover	
moving Battery Terminal	
FOR MEXICO	
PRE-TENSIONER"	2
FOR MEXICO : General Precautions	}
Cowl Top Cover313 FOR MEXICO : Precautions for Removing Battery Terminal314	
PREPARATION	;
PREPARATION	
Special Service Tool	
PERIODIC MAINTENANCE	
A/T FLUID	
Changing	
Adjustment	
A/T FLUID COOLER	
Cleaning)
STALL TEST	
A/T POSITION	
REMOVAL AND INSTALLATION	
A/T SHIFT SELECTOR	5
Exploded View	
Removal and Installation	
Disassembly and Assembly	
Inspection and Adjustment	
CONTROL ROD	
Exploded View	;
PADDLE SHIFTER 329 Exploded View 329 Removal and Installation 329)
CONTROL VALVE & TCM	
Exploded View)
Removal and Installation	

	Inspection and Adjustment334	
1	PARKING COMPONENTS	A
1	Exploded View	
1	Removal and Installation	E
1	Inspection and Adjustment	
	REAR OIL SEAL	
1	Exploded View	C
2	Removal and Installation	
_	Inspection and Adjustment	
2 2	OUTPUT SPEED SENSOR	ΤN
2 3	Exploded View	
5	Removal and Installation342	
3	Inspection	E
	AIR BREATHER HOSE	
4	Exploded View	_
5	Removal and Installation347	F
-	FLUID COOLER SYSTEM	
5	Exploded View	(
5	Removal and Installation	Ċ
6	Inspection and Adjustment350	
7	UNIT REMOVAL AND INSTALLATION 351	ŀ
7	TRANSMISSION ASSEMBLY	
7	Exploded View	
7	Removal and Installation	
9	Inspection and Adjustment353	
0	UNIT DISASSEMBLY AND ASSEMBLY . 354	J
2	TRANSMISSION ASSEMBLY	
3	Exploded View	k
э 3	Oil Channel	
5	Location of Needle Bearings and Bearing Races361	
4	Location of Snap Rings	L
4	Disassembly	
5	Inspection	
•		N
5	OIL PUMP, 2346 BRAKE, FRONT BRAKE	
5 6	PISTON	
.o .6	Exploded View401 Disassembly401	Ν
7	Assembly	
	Inspection and Adjustment408	_
8 8	UNDER DRIVE CARRIER, FRONT BRAKE	C
.o .8	HUB	
8	Exploded View	F
	Disassembly	Г
9	Assembly	
9	Inspection411	
J	FRONT CARRIER, INPUT CLUTCH, REAR	
0	INTERNAL GEAR	
0	Exploded View	

Disassembly	414
Assembly	
Inspection	

	-
Assembly	420
Inspection	422
-	
HIGH AND LOW REVERSE CLUTCH	423
Exploded View	423
Disassembly	
Assembly	424
Inspection	
•	
DIRECT CLUTCH	425
Exploded View	425
Disassembly	

Assembly	 25
Inspection	 26

SERVICE DATA AND SPECIFICATIONS

(SDS)42	27
General Specification 42	
Vehicle Speed at Which Gear Shifting Occurs 42	27
Vehicle Speed at Which Lock-up Occurs/Releas-	
es	27
Stall Speed 42	28
Torque Converter 42	28
Total End Play 42	28
Reverse Brake Clearance 42	28
Front Brake Clearance 42	28
2346 Brake Clearance 42	28

< PRECAUTION > PRECAUTION PRECAUTIONS FOR USA AND CANADA

FOR USA AND CANADA : Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER" INFOID:000000011738128

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 ТΜ 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:

Always observe the following items for preventing accidental activation.

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision that 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 "SRS AIR BAG".
- Never 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 Н connectors.

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

WARNING:

Always observe the following items for preventing accidental activation.

- When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the ignition ON or engine running, never 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 iniury.
- When using air or electric power tools or hammers, always switch the ignition OFF, disconnect the Κ 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 : Precaution for Procedure without Cowl Top Cover

INFOID:000000012104857 Ν

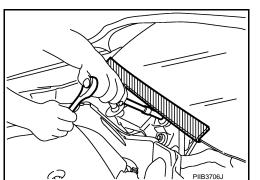
INFOID:000000011738129

L

Μ

P

When performing the procedure after removing cowl top cover, cover the lower end of windshield with urethane, etc to prevent damage to windshield.



А

PRECAUTIONS

< PRECAUTION >

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

INFOID:0000000011738130

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 <u>CL-19, "Removal
 and Installation"</u>.
- 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 USA AND CANADA : Precautions for Removing Battery Terminal

INFOID:000000012079322

• When removing the 12V battery terminal, turn OFF the ignition switch and wait at least 30 seconds.

NOTE:

ECU may be active for several tens of seconds after the ignition switch is turned OFF. If the battery terminal is removed before ECU stops, then a DTC detection error or ECU data corruption may occur.

• For vehicles with the 2-batteries, be sure to connect the main battery and the sub battery before turning ON the ignition switch. **NOTE:**

If the ignition switch is turned ON with any one of the terminals of main battery and sub battery disconnected, then DTC may be detected.

• After installing the 12V battery, always check "Self Diagnosis Result" of all ECUs and erase DTC. **NOTE:**

The removal of 12V battery may cause a DTC detection error.

FOR MEXICO

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

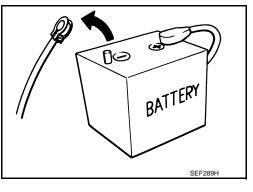
The Supplemental Restraint System such as "AIR BAG" and "SEAT BELT PRE-TENSIONER", used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. Information necessary to service the system safely is included in the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

WARNING:

Always observe the following items for preventing accidental activation.

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision that 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 "SRS AIR BAG".
- Never 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:



TM-8

PRECAUTIONS

< PRECAUTION >

Always observe the following items for preventing accidental activation.

- When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the А ignition ON or engine running, never 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 iniury.
- 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 ТΜ 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 for Procedure without Cowl Top Cover

When performing the procedure after removing cowl top cover, cover the lower end of windshield with urethane, etc to prevent damage to windshield.

FOR MEXICO : Service Notice or Precautions for Manual Transmission

CAUTION:

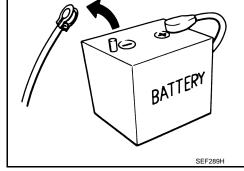
- Never reuse CSC (Concentric Slave Cylinder) body and CSC tube. Because CSC slides back to the original position every time when removing transmission assembly. At this timing, dust on the sliding parts may damage a seal of CSC and may cause clutch fluid leakage. Refer to CL-19, "Removal and Installation".
- 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 : Precautions for Removing Battery Terminal

 When removing the 12V battery terminal, turn OFF the ignition switch and wait at least 30 seconds. NOTE:

ECU may be active for several tens of seconds after the ignition switch is turned OFF. If the battery terminal is removed before ECU stops, then a DTC detection error or ECU data corruption may occur.

For vehicles with the 2-batteries, be sure to connect the main battery and the sub battery before turning ON the ignition switch. NOTE:



(

INFOID:000000011738132



INFOID:0000000011738133

PIIB3706J

Κ

Μ



INFOID:000000012079323

PRECAUTIONS

< PRECAUTION >

If the ignition switch is turned ON with any one of the terminals of main battery and sub battery disconnected, then DTC may be detected.

• After installing the 12V battery, always check "Self Diagnosis Result" of all ECUs and erase DTC. **NOTE:**

The removal of 12V battery may cause a DTC detection error.

< PREPARATION > PREPARATION

PREPARATION

Special Service Tools

INFOID:000000011738134

The actual shapes of TechMate tools may differ from those of special service tools illustrated here. Tool number С (TechMate No.) Description Tool name KV381054S0 Removing rear oil seal ТΜ (J-34286) Puller Ε ZZA0601D F ST33400001 Installing rear oil seal (J-26082) Drift a: 60 mm (2.36 in) dia. b: 47 mm (1.85 in) dia. Н ZZA0814D ST22490000 Holding an adapter plate (-) Adapter setting plate a: 156 mm (6.14 in) b: 220 mm (8.66 in) b S-NT407 ST33200000 Installing counter rear bearing Κ (J-26082) Drift a: 60 mm (2.36 in) dia. b: 44.5 mm (1.752 in) dia. L ZZA1002D Μ KV32103300 Installing reverse synchronizer hub assembly (J-46529) Press plate Ν a: 73 mm (2.87 in) Ο PCIB0165J ST01530000 Installing reverse synchronizer hub assembly (-) Ρ Drift a: 50 mm (1.97 in) dia. b: 41 mm (1.61 in) dia. ZZA0534D

А

В

< PREPARATION >

Tool number (TechMate No.) Tool name		Description
ST23860000 (-) Drift a: 38 mm (1.50 in) dia. b: 33 mm (1.30 in) dia.	a bl ZZA0534D	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.	ZZA1046D	Installing front oil seal
ST33061000 (J-8107-2) Drift a: 28.5 mm (1.122 in) dia. b: 38 mm (1.50 in) dia.	a b ZZA1023D	Installing striking rod oil seal
KV32102700 (-) Drift a: 48.6 mm (1.913 in) dia. b: 41.6 mm (1.638 in) dia.	a bi	Installing main drive gear bearing
ST30911000 (-) Inserter a: 98 mm (3.86 in) dia. b: 40.5 mm (1.594 in) dia.	a b b J 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.	ZZA0632D	 Installing 1st-2nd synchronizer hub assembly Installing 1st gear bushing
ST30022000 (-) Inserter a: 110 mm (4.33 in) dia. b: 46 mm (1.81 in) dia.	a b ZZA0920D	 Installing 3rd main gear Installing 4th main gear

< PREPARATION >

[6MT: FS6R31A]

Tool number (TechMate 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 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 J ZZA0920D	Installing counter rear bearing inner race
ST30031000 (J-22912-01) Puller	ZZA0537D	Measuring wear of inner baulk ring
commercial Service Tools		INFOID:000000011738135
Tool name		Description
Puller		 Removing reverse main gear Removing reverse synchronizer hub Removing reverse counter gear

	2774 EV	Removing reverse counter gear	К
	NT077		L
Puller		Removing each bearing, gear, and bushing	M
			N
	ZZB0823D		0

Ρ

< PREPARATION >

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	

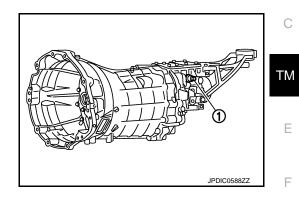
INFOID:000000011738136

< SYSTEM DESCRIPTION > SYSTEM DESCRIPTION COMPONENT PARTS

Component Parts Location

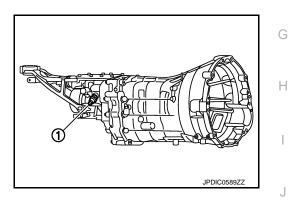
BACK-UP LAMP SWITCH

1 : Back-up lamp switch



PARK/NEUTRAL POSITION (PNP) SWITCH

1 : Park/Neutral position (PNP) switch



Κ

L

Μ

Ν

Ο

Ρ

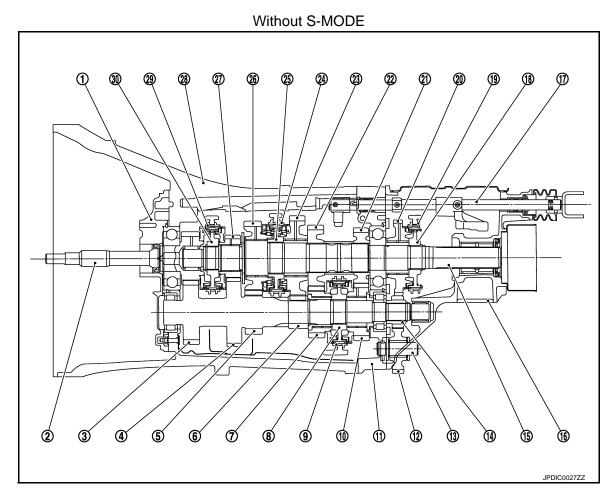
А

< SYSTEM DESCRIPTION >

STRUCTURE AND OPERATION

Sectional View

INFOID:000000011738137



- 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

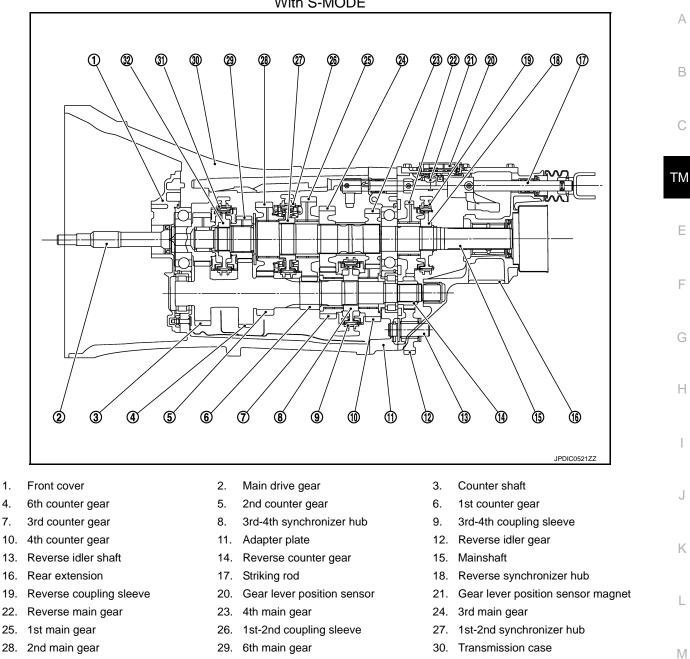
- 3. Counter shaft
- 6. 1st counter gear
- 9. 3rd-4th coupling sleeve
- 12. Reverse idler gear
- 15. Mainshaft
- 18. Reverse synchronizer hub
- 21. 4th main gear
- 24. 1st-2nd coupling sleeve
- 27. 6th main gear
- 30. 5th-6th synchronizer hub

STRUCTURE AND OPERATION

< SYSTEM DESCRIPTION >

With S-MODE

[6MT: FS6R31A]



28. 2nd main gear

1.

4.

7.

31. 5th-6th coupling sleeve

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**

32. 5th-6th synchronizer hub

Ρ

Ν

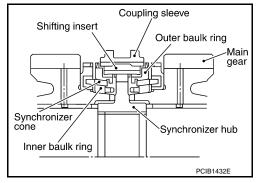
INFOID:0000000011738138

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.

[6MT: FS6R31A]



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.

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-33, "Removal and Installation".
- 2. Check continuity between back-up lamp switch terminals.

Terr	minal	Condition	Continuity	
1	Reverse gear position		Existed	
I	2	Except reverse gear position	Not existed	
ls the ir	nspectio	n result normal?		

YES >> INSPECTION END NO >> Replace back-up lamp switch. Refer to TM-33, "Removal and Installation". INFOID:000000011738139

F

А

В

С

- Н

- J
 - Κ
- L
 - - Μ
 - Ν

 - Ο
 - Ρ

PARK/NEUTRAL POSITION SWITCH

< DTC/CIRCUIT DIAGNOSIS >

PARK/NEUTRAL POSITION SWITCH

Component Inspection

INFOID:000000011738140

[6MT: FS6R31A]

1. CHECK PARK/NEUTRAL POSITION (PNP) SWITCH

1. Disconnect park/neutral position (PNP) switch connector. Refer to TM-36, "Removal and Installation".

2. Check continuity between park/neutral position (PNP) switch terminals.

Terr	ninal	Condition	Continuity
1	2	Neutral position	Existed
I	2	Except neutral position	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace park/neutral position (PNP) switch. Refer to <u>TM-36, "Removal and Installation"</u>.

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING < SYMPTOM DIAGNOSIS > [6MT: FS6R31A]

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.

essary, repair or replace these parts.						С								
SUSPECTED PARTS (Possible cause)		OIL (Oil level is low)	OlL (Wrong oil)	OIL (Oil level is high)	GASKET (Damaged)	OIL SEAL (Worn or damaged)	SHIFT CONTROL LINKAGE (Worn)	CHECK PLUG RETURN SPRING AND CHECK BALL (Worn or damaged)	SHIFT FORK (Worn)	GEAR (Worn or damaged)	BEARING (Worn or damaged)	BAULK RING (Worn or damaged)	INSERT SPRING (Damaged)	TM E G H J
Reference			<u>TM-22</u>				<u>TM-24</u>			TNA EA AAGAACA				K L M N
	Noise	1	2							3	3			Р
Symptoms	Oil leakage		3	1	2	2								٢
ey.nptomo	Hard to shift or will not shift		1	1			2					2	2	
	Jumps out of gear						1	1	2	2				

INFOID:000000011738141

А

В

< PERIODIC MAINTENANCE >

PERIODIC MAINTENANCE GEAR OIL

Inspection

OIL LEAKAGE

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

OIL LEVEL

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

Never start engine while checking oil level.

3. 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-51</u>, <u>"WITHOUT S-MODE : Exploded View"</u> (Without S-MODE) or <u>TM-83</u>, "WITH S-MODE : Exploded View" (With S-MODE).

Draining

- 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.
- 4. Set a gasket on drain plug and install it to transmission case. CAUTION:

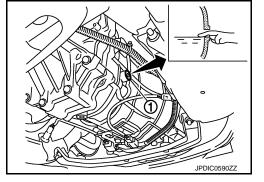
Never reuse gasket.

5. Tighten drain plug to the specified torque. Refer to <u>TM-51</u>, "<u>WITHOUT S-MODE</u> : <u>Exploded View</u>" (Without S-MODE) or <u>TM-83</u>, "<u>WITH S-MODE</u> : <u>Exploded View</u>" (With S-MODE).

Refilling

- 1. 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-16, "FOR NORTH AMERICA
viscosity	: Fluids and Lubricants" (For North
	America) or MA-18, "FOR MEXICO : Flu-
	ids and Lubricants" (For Mexico).
Oil capacity	: Refer to <u>TM-149, "General Specifica-</u> tion".



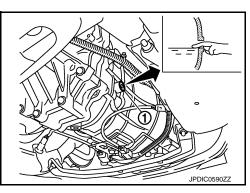
CAUTION:

Never reuse drained gear oil.

- 3. After refilling gear oil, check the oil level. Refer to TM-22. "Inspection".
- 4. 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-51</u>, "<u>WITHOUT S-MODE</u> : <u>Exploded View</u>" (Without S-MODE) or <u>TM-83</u>, "<u>WITH S-MODE</u> : <u>Exploded View</u>" (With S-MODE).



INFOID:000000011738143

INFOID:000000011738144

INFOID:0000000011738142

< REMOVAL AND INSTALLATION >

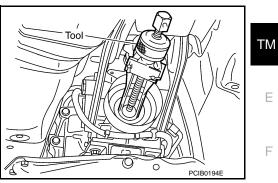
REMOVAL AND INSTALLATION REAR OIL SEAL

Removal and Installation

REMOVAL

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

Never damage rear extension.



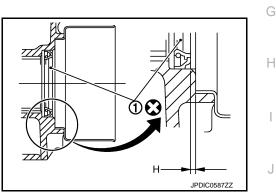
INSTALLATION

1. 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.

2. Install propeller shaft assembly. Refer to DLN-7, "Removal and Installation".



Inspection

INFOID:000000011738146

INSPECTION AFTER INSTALLATION Check the oil leakage and the oil level. Refer to TM-22, "Inspection".

Μ

L

Κ

Ν



INFOID:0000000011738145

А

В

С

Ε

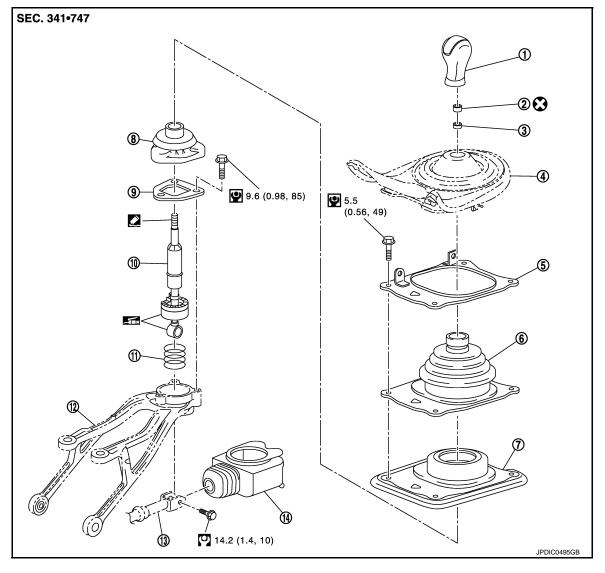
F

< REMOVAL AND INSTALLATION >

SHIFT CONTROL

Exploded View

INFOID:000000011738147



- 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
- 9. Guide plate
- 12. Control lever housing

E Apply multi-purpose grease.

Apply Genuine Medium Strength Thread Locking Sealant or an equivalent. Refer to <u>GI-22, "Recommended Chemical Products and Sealants"</u>.

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

Removal and Installation

REMOVAL

- 1. Remove shift knob with the following procedure.
- a. Release metal clips on console finisher assembly. Refer to IP-26, "Removal and Installation".

TM-24

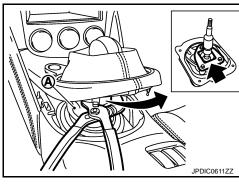
[6MT: FS6R31A]

< REMOVAL AND INSTALLATION >

b. 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:

C.

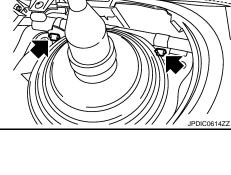
6.

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.

Remove clips (+) from hole cover.

- Release control rod boot from control lever housing.
- 5. Remove mounting bolt (+) and then separate control lever and control rod.
- SCIA2561J





F

Н

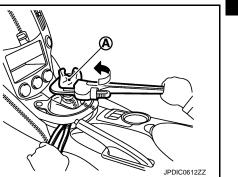
J

Κ

L

Μ

А





Ρ

< 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.
- 9. Remove mounting bolts (\blacklozenge) while holding guide plate.
- 10. Remove guide plate, control lever, and control lever spring from control lever housing.

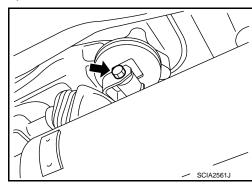
INSTALLATION

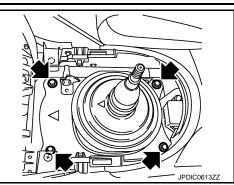
6.

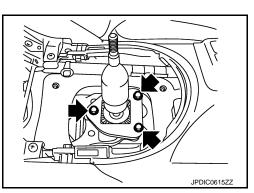
- 1. Apply multi-purpose grease to sliding surface of control lever.
- 2. Install control lever spring, control lever, and guide plate to control lever housing.
- 3. Temporarily tighten guide plate mounting bolts while holding guide plate.
- Install control lever to control rod and then tighten mounting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

Install guide plate with the following procedure.

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



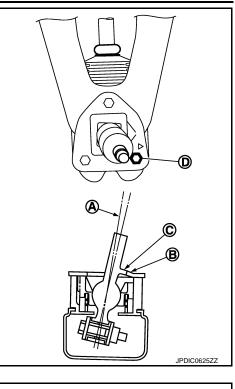




[6MT: FS6R31A]

< REMOVAL AND INSTALLATION >

- a. 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).
- d. Temporarily tighten mounting bolt (D).

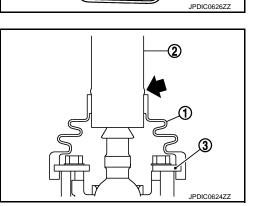


D

F

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



[6MT: FS6R31A]

А

В

TΜ

Ε

F

Н

Κ

L

Μ

Ν

Ρ

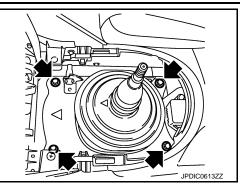
E

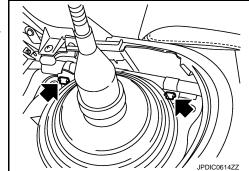
C

< REMOVAL AND INSTALLATION >

[6MT: FS6R31A]

- 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.



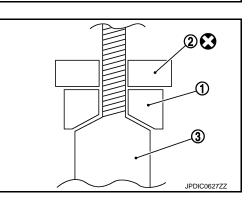


- 10. Install clips () to hole cover.
- 11. Install console finisher assembly. Refer to <u>IP-26, "Removal and</u> <u>Installation"</u>.

- 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-22, "Recommended Chemical</u> <u>Products and Sealants"</u>.
 CAUTION:

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

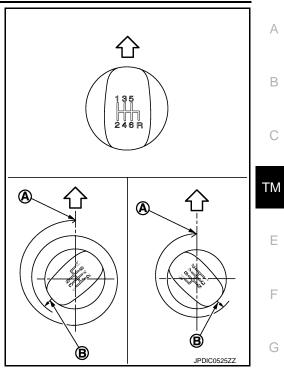
14. Set shift knob in the correct position with the following procedure.



< 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.

 - A : Proper position
 - B : Start position on reaction force
- b. 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:0000000011738149

Н

J

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.

Μ

Ν

AIR BREATHER HOSE

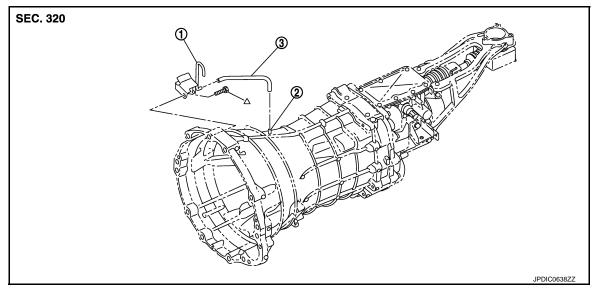
< REMOVAL AND INSTALLATION >

AIR BREATHER HOSE

Exploded View

INFOID:000000011738150

[6MT: FS6R31A]



1. Air breather tube

2. Breather tube

3. Air breather hose

 Δ : Refer to "INSTALLATION" in <u>TM-40</u>, "WITHOUT S-MODE : Removal and Installation" (Without S-MODE) or <u>TM-43</u>, "WITH S-MODE : Removal and Installation" (With S-MODE) for the tightening torque.

Removal and Installation

INFOID:000000011738151

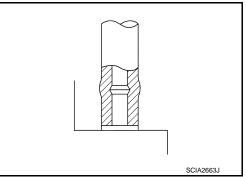
REMOVAL

Refer to <u>TM-30</u>, "Exploded View" for removal procedure.

INSTALLATION

Note the following, and refer to <u>TM-30, "Exploded View"</u> for installation procedure. **CAUTION:**

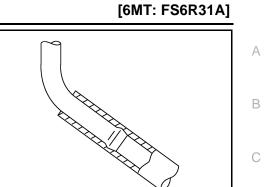
- Make sure there are no pinched or restricted areas on the air breather hose caused by bending or winding when installing it.
- Be sure to insert air breather hose into breather tube until hose end reaches the tube's base.



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.



Е

F

G

Н

J

Κ

L

Μ

Ν

Ο

Ρ

JPDIC0469ZZ

BACK-UP LAMP SWITCH

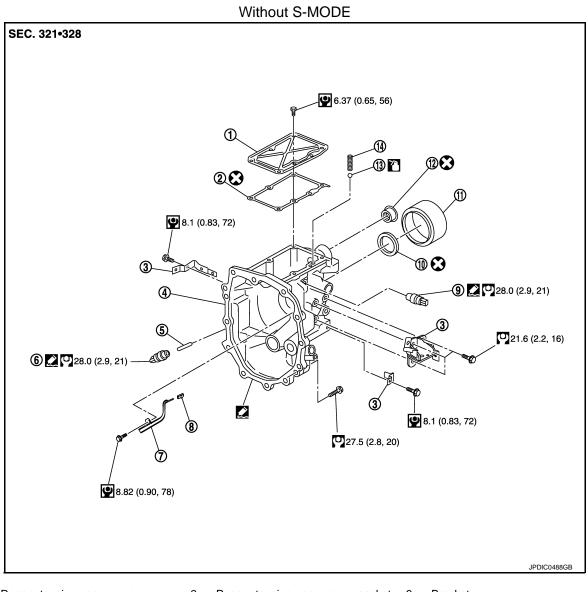
< REMOVAL AND INSTALLATION >

BACK-UP LAMP SWITCH

Exploded View

INFOID:0000000011738152

[6MT: FS6R31A]

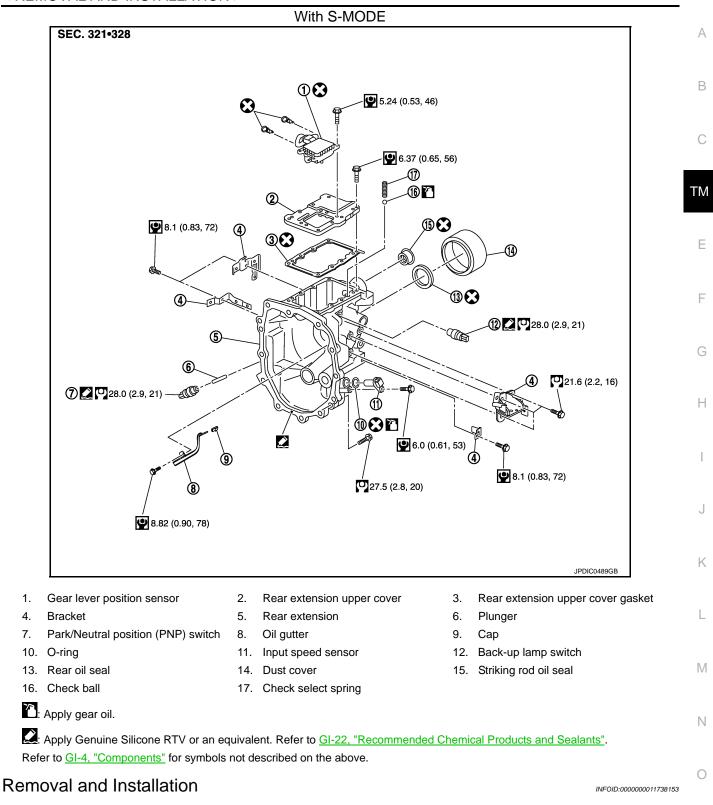


- 1. Rear extension upper cover
- 4. Rear extension
- 7. Oil gutter
- 10. Rear oil seal
- 13. Check ball
- : Apply gear oil.

- 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 Genuine Silicone RTV or an equivalent. Refer to <u>GI-22, "Recommended Chemical Products and Sealants"</u>. Refer to <u>GI-4, "Components"</u> for symbols not described on the above.

BACK-UP LAMP SWITCH

< REMOVAL AND INSTALLATION >



REMOVAL

1. Disconnect the battery cable from the negative terminal.

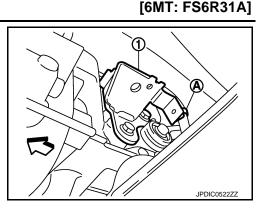
Ρ

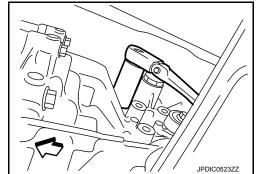
BACK-UP LAMP SWITCH

< REMOVAL AND INSTALLATION >

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

- 3. Remove bracket from rear extension.
- 4. Disconnect back-up lamp switch connector.
- 5. Remove back-up lamp switch from rear extension.
 - \triangleleft : Vehicle front



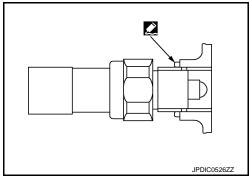


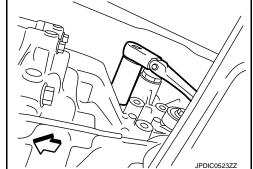
INSTALLATION

 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-</u><u>22, "Recommended Chemical Products and Sealants"</u>.





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

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

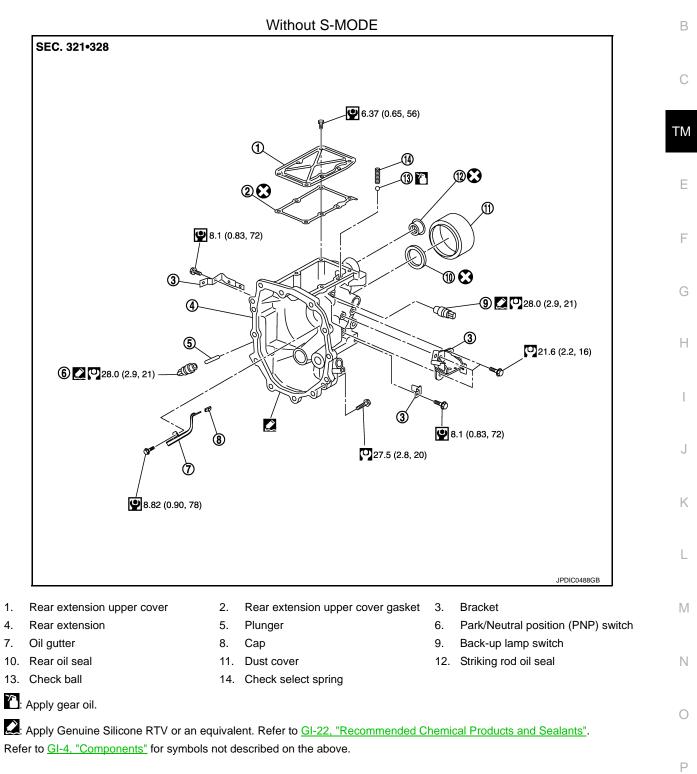
PARK/NEUTRAL POSITION SWITCH

Exploded View

[6MT: FS6R31A]

INFOID:0000000011738154

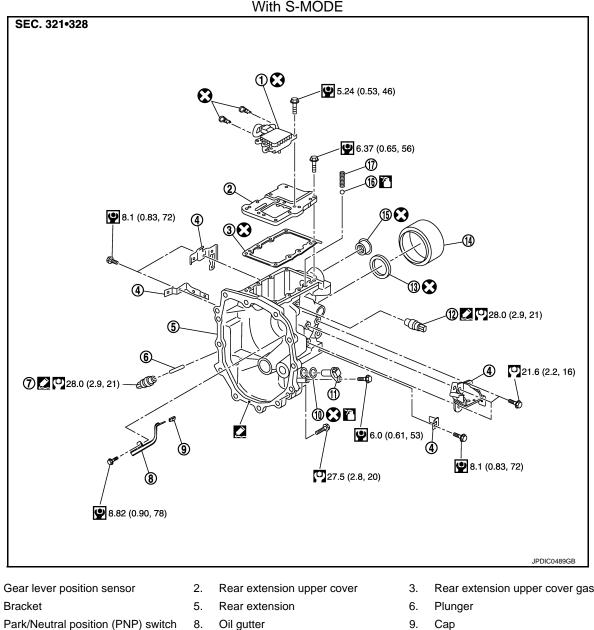
А



PARK/NEUTRAL POSITION SWITCH

< REMOVAL AND INSTALLATION >

With S-MODE



7. 10. O-ring

1. 4.

- 13. Rear oil seal
- 16. Check ball

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

- Rear extension upper cover gasket
- 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-22, "Recommended Chemical Products and Sealants". Refer to GI-4, "Components" for symbols not described on the above.

Removal and Installation

REMOVAL

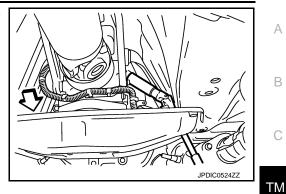
- Disconnect the battery cable from the negative terminal. 1.
- Disconnect park/neutral position (PNP) switch connector. 2.

INFOID:000000011738155

PARK/NEUTRAL POSITION SWITCH

< REMOVAL AND INSTALLATION >

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



[6MT: FS6R31A]

INSTALLATION

1. Install plunger to rear extension. CAUTION:

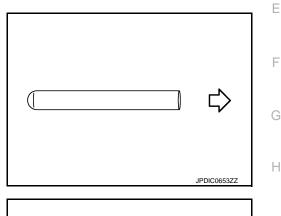
Be careful with orientation of plunger.

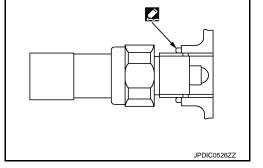
<□ : Park/Neutral position (PNP) switch side

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 <u>GI-</u> 22, "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.





Κ

L

Ν

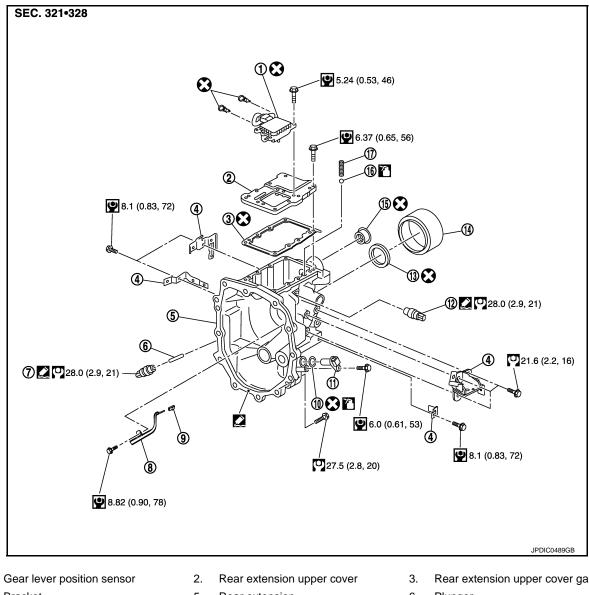
 \cap

< REMOVAL AND INSTALLATION >

INPUT SPEED SENSOR

Exploded View

INFOID:000000011738156



- Bracket
- Park/Neutral position (PNP) switch 7.
- 10. O-ring

1.

4.

- 13. Rear oil seal
- 16. Check ball

: Apply gear oil.

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

- 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-22, "Recommended Chemical Products and Sealants". Refer to GI-4, "Components" for symbols not described on the above.

Removal and Installation

REMOVAL

- Disconnect the battery cable from the negative terminal. 1.
- 2. Disconnect input speed sensor connector.
- 3. Remove input speed sensor from rear extension.

TM-38

2016 370Z

INFOID:000000011738157

INPUT SPEED SENSOR

< REMOVAL AND INSTALLATION >

<u> </u>		<u> </u>
	CAUTION: Never disassemble input speed sensor. Never impact input speed sensor by dropping or others. 	A
	 Never place input speed sensor near magnetic materials. 	
4.	Remove O-ring from input speed sensor.	В
IN	STALLATION	
1.	Apply gear oil to O-ring. CAUTION:	С
~	Never reuse O-ring.	
2.	Install O-ring to input speed sensor.	TM
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. 	E
4	Never allow foreign matter on input speed sensor.	F
4.	For the next step and after, install in the reverse order of removal.	I
		G
		Н
		J
		K
		N
		L
		M

Ν

0

Ρ

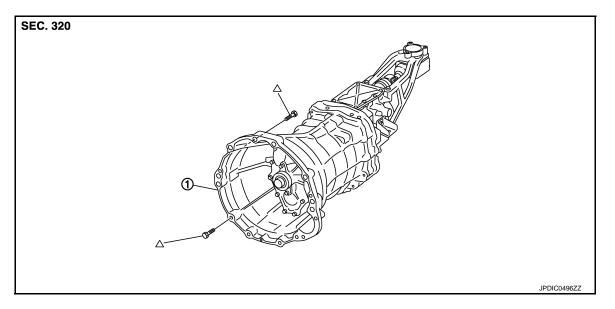
[6MT: FS6R31A]

UNIT REMOVAL AND INSTALLATION TRANSMISSION ASSEMBLY WITHOUT S-MODE

WITHOUT S-MODE : Exploded View

INFOID:000000011738158

INFOID:000000011738159



1. Transmission assembly

△: Refer to "INSTALLATION" in TM-40, "WITHOUT S-MODE : Removal and Installation" for the locations and tightening torque.

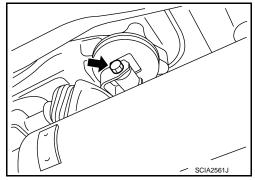
WITHOUT S-MODE : Removal and Installation

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 <u>CL-19</u>, "<u>Removal and Installation</u>".

REMOVAL

- 1. Disconnect the battery cable from the negative terminal.
- 2. Remove engine cover (front) and engine cover (rear). Refer to EM-28, "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-26, "Removal and Installation"</u>.

- 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

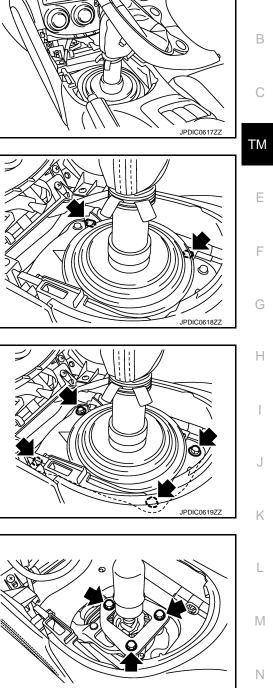
- f. Remove mounting bolts (-) while holding guide plate.
- g. Remove guide plate, control lever, and control lever spring from control lever housing.
- Remove exhaust front tube and center muffler. Refer to <u>EX-6</u>. <u>"Removal and Installation"</u>.
- Separate propeller shaft assembly. Refer to <u>DLN-7, "Removal</u> 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</u>, "<u>Removal</u> <u>and Installation</u>".
- 7. Remove suspension member stay. Refer to FSU-21, "Removal and Installation".

boot A.

JPDIC0620ZZ



[6MT: FS6R31A]

А

< UNIT REMOVAL AND INSTALLATION >

8. Remove clutch tube (1), clutch hose (2), and lock plate (3). Refer to <u>CL-18</u>, "<u>Removal and Installation</u>".

<□ : 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.

- 9. Remove crankshaft position sensor. Refer to EM-72, "Removal and Installation".
- 10. Remove starter motor. Refer to STR-25, "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 <u>EX-6, "Removal and Installation"</u>.
- 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:

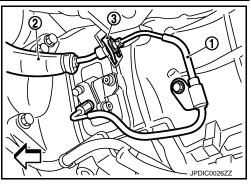
By placing wooden block between oil pan (upper) and front suspension member, the removal of transmission assembly from engine becomes easier.

- 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-19. "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.

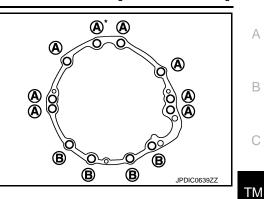


[6MT: FS6R31A]

< 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)



*: Tightening the bolt with air breather tube.

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

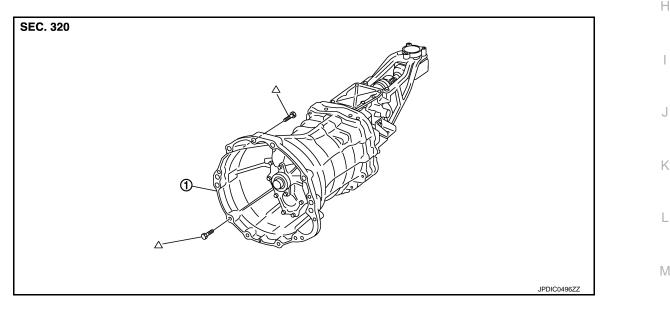
WITHOUT S-MODE : Inspection

INSPECTION AFTER INSTALLATION

- Check the shift control. Refer to TM-29, "Inspection".
- Check the oil leakage and the oil level. Refer to <u>TM-22</u>, "Inspection".

WITH S-MODE

WITH S-MODE : Exploded View



1. Transmission assembly

△: Refer to "INSTALLATION" in TM-43, "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 <u>CL-19</u>, "<u>Removal and</u> <u>Installation</u>".

REMOVAL

- 1. Disconnect the battery cable from the negative terminal.
- 2. Remove engine cover (front) and engine cover (rear). Refer to EM-28, "Removal and Installation".
- 3. Remove control lever with the following procedure.

TM-43

INFOID:0000000011738162



Ν

[6MT: FS6R31A]

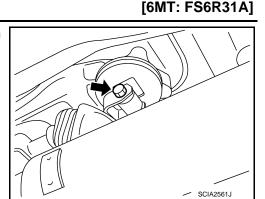
INFOID:0000000011738160

INFOID:0000000011738161

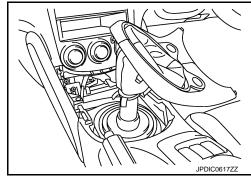
F

< UNIT REMOVAL AND INSTALLATION >

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



b. Remove console finisher assembly as shown in the figure. Refer to <u>IP-26, "Removal and Installation"</u>.



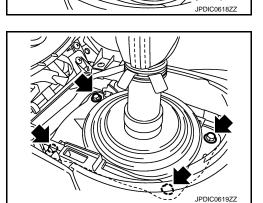
c. Remove clips (←) from hole cover.

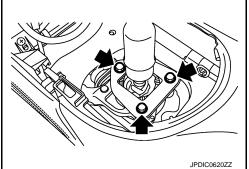
- d. Remove mounting bolts (←) and then remove hole cover.
 CAUTION: Never damage center console assembly.
- e. Remove control lever boot B, hole insulator, and control lever boot A.



- 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, "Removal</u> and Installation". **NOTE:**

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





Revision: 2015 June

< UNIT REMOVAL AND INSTALLATION >

- 6. Remove exhaust mounting bracket. Refer to EX-6. "Removal and Installation".
- 7. Remove suspension member stay. Refer to FSU-21, "Removal and Installation".
- 8. Remove clutch tube (1), clutch hose (2), and lock plate (3). Refer to <u>CL-18, "Removal and Installation"</u>.

└□ : 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.

- 9. Remove crankshaft position sensor. Refer to EM-72. "Removal and Installation".
- 10. Remove starter motor. Refer to STR-25, "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.
- Disconnect heated oxygen sensor 2 (bank 1) and heated oxygen sensor 2 (bank 2) connectors. Refer to <u>EX-6. "Removal and</u> <u>Installation"</u>.
- 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".
- 19. 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 <u>CL-19, "Removal and Installation"</u>.

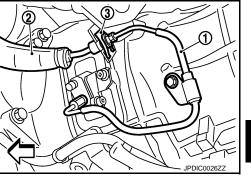
INSTALLATION

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

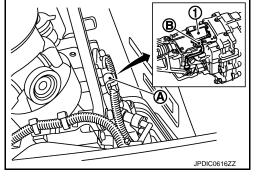
• Secure transmission assembly to a suitable jack while installing it.

TM-45





[6MT: FS6R31A]



(

Ε

F

Н

Κ

L

Μ

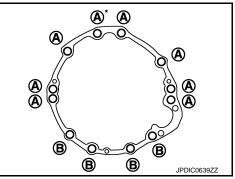
Ν

А

< 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)



*: Tightening the bolt with air breather tube.

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

WITH S-MODE : Inspection and Adjustment

INFOID:000000011738163

INSPECTION AFTER INSTALLATION

- Check the shift control. Refer to TM-29, "Inspection".
- Check the oil leakage and the oil level. Refer to TM-22, "Inspection".

ADJUSTMENT AFTER INSTALLATION

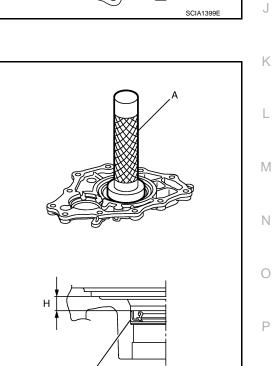
When replacing the gear lever position sensor, perform the M/T neutral position learning. Refer to <u>EC-25, "M/</u> <u>T NEUTRAL POSITION LEARNING : Special Repair Requirement"</u>.

FRONT OIL SEAL

Removal and Installation

REMOVAL

- 1. Drain gear oil. Refer to TM-22, "Draining".
- Remove transmission assembly. Refer to <u>TM-40</u>, "WITHOUT <u>S-MODE</u> : <u>Removal and Installation</u>" (Without S-MODE) or <u>TM-43</u>, "<u>WITH S-MODE</u> : <u>Removal and Installation</u>" (With S-MODE).
- 3. Remove mounting bolts (+) and sealing bolts (1).
- 4. Remove front cover and front cover gasket from transmission case.



(1)

E

Н

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

Never damage front cover.



1. 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.

- 2. 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.

[6MT: FS6R31A]

INFOID:000000011738164

.....

В

С

ТΜ

JPDIC0586Z

FRONT OIL SEAL

< UNIT REMOVAL AND INSTALLATION >

Temporarily tighten mounting bolt (+) and sealing bolt (1). 3.

4.

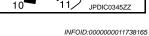
- Tighten mounting bolts (+) and sealing bolts (1) to the specified 5. torque in the numerical order as shown in the figure.
- Install transmission assembly. Refer to TM-40, "WITHOUT S-6. MODE : Removal and Installation" (Without S-MODE) or TM-43. "WITH S-MODE : Removal and Installation" (With S-MODE).

Check the oil leakage and the oil level. Refer to TM-22, "Inspection".

7. Refill gear oil. Refer to TM-22, "Refilling".

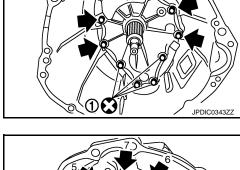
INSPECTION AFTER INSTALLATION

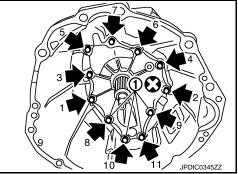
Inspection

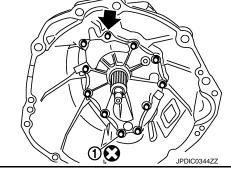


[6MT: FS6R31A]

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







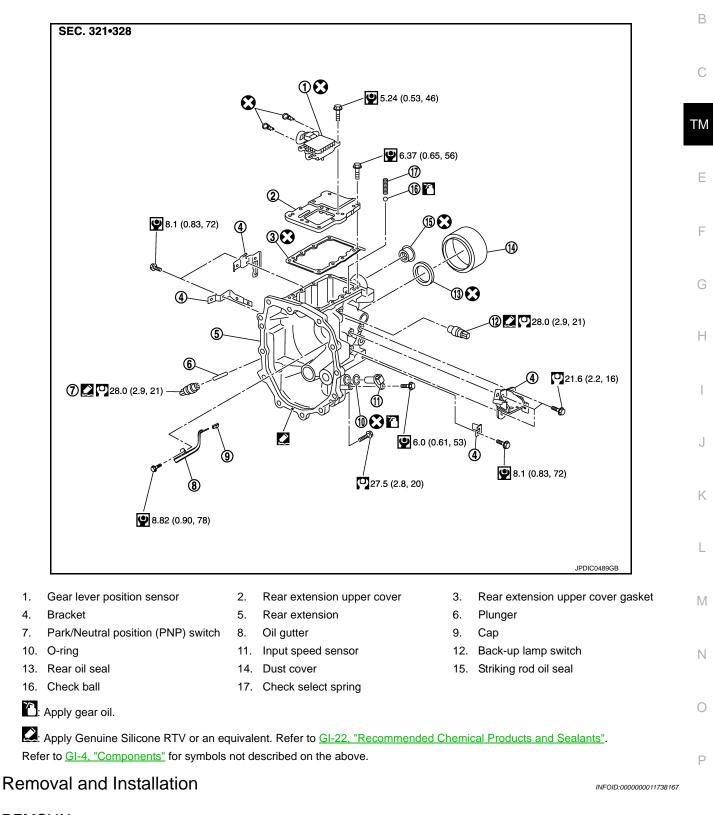
< UNIT REMOVAL AND INSTALLATION >

GEAR LEVER POSITION SENSOR

Exploded View

INFOID:000000011738166

А



REMOVAL

1. Remove transmission assembly. Refer to TM-43, "WITH S-MODE : Removal and Installation".

TM-49

GEAR LEVER POSITION SENSOR

< UNIT REMOVAL AND INSTALLATION >

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

INSTALLATION

1. 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).

- Tighten mounting bolts (to the specified torque in the numer-2. ical order as shown in the figure.
- 3. 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 TM-43, "WITH S-MODE : Removal and Installation".

Inspection and Adjustment

INSPECTION AFTER INSTALLATION

Check the oil leakage and the oil level. Refer to TM-22, "Inspection".

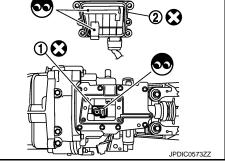
ADJUSTMENT AFTER INSTALLATION

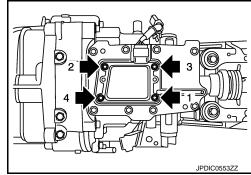
Perform the M/T neutral position learning. Refer to EC-25, "M/T NEUTRAL POSITION LEARNING : Special Repair Requirement".

TM-50

JPDIC0573ZZ

JPDIC0504ZZ A





INFOID:000000011738168

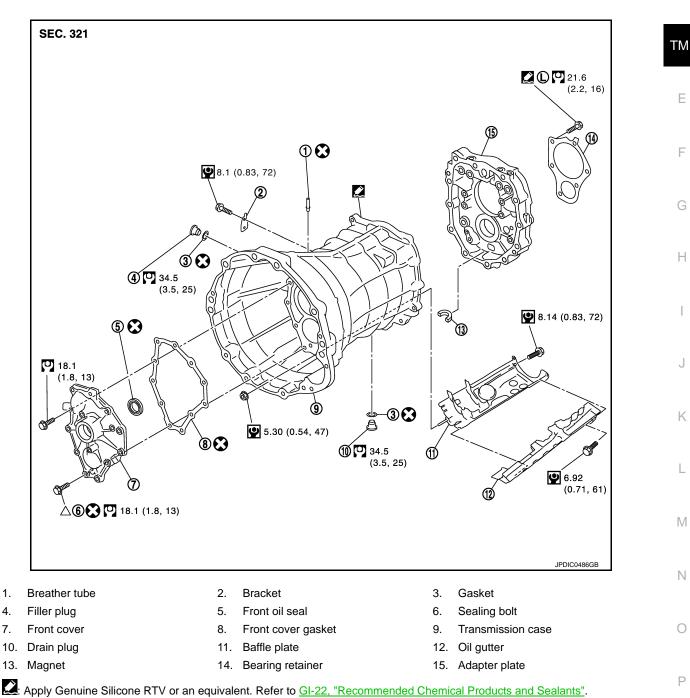
[6MT: FS6R31A]

JPDIC0572ZZ

TRANSMISSION ASSEMBLY < UNIT DISASSEMBLY AND ASSEMBLY > UNIT DISASSEMBLY AND ASSEMBLY TRANSMISSION ASSEMBLY WITHOUT S-MODE

WITHOUT S-MODE : Exploded View

CASE AND EXTENSION



20: Apply Genuine Medium Strength Thread Locking Sealant or an equivalent. Refer to <u>GI-22, "Recommended Chemical</u> <u>Products and Sealants"</u>.

 \triangle : Refer to "CASE AND EXTENSION" in <u>TM-65, "WITHOUT S-MODE : Assembly"</u> for the locations. Refer to <u>GI-4, "Components"</u> for symbols not described on the above.

TM-51

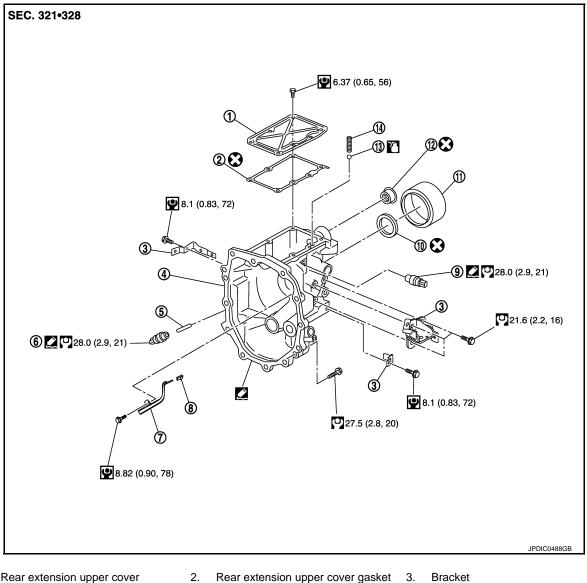
[6MT: FS6R31A]

INFOID:000000011738169

А

В

< UNIT DISASSEMBLY AND ASSEMBLY >



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

- 5. Plunger
- 8. Cap
- 11. Dust cover
- 14. Check select spring

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

: Apply gear oil.

Apply Genuine Silicone RTV or an equivalent. Refer to GI-22, "Recommended Chemical Products and Sealants". Refer to GI-4, "Components" for symbols not described on the above.

SHAFT AND GEAR

< UNIT DISASSEMBLY AND ASSEMBLY >

[6MT: FS6R31A]

А

В

С

F

Н

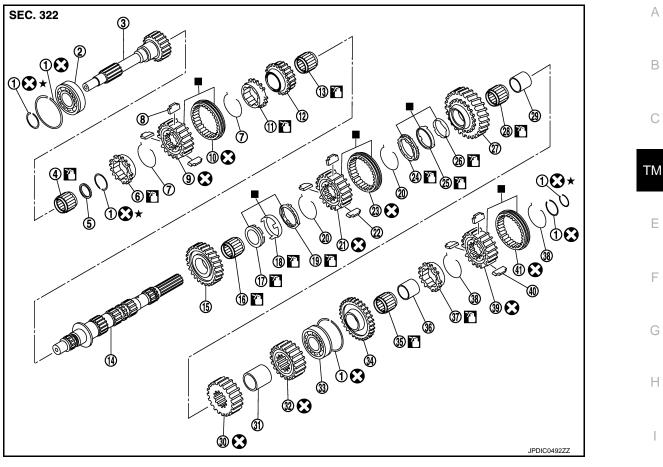
Κ

L

Μ

Ν

Ρ



- 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 37.
- Reverse shifting insert 40.

: Replace the parts as a set.

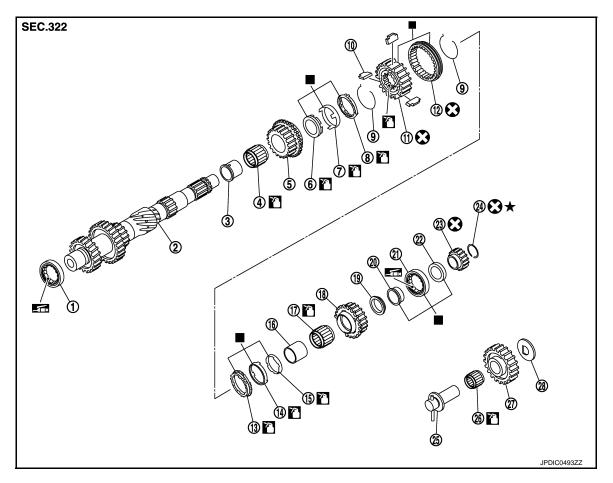
- 2. Main drive gear bearing
- 5. Pilot bearing spacer
- 8. 5th-6th shifting insert
- 6th baulk ring 11.
- Mainshaft 14.
- 17. 2nd inner baulk ring
- 20. 1st-2nd spread spring
- 23. 1st-2nd coupling sleeve
- 26. 1st inner baulk ring
- 29. 1st gear bushing
- 32. 4th main gear
- 35. Reverse needle bearing
- 38. Reverse spread spring
- Reverse coupling sleeve 41.
- 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 21. 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.

: 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.

< UNIT DISASSEMBLY AND ASSEMBLY >



- 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 <u>GI-4, "Components"</u> for symbols not described on the above.
- Apply gear oil to gears, shafts, synchronizers, and bearings when assembling.

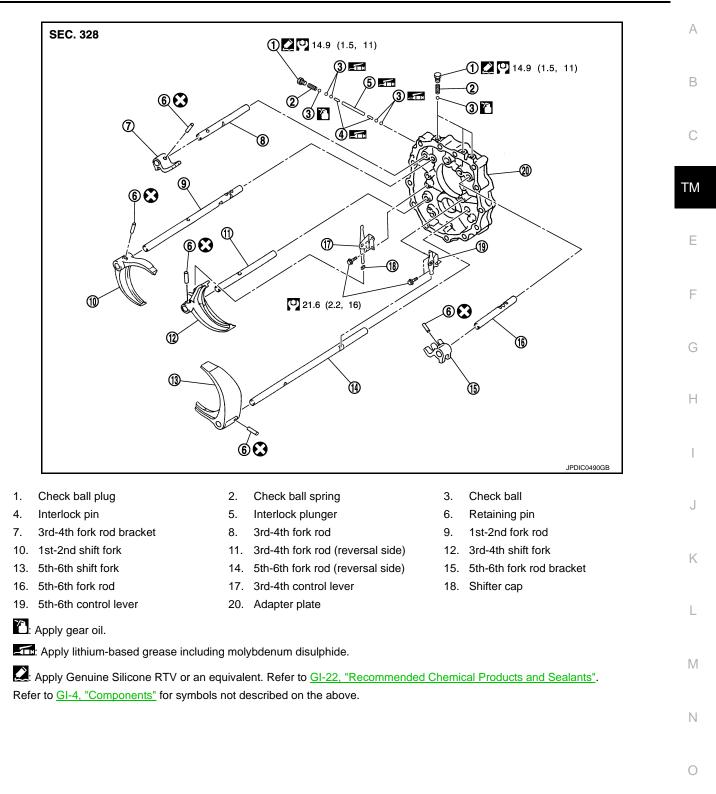
SHIFT FORK AND FORK ROD

- 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

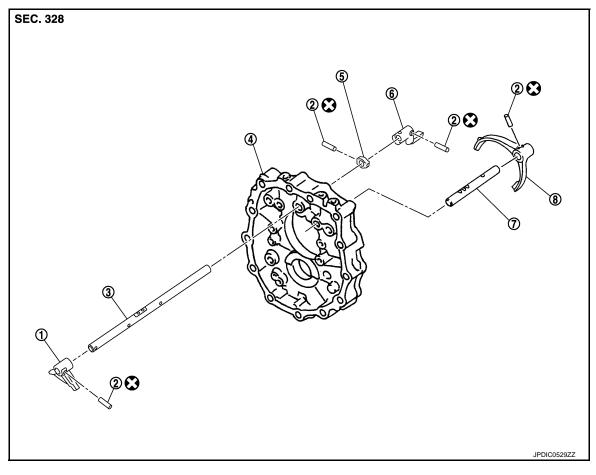
< UNIT DISASSEMBLY AND ASSEMBLY >

[6MT: FS6R31A]



Ρ

< UNIT DISASSEMBLY AND ASSEMBLY >



- 1. Striking lever
- 4. Adapter plate
- 7. Reverse fork rod
- 2. Retaining pin

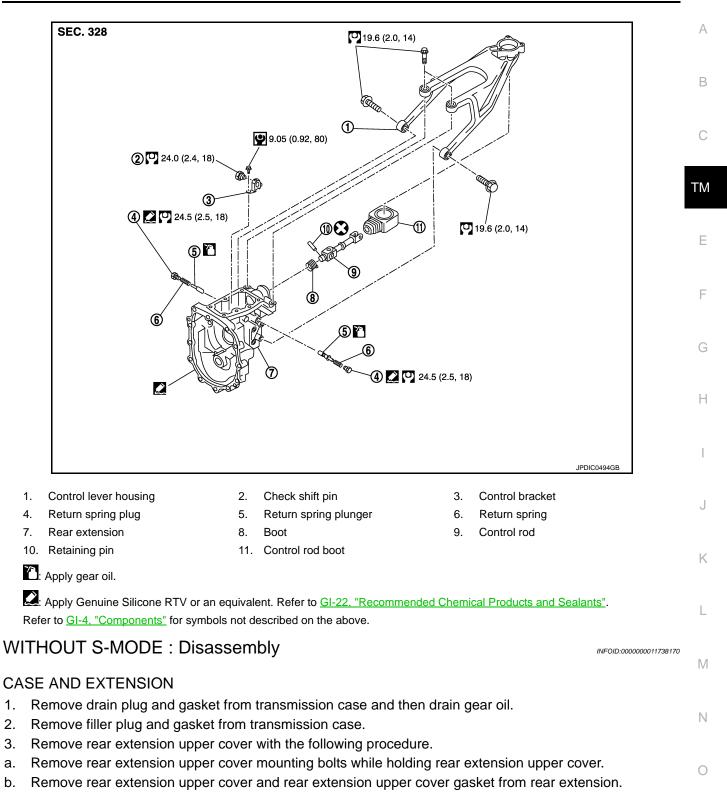
8.

- 5. Stopper ring
 - Reverse shift fork
- Refer to $\underline{\text{GI-4}}$, "Components" for the symbols in the figure.

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

< UNIT DISASSEMBLY AND ASSEMBLY >

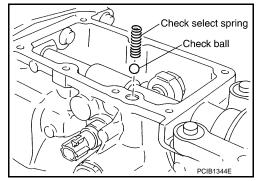
[6MT: FS6R31A]



Ρ

< 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.
- a. Remove control rod boot from control rod.

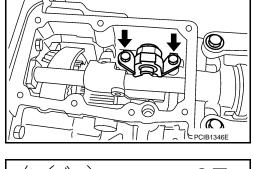


ⓓ

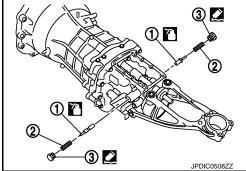
- b. Remove boot (1) from control rod as shown in the figure.
- c. Remove retaining pin () from control rod, using a pin punch [Commercial service tool] and then remove control rod from striking rod.
- d. Remove boot from striking rod oil seal.
- 6. Remove park/neutral position (PNP) switch and plunger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

 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.



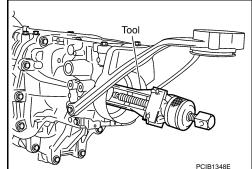
JPDIC0506ZZ



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.
- 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.



[6MT: FS6R31A]

< 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.
- Remove dust cover from rear extension.
 CAUTION:

Never damage rear extension.

16. Remove oil gutter with the following procedure.

18. Remove front cover with the following procedure.

Remove mounting bolts (\leftarrow) and sealing bolts (1).

- a. Remove oil gutter from rear extension.
- b. Remove cap from oil gutter.

a. b.

case.

17. Remove reverse idler shaft assembly (←) from adapter plate.

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

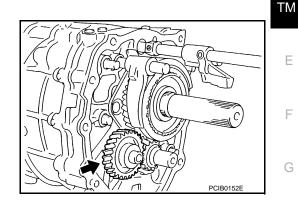
Remove front cover and front cover gasket from transmission

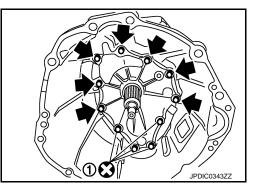
Never damage front cover.

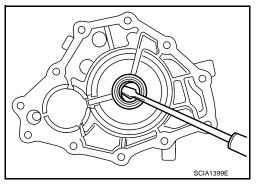
19. Remove transmission case with the following procedure.

С

В







Κ

L

Μ

Ν

Ρ

Н

< UNIT DISASSEMBLY AND ASSEMBLY >

Remove mounting nut () from transmission case. a.

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

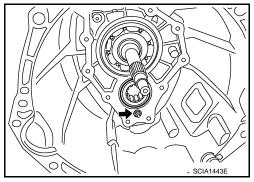
C. Carefully tap transmission case, using a soft hammer (A) and then separate adapter plate and transmission case. **CAUTION:** Never drop counter front bearing.

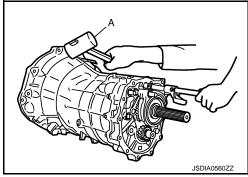
- 20. Remove counter front bearing (1) from transmission case.
- 21. Remove breather tube from transmission case. **CAUTION:**

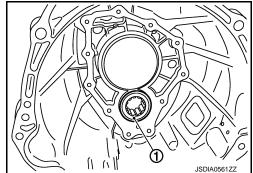
Never damage transmission case.

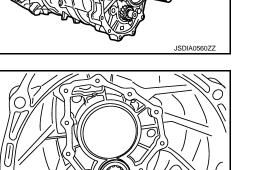
SHIFT FORK AND FORK ROD

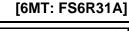
22. Remove bracket from transmission case.



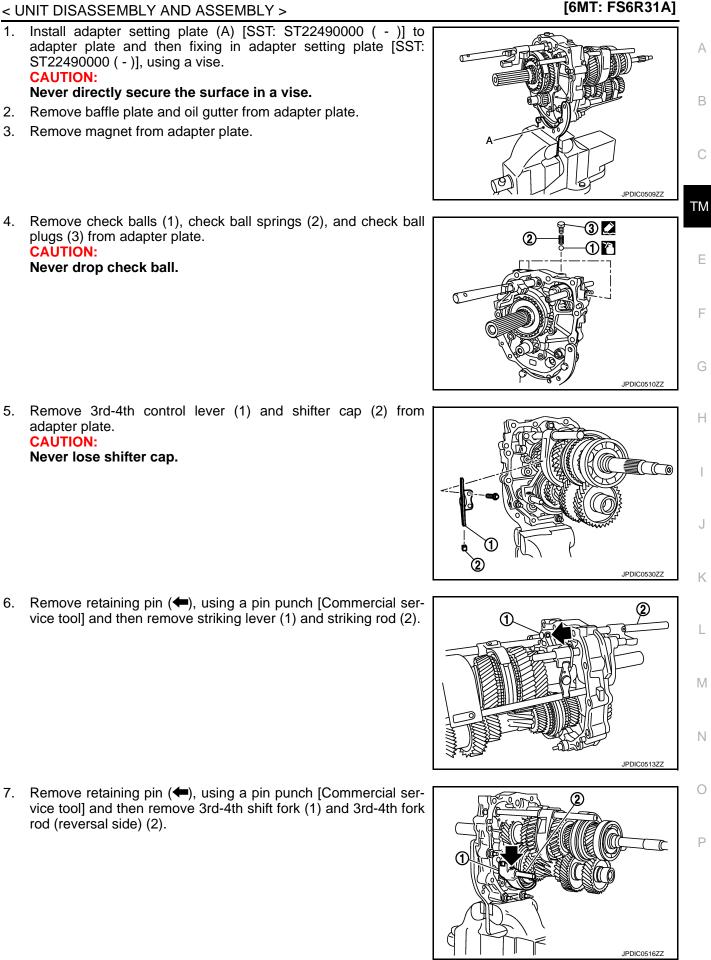








SCIA1532E



А

В

С

Ε

F

Н

Κ

L

Μ

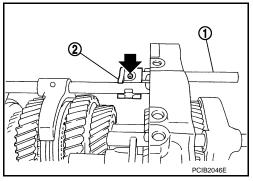
Ν

Ρ

< UNIT DISASSEMBLY AND ASSEMBLY >

[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.

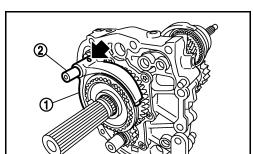
- 10. Remove interlock pin (2) from 1st-2nd fork rod. CAUTION: Never drop interlock pin.
- 11. Remove retaining pin (←), using a pin punch [Commercial service tool] and then remove 1st-2nd shift fork (1) and 1st-2nd fork rod (2).

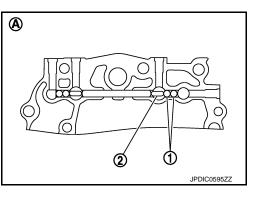
12. Remove interlock plunger (1) from adapter plate.

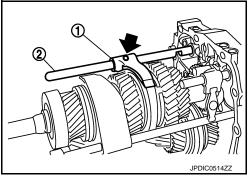
A : View from transmission rear side

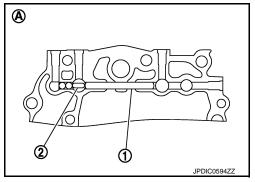
- Remove interlock pin (2) from reverse fork rod.
 CAUTION: Never drop interlock pin.
- 14. Remove retaining pin (), using a pin punch [Commercial service tool] and then remove reverse shift fork (1) and reverse fork rod (2).
 CAUTION:

Never drop reverse coupling sleeve.









JPDIC0517ZZ

A

< UNIT DISASSEMBLY AND ASSEMBLY >

[6MT: FS6R31A]

- 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).



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



Ε

F

Н

Κ

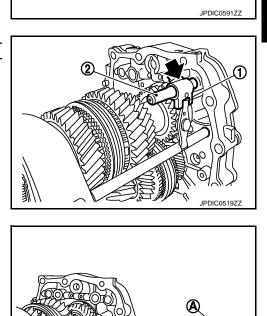
L

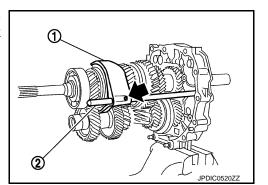
Μ

Ν

JPDIC0518ZZ

А





< UNIT DISASSEMBLY AND ASSEMBLY >

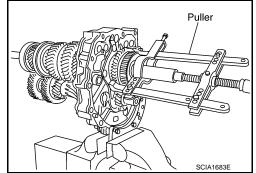
- d. Set a puller [Commercial service tool] to reverse main gear.
- e. Remove reverse synchronizer hub together with reverse main gear, reverse baulk ring, and reverse spread spring from main-shaft, using a puller [Commercial service tool].
- 2. Remove reverse needle bearing from mainshaft.
- 3. Remove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



Puller

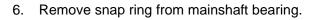
SCIA1682E

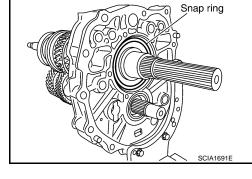
PCIB1238E



- 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.

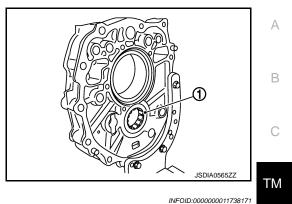




- 7. Carefully tap mainshaft with a plastic hammer and then remove mainshaft assembly, main drive gear assembly, and counter shaft assembly combined in one unit from adapter plate.

< UNIT DISASSEMBLY AND ASSEMBLY >

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



WITHOUT S-MODE : Assembly

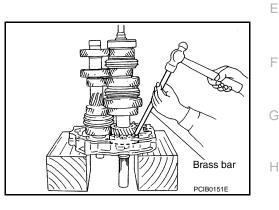
SHAFT AND GEAR

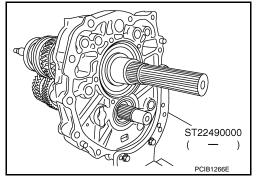
1. Install main drive gear assembly, mainshaft assembly, and counter shaft assembly combined in one unit to adapter plate, using a brass bar.

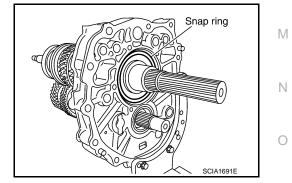
 Install the adapter setting plate [SST] to adapter plate and then fixing in adapter setting plate [SST], using a vise.
 CAUTION:

Never directly secure the surface in a vise.

- Install snap ring to mainshaft bearing.
 CAUTION: Never reuse snap ring.
- 4. Apply recommended grease to roller of counter rear bearing.







Ρ

Κ

L

< UNIT DISASSEMBLY AND ASSEMBLY >

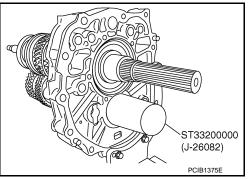
 Install counter rear bearing to adapter plate, using the drift [SST].
 CAUTION:

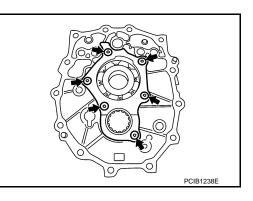
Replace counter rear bearing inner race, counter rear bearing, and counter rear bearing spacer as a set.

- 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-22</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.
- a. Install reverse coupling sleeve and reverse shifting inserts to reverse synchronizer hub.



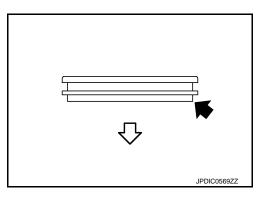


CAUTION:

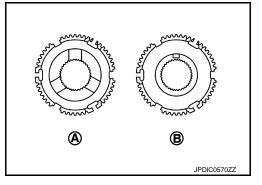
• Be careful with the orientation of reverse coupling sleeve.

: 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 >

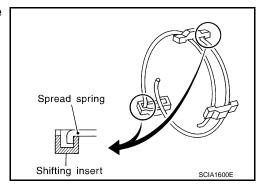
• Be careful with the shape of reverse shifting insert.

A Long Short Short Ditch for identification 1st-2nd, 3rd-4th, 5th-6th Shifting insert PCIBOGOBE TM

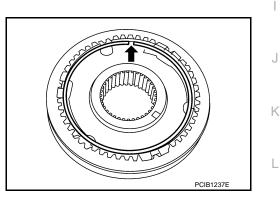
[6MT: FS6R31A]

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



M

Е

F

Н

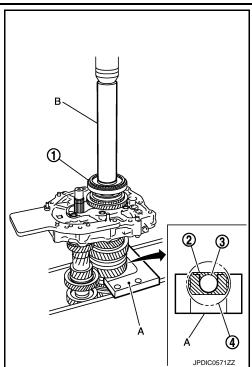
Ν

0

Ρ

< UNIT DISASSEMBLY AND ASSEMBLY >

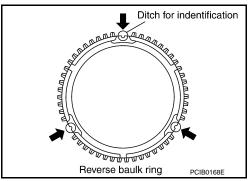
- 8. Install reverse synchronizer hub assembly (1) with the following procedure.
 - 2 : Collar of mainshaft
 - 3 : 6th main gear
 - 4 : 2nd main gear
 - B : Drift [SST: ST01530000 ()]
- a. Set the press plate (A) [SST: KV32103300 (J-46529)] to mainshaft as shown in the figure.
- b. Apply gear oil to 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.

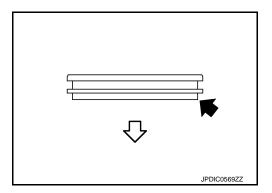
d. Install reverse synchronizer hub assembly to mainshaft with a pressing machine, using the drift [SST: ST01530000 (-)].



CAUTION:

Be careful with the orientation of reverse coupling sleeve.

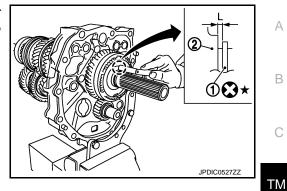
: Reverse main gear side



< UNIT DISASSEMBLY AND ASSEMBLY >

- 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-150, "End Play".



[6MT: FS6R31A]

А

- 10. Install reverse counter gear with the following procedure.
- Install counter rear bearing spacer to counter shaft. a. **CAUTION:**
 - · Be careful with the orientation of counter rear bearing spacer.

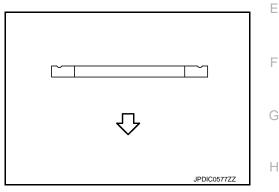
CAUTION:

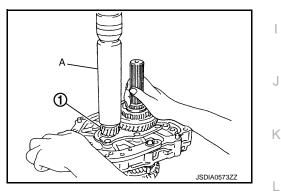
• Replace counter rear bearing inner race, counter rear bearing, and counter rear bearing spacer as a set.

b. Install reverse counter gear (1) to counter shaft with a pressing

machine, using the drift (A) [SST: ST23860000 (-)].

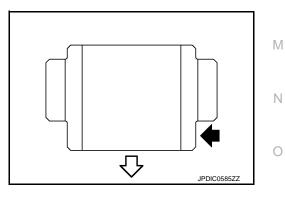
• Never reuse reverse counter gear.





· Be careful with the orientation of reverse counter gear.

Counter rear bearing side



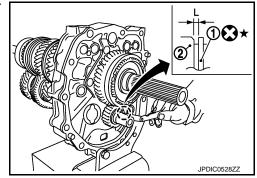


< UNIT DISASSEMBLY AND ASSEMBLY >

- 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-150, "End Play".

[6MT: FS6R31A]



❶

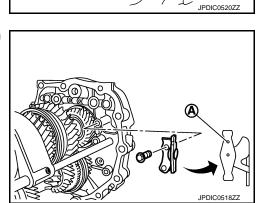
2)

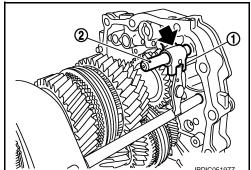


- Install 5th-6th shift fork (1) and 5th-6th fork rod (reversal side)
 (2) and then install retaining pin (
 to 5th-6th shift fork, using a pin punch [Commercial service tool].
 CAUTION:
 - Never reuse retaining pin.
 - Be careful with the orientation of 5th-6th shift fork and 5th-6th fork rod (reversal 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.
- Install 5th-6th control lever to adapter plate and then tighten mounting bolts to the specified torque.
 CAUTION:

Set the projection (A) upward.

- 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.





Revision: 2015 June

(A)

< UNIT DISASSEMBLY AND ASSEMBLY >

- 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.

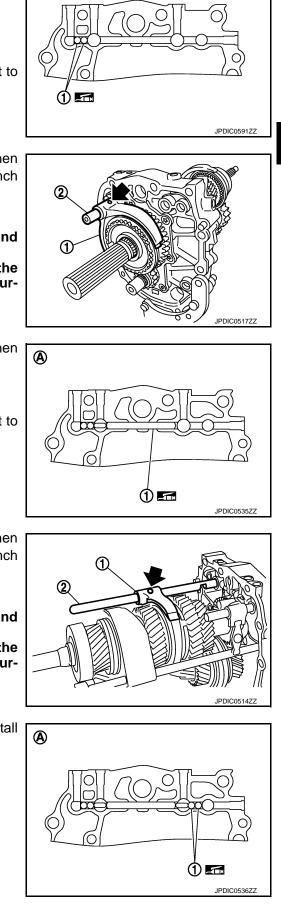
- Install reverse shift fork (1) and reverse fork rod (2) and then install retaining pin (+) to reverse shift fork, using a pin punch [Commercial service tool].
 CAUTION:
 - Never reuse retaining pin.
 - Be careful with the orientation of reverse shift fork and reverse fork rod.
 - Assemble retaining 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.
- 7. Apply recommended grease to interlock plunger (1) and then install it to adapter plate.
 - A : View from transmission rear side
- 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.
- 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]

А

В

ТΜ

Н

Κ

L

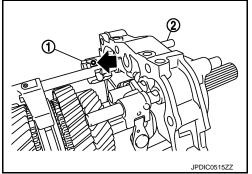
Μ

Ν

Ρ

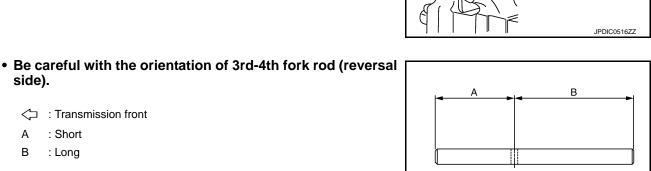
< UNIT DISASSEMBLY AND ASSEMBLY >

- 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.
 - \triangleleft : Transmission front
 - : View from transmission top side А

- 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.



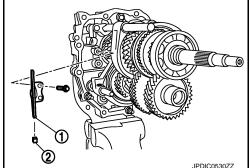
13. Install 3rd-4th control lever (1) and shifter cap (2) to adapter plate and then tighten mounting bolts to the specified torque. **CAUTION:**

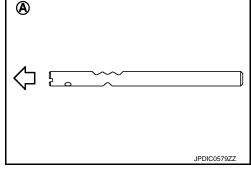
- Be careful with the orientation of 3rd-4th control lever.
- Never lose shifter cap.

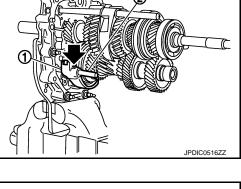
C : Transmission front

: Short

: Long







ຈ

side).

А В

JPDIC0581ZZ

< 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:

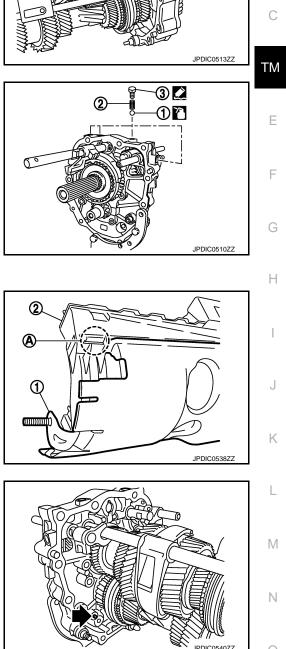
- Never reuse retaining pin.
- Be careful with the orientation of striking lever and striking rod.
- Assemble retaining pin from the direction shown by the arrow in the figure until it becomes flush with the end surface of striking lever.
- Apply gear oil to check balls (1) and then install check balls 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 <u>GI-22, "Recommended Chemical Products and Sealants"</u>.
 CAUTION:
 Remove old sealant and oil adhering to threads.
- 17. Install baffle plate with the following procedure.
- a. Insert baffle plate (1) until its projection contacts groove (A) of oil gutter (2).

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

Ρ



[6MT: FS6R31A]

ิต

(2)

А

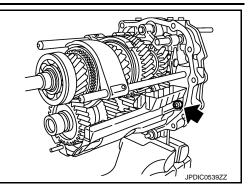
В

< 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.

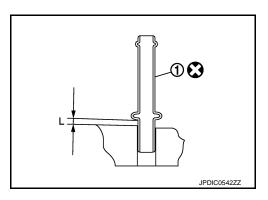


CASE AND EXTENSION

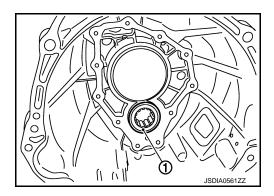
1. Install breather tube (1) to transmission case.

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.



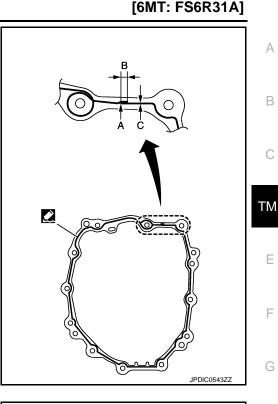
[6MT: FS6R31A]

< UNIT DISASSEMBLY AND ASSEMBLY >

- Apply recommended sealant to mating surface of transmission c. 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-22, "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.



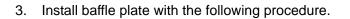
- e. Install transmission case to adapter plate. CAUTION:
 - Check for baffle plate weld bolt location while installing.
 - Check that magnet is within the specified area of adapter plate while installing.
 - Never drop counter front bearing. NOTE:

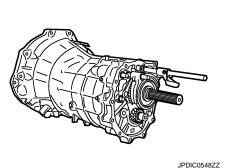
Apply grease to magnet if it is difficult to keep magnet within the specified area of adapter plate.

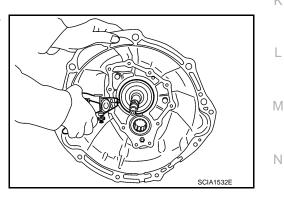
f. Install snap ring to main drive gear bearing, using snap ring pliers.

CAUTION:

Never reuse snap ring.







Ρ

Н

Κ

L

< UNIT DISASSEMBLY AND ASSEMBLY >

a. Tighten mounting nut (\leftarrow) to the specified torque.

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

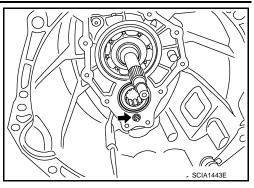
- 4. Install front cover with the following procedure.
- a. Install front oil seal (1) to front cover, using the drift (A) [SST: KV38102100 (J-25803-01)].

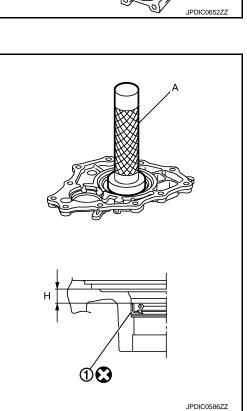
Dimension "H" : 8.55 – 9.55 mm (0.3366 – 0.3760 in)

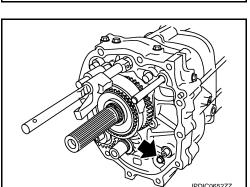
CAUTION:

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.







[6MT: FS6R31A]

< UNIT DISASSEMBLY AND ASSEMBLY >

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

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

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

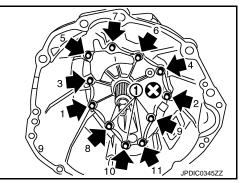
- Install reverse idler shaft assembly (+) to adapter plate. 5.
- Install rear extension with the following procedure. 6.
- Install oil gutter with the following procedure. a.
- i. Seat the prong of oil gutter in the groove on cap.

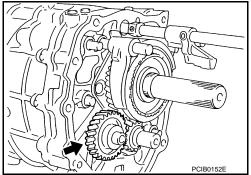
ii. Install oil gutter (1) to rear extension and then tighten mounting bolt to the specified torque.



JPDIC0547ZZ

[6MT: FS6R31A] А В С JPDIC0344ZZ ТΜ F $\bigcirc \mathbf{C}$ 0 JPDIC0343ZZ Н J JPDIC0345ZZ Κ L Μ С Ν PCIB0152E 0 Ρ ۩





< 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.
- 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)

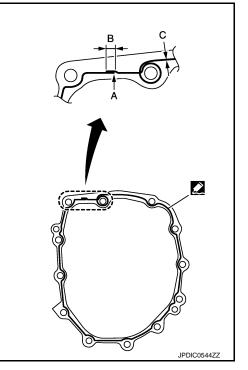
CAUTION:

Never incline rear oil seal.

- JPDICO587ZZ
- 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 <u>GI-22, "Recommended Chemical Products and Sealants"</u>. 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.

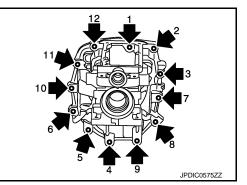


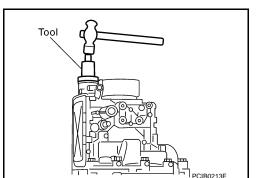
f. Install rear extension to adapter plate and then tighten mounting bolts (
 to the specified torque in the numerical order as shown in the figure.
 CAUTION:

Never 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.





[6MT: FS6R31A]

< UNIT DISASSEMBLY AND ASSEMBLY >

Apply gear oil to return spring plungers (1).

Install return spring plug with the following procedure.

Return spring identification mark

Brown

Blue

3 🕰

В

А

ТΜ



Ε

F

Н

 (\square) TLP<u>CIB1346E</u>



extension.

Region

RH

LH

8.

a.

b.

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

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

- 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 GI-22, "Recommended Chemical Products" and Sealants". CAUTION:

Without

With

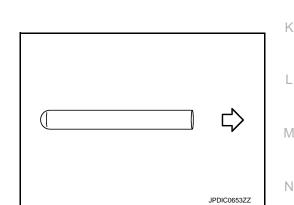
Remove old sealant and oil adhering to threads.

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

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

Be careful with orientation of plunger.

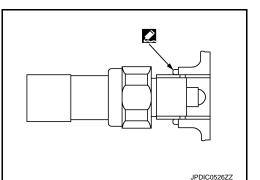
C : Park/Neutral position (PNP) switch side



Temporarily tighten back-up lamp switch onto rear extension by b. 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-22. "Recommended Chemical Products and Sealants".
- Tighten park/neutral position (PNP) switch to the specified d. torque.





0

Ρ

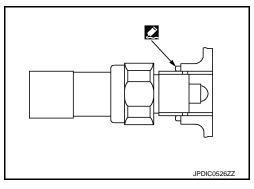
< UNIT DISASSEMBLY AND ASSEMBLY >

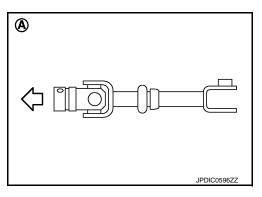
Temporarily tighten back-up lamp switch onto rear extension by rotating once or twice.
 CAUTION:

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 <u>GI-</u> <u>22, "Recommended Chemical Products and Sealants"</u>.
- c. Tighten back-up lamp switch to the specified torque.
- 12. Install control rod with the following procedure.
- Install boot to striking rod oil seal and then install control rod to striking rod.
 CAUTION:
 - Be careful with the orientation of control rod.

 - A : View from transmission top side





Ð

JPDIC0629ZZ

勹

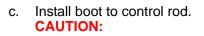
- Be careful with the orientation of boot (1).
 - : Transmission front
 - 2 : Striking rod oil seal

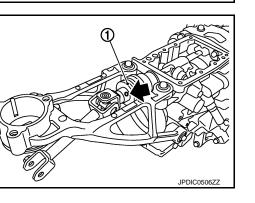
b. Install retaining pin (+) to control rod, using a pin punch [Commercial service tool].

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.





[6MT: FS6R31A]

A

< 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.

- 13. Install brackets with the following procedure.
- a. 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.
- 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.
- d. 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.
- 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.
- 16. Install filler plug with the following procedure.
- a. Install gasket to filler plug and then install it to transmission case

CAUTION:

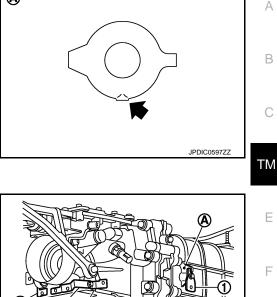
Never reuse gasket.

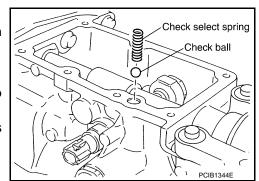
- b. Tighten filler plug to the specified torque. **CAUTION:**
 - After gear oil is filled, tighten filler plug to the specified torque.

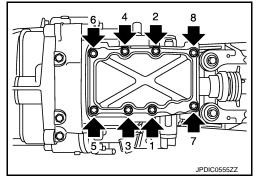


TM-81

2016 370Z









IPDIC054577

Н

Κ

L

M

Ν



< UNIT DISASSEMBLY AND ASSEMBLY >

WITHOUT S-MODE : Inspection

INFOID:000000011738172

[6MT: FS6R31A]

INSPECTION BEFORE DISASSEMBLY

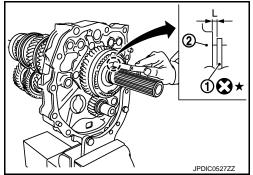
Shaft

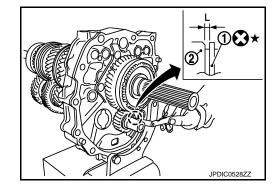
Before disassembly, measure the end play "L" for each position. If the end play is outside the standard value, disassemble and inspect.

Mainshaft

- 1 : Snap ring
- 2 : Reverse synchronizer hub

End play "L" : Refer to TM-150, "End Play".





Counter shaft

- 1 : Snap ring
- 2 : Reverse counter gear

End play "L" : Refer to <u>TM-150, "End Play"</u>.

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

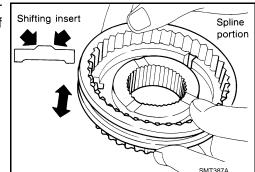
- Check the oil seal mounting surface for wear, cracks, and damages. Replace if necessary.
- Check the mating surface for wear, cracks, and damages. Replace if necessary.

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.

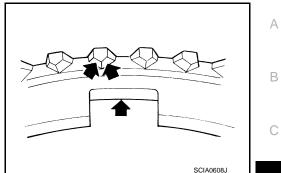


Baulk Ring and Spread Spring

< UNIT DISASSEMBLY AND ASSEMBLY >

[6MT: FS6R31A]

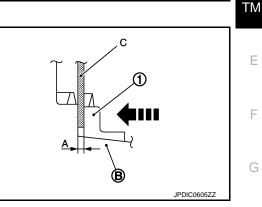
Check the cam surface and contact surface of the baulk ring for damage and uneven wear. Replace if necessary.
Check the spread springs for damage. Replace if necessary.



Baulk Ring Clearance for 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-150, "Baulk Ring Clear-ance"</u>.



Н

Κ

L

Μ

Ν

Ρ

INFOID:0000000011738173

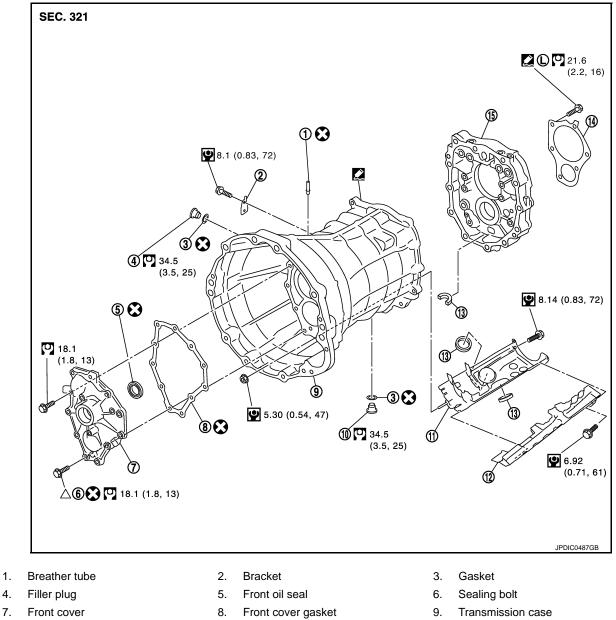
Bearing Check the bearing for damage and unsmooth rotation. Replace if necessary. WITH S-MODE

WITH S-MODE : Exploded View

CASE AND EXTENSION

Revision: 2015 June

< UNIT DISASSEMBLY AND ASSEMBLY >



- 10. Drain plug
- 13. Magnet

1.

- 11. Baffle plate
- 14. Bearing retainer
- 12. Oil gutter
- 15. Adapter plate

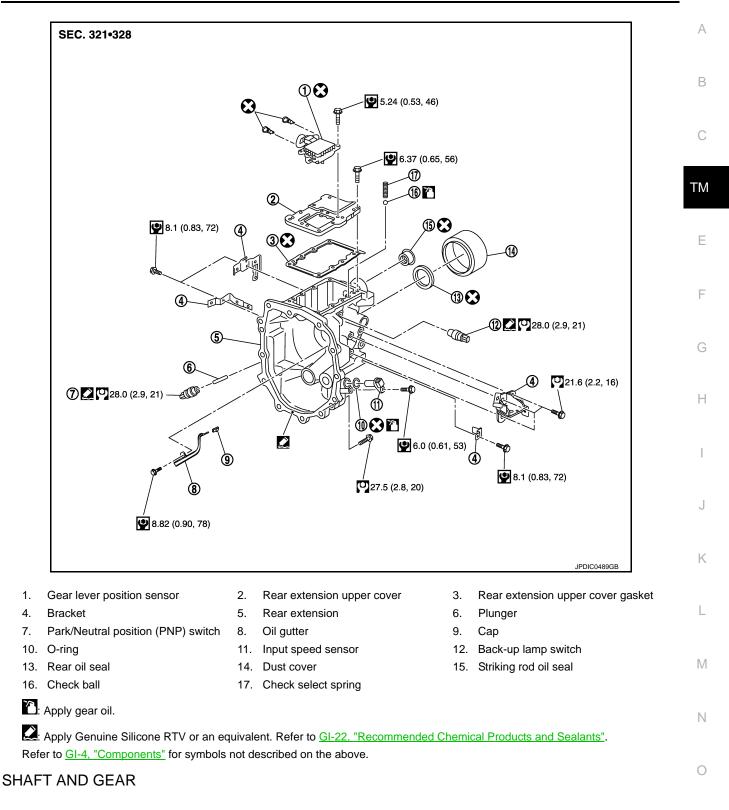
Apply Genuine Silicone RTV or an equivalent. Refer to GI-22, "Recommended Chemical Products and Sealants".

20: Apply Genuine Medium Strength Thread Locking Sealant or an equivalent. Refer to GI-22. "Recommended Chemical Products and Sealants".

△: Refer to "CASE AND EXTENSION" in TM-98, "WITH S-MODE : Assembly" for the locations. Refer to GI-4, "Components" for symbols not described on the above.

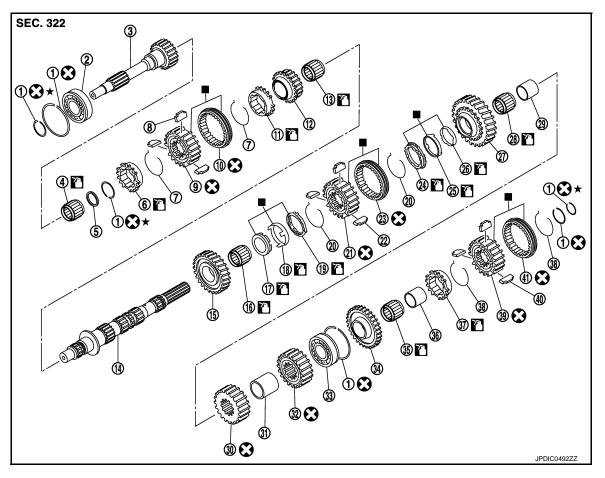
< UNIT DISASSEMBLY AND ASSEMBLY >

[6MT: FS6R31A]



Ρ

< UNIT DISASSEMBLY AND ASSEMBLY >



- 1. Snap ring
- 4. Main pilot bearing
- 7. 5th-6th spread spring
- 10. 5th-6th coupling sleeve
- 13. 6th needle bearing
- 16. 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.

- 2. Main drive gear bearing
- 5. Pilot bearing spacer
- 8. 5th-6th shifting insert
- 11. 6th baulk ring
- 14. Mainshaft
- 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
- 41. Reverse coupling sleeve

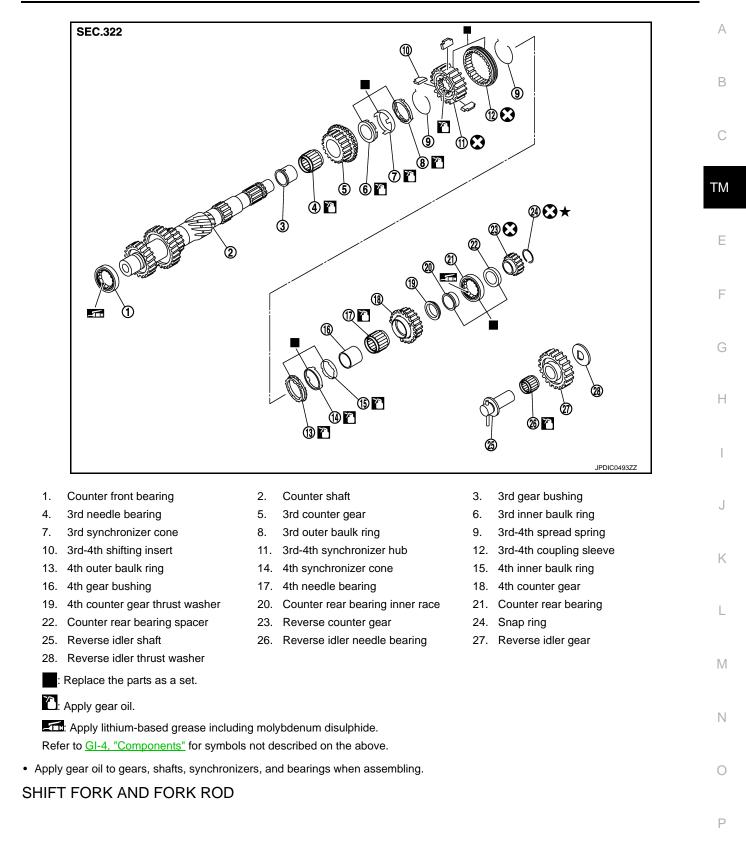
- 3. Main drive gear
- 6. 5th baulk ring
- 9. 5th-6th synchronizer hub
- 12. 6th main gear
- 15. 2nd main gear
- 18. 2nd synchronizer cone
- 21. 1st-2nd synchronizer hub
- 24. 1st outer baulk ring
- 27. 1st main gear
- 30. 3rd main gear
- 33. Mainshaft bearing
- 36. Reverse main gear bushing
- 39. Reverse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

: Apply gear oil.

Refer to <u>GI-4, "Components"</u> for symbols not described on the above.
Apply gear oil to gears, shafts, synchronizers, and bearings when assembling.

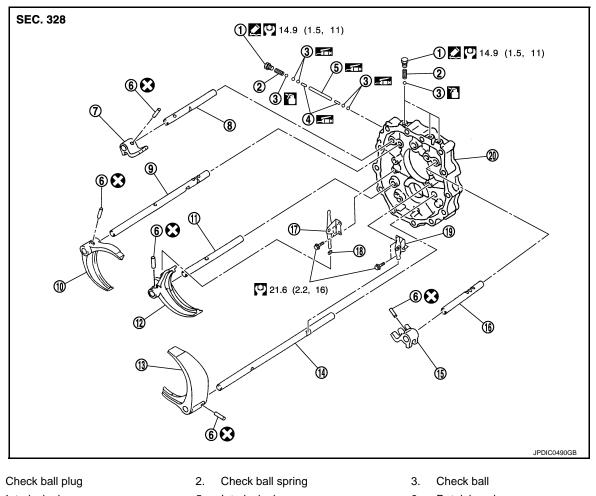
< UNIT DISASSEMBLY AND ASSEMBLY >

[6MT: FS6R31A]



< UNIT DISASSEMBLY AND ASSEMBLY >

[6MT: FS6R31A]



4. Interlock pin

1.

- 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

: Apply gear oil.

5. Interlock plunger

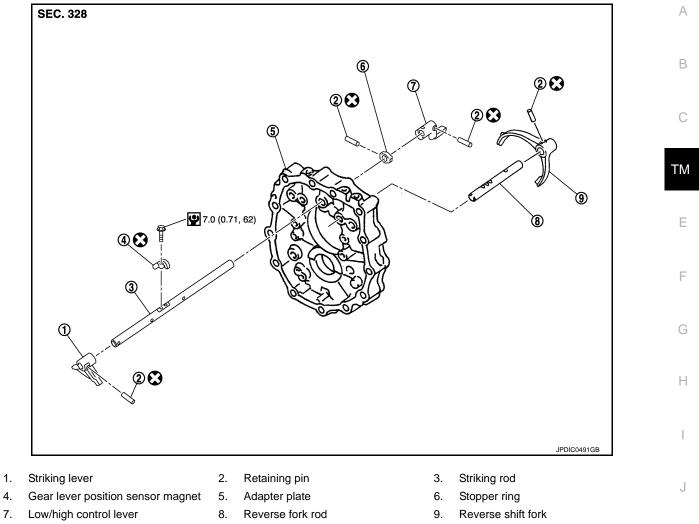
- 8. 3rd-4th fork rod
- 11. 3rd-4th fork rod (reversal side)
- 14. 5th-6th fork rod (reversal side)
- 17. 3rd-4th control lever
- 20. Adapter plate

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

E: Apply lithium-based grease including molybdenum disulphide.

Apply Genuine Silicone RTV or an equivalent. Refer to GI-22, "Recommended Chemical Products and Sealants". Refer to <u>GI-4, "Components"</u> for symbols not described on the above.

< UNIT DISASSEMBLY AND ASSEMBLY >



Refer to <u>GI-4</u>, "Components" for the symbols in the figure.

Revision: 2015 June

Κ

L

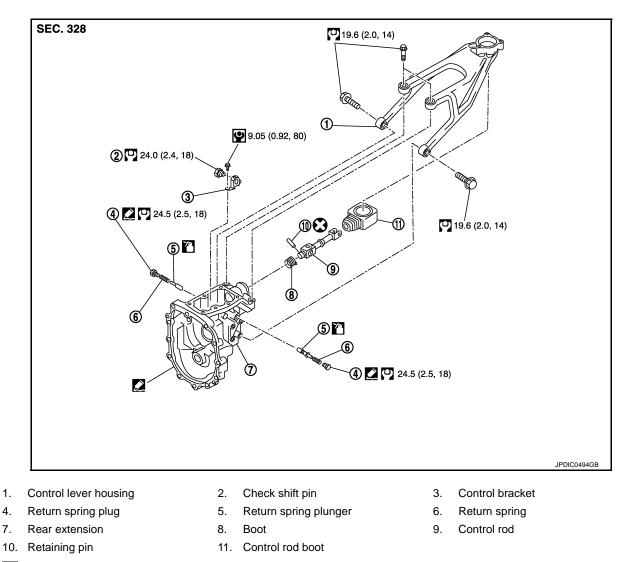
Μ

Ν

Ο

Ρ

< UNIT DISASSEMBLY AND ASSEMBLY >



: Apply gear oil.

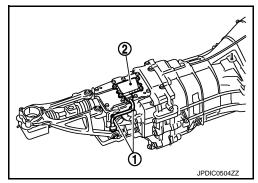
Apply Genuine Silicone RTV or an equivalent. Refer to <u>GI-22. "Recommended Chemical Products and Sealants"</u>. Refer to <u>GI-4. "Components"</u> for symbols not described on the above.

WITH S-MODE : Disassembly

INFOID:000000011738174

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.
- c. Remove gear lever position sensor from rear extension upper cover.



< UNIT DISASSEMBLY AND ASSEMBLY >

4. Remove gear lever position sensor magnet (1) from striking rod.

- 5. Remove rear extension upper cover with the following procedure.
- a. Remove rear extension upper cover mounting bolts while holding rear extension upper cover.
- b. Remove rear extension upper cover and rear extension upper cover gasket from rear extension.
- 6. Remove check select spring and check ball from rear extension. CAUTION:

Never drop check ball.

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

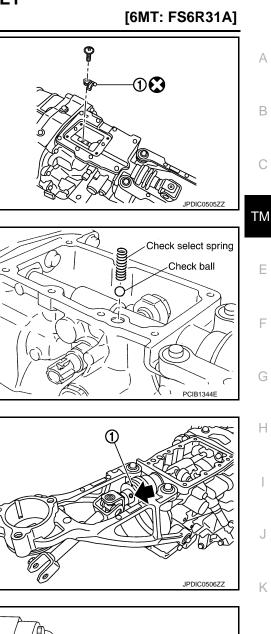
- 12. Remove input speed sensor with the following procedure.
- a. Remove input speed sensor from rear extension. CAUTION:
 - Never disassemble input speed sensor.
 - Never impact input speed sensor by dropping or others.

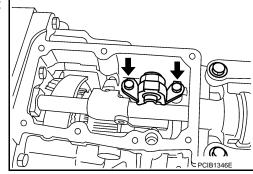


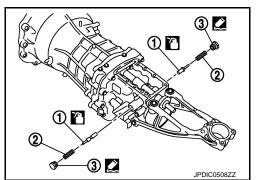
Μ

Ν

Ρ







< 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.

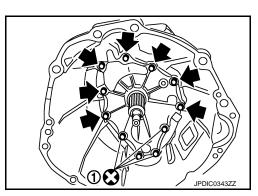
- 17. Remove striking rod oil seal from rear extension. CAUTION: Never damage rear extension.
- 18. Remove dust cover from rear extension. CAUTION:

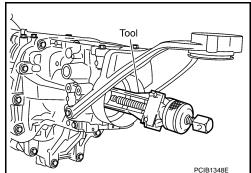
Never damage rear extension.

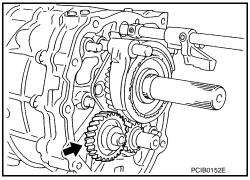
- 19. Remove oil gutter with the following procedure.
- a. Remove oil gutter from rear extension.
- b. Remove cap from oil gutter.
- 20. Remove reverse idler shaft assembly () from adapter plate.



- a. Remove mounting bolts (←) and sealing bolts (1).
- b. Remove front cover and front cover gasket from transmission case.



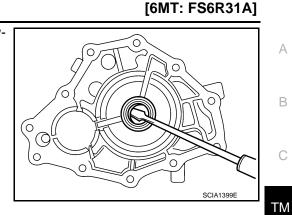




< UNIT DISASSEMBLY AND ASSEMBLY >

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

Never damage front cover.

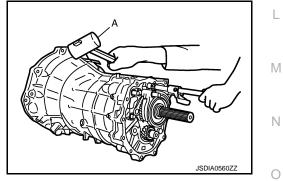


- 22. Remove transmission case with the following procedure.
- a. Remove mounting nut (←) from transmission case.

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

Never drop counter front bearing.



Е

F

Н

J

Κ

SCIA1443E

SCIA1532E

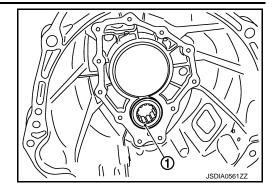
< UNIT DISASSEMBLY AND ASSEMBLY >

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

Never damage transmission case.

25. Remove bracket from transmission case.







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

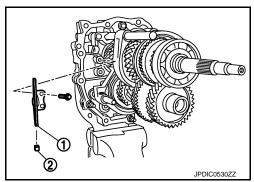
Never directly secure the surface in a vise.

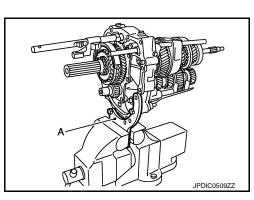
- 2. Remove baffle plate and oil gutter from adapter plate.
- 3. Remove magnets from baffle plate.
- 4. Remove magnet from adapter plate.
- Remove check balls (1), check ball springs (2), and check ball plugs (3) from adapter plate.
 CAUTION:

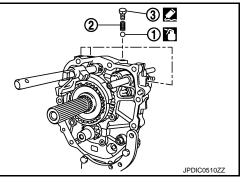
Never drop check ball.

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

Never lose shifter cap.







< UNIT DISASSEMBLY AND ASSEMBLY >

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

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).

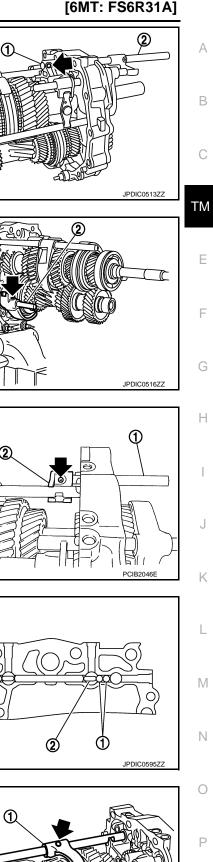
Remove retaining pin (+), using a pin punch [Commercial ser-9. vice tool] and then remove 3rd-4th fork rod (1) and 3rd-4th fork rod bracket (2).

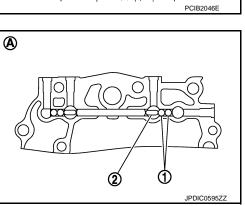
- 10. Remove check balls (1) from adapter plate.
 - A : View from transmission rear side

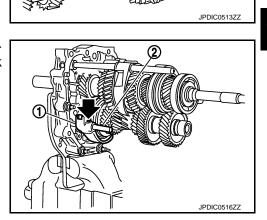
CAUTION: Never drop check ball.

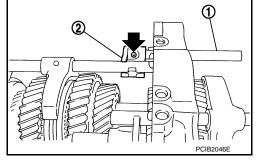
- 11. Remove interlock pin (2) from 1st-2nd fork rod. CAUTION: Never drop interlock pin.
- 12. Remove retaining pin (+), using a pin punch [Commercial service tool] and then remove 1st-2nd shift fork (1) and 1st-2nd fork rod (2).

JPDIC0514ZZ







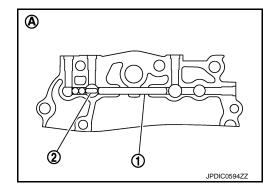


< UNIT DISASSEMBLY AND ASSEMBLY >

[6MT: FS6R31A]

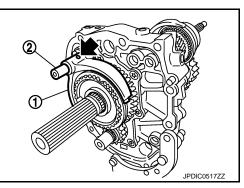
- 13. Remove interlock plunger (1) from adapter plate.
 - A : View from transmission rear side
- 14. Remove interlock pin (2) from reverse fork rod.

Never drop interlock pin.



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.

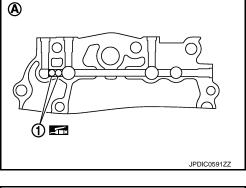


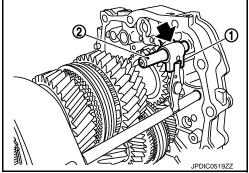
16. Remove check balls (1) from adapter plate.A : View from transmission rear side

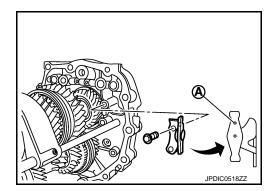
CAUTION: Never drop check ball.

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







Revision: 2015 June

< UNIT DISASSEMBLY AND ASSEMBLY >

[6MT: FS6R31A]

Puller

SCIA1683E

Ε

F

Н

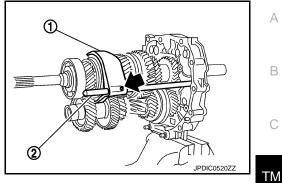
Κ

Μ

Ν

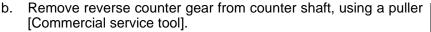
Ρ

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).

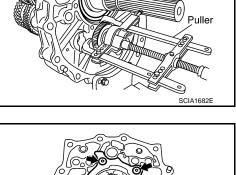


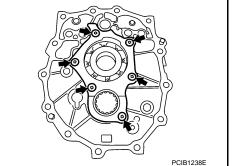
SHAFT AND GEAR

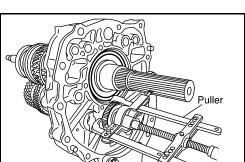
- 1. Remove reverse synchronizer hub with the following procedure.
- a. Remove snap ring from mainshaft.
- b. Remove snap ring from reverse synchronizer hub.
- c. Remove reverse spread spring, reverse shifting inserts, and reverse coupling sleeve from reverse synchronizer hub.
- d. Set a puller [Commercial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



4. Remove counter rear bearing spacer from counter shaft.







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

< UNIT DISASSEMBLY AND ASSEMBLY >

6. Remove snap ring from mainshaft bearing.

Revision: 2015 June

shaft assembly combined in one unit from adapter plate.

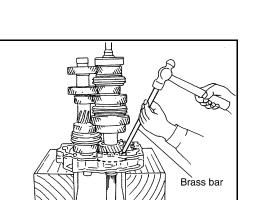
7. Carefully tap mainshaft with a plastic hammer and then remove mainshaft assembly, main drive gear assembly, and counter

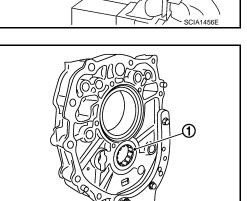
- 8. Remove counter rear bearing (1) from adapter plate.
- 9. Remove adapter plate from adapter setting plate [SST: ST22490000 (-)].

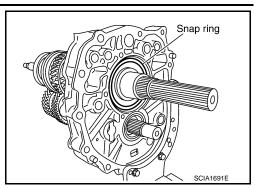
WITH S-MODE : Assembly

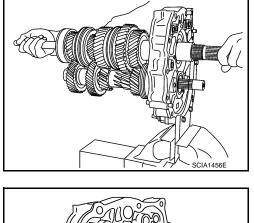
SHAFT AND GEAR

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









JSDIA0565ZZ

INFOID:000000011738175

PCIB0151E

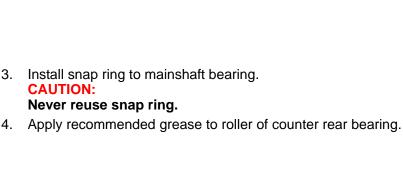
[6MT: FS6R31A]

< UNIT DISASSEMBLY AND ASSEMBLY >

3.

2. 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.



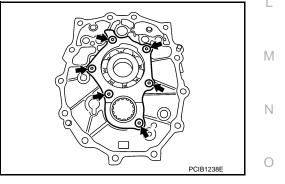
5. Install counter rear bearing to adapter plate, using the drift [SST]. **CAUTION:**

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 GI-22, "Recommended Chemical Products and Sealants". CAUTION:

Remove old sealant and oil adhering to threads.

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



PCIB1375E

Κ

Ρ

CAUTION:



А

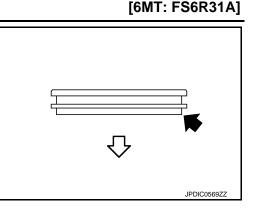
В ST22490000 () PCIB1266E TΜ Snap ring F SCIA1691E Н ST33200000 (J-26082)

< UNIT DISASSEMBLY AND ASSEMBLY >

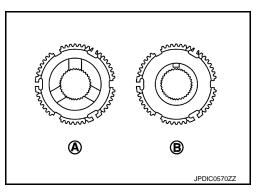
• Be careful with the orientation of reverse coupling sleeve.

<□ : Reverse main gear side

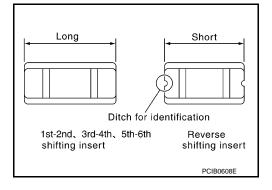
- Never reuse reverse coupling sleeve and reverse synchronizer hub.
- Replace reverse coupling sleeve and reverse synchronizer hub as a set.



- Be careful with the orientation of reverse synchronizer hub.
 - A : Reverse main gear side
 - B : Snap ring side

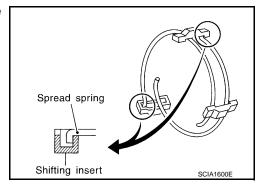


• Be careful with the shape of reverse shifting insert.



 Install reverse spread springs to reverse shifting inserts.
 CAUTION: Never install reverse spread spring hook onto the same

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 >

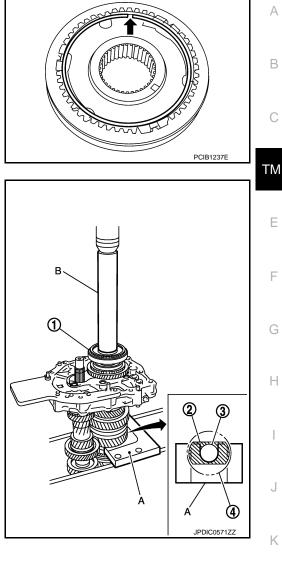
• Never align snap ring notch (+) with synchronizer hub groove when assembling.

Install reverse synchronizer hub assembly (1) with the following

Set the press plate (A) [SST: KV32103300 (J-46529)] to main-

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





NOTE:

8.

a.

c.

procedure.

: Collar of mainshaft

shaft as shown in the figure.

B : Drift [SST: ST01530000 (-)]

: 6th main gear

: 2nd main gear

baulk ring to mainshaft.

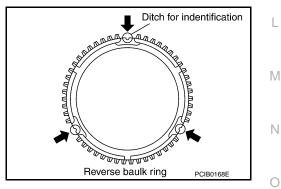
2

3

4

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:

< UNIT DISASSEMBLY AND ASSEMBLY >

[6MT: FS6R31A]

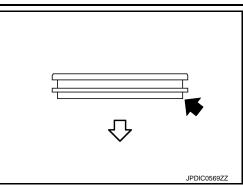
Be careful with the orientation of reverse coupling sleeve.

refer to the latest parts information.

2 : Reverse synchronizer hub

End play "L"

9.

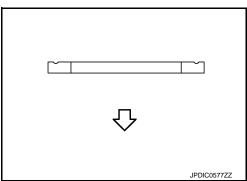


- Select and install snap ring (1) so that the end play "L" of mainshaft is adjusted to the standard value. For selecting snap ring, ⓓ€3★ JPDIC0527ZZ
- 10. Install reverse counter gear with the following procedure.
- a. Install counter rear bearing spacer to counter shaft. **CAUTION:**
 - · Be careful with the orientation of counter rear bearing spacer.

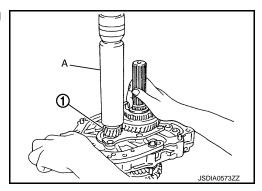
: Refer to TM-150, "End Play".

<□ : Counter rear bearing side

• 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 b. machine, using the drift (A) [SST: ST23860000 (-)]. **CAUTION:**
 - Never reuse reverse counter gear.



< UNIT DISASSEMBLY AND ASSEMBLY >

[6MT: FS6R31A]

А

В

Ε

F

Н

Κ

L

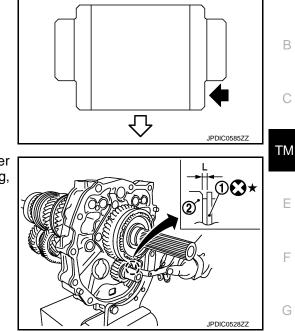
Μ

Ν

- Be careful with the orientation of reverse counter gear.

- 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

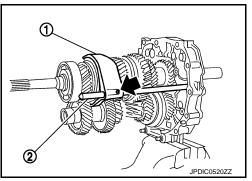
: Refer to TM-150, "End Play". End play "L"

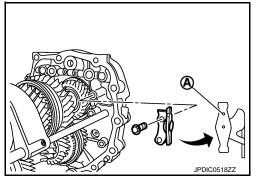


SHIFT FORK AND FORK ROD

- 1. Install 5th-6th shift fork (1) and 5th-6th fork rod (reversal side) (2) and then install retaining pin (\leftarrow) 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.





Ρ

< 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.
- 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.

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

CAUTION:

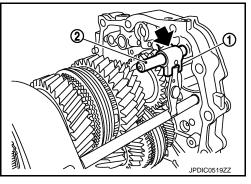
Never drop interlock pin.

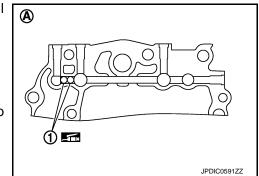
- Install reverse shift fork (1) and reverse fork rod (2) and then install retaining pin (+) to reverse shift fork, using a pin punch [Commercial service tool].
 - CAUTION:
 - Never reuse retaining pin.
 - Be careful with the orientation of reverse shift fork and reverse fork rod.
 - Assemble retaining 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.
- 7. Apply recommended grease to interlock plunger (1) and then install it to adapter plate.
 - A : View from transmission rear side
- 8. Apply recommended grease to interlock pin and then install it to 1st-2nd fork rod.

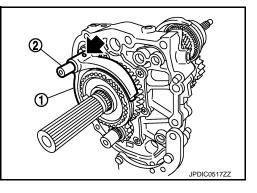
CAUTION:

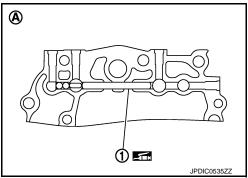
Never drop interlock pin.

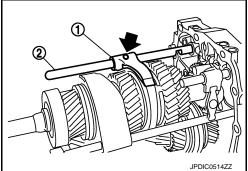
- Install 1st-2nd shift fork (1) and 1st-2nd fork rod (2) and then install retaining pin (⇐) to 1st-2nd shift fork, using a pin punch [Commercial service tool].
 CAUTION:
 - Never reuse retaining pin.
 - Be careful with the orientation of 1st-2nd shift fork and 1st-2nd fork rod.
 - Assemble retaining pin from the direction shown by the arrow in the figure until it becomes flush with the end surface of 1st-2nd shift fork.











[6MT: FS6R31A]

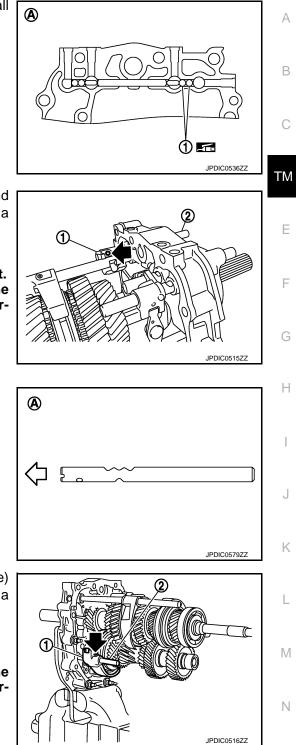
< UNIT DISASSEMBLY AND ASSEMBLY >

[6MT: FS6R31A]

- 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.



- 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.

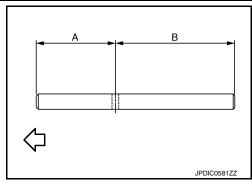
 - A : View from transmission top side

- 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.

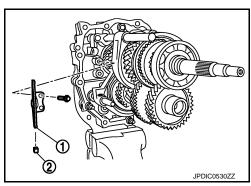
Ρ

< UNIT DISASSEMBLY AND ASSEMBLY >

- 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.



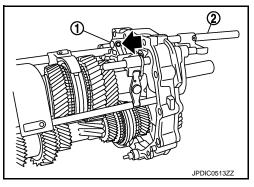
- 14. Install striking lever (1) and striking rod (2) and then install retaining pin (←) to striking lever, using a pin punch [Commercial service tool].
 - CAUTION:
 - Never reuse retaining pin.
 - Be careful with the orientation of striking lever and striking rod.
 - Assemble retaining pin from the 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:

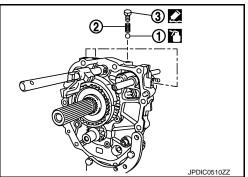
Never drop check ball.

 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 <u>GI-22, "Recommended Chemical Products and Sealants"</u>.
 CAUTION: Remove old sealant and oil adhering to threads.

17. Install baffle plate with the following procedure.





< UNIT DISASSEMBLY AND ASSEMBLY >

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

[6MT: FS6R31A]

А

В

С

TΜ

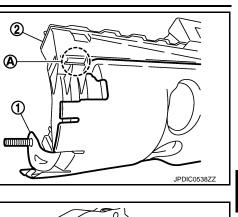
Ε

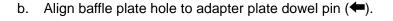
F

Н

Κ

Ρ

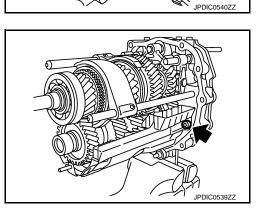




- c. Install mounting bolt (+) to adapter plate and then tighten mounting bolt to the specified torque.
- 18. Install magnets to baffle plate.
- 19. Remove adapter plate assembly from vise. CAUTION:

Never damage baffle plate.

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



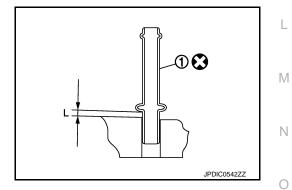
CASE AND EXTENSION

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

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

CAUTION:

Never bend breather tube.



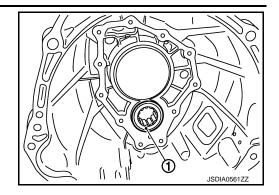
2. Install transmission case with the following procedure.

< UNIT DISASSEMBLY AND ASSEMBLY >

a. Install counter front bearing (1) to transmission case.

b. Apply recommended grease to roller of counter front bearing.

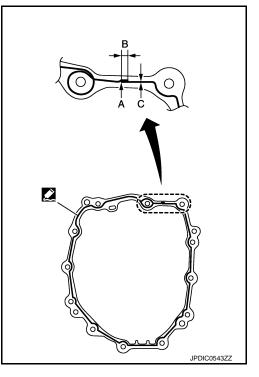
[6MT: FS6R31A]

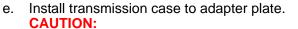


- c. Apply recommended sealant to mating surface of transmission case as shown in the figure.
 - A : Start and finish point shall be in the center of two bolts.

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 <u>GI-22, "Recommended Chemical Products and Sealants"</u>. 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.





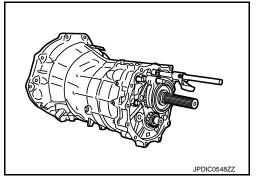
- Check for baffle plate weld bolt location while installing.
- Check that magnet is within the specified area of adapter
- plate while installing.Never drop counter front bearing.

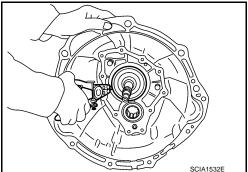
NOTE:

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 pliers.

CAUTION: Never reuse snap ring.





< UNIT DISASSEMBLY AND ASSEMBLY >

[6MT: FS6R31A]

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

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

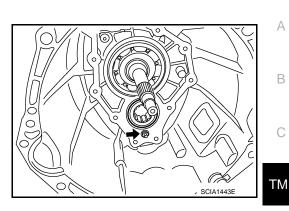
- 4. Install front cover with the following procedure.
- a. Install front oil seal (1) to front cover, using the drift (A) [SST: KV38102100 (J-25803-01)].

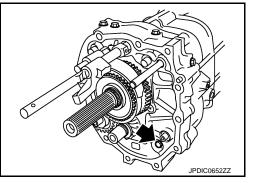
Dimension "H" : 8.55 – 9.55 mm (0.3366 – 0.3760 in)

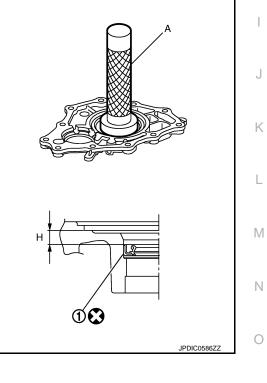
CAUTION:

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.







Ρ

Ε

F

Н

< UNIT DISASSEMBLY AND ASSEMBLY >

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

d. Temporarily tighten mounting bolts (\Leftarrow) 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 gear lever position sensor magnet (1) to striking rod.

• Replace gear lever position sensor magnet when it is

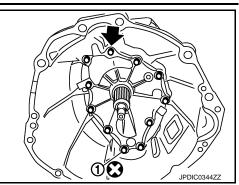
• Never place gear lever position sensor magnet near mag-

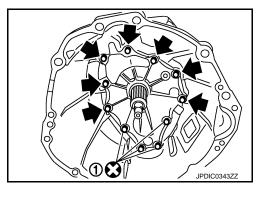
Revision: 2015 June

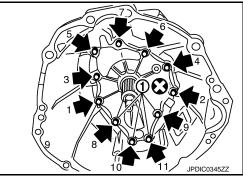
CAUTION:

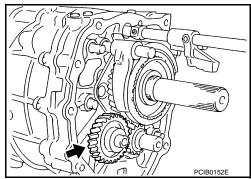
dropped.

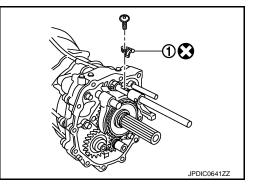
netic materials.











< UNIT DISASSEMBLY AND ASSEMBLY >

bolt to the specified torque.

ST33061000 (J-8107-2)].

ST33400001 (J-26082)].

Never incline rear oil seal.

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

CAUTION:

CAUTION:

Install oil gutter with the following procedure.

7.

a.

i.

ii.

c.

d.

[6MT: FS6R31A]

- Never allow foreign matter on striking rod (1) mounting А surface and gear lever position sensor magnet (2). Install rear extension with the following procedure. В Seat the prong of oil gutter in the groove on cap. JPDIC0642ZZ TΜ Install oil gutter (1) to rear extension and then tighten mounting Ε ന P F JPDIC0547ZZ Н b. Install striking rod oil seal to rear extension, using the drift [SST: Tool Κ PCIB0213E Install rear oil seal (1) to rear extension, using the drift [SST: L Dimension "H" : 1.2 – 2.2 mm (0.047 – 0.087 in) Μ ٦0 Ν н JPDIC0587ZZ
 - Ρ

Revision: 2015 June

TM-111

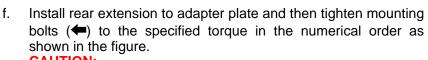
< UNIT DISASSEMBLY AND ASSEMBLY >

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 <u>GI-22</u>, "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.



CAUTION:

- Never impact rear oil seal and striking rod oil seal.
- 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.

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

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

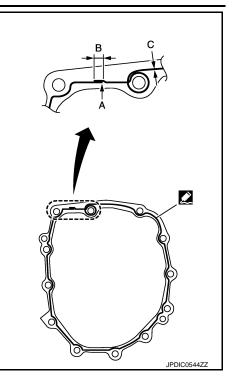
CAUTION:

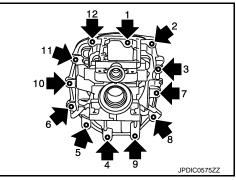
The right and left return springs and return spring plungers are different, so make sure they are installed correctly.

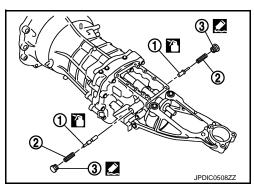
- c. Apply recommended sealant to threads of return spring plugs (3) and then tighten its to the specified torque.
 - Use Genuine Silicone RTV or an equivalent. Refer to <u>GI-22, "Recommended Chemical Products</u> <u>and Sealants"</u>.

CAUTION:

Remove old sealant and oil adhering to threads.

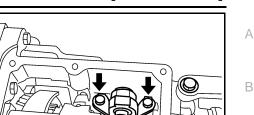






< UNIT DISASSEMBLY AND ASSEMBLY >

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



0

[6MT: FS6R31A]

0

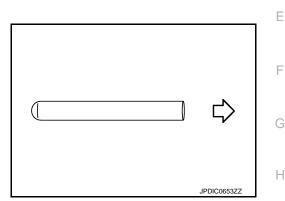
 (\mathbf{O}) PCIB1346E

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

Install plunger to rear extension. a. **CAUTION:**

Be careful with orientation of plunger.

: Park/Neutral position (PNP) switch side



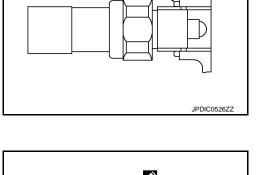
Temporarily tighten back-up lamp switch onto rear extension by b. rotating once or twice. **CAUTION:**

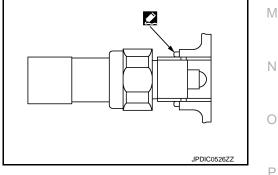
Remove old sealant and oil adhering to threads.

- 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-22, "Recommended Chemical Products and Sealants".
- Tighten park/neutral position (PNP) switch to the specified d. torque.
- 12. Install back-up lamp switch with the following procedure.
- Temporarily tighten back-up lamp switch onto rear extension by а 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-22, "Recommended Chemical Products and Sealants".
- c. Tighten back-up lamp switch to the specified torque.
- 13. Install control rod with the following procedure.
- a. Install boot to striking rod oil seal and then install control rod to striking rod. **CAUTION:**





ТΜ

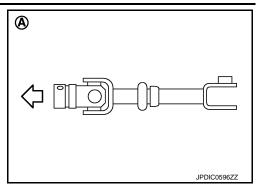
Κ

< UNIT DISASSEMBLY AND ASSEMBLY >

[6MT: FS6R31A]

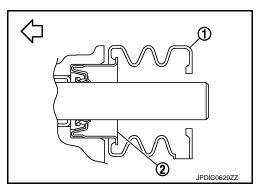
• Be careful with the orientation of control rod.

- A : View from transmission top side



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

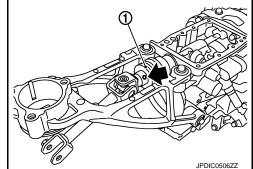
 - 2 : Striking rod oil seal



- b. 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.

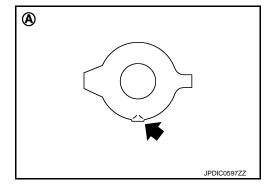


c. Install boot to control rod. CAUTION:

• Be careful with the orientation of boot.

A : View from transmission rear side

- Fit control rod boot to the groove on control rod.
- 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) a. and then tighten mounting bolt to the specified torque. CAUTION:

Be careful with orientation of bracket.

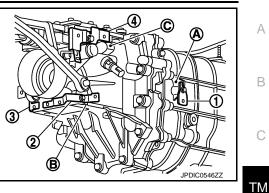
- b. Install bracket (2) so that it contacts the projection (B) of rear extension and then tighten mounting bolt to the specified torque.
- Install bracket (3) to rear extension and then tighten mounting C. bolt to the specified torque.
- d. Install bracket to rear extension and then tighten mounting 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:**

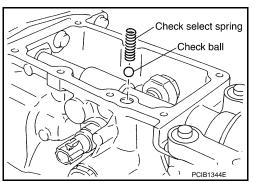
Never drop check ball.

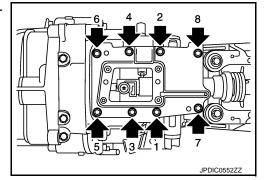
- b. Install check ball and check select spring to rear extension.
- Install rear extension upper cover gasket and rear extension С upper cover to rear extension. **CAUTION:**
 - Never reuse rear extension upper cover gasket.
 - Remove any moisture, oil, or foreign material adhering to both mating surfaces.
- d. Temporarily tighten rear extension upper cover mounting bolts while holding rear extension upper cover. CAUTION:

Avoid tangling check select spring.

Tighten mounting bolts (to the specified torque in the numere. ical order as shown in the figure.



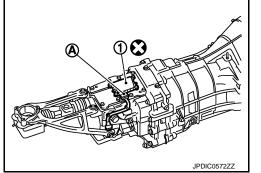




- 16. Install gear lever position sensor with the following procedure.
- a. Install gear lever position sensor (1) to rear extension upper cover.

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).



А

В

F

Н

Κ

L

Μ

Ν

< UNIT DISASSEMBLY AND ASSEMBLY >

[6MT: FS6R31A]

2 🕄

JPDIC0573ZZ

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

- 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.

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.

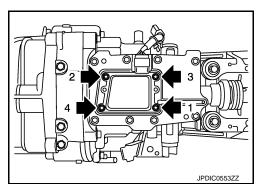
b. Tighten filler plug to the specified torque.
 CAUTION:
 After gear oil is filled, tighten filler plug to the specified torque.

WITH S-MODE : Inspection and Adjustment

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.



INFOID:000000011738176

< UNIT DISASSEMBLY AND ASSEMBLY >

[6MT: FS6R31A]

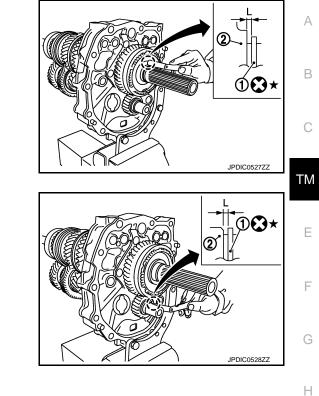
· Mainshaft

- 1 : Snap ring
- 2 : Reverse synchronizer hub

End play "L" : Refer to TM-150, "End Play".

- Counter shaft
 - 1 : Snap ring
 - 2 : Reverse counter gear

End play "L" : Refer to <u>TM-150, "End Play"</u>.



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.

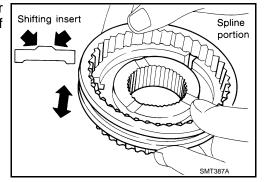
Gear

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

Synchronizer Hub and Coupling Sleeve

Baulk Ring and Spread Spring

- 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.



Ρ

Κ

L

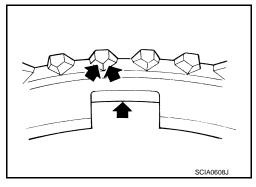
Μ

Ν

< UNIT DISASSEMBLY AND ASSEMBLY >

[6MT: FS6R31A]

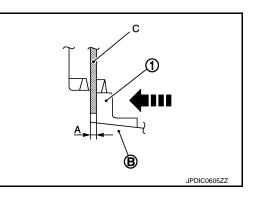
- Check the cam surface and contact surface of the baulk ring for damage and uneven wear. Replace if necessary.
- Check the spread springs for damage. Replace if necessary.



Baulk Ring Clearance for 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-150</u>, "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-25</u>, "<u>M/T NEUTRAL POSITION LEARNING</u> : <u>Special Repair Requirement</u>".

< UNIT DISASSEMBLY AND ASSEMBLY >

MAIN DRIVE GEAR

Exploded View

INFOID:000000011738177

А

В

С

F

Н

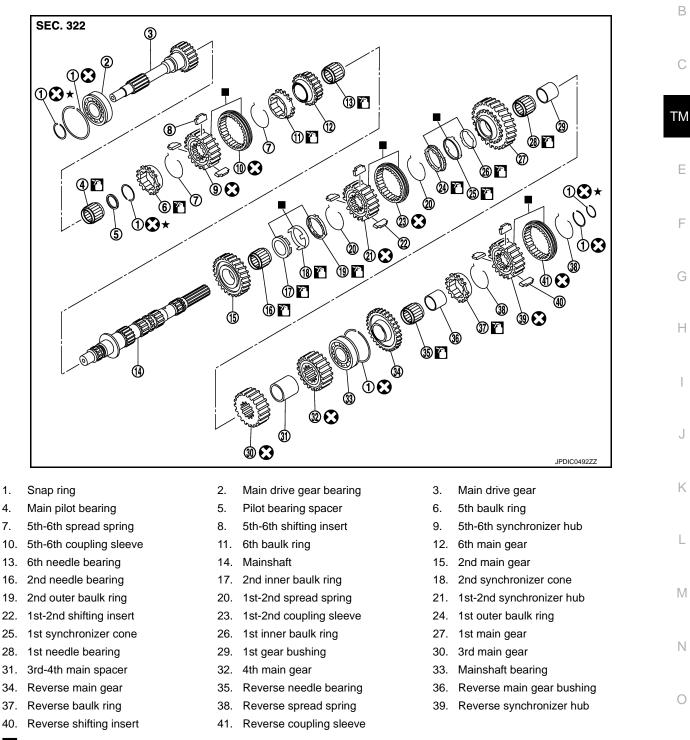
Κ

L

Μ

Ν

Ρ



: Replace the parts as a set.

: Apply gear oil.

1.

4.

7.

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

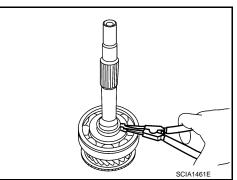
· Apply gear oil to gears, shafts, synchronizers, and bearings when assembling.

< UNIT DISASSEMBLY AND ASSEMBLY >

INFOID:000000011738178

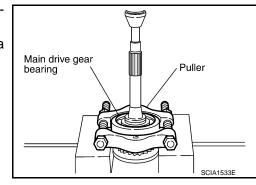
Disassembly

- 1. Remove 5th baulk ring, pilot bearing spacer, and main pilot bearing from main drive gear.
- 2. Remove snap ring from main drive gear, using snap ring pliers.



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

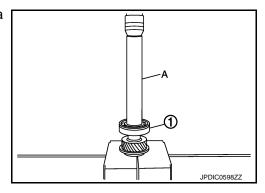
Never drop main drive gear.



INFOID:000000011738179

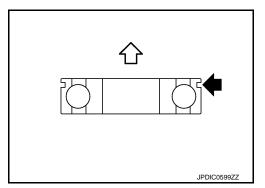
Assembly

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.

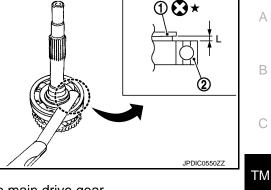


< UNIT DISASSEMBLY AND ASSEMBLY >

- 2. 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

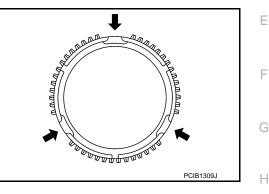
End play "L" : Refer to TM-150, "End Play".

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



4. 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.



INFOID:000000011738180

Κ

M

Ν

Ρ

Inspection

INSPECTION BEFORE DISASSEMBLY

Gear

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

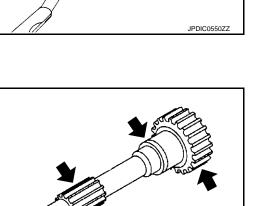
- 1 : Snap ring
- 2 : Main drive gear bearing

End play "L" : Refer to <u>TM-150, "End Play"</u>.



Gear

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



Baulk Ring

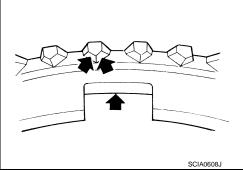
IPDIC00297

Revision: 2015 June

< UNIT DISASSEMBLY AND ASSEMBLY >

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

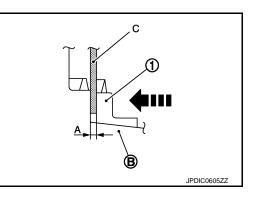
[6MT: FS6R31A]



Baulk Ring Clearance for Single Cone Synchronizer (5th)

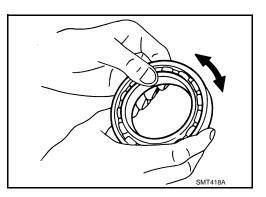
Measure the clearance "A" when pressing the baulk ring (1) against the cone (B) of clutch gear by hands at 2 points or more on the opposite side, using a feeler gauge (C), and then calculate the mean value. Replace if outside the limit value.

Clearance "A" : Refer to <u>TM-150, "Baulk Ring Clear-ance"</u>.



Bearing

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



< UNIT DISASSEMBLY AND ASSEMBLY >

MAINSHAFT AND GEAR

Exploded View

INFOID:000000011738181

А

В

С

ТΜ

F

Н

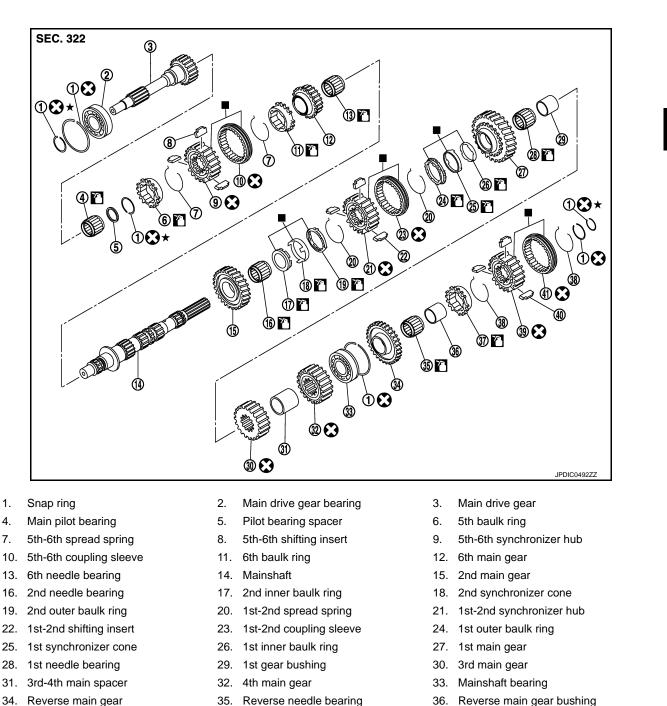
Κ

L

Μ

Ν

Ρ



- 34. Reverse main gear
- Reverse baulk ring 37.
- 40. Reverse shifting insert
- : Replace the parts as a set.
- : Apply gear oil.

1.

4.

7.

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

38.

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

Reverse spread spring

41. Reverse coupling sleeve

39.

Reverse synchronizer hub

< UNIT DISASSEMBLY AND ASSEMBLY >

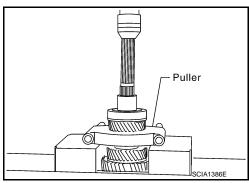
Disassembly

INFOID:000000011738182

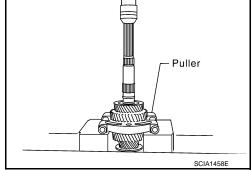
- 1. Remove 4th main gear with the following procedure.
- a. Set a puller [Commercial service tool] to 4th main gear.
- Remove mainshaft bearing and reverse main gear bushing together with 4th main gear from mainshaft with a pressing machine.
 CAUTION:

Never drop mainshaft.

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



- 3. Remove 1st main gear with the following procedure.
- a. Set a puller [Commercial service tool] to 1st main gear.
- 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.



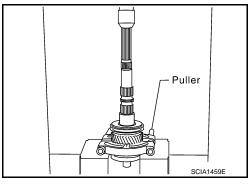
- 5. Remove 2nd main gear with the following procedure.
- a. Set a puller [Commercial service tool] to 2nd main gear.

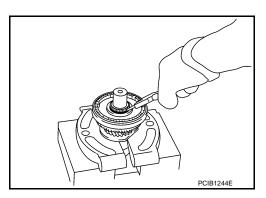
Set V-block in the position where V-block does not contact with collar of mainshaft.

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. a. **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.

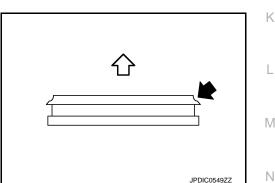
Assembly

- 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:

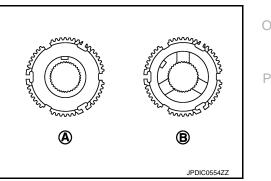
5th and 6th baulk rings have three spaces that four gear teeth are missing as shown in the figure.

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

- Never reuse 5th-6th coupling sleeve and 5th-6th synchronizer hub.
- 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 Α
 - R : 6th main gear side



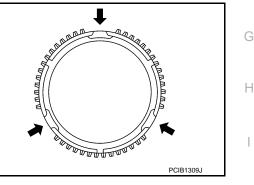
[6MT: FS6R31A] А Puller В SCIA1460E

ТΜ

F

L

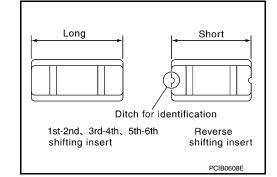
INFOID:000000011738183



<□ : 6th main gear side

< UNIT DISASSEMBLY AND ASSEMBLY >

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

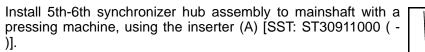


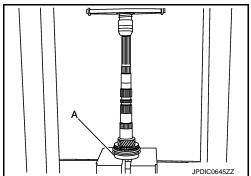
[6MT: FS6R31A]

SCIA1600E

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

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





Spread spring

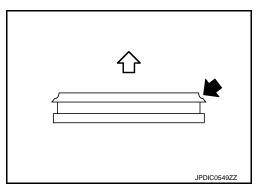
Shifting insert

CAUTION:

c.

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

<□ : 6th main gear side



< 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-150, "End Play".

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

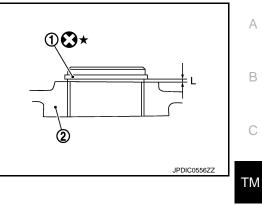
Replace 2nd inner baulk ring, 2nd synchronizer cone, and 2nd outer baulk ring as a set.

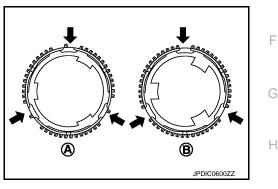
Install 2nd needle bearing, 2nd main gear, 2nd inner baulk ring, 2nd synchronizer cone, and 2nd outer 6. baulk ring to mainshaft.

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.

- А : 1st outer baulk ring
- В : 2nd outer baulk ring



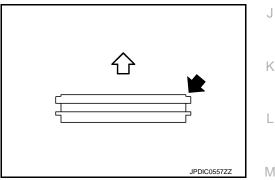


- 7. Install 1st-2nd synchronizer hub assembly with the following procedure.
- Install 1st-2nd coupling sleeve and 1st-2nd shifting inserts to 1st-2nd synchronizer hub. a. CAUTION:

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

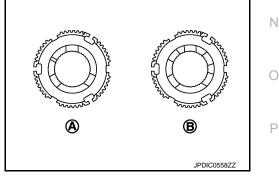
 \triangleleft : 2nd main gear side

- 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.
 - А : 2nd main gear side
 - В : 1st main gear side

Revision: 2015 June



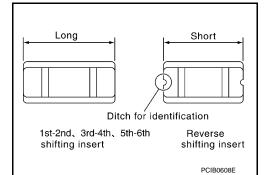
[6MT: FS6R31A]

Ε

F

< UNIT DISASSEMBLY AND ASSEMBLY >

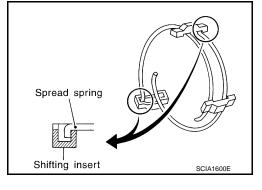
• Be careful with the shape of 1st-2nd shifting insert.

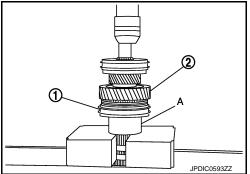


b. Install 1st-2nd spread springs to 1st-2nd shifting inserts. CAUTION:

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

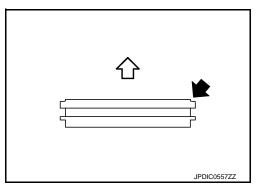




CAUTION:

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

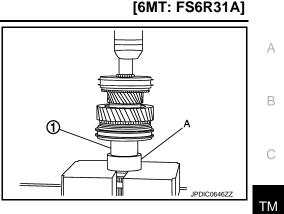
<□ : 2nd main gear side



< UNIT DISASSEMBLY AND ASSEMBLY >

- 8. Install 1st gear bushing (1) to mainshaft with a pressing machine, using the support ring (A) [SST: ST27861000 (-)].
- 9. 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.

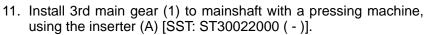


10. Install 1st outer baulk ring, 1st synchronizer cone, 1st inner baulk ring, 1st needle bearing, and 1st main gear to mainshaft.

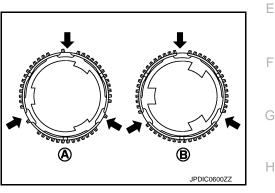
NOTE:

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.

- А : 1st outer baulk ring
- В : 2nd outer baulk ring



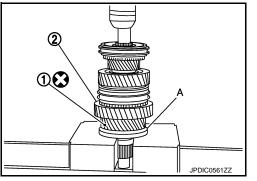
2 : 1st main gear



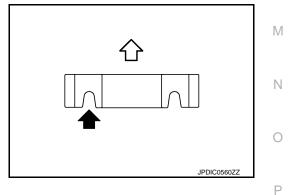
F

Κ

L



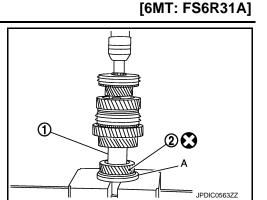
CAUTION: Be careful with the orientation of 3rd main gear.



< 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 (-)].

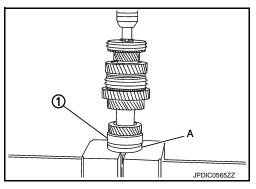


CAUTION:

Be careful with the orientation of 4th main gear.

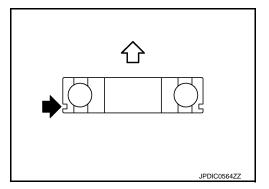
<> : 3rd-4th main spacer side

- JDDIC0562ZZ
- 14. Install mainshaft bearing (1) to mainshaft with a pressing machine, using the inserter (A) [SST: ST30911000 ()].



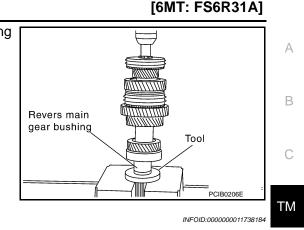
CAUTION:

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 (-)].



Inspection

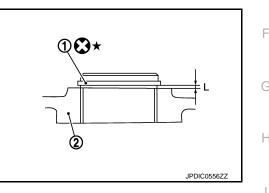
INSPECTION BEFORE DISASSEMBLY

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 2

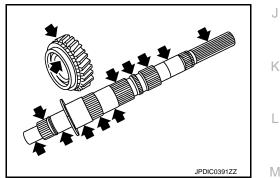
End play "L" : Refer to TM-150, "End Play".



INSPECTION AFTER DISASSEMBLY

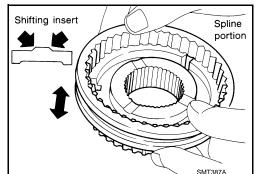
Shaft and Gear

- · 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

Ε

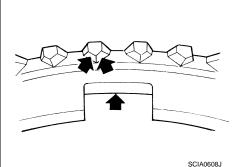
Н

Ν



< 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.

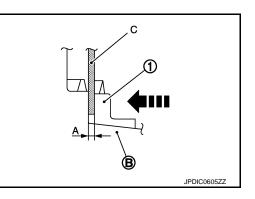


[6MT: FS6R31A]

Baulk Ring Clearance for Single Cone Synchronizer (6th)

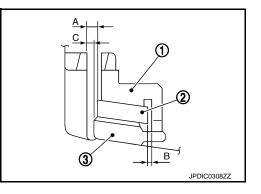
Measure the clearance "A" when pressing the baulk ring (1) against the cone (B) of clutch gear by hands at 2 points or more on the opposite side, using a feeler gauge (C), and then calculate the mean value. Replace if outside the limit value.

Clearance "A" : Refer to <u>TM-150, "Baulk Ring Clear-ance"</u>.



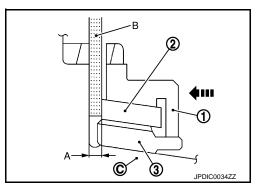
Baulk Ring Clearance for Triple Cone Synchronizer (1st and 2nd) Measure the clearance of outer baulk ring (1), synchronizer cone (2), and inner baulk ring (3) with the following procedure. CAUTION:

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 cone
 - 3 : Inner baulk ring

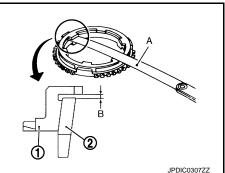
Clearance "A" : Refer to <u>TM-150, "Baulk Ring Clear-ance"</u>.



< 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 ring
 - 2 : Synchronizer cone

Clearance "B" : Refer to <u>TM-150, "Baulk Ring Clear-ance"</u>.

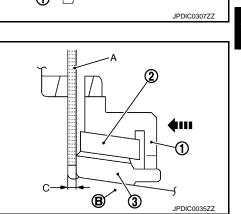


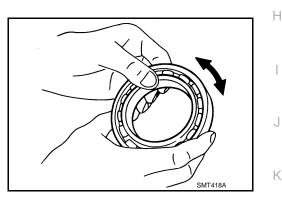
- 3. Measure the clearance "C" when pressing the outer baulk ring (1) against the cone (B) of clutch gear by hands at 2 points or more on the opposite side, using a feeler gauge (A), and then calculate the mean value.
 - 2 : Synchronizer cone
 - 3 : Inner baulk ring

Clearance "C" : Refer to <u>TM-150, "Baulk Ring Clear-ance"</u>.

Bearing

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





Ε

F

L

Μ

Ν

Ρ

А

В

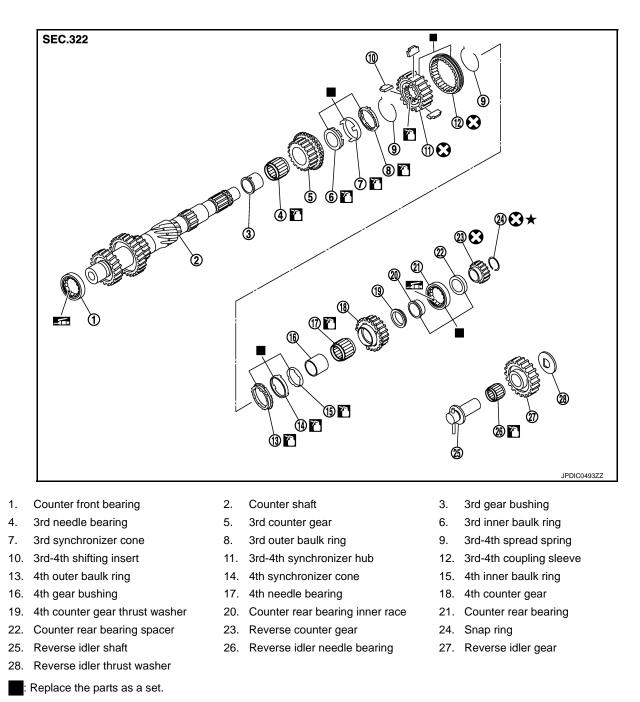
< UNIT DISASSEMBLY AND ASSEMBLY >

COUNTER SHAFT AND GEAR

Exploded View

INFOID:000000011738185

[6MT: FS6R31A]



: Apply gear oil.

Refer to <u>GI-4</u>, "<u>Components</u>" 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.

INFOID:000000011738186

< UNIT DISASSEMBLY AND ASSEMBLY >

- Set a puller [Commercial service tool] to 3rd counter gear. a.
- 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

CAUTION:

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.

machine, using the inserter [SST: ST30911000 (-)].

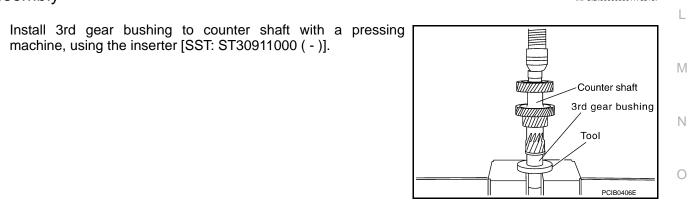
Remove 3rd gear bushing from counter shaft with a pressing b. machine.

CAUTION:

Assembly

1.

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





CAUTION:

Puller SCIA1389E

[6MT: FS6R31A]

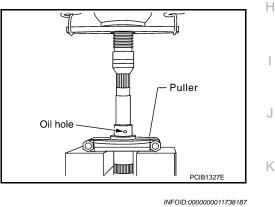
Е

ТΜ

А

В





< UNIT DISASSEMBLY AND ASSEMBLY >

Be careful with the orientation of 3rd gear bushing.

- <□ : 4th counter gear side
- Apply gear oil to 3rd needle bearing, 3rd inner baulk ring, 3rd synchronizer cone, and 3rd outer baulk ring.
 CAUTION:

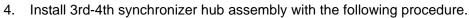
Replace 3rd inner baulk ring, 3rd synchronizer cone, and 3rd outer baulk ring as a set.

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

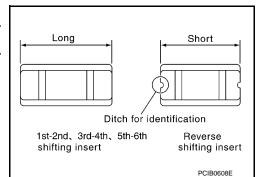
NOTE:

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

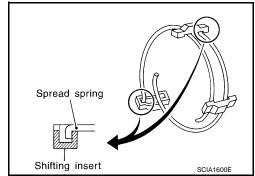


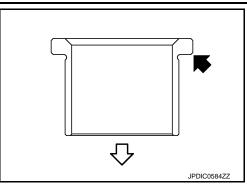
- a. Install 3rd-4th coupling sleeve and 3rd-4th shifting inserts to 3rd-4th synchronizer hub. CAUTION:
 - Be careful with the shape of 3rd-4th shifting insert.
 - Never reuse 3rd-4th coupling sleeve and 3rd-4th synchronizer hub.
 - Replace 3rd-4th coupling sleeve and 3rd-4th synchronizer hub as a set.

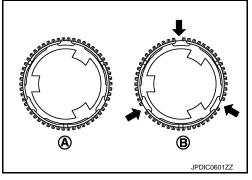


 Install 3rd-4th spread springs to 3rd-4th shifting inserts.
 CAUTION: Never install 3rd-4th spread spring hook onto the same 3rd-4th shifting insert.

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

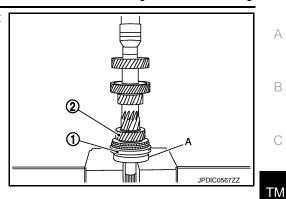






< UNIT DISASSEMBLY AND ASSEMBLY >

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

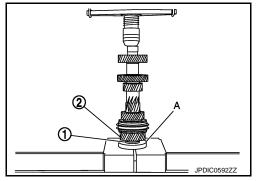


[6MT: FS6R31A]

CAUTION:

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

- 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:

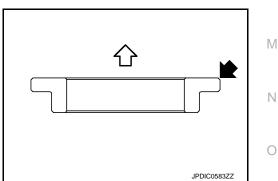
Be careful with the orientation of 4th counter gear thrust washer.

<□ : 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:



Ρ

Ε

F

Н

Κ

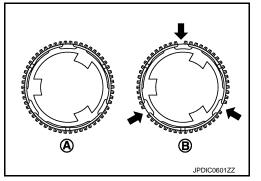
L

JPDIC0566Z

< 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.



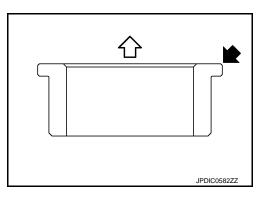
[6MT: FS6R31A]

JPDIC0390ZZ

INFOID:000000011738188

- 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.

 $\langle \neg$: 4th counter gear side



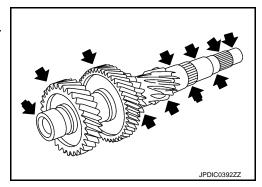
❶

Inspection

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.



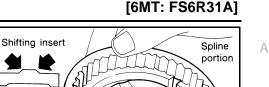
Synchronizer Hub and Coupling Sleeve

Revision: 2015 June

< UNIT DISASSEMBLY AND ASSEMBLY >

Baulk Ring and Spread Spring

- 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.

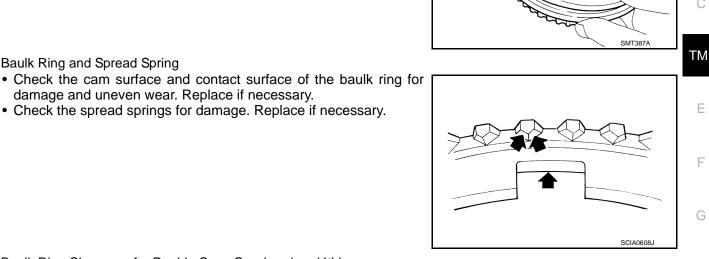


В

Н

Κ

JPDIC0305ZZ



A

Baulk Ring Clearance for Double Cone Synchronizer (4th)

damage and uneven wear. Replace if necessary.

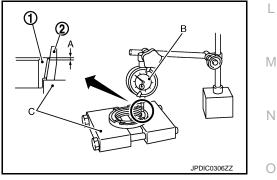
Check the spread springs for damage. Replace if necessary.

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.

- 1. 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 ring
 - 2 : Synchronizer cone

Clearance "A" : Refer to TM-150, "Baulk Ring Clearance".



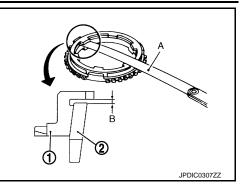
< UNIT DISASSEMBLY AND ASSEMBLY >

- 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.
 - : Outer baulk ring 1

CAUTION:

2 : Synchronizer cone

Clearance "B" : Refer to TM-150, "Baulk Ring Clearance".



[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.

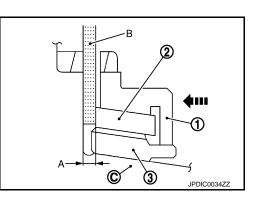
The outer baulk ring, synchronizer cone, and inner baulk ring manage the clearances "A", "B", and "C" as a set. Therefore, replace them as a set if the clearances are outside the limit value.

- 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.
 - 2 : Synchronizer cone
 - 3 : Inner baulk ring



- 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.
 - : Outer baulk ring 1
 - 2 : Synchronizer cone

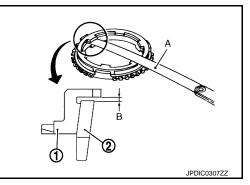
Clearance "B" : Refer to TM-150, "Baulk Ring Clearance".



3

R

JPDIC0308ZZ



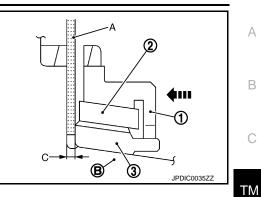
< UNIT DISASSEMBLY AND ASSEMBLY >

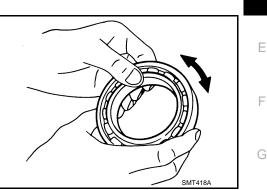
- 3. Measure the clearance "C" when pressing the outer baulk ring (1) against the cone (B) of clutch gear by hands at 2 points or more on the opposite side, using a feeler gauge (A), and then calculate the mean value.
 - 2 : Synchronizer cone
 - 3 : Inner baulk ring

Clearance "C" : Refer to TM-150, "Baulk Ring Clearance".

Bearing

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







Н

J

Κ

L

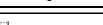
Μ

Ν

Ο

Ρ

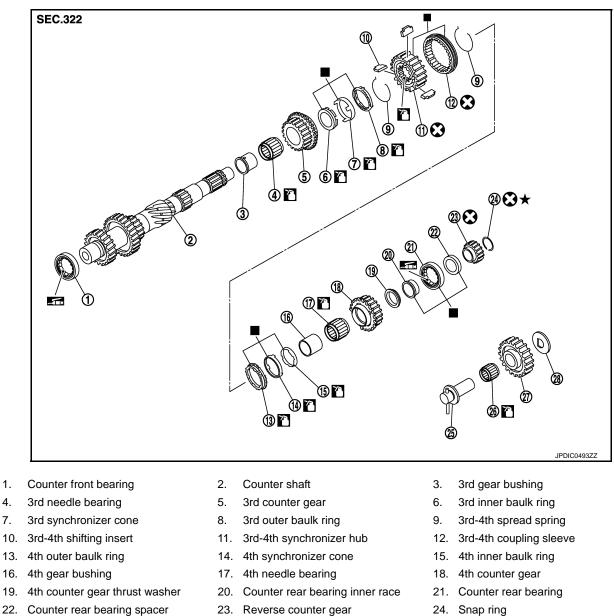
F



REVERSE IDLER SHAFT AND GEAR

Exploded View

INFOID:000000011738189



- 24. Snap ring
 - 27. Reverse idler gear

Revision: 2015 June

- 23. Reverse counter gear
- 26. Reverse idler needle bearing

INFOID:000000011738190

TM-142

25. Reverse idler shaft 28. Reverse idler thrust washer

- : Replace the parts as a set.
- : Apply gear oil.

1.

4.

7.

: 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

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

< UNIT DISASSEMBLY AND ASSEMBLY >	[6MT: FS6R31A]
Assembly	INFOID:000000011738191
Note the following, and assemble in the reverse order of disassembly. CAUTION: Apply gear oil to reverse idler needle bearing.	
Inspection	INFOID:000000011738192
INSPECTION AFTER DISASSEMBLY	
Shaft and GearCheck the shaft for damage or bend. Replace if necessary.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.	

А

В

С

ТΜ

Е

F

G

Н

J

Κ

L

Μ

Ν

Ο

Ρ

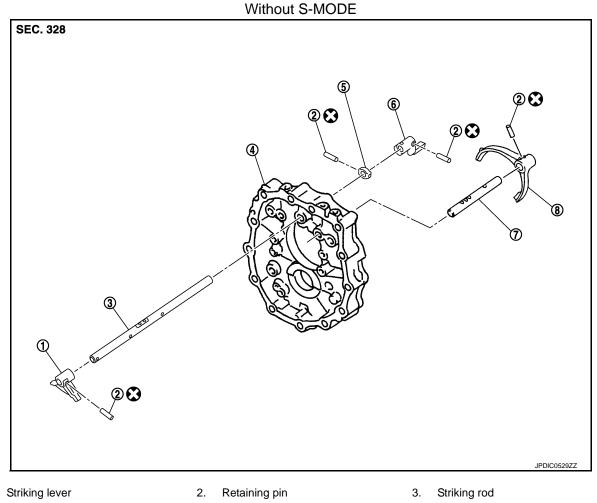
SHIFT FORK AND FORK ROD

< UNIT DISASSEMBLY AND ASSEMBLY >

SHIFT FORK AND FORK ROD

Exploded View

INFOID:000000011738193



1. 4. Adapter plate

Reverse fork rod

7.

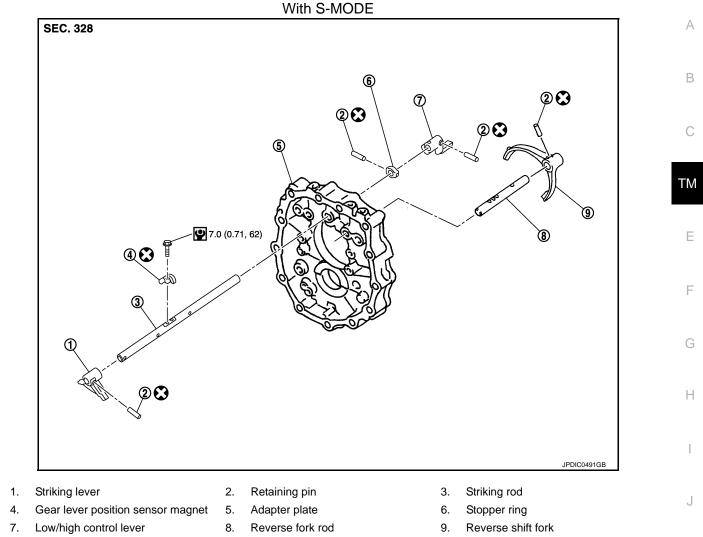
- 5. Stopper ring
- 8. Reverse shift fork

Refer to <u>GI-4, "Components"</u> for the symbols in the figure.

Low/high control lever 6.

< UNIT DISASSEMBLY AND ASSEMBLY >

[6MT: FS6R31A]



Refer to <u>GI-4, "Components"</u> for the symbols in the figure.

2016 370Z

Κ

L

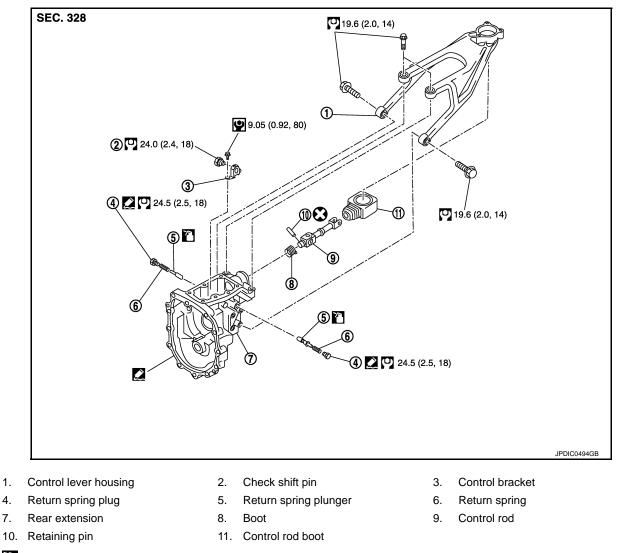
Μ

Ν

Ο

Ρ

< UNIT DISASSEMBLY AND ASSEMBLY >



: Apply gear oil.

Apply Genuine Silicone RTV or an equivalent. Refer to GI-22, "Recommended Chemical Products and Sealants". Refer to GI-4, "Components" for symbols not described on the above.

Disassembly

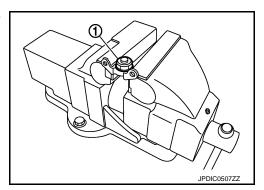
1.

INFOID:000000011738194

For disassembly procedures other than the following items, refer to "SHIFT FORK AND FORK ROD" in TM-57, "WITHOUT S-MODE : Disassembly" (Without S-MODE) or TM-90, "WITH S-MODE : Disassembly" (With S-MODE).

CHECK SHIFT PIN

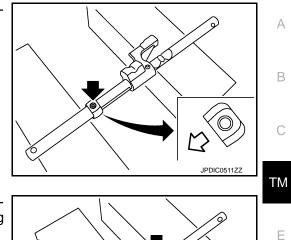
Set the control bracket to a vise and then remove check shift pin (1) from control bracket.



STRIKING ROD

< UNIT DISASSEMBLY AND ASSEMBLY >

- 1. Remove retaining pin (+), using a pin punch [Commercial service tool] and then remove stopper ring from striking rod.
 - : Transmission front



[6MT: FS6R31A]

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

> INFOID:000000011738195 Н

JPDIC0512ZZ

F

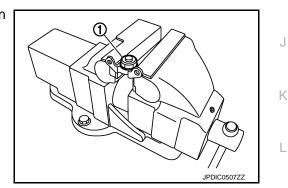
L

For assembly procedures other than the following items, refer to "SHIFT FORK AND FORK ROD" in TM-65. <u>"WITHOUT S-MODE : Assembly"</u> (Without S-MODE) or TM-98, "WITH S-MODE : Assembly" (With S-MODE).

CHECK SHIFT PIN

Assembly

- Set the control bracket to a vise and then install check shift pin 1. (1) to control bracket.
- Tighten check shift pin to the specified torque. 2.

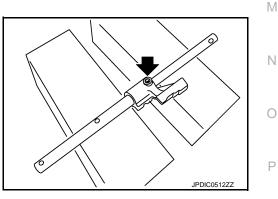


STRIKING ROD

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.



< 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].

: Transmission front

CAUTION:

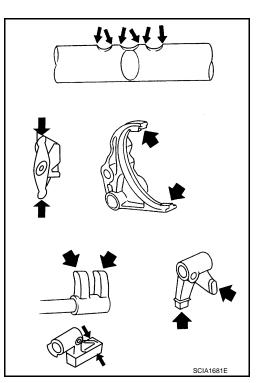
- Never reuse retaining pin.
- Be careful with the orientation of stopper ring and striking rod.
- Assemble retaining pin from the direction shown by the arrow in the figure until it becomes flush with the end surface of stopper ring.

Inspection

INSPECTION AFTER DISASSEMBLY

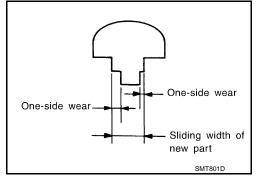
Shift Fork and Fork Rod

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

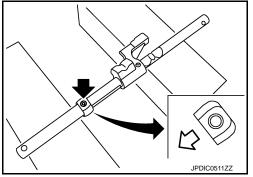


• Check if the width of shift fork hook (sliding area with coupling sleeve) is within allowable specification below.

One-side wear specification: Refer to TM-150, "Shift
Fork".Sliding width of new part: Refer to TM-150, "Shift
Fork".



[6MT: FS6R31A]



INFOID:000000011738196

SERVICE DATA AND SPECIFICATIONS (SDS) < SERVICE DATA AND SPECIFICATIONS (SDS) SERVICE DATA AND SPECIFICATIONS (SDS) SERVICE DATA AND SPECIFICATIONS (SDS)

General Specification

INFOID:000000011738197

А

[6MT: FS6R31A]

Transmission type			FS6R31A		
Engine type			VQ3	7VHR	C
Axle type			2\	WD	
Model code number			1EA0A	1EA0B	TM
Number of speed			6	_	
Shift pattern					
			1 3	5	E
					F
			2 4	■ ■ 6 R	
				SCIA0955E	
Synchromesh type			Wa	rner	G
Gear ratio	1st		3.7	794	
	2nd		2.3	324	Н
	3rd		1.0	624	
	4th 5th		1.271 1.000		
6th			0.	794	
	Reverse		3.4	446	J
Number of teeth	Main gear	Drive		26	
		1st	3	37	
		2nd	3	34	K
		3rd	3	33	
		4th	3	31	
		6th	3	31	
		Reverse	2	12	
	Counter gear	Drive	3	32	N
		1st	1	2	
		2nd	18		— N
		3rd	25		
		4th	3	30	
		6th	2	18	0
		Reverse	1	15	
	Reverse idler gea	r	2	26	
Oil capacity (Reference)		ℓ (US pt, Imp pt)	Approx. 2	2.83 (6, 5)	P
Remarks	Reverse synchror	nizer	Inst	alled	
	Double cone sync	hronizer	4	th	
	Triple cone synch	ronizer	1st, 2nd	, and 3rd	
	SynchroRev Matc	h mode (S-MODE)	Not installed	Installed	

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

End Play

INFOID:000000011738198

Unit:	mm	(in)

[6MT: FS6R31A]

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:000000011738199

			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 and clutch gear end face "A"	1st: 0.65 – 1.25 (0.026 – 0.049)	0.3 (0.012)
(Triple-cone synchronizer)		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)
	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

INFOID:000000011738200

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	Reverse	0.2 (0.008)	7.80 – 7.93 (0.3071 – 0.3122)
new part			
SMT801D			

Work Flow

INFOID:0000000011738201

1. OBTAIN INFORMATION ABOUT SYMPTOM

Refer to TM-152, "Diagnostic Work Sheet" and interview the customer to obtain the malfunction information С (conditions and environment when the malfunction occurred) as much as possible when the customer brings in the vehicle.

>> GOTO2

2. c	HECK DTC
2. - - - 3. (0	Before checking the malfunction, check whether any DTC exists. f DTC exists, perform the following operations. Record the DTC and freeze frame data. (Print out the data using CONSULT 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. <u>TM-299, "Symptom Table"</u> is effective. Check the information of related service bulletins and others also.
Mal Mal	nalfunction information and DTC exist? function information and DTC exists. >>GO TO 3. function information exists, but no DTC. >>GO TO 4. malfunction information, but DTC exists. >>GO TO 5.
3. r	EPRODUCE MALFUNCTION SYMPTOM
Also Whe <u>Work</u> Verify	ck any malfunction described by a customer, except those with DTC on the vehicle. investigate whether the symptom is a fail-safe or normal operation. Refer to <u>TM-292</u> , <u>"Fail-Safe"</u> . n a malfunction symptom is reproduced, the question sheet is effective. Refer to <u>TM-152</u> , <u>"Diagnostic</u> <u>Sheet"</u> . y the relationship between the symptom and the conditions in which the malfunction described by the cus- er occurs.
	>> GO TO 5.
4. R	EPRODUCE MALFUNCTION SYMPTOM
Also Whe <u>Work</u> Verify	ck the malfunction described by the customer on the vehicle. investigate whether the symptom is a fail-safe or normal operation. Refer to <u>TM-292</u> , "Fail-Safe". n a malfunction symptom is reproduced, the question sheet is effective. Refer to <u>TM-152</u> , "Diagnostic <u>Sheet"</u> . <u>x Sheet"</u> . y the relationship between the symptom and the conditions in which the malfunction described by the cus- er occurs.
	>> GO TO 6.
5. P	ERFORM "DTC CONFIRMATION PROCEDURE"
Refe	orm "DTC CONFIRMATION PROCEDURE" of the appropriate DTC to check if DTC is detected again. r to <u>TM-296, "DTC Inspection Priority Chart"</u> when multiple DTCs are detected, and then determine the r for performing the diagnosis. E:
	DTC is detected, refer to the freeze frame data.
	y DTC detected?
YES NO	

6. IDENTIFY MALFUNCTIONING SYSTEM WITH "DIAGNOSIS CHART BY SYMPTOM"

А

В

ТΜ

DIAGNOSIS AND REPAIR WORK FLOW

DIAGNOSIS AND REPAIR WORK FLOW

< BASIC INSPECTION >

[7AT: RE7R01A]

Use <u>TM-299</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.

Diagnostic Work 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. INFOID:000000011738202

SEF907L

KEY POINTS

 WHAT Vehicle & engine model
 WHEN Date, Frequencies
 WHERE..... Road conditions
 HOW Operating conditions, Weather conditions, Symptoms

WORKSHEET SAMPLE

			Question Sheet		
Customer name	MR/MS	Engine #		Manuf. Date	
		Incident Date		VIN	
		Model & Year		In Service Date	
		Trans.		Mileage	km / Mile

DIAGNOSIS AND REPAIR WORK FLOW

< BASIC INSPECTION >

[7AT: RE7R01A]

			Questi	on Sheet				
Symptoms		□ Vehicle does	not move (D)	Any position	Particular position	I)	
		□ No up-shift 6GR □ 6GR -		$\Box 2 \text{GR} \rightarrow 3 \text{GR}$	$R \Box \ 3GR \to 4GI$	$R \Box \ 4GR \to 5G$	GR □ 5GR -	\rightarrow
		□ No down-shit 2GR □ 2GR -		$GR \Box \ 6GR \rightarrow 5$	$GR \Box 5GR \to 4G$	$GR \Box 4GR \to 3$	GR □3GR	\rightarrow
		Lock-up malf	function					
		□ Shift point to	o high or too low					
		□ Shift shock o	r slip					
		□ Noise or vibr	ation					
		□ No kick dowr	ו					
		□ No pattern se	elect					
		□ Others						
Frequency		□ All the time	Under certair	n conditions	□ Sometimes (times a da	y)	
Weather conditions		□ Not affected						
	Weather	□ Fine	□ Clouding	□ Raining	□ Snowing	D Other ()
	Temp.	□ Hot	□ Warm		□ Cold	□ Temp. [Appro °F)]	°C (
	Humidity	🗆 High	□ Middle	□ Low				
Transmission condi	tions	□ Not affected						
		□ Cold	During warm	-up	□ After warm-u	р		
		□ Engine spee	d (rpm)				
Road conditions		□ Not affected						
		□ In town	□ In suburbs	□ Freeway	□ Off road (Up /	/ Down)		
Driving conditions		□ Not affected						
		□ At starting	□ While idling	While engine	eracing	□ At racing	While crui ing	is-
		□ While accele	rating	While decele	erating	🗆 While turning	g (Right / Left))
		□ Vehicle spee	d [km/h (MPH)]			
Other conditions								

Μ

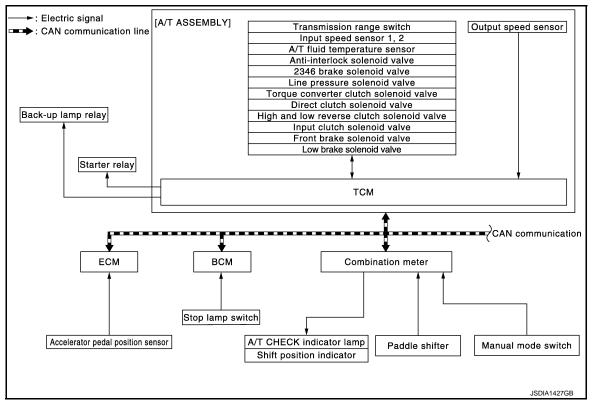
Ν

0

< SYSTEM DESCRIPTION > SYSTEM DESCRIPTION A/T CONTROL SYSTEM

System Diagram

INFOID:000000011738203



System Description

INFOID:0000000011738204

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 	⇒	 Line pressure control (<u>TM-157</u>) Shift change control (<u>TM-161</u>) Shift pattern control Shift pattern (<u>TM-166</u>) Manual mode (<u>TM-170</u>) Lock-up control (<u>TM-173</u>) Fail-safe control (<u>TM-292</u>) Self-diagnosis (<u>TM-206</u>) CONSULT communication line (<u>TM-206</u>) CAN communication line (<u>TM-215</u>) 	⇒	 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
 A/T fluid temperature sensor Output speed sensor Vehicle speed signal Manual mode switch signal 		 Self-diagnosis (<u>TM-206</u>) CONSULT communication line (<u>TM-206</u>) 		 Line pressure solenoid valve Anti-interlock solenoid valve 2346 brake solenoid valve A/T CHECK indicator lamp

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.

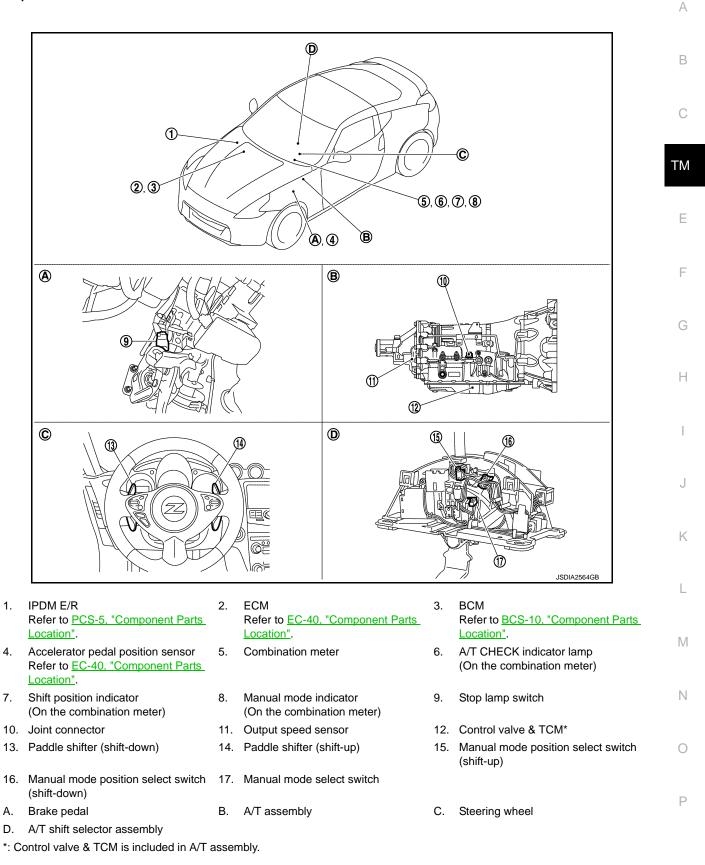
A/T CONTROL SYSTEM

< SYSTEM DESCRIPTION >

Component Parts Location

[7AT: RE7R01A]

INFOID:000000011738205



NOTE:

The following components are included in control valve & TCM.

- TCM
- Input speed sensor 1, 2

< 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

Component Description

INFOID:000000011738206

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.
Transmission range switch	TM-218, "Description"
Output speed sensor	TM-225, "Description"
Input speed sensor 1	TM 202 "Description"
Input speed sensor 2	TM-223, "Description"
A/T fluid temperature sensor	TM-220, "Description"
Input clutch solenoid valve	TM-249, "Description"
Front brake solenoid valve	TM-252, "Description"
Direct clutch solenoid valve	TM-270, "Description"
High and low reverse clutch solenoid valve	TM-267, "Description"
Low brake solenoid valve	TM-268, "Description"
Anti-interlock solenoid valve	TM-248, "Description"
2346 brake solenoid valve	TM-269, "Description"
Torque converter clutch solenoid valve	TM-243, "Description"
Line pressure solenoid valve	TM-247, "Description"
Accelerator pedal position sensor	TM-253, "Description"
Manual mode switch	TM-261, "Description"
Paddle shifter	TM-261, "Description"
Starter relay	TM-216, "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-275, "Description"
ECM	EC-40. "System Description"
BCM	BCS-9, "System Description"
Combination meter	MWI-6. "METER SYSTEM : System Description"

< SYSTEM DESCRIPTION >

LINE PRESSURE CONTROL

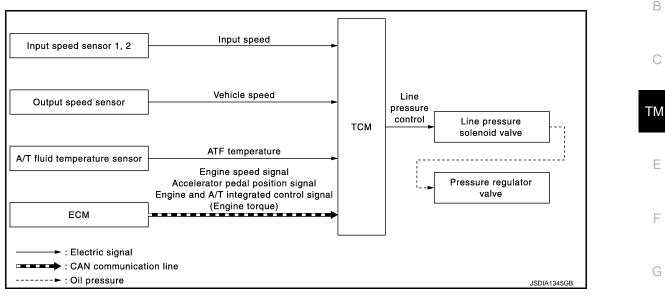
System Diagram

INFOID:000000011738207

INFOID:000000011738208

Н

А



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 solenoid valve	
	Engine speed signal*	Line pressure control		
ECM	Accelerator pedal position signal*		Pressure regulator valve	
	Engine and A/T integrated control signal (Engine torque)*			
: This signal is transmitted via C	AN communication line			

*: 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 Μ 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 pressure of the operating oil discharged from the oil pump to the line pressure most appropriate to the driving state. Ν
- 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.

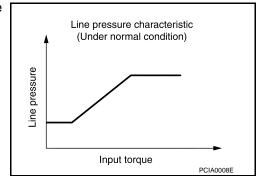
Normal Control

Ρ

0

< SYSTEM DESCRIPTION >

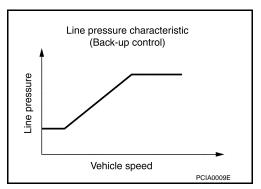
Each clutch is adjusted to the necessary pressure to match the engine drive force.



[7AT: RE7R01A]

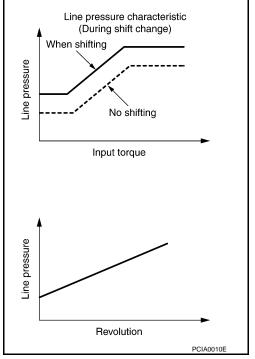
Back-up Control (Engine Brake)

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

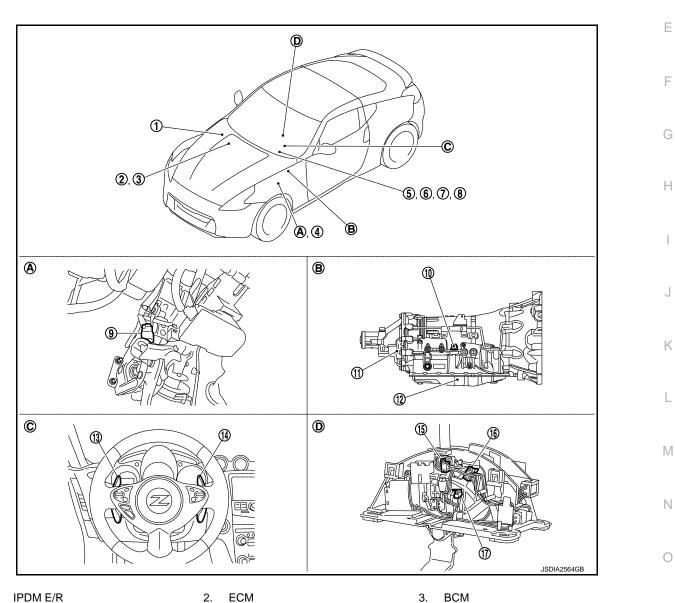
< SYSTEM DESCRIPTION >

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.

Line pressure characteristic А (At low fluid temperature) Low temperature Line pressure В Normal conditions Throttle opening PCIA0011E ТΜ

Component Parts Location

INFOID:0000000011738209



- IPDM E/R 1. Refer to PCS-5, "Component Parts Location"
- Accelerator pedal position sensor 4. Refer to EC-40, "Component Parts Location".
- Shift position indicator 7. (On the combination meter)
- 10. Joint connector

- ECM Refer to EC-40, "Component Parts Location".
- Combination meter

5.

Manual mode indicator 8. (On the combination meter)

TM-159

11. Output speed sensor

- BCM Refer to BCS-10, "Component Parts

- 3.

 - - Location".
- 6. A/T CHECK indicator lamp
 - (On the combination meter)
- 9. Stop lamp switch
- 12. Control valve & TCM*

2016 370Z

Ρ

[7AT: RE7R01A]

< SYSTEM DESCRIPTION >

- 13. Paddle shifter (shift-down) 14. Paddle shifter (shift-up)
- 15. Manual mode position select switch (shift-up)

C. Steering wheel

[7AT: RE7R01A]

16. Manual mode position select switch 17. Manual mode select switch (shift-down)

В.

A/T assembly

- A. Brake pedal
- D. A/T shift selector assembly

*: Control valve & TCM is included in A/T assembly.

NOTE:

The following components are included in control valve & TCM.

- TCM
- Input speed sensor 1, 2
- 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

Component Description

INFOID:000000011738210

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-225, "Description"		
Input speed sensor 1	TM 222 "Description"		
Input speed sensor 2	<u>TM-223, "Description"</u>		
A/T fluid temperature sensor	TM-220, "Description"		
Line pressure solenoid valve	TM-247, "Description"		
Pressure regulator valve	Adjusts the oil discharged from the oil pump to the optimum pressure (line pressure) for the driving state.		
ECM	EC-40, "System Description"		

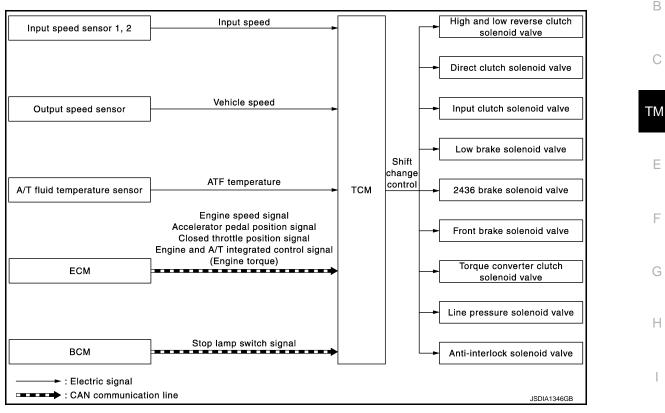
< SYSTEM DESCRIPTION >

SHIFT CHANGE CONTROL

System Diagram

INFOID:000000011738211

[7AT: RE7R01A]



System Description

INFOID:0000000011738212

INPUT/OUTPUT SIGNAL CHART

Sensor	Input signal to TCM	TCM function	Actuator	
Input speed sensor 1, 2 Output speed sensor	Input speed Vehicle speed	_	High and low reverse clutch solenoid valve	
A/T fluid temperature sensor	ATF temperature	-	Direct clutch solenoid valve	
	Engine 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*		Front brake solenoid valveTorque converter clutch so-	
	Engine and A/T integrated control signal (Engine torque)*	-	Inique conventer elution so lenoid valveLine pressure solenoid	
BCM	Stop lamp switch signal*		valveAnti-interlock solenoid valve	

*: This signal is transmitted via CAN communication line.

SYSTEM DESCRIPTION

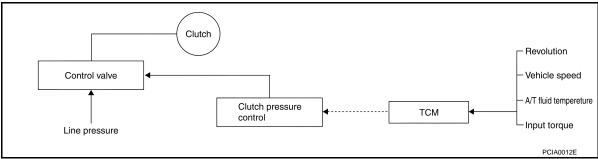
The clutch pressure control solenoid is controlled by the signals from the switches and sensors. Thus, the clutch pressure is adjusted to be appropriate to the engine load state and vehicle driving state. It becomes

А

Ρ

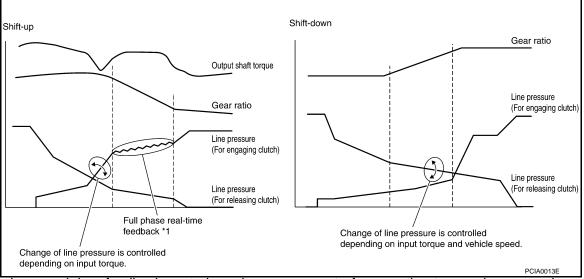
< SYSTEM DESCRIPTION >

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.



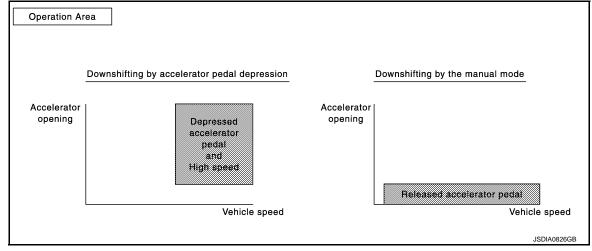
Shift Change System Diagram

*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.



< SYSTEM DESCRIPTION >

[7AT: RE7R01A]

А

В

С

ТΜ

Ε

F

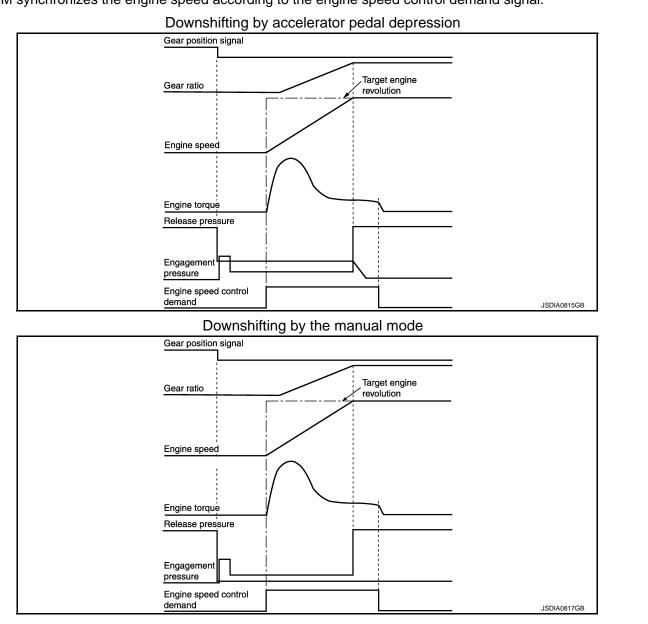
Н

Κ

L

Μ

- 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".
- Engine speed control demand signal is transmitted from TOM to ECM under "BLIPPING CONTRO"
 ECM synchronizes the engine speed according to the engine speed control demand signal.



Ν

0

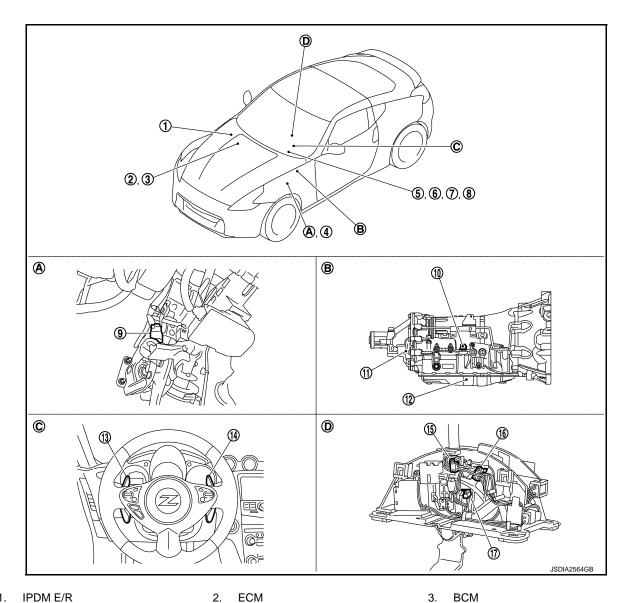
Ρ

< SYSTEM DESCRIPTION >

Component Parts Location

INFOID:000000011738213

[7AT: RE7R01A]



Refer to EC-40, "Component Parts

Location".

Combination meter

11. Output speed sensor

A/T assembly

14. Paddle shifter (shift-up)

Manual mode indicator

(On the combination meter)

5.

8.

Β.

- 1. IPDM E/R Refer to <u>PCS-5, "Component Parts</u> Location".
- 4. Accelerator pedal position sensor Refer to EC-40, "Component Parts Location".
- Shift position indicator (On the combination meter)
- 10. Joint connector
- 13. Paddle shifter (shift-down)
- 16. Manual mode position select switch 17. Manual mode select switch (shift-down)
- A. Brake pedal
- D. A/T shift selector assembly
- *: Control valve & TCM is included in A/T assembly.

NOTE:

The following components are included in control valve & TCM.

- TCM
- Input speed sensor 1, 2

C. Steering wheel

Stop lamp switch

12. Control valve & TCM*

(shift-up)

Location".

6.

9.

Refer to BCS-10, "Component Parts

A/T CHECK indicator lamp

(On the combination meter)

15. Manual mode position select switch

< 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

Component Description

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-225, "Description"					
Input speed sensor 1	TM 222 "Description"					
Input speed sensor 2	TM-223, "Description"					
A/T fluid temperature sensor	TM-220, "Description"					
Input clutch solenoid valve	TM-249, "Description"					
Front brake solenoid valve	TM-252, "Description"					
Direct clutch solenoid valve	TM-270, "Description"					
High and low reverse clutch solenoid valve	TM-267, "Description"					
Low brake solenoid valve	TM-268, "Description"					
Anti-interlock solenoid valve	TM-248, "Description"					
2346 brake solenoid valve	TM-269, "Description"					
Line pressure solenoid valve	TM-247, "Description"					
Torque converter clutch solenoid valve	TM-243, "Description"					
ECM	EC-40, "System Description"					
BCM	BCS-9, "System Description"					

С

А

В

ТМ

Ε

INFOID:0000000011738214

Р

Μ

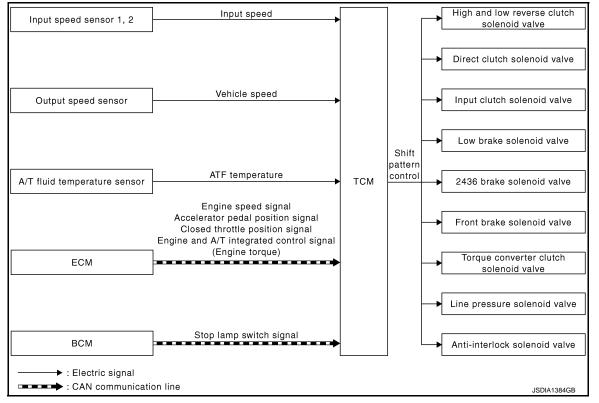
Ν

Ο

SHIFT PATTERN CONTROL SHIFT PATTERN

SHIFT PATTERN : System Diagram

INFOID:000000011738215



SHIFT PATTERN : System Description

INFOID:000000011738216

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	
	Engine speed signal*		 Input clutch solenoid valve Low brake solenoid valve 	
	Accelerator pedal position signal*	Shift pattern control	 2346 brake solenoid valve Front brake solenoid valve Torque converter clutch so- 	
ECM	Closed throttle position signal*			
	Engine and A/T integrated control signal (engine torque)*		 Ionque conventer clutch sol lenoid valve Line pressure solenoid 	
BCM	Stop lamp switch signal*		valveAnti-interlock solenoid valve	

*: 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.

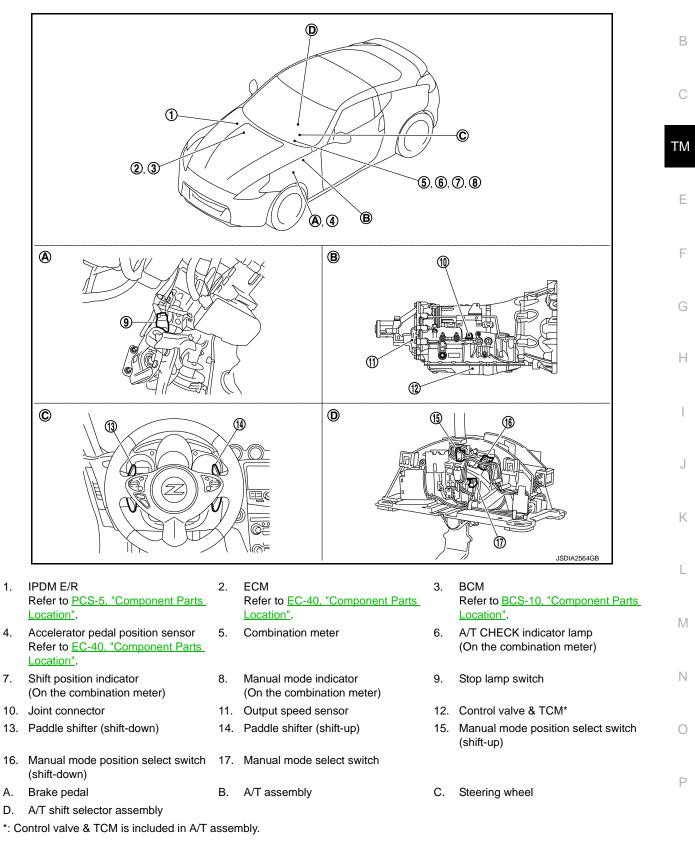
< SYSTEM DESCRIPTION >

SHIFT PATTERN : Component Parts Location

[7AT: RE7R01A]

INFOID:000000011738217

А



NOTE:

1.

4.

The following components are included in control valve & TCM.

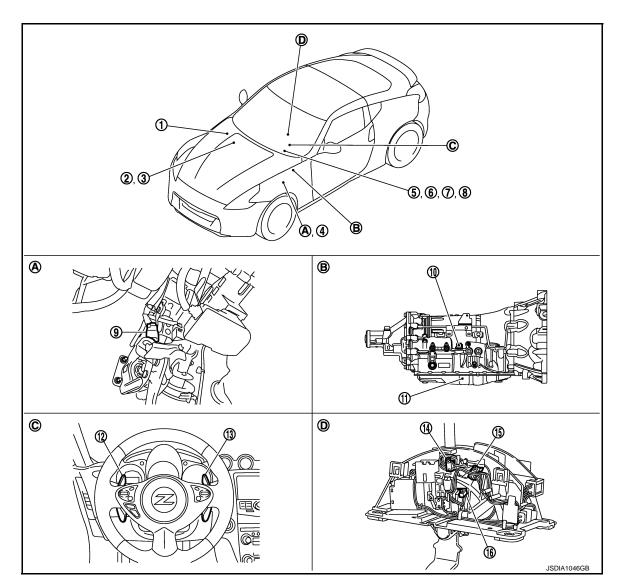
- TCM
- Input speed sensor 1, 2

< 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

SHIFT PATTERN : Component Parts Location

INFOID:000000011738218



- 1. IPDM E/R Refer to <u>PCS-5, "Component Parts</u> Location".
- 4. Accelerator pedal position sensor Refer to <u>EC-40, "Component Parts</u> <u>Location"</u>.
- 7. Shift position indicator (On the combination meter)
- ECM Refer to <u>EC-40, "Component Parts</u> Location".
- 5. Combination meter

2.

- 8. Manual mode indicator (On the combination meter)
- 3. BCM Refer to <u>BCS-10, "Component Parts</u> <u>Location"</u>.
- 6. A/T CHECK indicator lamp (On the combination meter)
- 9. Stop lamp switch



[7AT: RE7R01A] < SYSTEM DESCRIPTION > 12. Paddle shifter (shift-down) 10. Joint connector 11. Control valve & TCM* 13. Paddle shifter (shift-up) 14. Manual mode position select switch 15. Manual mode position select switch (shift-up) (shift-down) 16. Manual mode select switch Α. Brake pedal Β. A/T assembly C. Steering wheel D. A/T shift selector assembly NOTE: The following components are included in control valve & 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 & TCM is included in A/T assembly.

SHIFT PATTERN : Component Description

INFOID:000000011738219

А

В

С

ТΜ

Ε

F

Н

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-225, "Description"
Input speed sensor 1	TM 222 "Deparimtion"
Input speed sensor 2	- <u>TM-223, "Description"</u>
A/T fluid temperature sensor	TM-220, "Description"
Input clutch solenoid valve	TM-249, "Description"
Front brake solenoid valve	TM-252, "Description"
Direct clutch solenoid valve	TM-270, "Description"
High and low reverse clutch solenoid valve	TM-267, "Description"
Low brake solenoid valve	TM-268, "Description"
Anti-interlock solenoid valve	TM-248, "Description"
2346 brake solenoid valve	TM-269, "Description"
Line pressure solenoid valve	TM-247, "Description"
Torque converter clutch solenoid valve	TM-243, "Description"
ECM	EC-40, "System Description"
BCM	BCS-9, "System Description"

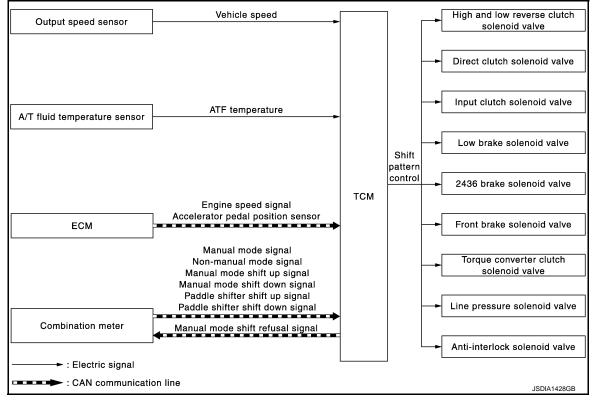
MANUAL MODE

< SYSTEM DESCRIPTION >

MANUAL MODE : System Diagram



[7AT: RE7R01A]



MANUAL MODE : System Description

INFOID:000000011738221

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*		 High and low reverse clutch solenoid valve 		
ECM	Accelerator pedal position sig- nal*		 Direct clutch solenoid valve Input clutch solenoid valve Low brake solenoid valve 		
	Manual mode signal*	Shift pattern control	 2346 brake solenoid valve 		
	Non-manual mode signal*		Front brake solenoid valve Torgue converter dutch colo		
Combination meter	Manual mode shift up signal*		Torque converter clutch sole- noid valve		
	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 <u>TM-292, "Fail-Safe"</u>.

TM-170

< SYSTEM DESCRIPTION >

[7AT: RE7R01A]

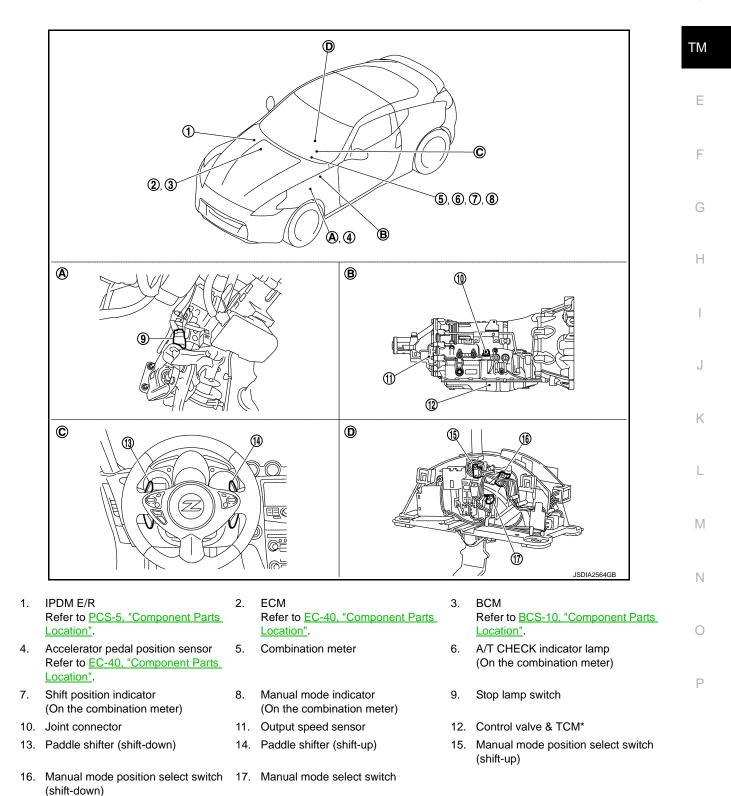
- The TCM transmits the manual mode shift refusal signal to the combination meter if the TCM refuses the transmission from the driving status of vehicle when the selector lever or paddle shifter shifts to "UP (+ side)" or "DOWN (– side)" side. The combination meter blinks shift indicator on the combination 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

INFOID:0000000011738222

А

В



TM-171

B. A/T assembly

< SYSTEM DESCRIPTION >

- A. Brake pedal
- D. A/T shift selector assembly

*: Control valve & TCM is included in A/T assembly.

NOTE:

The following components are included in control valve & TCM.

- TCM
- Input speed sensor 1, 2
- 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

MANUAL MODE : Component Description

INFOID:000000011738223

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-225, "Description"
A/T fluid temperature sensor	TM-220, "Description"
Input clutch solenoid valve	TM-249, "Description"
Front brake solenoid valve	TM-252, "Description"
Direct clutch solenoid valve	TM-270, "Description"
High and low reverse clutch solenoid valve	TM-267, "Description"
Low brake solenoid valve	TM-268, "Description"
Anti-interlock solenoid valve	TM-248, "Description"
2346 brake solenoid valve	TM-269, "Description"
Line pressure solenoid valve	TM-247, "Description"
Torque converter clutch solenoid valve	TM-243, "Description"
ECM	EC-40. "System Description"
Combination meter	MWI-6. "METER SYSTEM : System Description"

C. Steering wheel

LOCK-UP CONTROL

< SYSTEM DESCRIPTION >

LOCK-UP CONTROL

System Diagram

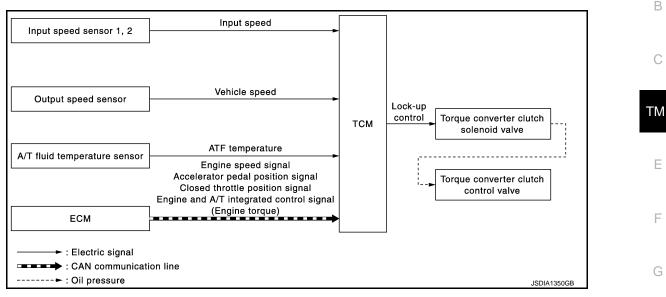
INFOID:000000011738224

INFOID:0000000011738225

Н

Μ

А



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		Torque converter clutch sole-
	Engine speed signal*	Lock-up control	noid valve ↓
	Accelerator pedal position signal*		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.

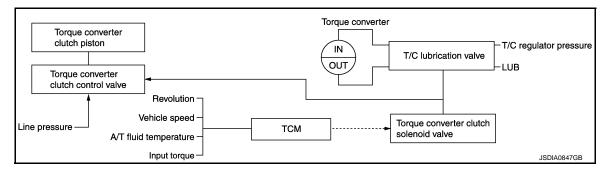
The torque converter clutch control valve operation is controlled by the torque converter clutch solenoid valve, which is controlled by a signal from TCM, and the torque converter clutch control valve engages or releases the torque converter clutch piston.

Selector lever			"D" p	osition					"M" p	osition			C
Gear position	7	6	5	4	3	2	7	6	5	4	3	2	-
Lock-up	×	I	-	-	-	-	×	×	×	×	×	×	P
Slip lock-up	×	×	×	×	×	×	×	×	×	×	×	×	- F

Torque Converter Clutch Control Valve Control Lock-up control system diagram

LOCK-UP CONTROL

< SYSTEM DESCRIPTION >



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.

LOCK-UP CONTROL

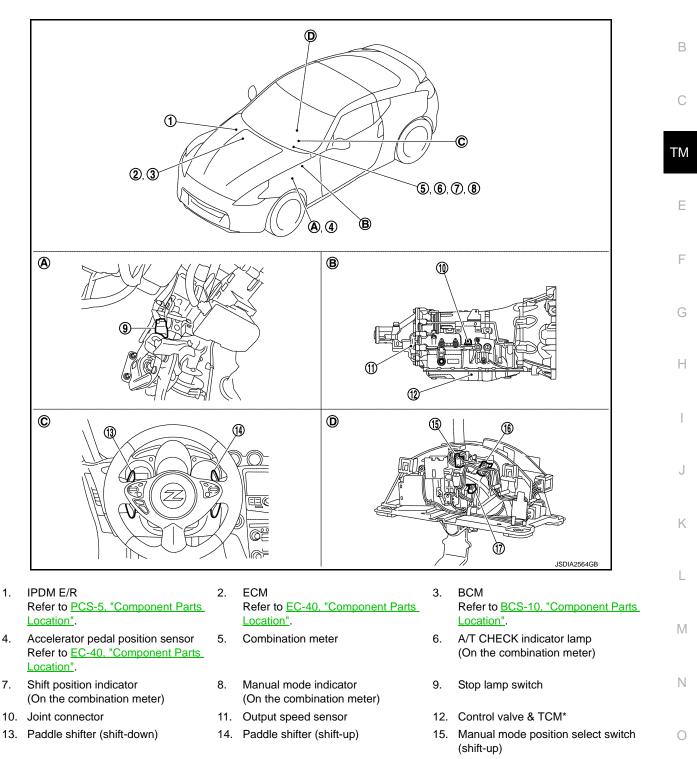
< SYSTEM DESCRIPTION >

Component Parts Location

[7AT: RE7R01A]

INFOID:000000011738226

А



- 16. Manual mode position select switch (shift-down)
- Brake pedal Α.
- D. A/T shift selector assembly
- *: Control valve & TCM is included in A/T assembly.

NOTE:

1.

4.

7.

The following components are included in control valve & TCM.

- TCM
- Input speed sensor 1, 2

C.

Steering wheel

17. Manual mode select switch

A/T assembly

Β.

Ρ

< 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

Component Description

INFOID:000000011738227

Name	Function The TCM consists of a microcomputer and connectors for signal input and output and for power supply. The TCM controls the A/T.				
ТСМ					
Output speed sensor	TM-225, "Description"				
Input speed sensor 1	TM 222 "Description"				
Input speed sensor 2	- <u>TM-223, "Description"</u>				
A/T fluid temperature sensor	TM-220, "Description"				
Torque converter clutch solenoid valve	TM-243, "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-40, "System Description"				

< SYSTEM DESCRIPTION >

SHIFT MECHANISM

Cross-Sectional View



А

В

С

ТΜ

Ε

F

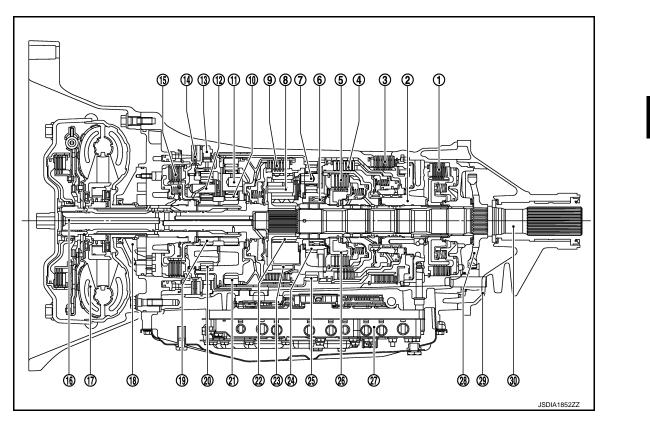
Н

Κ

L

Μ

[7AT: RE7R01A]



- 1. Low brake
- 4. Direct clutch
- 7.*1 Rear carrier
- 10.*2 Front sun gear
- 13. 1st one-way clutch
- 16.^{*4} Input shaft
- 19.*2 Under drive sun gear
- 22. Mid sun gear
- 25. Rear internal gear
- 28. Parking gear
- *1: 7 and 23 are one unit.
- *2: 10 and 19 are one unit.
- *3: 11 and 20 are one unit.
- *4: 16 and 21 are one unit.

- Drum support
 High and low reverse clutch
 Mid carrier
 *3 Front carrier
- 14. Front brake
- 17. Torque converter
- 20.^{*3} Under drive internal gear
- 23.^{*1} Mid internal gear
- 26. High and low reverse clutch hub
- 29. Rear extension

- Reverse brake
 2nd one-way clutch
 Input clutch
 Under drive carrier
 2346 brake
 Oil pump
- 21.^{*4} Front internal gear
- 24. Rear sun gear
- 27. Control valve & TCM
 30. Output shaft
- Ν

Э

Ρ

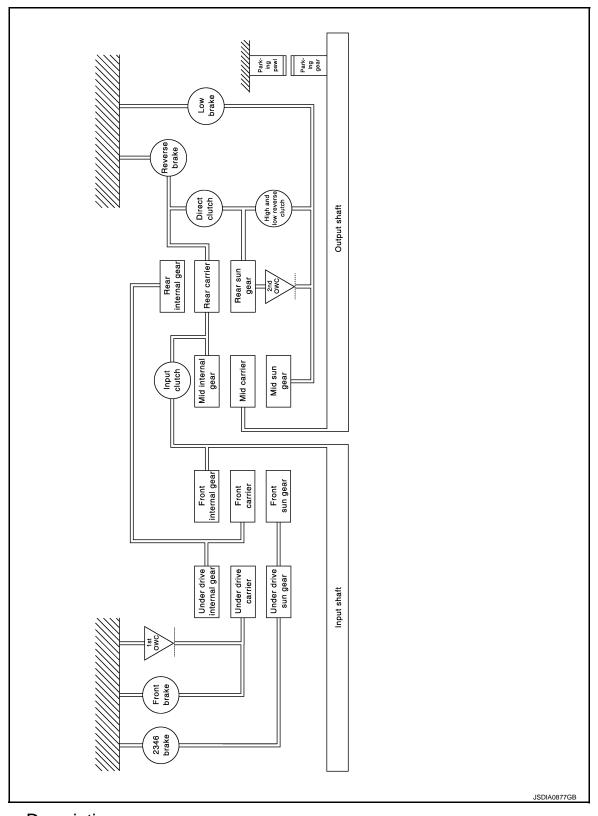
SHIFT MECHANISM

< SYSTEM DESCRIPTION >

System Diagram

INFOID:000000011738229

[7AT: RE7R01A]



System Description

DESCRIPTION

INFOID:000000011738230

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01A]

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

	ame of		D/	/C			L	/В					
Shift positio	ne part	I/C	FRONT	REAR	H&LR/C	F/B	INNER	OUTER	2346/B	REV/B	1st OWC	2nd OWC	Remarks
l	Р				\triangle	\triangle							Park position
	R				\diamond	\diamond				0	O	Ø	Reverse position
I	N				\triangle	\triangle							Neutral position
	1st				☆	☆	0	0			O	Ø	
	2nd						0	0	0			O	
	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			O	Locks* (held stationary) in 2GR
1M	1st				\diamond	\diamond	0	0			O	O	Locks (held stationary) in 1GR

○ – Operates

O - Operates during "progressive" acceleration.

 \triangle – Line pressure is applied but does not affect power transmission.

 $\stackrel{\scriptscriptstyle \wedge}{\rightharpoondown}$ – Operates at the fixed speed or less.

POWER TRANSMISSION

"N" Position

А

В

С

ТΜ

Ε

F

Н

J

Κ

L

Μ

Ν

0

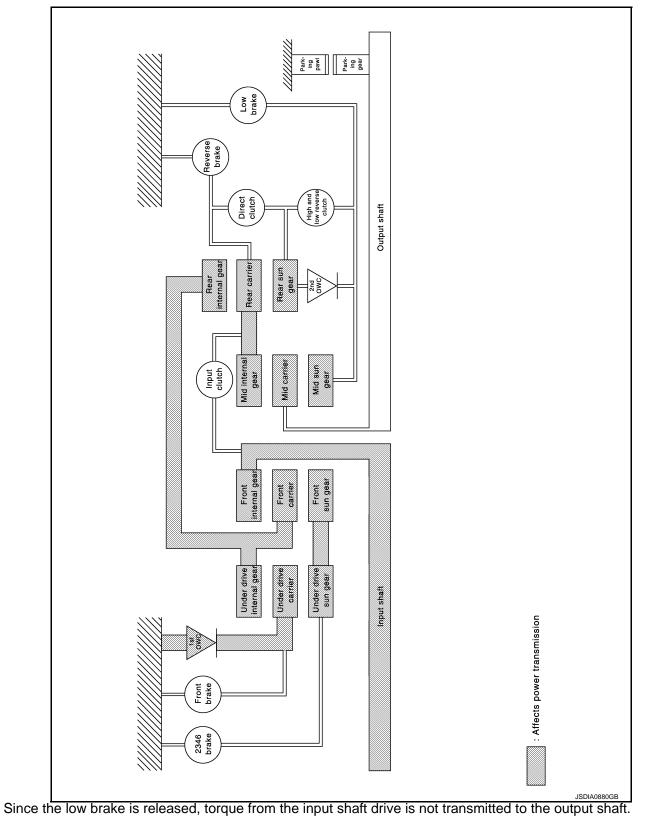
Ρ

*: Down shift automatically according to the vehicle speed.

JSDIA1455GB

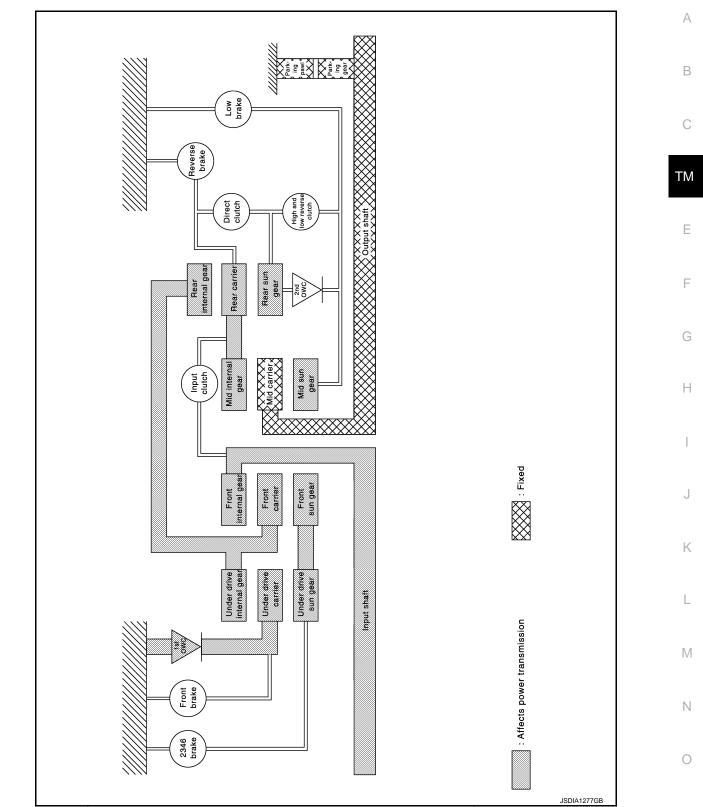
SHIFT MECHANISM

< SYSTEM DESCRIPTION >



"P" Position

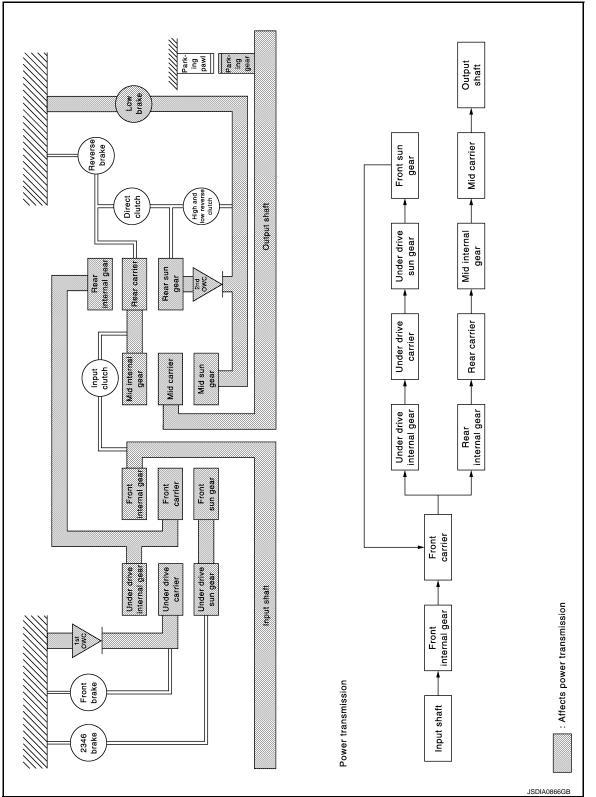
< SYSTEM DESCRIPTION >



The same as for the "N" position, since the low brake is released, so torque from the input shaft drive is not ransmitted 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. ٠

- The mid sun gear is fixed by the low brake. ٠
- Each planetary gear enters the state described below.

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

< SYSTEM DESCRIPTION >

[7AT: RE7R01A]

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	Acceleration 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	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

"M1" Position

K

L

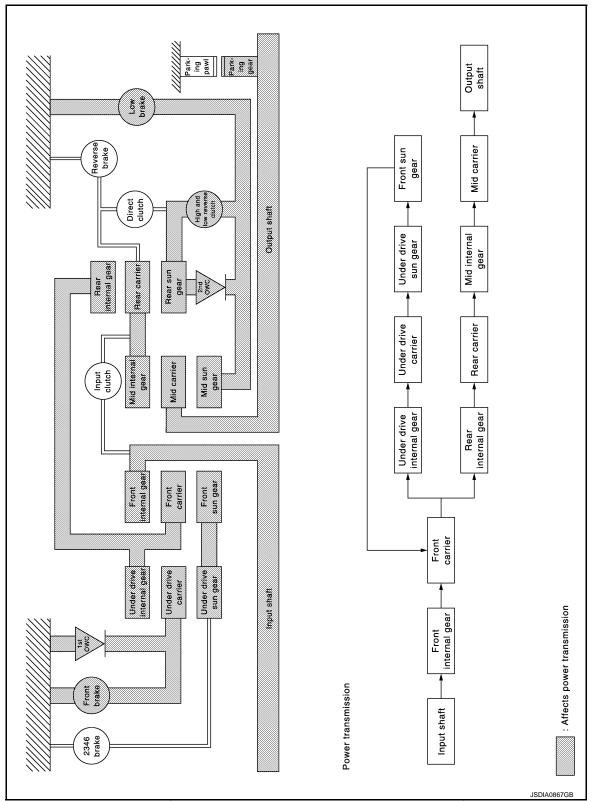
Μ

Ν

Ο

Ρ

J



- 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.

< SYSTEM DESCRIPTION >

• 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.

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01A]

• Each planetary gear enters the state described below.

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 in- ternal 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	

"D2" and "DS2" Positions

Κ

L

Μ

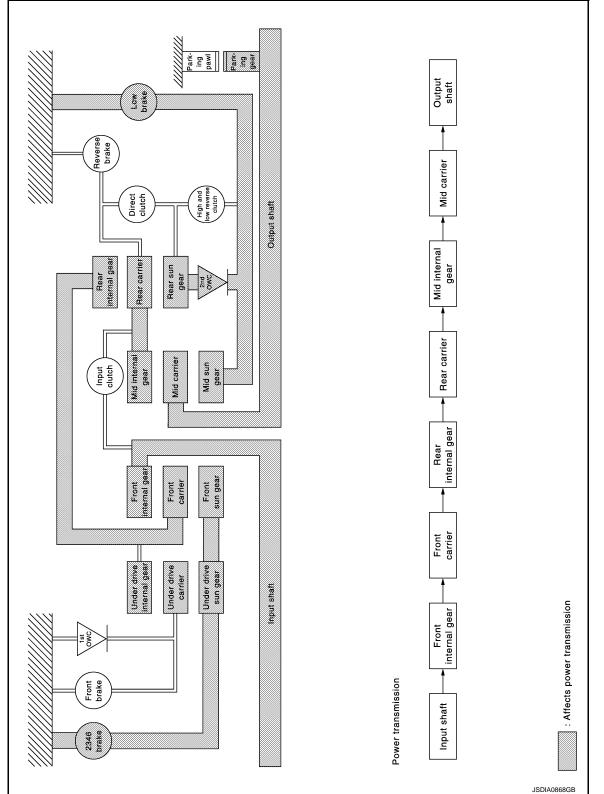
Ν

Ο

Ρ

J

< SYSTEM DESCRIPTION >



- 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.

< SYSTEM DESCRIPTION >

[7AT: RE7R01A]

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 ge	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	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

"M2" Position

Κ

L

Μ

Ν

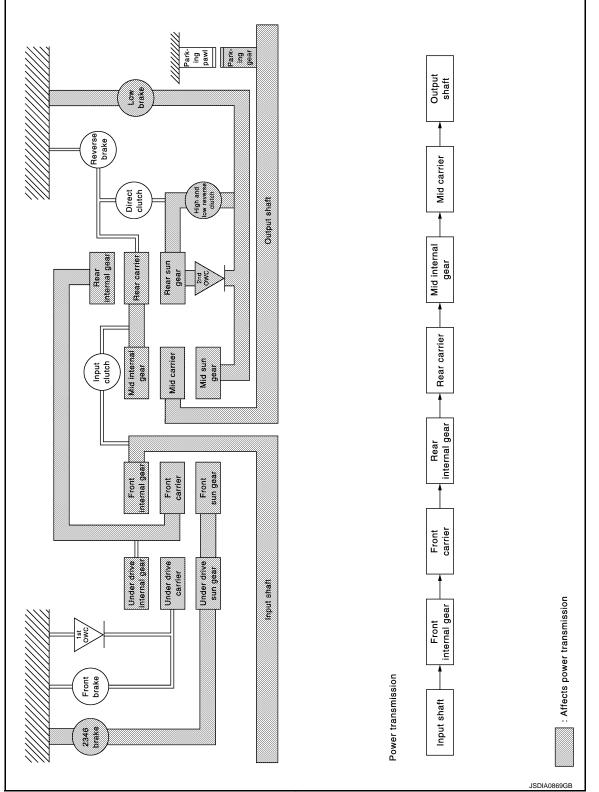
Ο

Ρ

J



< SYSTEM DESCRIPTION >



- 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.

TM-188

< SYSTEM DESCRIPTION >

[7AT: RE7R01A]

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 ge	ar		
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	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

"D3", "DS3" and "M3" Positions

K

L

Μ

Ν

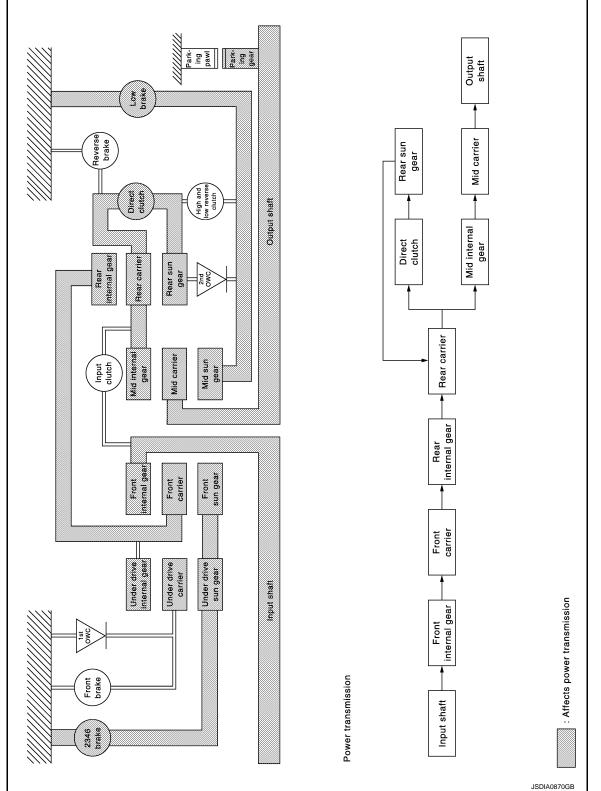
Ο

Ρ

J



< SYSTEM DESCRIPTION >



- 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.

< SYSTEM DESCRIPTION >

[7AT: RE7R01A]

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	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

"D4", "DS4" and "M4" Positions

K

L

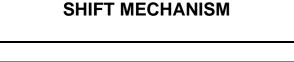
Μ

Ν

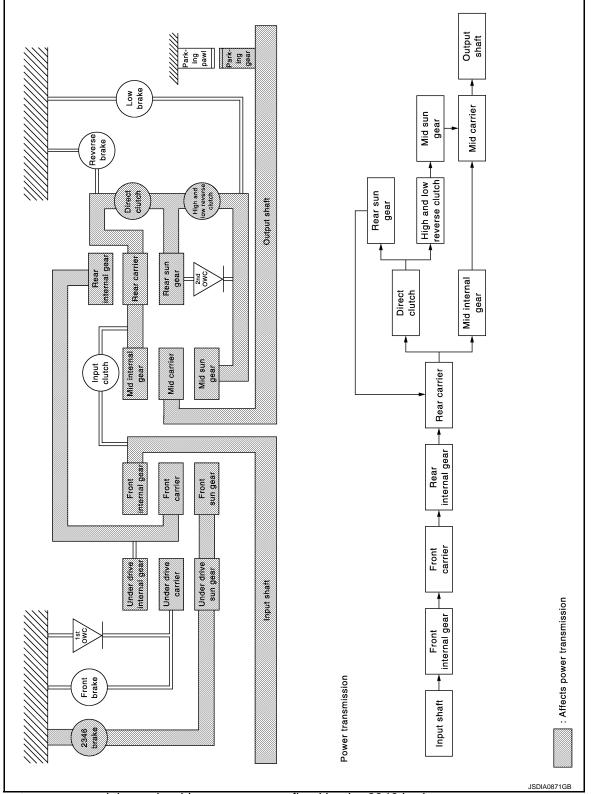
Ο

Ρ

J



< SYSTEM DESCRIPTION >



- 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.

< SYSTEM DESCRIPTION >

[7AT: RE7R01A]

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		Input	
Direction of rotation	ction of rotation Clockwise revolution 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

"D5", "DS5" and "M5" Positions

Κ

L

Μ

Ν

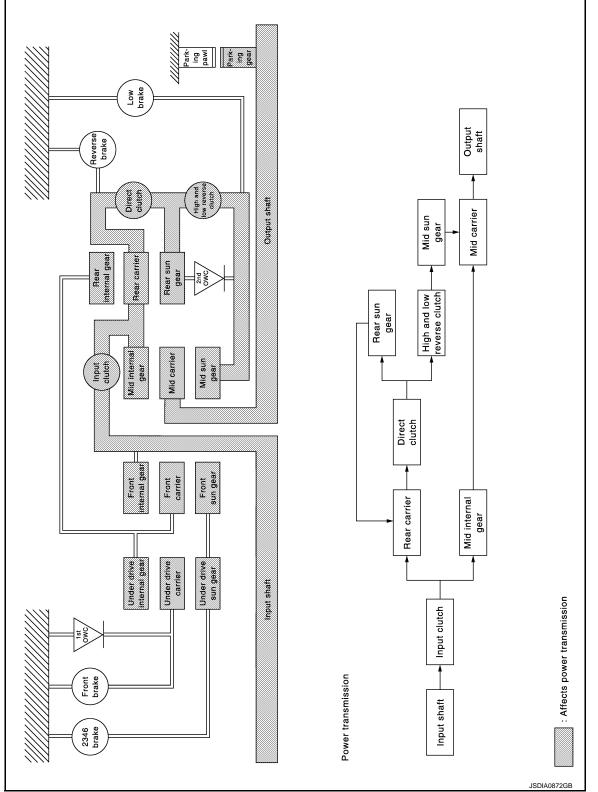
Ο

Ρ

J



< SYSTEM DESCRIPTION >



- 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.

< SYSTEM DESCRIPTION >

[7AT: RE7R01A]

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	ndition — Output Input		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

"D6", "DS6" and "M6" Positions

Е

F

G

Н

J

Κ

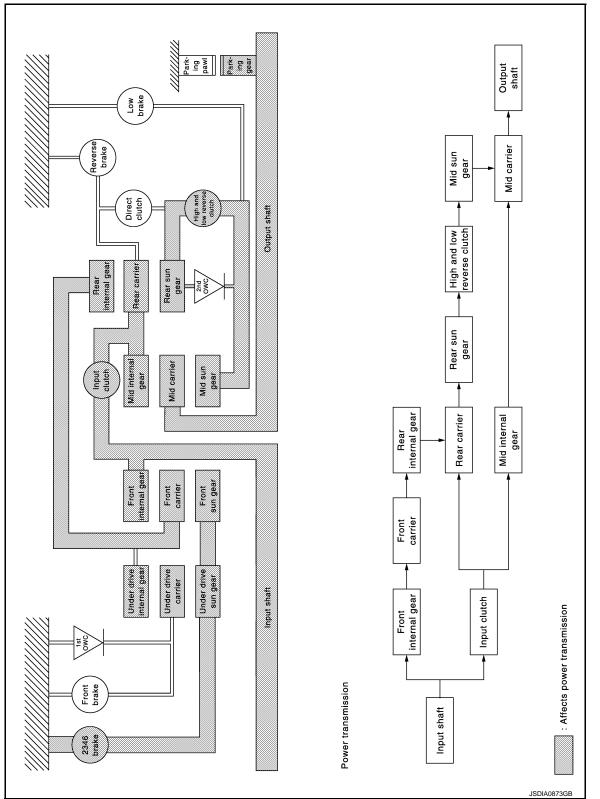
L

Μ

Ν

Ο

Ρ



< SYSTEM DESCRIPTION >

- The front sun gear and the under drive sun gear are fixed by the 2346 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 the state described below.

< SYSTEM DESCRIPTION >

[7AT: RE7R01A]

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

"D7", "DS7" and "M7" Positions

Н

J

Κ

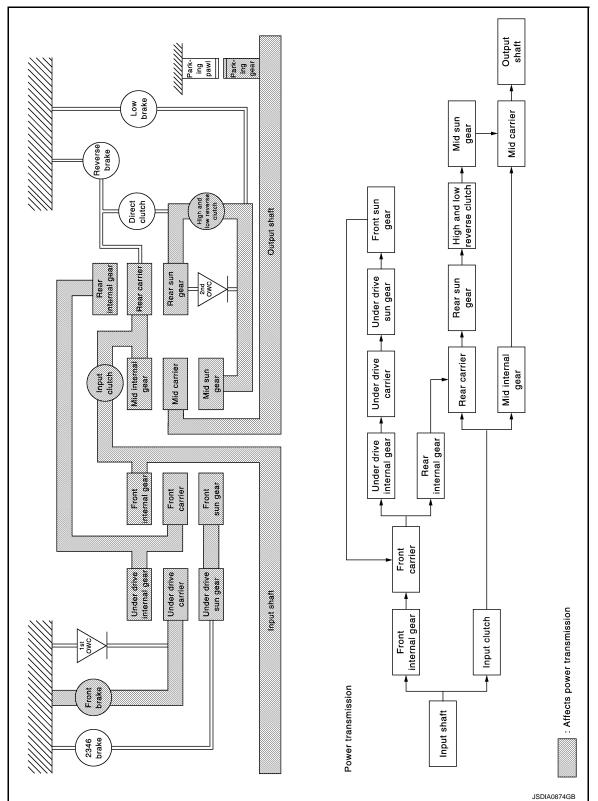
L

Μ

Ν

Ο

Ρ



• The under drive carrier is fixed by the front brake.

< SYSTEM DESCRIPTION >

- 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.

SHIFT MECHANISM

Revision: 2015 June

< SYSTEM DESCRIPTION >

[7AT: RE7R01A]

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	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	— Input/Output Input		Input
Direction of rotation	ation Clockwise revolution 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 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	Acceleration from mid internal gear	Acceleration from mid internal gear	Same number of revolution as the input shaft

"R" Position

Κ

L

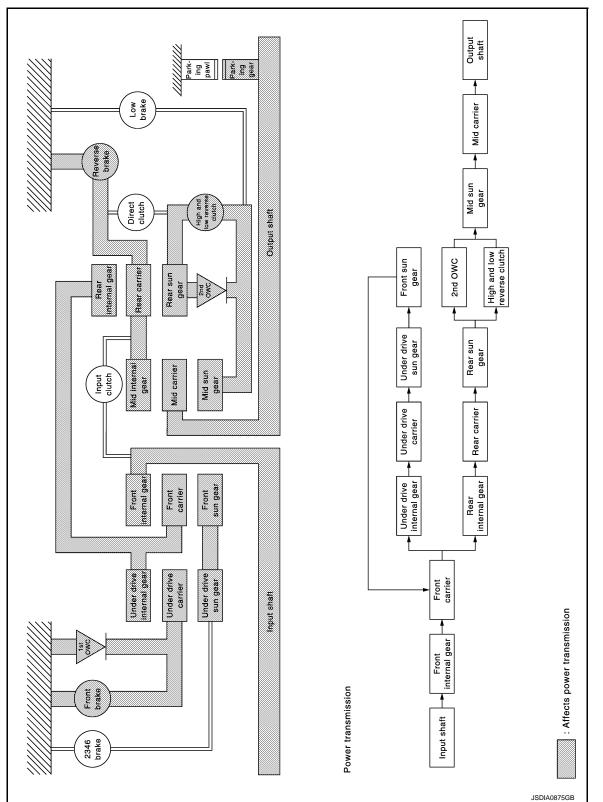
Μ

Ν

Ο

Ρ

J



- 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.

TM-200

NOTE:

The high and low reverse clutch operates at the fixed speed or less.

Revision: 2015 June

< SYSTEM DESCRIPTION >

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01A]

• Each planetary gear enters the state described below.

Name	Front sun gear	Front sun gear Front carrier Front inte		
Condition	- Output Input		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	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	tions Acceleration from rear internal San		Same number of revolution as the under drive internal gear	
Mid planetary gear				
wild planetary gear	Mid sun gear Mid carrier Mid interna		Mid internal gear	
Name	Mid sun gear			
	Input	Output	Fixed	
Name	3	Output Counterclockwise revolution	Fixed	

Component Parts Location

Refer to TM-177, "Cross-Sectional View".

Component Description

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 ro- tation.
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.

INFOID:000000011738231 J

INFOID:000000011738232

< SYSTEM DESCRIPTION >

SHIFT LOCK SYSTEM

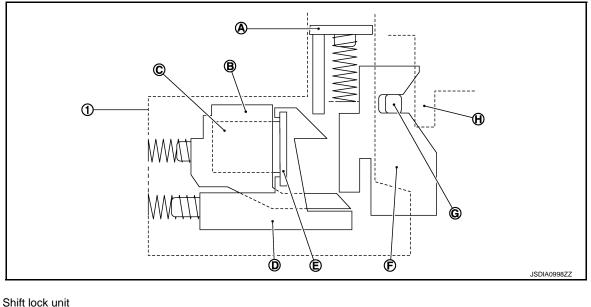
System Description

INFOID:000000011738233

[7AT: RE7R01A]

- 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
- D. Stopper
- G. Detent pin

B. Slider

Iron plate

Detent gate

Ε.

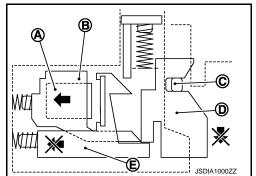
Н.

- 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.)

SHIFT LOCK SYSTEM

< SYSTEM DESCRIPTION >

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.

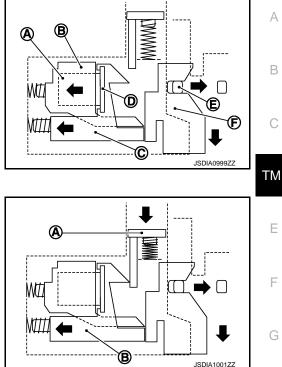
FORCIBLE RELEASE OF SHIFT LOCK

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.

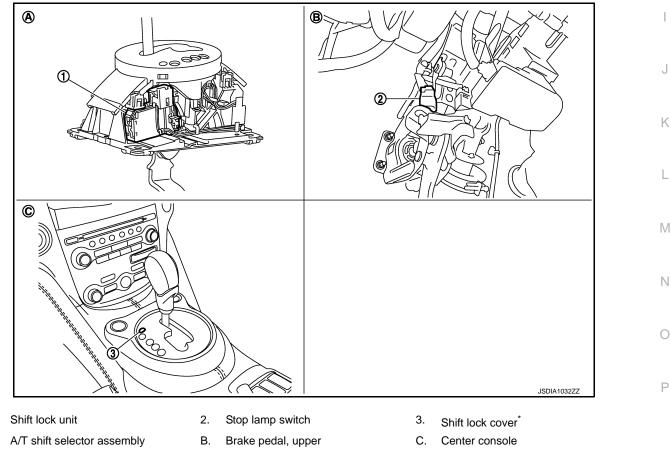
CAUTION:

Never use shift lock release button except when select lever is inoperative when depressing brake pedal while ignition switch is ON.

Component Parts Location



INFOID:0000000011738234



*: Shift lock release button becomes operative by removing shift lock cover.

1.

Α

SHIFT LOCK SYSTEM

< SYSTEM DESCRIPTION >

Component Description

INFOID:000000011738235

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.

ON BOARD DIAGNOSTIC (OBD) SYSTEM

< SYSTEM DESCRIPTION >

ON BOARD DIAGNOSTIC (OBD) SYSTEM

Diagnosis Description

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-297, "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-145</u>, "<u>DIAGNOSIS DESCRIPTION</u> : <u>1st Trip Detection Logic</u>".

F

Н

Κ

L

Μ

Ν

Ρ

Revision: 2015 June

[7AT: RE7R01A]

INFOID:000000011738236

А

В

ТΜ

Ε

< SYSTEM DESCRIPTION >

DIAGNOSIS SYSTEM (TCM)

CONSULT Function

INFOID:000000011738237

[7AT: RE7R01A]

CONSULT 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 status of CAN communication.	
DTC work support	DTC reproduction procedure can be performed speedily and precisely.	
ECU Identification	Display the ECU identification number (part number etc.) of the selected system.	
CALIB DATA*	The calibration data status of TCM can be checked.	

*: Although "CALIB DATA" is selectable, do not use its.

SELF DIAGNOSTIC RESULTS

Refer to TM-297, "DTC Index".

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.
- The number is fixed to 255 until the self-diagnosis results are erased if it is over 255.

DATA MONITOR

NOTE:

The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.

X: Standard, —: Not applicable, ▼: Option								
		Mor	nitor Item Sele	ction				
Monitored item (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 revolu- tion.			
F SUN GR REV	(rpm)	_	_	▼	Displays the front sun gear revolution calculat- ed from the pulse signal of input speed sensor 1.			

< SYSTEM DESCRIPTION >

		Monitor Item Selection				
Monitored iten	n (Unit)	ECU IN- PUT SIG- NALS	MAIN SIG- NALS	SELEC- TION FROM ITEM	Remarks	A
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.	С
TC SLIP SPEED	(rpm)	—	Х	▼	Displays the revolution difference between in- put speed and engine speed.	ΤM
ACCELE POSI	(0.0/8)	Х	—	▼	Displays the accelerator position estimated value received via CAN communication.	Е
THROTTLE POSI	(0.0/8)	Х	Х	▼	Displays the throttle position received via CAN communication.	
ATF TEMP 1	(°C or °F)	х	х	▼	Displays the ATF temperature of oil pan calcu- lated from the signal voltage of A/T fluid tem- perature sensor.	F
ATF TEMP 2	(°C or °F)	х	х	▼	Displays the ATF temperature estimated value of torque converter outlet calculated from the signal voltage of A/T fluid temperature sensor.	G
ATF TEMP SE 1	(V)	_	_	▼	Displays the signal voltage of A/T fluid temper- ature sensor.	Н
BATTERY VOLT	(V)	Х	_	▼	Displays the power supply voltage of TCM.	
LINE PRES SOL	(A)	_	Х	▼	Displays the command current from TCM to the line pressure solenoid.	
TCC SOLENOID	(A)	_	х	▼	Displays the command current from TCM to the torque converter clutch solenoid.	
L/B SOLENOID	(A)	_	х	▼	Displays the command current from TCM to the low brake solenoid.	J
FR/B SOLENOID	(A)	_	Х	▼	Displays the command current from TCM to the front brake solenoid.	Κ
HLR/C SOL	(A)	_	х	▼	Displays the command current from TCM to the high and low reverse clutch solenoid.	
I/C SOLENOID	(A)	_	х	▼	Displays the command current from TCM to the input clutch solenoid.	L
D/C SOLENOID	(A)	_	х	▼	Displays the command current from TCM to the direct clutch solenoid.	M
2346/B SOL	(A)	_	Х	▼	Displays the command current from TCM to the 2346 brake solenoid.	
L/P SOL MON	(A)	_	_	▼	Monitors the command current from TCM to the line pressure solenoid, and displays the monitor value.	Ν
TCC SOL MON	(A)	_	_	▼	Monitors the command current from TCM to the torque converter clutch solenoid, and dis- plays the monitor value.	0
L/B SOL MON	(A)	_	_	▼	Monitors the command current from TCM to the low brake solenoid, and displays the mon- itor value.	Ρ
FR/B SOL MON	(A)	_		▼	Monitors the command current from TCM to the front brake solenoid, and displays the monitor value.	

< SYSTEM DESCRIPTION >

		Monitor Item Selection		ction		
Monitored item (Unit)		ECU IN- PUT SIG- NALS	MAIN SIG- NALS	SELEC- TION FROM ITEM	Remarks	
HLR/C SOL MON	(A)	_	_	▼	Monitors the command current from TCM to the high and low reverse clutch solenoid, and displays the monitor value.	
I/C SOL MON	(A)	_	_	▼	Monitors the command current from TCM to the input clutch solenoid, and displays the monitor value.	
D/C SOL MON	(A)	_		▼	Monitors the command current from TCM to the direct clutch solenoid, and displays the monitor value.	
2346/B SOL MON	(A)	_	_	▼	Monitors the command current from TCM to the 2346 brake solenoid, and displays the monitor value.	
GEAR RATIO		_	Х	▼	Displays the gear ratio calculated from input speed and output revolution.	
ENGINE TORQUE	(Nm)	—	_	▼	Displays the engine torque estimated value re- ceived via CAN communication.	
ENG TORQUE D	(Nm)	_	_	▼	Displays the engine torque estimated value re- flected the requested torque of each control unit received via CAN communication.	
INPUT TRQ S	(Nm)	_	_	▼	Displays the input torque using for the oil pres- sure calculation process of shift change con- trol.	
INPUT TRQ L/P	(Nm)	_	_	▼	Displays the input torque using for the oil pres- sure calculation process of line pressure con- trol.	
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 pres- sure calculation process of shift change con- trol.	
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 pres- sure calculation process of shift change con- trol.	
TRG PRE HLR/C	(kPa, kg/cm ² or psi)	_	_	▼	Displays the target oil pressure value of high and low reverse clutch solenoid valve calculat- ed 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.	

< SYSTEM DESCRIPTION >

Mon		nitor Item Sele	ction		
Monitored	item (Unit)	ECU IN- PUT SIG- NALS	MAIN SIG- NALS	SELEC- TION FROM ITEM	Remarks
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 pres- sure calculation process of shift change con- trol.
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.
RANGE SW 1	(ON/OFF)	Х	—	▼	Displays the operation status of transmission range switch 1.
SFT DWN ST SW	(ON/OFF)	Х	_	▼	Displays the operation status of paddle shifter (down switch).
SFT UP ST SW	(ON/OFF)	Х	_	▼	Displays the operation status of paddle shifter (up switch).
DOWN SW LEVER	(ON/OFF)	х	_	▼	Displays the operation status of selector lever (down switch).
UP SW LEVER	(ON/OFF)	х	_	▼	Displays the operation status of selector lever (up switch).
NON M-MODE SW	(ON/OFF)	Х	_	▼	Displays whether the selector lever is in any position other than manual shift gate position.
MANU MODE SW	(ON/OFF)	х	_	▼	Displays whether the selector lever is in the manual shift gate position.
TOW MODE SW	(ON/OFF)	_	_	▼	 Displays the reception status of tow mode switch signal received via CAN communica- tion. Not mounted but displayed.
DS RANGE	(ON/OFF)	_	_	▼	Displays whether it is the DS mode.Not mounted but displayed.
1 POSITION SW	(ON/OFF)	х	_	▼	 Displays the reception status of 1 position switch signal received via CAN communica- tion. Not mounted but displayed.
OD CONT SW	(ON/OFF)	х	_	▼	 Displays the reception status of overdrive control switch signal received via CAN com- munication. Not mounted but displayed.
BRAKESW	(ON/OFF)	Х	—	▼	Displays the reception status of stop lamp switch signal received via CAN communica- tion.
POWERSHIFT SW	(ON/OFF)	х	_	▼	 Displays the reception status of POWER mode signal received via CAN communica- tion. Not mounted but displayed.
ASCD-OD CUT	(ON/OFF)	Х	—	▼	Displays the reception status of ASCD OD cancel request signal received via CAN communication.

< SYSTEM DESCRIPTION >

		Мо	nitor Item Sele	ction	
Monitored it	em (Unit)	ECU IN- PUT SIG- NALS	MAIN SIG- NALS	SELEC- TION FROM ITEM	Remarks
ASCD-CRUISE	(ON/OFF)	Х	_	▼	Displays the reception status of ASCD opera- tion signal received via CAN communication.
ABS SIGNAL	(ON/OFF)	х	_	▼	Displays the reception status of ABS operation signal received via CAN communication.
TCS GR/P KEEP	(ON/OFF)	Х	_	▼	Displays the reception status of TCS gear keep request signal received via CAN communication.
TCS SIGNAL 2	(ON/OFF)	Х	_	▼	Displays whether the reception value of A/T shift schedule change demand signal received via CAN communication is "cold".
TCS SIGNAL 1	(ON/OFF)	х	_	▼	Displays whether the reception value of A/T shift schedule change demand signal received via CAN communication is "warm".
LOW/B PARTS	(FAIL/NOTFAIL)	_	_	▼	Displays whether the identified malfunction point judged by TCM is the related parts of low brake.
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 in- put 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 re- ceived 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 posi- tion signal transmitted via CAN communica- tion.
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 communica- tion.
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.

< SYSTEM DESCRIPTION >

[7AT: RE7R01A]

		Monitor Item Selection				
Monitored in	tem (Unit)	ECU IN- PUT SIG- NALS	MAIN SIG- NALS	SELEC- TION FROM ITEM	Remarks	
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.	С
GEAR		—	Х	▼	Displays the current transmission gear posi- tion recognized by TCM.	ТМ
NEXT GR POSI		_	_	▼	Displays the target gear position of gear change that is calculated based on the vehicle speed information and throttle information.	E
SHIFT MODE		_	—	▼	Displays the transmission driving mode recog- nized by TCM.	L
D/C PARTS	(FAIL/NOTFAIL)	_	_	▼	Displays whether the identified malfunction point judged by TCM is the related parts of direct clutch.	F
FR/B PARTS	(FAIL/NOTFAIL)	_	_	▼	Displays whether the identified malfunction point judged by TCM is the related parts of front brake.	G
2346/B PARTS	(FAIL/NOTFAIL)	_	_	▼	Displays whether the identified malfunction point judged by TCM is the related parts of 2346 brake.	Η
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 WORK SUPPORT

Κ

L

Μ

Ν

Ο

Ρ

< SYSTEM DESCRIPTION >

Item	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) 		
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) 	 Input clutch solenoid valve Front brake solenoid valve 	
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) 	 Direct clutch solenoid valve High and low reverse 	
4TH GR FNCTN P0734	 Following items for "4GR incorrect ratio" can be confirmed. Self-diagnosis status (whether the diagnosis is being performed or not) Self-diagnostic results (OK or NG) 	 clutch solenoid valve Low brake solenoid valve 2346 brake solenoid 	
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 solenoid valve 	
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) 	 Each clutch and brake Output speed sensor Input speed sensor 1, 2 Hydraulic control circuit 	
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) 	nyuraulic control circuit	
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 	

DTC/CIRCUIT DIAGNOSIS U0100 LOST COMMUNICATION (ECM A)

DTC Logic

DTC DETECTION LOGIC

				С				
DTC	Trouble diagnosis name	DTC is detected if	Possible causes	0				
U0100	Lost Communication With ECM/PCM A	When the ignition switch is ON, TCM is un- able to receive the CAN communications signal from ECM continuously for 2 sec- onds or more.	 ECM Harness or connector (CAN communication line is open or shorted) 	ТМ				
DTC CONFIRMATION PROCEDURE								
1.PREP/	ARATION BEFORE WORK	ζ		E				
	"DTC CONFIRMATION P econds, then perform the r		n ignition switch OFF and wait for at	F				
>> GO TO 2. 2.PERFORM DTC CONFIRMATION PROCEDURE								
1. Start 1 2. Chec	 With CONSULT Start the engine and wait for at least 5 seconds. Check DTC. 							
Follow the Is "U0100	With GST Follow the procedure "With CONSULT". <u>Is "U0100" detected?</u>							
	YES >> Go to <u>TM-213, "Diagnosis Procedure"</u> . NO >> INSPECTION END J							
Diagnosis Procedure								
For the diagnosis procedure, refer to LAN-16. "Trouble Diagnosis Flow Chart".								
				L				

Μ

Ν

Ο

Ρ

INFOID:000000011738238 В

[7AT: RE7R01A]

А

< DTC/CIRCUIT DIAGNOSIS >

U0300 CAN COMMUNICATION DATA

Description

The amount of data transmitted from each control unit is read.

DTC Logic

INFOID:000000011738241

INFOID-000000011738242

INFOID:000000011738240

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
U0300	Internal Control Module Soft- ware Incompatibility	When the amount of data trans- mitted from each control unit is smaller than the specified amount.	Control units other than TCM.

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2. CHECK DTC DETECTION

With CONSULT

- Turn ignition switch ON and wait 2 seconds or more.
- 2. Perform "Self Diagnostic Results" in "TRANSMISSION".

Is "U0300" detected?

- YES >> Go to TM-214, "Diagnosis Procedure".
- NO >> INSPECTION END

Diagnosis Procedure

1.CHECK CONTROL UNIT

Check the number of control units replaced before detecting "U0300".

Is the number of replaced control units one?

- YES >> Since the replaced control unit may be out of specifications, check the part number and specifications.
- NO >> GO TO 2.

2.INSPECTION CONTROL UNIT

(I) With CONSULT

- 1. Remove one of the replaced control units.
- 2. Install the previous control unit mounted before replacement.
- 3. Turn ignition switch ON and wait 2 seconds or more.
- 4. Perform "Self Diagnostic Results" in "TRANSMISSION".

Is "U0300" detected?

- YES >> Turn OFF the ignition switch to check the other control units in the same method.
- NO >> Since the removed control unit may be out of specifications, check the part number and specifications.

U1000 CAN COMM CIRCUIT

Description

CAN (Controller Area Network) is a serial communication line for real-time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent 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 con-С nected 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

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 P	ROCEDURE				
1.PRECONDITIONING					
		conducted, always turn igni	tion switch OFF and wait at		
least 10 seconds before pe	erforming the next test.				
>> GO TO 2.					
2.CHECK DTC DETECTION	ON				
	2 consecutive seconds at i				
 Perform "Self Diagnost s "U1000" detected? 	tic Results" in "TRANSMISS	SION".			
	"Diagnosis Procedure".				
NO >> INSPECTION					
Diagnosis Procedure					
Go to LAN-16, "Trouble Dia	agnosis Flow Chart".				

INFOID:000000011738243

INFOID:000000011738244

[7AT: RE7R01A]

В

TΜ

Ρ

P0615 STARTER RELAY

Description

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

DTC Logic

INFOID:000000011738247

INFOID:000000011738246

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

With CONSULT

- T. Shift the selector lever to "P" and "N" positions.
- 2. Turn ignition switch ON and wait 2 seconds or more.
- 3. Perform "Self Diagnostic Results" in "TRANSMISSION".

Is "P0615" detected?

- YES >> Go to TM-216, "Diagnosis Procedure".
- NO >> INSPECTION END

Diagnosis Procedure

1.CHECK STARTER RELAY SIGNAL

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

IPDM E/R connector			Condition	Voltage (Approx.)
Connector	Terminal	Ground	Condition	Voltage (Approx.)
E5 ^{*1}	30*1		Selector lever in "P" and "N" positions.	Battery voltage
			Selector lever in other positions.	0 V
E7 ^{*2}	72 ^{*2}		Selector lever in "P" and "N" positions.	Battery voltage
E/ -			Selector lever in other positions.	0 V

*1: Roadster models

*2: Coupe models

Is the inspection result normal?

YES >> Check starter relay circuit. Refer to <u>STR-14, "Wiring 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.

INFOID:000000011738248

P0615 STARTER RELAY

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A]

2.

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 3. А side harness connector terminal.

A/T assembly vehicle	side harness conne	ector IPDM	E/R vehicle side	e harness connector	Continuity
Connector	Terminal	Con	nector	Terminal	Continuity
		E	5 ^{*1}	30 ^{*1}	
F51	9	E	7*2	72 ^{*2}	Existed
*1: Roadster models					
*2: Coupe models					
the inspection resu					
YES >> GO TO 3 NO >> Repair or	replace damag	led parts			
CHECK HARNES		•			
heck continuity betw	een A/T assem	ibly vehicle side h	arness conr	ector terminal ar	id ground.
A/T assembly v	ehicle side harness	sconnector			
Connector		Terminal		Ground	Continuity
F51		9		_	Not existed
YES >> GO TO 4 NO >> Repair or CHECK JOINT CO Remove joint con	replace damag		ded View".		
NO >> Repair or CHECK JOINT CC Remove joint con Check the continu	replace damag DNNECTOR nector. Refer to uity between joi	o <u>TM-330, "Explo</u> nt connector term	inals.		
NO >> Repair or CHECK JOINT CO Remove joint con Check the continu A/T assembly harness	replace damag DNNECTOR nector. Refer to uity between join connector side	o <u>TM-330, "Explo</u> nt connector term TCM harness	inals.	•	Continuity
NO >> Repair or CHECK JOINT CC Remove joint con Check the continu A/T assembly harness Termina	replace damag DNNECTOR nector. Refer to uity between join connector side	o <u>TM-330, "Explo</u> nt connector term TCM harness	inals. connector side minal	3	
NO >> Repair or CHECK JOINT CO Remove joint con Check the continu A/T assembly harness Termina 9	replace damag DNNECTOR nector. Refer to uity between join	o <u>TM-330, "Explo</u> nt connector term TCM harness	inals.	3	Continuity Existed
NO >> Repair or CHECK JOINT CC Remove joint con Check the continu A/T assembly harness Termina 9 the inspection resu YES >> GO TO 5	replace damag DNNECTOR nector. Refer to uity between join connector side t normal? replace damag	o <u>TM-330, "Explo</u> nt connector term TCM harness Tern	inals. connector side minal	<u>)</u>	
NO >> Repair or CHECK JOINT CC Remove joint con Check the continu A/T assembly harness Termina 9 the inspection resu YES >> GO TO 5 NO >> Repair or .CHECK INTERMIT	replace damag DNNECTOR nector. Refer to uity between join connector side to normal? replace damag	o <u>TM-330, "Explo</u> nt connector term TCM harness Tern led parts.	inals. connector side minal	3	
NO >> Repair or CHECK JOINT CC Remove joint con Check the continu A/T assembly harness Termina 9 the inspection resu YES >> GO TO 5 NO >> Repair or CHECK INTERMIT efer to <u>GI-45, "Interr</u>	replace damag DNNECTOR nector. Refer to uity between join connector side to normal? replace damag TENT INCIDE	o <u>TM-330, "Explo</u> nt connector term TCM harness Tern led parts.	inals. connector side minal	<u>}</u>	
NO >> Repair or CHECK JOINT CC Remove joint con Check the continu A/T assembly harness Termina 9 the inspection resul YES >> GO TO 5 NO >> Repair or CHECK INTERMIT efer to <u>GI-45, "Interr</u> the inspection resul	replace damag DNNECTOR nector. Refer to uity between join connector side <u>t normal?</u> replace damag TENT INCIDEI <u>nittent Incident</u>	o <u>TM-330, "Explo</u> nt connector term TCM harness Tern led parts. NT	inals. connector side minal 9		
NO >> Repair or CHECK JOINT CC Remove joint con Check the continu A/T assembly harness Termina 9 the inspection resu YES >> GO TO 5 NO >> Repair or .CHECK INTERMIT efer to GI-45, "Interr the inspection resu YES >> Replace of	replace damag DNNECTOR nector. Refer to uity between join connector side <u>t normal?</u> replace damag TENT INCIDEI <u>nittent Incident</u>	o <u>TM-330, "Explo</u> nt connector term <u>TCM harness</u> Tern Jed parts. NT TCM. Refer to <u>TM</u>	inals. connector side minal 9		
NO >> Repair or CHECK JOINT CC Remove joint con Check the continu A/T assembly harness Termina 9 the inspection resu YES >> GO TO 5 NO >> Repair or .CHECK INTERMIT efer to GI-45, "Interr the inspection resu YES >> Replace of	replace damag NNECTOR nector. Refer to uity between join connector side to normal? replace damag TENT INCIDER nittent Incident" lt normal? control valve &	o <u>TM-330, "Explo</u> nt connector term <u>TCM harness</u> Tern Jed parts. NT TCM. Refer to <u>TM</u>	inals. connector side minal 9		
NO >> Repair or CHECK JOINT CC Remove joint con Check the continu A/T assembly harness Termina 9 the inspection resu YES >> GO TO 5 NO >> Repair or .CHECK INTERMIT efer to GI-45, "Interr the inspection resu YES >> Replace of	replace damag NNECTOR nector. Refer to uity between join connector side to normal? replace damag TENT INCIDER nittent Incident" lt normal? control valve &	o <u>TM-330, "Explo</u> nt connector term <u>TCM harness</u> Tern Jed parts. NT TCM. Refer to <u>TM</u>	inals. connector side minal 9		
NO >> Repair or CHECK JOINT CC Remove joint con Check the continu A/T assembly harness Termina 9 the inspection resu YES >> GO TO 5 NO >> Repair or .CHECK INTERMIT efer to GI-45, "Interr the inspection resu YES >> Replace of	replace damag NNECTOR nector. Refer to uity between join connector side to normal? replace damag TENT INCIDER nittent Incident" lt normal? control valve &	o <u>TM-330, "Explo</u> nt connector term <u>TCM harness</u> Tern Jed parts. NT TCM. Refer to <u>TM</u>	inals. connector side minal 9		

Ρ

P0705 TRANSMISSION RANGE SWITCH A

< DTC/CIRCUIT DIAGNOSIS >

P0705 TRANSMISSION RANGE SWITCH A

Description

- The transmission range switch incorporates four contact switches. Each contact switch transmits an ON/ OFF signal to the TCM.
- The TCM judges a select lever position from a combination of ON/OFF signals transmitted from each contact switch.

Salact lover position	Transmission range switch			
Select lever position	SW1	SW2	SW3	SW4
Р	OFF	OFF	OFF	OFF
R	ON	OFF	OFF	ON
Ν	ON	ON	OFF	OFF
D and M	ON	ON	ON	ON

DTC Logic

INFOID:000000011738250

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P0705	Transmission Range Sensor A Circuit (PRNDL Input)	The TCM detects an ON/OFF combination pattern other than that of the transmission range switches 1, 2, 3 and 4.	 Harness or connectors (Transmission range switch- es 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

With CONSULT

- 1. Start the engine.
- 2. Select "ACCELE POSI" and "VHCL/S SE-A/T" in "Data Monitor" in "TRANSMISSION".
- 3. 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".

Is "P0705" detected?

YES >> Go to <u>TM-218, "Diagnosis Procedure"</u>. NO >> INSPECTION END

Diagnosis Procedure

1.CHECK INTERMITTENT INCIDENT

Refer to GI-45, "Intermittent Incident".

INFOID:000000011738249

< DTC	P0705 TRANSMISSION RANGE SWITCH A /CIRCUIT DIAGNOSIS >	[7AT: RE7R01A]	
	nspection result normal?		
YES NO	>> Replace control valve & TCM. Refer to <u>TM-330, "Exploded View"</u> . >> Repair or replace damaged parts.		А
			В
			С
			ΤM
			E
			F
			G
			Η
			J
			K
			L
			M
			Ν
			0
			Ρ

P0710 TRANSMISSION FLUID TEMPERATURE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

P0710 TRANSMISSION FLUID TEMPERATURE SENSOR A

Description

INFOID:000000011738252

[7AT: RE7R01A]

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

DTC Logic

INFOID:0000000011738253

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
	P0710 Transmission Fluid Tempera- ture Sensor A Circuit	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 while driving at 10 km/h (7 MPH) or more.	 Harness or connectors (Sensor circuit is short.) A/T fluid temperature sensor
P0710		A/T fluid temperature does not rise to 20° C (68°F) after driving for a certain period of time with the TCM-received fluid temperature sensor value between -40° C (-40° F) and 19° C (66° F).	 Harness or connectors (Sensor circuit is stuck.) A/T fluid temperature sensor
		 The following conditions are maintained for 5 minutes after the completion of engine diagnosis P0111, P0116, and P0196: A/T fluid temperature – Engine coolant temperature > 33°C (91.4°F) A/T fluid temperature – Engine coolant temperature < -19°C (-2.2°F) NOTE: This malfunction is applied to vehicle for North America. 	A/T fluid temperature sen- sor

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 (PART 1)

(B) With CONSULT

- 1. Turn ignition switch ON.
- 2. Select "VHCL/S SE-A/T" in "Data Monitor" in "TRANSMISSION".
- 3. Start the engine and maintain the following condition for 10 seconds or more.

VHCL/S SE-A/T : 10 km/h (7 MPH) or more

With GST

Follow the procedure "With CONSULT".

Is "P0710" detected?

YES >> Go to <u>TM-222</u>, "Diagnosis Procedure".

NO-1 (For North America)>>GO TO 3.

NO-2 (For Mexico)>>GO TO 4.

3.CHECK A/T FLUID TEMPERATURE SENSOR FUNCTION

With CONSULT

P0710 TRANSMISSION FLUID TEMPERATURE SENSOR A

P0710 TRANSMI	SSION FLUID TEMPERATURE SENSOR A	
< DTC/CIRCUIT DIAGNOSIS >	[7AT: RE7R01A]
 Turn ignition switch OFF and coo Turn ignition switch ON. CAUTION: 	I the engine.	A
 Never start the engine. 3. Select "ATF TEMP 1" in "Data Model. 4. Select "COOLANT TEMP/S" in "Ending of the start of the		B
 With GST Complete engine diagnoses P01 After starting the engine start, rur Check the DTC. 		(
Is the temperature calculated by subt 33°C (91.4°F) or is it less than –19°C	racting engine coolant temperature from A/T fluid temperature more tha (-2.2°F)? (With CONSULT)/Is "P0710" detected? (With GST)	n TN
NO-2 With CONSULT: "ATF TEMP NO-3 (With GST)>>GO TO 4.	1" is 20°C (68°F) or more]>>INSPECTION END 1" is 19°C (66°F) or less]>>GO TO 4.	E
4.CHECK DTC DETECTION (PART	2)	F
 With CONSULT Turn ignition switch OFF and coo Turn ignition switch ON. CAUTION: 	of the engine.	G
"TRANSMISSION".4. Record A/T fluid temperature.	CL/S SE-A/T", "ACCELE POSI", "ATF TEMP 1" in "Data Monitor" i	n ₋
 Start the engine and wait for at le Drive the vehicle for the total min tions satisfied. 	east 3 minutes. Intes specified in the Driving time column below with the following cond	i-
SLCT LVR POSI : D VHCL/S SE-A/T : 10 km/h (7 ACCELE POSI : 0.5/8 or mo	MPH) or more	J
ACCELE POSI : 0.5/8 of mo	Jie	K
A/T fluid temperature before engine start	Driving time	r
-40° C (-40° F) -31° C (-23.8° F)	21 minutes or more	
-30°C (-22°F)21°C (-5.8°F)	18 minutes or more	L
–20°C (−4°F) – –11°C (12.2°F)	15 minutes or more	
–10°C (14°F) – −1°C (30.2°F)	12 minutes or more	N
0°C (32°F) – 9°C (48.2°F)	9 minutes or more	
10°C (50°F) – 19°C (66.2°F)	6 minutes or more	
7. Perform "Self Diagnostic Results" With GST	" in "TRANSMISSION".	Ν
 Turn ignition switch OFF and coo Start the engine and wait for at le Drive the vehicle and maintain th 		C
Selector lever : D pos	sition	P
Vehicle speed : 10 km	n/h (7 MPH) or more	
	or more	
4. Check the DTC. Is "P0710" detected?		

NO >> INSPECTION END

YES >> Go to TM-222, "Diagnosis Procedure".

P0710 TRANSMISSION FLUID TEMPERATURE SENSOR A [7AT: RE7R01A]

< DTC/CIRCUIT DIAGNOSIS >

Diagnosis Procedure

INFOID:000000011738254

1.CHECK INTERMITTENT INCIDENT

Refer to GI-45, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace control valve & TCM. Refer to <u>TM-330, "Exploded View"</u>.

P0717 INPUT SPEED SENSOR A

Description

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:000000011738256

INFOID:000000011738255

С

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause	ТМ
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 	Е
DTC CONFIRMATION P CAUTION: Always drive vehicle at a				F
				G
If "DTC CONFIRMATION F least 10 seconds before pe	PROCEDURE" is previously performing the next test.	conducted, always turn ign	ition switch OFF and wait at	
				Н
>> GO TO 2. 2.CHECK DTC DETECTI				
(P) With CONSULT				I
1. Start the engine.				
 Select "SLCT LVR PO Monitor" in "TRANSMI 	SI", "GEAR", "VHCL/S SE-A SSION".	VT", "CLSD THL POS" and	"ENGINE SPEED" in "Data	J
3. Drive vehicle and mair CAUTION:	ntain the following conditions	s for 5 seconds or more.		
Keep the same gear	position.			K
NOTE: Driving the vehicle up	nill (increased engine load) v	will help maintain the driving	conditions required for this	
test.	(3 /	1 3		I
SLCT LVR POSI	: D			
GEAR	: 2nd, 3rd, 4th, 5th or 6th			
VHCL/S SE-A/T CLSD THL POS	: More than 40 km/h (25 MPH) : OFF			Μ
ENGINE SPEED	: More than 1,500 rpm			
4. Perform "Self Diagnos	tic Results" in "TRANSMISS	SION".		Ν
With GST				
Follow the procedure "With	n CONSULI".			0
<u>Is "P0717" detected?</u> YES >> Go to TM-223,	<u>, "Diagnosis Procedure"</u> .			0
NO >> INSPECTION	END			_
Diagnosis Procedure)		INFOID:000000011738257	Ρ
1.CHECK INTERMITTEN	IT INCIDENT			

Refer to GI-45, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace control valve & TCM. Refer to TM-330, "Exploded View".

TM-223

[7AT: RE7R01A]

А

NO

P0720 OUTPUT SPEED SENSOR

Description

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:000000011738259

INFOID:000000011738258

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause	ΤN
		The vehicle speed detected by the output speed sensor is 5 km/h (3 MPH) or less when the vehicle speed transmitted from the combination meter		E
		to TCM is 20 km/h (13 MPH) or more. (Only when starts af- ter the ignition switch is turned ON.)		F
P0720	Output Speed Sensor Circuit	 The vehicle speed transmit- ted from the combination meter to TCM does not de- crease despite the 36 km/h 	 Harness or connectors (Sensor circuit is open.) Output speed sensor 	G
		(23 MPH) or more of deceler- ation in vehicle speed detect- ed by the output speed sensor. when the vehicle		Н
		speed detected by the output speed sensor is 36 km/h (23 MPH) or more and the vehicle speed transmitted from the		
		combination meter to TCM is 24 km/h (15 MPH) or more.		J
TC CONFIRMATIO	N PROCEDURE			K
AUTION: Always drive vehicle				
Be careful not to rev	\sim engine into the red zone on	the tachometer.		I
	ON PROCEDURE" is previously	conducted always turn igni		
	e performing the next test.	conducted, always turn ign		
00 - 0 0				N
>> GO TO 2.	OTION			
	CTION			Ν
With CONSULT . Start the engine.				
	P SIG" in "Data Monitor" in "TRA maintain the following condition"			С
ESTM VSP SIG	: 40 km/h (25 MPH) or more			P
-	nostic Results" in "TRANSMISS	SION".		
With GST follow the procedure "\	With CONSULT".			
s "P0720" detected?				

Is "P0720" detected?

- YES >> Go to TM-226, "Diagnosis Procedure".
- NO >> INSPECTION END

А

С

P0720 OUTPUT SPEED SENSOR

< DTC/CIRCUIT DIAGNOSIS >

Diagnosis Procedure

[7AT: RE7R01A]

INFOID:000000011738260

1.CHECK INTERMITTENT INCIDENT

Refer to GI-45, "Intermittent Incident".

Is the inspection result normal?

- YES >> Replace control valve & TCM. Refer to <u>TM-330, "Exploded View"</u>.
- NO >> Repair or replace damaged parts.

P0725 ENGINE SPEED

< DTC/CIRCUIT DIAGNOSIS >

P0725 ENGINE SPEED

Description

The engine speed signal is transmitted from the ECM to the TCM via CAN communication line.

DTC Logic

INFOID:000000011738262

INFOID:000000011738261

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 vehi- cle speed is more than 10 km/ h (7 MPH). 	Harness or connectors (ECM to TCM circuit is open or shorted.)
DTC CONFIRMATION P	ROCEDURE		
CAUTION: Always drive vehicle at a	safa speed		
1.PRECONDITIONING	sale speed.		
	PROCEDURE" is previously	y conducted, always turn igni	tion switch OFF and wait at
least 10 seconds before pe			
>> GO TO 2.			
2.CHECK DTC DETECTI	ON		
 Drive vehicle and main SLCT LVR POSI VHCL/S SE-A/T Perform "Self Diagnos With GST Follow the procedure "With Is "P0725" detected? 	ntain the following condition : D : More than 10 km/h (7 MPH) tic Results" in "TRANSMISS n CONSULT". <u>, "Diagnosis Procedure"</u> .		1ISSION".
Diagnosis Procedure	9		INFOID:000000011738263
1. СНЕСК DTC OF ЕСМ			
Is any DTC detected?	N. tic Results" in "ENGINE". etected item. Refer to <u>EC-5</u>	76. "DTC_Index".	

Is any DTC other than "P0725" detected?

А

В

С

P0725 ENGINE SPEED

< DTC/CIRCUIT DIAGNOSIS >

YES >> Check DTC detected item. Refer to <u>TM-297, "DTC Index"</u>.

NO >> GO TO 3.

3.CHECK INTERMITTENT INCIDENT

Refer to GI-45, "Intermittent Incident".

Is the inspection result normal?

- YES >> Replace control valve & TCM. Refer to <u>TM-330, "Exploded View"</u>.
- NO >> Repair or replace damaged parts.

P0729 6GR INCORRECT RATIO

Description

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

INFOID:000000011738265

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
DURE".	Procedure"" must be perfe CONFIRMATION PROCED	-	TC CONFIRMATION PROCE- the repair, which may cause
I PRECONDITIONING			

>> GO TO 2.

2. CHECK ATF TEMPERATURE

With CONSULT

- 1. Start the engine.
- 2. 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)

With CONSULT

- 1. Select "6TH GR FNCTN P0729" in "DTC Work Support" in "TRANSMISSION".
- 2. Drive vehicle with manual mode and maintain the following conditions.

TM-229

INFOID:000000011738264



L

Μ

Ν

Ρ

P0729 6GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A]

GEAR	: 6th
ACCELE POSI	: 0.7/8 or more
VEHICLE SPEED	: 10 km/h (7 MPH) or more

3. Keep the current driving status for 2 seconds or more if CONSULT screen changes from "OUT OF CON-DITION" to "TESTING".

CAUTION:

When "TESTING" is not indicated on CONSULT for a long time, check "Self Diagnostic Results" in "TRANSMISSION". When a DTC other than "P0729" is detected, check the DTC. Refer to <u>TM-297</u>, <u>"DTC Index"</u>.

(a) 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.

Is "OUT OF CONDITION", "STOP VEHICLE" or "COMPLETED RESULT NG" displayed? / Is "P0729" 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-230, "Diagnosis Procedure".

YES-4 ("P0729" is detected)>>Go to TM-230. "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:000000011738266

1.CHECK INTERMITTENT INCIDENT

Refer to GI-45, "Intermittent Incident".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace damaged parts.

2. DETECT MALFUNCTIONING ITEM

Disassemble the A/T assembly to check component parts. Refer to TM-362, "Disassembly".

NOTE:

Check the component parts, referring to "Possible cause" in "DTC DETECTION LOGIC". Refer to <u>TM-229</u>, <u>"DTC Logic"</u>.

Is the inspection result normal?

YES >> Replace control valve & TCM. Refer to <u>TM-330</u>, "Exploded View".

P0730 INCORRECT GEAR RATIO

Description

- 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:000000011738268

INFOID:000000011738267

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
TC CONFIRMATION	N PROCEDURE		
AUTION: "TM-231, "Diagnosis	Procedure"" must be perf	ormed before starting "DTC	CONFIRMATION PROCE-
DURE".	-	_	
secondary malfuncti	ion.	URE" before completing the	repair, which may cause
Always drive vehicle	•		
.PRECONDITIONING			
	N PROCEDURE" is previous e performing the next test.	ly conducted, always turn igni	tion switch OFF and wait at
>> GO TO 2.			
CHECK DTC DETEC			
) With CONSULT Start the engine.			
Select "Self Diagno	stic Results" in "ENGINE".		
Drive vehicle under table below.	r the similar conditions to (1	st trip) Freeze Frame Data fo	or 10 minutes. Refer to the
Hold the accelerat	tor pedal as steady as poss	ible.	
NGINE SPEED	Same value a	s the Freeze Frame Data.	
EHICLE SPEED	Same value a	s the Freeze Frame Data.	
FUEL SCHDL	Same value a	s the Freeze Frame Data.	
With GST			
ollow the procedure "V			
"P0730" detected?	Vith CONSULT".		
	Vith CONSULI". 31, "Diagnosis Procedure".		
'ES >> Go to <u>TM-2</u>	<u>31, "Diagnosis Procedure"</u> .		
YES >> Go to TM-2	<u>31, "Diagnosis Procedure"</u> . DN END		INFOID:000000011738269
YES >> Go to <u>TM-2</u> NO >> INSPECTIO iagnosis Procedu	2 <u>31, "Diagnosis Procedure"</u> . DN END J re		INFOID:000000011738269
	2 <u>31, "Diagnosis Procedure"</u> . DN END J I IR ENT INCIDENT		INFOID:000000011738269

YES >> GO TO 2.

NO >> Repair or replace damaged parts.

А

В

С

2. DETECT MALFUNCTIONING ITEM

Disassemble the A/T assembly to check component parts. Refer to <u>TM-362</u>, "Disassembly". **NOTE:**

Check the component parts, referring to "Possible cause" in "DTC DETECTION LOGIC". Refer to <u>TM-231</u>, <u>"DTC Logic"</u>.

Is the inspection result normal?

- YES >> Replace control valve & TCM. Refer to <u>TM-330, "Exploded View"</u>.
- NO >> Repair or replace damaged parts.

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 В 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:000000011738271

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
			Output speed sensorInput speed sensor 1, 2
DURE".	is Procedure"" must be perfo C CONFIRMATION PROCED tion. le at a safe speed.	_	TC CONFIRMATION PROCE- the repair, which may cause
.PRECONDITIONIN	IG		
	ON PROCEDURE" is previous re performing the next test.	ly conducted, always turn i	gnition switch OFF and wait at
>> GO TO 2.			

2. CHECK ATF TEMPERATURE

(P) With CONSULT 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) (a) With GST 1. 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)

With CONSULT

1.

2. 3.

2.

- Select "1ST GR FNCTN P0731" in "DTC Work Support" in "TRANSMISSION". 1.
- 2. Drive vehicle with manual mode and maintain the following conditions.

TM-233

Μ

Ν

Ρ

INFOID:000000011738270

А

P0731 1GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A]

GEAR	: 1st
ACCELE POSI	: 0.7/8 or more
VEHICLE SPEED	: 10 km/h (7 MPH) or more

3. Keep the current driving status for 2 seconds or more if CONSULT screen changes from "OUT OF CON-DITION" to "TESTING".

CAUTION:

When "TESTING" is not indicated on CONSULT for a long time, check "Self Diagnostic Results" in "TRANSMISSION". When a DTC other than "P0731" is detected, check the DTC. Refer to <u>TM-297</u>, <u>"DTC Index"</u>.

(a) With GST

1. 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

2. 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-234, "Diagnosis Procedure".

YES-4 ("P0731" is detected)>>Go to TM-234. "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:000000011738272

1.CHECK INTERMITTENT INCIDENT

Refer to GI-45, "Intermittent Incident".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace damaged parts.

2. DETECT MALFUNCTIONING ITEM

Disassemble the A/T assembly to check component parts. Refer to TM-362, "Disassembly".

NOTE:

Check the component parts, referring to "Possible cause" in "DTC DETECTION LOGIC". Refer to <u>TM-233</u>, <u>"DTC Logic"</u>.

Is the inspection result normal?

YES >> Replace control valve & TCM. Refer to <u>TM-330</u>, "Exploded View".

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

INFOID:000000011738274

А

Κ

L

Μ

Ν

Ρ

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
DURE".	rocedure"" must be perfo ONFIRMATION PROCED	_	TC CONFIRMATION PROCE- the repair, which may cause

least 10 seconds before performing the next test.

>> GO TO 2.

2. CHECK ATF TEMPERATURE

With CONSULT

- 1. Start the engine.
- 2. 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)

With CONSULT

- 1. Select "2ND GR FNCTN P0732" in "DTC Work Support" in "TRANSMISSION".
- 2. Drive vehicle with manual mode and maintain the following conditions.

TM-235

P0732 2GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

GEAR	: 2nd
ACCELE POSI	: 0.7/8 or more
VEHICLE SPEED	: 10 km/h (7 MPH) or more

3. Keep the current driving status for 2 seconds or more if CONSULT screen changes from "OUT OF CON-DITION" to "TESTING".

CAUTION:

When "TESTING" is not indicated on CONSULT for a long time, check "Self Diagnostic Results" in "TRANSMISSION". When a DTC other than "P0732" is detected, check the DTC. Refer to <u>TM-297</u>, <u>"DTC Index"</u>.

(a) 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-236, "Diagnosis Procedure".

YES-4 ("P0732" is detected)>>Go to TM-236. "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:000000011738275

1.CHECK INTERMITTENT INCIDENT

Refer to GI-45, "Intermittent Incident".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace damaged parts.

2. DETECT MALFUNCTIONING ITEM

Disassemble the A/T assembly to check component parts. Refer to TM-362, "Disassembly".

NOTE:

Check the component parts, referring to "Possible cause" in "DTC DETECTION LOGIC". Refer to <u>TM-235</u>, <u>"DTC Logic"</u>.

Is the inspection result normal?

YES >> Replace control valve & TCM. Refer to <u>TM-330</u>, "Exploded View".

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

INFOID:000000011738277

А

J

Κ

L

M

Ν

Ρ

DTC DETECTION LOGIC

DTC Trouble diagnos	sis name DTC is detected if	Possible cause
P0733 Gear 3 Incorrect Ra	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

- 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

With CONSULT

- 1. Start the engine.
- 2. 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)

With CONSULT

- 1. Select "3RD GR FNCTN P0733" in "DTC Work Support" in "TRANSMISSION".
- 2. Drive vehicle with manual mode and maintain the following conditions.

TM-237

P0733 3GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A]

GEAR	: 3rd
ACCELE POSI	: 0.7/8 or more
VEHICLE SPEED	: 10 km/h (7 MPH) or more

3. Keep the current driving status for 2 seconds or more if CONSULT screen changes from "OUT OF CON-DITION" to "TESTING".

CAUTION:

When "TESTING" is not indicated on CONSULT for a long time, check "Self Diagnostic Results" in "TRANSMISSION". When a DTC other than "P0733" is detected, check the DTC. Refer to <u>TM-297</u>, <u>"DTC Index"</u>.

(a) With GST

1. 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

2. 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-238, "Diagnosis Procedure".

YES-4 ("P0733" is detected)>>Go to TM-238. "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:000000011738278

1.CHECK INTERMITTENT INCIDENT

Refer to GI-45, "Intermittent Incident".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace damaged parts.

2. DETECT MALFUNCTIONING ITEM

Disassemble the A/T assembly to check component parts. Refer to TM-362, "Disassembly".

NOTE:

Check the component parts, referring to "Possible cause" in "DTC DETECTION LOGIC". Refer to <u>TM-237</u>, <u>"DTC Logic"</u>.

Is the inspection result normal?

YES >> Replace control valve & TCM. Refer to <u>TM-330</u>, "Exploded View".

P0734 4GR INCORRECT RATIO

Description

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:000000011738280

А

Κ

L

Μ

Ν

Ρ

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
DURE".	rocedure"" must be perfo ONFIRMATION PROCEDI	_	TC CONFIRMATION PROCE- the repair, which may cause

least 10 seconds before performing the next test.

>> GO TO 2.

2. CHECK ATF TEMPERATURE

With CONSULT

1. Start the engine.

2. 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)

(a) 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)

With CONSULT

- 1. Select "4TH GR FNCTN P0734" in "DTC Work Support" in "TRANSMISSION".
- 2. Drive vehicle with manual mode and maintain the following conditions.

TM-239

P0734 4GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A]

GEAR	: 4th
ACCELE POSI	: 0.7/8 or more
VEHICLE SPEED	: 10 km/h (7 MPH) or more

3. Keep the current driving status for 2 seconds or more if CONSULT screen changes from "OUT OF CON-DITION" to "TESTING".

CAUTION:

When "TESTING" is not indicated on CONSULT for a long time, check "Self Diagnostic Results" in "TRANSMISSION". When a DTC other than "P0734" is detected, check the DTC. Refer to <u>TM-297</u>, <u>"DTC Index"</u>.

(a) With GST

1. 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

2. 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-240, "Diagnosis Procedure".

YES-4 ("P0734" is detected)>>Go to TM-240. "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:000000011738281

1.CHECK INTERMITTENT INCIDENT

Refer to GI-45, "Intermittent Incident".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace damaged parts.

2. DETECT MALFUNCTIONING ITEM

Disassemble the A/T assembly to check component parts. Refer to TM-362, "Disassembly".

NOTE:

Check the component parts, referring to "Possible cause" in "DTC DETECTION LOGIC". Refer to <u>TM-239</u>, <u>"DTC Logic"</u>.

Is the inspection result normal?

YES >> Replace control valve & TCM. Refer to <u>TM-330</u>, "Exploded View".

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

INFOID:000000011738283

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
DURE".	rocedure"" must be perfo ONFIRMATION PROCEDU	_	TC CONFIRMATION PROCE- the repair, which may cause

least 10 seconds before performing the next test.

>> GO TO 2.

2. CHECK ATF TEMPERATURE

With CONSULT

- 1. Start the engine.
- 2. 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)

With CONSULT

- 1. Select "5TH GR FNCTN P0735" in "DTC Work Support" in "TRANSMISSION".
- 2. Drive vehicle with manual mode and maintain the following conditions.

[7AT: RE7R01A]

INFOID:000000011738282

А

Κ

L

Μ

Ν

Ρ

P0735 5GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A]

GEAR	: 5th
ACCELE POSI	: 0.7/8 or more
VEHICLE SPEED	: 10 km/h (7 MPH) or more

3. Keep the current driving status for 2 seconds or more if CONSULT screen changes from "OUT OF CON-DITION" to "TESTING".

CAUTION:

When "TESTING" is not indicated on CONSULT for a long time, check "Self Diagnostic Results" in "TRANSMISSION". When a DTC other than "P0735" is detected, check the DTC. Refer to <u>TM-297</u>, <u>"DTC Index"</u>.

(a) With GST

1. 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

2. 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-242, "Diagnosis Procedure".

YES-4 ("P0735" is detected)>>Go to TM-242. "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:000000011738284

1.CHECK INTERMITTENT INCIDENT

Refer to GI-45, "Intermittent Incident".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace damaged parts.

2. DETECT MALFUNCTIONING ITEM

Disassemble the A/T assembly to check component parts. Refer to TM-362, "Disassembly".

NOTE:

Check the component parts, referring to "Possible cause" in "DTC DETECTION LOGIC". Refer to <u>TM-241</u>, <u>"DTC Logic"</u>.

Is the inspection result normal?

YES >> Replace control valve & TCM. Refer to <u>TM-330</u>, "Exploded View".

P0740 TORQUE CONVERTER

< DTC/CIRCUIT DIAGNOSIS >

P0740 TORQUE CONVERTER

Description

- 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

INFOID:0000000011738286

DTC DETECTION LOGIC

	Trouble diagnosis name	DTC is detected if	Possible cause
P0740	Torque Converter Clutch Cir- cuit/Open	The torque converter clutch so- lenoid valve monitor value is 0.2 A or less when the torque con- verter clutch solenoid valve command value is more than 0.75 A.	 Harness or connectors (Solenoid valve circuit is open or shorted.) Torque converter clutch sole- noid valve
DTC CONFIRMATION	PROCEDURE		
CAUTION: Always drive vehicle at	t a safe speed.		
1.PRECONDITIONING	-		
	N PROCEDURE" is previously	/ conducted, always turn igni	tion switch OFF and wait at
east 10 seconds before	performing the next test.		
>> GO TO 2.			
2. CHECK DTC DETEC	TION		
"TRANSMISSION". 3. Drive vehicle and ma	/OLT", "MANU MODE SW",		
NOTE: Driving the vehicle u test.	phill (increased engine load)		conditions required for this
Driving the vehicle u test. BATTERY VOLT	uphill (increased engine load) :9 V or more		conditions required for this
Driving the vehicle u test. BATTERY VOLT MANU MODE SW	uphill (increased engine load)		conditions required for this
Driving the vehicle u test. BATTERY VOLT MANU MODE SW GEAR VEHICLE SPEED	 9 V or more ON 2nd 40 km/h (25 MPH) or more 	will help maintain the driving	conditions required for this
Driving the vehicle u test. BATTERY VOLT MANU MODE SW GEAR VEHICLE SPEED 4. Perform "Self Diagno	 uphill (increased engine load) 9 V or more : ON : 2nd 	will help maintain the driving	conditions required for this
Driving the vehicle u test. BATTERY VOLT MANU MODE SW GEAR VEHICLE SPEED 4. Perform "Self Diagno With GST Follow the procedure "W	uphill (increased engine load) : 9 V or more : ON : 2nd : 40 km/h (25 MPH) or more ostic Results" in "TRANSMISS	will help maintain the driving	conditions required for this
Driving the vehicle u test. BATTERY VOLT MANU MODE SW GEAR VEHICLE SPEED 4. Perform "Self Diagno With GST Follow the procedure "W Is "P0740" detected?	uphill (increased engine load) : 9 V or more : ON : 2nd : 40 km/h (25 MPH) or more ostic Results" in "TRANSMISS /ith CONSULT".	will help maintain the driving	conditions required for this
Driving the vehicle u test. BATTERY VOLT MANU MODE SW GEAR VEHICLE SPEED 4. Perform "Self Diagno With GST Follow the procedure "W Is "P0740" detected? YES >> Go to <u>TM-24</u>	 aphill (increased engine load) 9 V or more ON 2nd 40 km/h (25 MPH) or more ostic Results" in "TRANSMISS Vith CONSULT". 13. "Diagnosis Procedure". N END 	will help maintain the driving	conditions required for this
Driving the vehicle u test. BATTERY VOLT MANU MODE SW GEAR VEHICLE SPEED 4. Perform "Self Diagne With GST Follow the procedure "W Is "P0740" detected? YES >> Go to <u>TM-24</u> NO >> INSPECTIO	 aphill (increased engine load) 9 V or more ON 2nd 40 km/h (25 MPH) or more ostic Results" in "TRANSMISS Vith CONSULT". 13. "Diagnosis Procedure". N END re 	will help maintain the driving	

INFOID:000000011738285

А

В

P0740 TORQUE CONVERTER

< DTC/CIRCUIT DIAGNOSIS >

Is the inspection result normal?

- YES >> Replace control valve & TCM. Refer to <u>TM-330</u>, "Exploded View".
- NO >> Repair or replace damaged parts.

P0744 TORQUE CONVERTER

Description

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.

Trouble diagnosis name

DTC is detected if ...

DTC Logic

DTC DETECTION LOGIC

DTC

INFOID:000000011738289

Possible cause

· Harness or connectors · Torque converter clutch sole-**Torque Converter Clutch Circuit** The lock-up is not performed in noid valve P0744 Intermittent spite of within the lock-up area. • Torque converter Input speed sensor 1, 2 · Hydraulic control circuit F 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 Н least 10 seconds before performing the next test. >> GO TO 2. 2. CHECK DTC DETECTION (I) With CONSULT Start the engine. 1. Select "MANU MODE SW", "GEAR" and "VEHICLE SPEED" in "Data Monitor" in "TRANSMISSION". 2. Drive vehicle and maintain the following conditions for 10 seconds or more. 3. Κ NOTE: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test. L MANU MODE SW : ON GEAR : 2nd VEHICLE SPEED : 40 km/h (25 MPH) or more M Perform "Self Diagnostic Results" in "TRANSMISSION". With GST Follow the procedure "With CONSULT". Ν Is "P0744" detected? >> Go to TM-245, "Diagnosis Procedure". YES >> INSPECTION END NO Diagnosis Procedure INFOID:000000011738290 Ρ 1. CHECK INTERMITTENT INCIDENT

Refer to GI-45, "Intermittent Incident".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace damaged parts.

2. DETECT MALFUNCTIONING ITEM

INFOID:000000011738288

А

ТΜ

Disassemble the A/T assembly to check component parts. Refer to <u>TM-362</u>, "Disassembly". **NOTE:**

Check the component parts, referring to "Possible cause" in "DTC DETECTION LOGIC". Refer to <u>TM-245</u>, <u>"DTC Logic"</u>.

Is the inspection result normal?

YES >> Replace control valve & TCM. Refer to <u>TM-330</u>, "Exploded View".

Wi St 몔

2.c⊦

- 1.
- 2. S

Trouble diagnosis name

Pressure Control Solenoid A

S 3.

DTC CONFIRMATION PROCEDURE

least 10 seconds before performing the next test.

4. Ν

	BATTERY VOLT	: 9 V or more
	SLCT LVR POSI	: N/P
5.	Perform "Self Diagn	ostic Results" in "TRANSMISSION".

🗿 Wi

Follov

ls "P0

YES NO

Diag

1.c⊦

Refer

Is the

YES NO

DTC

P0745

1.PRECONDITIONING

>> GO TO 2.

Revision: 2015 June

P0745 PRESSURE CONTROL SOLENOID A

P0745 PRESSURE CONTROL SOLENOID A

Description

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

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at

DTC is detected if ...

valve monitor value is 0.2 A or

less when the line pressure so-

lenoid valve command value is

The line pressure solenoid

more than 0.75 A.

DTC Logic

DTC DETECTION LOGIC

< DTC/CIRCUIT DIAGNOSIS >

HECK DTC DETECTION	
/ith CONSULT Start the engine. Select "BATTERY VOLT" and "SLCT LVR POSI" in "Data Monitor" in "TRANSMISSION". Shift the selector lever to "N" position. Maintain the following conditions for 5 seconds or more.	
BATTERY VOLT : 9 V or more SLCT LVR POSI : N/P	
Perform "Self Diagnostic Results" in "TRANSMISSION".	
/ith GST w the procedure "With CONSULT". <u>0745" detected?</u>	
 S >> Go to <u>TM-247, "Diagnosis Procedure"</u>. >> INSPECTION END 	
gnosis Procedure	INFOID:000000011738293
HECK INTERMITTENT INCIDENT	
r to <u>GI-45, "Intermittent Incident"</u> .	
 <u>e inspection result normal?</u> S >> Replace control valve & TCM. Refer to <u>TM-330, "Exploded View"</u>. >> Repair or replace damaged parts. 	

[7AT: RE7R01A]

А

С

ТΜ

Ε

F

Н

Κ

L

Μ

Ν

Ρ

INFOID:000000011738291

INFOID:000000011738292

Possible cause

Harness or connectors

open or shorted.)

(Solenoid valve circuit is

· Line pressure solenoid valve

P0750 SHIFT SOLENOID A

Description

- 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

INFOID:000000011738295

INFOID:000000011738294

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 sole- noid valve command value is OFF. The anti-interlock solenoid valve monitor value is OFF when the anti-interlock sole- noid 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

(I) With CONSULT

1. Start the engine.

- 2. 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".

Is "P0750" detected?

YES >> Go to TM-248, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1.CHECK INTERMITTENT INCIDENT

Refer to GI-45, "Intermittent Incident".

Is the inspection result normal?

- YES >> Replace control valve & TCM. Refer to TM-330, "Exploded View".
- NO >> Repair or replace damaged parts.

TM-248

P0775 PRESSURE CONTROL SOLENOID B

< DTC/CIRCUIT DIAGNOSIS >

P0775 PRESSURE CONTROL SOLENOID B

Description

- 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:000000011738298

INFOID:000000011738297

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:	<i>,</i> ,		
Always drive vehicle at 1. PRECONDITIONING	a sate speed.		
If "DTC CONFIRMATION least 10 seconds before p	PROCEDURE" is previously performing the pext test	/ conducted, always turn igni	tion switch OFF and wait at
	enoming the next test.		
>> GO TO 2.			
2. СНЕСК DTC DETECT	ION		
1. Start the engine.			
 Select "BATTERY V "TRANSMISSION". 	OLT", "MANU MODE SW",	"GEAR" and "VHCL/S SE	-A/T" in "Data Monitor" in
	intain the following condition	s for 5 seconds or more.	
	0.1/		
-	9 V or more ON		
	1st		
VHCL/S SE-A/T :	10 km/h (7 MPH) or more		
	stic Results" in "TRANSMISS	SION".	
With GST			
Follow the procedure "Wit			
<u>Is "P0775" detected?</u> YES >> Go to TM-249	9, "Diagnosis Procedure".		
NO >> INSPECTION	I END		
Diagnosis Procedur	е		INFOID:000000011738299
1. CHECK INTERMITTE			
Refer to GI-45, "Intermitte			
Is the inspection result no	ormal?		

YES >> Replace control valve & TCM. Refer to TM-330. "Exploded View".

NO >> Repair or replace damaged parts.

TM-249

А

В

С

ТΜ

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

INFOID:000000011738301

INFOID:000000011738300

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P0780	Shift Error	 When shifting from 3GR to 4GR with the selector lever in "D" position, the gear ratio does not shift to 1.412 (gear ratio of 4th). When shifting from 5GR to 6GR or 6GR to 7GR, the en- gine speed exceeds the pre- scribed speed. 	 Anti-interlock solenoid valve Low brake solenoid valve Hydraulic control circuit

DTC CONFIRMATION PROCEDURE

- "<u>TM-250, "Diagnosis Procedure"</u>" 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

With CONSULT

- 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 or 5th \rightarrow 6th \rightarrow 7th

4. Perform "Self Diagnostic Results" in "TRANSMISSION".

With GST

Follow the procedure "With CONSULT".

Is "P0780" detected?

YES >> Go to TM-250, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1.CHECK INTERMITTENT INCIDENT

Refer to <u>GI-45, "Intermittent Incident"</u>. <u>Is the inspection result normal?</u>

< DTC/CIRCUIT DIAGNOSIS >	[7AT: RE7R01A]
YES >> GO TO 2.	
NO >> Repair or replace damaged part 2.DETECT MALFUNCTIONING ITEM	ເວ.
	mponent parts. Refer to <u>TM-362, "Disassembly"</u> .
NOTE:	
Check the component parts, referring to "P <u>"DTC Logic"</u> .	Possible cause" in "DTC DETECTION LOGIC". Refer to TM-250,
Is the inspection result normal?	
YES >> Replace control valve & TCM. R	
NO >> Repair or replace damaged part	ls.

P0795 PRESSURE CONTROL SOLENOID C

< DTC/CIRCUIT DIAGNOSIS >

P0795 PRESSURE CONTROL SOLENOID C

Description

INFOID:000000011738303

[7AT: RE7R01A]

- The front brake solenoid value 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:000000011738304

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 0.2 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

With CONSULT

- 1. Start the engine.
- 2. 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	: 7th
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".

Is "P0795" detected?

- YES >> Go to <u>TM-252, "Diagnosis Procedure"</u>.
- NO >> INSPECTION END

Diagnosis Procedure

1.CHECK INTERMITTENT INCIDENT

Refer to GI-45, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace control valve & TCM. Refer to <u>TM-330, "Exploded View"</u>.

NO >> Repair or replace damaged parts.

P1705 TP SENSOR

< DTC/CIRCUIT DIAGNOSIS >

P1705 TP SENSOR

Description

- 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:0000000011738307

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause	Е
P1705	Accelerator Pedal Position Sen- sor 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 short- ed.)	F

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

 With CONSULT 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. 	J
SLCT LVR POSI: DVHCL/S SE-A/T: 5 km/h (3 MPH) or more	К
 Perform "Self Diagnostic Results" in "TRANSMISSION". <u>Is "P1705" detected?</u> YES >> Go to <u>TM-253, "Diagnosis Procedure"</u>. NO >> INSPECTION END 	L
Diagnosis Procedure	M
1.CHECK DTC OF ECM	NI
 With CONSULT 1. Turn ignition switch ON. 2. Perform "Self Diagnostic Results" in "ENGINE". <u>Is any DTC detected?</u> YES >> Check DTC detected item. Refer to <u>EC-576, "DTC Index"</u>. NO >> GO TO 2. 2.CHECK DTC OF TCM 	N O P
With CONSULT Perform "Self Diagnostic Results" in "TRANSMISSION". Is any DTC other than "P1705" detected?	

YES >> Check DTC detected item. Refer to TM-297, "DTC Index".

NO >> GO TO 3.

INFOID:000000011738306

В

А

С

ТΜ

Н

3. CHECK INTERMITTENT INCIDENT

Refer to GI-45, "Intermittent Incident".

Is the inspection result normal?

- YES >> Replace control valve & TCM. Refer to <u>TM-330, "Exploded View"</u>.
- NO >> Repair or replace damaged parts.

P1721 VEHICLE SPEED SIGNAL

Description

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

INFOID:000000011738310

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause	
		 The vehicle speed transmitted from the combination meter to TCM is 5 km/h (3 MPH) or less when the vehicle speed detected by the output speed sensor is 20 km/h (13 MPH) or more. (Only when starts after the ignition switch is turned ON.) The vehicle speed detected by the output speed sensor 		
			Harness or connectors	
P1721	Vehicle Speed Signal Circuit	does not decrease despite the 36 km/h (23 MPH) or more of deceleration in vehi- cle speed received from the combination meter when the	(Sensor circuit is open or short- ed.)	
		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 km/h (15 MPH) or more.		
TC CONFIRMATION	N PROCEDURE			
AUTION: Always drive vehicle	at a safe sneed			
Be careful not to rev	engine into the red zone on	the tachometer.		
.PRECONDITIONING	3			
	N PROCEDURE" is previously performing the next test.	/ conducted, always turn ign	ition switch OFF and wait at	
>> GO TO 2.				
2. CHECK DTC DETEC	CTION			
 Start the engine. Select "ESTM VSP 	SIG" in "Data Monitor" in "TRA	ANSMISSION".		
	naintain the following condition			
ESTM VSP SIG	: 40 km/h (25 MPH) or more			
4. Perform "Self Diagr	nostic Results" in "TRANSMIS	SION".		
s "P1721" detected?				

YES >> Go to TM-256, "Diagnosis Procedure".

NO >> INSPECTION END

TM-255

INFOID:000000011738309

А

ТΜ

Diagnosis Procedure

[7AT: RE7R01A]

1. CHECK DTC OF COMBINATION METER

(I) With CONSULT

Turn ignition switch ON.

2. Perform "Self Diagnostic Results" in "METER/M&A".

Is any DTC detected?

YES >> Check DTC detected item. Refer to <u>MWI-77, "DTC Index"</u>.

NO >> GO TO 2.

2.CHECK DTC OF TCM

With CONSULT

Perform "Self Diagnostic Results" in "TRANSMISSION".

Is any DTC other than "P1721" detected?

YES >> Check DTC detected item. Refer to TM-297, "DTC Index".

NO >> GO TO 3.

3.CHECK INTERMITTENT INCIDENT

Refer to GI-45, "Intermittent Incident".

Is the inspection result normal?

- YES >> Replace control valve & TCM. Refer to TM-330, "Exploded View".
- NO >> Repair or replace damaged parts.

P1730 INTERLOCK

Description

Fail-safe function to detect interlock conditions.

DTC Logic

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause	
P1730	Interlock	The output speed sensor de- tects the deceleration of 12 km/ h (7 MPH) or more for 1 sec- ond.	 Harness or connectors (Solenoid valve circuit is open 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 	ТМ Е F G
NOTE: When the vehicle is driv a input speed sensor m	· •	peed sensor malfunction is	s displayed, but this is not	Н
DTC CONFIRMATION	PROCEDURE			
CAUTION:		ormed before starting "DTC	CONFIRMATION PROCE-	I
 Never perform "DTC (secondary malfunctio 		JRE" before completing th	e repair, which may cause	J

- 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	M
With CONSULT	
 Start the engine. Select "SLCT LVR POSI" and "GEAR" in "Data Monitor" in "TRANSMISSION". Drive vehicle the following condition. 	Ν
SLCT LVR POSI : D GEAR : 1st through 7th	0
 4. Perform "Self Diagnostic Results" in "TRANSMISSION". With GST Follow the procedure "With CONSULT". 	Ρ
Is "P1730" detected?	
YES >> Go to <u>TM-258, "Diagnosis Procedure"</u> . NO >> INSPECTION END	
Judgment of A/T Interlock	INFOID:000000011738314
Refer to TM-292, "Fail-Safe".	

А

INFOID:000000011738312

В

INFOID:000000011738313

С

Κ

Diagnosis Procedure

INFOID:000000011738315

1.CHECK INTERMITTENT INCIDENT

Refer to GI-45, "Intermittent Incident".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace damaged parts.

 $2. {\tt DETECT MALFUNCTIONING ITEM}$

Disassemble the A/T assembly to check component parts. Refer to TM-362, "Disassembly".

NOTE: Check the component parts, referring to "Possible cause" in "DTC DETECTION LOGIC". Refer to <u>TM-257</u>, <u>"DTC Logic"</u>.

Is the inspection result normal?

YES >> Replace control valve & TCM. Refer to <u>TM-330</u>, "Exploded View".

NO >> Repair or replace damaged parts.

P1734 7GR INCORRECT RATIO

Description

This malfunction is detected when the A/T does not shift into 7GR position as instructed by TCM. This is not В 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:000000011738317

А

Κ

L

M

Ν

Ρ

DTC DETECTION LOGIC

DTC Trouble diagno	name DTC is detected if Possible cause
P1734 Gear 7 Incorrect R	 Input clutch solenoid valve Direct clutch solenoid valve High and low reverse 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

- 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

- 1. Start the engine.
- Select "ATF TEMP 1" in "Data Monitor" in "TRANSMISSION". 2.
- 3. Check ATF temperature is in the following range.

ATF TEMP 1 : 20°C (68°F) – 140°C (284°F)

(B) With GST

- 1. Start the engine.
- Drive vehicle for approximately 5 minutes in urban areas. 2.

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

- Select "7TH GR FNCTN P1734" in "DTC Work Support" in "TRANSMISSION". 1.
- 2. Drive vehicle with manual mode and maintain the following conditions.

TM-259

P1734 7GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A]

GEAR	: 7th
ACCELE POSI	: 0.7/8 or more
VEHICLE SPEED	: 10 km/h (7 MPH) or more

3. Keep the current driving status for 2 seconds or more if CONSULT screen changes from "OUT OF CON-DITION" to "TESTING".

CAUTION:

When "TESTING" is not indicated on CONSULT for a long time, check "Self Diagnostic Results" in "TRANSMISSION". When a DTC other than "P1734" is detected, check the DTC. Refer to <u>TM-297</u>, <u>"DTC Index"</u>.

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.

Is "OUT OF CONDITION", "STOP VEHICLE" or "COMPLETED RESULT NG" displayed? / Is "P1734" 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-260, "Diagnosis Procedure".

YES-4 ("P1734" is detected)>>Go to TM-260. "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:000000011738318

1.CHECK INTERMITTENT INCIDENT

Refer to GI-45, "Intermittent Incident".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace damaged parts.

2. DETECT MALFUNCTIONING ITEM

Disassemble the A/T assembly to check component parts. Refer to TM-362, "Disassembly".

NOTE:

Check the component parts, referring to "Possible cause" in "DTC DETECTION LOGIC". Refer to <u>TM-259</u>, <u>"DTC Logic"</u>.

Is the inspection result normal?

YES >> Replace control valve & TCM. Refer to <u>TM-330</u>, "Exploded View".

NO >> Repair or replace damaged parts.

< DTC/CIRCUIT DIAGNOSIS >

P1815 M-MODE SWITCH

Description

- 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:0000000011738320

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 de- tects as irregular when im- possible input pattern occurs 2 seconds or more. Shift up/down signal of pad- dle shifter continuously re- mains 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

With CONSULT

- 1. Turn ignition switch ON.
- 2. Select "SLCT LVR POSI" and "MANU MODE SW" in "Data Monitor" in "TRANSMISSION".
- 3. 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-261, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1.CHECK INPUT SIGNAL

With CONSULT

1. Turn ignition switch ON.

INFOID:000000011738321

INFOID:000000011738319

В

TΜ

Ε

L

M

Ν

< 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
Manual mode switch	MANU MODE SW	Selector lever is shifted to manual shift gate side	ON
	MANU MODE SW	Other than the above	OFF
		Selector lever is shifted to manual shift gate side	OFF
	NON M-MODE SW	Other than the above	ON
	UP SW LEVER	Selector lever is shifted to + side	ON
	UP SW LEVER	Other than the above	OFF
		Selector lever is shifted to – side	ON
	DOWN SW LEVER	Other than the above	OFF
Paddle shifter	SFT UP ST SW	Paddle shifter (shift-up) is pulled	ON
	5FI UF 31 3W	Other than the above	OFF
	SFT DWN ST SW	Paddle shifter (shift-down) is pulled	ON
	3F1 DWN 31 3W	Other than the above	OFF

Without CONSULT

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.
- 2. Disconnect A/T shift selector connector.
- 3. Turn ignition switch ON.

4. Check voltage between A/T shift selector vehicle side harness connector terminals.

A/T s			
Connector	Terminal		Voltage (Approx.)
Connector	+	-	
	1	4 Battery	Potton voltago
M137	2		
WI 137	3		Battery voltage
	5		

Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 4.

3.CHECK MANUAL MODE SWITCH

1. Turn ignition switch OFF.

Check manual mode switch. Refer to <u>TM-265</u>, "Component Inspection (Manual Mode Switch)".

Is the inspection result normal?

YES >> GO TO 12.

NO >> Repair or replace damaged parts.

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A]

1. CHECK GROUND	CIRCUIT (MA	NUAL MODE SW	ITCH CIRC	UIT)	
 Turn ignition swite Check continuity I 		nift selector vehic	le side harn	ess connector ter	minal and ground.
A/T shift selector	vehicle side harne	ess connector			Continuity
Connector		Terminal	Ground		Continuity
M137		4			Existed
D.CHECK HARNESS	replace damages BETWEEN A nation meter of between A/T s	/T SHIFT SELEC onnector. shift selector veh			IETER (PART 1) terminals and combination
A/T shift selector vehicle		1	on meter vehi	cle side harness conn	ector
Connector	Terminal		nnector	Terminal	Continuity
	1			40	
	2			38	
M137	3		M54	39	Existed
	5			37	
Check continuity betw			de harness	connector termina	als and ground.
A/T shift selector	vehicle side harne		_		Continuity
Connector		Terminal	_		-
		2	_	Ground	
M137		3			Not existed
		5	_		
s the inspection resul YES >> GO TO 12 NO >> Repair or CHECK PADDLE S	2. replace damaç				
 Turn ignition swite Disconnect paddle Turn ignition swite Check voltage be 	e shifter conne h ON.		e harness c	onnector terminal	S.
	Paddle shifter ve	hicle side harness co	nnector		
0		Terminal Voltage (App		Voltage (Approx.)	
Connector		+		_	
M32		3		1	Battery voltage
M39		3		I	Dallery Vollage

Is the inspection result normal?

YES >> GO TO 8. NO >> GO TO 9.

8.CHECK PADDLE SHIFTER

1. Turn ignition switch OFF.

2. Check paddle shifter. Refer to <u>TM-265.</u> "Component Inspection [Paddle Shifter (Shift-up)]", <u>TM-265.</u> "Component Inspection [Paddle Shifter (Shift-down)]".

Is the inspection result normal?

YES >> GO TO 12.

NO >> Replace paddle shifter. Refer to <u>TM-265</u>, "Component Inspection [Paddle Shifter (Shift-up)]", <u>TM-265</u>, "Component Inspection [Paddle Shifter (Shift-down)]"

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			Existed

Is the inspection result normal?

YES >> GO TO 10.

NO >> Repair or replace damaged parts.

10.CHECK HARNESS BETWEEN PADDLE SHIFTER AND COMBINATION METER (PART 1)

- 1. Disconnect combination meter connector.
- 2. Check continuity between paddle shifter vehicle side harness connector terminals and combination meter vehicle side harness connector terminals.

Paddle shifter vehicle	Paddle shifter vehicle side harness connector		Combination meter vehicle side harness connector	
Connector	Terminal	Connector	Terminal	Continuity
M32	2	M54	32	Existed
M39		M54	33	LAISIEU

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	Conuntury
M32	3	Ground	Not existed
M39			NOT EXISTED

Is the inspection result normal?

YES >> GO TO 12.

NO >> Repair or replace damaged parts.

12. CHECK INTERMITTENT INCIDENT

Refer to GI-45, "Intermittent Incident".

Is the inspection result normal?

YES >> GO TO 13.

NO >> Repair or replace damaged parts.

13.CHECK COMBINATION METER

< DTC/CIRCUIT DIAGNOSIS >

1. Reconnect all the connectors.

- 2. Turn ignition switch ON.
- 3. 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".
- 4. Check the ON/OFF operations of each monitor item. Refer to <u>MWI-57, "Reference Value"</u>.

Is the inspection result normal?

- YES >> Replace control valve & TCM. Refer to TM-330, "Exploded View".
- NO >> Replace combination meter. Refer to <u>MWI-103</u>, "Exploded View".

Component Inspection (Manual Mode Switch)

1.CHECK MANUAL MODE SWITCH

Check continuity between A/T shift selector connector terminals.

A/T shift selector connector		Condition	Continuity		
Connector	Terr	ninal	Condition	Continuity	
	1		Selector lever is shifted to manual shift gate side	Existed	
			Other than the above	Not existed	
	0		Selector lever is shifted to – side	Existed	_
1407	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 <u>TM-325, "Exploded View"</u>.

Component Inspection [Paddle Shifter (Shift-up)]

1.CHECK PADDLE SHIFTER (SHIFT-UP)

Check continuity between paddle shifter (shift-up) connector terminals.

Continuity	Condition	Paddle shifter (shift-up) connector		
Continuity	Condition	Terminal		Connector
 Existed	Paddle shifter (shift-up) is Existed		1	M39
Not existed	Other than the above			

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace paddle shifter (shift-up). Refer to <u>TM-329</u>, "Exploded View".

Component Inspection [Paddle Shifter (Shift-down)]

INFOID:000000011738324

INFOID:0000000011738323

Κ

C

Ρ

1.CHECK PADDLE SHIFTER (SHIFT-DOWN)

Check continuity between paddle shifter (shift-down) connector terminals.

А

В

ТΜ

< DTC/CIRCUIT DIAGNOSIS >

Pado	Paddle shifter (shift-down) connector			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 <u>TM-329</u>, "Exploded View".

P2713 PRESSURE CONTROL SOLENOID D

< DTC/CIRCUIT DIAGNOSIS >

P2713 PRESSURE CONTROL SOLENOID D

Description

- 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:000000011738326

INFOID:000000011738325

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 0.2 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 P	ROCEDURE		
CAUTION: Always drive vehicle at a	safe sneed		
1.PRECONDITIONING	Sare Specu.		
	PROCEDURE" is previously	conducted always turn ign	ition switch OFF and wait at
least 10 seconds before pe		conductod, amayo tam ign	
>> GO TO 2.			
2.CHECK DTC DETECTI	ON		
 With CONSULT Start the engine. Select "BATTERY VC "TRANSMISSION". 	DLT", "MANU MODE SW",	"GEAR" and "VHCL/S SE	-A/T" in "Data Monitor" in
3. Drive the vehicle and r	naintain the following condit	tions for 5 seconds or more.	
BATTERY VOLT : 9	V or more		
MANU MODE SW : O	N		
GEAR : 3	-		
	0 km/h (7 MPH) or more tic Results" in "TRANSMISS		
With GST			
Follow the procedure "With	CONSULT".		
Is "P2713" detected?			
YES >> Go to <u>TM-267</u> , NO >> INSPECTION	<u>"Diagnosis Procedure"</u> . END		
Diagnosis Procedure			INFOID:000000011738327
1.CHECK INTERMITTEN			
Refer to GI-45, "Intermitter			
Is the inspection result nor	mai?		

Is the inspection result normal?

YES >> Replace control valve & TCM. Refer to <u>TM-330</u>, "Exploded View".

NO >> Repair or replace damaged parts.

TM-267

2016 370Z

A

В

С

ТΜ

P2722 PRESSURE CONTROL SOLENOID E

< DTC/CIRCUIT DIAGNOSIS >

P2722 PRESSURE CONTROL SOLENOID E

Description

INFOID:000000011738328

[7AT: RE7R01A]

- 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:000000011738329

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 0.2 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

With CONSULT

- 1. Start the engine.
- 2. 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".

Is "P2722" detected?

- YES >> Go to <u>TM-268, "Diagnosis Procedure"</u>.
- NO >> INSPECTION END

Diagnosis Procedure

1.CHECK INTERMITTENT INCIDENT

Refer to GI-45, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace control valve & TCM. Refer to <u>TM-330, "Exploded View"</u>.

NO >> Repair or replace damaged parts.

P2731 PRESSURE CONTROL SOLENOID F

< DTC/CIRCUIT DIAGNOSIS >

P2731 PRESSURE CONTROL SOLENOID F

Description

- 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:000000011738332

INFOID:000000011738331

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 0.2 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	-		
1.PRECONDITIONING			
	N PROCEDURE" is previously performing the next test.	/ conducted, always turn igni	tion switch OFF and wait at
	penoming the next test.		
>> GO TO 2.			
2. CHECK DTC DETEC	TION		
1. Start the engine.			
 Select "BATTERY "TRANSMISSION". 	VOLT", "MANU MODE SW",	, "GEAR" and "VHCL/S SE	-A/T" in "Data Monitor" in
	aintain the following condition	s for 5 seconds or more.	
	0.1/		
-	: 9 V or more : ON		
	: 2nd		
	-		
VHCL/S SE-A/T	: 2nd	SION".	
VHCL/S SE-A/T 4. Perform "Self Diagn With GST	: 2nd : 10 km/h (7 MPH) or more ostic Results" in "TRANSMIS	SION".	
VHCL/S SE-A/T 4. Perform "Self Diagn With GST Follow the procedure "W	: 2nd : 10 km/h (7 MPH) or more ostic Results" in "TRANSMIS	SION".	
VHCL/S SE-A/T 4. Perform "Self Diagn (a) With GST Follow the procedure "W Is "P2731" detected?	: 2nd : 10 km/h (7 MPH) or more ostic Results" in "TRANSMIS /ith CONSULT".	SION".	
VHCL/S SE-A/T 4. Perform "Self Diagn (a) With GST Follow the procedure "W Is "P2731" detected?	2nd 10 km/h (7 MPH) or more ostic Results" in "TRANSMIS 7ith CONSULT". 69, "Diagnosis Procedure".	SION".	
VHCL/S SE-A/T 4. Perform "Self Diagna With GST Follow the procedure "W <u>Is "P2731" detected?</u> YES >> Go to <u>TM-26</u> NO >> INSPECTIO	2nd 10 km/h (7 MPH) or more ostic Results" in "TRANSMISS /ith CONSULT". <u>69, "Diagnosis Procedure"</u> . N END	SION".	INIE011D-0000000117989393
VHCL/S SE-A/T 4. Perform "Self Diagna With GST Follow the procedure "W Is "P2731" detected? YES >> Go to <u>TM-26</u> NO >> INSPECTIO Diagnosis Procedu	: 2nd : 10 km/h (7 MPH) or more ostic Results" in "TRANSMISS /ith CONSULT". 59, <u>"Diagnosis Procedure"</u> . N END re	SION".	INF01D:000000011738333
VHCL/S SE-A/T 4. Perform "Self Diagna With GST Follow the procedure "W <u>Is "P2731" detected?</u> YES >> Go to <u>TM-26</u> NO >> INSPECTIO	: 2nd : 10 km/h (7 MPH) or more ostic Results" in "TRANSMISS /ith CONSULT". 59, <u>"Diagnosis Procedure"</u> . N END re	SION".	INFOID:000000011738333
VHCL/S SE-A/T 4. Perform "Self Diagna With GST Follow the procedure "W Is "P2731" detected? YES >> Go to <u>TM-26</u> NO >> INSPECTIO Diagnosis Procedu	: 2nd : 10 km/h (7 MPH) or more ostic Results" in "TRANSMISS /ith CONSULT". 59, <u>"Diagnosis Procedure"</u> . N END REND FRE	SION".	INFOID:000000011738333

YES >> Replace control valve & TCM. Refer to TM-330. "Exploded View".

NO >> Repair or replace damaged parts.

TM-269

А

В

С

ТΜ

P2807 PRESSURE CONTROL SOLENOID G

< DTC/CIRCUIT DIAGNOSIS >

P2807 PRESSURE CONTROL SOLENOID G

Description

INFOID:000000011738334

[7AT: RE7R01A]

- 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

INFOID:000000011738335

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 0.2 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

(I) With CONSULT

- 1. Start the engine.
- 2. 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".

Is "P2807" detected?

- YES >> Go to TM-270, "Diagnosis Procedure".
- NO >> INSPECTION END

Diagnosis Procedure

1.CHECK INTERMITTENT INCIDENT

Refer to GI-45, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace control valve & TCM. Refer to <u>TM-330, "Exploded View"</u>.

NO >> Repair or replace damaged parts.

MAIN POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

MAIN POWER SUPPLY AND GROUND CIRCUIT

Description

Supply power to the TCM.

Diagnosis Procedure

1.CHECK TCM POWER SOURCE (PART 1)

1. Turn ignition switch OFF.

- 2. Disconnect A/T assembly connector.
- 3. Check voltage between A/T assembly vehicle side harness connector terminal and ground.

A/T assembly vehicle s	side harness connector		Condition	Voltago (Approx.)	
Connector	Terminal	Ground	Condition	Voltage (Approx.)	
F51	2		Always	Battery voltage	-

Is the inspection result normal?

YES >> GO TO 2. NO >> GO TO 6.

NO >> GO | O O.

2.CHECK TCM POWER SOURCE (PART 2)

Check voltage between A/T assembly vehicle side harness connector terminals and ground.

A/T assembly vehicle	side harness connector		Condition	Voltage (Approv.)	H
Connector	Terminal		Condition	Voltage (Approx.)	
	1	Cround	Turn ignition switch ON	Battery voltage	-
551	I	Ground	Turn ignition switch OFF	0 V	-
F51	<u>^</u>		Turn ignition switch ON	Battery voltage	-
	6		Turn ignition switch OFF	0 V	J

Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 7.

3.CHECK TCM GROUND CIRCUIT

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

A/T assembly vehicle s	side harness connector		Continuity	-
Connector	Terminal	Ground	Continuity	M
FF 4	5	Giouna	Evieted	-
F51	10	_	Existed	
the inspection result norma	?			N

YES >> GO TO 4.

NO >> Repair or replace damaged parts.

4.CHECK JOINT CONNECTOR

1. Remove joint connector. Refer to <u>TM-330, "Exploded View"</u>.

2. Check the continuity between joint connector terminals.

А

В

С

ТΜ

F

Κ

Ρ

INFOID:000000011738337

MAIN POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A]

A/T assembly harness connector side	TCM harness connector side	Continuity
Terminal	Terminal	Continuity
1	1	
2	2	-
5	5	Existed
6	6	-
10	10	

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace damaged parts.

5.CHECK INTERMITTENT INCIDENT

Refer to GI-45, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace the control valve & TCM. Refer to TM-330, "Exploded View".

NO >> Repair or replace damaged parts.

6.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 <u>PG-6</u>, "Wiring Diagram <u>BATTERY POWER SUPPLY -"</u>.
- Battery
- 10A fuse (No.36, located in the fuse, fusible link and relay box). Refer to <u>PG-99, "Fuse and Fusible Link</u> <u>Arrangement"</u>.

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45. "Intermittent Incident".

NO >> Repair or replace damaged parts.

7.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	side harness connector	Continuity
Connector	Terminal	Connector	Terminal	Continuity
E7	58	F51	1	Existed
	56	FJI	6	Existed

Is the inspection result normal?

YES >> GO TO 8.

NO >> Repair or replace damaged parts.

8.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
F51	1	Ground	Not existed
	6		NOT EXISTED

Is the inspection result normal?

YES >> GO TO 9.

NO >> Repair or replace damaged parts.

MAIN POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A]

F

G

Н

J

Κ

L

Μ

Ν

Ο

Ρ

9. DETECT MALFUNCTIONING ITEM	А
 Check the following. Harness for short or open between ignition switch and IPDM E/R. Refer to <u>PG-39</u>, "Wiring Diagram - IGNI-<u>TION POWER SUPPLY -"</u>. Ignition switch 10A fuse (No.43, located in the IPDM E/R). Refer to <u>PG-100</u>, "Fuse, Connector and Terminal Arrangement". IPDM E/R 	В
Is the inspection result normal?	С
YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".	
NO >> Repair or replace damaged parts.	ΤM
	Е

Revision: 2015 June

SHIFT POSITION INDICATOR CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

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.
- 3. 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-274, "Diagnosis Procedure".

Diagnosis Procedure

1.CHECK INPUT SIGNALS

With CONSULT

- 1. Start 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-282</u>, "<u>Reference Value</u>".
- 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 <u>TM-282</u>, "<u>Reference Value</u>".

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-265, "Component Inspection (Manual Mode Switch)".

- Check A/T main system (Fail-safe function actuated).
- Perform "Self Diagnostic Results" in "TRANSMISSION". Refer to TM-297, "DTC Index".
- NO-2 (The actual gear position changes, but the shift position indicator is not indicated.)>>Perform "Self Diagnostic Results" in "TRANSMISSION". Refer to TM-297, "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 <u>TM-297, "DTC Index"</u>.
- NO-4 (Only a specific position or positions is/are not indicated on the shift position indicator.)>>Check the combination meter. Refer to <u>MWI-4, "Work flow"</u>.

INFOID:0000000011738339

INFOID:000000011738340

< DTC/CIRCUIT DIAGNOSIS >

SHIFT LOCK SYSTEM

Description

Refer to TM-202, "System Description".

Wiring Diagram - A/T SHIFT LOCK SYSTEM -

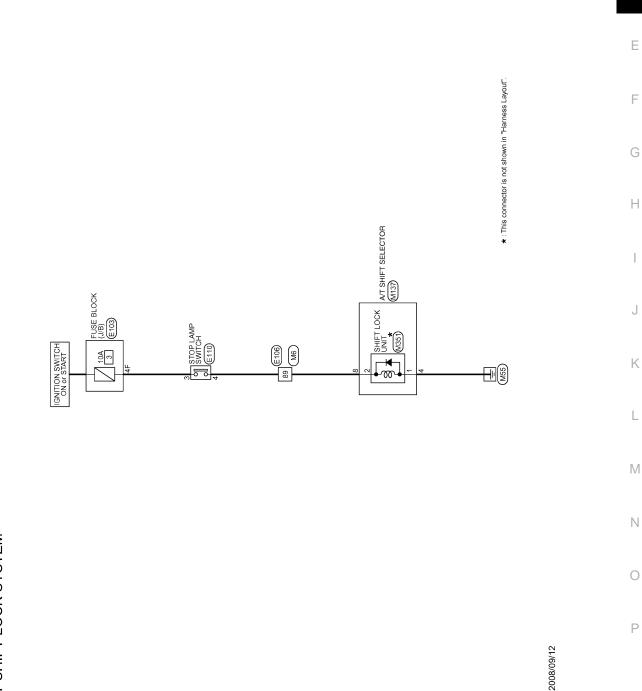
A

INFOID:000000011738343

С

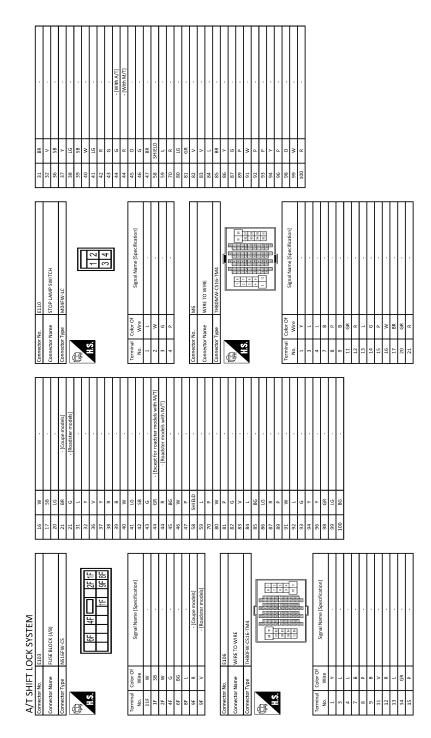
ТΜ

В



A/T SHIFT LOCK SYSTEM

JCDWA0369GB



< DTC/CIRCUIT DIAGNOSIS >

	А
	В
	С
	ТМ
	Е
	F
	G
	Н
	I
	J
	K
	L
OCK SYSTEM Mu37 Arrswitz stateron Signal Name [Specification] Signal Name [Specification]	Μ
A/T SHIFT LOCK SYSTEM Connector Name Connector Name Connector Name Connector Name N133 Connector Name N	Ν
JRDWC5293GB	0
Component Function Check	Ρ

1.CHECK A/T SHIFT LOCK OPERATION (PART 1)

1. Turn ignition switch ON.

2. Shift the selector lever to "P" position.

3. 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?

TM-277

< DTC/CIRCUIT DIAGNOSIS >

YES >> Go to <u>TM-278</u>, "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-278, "Diagnosis Procedure".

Diagnosis Procedure

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	Ground	Condition	voltage (Approx.)
M137	0	Gibunu	Depressed brake pedal.	Battery voltage
WI157	0		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	ector connector	Shift lock unit A/T shift	selector side connector	Continuity
Connector	Terminal	Connector	Terminal	Continuity
M137	8	M351	2	Existed
W157	4	10001	1	Existed

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 <u>TM-325</u>, "Exploded View".
- 2. Check shift lock unit. Refer to TM-280, "Component Inspection (Shift Lock Unit)".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45. "Intermittent Incident".

NO >> Replace shift lock unit. Refer to <u>TM-325</u>, "Exploded View".

TM-278

[7AT: RE7R01A]

 Turn ignition swit 	lamp switch connector ch ON.		ess connector terminal	and ground.
Stop lamp switch	vehicle side harness conne	ector		Voltage (Approx.)
Connector	Termin	al	Ground	voltage (Approx.)
E110	3			Battery voltage
Check stop lamp swit <u>Is the inspection resu</u> YES >> GO TO 7 NO >> GO TO 1 7.CHECK HARNES	MP SWITCH (PART 1) ch. Refer to <u>TM-280, "</u> <u>It normal?</u> 2. S BETWEEN STOP L/ ween stop lamp switc	Component Inspec	tion (Stop Lamp Switch A/T SHIFT SELECTO	R (PART 1)
vehicle side harness	connector terminal.			
		A/T shift selector ve	nicle side harness connector	
	e side harness connector	A/T shift selector ve Connector	nicle side harness connector	Continuity
Stop lamp switch vehicl Connector E110 s the inspection resu YES >> GO TO 8	e side harness connector Terminal 4 It normal?	Connector M137		
Stop lamp switch vehicl Connector E110 Is the inspection resu YES >> GO TO 8 NO >> Repair of 8. CHECK HARNES Check continuity betw	e side harness connector Terminal 4 It normal? • • • replace damaged par S BETWEEN STOP L/ veen stop lamp switch	Connector M137 ts. AMP SWITCH ANE vehicle side harnes	Terminal	Continuity Existed
Stop lamp switch vehicl Connector E110 s the inspection resu YES >> GO TO 8 NO >> Repair of B.CHECK HARNES Check continuity betw	e side harness connector Terminal 4 It normal? replace damaged par S BETWEEN STOP L/	Connector M137 ts. AMP SWITCH ANE vehicle side harnes	Terminal 8 A/T SHIFT SELECTO	Continuity Existed
Stop lamp switch vehicl Connector E110 Is the inspection resu YES >> GO TO 8 NO >> Repair of 8.CHECK HARNES Check continuity betw Stop lamp switch Connector E110	e side harness connector Terminal 4 It normal? replace damaged par S BETWEEN STOP L/ veen stop lamp switch vehicle side harness conne Termina 4	Connector M137 ts. AMP SWITCH ANE vehicle side harnes	Terminal 8 0 A/T SHIFT SELECTO ss connector terminal a	Continuity Existed R (PART 2) nd ground.
$\begin{tabular}{l l l l l l l l l l l l l l l l l l l $	e side harness connector Terminal 4 It normal? replace damaged par S BETWEEN STOP L/ veen stop lamp switch vehicle side harness connector vehicle side harness connector. Ref replace damaged par S BETWEEN FUSE Bl ch OFF. block (J/B) connector.	Connector M137 ts. AMP SWITCH ANE vehicle side harnes ector al fer to <u>GI-45, "Interm</u> ts. LOCK (J/B) AND S	Terminal 8 A/T SHIFT SELECTO ss connector terminal a Ground	Continuity Existed R (PART 2) nd ground. Continuity Not existed PART 1)
Stop lamp switch vehicl Connector E110 Is the inspection result YES >> GO TO 8 NO >> Repair of 8.CHECK HARNES Check continuity betw Stop lamp switch Connector E110 Is the inspection result YES >> Check in NO >> Repair of 9.CHECK HARNES 1. Turn ignition switt 2. Disconnect fuse 3. Check continuity vehicle side harm	e side harness connector Terminal 4 It normal? 5 replace damaged par S BETWEEN STOP L/ veen stop lamp switch vehicle side harness conne vehicle side harness conne termittent incident. Ref replace damaged par S BETWEEN FUSE Bl ch OFF. block (J/B) connector. between fuse block (J ess connector termina	Connector M137 ts. AMP SWITCH ANE vehicle side harnes ector al fer to <u>GI-45, "Interm</u> ts. LOCK (J/B) AND S	Terminal 8 A/T SHIFT SELECTOR Ss connector terminal a Ground hittent Incident". TOP LAMP SWITCH (F rness connector terminal	Continuity Existed R (PART 2) nd ground. Continuity Not existed PART 1) al and stop lamp swite
Stop lamp switch vehicl Connector E110 Is the inspection result YES >> GO TO 8 NO >> Repair of 8.CHECK HARNES Check continuity betw Stop lamp switch Connector E110 Is the inspection result YES >> Check in NO >> Repair of 9.CHECK HARNES 1. Turn ignition switt 2. Disconnect fuse 3. Check continuity vehicle side harm	e side harness connector Terminal 4 It normal? replace damaged par S BETWEEN STOP L/ veen stop lamp switch vehicle side harness connector vehicle side harness connector termittent incident. Ref replace damaged par S BETWEEN FUSE Bl ch OFF. block (J/B) connector. between fuse block (J	Connector M137 ts. AMP SWITCH ANE vehicle side harnes ector al fer to <u>GI-45, "Interm</u> ts. LOCK (J/B) AND S	Terminal 8 A/T SHIFT SELECTOR Ss connector terminal a Ground hittent Incident". TOP LAMP SWITCH (F	Continuity Existed R (PART 2) nd ground. Continuity Not existed PART 1) al and stop lamp swite

10.check harness between fuse block (J/B) and stop lamp switch (part 2)

< DTC/CIRCUIT DIAGNOSIS >

< DTC/CIRCUIT DIAGNOSIS >

Check continuity between fuse block (J/B) vehicle side harness connector terminal and ground.

Fuse block (J/B) vehicle	e 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 <u>PG-39</u>, "Wiring Diagram <u>IGNITION POWER SUPPLY -</u>".
- Ignition switch
- 10A fuse [No.3, located in the fuse block (J/B)]. Refer to <u>PG-98, "Fuse, Connector and Terminal Arrange-ment"</u>.

Fuse block (J/B)

Is the inspection result normal?

YES >> Check intermittent incident. Refer to <u>GI-45, "Intermittent Incident"</u>.

NO >> Repair or replace damaged parts.

12. CHECK INSTALLATION POSITION OF STOP LAMP SWITCH

Adjust stop lamp switch position. Refer to <u>BR-9, "Inspection and Adjustment"</u>.

>> GO TO 13.

13.CHECK STOP LAMP SWITCH (PART 2)

Check stop lamp switch. Refer to TM-280, "Component Inspection (Stop Lamp Switch)".

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace stop lamp switch. Refer to <u>BR-22, "Exploded View"</u>.

Component Inspection (Shift Lock Unit)

INFOID:000000011738346

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	Terminal		Condition	Status
Connector	+ (fuse)	-		
M351	2	1	Apply 12 V direct current between terminals 1 and 2.	Shift lock unit operates

Can the plate be moved up and down?

YES >> INSPECTION END

NO >> Replace shift lock unit. Refer to <u>TM-325</u>, "Exploded View".

Component Inspection (Stop Lamp Switch)

1.CHECK STOP LAMP SWITCH

Check continuity between stop lamp switch connector terminals.

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A]

Stop lamp switch connector			Condition	Continuity	А
Connector	Terr	minal	Condition	Continuity	
E110	2	3 4	Depressed brake pedal.	Existed	В
	3		Released brake pedal.	Not existed	
Is the inspection resu	It normal?				

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace stop lamp switch. Refer to <u>BR-22, "Exploded View"</u>.

ТΜ

Е

F

G

Н

J

Κ

L

Μ

Ν

Ο

Ρ

С

ECU DIAGNOSIS INFORMATION

TCM

Reference Value

INFOID:0000000011738348

[7AT: RE7R01A]

VALUES ON DIAGNOSIS TOOL

• The CONSULT 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 display. If the difference is noticeable, mechanical parts (except solenoids, sensors, etc.) may be malfunctioning. Check mechanical parts using applicable diagnostic procedures.

- Shift schedule (which implies gear position) displayed on CONSULT and that indicated in Service Manual may differ slightly. This occurs because of the following reasons:
- Actual shift schedule has more or less tolerance or allowance
- Shift schedule indicated in Service Manual refers to the point where shifts start
- Gear position displayed on CONSULT indicates the point where shifts are completed
- Display of solenoid valves on CONSULT changes at the start of shifting, while gear position is displayed upon completion of shifting (which is computed by TCM).

NOTE:

The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.

CONSULT 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 indi- cated.
F CARR GR REV	During driving	Revolution of front carrier is indi- cated.
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
INKUTTLE PUSI	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	_	_
TCC SOLENOID	_	—
L/B SOLENOID	_	_
FR/B SOLENOID	_	—
HLR/C SOL	_	—

ТСМ

< ECU DIAGNOSIS INFORMATION >

[7AT: RE7R01A]

Item name	Condition Value (Approx.) / S		
I/C SOLENOID			
D/C SOLENOID	-	_	
2346/B SOL	_		
L/P SOL MON	-		
TCC SOL MON	_	_	
L/B SOL MON	_		
FR/B SOL MON	_		
HLR/C SOL MON	_	_	
I/C SOL MON	_		
D/C SOL MON	_		
2346/B SOL MON	-		
	Driving with 1GR	4.924	
	Driving with 2GR	3.194	
	Driving with 3GR	2.043	
GEAR RATIO	Driving with 4GR	1.412	
	Driving with 5GR	1.000	
	Driving with 6GR	0.862	
	Driving with 7GR	0.772	
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 account of the acceleration or dece		
INPUT TRQ L/P	During driving	Changes the value according to the acceleration or deceleration.	
	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	
	Low brake is engaged	1370 kPa	
TRGT PRES L/B	Low brake is disengaged	0 kPa	
	Front brake is engaged	1370 kPa	
TRGT PRES FR/B	Front brake is disengaged	0 kPa	
	High and low reverse clutch is engaged	1370 kPa	
TRG PRE HLR/C	High and low reverse clutch is disengaged	0 kPa	
	Input clutch is engaged	1370 kPa	
TRGT PRES I/C	Input clutch is disengaged	0 kPa	
	Direct clutch is engaged	1370 kPa	
TRGT PRES D/C	Direct clutch is disengaged	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.	

ТСМ

< ECU DIAGNOSIS INFORMATION >

[7AT: RE7R01A]

Item name			
RANGE SW 4	Selector lever in "P" and "N" positions	OFF	
RANGE SW 4	Other than the above	ON	
RANGE SW 3	Selector lever in "P", "R" and "N" positions	OFF	
RANGE SW 5	Other than the above	ON	
RANGE SW 2	Selector lever in "P" and "R" positions	OFF	
RANGE SW 2	Other than the above	ON	
RANGE SW 1	Selector lever in "P" position	OFF	
RANGE SW I	Other than the above	ON	
	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	
	Tow mode	ON	
TOW 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	
1 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	
	When TCM receives ASCD OD cancel request signal	ON	
ASCD-OD CUT	Other than the above	OFF	
	ASCD operate	ON	
ASCD-CRUISE	Other than the above	OFF	
	ABS operate	ON	
ABS SIGNAL	Other than the above	OFF	
	When TCM receives TCS gear keep request signal	ON	
TCS GR/P KEEP	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	

TCM

< ECU DIAGNOSIS INFORMATION >

[7AT: RE7R01A]

Item name	Condition	Value (Approx.) / Status	
CS SIGNAL 1	When the reception value of A/T shift schedule change demand signal is "warm"	ON	
	Other than the above	ignal is "warm"ONin the aboveOFFGR - 6GR shift controlFAIL2GR - 3GR shift controlFAIL2GR - 3GR shift controlFAIL2GR - 6GR shift controlFAILin the aboveNOTFAIL3GR - 6GR shift controlFAILin the aboveNOTFAIL3GR - 6GR shift controlFAILin the aboveNOTFAILin the aboveNOTFAILin the aboveNOTFAILor pedal is releasedONor pedal is releasedONor pedal is releasedOFFor pedal is releasedOFFor pedal is fully depressedOFFor pedal is feleasedCOASTselector lever is positioned in between each po- pever in "P" positionPever in "D" positionPever in "D" positionDever in "D" position: 7GRDever in "D" position: 3GR3aver in "D" position: 1GR1ever in "D" position: 2GR2ever in "D" position: 1GR1ever in "D" position: 2GR2ever in "D" position: 2GR2ever in "D" position: 3GRM3ever in "M" position: 3GRM5ever in "M" position: 3GR	
	When the reception value of A/T shift schedule change demand signal is "warm" ON Other than the above OFF At 4GR - 5GR - 6GR shift control FAIL Other than the above NOTFAIL At 1GR - 2GR - 3GR shift control FAIL Other than the above NOTFAIL At 4GR - 5GR - 6GR shift control FAIL Other than the above NOTFAIL At 4GR - 5GR - 6GR shift control FAIL Other than the above NOTFAIL At 4GR - 5GR - 6GR shift control FAIL Other than the above NOTFAIL Accelerator pedal is fully depressed ON Accelerator pedal is released ONFF Accelerator pedal is released OFF Accelerator pedal is fully depressed OFF Accelerator pedal is released OFF Accelerator pedal is released OFF Selector lever in "P" position P Selector lever in "P" position R Selector lever in "D" position: GGR G Selector lever in "D" position: GGR G Selector lever in "D" position: GR M1 </td <td>FAIL</td>	FAIL	
OW/B PARTS		NOTFAIL	
	At 1GR - 2GR - 3GR shift control	FAIL	
IC/IC/FRB PARTS	Other than the above	Aule change ON OFF FAIL Image ON Image ON Image ON Image ON Image ON Image ON Image FAIL Image ON Image ON Image ON Image Image Image Image Image Image Image Image Image Image Image Image <t< td=""></t<>	
C/FRB PARTS	At 4GR - 5GR - 6GR shift control	FAIL	
JIND FARIS	Other than the above OFF At 4GR - 5GR - 6GR shift control FAIL Other than the above NOTFAIL At 1GR - 2GR - 3GR shift control FAIL Other than the above NOTFAIL At 1GR - 2GR - 3GR shift control FAIL Other than the above NOTFAIL At 4GR - 5GR - 6GR shift control FAIL Other than the above NOTFAIL At 4GR - 5GR - 6GR shift control FAIL Other than the above NOTFAIL At 4GR - 5GR - 6GR shift control FAIL Other than the above NOTFAIL At 4GR - 5GR - 6GR shift control FAIL Other than the above NOTFAIL Accelerator pedal is fully depressed ON Accelerator pedal is released ON Accelerator pedal is released COAST Vhen the selector lever is positioned in between each position. P Selector lever in "P" position P Selector lever in "D" position: 7GR D Selector lever in "D" position: 7GR 5 Selector lever in "D" position: 3GR 3		
ILR/C PARTS	When the reception value of A/T shift schedule change demand signal is "warm" Oh Other than the above OF At 4GR - 5GR - 6GR shift control FAI Other than the above NOTF At 1GR - 2GR - 3GR shift control FAI Other than the above NOTF At 4GR - 5GR - 6GR shift control FAI Other than the above NOTF At 4GR - 5GR - 6GR shift control FAI Other than the above NOTF At 4GR - 5GR - 6GR shift control FAI Other than the above NOTF Accelerator pedal is released OF Accelerator pedal is released OF Accelerator pedal is depressed OF Accelerator pedal is released OF Accelerator pedal is released OF Selector lever in "P" position P Selector lever in "P" position P Selector lever in "P" position P Selector lever in "D" position: 5GR 5 Selector lever in "D" position: 3GR M Selector lever in "D" position: 3GR M Selec	FAIL	
	Other than the above	NOTFAIL	
I/O THL POS	Accelerator pedal is fully depressed	ON	
WO THE POS	Accelerator pedal is released	OFF	
CLSD THL POS	When the reception value of AT shift schedule change demand signal is "warm" Other than the above At 4GR - 5GR - 6GR shift control Other than the above At 1GR - 2GR - 3GR shift control Other than the above At 4GR - 5GR - 6GR shift control Other than the above At 4GR - 5GR - 6GR shift control Other than the above At 4GR - 5GR - 6GR shift control Other than the above Accelerator pedal is fully depressed Accelerator pedal is released Accelerator pedal is released Accelerator pedal is fully depressed Accelerator pedal is released Vhen the selector lever is positioned in between each position. Selector lever in "P" position Selector lever in "D" position Selector lever in "D" position: 3GR Selector lever in "D" position: 3GR Selector lever in "D" position: 3GR Selector lever in "M" position: 3GR <	ON	
	Accelerator pedal is fully depressed	OFF	
DRV CST JUDGE	When the reception value of A/T shift schedule change demand signal is "warm" ON Other than the above OFF At 4GR - 5GR - 6GR shift control FAIL Other than the above NOTFA At 1GR - 2GR - 3GR shift control FAIL Other than the above NOTFA At 4GR - 5GR - 6GR shift control FAIL Other than the above NOTFA At 4GR - 5GR - 6GR shift control FAIL Other than the above NOTFA At 4GR - 5GR - 6GR shift control FAIL Other than the above NOTFA Accelerator pedal is released ON Accelerator pedal is released ON Accelerator pedal is released COAS Accelerator pedal is released COAS Selector lever in "P" position P Selector lever in "P" position R Selector lever in "D" position: 5GR 6 Selector lever in "D" position: 2GR Ma Selector lever in "D" position: 2GR Ma Selector lever in "D" position: 3GR Ma Selector lever in "D" position: 3GR Ma <td>DRIVE</td>	DRIVE	
		COAST	
		OFF	
	Selector lever in "P" position	Р	
	Selector lever in "R" position	R	
	Selector lever in "N" position	Ν	
	Selector lever in "D" position	Л	
	Selector lever in "D" position: 7GR	U	
	Selector lever in "D" position: 6GR	6	
	Selector lever in "D" position: 5GR	5	
	Selector lever in "D" position: 4GR	4	
HIFT 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	
	Selector lever in "P" and "N" positions	ON	
TARTER RELAY			
	For 2 seconds after the ignition switch is turned ON	ON	
-SAFE IND/L	Other than the above		
TE 14/4 DALL 4140*	When TCM transmits the ATF indicator lamp signal	ON	
TF WARN LAMP [*]	Other than the above	OFF	
IANU MODE IND	Other than the above	OFF	

ТСМ

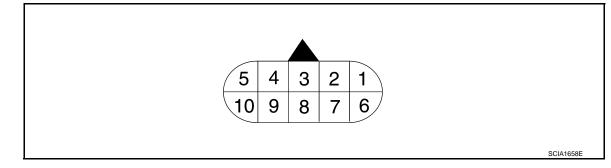
< ECU DIAGNOSIS INFORMATION >

[7AT: RE7R01A]

Item name	Condition	Value (Approx.) / Status	
	Selector lever in "P" and "N" positions		
ON OFF SOL MON	Driving with 1GR to 3GR	ON	
	Other than the above	OFF	
	Selector lever in "P" and "N" positions	ON	
START RLY MON	Other than the above	OFF	
	Selector lever in "P" and "N" positions		
ON OFF SOL	Driving with 1GR to 3GR	ON	
	Other than the above	OFF	
	Selector lever in "N" and "P" positions	N/P	
	Selector lever in "R" position	R	
	Selector lever in "D" positions		
	Selector lever in "M" position: 7GR	D	
	Selector lever in "M" position: 6GR	6	
SLCT LVR POSI	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	
	Driving with the D position	0 or 3	
SHIFT MODE	Driving with the manual mode	4 or 8	
	At 1GR - 2GR shift control	FAIL	
D/C PARTS	Other than the above	NOTFAIL	
	At control fixed to 1GR	FAIL	
FR/B PARTS	Other than the above	NOTFAIL	
	At control fixed to 1GR	FAIL	
2346/B PARTS	Other than the above	NOTFAIL	
	At 2GR - 3GR - 4GR shift control	FAIL	
2346B/DC PARTS	Other than the above	NOTFAIL	

*: Not mounted but always display as OFF.

TERMINAL LAYOUT



PHYSICAL VALUES

< ECU DIAGNOSIS INFORMATION >

[7AT: RE7R01A]

	minal color)	Description	า	Condition		Condition		Value (Approx.)
+	_	Signal name	Input/ Output			value (Approx.)		
1	Ground	Power supply	Input	Ignition switch ON		Battery voltage		
(Y)	Ground	Fower supply	mput	Ignition switch OFF		0 V		
2 (BR)	Ground	Power supply (Memory back-up)	Input		Always	Battery voltage		
3 (L)	_	CAN-H	Input/ Output		_	_		
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	Fower supply	mput	Ignition switch OFF	Ignition switch OFF			
7					Selector lever in "R" position.	0 V		
(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	Ground	Storter relay	Output	Ignition switch ON	Selector lever in "N" and "P" positions.	Battery voltage		
(GR)	Ground	Starter relay	Output	ut Ignition switch ON	Selector lever in other than above.	0 V		
10 (B)	Ground	Ground	Output		Always	0 V		

TCM

Κ

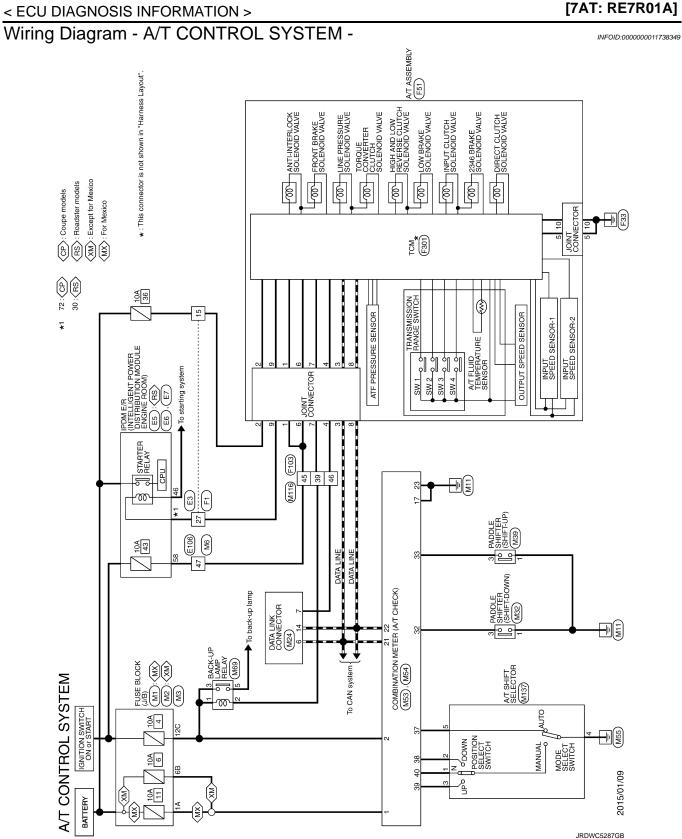
L

Μ

Ν

Ο

Ρ



TCM

	А
	В
Etos Witk TO WIE Interview Signal kane (Specification) 	С
72 6R 73 6R 75 5 75 5 76 5 77 5 78 6 79 6 79 6 70 6 71 6 71 7 70 6 71 7 70 6 71 7 70 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	ТМ
ador f own to strandom koout (noot)	F
66 その40,000,000,000,000,000,000,000,000,000,	G
Connector Name Connector Name Connector Type Connector Type Connector Name Connector Name	Н
	I
	J
30 P 41 1 41 1 41 1 42 1 43 1 44 1 45 1 46 1 47 1 48 1 49 1 49 1 41 1 42 1 43 1 44 1 45 1 46 1 47 1 48 1 49 1 40 1 40 1 41 1 42 1 5 1 5 1 5 1 43 1 43 1 5 1 5 1 5 1 5 1	K
Strait Strait<	L
	Μ
A/T CONTR Connector Non- Connector Non- Connector Non- Connector Non- Non- Connector Non- Connector Non- N	Ν
	6

TCM

JRDWC5288GB

Ρ

Ο

A/T CON	A/T CONTROL SYSTEM									
44	GR - [Except for roadster models with M/T]	11	œ (-	Connector No.			29 L	LG -	
╉		13	╀		Connector Name		A/T ASSEMBLY	╀		Т
46	M	14	╞		Connector Type	Type RK10FG-DGY	G-DGY	╞		1
47		15	BR		6		<	42 0		
58 SH	SHIELD -	16	Y		ß		«		P .	
	. 1	17	>		ů.			44 1		
	P .	18	FG		<u>0</u>		F 3 3 3 3	45	· .	
	M	19	٩	,			4	46	· · ·	
81	P .	20	0							
		21	_	,						Г
_	v -	22	9					Connector No.	F301	-
84	- 1	23	Y		Terminal	Color Of	Circul Namo (Coorification)	Connector Mamo	C TCM	
_	BG .	24	PI		No.	Wire				
		25	>		1	٨	IGNITION POWER SUPPLY	Connector Type	SP10FG SP10FG	
	Р	27	GR		2	BR BATT	BATTERY POWER SUPPLY (MEMORY BACK-UP)	ſ	<	1
68		28	BR		m		CAN-H	E		
	M	29	-		4	^	K-LINE			
92		30	R		5	в	GROUND	С.П.	1 2 3 4 5	
93		31	P		9	٨	IGNITION POWER SUPPLY			
	· ·	32	>		2	>	BACK-UP LAMP RELAY		(6 7 8 9 10)	
96	· ·	8	88	,	∞	٩	CAN-L			
	GR -	34	0		6	GR	STARTER RELAY			
66	 IG	36	9		10	80	GROUND	Terminal Color Of		
		37	SHIELD	,				No.	Wire Signal Name (specification)	
		38	>					1	W IGNITION POWER SUPPLY	1
		39	٨		Connector No.	No. F103		2 E	B BATTERY POWER SUPPLY (MEMORY BACK-UP)	
Connector No.	F1	40	9		Connector Name		WIRE TO WIRE	3	R CAN-H	
Connector Name	WIRE TO WIRE	41	_					4	0 K-LINE	
		42	GR		Connector Type		TK36FW-NS10	5	G GROUND	
Connector Type	e SAA36FB-RS8-SHZ8	43	R		C			9	GR IGNITION POWER SUPPLY	
ſ		45	SB		E		[2	L BACK-UP LAMP RELAY	
E	[[12]11]10[9] [2]17]	46	SHIELD				C	8	BR CAN-L	
	ł	47	N/L		Ċ.	20139.	11 15 15 14 13 12 11 5 4 3	σ	Y STARTER RELAY	
2 H	0	48	51			499 49 49	2022/2022	10 W	W/B GROUND	
	201 201 201 201 201 201 201 201 201 201	49	1/0							1
		50	γ	,						
	[2] 5] 5] 5] 5] 5] 5] 5] 5] 5] 5] 5] 5] 5]	51	>							
		52	۲/e	,	Terminal	Color Of	Constant and Const			
Terminal Color Of	lor Of circuit Name (Candification)		\mathbf{I}		No.	Wire	Signal Name [Specification]			
No.	DINEAL INTER				2	U				
⊢					m	~				
2 SH	SHIELD -				4	œ				
- 	L/B -				5	8				
4 SH	SHIELD -				~	-				
t					a	>				
+	i u				6	GR				
~					6[c				
+					20	. >				
10	. 0				28	. 8				
					;	,				

ТСМ

JRDWC5289GB

	A
Peerfication)	В
M04 DuffALINK CONNECTOR DuffALINK CONNECTOR DuffALINK Connector Signal Name (Specification) 	С
Connector No. M Connector Name 10 Connector Type 10 No. 11 V 1 V 1 V 1 V 1 V 1 V 1 V 1 V 1 V 1	ТМ
	E
	F
8 9 8 6 9 6 9 6 9 6 9 8 6 9 8 6 9 8 6 9 8 7 9 8 7 9 7 7 9 7 9 7 9 7 9 7 7 9 7 9 7 9 7 9 7 7 9 7 9	G
20 23 33 3 34 4 45 4 56 55 98 88 88 88 99 99 99 93 910 93	Н
CC (1/b) CC (1/b) Suppart Name (Specification) Suppart Name (Specification) Suppart Name (Specification) Suppart Name (Specification) Suppart Name (Specification)	I
TH80MMW M6	J
Commetor No. Commetor Name Commetor Name Commetor Name Name Commetor Name Commetor Name Name Commetor Name Commetor Name Name Commetor Name Commetor Name Commetor Name	К
	L
	Μ
A/T CONTROL SYSTEM Connector Name PLOS BLOCK (1/B) Connector Name PLOS BLOCK (1/B) Connector Name PLOS BLOCK (1/B) Connector Name NoGer War 2 A L C No C Separation 2 A L C No C	Ν
	0

TCM

JRDWC5290GB

[7AT: RE7R01A]

Р

	Connector Type TraJ6MW-4/51D	Terminal No. Color O Nme Signal Name [Specification] 7 6 7 2 W Vine Signal Name [Specification] 9 9 9 3 BG -(Coupe models) 10 9 9 9 3 O -(Ibaditier models) 10 9 9 10 8 I - - - 10 10 10 9 Y - - - - 10	
23 8 GROUND 24 Y FULL LEVEL SENSOR GROUND Connector No. M54 Connector No. M54	Terminal Color Of Sol 35 Color Of Sol 35 Color 30 Color 3	о о о о о о о о о о о о о о о о о о о	v Mail W M M N M N M M M M M M M M M M M M M M M
A/T CONTROL SYSTEM Connector No. M33 Connector Nome ADDL SWIFT& (SHIFLUP) Connector Type ADDL SWIFT& (SHIFLUP) Connector Type ADDL	K Signal Name (Specification)		M Signal Nume (Specification) BATTERY POWER SUPPLY BATTERY POWER SUPPLY ICATION SUPPLY BATTERY POWER SUPPLY VEHICLE SFEED SIGNAL (SPEED SIGNAL) VEHICLE SFEED SIGNAL (SPEED SIGNAL) VEHICLE SFEED SIGNAL (SPEED SIGNAL) VEHICLE SFEED SIGNAL (SPEED SIGNAL) VEHICLE SFEED SIGNAL (SPEED SIGNAL) VEHICLE SFEED SIGNAL (SPEED SIGNAL) VEHICLE SFEED SIGNAL (SPEED SIGNAL) VEHICLE SFEED SIGNAL) VEHICLE SFEED SIGNAL (SPEED SIGNAL) VEHICLE SFEED SIGNAL VEHICLE SFEED SIGNAL (SPEED SIGNAL) COMMUNICATION SIGNAL (SPEED SIGNAL) COMMUNICATION SIGNAL (SPEED SIGNAL) ARE MACE SIGNAL) ARIE MACE SIGNAL (SPEED SIGNAL) ARIE MACE SIGNAL) ARIE MACE SIGNAL (SPEED SIGNAL) ARIE MACE SIGNAL) ARIE MACE SIGNAL (SPEED SIGNAL) ARIE MACE SIGNAL)
A/T CONT Connector No. Connector Type	Terminal Color Of No. Wire 1 B 3 O Connector No.	Connector Name Connector Type 出名	Tateminal Color Of No. Wore No. Wore 2 0 3 1 4 V 6 8 6 8 12 6 13 1 14 1 12 1 13 1 14 1 15 1 13 1 13 1 13 1 13 1 13 1 13 1 13 1 13 1

Fail-Safe

JRDWC5291GB

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.

Revision: 2015 June

TM-292

TCM

< ECU DIAGNOSIS INFORMATION >

Consequently, the customer's vehicle may already return to the normal condition. Refer to TM-151, "Work Flow".

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 malfunction- ing 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 fail-safe 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 per- formed) Lock-up is prohibited when 30 km/h (19 MPH) or less 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 per- formed) Lock-up is prohibited when 30 km/h (19 MPH) or less 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
	Between the gears of 4 - 5 - 6 - 7	Fix the gear while drivingManual 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
	Between the gears of 4 - 5 - 6 - 7	Fix the gear while drivingManual mode is prohibited	_	Manual mode is prohibited
P0720	Between the gears of 1 - 2 - 3	 Only downshift can be performed Manual mode is prohibited A vehicle speed signal from the unified meter and A/C amp. is regarded as an effective signal 	_	 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 A vehicle speed signal from the unified meter and A/C amp. is regarded as an effective signal 		Manual mode is prohibited

[7AT: RE7R01A]

ТΜ

А

В

С

< ECU DIAGNOSIS INFORMATION >

[7AT: RE7R01A]

DTC	Vehicle	condition	Vehicle behavior for 1st fail- safe	Vehicle behavior for 2nd fail- safe	Vehicle behavior for final fail- safe
	Small gear ra	tio difference	Engine torque limit: Max 150 Nm	_	Engine torque limit: Max 150 Nm
P0729 P0731		Neutral mal- function be- tween the gears of 1 - 2 - 3 and 7	 Locks in 2GR, 3GR or 4GR 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 4 - 5 - 6 can be performed Manual mode is prohibited
P0732 P0733 P0734 P0735 P1734		Other than the above	 Locks in 1GR, 2GR, 3GR, 4GR, 5GR or 6GR Fix the gear while driving 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 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 4 - 5 - 6 can be performed Manual mode is prohibited
P0730		_	 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 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 prohibitedSlip lock-up is prohibited	_	Lock-up is prohibitedSlip 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			Locks in 3GRManual mode is prohibited	_	 The shifting between the gears of 1 - 2 - 3 can be performed Manual mode is prohibited

ТСМ

< ECU DIAGNOSIS INFORMATION >

[7AT: RE7R01A]

DTC	Vehicle condition	Vehicle behavior for 1st fail- safe	Vehicle behavior for 2nd fail- safe	Vehicle behavior for final fail- safe	А
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 pedal is depressed is prohibited Upshift when accelerator pedal is released is prohibited Manual mode is prohibited 	B
		 Locks in 1GR, 2GR, 3GR, 	The shifting between the	 Locks in 1GR The shifting between the gears of 2 - 3 - 4 can be performed The shifting between the 	ТМ
P1730		4GR, 5GR, 6GR or 7GR • Manual mode is prohibited	gears of 1 - 2 - 3 can be performedManual mode is prohibited	 gears of 3 - 4 can be performed The shifting between the gears of 4 - 5 - 6 can be performed Manual mode is prohibited 	E
	Gate switch malfunction	Only the gate switch is pro- hibited		Only the gate switch is pro- hibited	
P1815	Paddle switch malfunction	Only the paddle switch is prohibited	_	Only the paddle switch is pro- hibited	G
	Malfunction of both switches	Manual mode is prohibited	—	Manual mode is prohibited	
U0100 U0300	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 	H
U1000	Between the gears of 4 - 5 - 6 - 7	Fix the gear at drivingManual mode is prohibited	_	maximum hydraulic pres- sureManual mode is prohibited	
P0720 and P1721	_	Locks in 5GR	_	Locks in 5GR	J

Protection Control

INFOID:000000011738351

Κ

L

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

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	Ν
Control at malfunction	Neutral	
Normal return condition	 Vehicle speed: 8 km/h (5 MPH) or less and Engine speed: 2,200 rpm or less 	0
Vehicle behavior	 The torque transmission cannot be performed There is a shock just before a vehicle stop 	Р

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.

ТСМ

< ECU DIAGNOSIS INFORMATION >

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:0000000011738352

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	U0100 LOST COMM (ECM A)	TM-213, "DTC Logic"
Ι	U1000 CAN COMM CIRCUIT	TM-215, "DTC Logic"
	P0615 STARTER RELAY	TM-216, "DTC Logic"
	P0705 T/M RANGE SENSOR A	TM-218, "DTC Logic"
	P0710 FLUID TEMP SENSOR A	TM-220, "DTC Logic"
	P0717 INPUT SPEED SENSOR A	TM-223, "DTC Logic"
	P0720 OUTPUT SPEED SENSOR	TM-225, "DTC Logic"
	P0740 TORQUE CONVERTER	TM-243, "DTC Logic"
2	P0745 PC SOLENOID A	TM-247, "DTC Logic"
2	P0750 SHIFT SOLENOID A	TM-248, "DTC Logic"
	P0775 PC SOLENOID B	TM-249, "DTC Logic"
	P0795 PC SOLENOID C	TM-252, "DTC Logic"
	P2713 PC SOLENOID D	TM-267, "DTC Logic"
	P2722 PC SOLENOID E	TM-268, "DTC Logic"
	P2731 PC SOLENOID F	TM-269, "DTC Logic"
	P2807 PC SOLENOID G	TM-270, "DTC Logic"

< ECU DIAGNOSIS INFORMATION >

Priority	Detected items (DTC)	Reference
	P0729 6GR INCORRECT RATIO	TM-229, "DTC Logic"
	P0730 INCORRECT GR RATIO	TM-231, "DTC Logic"
	P0731 1GR INCORRECT RATIO	TM-233, "DTC Logic"
	P0732 2GR INCORRECT RATIO	TM-235, "DTC Logic"
	P0733 3GR INCORRECT RATIO	TM-237, "DTC Logic"
3	P0734 4GR INCORRECT RATIO	TM-239, "DTC Logic"
	P0735 5GR INCORRECT RATIO	TM-241, "DTC Logic"
	P0744 TORQUE CONVERTER	TM-245, "DTC Logic"
	P0780 SHIFT	TM-250, "DTC Logic"
	P1730 INTERLOCK	TM-257, "DTC Logic"
	P1734 7GR INCORRECT RATIO	TM-259, "DTC Logic"
	U0300 CAN COMM DATA	TM-214, "DTC Logic"
	P0725 ENGINE SPEED	TM-227, "DTC Logic"
4	P1705 TP SENSOR	TM-253, "DTC Logic"
	P1721 VEHICLE SPEED SIGNAL	TM-255, "DTC Logic"
	P1815 M-MODE SWITCH	TM-261, "DTC Logic"

DTC Index

INFOID:000000011738353

Н

ī.

[7AT: RE7R01A]

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 <u>TM-296</u>, "<u>DTC Inspection Priority Chart</u>".

ltomo	D	TC ^{*2}	
Items (CONSULT screen terms)	MIL ^{*1} , "ENGINE" with CONSULT or GST	CONSULT only "TRANS- MISSION"	Reference
STARTER RELAY	—	P0615	TM-216, "DTC Logic"
T/M RANGE SENSOR A	P0705	P0705	TM-218, "DTC Logic"
FLUID TEMP SENSOR A	P0710	P0710	TM-220, "DTC Logic"
INPUT SPEED SENSOR A	P0717	P0717	TM-223, "DTC Logic"
OUTPUT SPEED SENSOR	P0720	P0720	TM-225, "DTC Logic"
ENGINE SPEED	-	P0725	TM-227, "DTC Logic"
6GR INCORRECT RATIO	P0729	P0729	TM-229, "DTC Logic"
INCORRECT GR RATIO	P0730	P0730	TM-231, "DTC Logic"
1GR INCORRECT RATIO	P0731	P0731	TM-233, "DTC Logic"
2 GR INCORRECT RATIO	P0732	P0732	TM-235, "DTC Logic"
3GR INCORRECT RATIO	P0733	P0733	TM-237, "DTC Logic"
4GR INCORRECT RATIO	P0734	P0734	TM-239, "DTC Logic"
5GR INCORRECT RATIO	P0735	P0735	TM-241, "DTC Logic"
TORQUE CONVERTER	P0740	P0740	TM-243, "DTC Logic"
TORQUE CONVERTER	P0744	P0744	TM-245, "DTC Logic"
PC SOLENOID A	P0745	P0745	TM-247, "DTC Logic"
SHIFT SOLENOID A	P0750	P0750	TM-248, "DTC Logic"
PC SOLENOID B	P0775	P0775	TM-249, "DTC Logic"
SHIFT	P0780	P0780	TM-250, "DTC Logic"
PC SOLENOID C	P0795	P0795	TM-252, "DTC Logic"

Revision: 2015 June

< ECU DIAGNOSIS INFORMATION >

[7AT: RE7R01A]

Items	דס	rc*2	
(CONSULT screen terms)	MIL ^{*1} , "ENGINE" with CONSULT or GST	CONSULT only "TRANS- MISSION"	Reference
TP SENSOR	—	P1705	TM-253, "DTC Logic"
VEHICLE SPEED SIGNAL	—	P1721	TM-255, "DTC Logic"
INTERLOCK	P1730	P1730	TM-257, "DTC Logic"
7 GR INCORRECT RATIO	P1734	P1734	TM-259, "DTC Logic"
M-MODE SWITCH	—	P1815	TM-261, "DTC Logic"
PC SOLENOID D	P2713	P2713	TM-267, "DTC Logic"
PC SOLENOID E	P2722	P2722	TM-268, "DTC Logic"
PC SOLENOID F	P2731	P2731	TM-269, "DTC Logic"
PC SOLENOID G	P2807	P2807	TM-270, "DTC Logic"
LOST COMM (ECM A)	U0100	U0100	TM-213, "DTC Logic"
CAN COMM DATA	—	U0300	TM-214, "DTC Logic"
CAN COMM CIRCUIT	—	U1000	TM-215, "DTC Logic"

*1: Refer to TM-205, "Diagnosis Description".

*2: These numbers are prescribed by SAE J2012.

SYMPTOM DIAGNOSIS SYSTEM SYMPTOM

Symptom Table

• The diagnostics item numbers show the sequence for inspection. Inspect in order from item 1.

• Perform diagnoses of symptom table 1 before symptom table 2.

SYMPTOM TABLE 1

													[Diag	nos	stic	iten	n								—	
		Sym	ptom		Control linkage	Output speed sensor	Vehicle speed signal	Accelerator pedal position sensor	Engine speed signal	Input speed sensor	A/T fluid temperature sensor	Battery voltage	Transmission range switch	Manual mode switch	Stop lamp 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	Starter relay	CAN communication	E F G
					TM-324	TM-225	<u>TM-255</u>	<u>TM-253</u>	TM-227	TM-223	TM-220	TM-271	<u>TM-218</u>	TM-261	SEC-54	TM-247	<u>TM-245</u>	<u>TM-268</u>	TM-252	TM-267	<u>TM-249</u>	<u>TM-270</u>	<u>TM-269</u>	<u>TM-248</u>	TM-216	<u>TM-215</u>	I
			-	in "D" position.		1		2			3																
		Shift po	int is low i	n "D" position.		1		2	-		-					-		-						_		_	J
				\rightarrow "D" position	4			7 7	6 6		6 6		5 5			3 3		2				2		3		1	
				\rightarrow "R" position 1GR \Leftrightarrow 2GR	4	4		7 2	ь 5	4	ю 4		Э			3						2	3			1	Κ
				2GR ⇔ 3GR		4	-	2	5	4	4									-	-	3	5			1	
				3GR ⇔ 4GR		4		2	5	4	4							3		3		-				1	I
	Driving			4GR ⇔ 5GR		4		2	5	4	4										3		3			1	
	perfor-	Large	When shifting	5GR ⇔ 6GR		4		2	5	4	4											3	3			1	
Poor	mance	shock	gears	6GR ⇔ 7GR		4		2	5	4	4								3				3			1	M
perfor- mance				Downshift when accelerator ped- al is depressed		3		2	4	3	3															1	Ν
				Upshift when ac- celerator pedal is released		3		2	4	3	3															1	0
				Lock-up		4		2	4	4	4						3									1	
		Judder		Lock-up				2	1	1	4						3										D
			In "R" position		2			1																		Ρ	
	Strange noise			In "N" position		2			1																	<u> </u>	
				In "D" position		2			1																	<u> </u>	
				Engine at idle		2			1																		

INFOID:000000011738354

С

А

В

													Dia	gno	stic	ite	m								
		Symptom		Control linkage	Output speed sensor	Vehicle speed signal	Accelerator pedal position sensor	Engine speed signal	Input speed sensor	A/T fluid temperature sensor	Battery voltage	Transmission range switch	Manual mode switch	Stop lamp 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	Starter relay	CAN communication
				TM-324	<u>TM-225</u>	<u>TM-255</u>	<u>TM-253</u>	TM-227	TM-223	TM-220	TM-271	<u>TM-218</u>	<u>TM-261</u>	SEC-54	<u>TM-247</u>	TM-245	<u>TM-268</u>	<u>TM-252</u>	<u>TM-267</u>	TM-249	TM-270	TM-269	TM-248	TM-216	<u>TM-215</u>
Func- tion trouble	Gear does no change	"D" position	Locks in 1GR Locks in 2GR Locks in 3GR Locks in 4GR Locks in 5GR Locks in 6GR Locks in 7GR 1GR \rightarrow 2GR 2GR \rightarrow 3GR 3GR \rightarrow 4GR 4GR \rightarrow 5GR 5GR \rightarrow 6GR 6GR \rightarrow 7GR 5GR \rightarrow 4GR 4GR \rightarrow 3GR 3GR \rightarrow 2GR						2	2		1					2		2	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1	1	1		
		"M" posi- tion	Does not lock-up $1GR \Leftrightarrow 2GR$ $2GR \Leftrightarrow 3GR$ $3GR \Leftrightarrow 4GR$ $4GR \Leftrightarrow 5GR$ $5GR \Leftrightarrow 6GR$ $6GR \Leftrightarrow 7GR$		2 3 3 3 3 3			2	2 3 3 3 3 3	3 3 3 3		5 3 3 3 3 3 3 3	2 2 2 2 2	3	2 3 3 3 3 3	3 3 3 3	2 3 3 3 3 3 3 3 3 3	3 3 3	3 3 3 3 3	2 3 3 3 3 3	3 3 3 3	2 3 3 3 3 3 3 3	2 3 3 3 3 3 3 3		1 1 1 1 1 1

< SYMPTOM DIAGNOSIS >

[7AT: RE7R01A]

													[Diag	gno	stic	iten	n									А
		Sympt	tom		Control linkage	Output speed sensor	Vehicle speed signal	Accelerator pedal position sensor	Engine speed signal	Input speed sensor	A/T fluid temperature sensor	Battery voltage	Transmission range switch	Manual mode switch	Stop lamp 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	Starter relay	CAN communication	B C TN
					TM-324	TM-225	<u>TM-255</u>	<u>TM-253</u>	<u>TM-227</u>	<u>TM-223</u>	TM-220	TM-271	<u>TM-218</u>	<u>TM-261</u>	<u>SEC-54</u>	TM-247	<u>TM-245</u>	<u>TM-268</u>	<u>TM-252</u>	<u>TM-267</u>	<u>TM-249</u>	TM-270	TM-269	<u>TM-248</u>	TM-216	TM-215	F
				$1GR \Leftrightarrow 2GR$		3			3	3	4					2							2			1	
			When	$2\text{GR} \Leftrightarrow 3\text{GR}$		3			3	3	4					2						2				1	C
		Slip	shift-	3 GR \Leftrightarrow 4 GR		3			3	3	4					2		2		2				2		1	
		Silp	ing	4GR ⇔ 5GR		3			3	3	4					2					2		2			1	ŀ
			gears	5GR ⇔ 6GR		3			3	3	4					2						2	2			1	
_				6GR ⇔ 7GR		3			3	3	4					2			2				2			1	
Func- tion trou- ble	Poor shifting		"D" pos tion	sition \rightarrow "M" posi-		5			5	5	6		4	2		3			3	3						1	l
510		En-		$7\text{GR} \rightarrow 6\text{GR}$		5			5	5	6		4	2		3			3				3			1	
		gine		$6\text{GR} \rightarrow 5\text{GR}$		5			5	5	6		4	2		3						3	3			1	
		brake does	"M" posi-	5GR ightarrow 4GR		5			5	5	6		4	2		3					3		3			1	
		not	tion	$4\text{GR} \rightarrow 3\text{GR}$		5			5	5	6		4	2		3		3		3				3		1	þ
		work		$3\text{GR} \rightarrow 2\text{GR}$		5			5	5	6		4	2		3				3		3				1	
				2GR ightarrow 1GR		5			5	5	6		4	2		3			3				3			1	

M

Ν

0

Ρ

< SYMPTOM DIAGNOSIS >

[7AT: RE7R01A]

												[Dia	gno	stic	iter	n								
		Symptom		Control linkage	Output speed sensor	Vehicle speed signal	Accelerator pedal position sensor	Engine speed signal	Input speed sensor	A/T fluid temperature sensor	Battery voltage	Transmission range switch	Manual mode switch	Stop lamp 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	Starter relay	CAN communication
				TM-324	<u>TM-225</u>	TM-255	TM-253	TM-227	<u>TM-223</u>	TM-220	TM-271	<u>TM-218</u>	TM-261	<u>SEC-54</u>	TM-247	TM-245	TM-268	TM-252	TM-267	TM-249	<u>TM-270</u>	<u>TM-269</u>	<u>TM-248</u>	<u>TM-216</u>	<u>TM-215</u>
			With selector le- ver in "D" posi- tion, acceleration is extremely poor.	5	3			3	3	4					2		2						2		1
			With selector le- ver in "R" posi- tion, acceleration is extremely poor.	5	3			3	3	4					2						2		2		1
			While starting off by accelerating in 1GR, engine races.		3			3	3	4					2		2						2		1
			While accelerat- ing in 2GR, en- gine races.		3			3	3	4					2		2					2	2		1
Func- tion trou- ble	Poor power trans- mission	Slip	While accelerat- ing in 3GR, en- gine races.		3			3	3	4					2		2				2	2			1
			While accelerat- ing in 4GR, en- gine races.		3			3	3	4					2				2		2	2			1
			While accelerat- ing in 5GR, en- gine races.		3			3	3	4					2				2	2	2		2		1
			While accelerat- ing in 6GR, en- gine races.		3			3	3	4					2				2	2		2	2		1
			While accelerat- ing in 7GR, en- gine races.		3			3	3	4					2			2	2	2			2		1
			Lock-up		3			3	3	4					2	2									1
			No creep at all.												1	1	1	1	1	1	1	1	1		
			Extremely large creep.					1																	

< SYMPTOM DIAGNOSIS >

[7AT: RE7R01A]

											Di	agn	ost	ic ite	em										А
	Sympt	om	Control linkage	Output speed sensor	Vehicle speed signal	Accelerator pedal position sensor	Engine speed signal	Input speed sensor	A/T fluid temperature sensor	Battery voltage	Transmission range switch	Manual mode switch	Stop lamp 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	Starter relay	CAN communication	B C TM E
			TM-324	TM-225	<u>TM-255</u>	TM-253	TM-227	<u>TM-223</u>	<u>TM-220</u>	TM-271	TM-218	<u>TM-261</u>	<u>SEC-54</u>	TM-247	<u>TM-245</u>	<u>TM-268</u>	TM-252	TM-267	TM-249	TM-270	<u>TM-269</u>	<u>TM-248</u>	TM-216	<u>TM-215</u>	F
		Vehicle cannot run in all position.	3								2			1	1	1	1	1	1	1	1	1			G
		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			Η
	Power transmis- sion cannot be	Engine stall		4		5	5			6			3		2								1		
	performed	Engine stalls when selector lever shifted "N" \rightarrow "D" or "R".		4		5	5				3				2								1		
		Engine does not start in "N" or "P" position.	3							1	2												1		J
Function trouble		Engine starts in position other than "N" or "P".	3								2												1		K
		Vehicle does not enter parking condition.	1								2														
		Parking condition is not cancelled.	1								2														L
		Vehicle runs with A/T in "P" position.	1								2														в. Л
	Poor operation	Vehicle moves forward with the "R" position.	1								2														Μ
		Vehicle runs with A/T in "N" position.	1								2														Ν
		Vehicle moves backward with the "D" position.	1								2														0

SYMPTOM TABLE 2

Ρ

< SYMPTOM DIAGNOSIS >

										Diag	nosti	c iten	n					
		S	Symptom		Oil pump	Torque converter	Low brake*	Front brake	High and low reverse clutch	Input clutch	Direct clutch	2346 brake	Reverse brake	1st one-way clutch	2nd one-way clutch	gear	control valve	Parking component
					TM-401	<u>TM-354</u>	<u>TM-354</u>	<u>TM-354</u>	<u>TM-423</u>	<u>TM-413</u>	<u>TM-425</u>	TM-401	<u>TM-354</u>	<u>TM-354</u>	<u>TM-418</u>	TM-354	TM-330	TM-335
		Shift po	oint is high	in "D" position.														
		Shift po	pint is low	in "D" position.														
				\rightarrow "D" position	1		2										2	
				\rightarrow "R" position	1								1				2	
				1GR ⇔ 2GR								1					2	
				2GR ⇔ 3GR							1						2	
				3GR ⇔ 4GR			2		1								2	
	Driving perfor-		When	4GR ⇔ 5GR						1		1					2	
	mance	Large shock	shift- ing	5GR ⇔ 6GR							1	1					2	
Poor perfor-			gears	6GR ⇔ 7GR				1				1					2	
mance				Downshift when accel- erator pedal is de- pressed			2	1	1	1	1	1		1	1		2	
				Upshift when accelera- tor pedal is released			2	1	1	1	1	1		1	1		2	
				Lock-up		1											2	
		Judder		Lock-up		1											2	
				In "R" position	1	1							1			1	2	
	Strange	noise		In "N" position	1	1										1	2	
	Scange	10156		In "D" position	1	1	1									1	2	
_				Engine at idle	1	1										1	2	

*: Parts behind drum support is impossible to perform inspection by disassembly. Refer to TM-177, "Cross-Sectional View".

< SYMPTOM DIAGNOSIS >

[7AT: RE7R01A]

									Diag	nosti	c iterr	۱						A
		Sympto	ım	Oil pump	Torque converter	Low brake*	Front brake	High and low reverse clutch	Input clutch	Direct clutch	2346 brake	Reverse brake	1st one-way clutch	2nd one-way clutch	gear	control valve	Parking component	B C
				TM-401	TM-354	TM-354	<u>TM-354</u>	<u>TM-423</u>	TM-413	<u>TM-425</u>	<u>TM-401</u>	TM-354	TM-354	<u>TM-418</u>	<u>TM-354</u>	<u>TM-330</u>	<u>TM-335</u>	
			Locks in 1GR				1		1		1					2		
			Locks in 2GR													1		-
			Locks in 3GR													1		F
			Locks in 4GR													1		-
			Locks in 5GR													1		G
			Locks in 6GR													1		G
			Locks in 7GR													1		-
			$1 \text{GR} \rightarrow 2 \text{GR}$				1		1		1					2		Н
		"D" posi-	$2GR \rightarrow 3GR$							1						2		-
		tion	$3\text{GR} \rightarrow 4\text{GR}$			2	1	1	1							2		
			$4\text{GR} \rightarrow 5\text{GR}$							1	1					2		
Func- tion	Gear does no		$5 \text{GR} \rightarrow 6 \text{GR}$							1						2		-
trouble	change		$6\text{GR} \rightarrow 7\text{GR}$			2	1	1	1							2		J
			$5\text{GR} \rightarrow 4\text{GR}$						1							2		
			$4GR \rightarrow 3GR$			2		1								2		
			$3\text{GR} \rightarrow 2\text{GR}$							1				1		2		K
			$2\text{GR} \rightarrow 1\text{GR}$							1	1		1			2		
			Does not lock-up		1	2	1	1	1	1	1		1	1		2		L
			1GR ⇔ 2GR			2	1	1	1	1	1		1	1		2		
			2GR ⇔ 3GR			2	1	1	1	1	1		1	1		2		_
		"M" posi-	3GR ⇔ 4GR			2	1	1	1	1	1		1	1		2		M
		tion	4GR ⇔ 5GR			2	1	1	1	1	1		1	1		2		-
			5GR ⇔ 6GR			2	1	1	1	1	1		1	1		2		- N
			6GR ⇔ 7GR			2	1	1	1	1	1		1	1		2		

*: Parts behind drum support is impossible to perform inspection by disassembly. Refer to <u>TM-177, "Cross-Sectional View"</u>.

0

Ρ

< SYMPTOM DIAGNOSIS >

										D	iagno	ostic it	em					
			Symptom		Oil pump	Torque converter	Low brake*	Front brake	High and low reverse clutch	Input clutch	Direct clutch	2346 brake	Reverse brake	1st one-way clutch	2nd one-way clutch	gear	control valve	Parking component
	Slip				TM-401	TM-354	TM-354	TM-354	TM-423	<u>TM-413</u>	TM-425	TM-401	TM-354	TM-354	<u>TM-418</u>	TM-354	TM-330	TM-335
				1GR ⇔ 2GR	1							1		1			2	
				2GR ⇔ 3GR	1						1						2	
		Slip	When shifting	3GR ⇔ 4GR	1		2		1								2	
		Onp	gears	4GR ⇔ 5GR	1					1		1					2	
				5GR ⇔ 6GR	1						1	1					2	
Func-	Poor			6GR ⇔ 7GR	1			1				1					2	
tion	shift-		"D" position	\rightarrow "M" position	1			1	1					1	1		2	
trouble	ing	F -2		$7\text{GR} \rightarrow 6\text{GR}$	1			1				1					2	
		En- gine		$6GR \rightarrow 5GR$	1						1	1					2	
		brake	"M" posi-	$5\text{GR} \rightarrow 4\text{GR}$	1					1		1					2	
		does not	tion	$4GR \rightarrow 3GR$	1		2		1								2	
		work		$3GR \rightarrow 2GR$	1				1		1			1	1		2	
				$2\text{GR} \rightarrow 1\text{GR}$	1			1				1		1			2	

< SYMPTOM DIAGNOSIS >

[7AT: RE7R01A]

									C	iagno	ostic i	tem						А
		Symptom		Oil pump	Torque converter	Low brake*	Front brake	High and low reverse clutch	Input clutch	Direct clutch	2346 brake	Reverse brake	1st one-way clutch	2nd one-way clutch	gear	control valve	Parking component	B
				TM-401	TM-354	TM-354	TM-354	<u>TM-423</u>	TM-413	<u>TM-425</u>	TM-401	TM-354	<u>TM-354</u>	<u>TM-418</u>	TM-354	TM-330	TM-335	ТМ
			With selector lever in "D" position, ac- celeration is ex- tremely poor.	1	1	2							1		1	2		E
			With selector lever in "R" position, ac- celeration is ex- tremely poor.	1	1							1	1	1	1	2		G
			While starting off by accelerating in 1GR, engine rac- es.	1	1	2							1	1	1	2		Н
			While accelerat- ing in 2GR, engine races.	1		2					1			1	1	2		
Func- tion	Poor pow- er trans-	Slip	While accelerat- ing in 3GR, engine races.	1		2				1	1				1	2		J
trouble	mis- sion		While accelerat- ing in 4GR, engine races.	1				1		1	1				1	2		K
			While accelerat- ing in 5GR, engine races.	1				1	1	1					1	2		L
			While accelerat- ing in 6GR, engine races.	1				1	1		1				1	2		M
			While accelerat- ing in 7GR, engine races.	1			1	1	1							2		
			Lock-up	1	1										1	2		Ν
			No creep at all. Extremely large creep.	1	1	2	1	1	1	1	1		1	1	1	2	1	0

*: Parts behind drum support is impossible to perform inspection by disassembly. Refer to TM-177, "Cross-Sectional View".

Ρ

< SYMPTOM DIAGNOSIS >

			Diagnostic item													
Symptom			Oil pump	Torque converter	Low brake*	Front brake	High and low reverse clutch	Input clutch	Direct clutch	2346 brake	Reverse brake	gear	1st one-way clutch	2nd one-way clutch	control valve	Parking component
			TM-401	TM-354	TM-354	<u>TM-354</u>	TM-423	TM-413	<u>TM-425</u>	TM-401	<u>TM-354</u>	<u>TM-354</u>	<u>TM-418</u>	TM-354	TM-330	TM-335
Function trouble	Power trans- mission cannot be performed	Vehicle cannot run in all position.	1	1	2	1	1	1	1	1				1	2	1
		Driving is not possible in "D" posi- tion.	1	1	2	1	1	1	1	1		1	1	1	2	1
		Driving is not possible in "R" position.	1								1	1	1	1	2	1
		Engine stall		1												
		Engine stalls when selector lever shifted "N" \rightarrow "D" or "R".		1												
		Engine does not start in "N" or "P" position.		1												
		Engine starts in position other than "N" or "P".														
	Poor operation	Vehicle does not enter parking condition.														1
		Parking condition is not can- celled.														1
		Vehicle runs with A/T in "P" position.			2	1	1	1	1	1	1				2	1
		Vehicle moves forward with the "R" position.			2	1	1	1	1	1					2	
		Vehicle runs with A/T in "N" position.			2	1	1	1	1	1	1				2	
		Vehicle moves backward with the "D" position.									1				2	

*: Parts behind drum support is impossible to perform inspection by disassembly. Refer to TM-177, "Cross-Sectional View".

< PRECAUTION > PRECAUTION PRECAUTIONS FOR USA AND CANADA

FOR USA AND CANADA : Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER" INFOID:000000011738355

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 ΤM 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:

Always observe the following items for preventing accidental activation.

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision that 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 "SRS AIR BAG".
- Never 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 Н connectors.

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

WARNING:

Always observe the following items for preventing accidental activation.

- When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the ignition ON or engine running, never 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 iniury.
- When using air or electric power tools or hammers, always switch the ignition OFF, disconnect the Κ 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 : On Board Diagnostic (OBD) System of Engine and A/T

INFOID:0000000011738357 Ν

INFOID:000000011738356

L

Μ

Ρ

The ECM has an on board diagnostic system. It will light up the malfunction indicator lamp (MIL) to warn the driver of a malfunction causing emission deterioration.

- CAUTION:
- Be sure to turn the ignition switch OFF and disconnect the negative battery cable before any repair or inspection work. The open/short circuit of related switches, sensors, solenoid valves, etc. will cause the MIL to light up.
- Be sure to connect and lock the connectors securely after work. A loose (unlocked) connector will cause the MIL to light up due to the open circuit. (Be sure the connector is free from water, grease, dirt, bent terminals, etc.)
- Certain systems and components, especially those related to OBD, may use a new style slide-locking type harness connector. For description and how to disconnect, refer to PG-93, "Description".
- Be sure to route and secure the harnesses properly after work. The interference of the harness with a bracket, etc. may cause the MIL to light up due to the short circuit.

TM-309

А

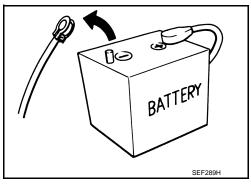
Е

< PRECAUTION >

- Be sure to connect rubber tubes properly after work. A misconnected or disconnected rubber tube may cause the MIL to light up due to the malfunction of the EVAP system or fuel injection system, etc.
- Be sure to erase the unnecessary malfunction information (repairs completed) from the ECM and TCM (Transmission control module) before returning the vehicle to the customer.

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.



SERVICE

- 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 <u>MA-16, "FOR</u> <u>NORTH AMERICA : Fluids and Lubricants"</u>.
- 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 <u>TM-</u> <u>310, "FOR USA AND CANADA : Service Notice or Precaution"</u>.
- 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-317, "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

tor 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

INFOID:000000011738359

ATF COOLER SERVICE

INFOID:0000000011738358

SEF217U

Revision: 2015 June

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-320, "Cleaning". For radiator replacement, refer to CO-17, "Exploded View".

FOR USA AND CANADA : Precaution for Procedure without Cowl Top Cover

INFOID:000000011738360

PIIB3706J

INFOID:0000000011738361

When performing the procedure after removing cowl top cover, cover the lower end of windshield with urethane, etc to prevent damage to windshield.

FOR USA AND CANADA : Precautions for Removing Battery Terminal

When removing the 12V battery terminal, turn OFF the ignition switch and wait at least 30 seconds.

NOTE:

< PRECAUTION >

ECU may be active for several tens of seconds after the ignition switch is turned OFF. If the battery terminal is removed before ECU stops, then a DTC detection error or ECU data corruption may occur.

 For vehicles with the 2-batteries, be sure to connect the main battery and the sub battery before turning ON the ignition switch. NOTE:

If the ignition switch is turned ON with any one of the terminals of main battery and sub battery disconnected, then DTC may be detected.

After installing the 12V battery, always check "Self Diagnosis Result" of all ECUs and erase DTC. NOTE:

The removal of 12V battery may cause a DTC detection error.

FOR MEXICO

FOR MEXICO : Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER" INFOID:000000011738362

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.

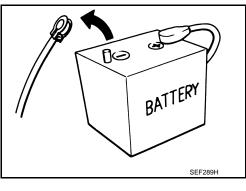
WARNING:

Always observe the following items for preventing accidental activation.

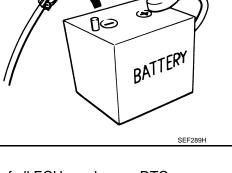
- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision that would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.
- Improper maintenance, including incorrect removal and installation 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 "SRS AIR BAG".
- Never 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.

TM-311

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



 $\langle \mathcal{A} \rangle$



ТΜ

F

А

В

Κ

L

Μ

Н

Ν

2016 370Z

< PRECAUTION >

[7AT: RE7R01A]

Always observe the following items for preventing accidental activation.

- When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the ignition ON or engine running, never 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 iniurv.
- 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

INFOID:000000011738363

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

INFOID:000000011738364

INFOID:000000011738365

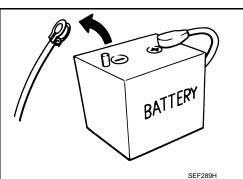
The ECM has an on board diagnostic system. It will light up the malfunction indicator lamp (MIL) to warn the driver of a malfunction causing emission deterioration.

CAUTION:

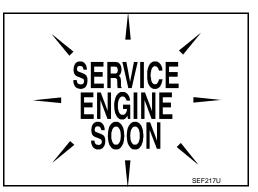
- Be sure to turn the ignition switch OFF and disconnect the negative battery cable before any repair or inspection work. The open/short circuit of related switches, sensors, solenoid valves, etc. will cause the MIL to light up.
- Be sure to connect and lock the connectors securely after work. A loose (unlocked) connector will cause the MIL to light up due to the open circuit. (Be sure the connector is free from water, grease, dirt, bent terminals, etc.)
- Certain systems and components, especially those related to OBD, may use a new style slide-locking type harness connector. For description and how to disconnect, refer to PG-93, "Description".
- Be sure to route and secure the harnesses properly after work. The interference of the harness with a bracket, etc. may cause the MIL to light up due to the short circuit.
- Be sure to connect rubber tubes properly after work. A misconnected or disconnected rubber tube may cause the MIL to light up due to the malfunction of the EVAP system or fuel injection system, etc.
- Be sure to erase the unnecessary malfunction information (repairs completed) from the ECM and TCM (Transmission control module) before returning the vehicle to the customer.

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.



- 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-18, "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.



< PRECAUTION >

А

В

Е

F

Н

- 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 <u>TM-313</u>, "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-317, "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

ATF COOLER SERVICE

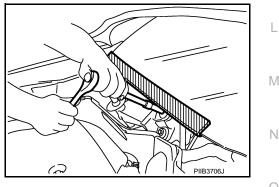
If ATF contains frictional material (clutches, bands, etc.), or if an A/T is repaired, overhauled, or replaced, inspect and clean the A/T fluid cooler mounted in the radiator or replace the radiator. Flush cooler lines using cleaning solvent and compressed air after repair. For A/T fluid cooler cleaning procedure, refer to <u>TM-320</u>, <u>"Cleaning"</u>. For radiator replacement, refer to <u>CO-17</u>, "<u>Exploded View</u>".

FOR MEXICO : Precaution for Procedure without Cowl Top Cover

INFOID:000000011738367

INFOID:000000011738366

When performing the procedure after removing cowl top cover, cover the lower end of windshield with urethane, etc to prevent damage to windshield.



< PRECAUTION >

FOR MEXICO : Precautions for Removing Battery Terminal

INFOID:000000011738368

[7AT: RE7R01A]

• When removing the 12V battery terminal, turn OFF the ignition switch and wait at least 30 seconds.

NOTE:

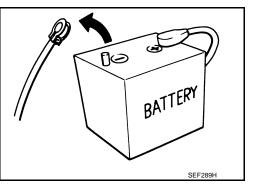
ECU may be active for several tens of seconds after the ignition switch is turned OFF. If the battery terminal is removed before ECU stops, then a DTC detection error or ECU data corruption may occur.

• For vehicles with the 2-batteries, be sure to connect the main battery and the sub battery before turning ON the ignition switch. **NOTE:**

If the ignition switch is turned ON with any one of the terminals of main battery and sub battery disconnected, then DTC may be detected.

 After installing the 12V battery, always check "Self Diagnosis Result" of all ECUs and erase DTC. NOTE:

The removal of 12V battery may cause a DTC detection error.



PREPARATION

< PREPARATION > PREPARATION

PREPARATION

Special Service Tool

А

В

(TechMate No.) Tool name		Description
ST33400001 (J-26082) Drift a: 60 mm (2.36 in) dia. b: 47 mm (1.85 in) dia.	ab	 Installing rear oil seal Installing oil pump housing oil seal
KV31102400 (J-34285 and J-34285-87) Clutch spring compressor a: 320 mm (12.60 in) b: 174 mm (6.85 in)	NTOR6	 Installing reverse brake return spring retainer Removing and installing 2346 brake spring retainer er
KV31103800 Clutch spring compressor 1. M12×1.75P		Removing and installing front brake spring retainer
ST25850000 (J-25721-A) Sliding hammer a: 179 mm (7.05 in) b: 70 mm (2.76 in) c: 40 mm (1.57 in) d: M12X1.75P		Remove oil pump assembly

0

[7AT: RE7R01A]

INFOID:000000011738369

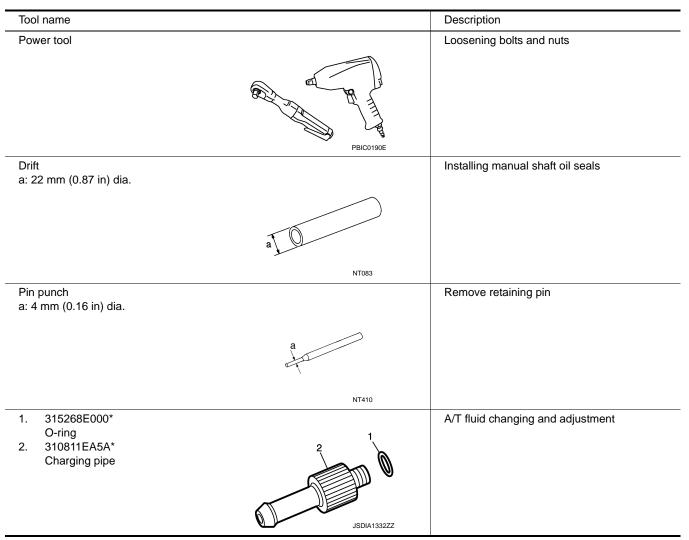
PREPARATION

< PREPARATION >

Commercial Service Tool

INFOID:000000011738370

[7AT: RE7R01A]



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

PERIODIC MAINTENANCE A/T FLUID

Recommended fluid and fluid capacity

Inspection

Changing

CAUTION:

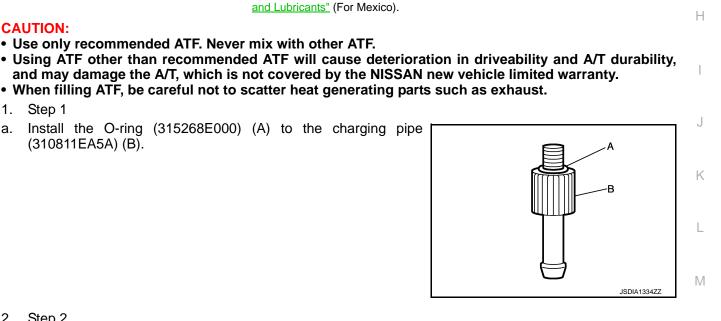
Step 1

1.

a.

FLUID LEAKAGE

- · Check transmission surrounding area (oil seal and plug etc.) for fluid leakage.
- If anything is found, repair or replace damaged parts and adjust A/ T fluid level. Refer to TM-319, "Adjustment".



: Refer to MA-16, "FOR NORTH AMERICA : Fluids and Lubricants" (For North America), MA-18, "FOR MEXICO : Fluids

- 2. Step 2 Ν a. Use CONSULT to check that the ATF temperature is 40°C (104°F) or less. b. Lift up the vehicle. Remove the drain plug from the oil pan, and then drain the ATF. C. When the ATF starts to drip, temporarily tighten the drain plug to the oil pan. d. NOTE: Never replace drain plug and drain plug gasket with new ones yet. Ρ
- Remove overflow plug from oil pan. e.

TM-317

2016 370Z

А

ТΜ

INFOID:0000000011738371 В

JSDIA1912ZZ

INFOID:000000011738372

A/T FLUID

< PERIODIC MAINTENANCE >

- 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

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.
- i. 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
- a. Use CONSULT 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-330</u>, <u>"Exploded View"</u>.

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.
- i. Remove the bucket pump hose to remove the charging pipe, and then temporarily tighten the overflow plug to the oil pan. CAUTION:

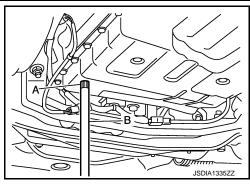
Quickly perform the procedure to avoid ATF leakage from the oil pan.

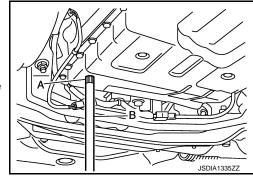
- j. Lift down the vehicle.
- k. Start the engine.
- I. Make the ATF temperature approximately 40°C (104°F). NOTE:

The ATF level is greatly affected by the temperature. Always check the ATF temperature on "ATF TEMP 1" of "Data Monitor" using CONSULT.

- 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 <u>TM-330, "Exploded View"</u>. CAUTION:

Never reuse overflow plug.





[7AT: RE7R01A]

A/T FLUID

< PERIODIC MAINTENANCE >

Adjustment

Recommended fluid and fluid capacity : Refer to MA-16, "FOR NORTH AMERICA : Fluids and Lubricants" (For North America), MA-18, "FOR MEXICO : Fluids and Lubricants" (For Mexico).

CAUTION:

- Use only recommended ATF. Never mix with other ATF.
- Using ATF other than recommended 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 ТΜ with CONSULT when the ATF level adjustment is performed.
- 1. Install the O-ring (315268E000) (A) to the charging pipe (310811EA5A) (B).
- 2. Start the engine.
- 3. Make the ATF temperature approximately 40°C (104°F). NOTE:

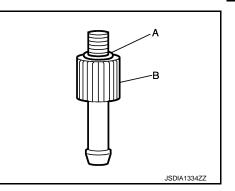
The ATF level is greatly affected by the temperature. Always check the ATF temperature on "ATF TEMP 1" of "Data Monitor" using CONSULT.

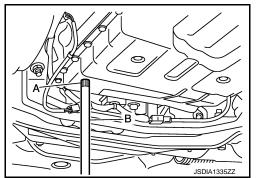
- 4. Park vehicle on level surface and set parking brake.
- 5. Shift the selector lever through each gear position. Leave selector lever in "P" position.
- Lift up the vehicle.
- 7. Check the ATF leakage from transmission.
- Remove overflow plug from oil pan.
- 9. Install the charging pipe (A) to the 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 Imp 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-330, "Exploded View". CAUTION:

Never reuse overflow plug.





INFOID:000000011738373

В

А

Ε

F

Н

Κ

L

M

Ν

Ρ

< PERIODIC MAINTENANCE >

A/T FLUID COOLER

Cleaning

INFOID:0000000011738374

[7AT: RE7R01A]

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.

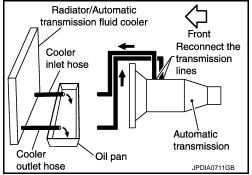
Debris, if present, may build up as ATF enters the cooler inlet. It will be necessary to back flush the cooler through the cooler outlet in order to flush out any built up debris.

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.
- 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.

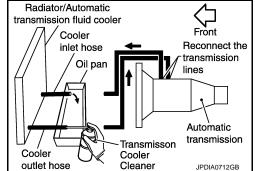
4. Allow any ATF that remains in the cooler hoses to drain into the oil pan.

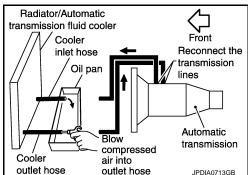


 Insert the extension adapter hose of a can of Transmission Cooler Cleaner (Nissan P/N 999MP-AM006) into the cooler outlet hose.

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.
- 8. Wrap a shop rag around the air gun tip and of the cooler outlet hose.
- 9. Blow compressed air regulated to 5 to 9 kg/cm² (71 to 128 psi) through the cooler outlet hose for 10 seconds to force out any remaining ATF.
- 10. Repeat steps 5 through 9 three additional times.
- 11. Position an oil pan under the banjo bolts that connect the A/T fluid cooler steel lines to the A/T.
- 12. Remove the banjo bolts.
- 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".





TM-320

А

В

ТΜ

F

Н

Κ

L

M

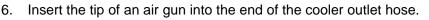
< PERIODIC MAINTENANCE >

DIAGNOSIS PROCEDURE

NOTE:

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

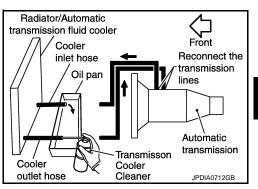
- 1. Position an oil pan under the A/T inlet and outlet cooler hoses.
- 2. Clean the exterior and tip of the cooler inlet hose.
- Insert the extension adapter hose of a can of Transmission Cooler Cleaner (Nissan P/N 999MP-AM006) into the cooler outlet hose.
 - Wear safety glasses an
 - Wear safety glasses 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.

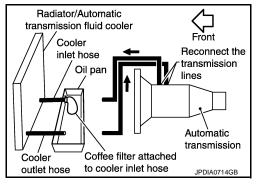


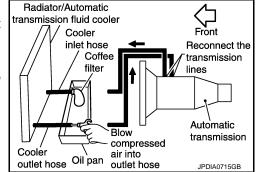
- 7. Wrap a shop rag around the air gun tip and end of cooler outlet hose.
- 8. Blow compressed air regulated to 5 to 9 kg/cm² (71 to 128 psi) through the cooler outlet hose to force any remaining ATF into the coffee filter.
- 9. Remove the coffee filter from the end of the cooler inlet hose.
- 10. Perform "INSPECTION PROCEDURE".

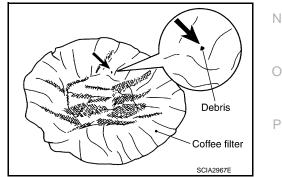
INSPECTION PROCEDURE

- 1. 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.





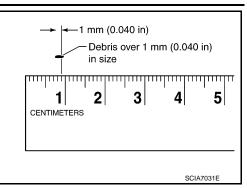




A/T FLUID COOLER

< PERIODIC MAINTENANCE >

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 <u>CO-17</u>, "<u>Exploded View</u>".



Inspection

INFOID:000000011738375

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

STALL TEST

[7AT: RE7R01A]

STALL T	E91							
nspection	and Judg	ment		INFOID:000000011738376				
NSPECTIC	N							
. Inspect t	he amount o	f enaine oil.	. Replenish the engine oil if necessa	arv.				
2. Drive for	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.							
B. Securely	engage the	parking bra	ake so that the tires do not turn.					
I. Start the	Start the engine, apply foot brake, and place selector lever in "D" position.							
5. Graduall								
CAUTIO	N:	-	and then quickly release the accele					
Never h	old down th	e accelerat	tor pedal for more than 5 seconds	s auring this test.				
Stall	speed : Re	efer to <u>TM-4</u>	428, "Stall Speed".					
7. Shift the	selector leve	lever to "N" position.						
	vn the ATF.							
CAUTIO		lla fan at la	and A main sta					
Run the	engine at id		east 1 minute.					
Run the	engine at ic steps 5 throug	gh 8 with se	east 1 minute. elector lever in "R" position.					
Run the	engine at id	gh 8 with se						
Run the	engine at ic steps 5 throug	gh 8 with se . TEST	elector lever in "R" position.					
Run the	engine at ic steps 5 throu Γ OF STALL	gh 8 with se . TEST	elector lever in "R" position.	tion of malfunction				
Run the	engine at ic steps 5 throug Γ OF STALL Selector lev	gh 8 with se . TEST ver position	elector lever in "R" position.	tion of malfunction				
Run the	engine at ic steps 5 throug F OF STALL Selector lev "D" and "M"	gh 8 with se . TEST /er position "R"	elector lever in "R" position. Possible loca Low brake 1st one-way clutch	tion of malfunction				
Run the P. Repeat s UDGMEN	engine at ic steps 5 throug F OF STALL Selector lev "D" and "M" H	gh 8 with se TEST /er position "R" O	 elector lever in "R" position. Possible loca Low brake 1st one-way clutch 2nd one-way clutch Reverse brake 1st one-way clutch 					
Run the P. Repeat s UDGMEN	engine at ic steps 5 throug FOF STALL Selector lev "D" and "M" H O	gh 8 with se . TEST /er position "R" O H	 elector lever in "R" position. Possible loca Low brake 1st one-way clutch 2nd one-way clutch Reverse brake 1st one-way clutch 2nd one-way clutch 2nd one-way clutch 					
Run the Repeat s UDGMEN Stall speed	engine at ic steps 5 throug F OF STALL Selector lev "D" and "M" H O L	gh 8 with se . TEST /er position "R" O H L H	 elector lever in "R" position. Possible loca Low brake 1st one-way clutch 2nd one-way clutch Reverse brake 1st one-way clutch 2nd one-way clutch 2nd one-way clutch Engine and torque converter one-way clutch 					
Run the D. Repeat s UDGMEN Stall speed	engine at ic steps 5 throug FOF STALL Selector lev "D" and "M" H H O L H	gh 8 with se . TEST /er position "R" O H L H alue position	 elector lever in "R" position. Possible loca Low brake 1st one-way clutch 2nd one-way clutch Reverse brake 1st one-way clutch 2nd one-way clutch 2nd one-way clutch Engine and torque converter one-way clutch 					
Run the P. Repeat s UDGMEN Stall speed D: Stall speed w 1: Stall speed h	engine at id steps 5 throug FOF STALL Selector lev "D" and "M" H O L H	gh 8 with se TEST /er position "R" O H L L H alue position dard value	 elector lever in "R" position. Possible loca Low brake 1st one-way clutch 2nd one-way clutch Reverse brake 1st one-way clutch 2nd one-way clutch 2nd one-way clutch Engine and torque converter one-way clutch 					
Run the P. Repeat s UDGMEN Stall speed D: Stall speed w 1: Stall speed h	engine at ic steps 5 throug FOF STALL Selector lev "D" and "M" H O L L H vithin standard v igher than standard	gh 8 with se TEST /er position "R" O H L L H alue position dard value	 elector lever in "R" position. Possible loca Low brake 1st one-way clutch 2nd one-way clutch Reverse brake 1st one-way clutch 2nd one-way clutch 2nd one-way clutch Engine and torque converter one-way clutch 					
Run the D. Repeat so UDGMENT Stall speed D: Stall speed with t: Stall speed hit Stall	engine at ic steps 5 throug FOF STALL Selector lev "D" and "M" H O L L H vithin standard v igher than standard	gh 8 with set TEST /er position "R" O H L H alue position dard value ard value	 elector lever in "R" position. Possible loca Low brake 1st one-way clutch 2nd one-way clutch Reverse brake 1st one-way clutch 2nd one-way clutch 2nd one-way clutch Engine and torque converter one-way clutch 					
Run the Repeat s UDGMENT Stall speed Stall speed w Stall speed w Stall speed h Stall speed h Stall speed h	engine at ic steps 5 throug FOF STALL Selector lev "D" and "M" H O L L H vithin standard v igher than standard wer than standard	gh 8 with set TEST ver position "R" O H L H value position dard value ard value value 1 \rightarrow 2	elector lever in "R" position. Possible loca • Low brake • 1st one-way clutch • 2nd one-way clutch • Reverse brake • 1st one-way clutch • 2nd one-way clutch • 2nd one-way clutch • Engine and torque converter one-way of • Line pressure low	clutch				

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

Ρ

Ο

< PERIODIC MAINTENANCE >

< PERIODIC MAINTENANCE >

A/T POSITION

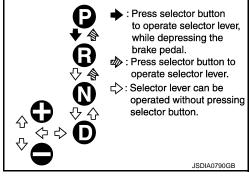
Inspection and Adjustment

INFOID:0000000011738377

[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.
- 3. 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.

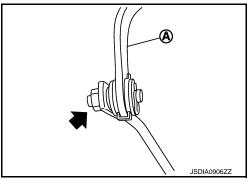
In addition, a set shift position must be changed when the selector lever is shifted to the "+" or "-" side in the manual mode. (Only while driving.)

ADJUSTMENT

- 1. 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-325</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).

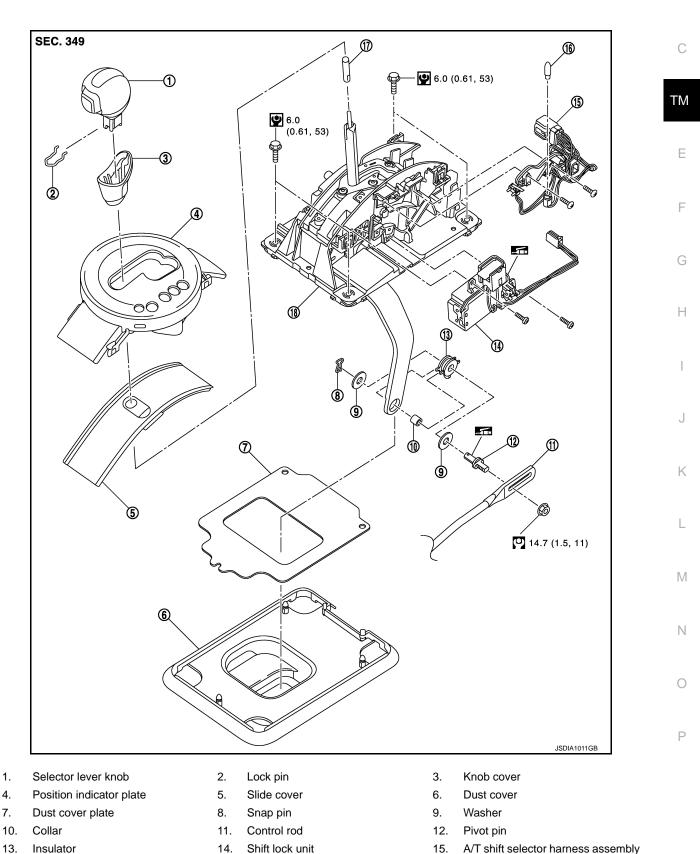


< REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION A/T SHIFT SELECTOR

Exploded View

INFOID:000000011738378

А



Revision: 2015 June

TM-325

A/T SHIFT SELECTOR

< REMOVAL AND INSTALLATION >

[7AT: RE7R01A]

16. Position lamp

: Apply multi-purpose grease. Refer to GI-4, "Components" for symbols not described on the above.

17.

Adapter

Removal and Installation

REMOVAL

- 1. Shift the selector lever to "P" position.
- Remove the control rod from the A/T shift selector assembly. 2.
- 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. 6.
- 7. Remove the center console assembly. Refer to IP-25, "Exploded View".
- 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.

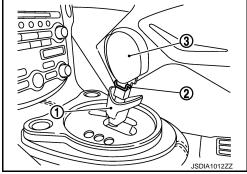
- 1. Install the lock pin to the selector lever knob.
- Install the knob cover to the selector lever knob. 2.
- Insert the shift lever knob into the shift lever until it clicks. 3.
 - **CAUTION:**
 - Install it straight, and never tap or apply any shock to install it.
 - Never press selector button.

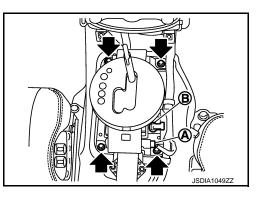
Disassembly and Assembly

DISASSEMBLY

- Remove the position lamp.
- 2. Remove the adapter from the A/T shift selector assembly.

INFOID:000000011738379





INFOID:000000011738380

A/T SHIFT SELECTOR

ᠿ

< REMOVAL AND INSTALLATION >

 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.
- 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:

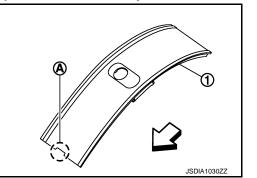
Be careful not to break the pawl when remove the mode select switch (C) from the A/T shift selector assembly.

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



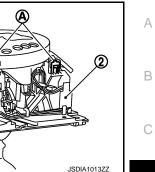
Inspection and Adjustment

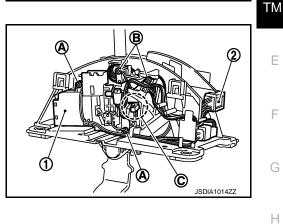
INSPECTION AFTER INSTALLATION

Check A/T position. Refer to TM-324, "Inspection and Adjustment".

ADJUSTMENT AFTER INSTALLATION Adjust A/T position. Refer to <u>TM-324</u>, "Inspection and Adjustment".







INFOID:000000011738381

Κ

Μ

Ν

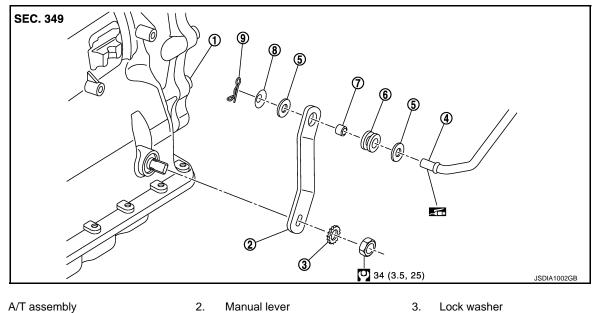
Ρ

CONTROL ROD

Exploded View

INFOID:000000011738382

[7AT: RE7R01A]



1. 4.

Collar

- Control rod
- 5. Washer
- 8. Conical washer

- 6. Insulator
- 9. Snap pin

: Apply multi-purpose grease.

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

Removal and Installation

REMOVAL

7.

- 1. Shift the selector lever to "P" position.
- 2. Remove the control rod from the A/T shift selector assembly. Refer to TM-325, "Exploded View".
- 3. Remove the manual lever from the A/T assembly.
- 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

INSPECTION AFTER INSTALLATION Check A/T position. Refer to TM-324, "Inspection and Adjustment".

ADJUSTMENT AFTER INSTALLATION Adjust A/T position. Refer to TM-324, "Inspection and Adjustment". INFOID:0000000011738384

INFOID:0000000011738383

PADDLE SHIFTER

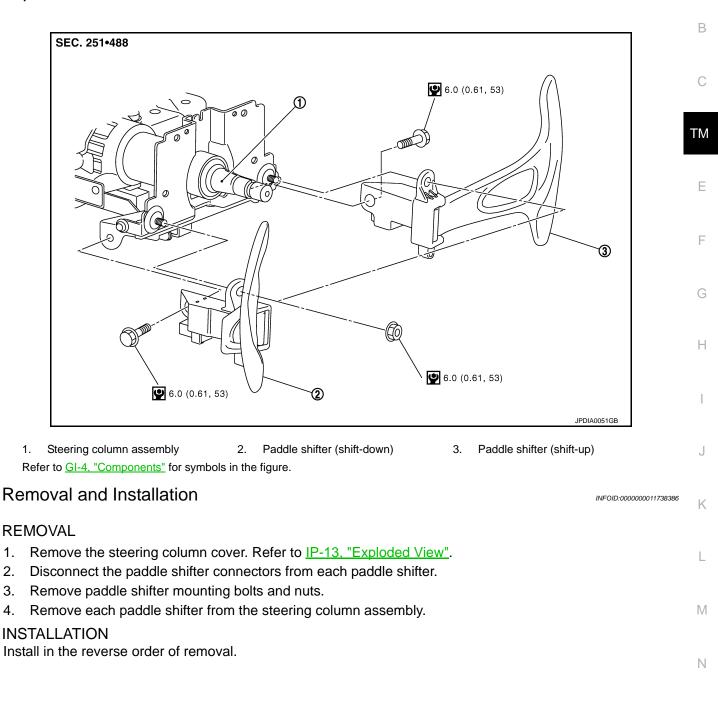
< REMOVAL AND INSTALLATION > PADDLE SHIFTER

Exploded View

[7AT: RE7R01A]

INFOID:000000011738385

А



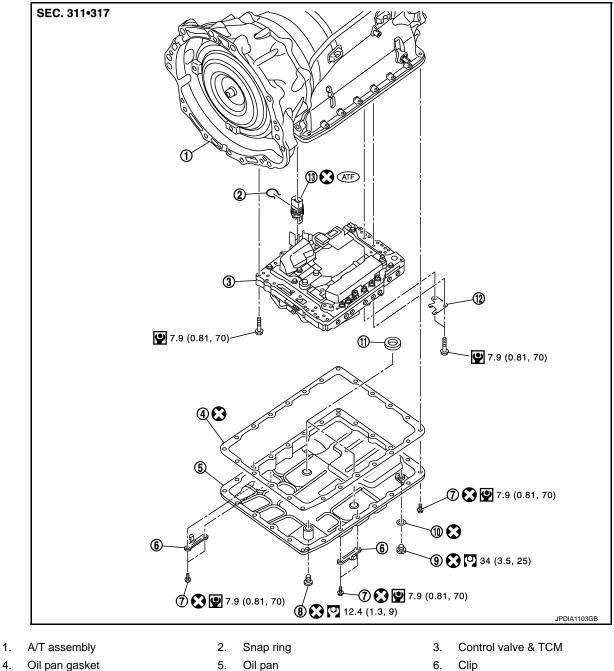
2.

3. 4.

CONTROL VALVE & TCM

Exploded View

INFOID:000000011738387



- 7. Oil pan mounting bolt
- 10. Drain plug gasket
- 13. Joint connector

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

Removal and Installation

INFOID:000000011738388

REMOVAL

4.

- Drain ATF through drain plug. 1.
- 2. Remove exhaust mounting bracket with power tool. Refer to EX-5, "Exploded View".

TM-330

9.

12. Clip

Drain plug

Oil pan 8. Overflow plug

11. Magnet

CONTROL VALVE & TCM

< REMOVAL AND INSTALLATION >

Disconnect heated oxygen sensor 2 connectors (A). 3.

\triangleleft : Vehicle front

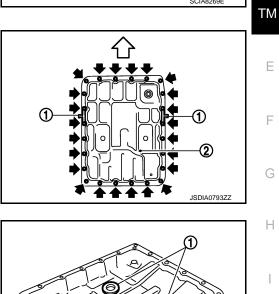
- : Bolt
- Remove heated oxygen sensor 2 harness (B) from clips (1). 4.
- Remove bracket (2) from A/T assembly. Refer to TM-351, 5. "Exploded View".
- \cap SCIA826

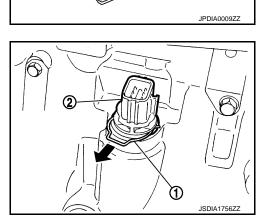
- Remove clips (1). 6.
 - \triangleleft : Vehicle front
 - : Oil pan mounting bolt
- 7. Remove oil pan (2) and oil pan gasket.
- Remove magnets (1) from oil pan. 8.

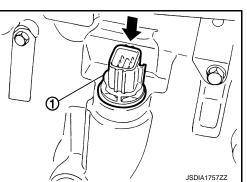
Remove snap ring (1) from joint connector (2). 9.

10. Push joint connector (1).









[7AT: RE7R01A]

А

В

С

Ε

F

Н

J

Κ

L

Μ

Ν

Ο

Ρ

CONTROL VALVE & TCM

< REMOVAL AND INSTALLATION >

- Disconnect output speed sensor connector (A). **CAUTION:** Be careful not to damage connector.
- 12. Disengage terminal clip (



INSTALLATION

CAUTION:

CAUTION:

- Be careful not to damage connector when installing any connector.
- Never reuse joint connector.

a flat-bladed screwdriver (B). 16. Disconnect TCM harness connector.

Be careful not to damage connector.

- Apply ATF to O-ring of joint connector.
- 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.
- Refer to the following when installing the control valve & TCM to transmission case.

13. Remove bolts and clip (1) from the control valve & TCM.

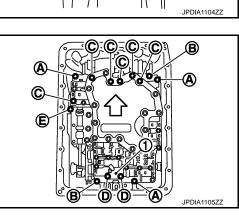
Bolt symbol	Length mm (in)	Number of bolts
А	43 (1.69)	3
В	40 (1.57)	2
С	54 (2.13)	6
D	50 (1.97)	2
E*	50 (1.97)	1

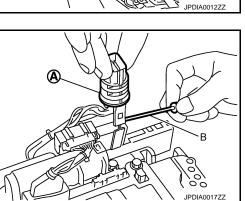
*: Reamer bolt

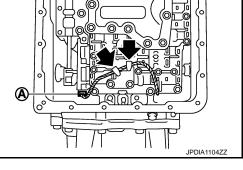
14. Remove the control valve & TCM from transmission case. CAUTION:

When removing, be careful with the manual valve (1) notch and manual plate (2) height. Remove it vertically.

15. Remove joint connector (A) from the control valve & TCM using









ᠿ

[7AT: RE7R01A]

[7AT: RE7R01A]

А

В

ТΜ

F

Н

Κ

L

Μ

JPDIA1106ZZ

ന

CAUTION:

- Make sure that input speed sensor securely installs input speed sensor holes (A).
- Hang down output speed sensor harness toward outside so as not to disturb installation of the control valve & TCM.
- Adjust joint connector of the control valve & TCM to terminal hole of transmission case.
- Assemble it so that manual valve (1) cutout is engaged with manual plate (2) projection.

- Install bolts and clip (1) to the control valve & TCM. Tighten bolt (E) to the specified torque before tightening the other than bolts.

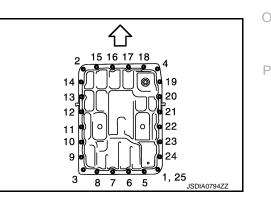
Bolt symbol	Length mm (in)	Number of bolts
A	43 (1.69)	3
В	40 (1.57)	2
С	54 (2.13)	6
D	50 (1.97)	2
E*	50 (1.97)	1

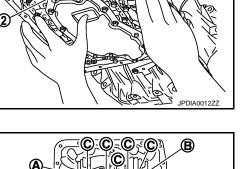
*: Reamer bolt

- Refer to the following when installing oil pan to transmission case. 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 $$_{\rm N}$$ 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.
- Tighten the oil pan mounting bolts to the specified torque in the numerical order as shown in the figure after temporarily tightening them.

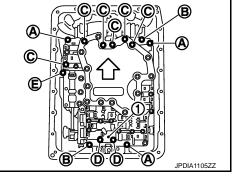
C : Vehicle front

Fill ATF after installation. Refer to <u>TM-317</u>, "Changing"





հ∥⊞

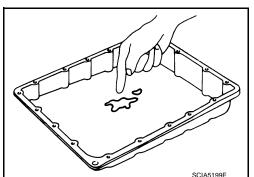


Inspection and Adjustment

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-320, "Cleaning"</u>.



INFOID:0000000011738389

[7AT: RE7R01A]

INSPECTION AFTER INSTALLATION

Start the engine and check visually that there is no leakage of ATF.

< REMOVAL AND INSTALLATION >

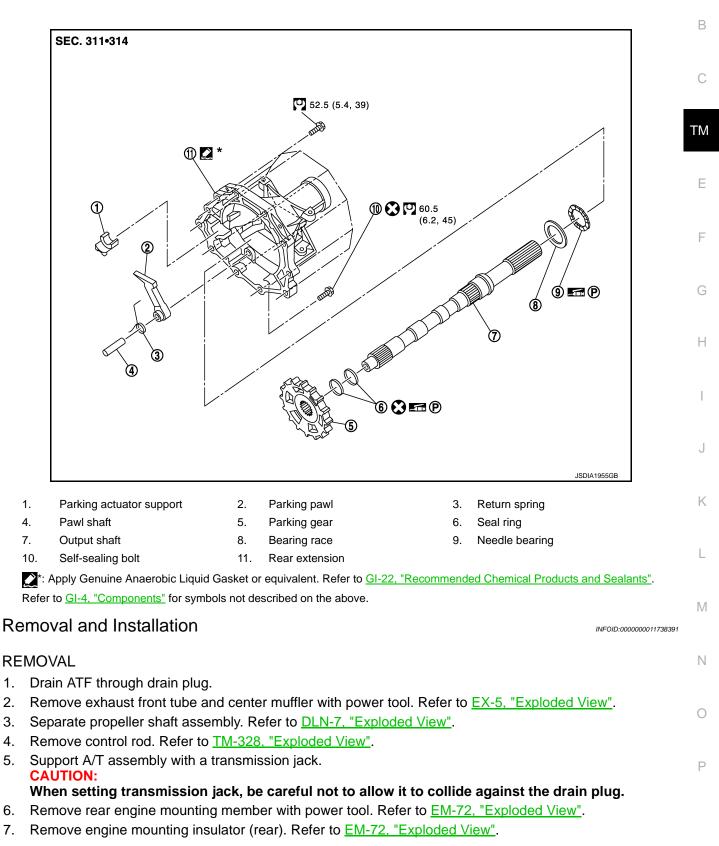
PARKING COMPONENTS

Exploded View

INFOID:000000011738390

А

[7AT: RE7R01A]



< REMOVAL AND INSTALLATION >

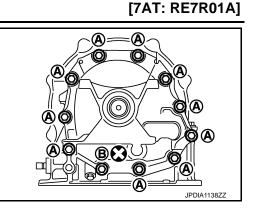
- 8. Remove tightening bolts for rear extension assembly and transmission case.
 - A : Bolt
 - B : Self-sealing bolt

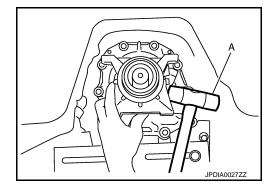
9. Tap rear extension assembly with a soft hammer (A).

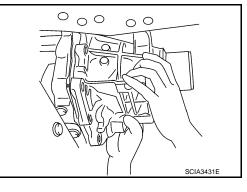
10. Remove rear extension assembly (with needle bearing) from transmission case.

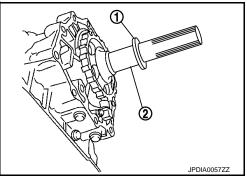
11. Remove bearing race (1) from output shaft (2).

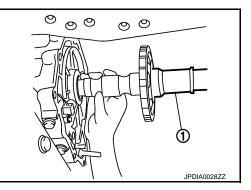
12. Remove output shaft (1) from transmission case by rotating left/ right.







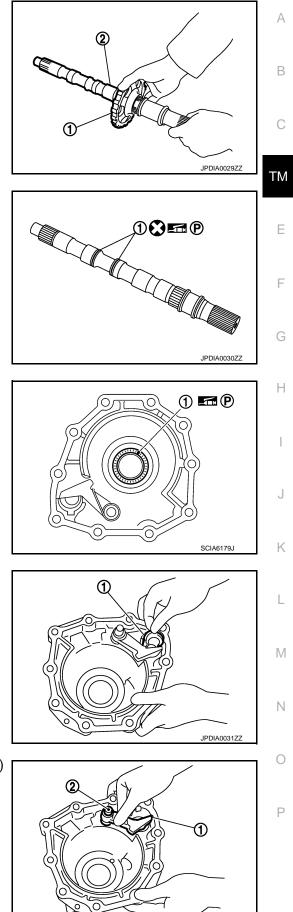




< REMOVAL AND INSTALLATION >

13. Remove parking gear (1) from output shaft (2).

[7AT: RE7R01A]



14. Remove seal rings (1) from output shaft.

15. Remove needle bearing (1) from rear extension.

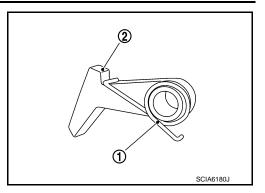
16. Remove parking actuator support (1) from rear extension.

17. Remove parking pawl (with return spring) (1) and pawl shaft (2) from rear extension.

JPDIA0032ZZ

< REMOVAL AND INSTALLATION >

18. Remove return spring (1) from parking pawl (2).



INSTALLATION

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

- Never reuse seal rings and drain plug gasket.
- Apply petroleum jelly to needle bearing and seal rings.
- · Insert the tip of parking rod between the parking pawl and the parking actuator support when assembling the rear extension assembly.
- Refer to the followings installing rear extension assembly.
- Apply recommended sealant to rear extension assembly as shown in the figure.



: Genuine Anaerobic Liquid Gasket or equivalent. Refer to GI-22, "Recommended Chemical Products and Sealants".

Sealant starting point and endpoint (A) Overlap width of sealant starting point and endpoint (B) Sealant width (C)

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

: 3 – 5 mm (0.12 – 0.20 in) : 1.0 – 2.0 mm (0.04 – 0.08 in)

Sealant height (C) : 0.4 – 1.0 mm (0.016 – 0.04 in)

CAUTION:

А

В

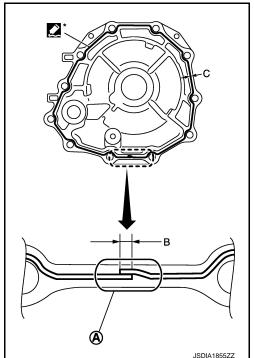
: Bolt

: Self-sealing bolt

Completely remove all moisture, oil and old sealant, etc. from transmission case and rear extension assembly mounting surfaces.

- Tighten rear extension assembly bolts to the specified torque.

Fill ATF after installation. Refer to <u>TM-317, "Changing"</u>.



(o BC JPDIA1138ZZ

INFOID:0000000011738392

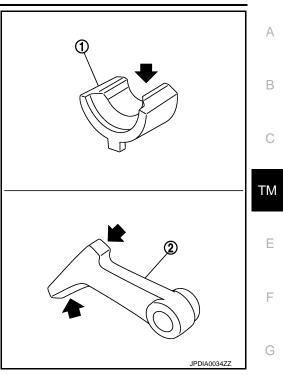
Inspection and Adjustment

INSPECTION AFTER REMOVAL

Revision: 2015 June

< REMOVAL AND INSTALLATION >

If the contact surface on parking actuator support (1), parking pawl (2) and etc. has excessive wear, abrasion, bend, or any other damage, replace the components.



[7AT: RE7R01A]

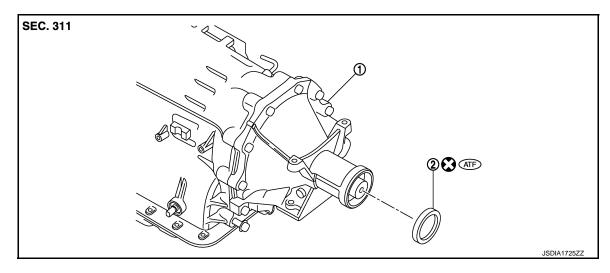
		JPDIA0034ZZ	G
 INSPECTION AFTER INSTALLATION Start the engine and check visually that there is no leakage of ATF. Check A/T positions after adjusting A/T positions. Refer to <u>TM-324</u>. 	"Inspection and Adjustment".		Н
ADJUSTMENT AFTER INSTALLATION Adjust A/T positions. Refer to <u>TM-324</u> , "Inspection and Adjustment".			I
			J
			К
			L
			Μ
			N
			0
			Ρ

REAR OIL SEAL

Exploded View

INFOID:000000011738393

[7AT: RE7R01A]



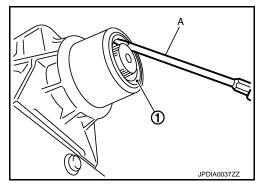
1. A/T assembly2. Rear oil sealRefer to GI-4, "Components" for symbols in the figure.

Removal and Installation

REMOVAL

- 1. Separate propeller shaft assembly. Refer to DLN-7, "Exploded View".
- 2. Remove rear oil seal (1) using a flat-bladed screwdriver (A). CAUTION:

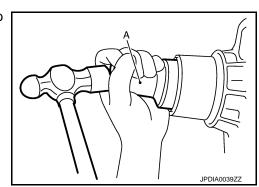
Be careful not to scratch rear extension assembly.



INSTALLATION

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

- As shown in the figure, use the drift (SST: ST33400001) (A) to drive rear oil seal into rear extension assembly until it is flush.
 CAUTION:
 - Never reuse rear oil seal.
 - Apply ATF to rear oil seal.
 - Never incline rear oil seal.



Inspection and Adjustment

INSPECTION AFTER INSTALLATION Drive the vehicle and check visually that there is no leakage of ATF.

Revision: 2015 June

TM-340

INFOID:000000011738395

INFOID:0000000011738394

ADJUSTMENT AFTER INSTALLATION Adjust A/T fluid level. Refer to <u>TM-319, "Adjustment"</u>.

	С	
I	M	
	E	
	F	

G

Н

J

Κ

L

Μ

Ν

Ο

Ρ

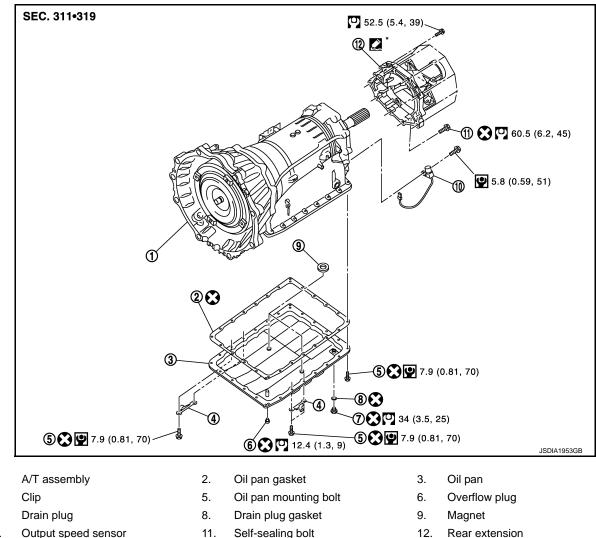
А

В

OUTPUT SPEED SENSOR

Exploded View

INFOID:000000011738396



10. Output speed sensor 11. Self-sealing bolt

*: Apply Genuine Anaerobic Liquid Gasket or equivalent. Refer to <u>GI-22, "Recommended Chemical Products and Sealants"</u>. Refer to GI-4, "Components" for symbols not described on the above.

Removal and Installation

INFOID:000000011738397

REMOVAL

1.

4.

7.

- 1. Disconnect the battery cable from the negative terminal.
- 2. Drain ATF through drain plug.
- Remove exhaust front tube and center muffler with power tool. Refer to <u>EX-5. "Exploded View"</u>.
- 4. Separate propeller shaft assembly. Refer to <u>DLN-7, "Exploded View"</u>.
- Remove control rod. Refer to TM-328, "Exploded View". 5.
- 6. Remove exhaust mounting bracket. Refer to EX-5, "Exploded View".

TM-342

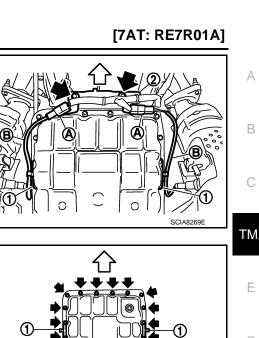
< REMOVAL AND INSTALLATION >

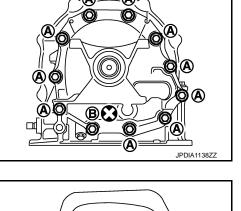
7. Disconnect heated oxygen sensor 2 harness connectors (A).

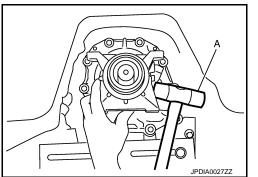
: Vehicle front

- 🛑 : Bolt
- Remove heated oxygen sensor 2 harness (B) from clips (1). 8.
- 9. Remove bracket (2) from transmission assembly.
- 10. Remove clips (1).

 - Cil pan mounting bolt
- 11. Remove oil pan (2) and oil pan gasket.
- 12. Support A/T assembly with a transmission jack. CAUTION: When setting transmission jack, place wooden blocks to prevent from damaging control valve & TCM and transmission case.
- Remove rear engine mounting member with power tool. Refer to <u>EM-72, "Exploded View"</u>.
- 14. Remove engine mounting insulator (rear). Refer to EM-72, "Exploded View".
- 15. Remove tightening bolts for rear extension assembly and transmission case.
 - А : Bolt
 - В : Self-sealing bolt
- 16. Tap rear extension assembly with a soft hammer (A).







Ε

А

В

F

Н

Κ

L

Μ

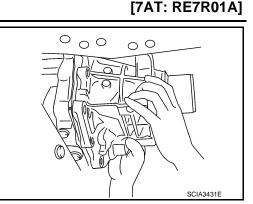
Ν

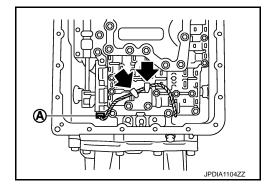
Ρ

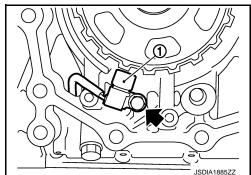
JSDIA0793ZZ

< REMOVAL AND INSTALLATION >

17. Remove rear extension assembly (with needle bearing) from transmission case.







Revision: 2015 June

TM-344

2016 370Z

- 18. Disconnect output speed sensor connector (A).
 CAUTION: Be careful not to damage connector
- 19. Disengage terminal clips (

20. Remove output speed sensor (1) from transmission case.

🗲 : Bolt

CAUTION:

- Never subject it to impact by dropping or hitting it.
- Never disassemble.
- Never allow metal filings, etc. to get on the sensor's front edge magnetic area.
- Never place in an area affected by magnetism.

INSTALLATION

Note the following, and install in the reverse order removal. **CAUTION:**

- Insert the tip of parking rod between the parking pole and the parking actuator support when assembling the rear extension assembly.
- Never reuse drain plug gasket.
- Refer to the followings when installing output speed sensor. CAUTION:
 - Never subject it to impact by dropping or hitting it.
 - Never disassemble.
 - Never allow metal filings, etc. to get on the sensor's front edge magnetic area.
 - Never place in an area affected by magnetism.
- Refer to the followings when installing rear extension assembly.

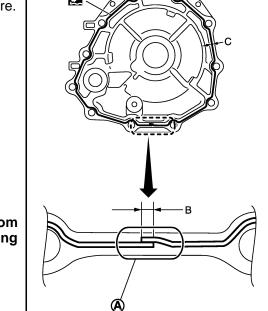
< REMOVAL AND INSTALLATION >

- Apply recommended sealant (Genuine Anaerobic Liquid Gasket or equivalent. Refer to <u>GI-22</u>, <u>"Recommended Chemical Products</u> <u>and Sealants"</u>.) to rear extension assembly as shown in the figure.

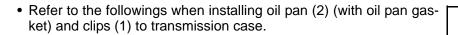
Sealant starting point and end- point (A)	: Start and finish point shall be in the center of two bolts.
Overlap width of sealant starting point and end- point (B)	: 3 – 5 mm (0.12 – 0.20 in)
Sealant width (C)	: 1.0 – 2.0 mm (0.04 – 0.08 in)
Sealant height (C)	: 0.4 – 1.0 mm (0.016 – 0.04 in)

CAUTION:

Completely remove all moisture, oil and old sealant, etc. from transmission case and rear extension assembly mounting surfaces.



- Tighten rear extension assembly bolts to the specified torque.
 - A : Bolt
 - B : Self-sealing bolt

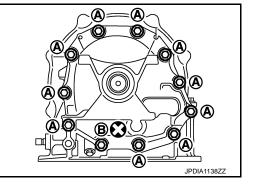


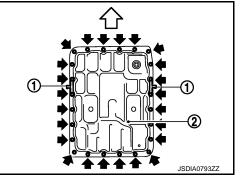
: Vehicle front

+ : Oil pan mounting bolt

CAUTION:

- Never reuse oil pan gasket and oil pan mounting bolts.
- Install oil pan gasket in the direction to align hole position.
- Install it so that drain plug comes to the position as shown in the figure.
- Be careful not to pinch harnesses.
- Completely remove all moisture, oil and old gasket, etc. from oil pan mounting surface.





Ρ

[7AT: RE7R01A]

А

В

ТΜ

Ε

F

Н

Κ

L

Μ

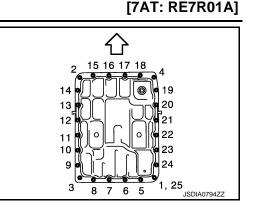
Ν

JSDIA1855ZZ

< REMOVAL AND INSTALLATION >

- Tighten oil pan mounting bolts to the specified torque in numerical order shown in the figure after temporarily tightening them. Tighten necessary oil pan mounting bolts with specified torque.

• Fill ATF after installation. Refer to TM-317, "Changing".



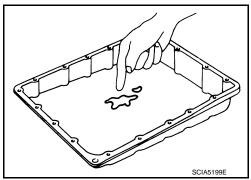
INFOID:000000011738398

Inspection

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-320, "Cleaning"</u>.



INSPECTION AFTER INSTALLATION

- Start the engine and check visually that there is no leakage of ATF.
- Check A/T positions after adjusting A/T positions. Refer to <u>TM-324, "Inspection and Adjustment"</u>.

ADJUSTMENT AFTER INSTALLATION

Adjust A/T positions. Refer to TM-324, "Inspection and Adjustment".

AIR BREATHER HOSE

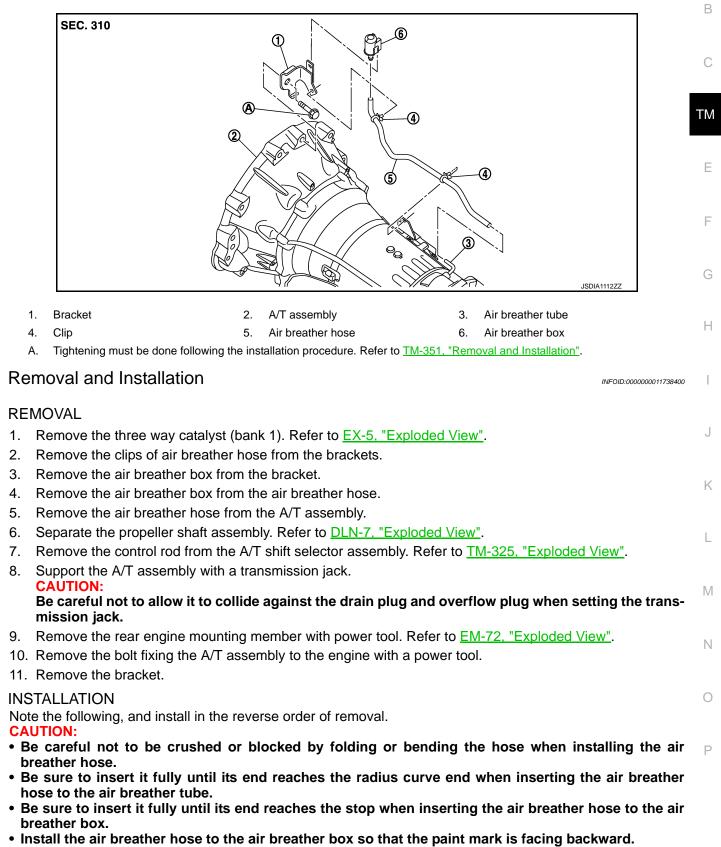
< REMOVAL AND INSTALLATION >

AIR BREATHER HOSE

Exploded View

INFOID:000000011738399

А



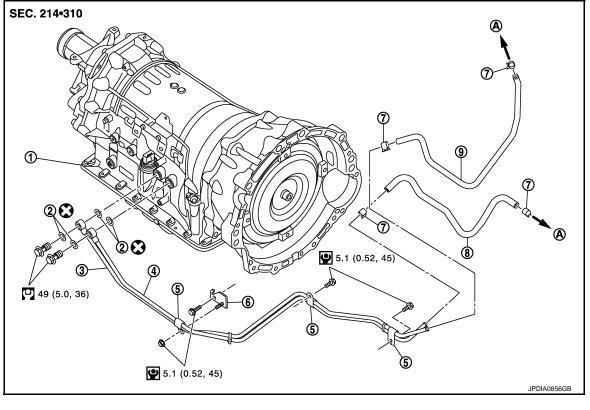
 Ensure the clips are securely installed to the brackets when installing the air breather hose to the brackets.

TM-347

FLUID COOLER SYSTEM

Exploded View

INFOID:0000000011738401



1. A/T assembly

- 2. Copper washer
- A/T fluid cooler tube
 Hose clamp
- Clip
 A/T fluid cooler hose B

A. To radiator

Refer to <u>GI-4, "Components"</u> for symbols in the figure.

Removal and Installation

REMOVAL

- 1. Remove the air cleaner case (LH). Refer to EM-30, "Exploded View".
- 2. Remove the engine cover (front). Refer to EM-28, "Exploded View".
- 3. Remove the floor under cover with a power tool. Refer to <u>EXT-41</u>, "<u>ENGINE UNDER COVER</u> : <u>Exploded</u> <u>View</u>".
- 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-21, "Exploded View".
- 9. Remove the lower mounting nuts for the engine mounting insulators (RH and LH). Refer to <u>EM-72.</u> <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.
- Revision: 2015 June

TM-348

A/T fluid cooler hose A

A/T fluid cooler tube

Bracket

3.

6.

9

INFOID:000000011738402

FLUID COOLER SYSTEM

< REMOVAL AND INSTALLATION >

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.

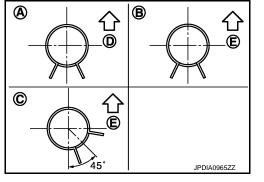
• Refer to the following when installing the A/T fluid cooler hoses.

Hose name	Hose end	Paint mark	Position of hose clamp*	
A/T fluid cooler hose A	Radiator assembly side	Facing backward	A	ТМ
A/T huid cooler hose A	A/T fluid cooler tube side	Facing downward	В	
A/T fluid cooler hose B	Radiator assembly side	Facing downward	С	F
	A/T fluid cooler tube side	Facing downward	В	

*: Refer to the illustrations for the specific position each hose clamp tab.

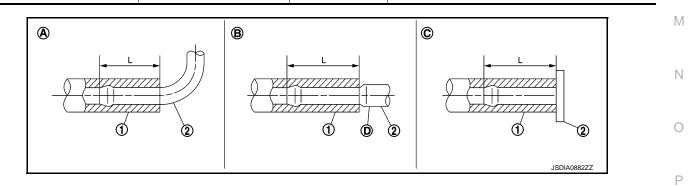
- The illustrations indicate the view from the hose ends.

- <>□ 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.



- 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/	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).]



[7AT: RE7R01A]

В

А

С

F

Н

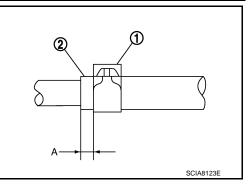
FLUID COOLER SYSTEM

< 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.



Inspection and Adjustment

INFOID:000000011738403

[7AT: RE7R01A]

INSPECTION AFTER INSTALLATION Start the engine and check visually that there is no leakage of ATF.

ADJUSTMENT AFTER INSTALLATION

Adjust A/T fluid level. Refer to TM-319, "Adjustment".

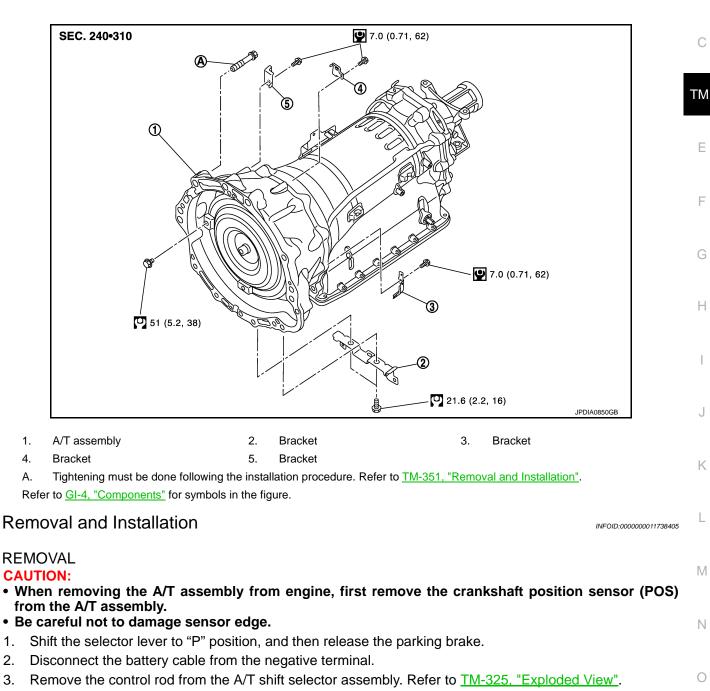
UNIT REMOVAL AND INSTALLATION TRANSMISSION ASSEMBLY

Exploded View

[7AT: RE7R01A]

INFOID:000000011738404 В

А



- 4. Remove the engine cover (front and rear). Refer to EM-28, "Exploded View".
- Separate the propeller shaft assembly. Refer to <u>DLN-7, "Exploded View"</u>.
- Remove the manual lever from the A/T assembly. Refer to <u>TM-328, "Exploded View"</u>.
- 7. Remove the floor under cover with a power tool. Refer to EXT-41, "ENGINE UNDER COVER : Exploded Vi<u>ew"</u>.
- 8. Remove the suspension member stay. Refer to FSU-21, "Exploded View".
- Remove the exhaust mounting bracket with power tool. Refer to EX-5, "Exploded View". 9.
- 10. Remove the crankshaft position sensor (POS) from the A/T assembly. Refer to EM-116, "Exploded View". CAUTION:

1.

TM-351

Ρ

< 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-24, "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.

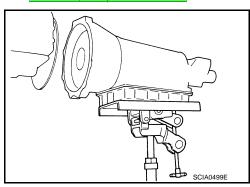
- 14. Remove the A/T fluid cooler tubes from the A/T assembly. Refer to TM-348, "Exploded View".
- 15. Plug up openings such as the A/T fluid cooler tube holes.
- 16. Support the A/T assembly with a transmission jack. CAUTION:

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.

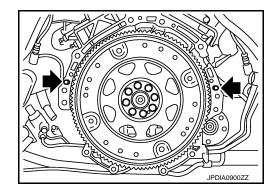
- 17. Remove the rear engine mounting member and engine mounting insulator (rear) with a power tool. Refer to <u>EM-72, "Exploded View"</u>.
- 18. Disconnect the A/T assembly connector.
- 19. Remove the harness and brackets.
- 20. Remove the bolts fixing A/T assembly to the engine with a power tool.
- 21. Remove the air breather hose, air breather box and bracket. Refer to TM-347, "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.

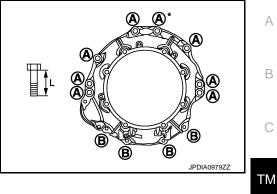
• Check fitting of the dowel pins (



< UNIT REMOVAL AND INSTALLATION >

 Install the fixing bolts of A/T assembly and engine according to the following standards.

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)



[7AT: RE7R01A]

*: Tightening the bolt with bracket.

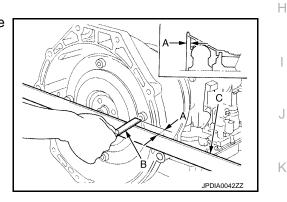
- Align the positions of tightening bolts for drive plate with those of the torque converter, and temporarily tighten the bolts. Then, tighten the bolts with the specified torque.
 - CAUTION:
 - When turning crankshaft, turn it clockwise as viewed from the front of the engine.
 - When tightening the 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 <u>EM-54, "Exploded View"</u>.
 - 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

INSPECTION BEFORE INSTALLATION

Check dimension (A) between the converter housing and torque converter.

- B : Scale
- C : Straightedge
- **Dimension (A)**
- : Refer to <u>TM-428, "Torque Convert-</u> <u>er"</u>.



INSPECTION AFTER INSTALLATION

- Start the engine and check visually that there is no leakage of ATF.
- Check A/T position after adjusting A/T positions. Refer to TM-324, "Inspection and Adjustment".

ADJUSTMENT AFTER INSTALLATION

- Adjust A/T fluid level. Refer to <u>TM-319, "Adjustment"</u>.
- Adjust A/T position. Refer to <u>TM-324</u>, "Inspection and Adjustment"

L

Μ

Е

F

INFOID:000000011738406

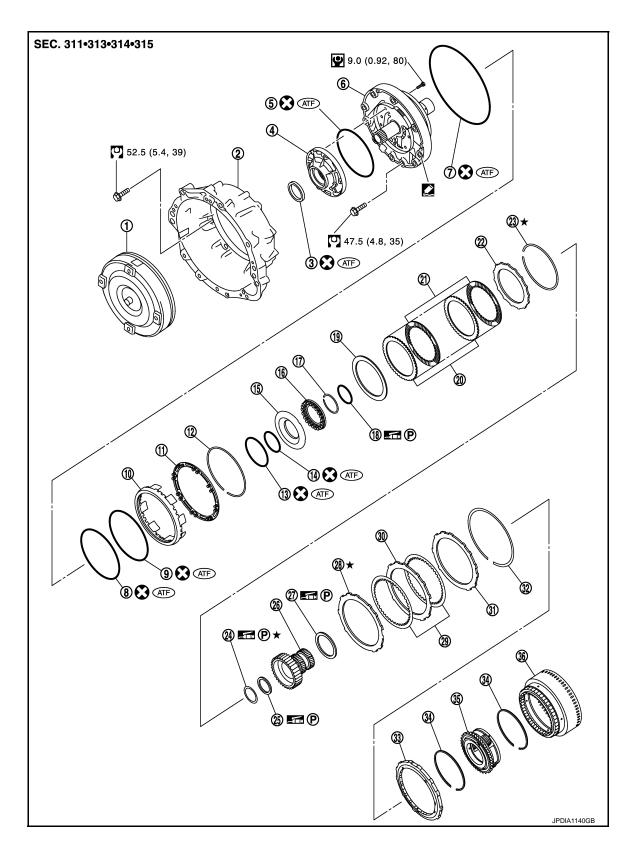
Ρ

[7AT: RE7R01A]

UNIT DISASSEMBLY AND ASSEMBLY TRANSMISSION ASSEMBLY

Exploded View

INFOID:000000011738407



< UNIT DISASSEMBLY AND ASSEMBLY >

1. Torque converter

- 4. Oil pump housing
- 7. O-ring
- 10. Front brake piston
- 13. D-ring
- 16. 2346 brake spring retainer
- 19. 2346 brake dish plate
- 22. 2346 brake retaining plate
- 25. Needle bearing
- 28. Front brake retaining plate
- 31. Front brake retaining plate
- 34. Snap ring

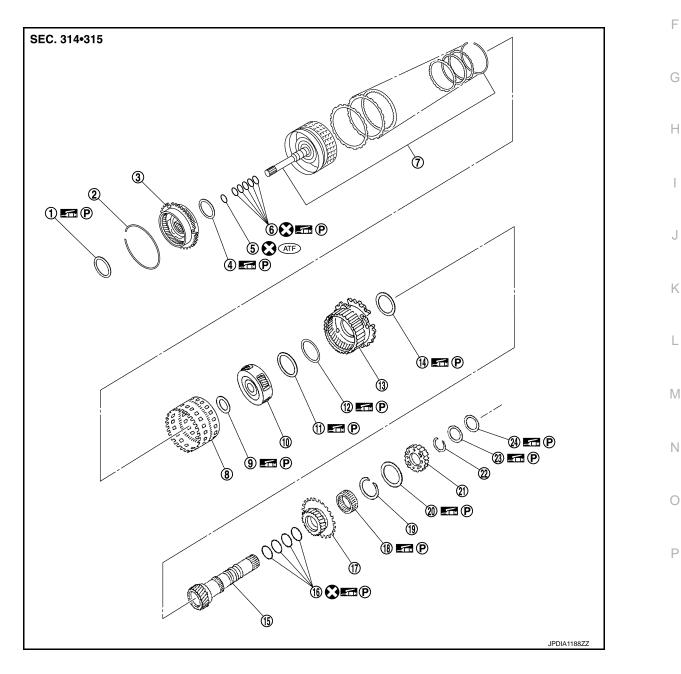
- Converter housing
 O-ring
 D-ring
- 11. Front brake spring retainer
- 14. D-ring
- 17. Snap ring
- 20. 2346 brake driven plate
- 23. Snap ring
- 26. Under drive sun gear
- 29. Front brake drive plate
- 32. Snap ring
- 35. Under drive carrier assembly

[7AT: RE7R01A]

Ε

3. Oil pump housing oil seal А 6. Oil pump cover 9. D-ring 12. Snap ring В 15. 2346 brake piston 18. Seal ring 21. 2346 brake drive plate С 24. Bearing race 27. Needle bearing ТΜ 30. Front brake driven plate 33. 1st one-way clutch 36. Front brake hub assembly

Apply Genuine RTV silicone sealant or equivalent. Refer to <u>GI-22, "Recommended Chemical Products and Sealants"</u>. Refer to <u>GI-4, "Components"</u> for symbols not described on the above.



< UNIT DISASSEMBLY AND ASSEMBLY >

- 1. Needle bearing
- 4. Needle bearing
- 7. Input clutch assembly
- 10. Mid carrier assembly
- 13. Rear carrier assembly
- 16. Seal ring
- 19. Snap ring
- 22. Snap ring

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

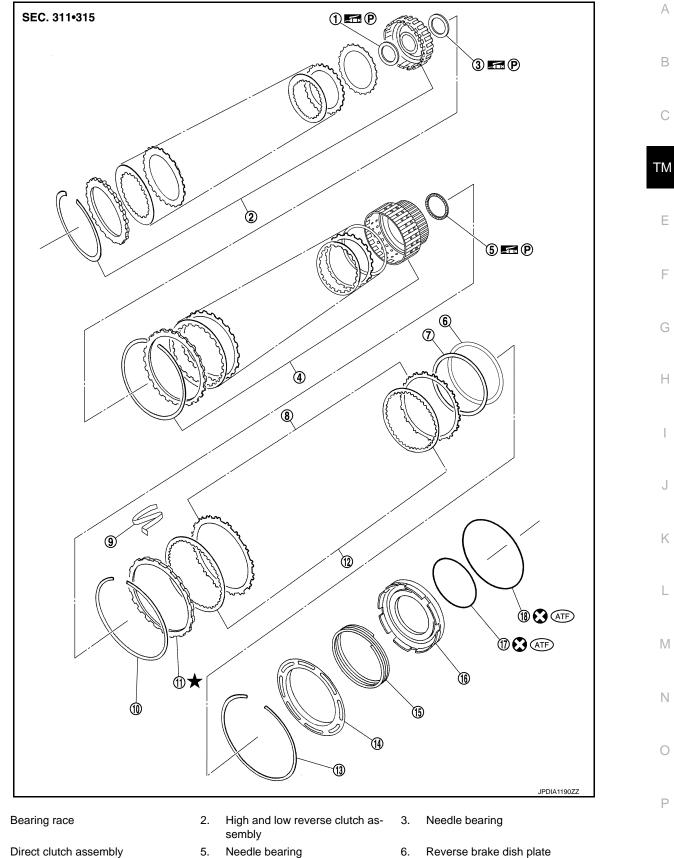
- 2. Snap ring
- 5. O-ring
- 8. Rear internal gear
- 11. Needle bearing
- 14. Needle bearing
- 17. Rear sun gear
- 20. Needle bearing
- 23. Bearing race

3. Front carrier assembly

- 6. Seal ring
- 9. Needle bearing
- 12. Bearing race
- 15. Mid sun gear
- 18. 2nd one-way clutch
- 21. High and low reverse clutch hub
- 24. Needle bearing

< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01A]



- 4. Direct clutch assembly
- 7. Reverse brake dish plate
- 10. Snap ring

1.

13. Snap ring

- 5. Needle bearing
- 8. Reverse brake driven plate
- 11. Reverse brake retaining plate
- 14. Reverse brake spring retainer
- 12. Reverse brake drive plate
 - 15. Reverse brake return spring

9.

N-spring

Revision: 2015 June

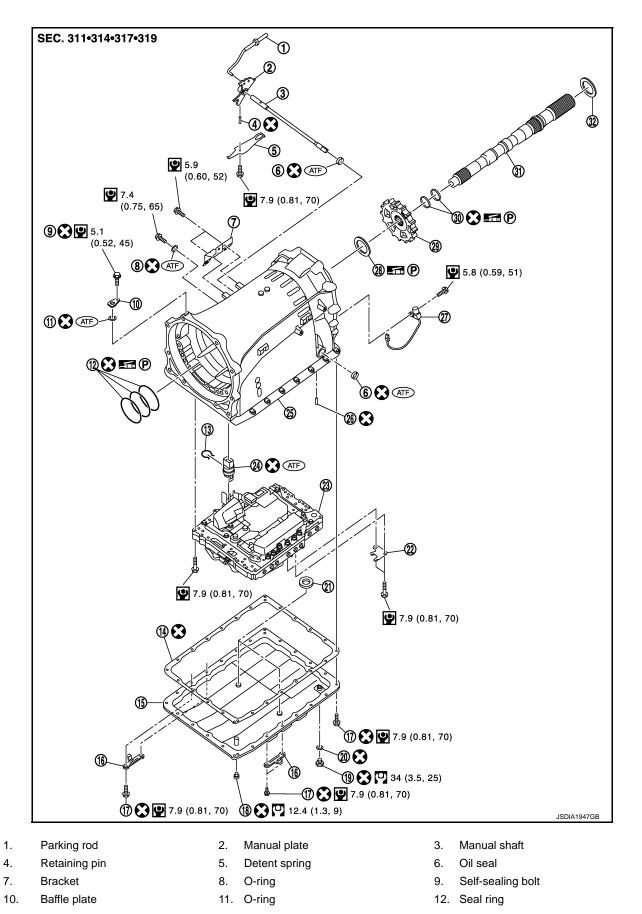
2016 370Z

< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01A]

16. Reverse brake piston17. D-ringRefer to GI-4, "Components" for symbols in the figure.

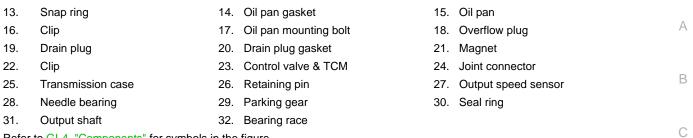
18. D-ring



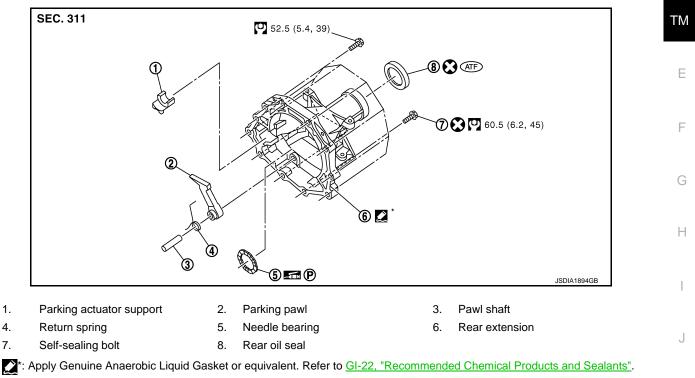
TM-358

< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01A]



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



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

1.

4.

7.

Κ

L

Μ

Ν

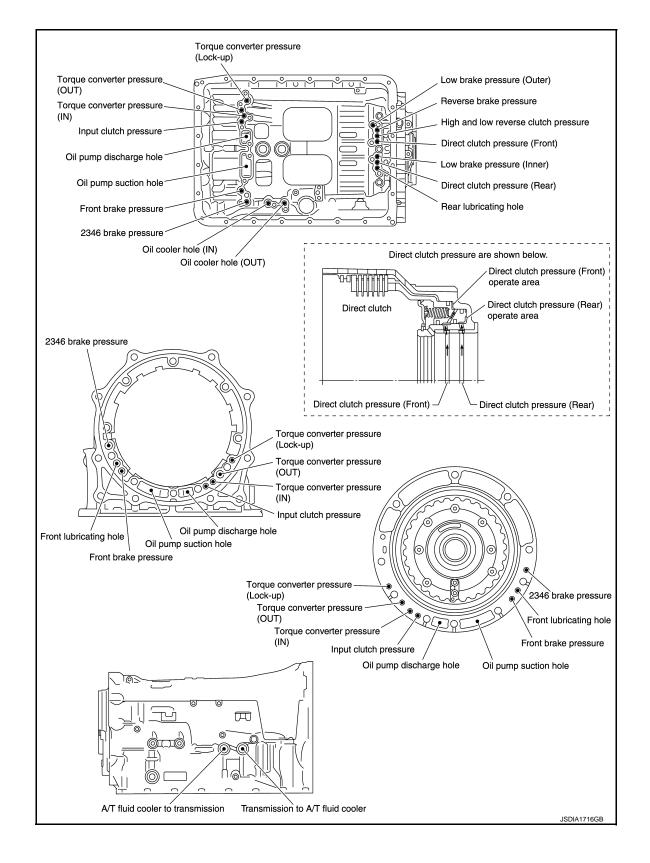
Ρ

< UNIT DISASSEMBLY AND ASSEMBLY >

Oil Channel

INFOID:0000000011738408

[7AT: RE7R01A]



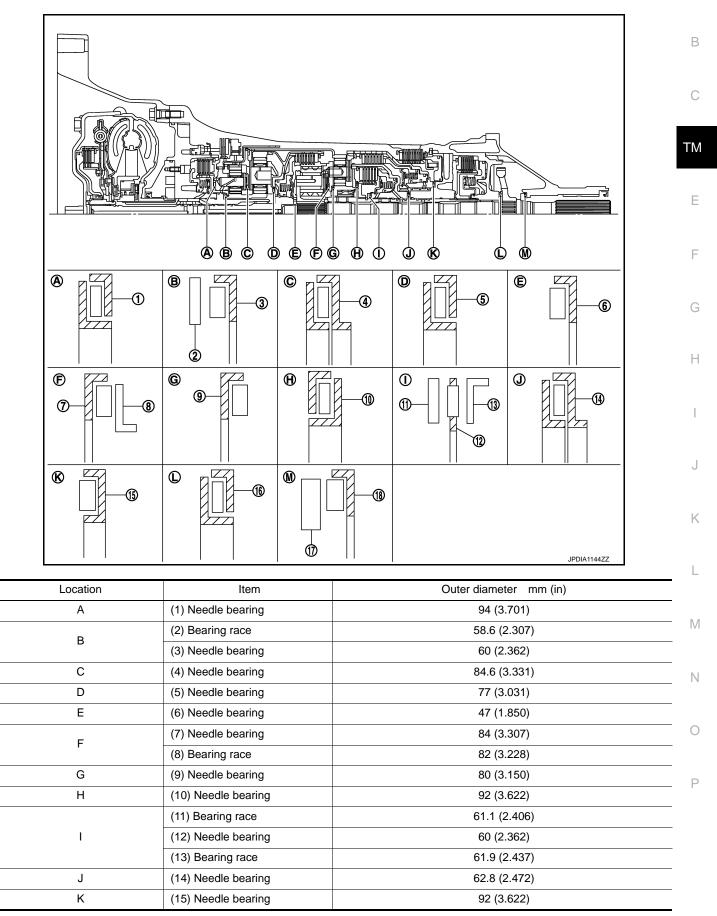
< UNIT DISASSEMBLY AND ASSEMBLY >

Location of Needle Bearings and Bearing Races

[7AT: RE7R01A]

INFOID:0000000011738409

А



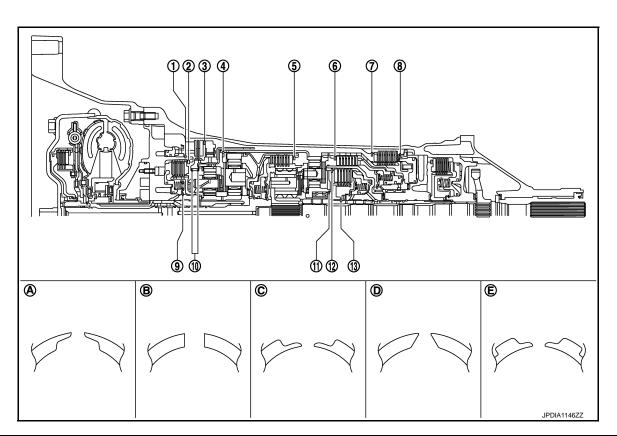
< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01A]

Location	Item	Outer diameter mm (in)
L	(16) Needle bearing	65 (2.559)
М	(17) Bearing race	58 (2.283)
	(18) Needle bearing	60 (2.362)

Location of Snap Rings

INFOID:000000011738410



Location	Shape of snap ring	Outer diameter mm (in)
1	A	159.9 (6.295)
2	В	159 (6.260)
3	В	216 (8.504)
4	В	180.4 (7.102)
5	С	171.5 (6.752)
6	В	169 (6.654)
7	В	180.5 (7.106)
8	В	181.0 (7.126)
9	D	64.6 (2.543)
10	В	136 (5.354)
11	E	70.5 (2.776)
12	В	135 (5.315)
13	A	48.4 (1.906)

Disassembly

INFOID:000000011738411

CAUTION:

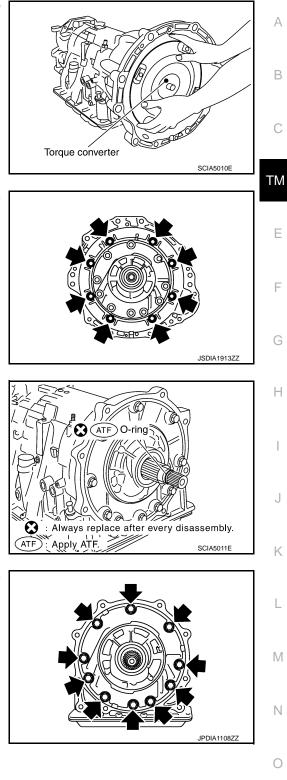
Never disassemble parts behind drum support. Refer to TM-177, "Cross-Sectional View".

1. Drain ATF through drain plug.

< UNIT DISASSEMBLY AND ASSEMBLY >

2. Remove torque converter by holding it firmly and turning while pulling straight out.





- 3. Remove tightening bolts (←) for converter housing and transmission case.
- Remove converter housing from transmission case.
 CAUTION: Be careful not to scratch converter housing.

5. Remove O-ring from input clutch assembly.

6. Remove tightening bolts (+) for oil pump assembly and transmission case.

Ρ

TM-364

< UNIT DISASSEMBLY AND ASSEMBLY >

- 7. Attach the sliding hammers (SST: ST25850000) (A) to oil pump assembly (1) and extract it evenly from transmission case.
 - B : Sliding hammer attachment position

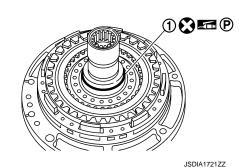
CAUTION:

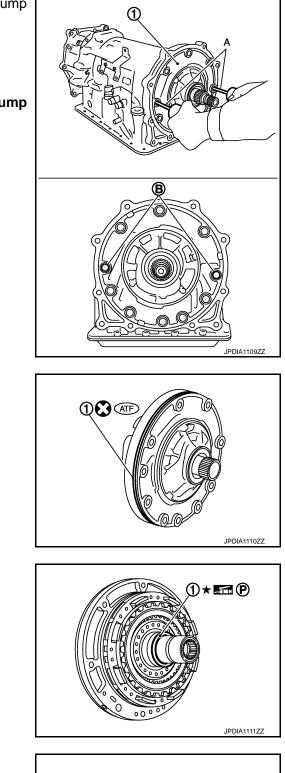
- Fully tighten the sliding hammer screws.
- Make sure that bearing race is installed to the oil pump assembly edge surface.

8. Remove O-ring (1) from oil pump assembly.

9. Remove bearing race (1) from oil pump assembly.

10. Remove seal ring (1) from oil pump assembly.



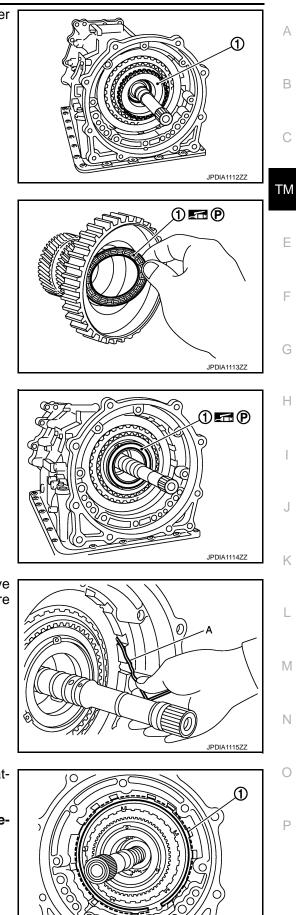




< UNIT DISASSEMBLY AND ASSEMBLY >

11. Remove under drive sun gear (1) from under drive carrier assembly.

[7AT: RE7R01A]

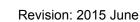


12. Remove needle bearing (1) from under drive sun gear.

13. Remove needle bearing (1) from under drive carrier assembly.

14. Remove front brake component part (retaining plates, drive plates and driven plate) from transmission case by using a wire (A) with its tip bent like a hook.

- Remove snap ring (1) from transmission case using a flatbladed screwdriver.
 CAUTION:
 - Be careful not to scratch transmission case and 1st oneway clutch.
 - Be careful not to damage snap ring.



JPDIA1116ZZ

< UNIT DISASSEMBLY AND ASSEMBLY >

16. Remove input clutch assembly (with 1st one-way clutch, under drive carrier assembly, front brake hub, front carrier assembly, and rear internal gear) (1) from transmission case.

Revision: 2015 June

ړر د د د د د JPDIA1119ZZ () 🖬 🕑

➀ JPDIA1118ZZ



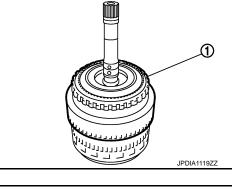
18. Remove under drive carrier assembly (with front brake hub) (1) from front carrier assembly.

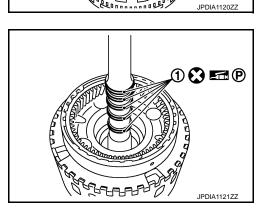
17. Remove 1st one-way clutch (1) from front brake hub.

20. Remove seal rings (1) from input clutch assembly.

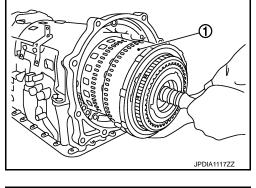
19. Remove needle bearing (1) from front carrier assembly.

í









2016 370Z



< UNIT DISASSEMBLY AND ASSEMBLY >

21. Remove mid carrier assembly and rear carrier assembly as a unit.

22. Remove mid carrier assembly from rear carrier assembly.

23. Remove needle bearing (front side) from mid carrier assembly.

24. Remove needle bearing (rear side) from mid carrier assembly.

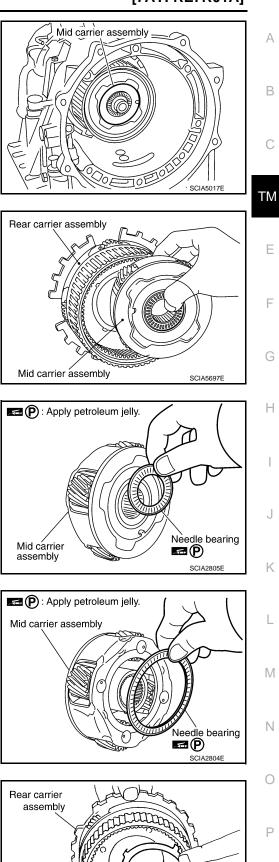
25. Remove bearing race from rear carrier assembly.

SCIA5175E

ANDULL

Bearing race

A (P) 🖬 P : Apply petroleum jelly.





А

Ε

F

Κ

L

< UNIT DISASSEMBLY AND ASSEMBLY >

26. Remove needle bearing from rear carrier assembly.

27. Remove mid sun gear assembly, rear sun gear assembly, and high and low reverse clutch hub as a unit. CAUTION:

Be careful to remove then with bearing race and needle bearing.

Remove high and low reverse clutch assembly from direct clutch assembly.
 CAUTION:

Make sure that needle bearing is installed to the high and low reverse clutch assembly edge surface.

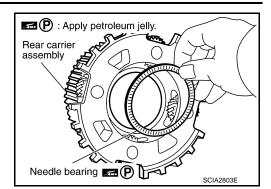
29. Remove direct clutch assembly from reverse brake.

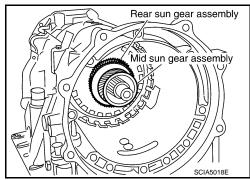
30. Remove needle bearing from drum support.

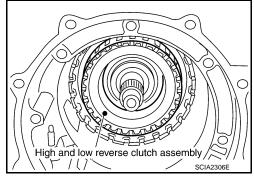
Revision: 2015 June

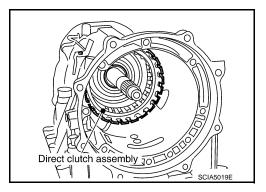
TM-368

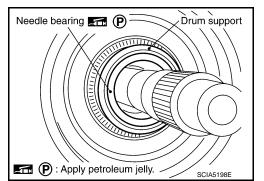












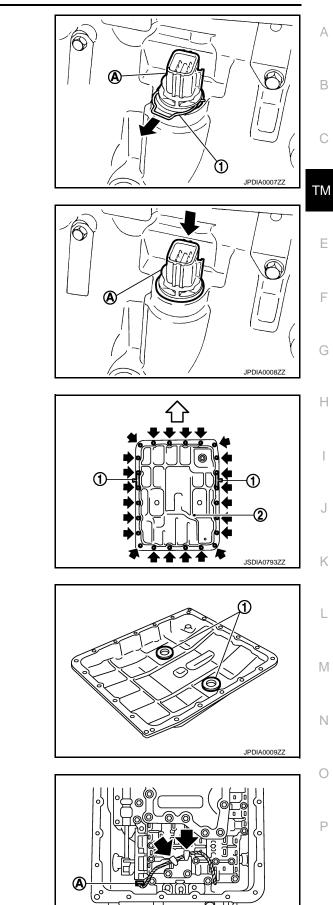


< UNIT DISASSEMBLY AND ASSEMBLY >

Be careful not to damage connector.

31. Remove snap ring (1) from joint connector (A).

[7AT: RE7R01A]



- 33. Remove oil pan mounting bolts (<
 - 1 : Clip *<*⊐ : Front

32. Push joint connector (A).

CAUTION:

- 34. Remove oil pan (2) and oil pan gasket.
- 35. Remove magnets (1) from oil pan.

- 36. Disconnect output speed sensor connector (A).
 CAUTION:
 Be careful not to damage connector.
- 37. Disengage terminal clips (

JPDIA1104ZZ

< UNIT DISASSEMBLY AND ASSEMBLY >

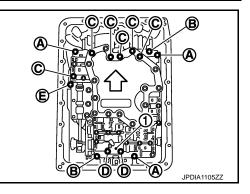
- 38. Remove control valve & TCM mounting bolts and clip (1) from the control valve & TCM.

Bolt symbol	Length mm (in)	Number of bolts
Α	43 (1.69)	3
В	40 (1.57)	2
C	54 (2.13)	6
D	50 (1.97)	2
E*	50 (1.97)	1

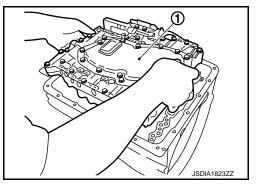
^{*:} Reamer bolt

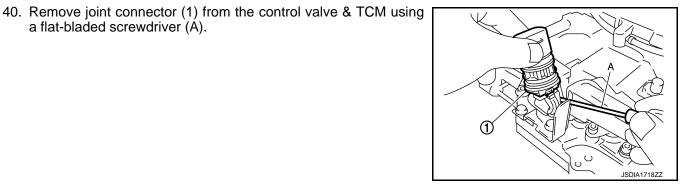
39. Remove the control valve & TCM (1) from transmission case. **CAUTION:**

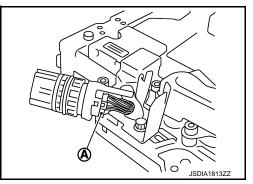
When removing, never with the manual valve notch and manual plate height. Remove it vertically.



[7AT: RE7R01A]







41. Disconnect TCM connector (A). **CAUTION:** Be careful not to damage connector.

a flat-bladed screwdriver (A).

< UNIT DISASSEMBLY AND ASSEMBLY >

- 42. Remove tightening bolts for rear extension assembly and transmission case.
 - А : Bolt
 - В : Self-sealing bolt

43. Tap rear extension assembly using a soft hammer. **CAUTION:** Be careful not to damage rear extension.

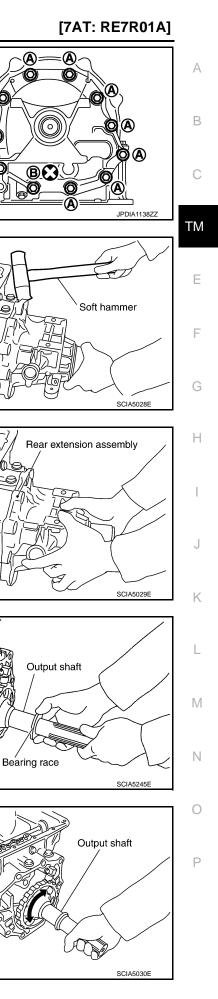
44. Remove rear extension assembly from transmission case. (With needle bearing.)

46. Remove output shaft from transmission case by rotating left/

45. Remove bearing race from output shaft.

Revision: 2015 June

right.



(A)

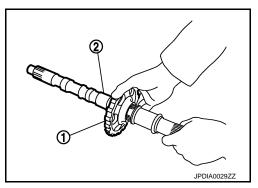
Ò

09

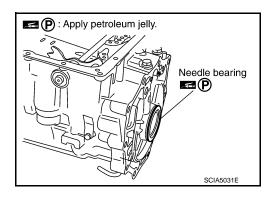
< UNIT DISASSEMBLY AND ASSEMBLY >

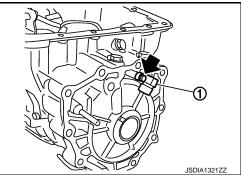
47. Remove parking gear (1) from output shaft (2).

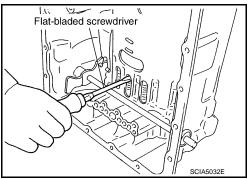
[7AT: RE7R01A]



JPDIA0030ZZ







48. Remove seal rings (1) from output shaft.

49. Remove needle bearing from transmission case.

50. Remove output speed sensor (1) from transmission case.

+ : Bolt

CAUTION:

- Never subject it to impact by dropping or hitting it.
- Never disassemble.
- Never allow metal filings, etc. to get on the sensor's front edge magnetic area.
- Never place in an area affected by magnetism.
- 51. Remove reverse brake snap ring (fixing plate) with 2 flat-bladed screwdrivers. CAUTION:
 - Be careful not to scratch transmission case and reverse brake retaining plate.
 - Be careful not to damage snap ring. NOTE:

Press out snap ring from the transmission case oil pan side gap with a flat-bladed screwdriver, and remove it using a another screwdriver.

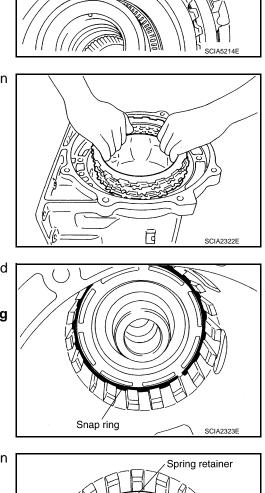
52. Remove reverse brake retaining plate from transmission case.

< UNIT DISASSEMBLY AND ASSEMBLY >

53. Remove N-spring from transmission case.

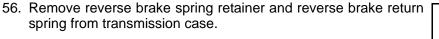
54. Remove reverse brake component part (drive plates, driven plates and dish plates) from transmission case.

- 55. Remove snap ring (fixing spring retainer) using a flat-bladed screwdriver. CAUTION:
 - Be careful not to scratch transmission case and spring retainer.
 - Be careful not to damage snap ring.

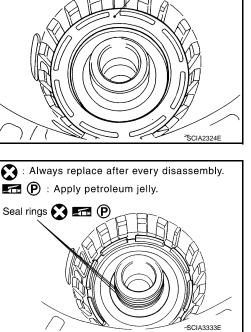


Driven plate

Drive plate



57. Remove seal rings from drum support.



[7AT: RE7R01A]

Transmission case

А

В

С

TΜ

Ε

F

Н

Κ

L

Μ

Ν

Ρ

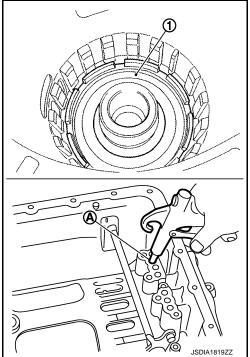
< UNIT DISASSEMBLY AND ASSEMBLY >

58. Remove needle bearing from drum support edge surface.

- 59. Remove reverse brake piston (1) from transmission case with compressed air. Refer to <u>TM-360</u>, "Oil Channel".
 - A : Reverse brake pressure hole

CAUTION:

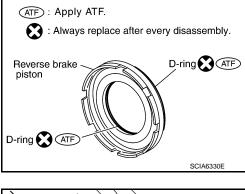
Care should be taken not to abruptly blow air. It makes pistons incline, as the result, it becomes hard to disassemble the pistons.

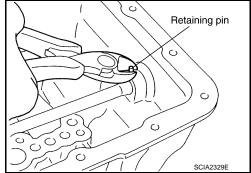


P : Apply petroleum jelly

60. Remove D-rings from reverse brake piston.

61. Remove manual shaft retaining pin with pair of nippers.
 CAUTION:
 Be careful not to cut retaining pin.





[7AT: RE7R01A]

Needle bearing

< UNIT DISASSEMBLY AND ASSEMBLY >

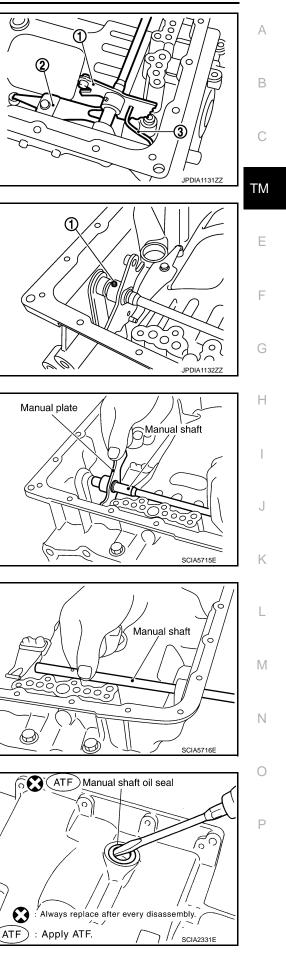
- 62. Remove manual plate (1) from detent spring (2).
- 63. Remove parking rod (3) from manual plate.
- 64. Install manual plate to detent spring.

65. Use a pin punch [4 mm (0.16 in) dia. commercial service tool] to knock out retaining pin (1).

66. Remove manual plate from manual shaft.

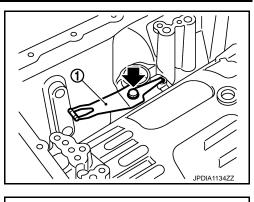
67. Remove manual shaft from transmission case.

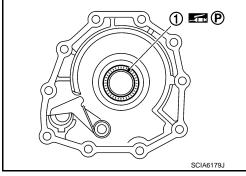
 68. Remove manual shaft oil seals using a flat-bladed screwdriver.
 CAUTION: Be careful not to scratch transmission case.



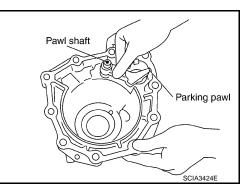
< UNIT DISASSEMBLY AND ASSEMBLY >

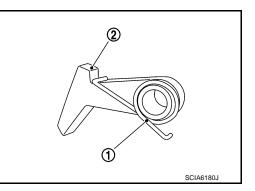
- 69. Remove detent spring (1) from transmission case.
 - : Bolt





Parking actuator support





70. Remove needle bearing (1) from rear extension.

71. Remove parking actuator support from rear extension.

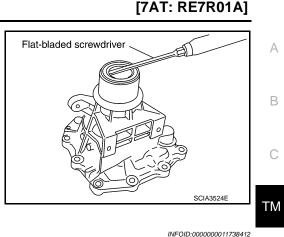
72. Remove parking pawl (with return spring) and pawl shaft from rear extension.

73. Remove return spring (1) from parking pawl (2).

< UNIT DISASSEMBLY AND ASSEMBLY >

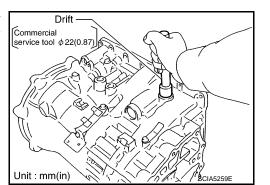
74. Remove rear oil seal from rear extension using a flat-bladed screwdriver. CAUTION:

Be careful not to scratch rear extension.



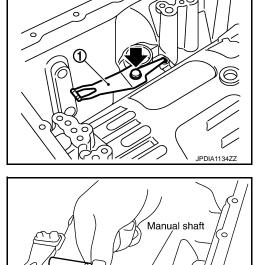
Assembly

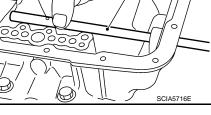
- 1. As shown in the figure, use a drift [22 mm (0.87 in) dia. commercial service tool] to drive manual shaft oil seals into the transmission case until it is flush.
 - CAUTION:
 - Never reuse manual shaft oil seals.
 - Apply ATF to manual shaft oil seals.



- 2. Install detent spring to transmission case. Tighten detent spring bolt to the specified torque.
 - 🗭 : Bolt

3. Install manual shaft to transmission case.





Е

F

Н

J

Κ

L

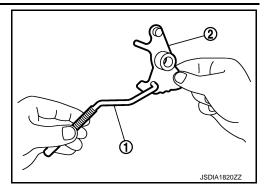
Μ

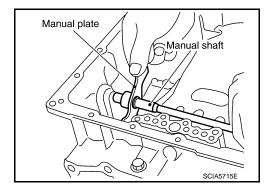
Ν

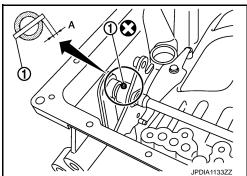
< UNIT DISASSEMBLY AND ASSEMBLY >

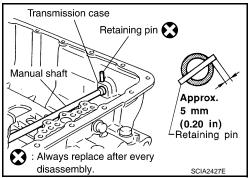
4. Install parking rod (1) to manual plate (2).

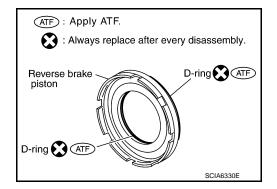
[7AT: RE7R01A]











5. Install manual plate (with parking rod) to manual shaft.

- 6. Install retaining pin (1) into the manual plate and manual shaft.
- a. Fit pinhole of the manual plate to pinhole of the manual shaft with a pin punch.
- b. Use a hammer to tap the retaining pin into the manual plate.

A : Approx. 2 mm (0.08in)

CAUTION:

Drive retaining pin to 2 ± 0.5 mm (0.08 ±0.020 in) over the manual plate.

- 7. Install retaining pin into the transmission case and manual shaft.
- a. Fit pinhole of the transmission case to pinhole of the manual shaft with a pin punch.
- b. Use a hammer to tap the retaining pin into the transmission case.

CAUTION: Drive retaining pin to 5±1 mm (0.20±0.04 in) over the transmission case.

8. Install D-rings to reverse brake piston.

< UNIT DISASSEMBLY AND ASSEMBLY >

9. Install reverse brake piston to transmission case.

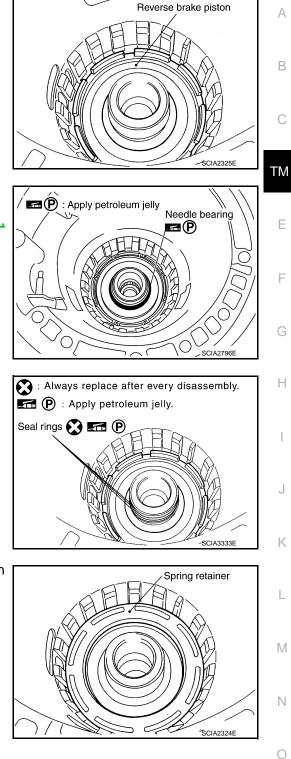
Check the direction of needle bearing. Refer to <u>TM-361,</u> <u>"Location of Needle Bearings and Bearing Races"</u>.

10. Install needle bearing to drum support edge surface.

11. Install seal rings to drum support.

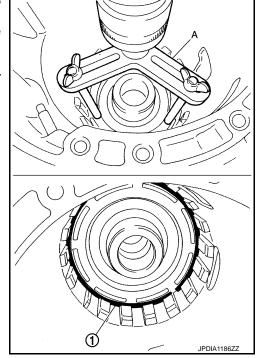
CAUTION:

12. Install reverse brake spring retainer and reverse brake return spring to transmission case.



< UNIT DISASSEMBLY AND ASSEMBLY >

- Set the clutch spring compressor [SST: KV31102400 (J-34285 and J-34285-87)] (A) on reverse brake spring retainer and install snap ring (fixing spring retainer) (1) to transmission case while compressing return spring.
 CAUTION:
 - Securely assemble them using a flat-bladed screwdriver so that snap ring tension is slightly weak.
 - Be careful not to damage snap ring.



(4)

3

(6)

JPDIA1135ZZ

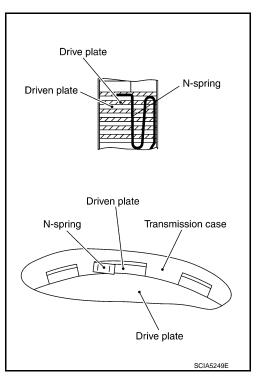
ⓓ

- 14. Install reverse brake component part (dish plates, driven plates and drive plates) to transmission case.
 - 1 : Snap ring
 - 2 : Retaining plate
 - 3 : Drive plate (six pieces)
 - 4 : Driven plate (six pieces)
 - 5 : Dish plate
 - 6 : Dish plate

CAUTION:

Check order of plates.

- 15. Assemble N-spring.
- 16. Install reverse brake retaining plate to transmission case.



< UNIT DISASSEMBLY AND ASSEMBLY >

17. Install snap ring to transmission case. **CAUTION:** Be careful not to damage snap ring.



А

В

TΜ

Е

F

Н

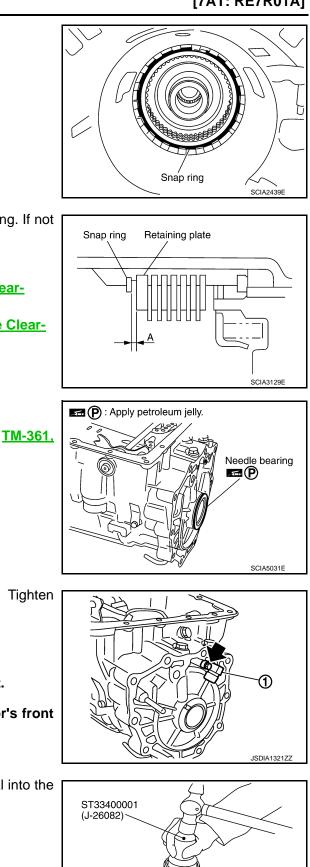
Κ

L

Μ

Ν

Ρ



18. Measure clearance between retaining plate and snap ring. If not within specified clearance, select proper retaining plate.

Specified clearance "A"

Standard: Refer to TM-428, "Reverse Brake Clearance".

Retaining plate: Refer to TM-428, "Reverse Brake Clearance".

19. Install needle bearing to transmission case. CAUTION: Check the direction of needle bearing. Refer to TM-361, "Location of Needle Bearings and Bearing Races".

- 20. Install output speed sensor (1) to transmission case. Tighten revolution sensor bolt to the specified torque.
 - : Bolt

CAUTION:

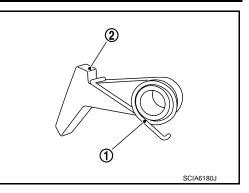
- Never subject it to impact by dropping or hitting it.
- Never disassemble.
- Never allow metal filings, etc. to get on the sensor's front edge magnetic area.
- Never place in an area affected by magnetism.
- 21. As shown in the figure, use the drift to drive rear oil seal into the rear extension until it is flush. CAUTION:
 - Never reuse rear oil seal.
 - Apply ATF to rear oil seal.

SCIA5311E

< UNIT DISASSEMBLY AND ASSEMBLY >

22. Install return spring (1) to parking pawl (2).

[7AT: RE7R01A]



- 23. Install parking pawl (with return spring) and pawl shaft to rear extension.
- Pawl shaft Parking pawl

Parking actuator support

24. Install parking actuator support to rear extension.

- 25. Install needle bearing (1) to rear extension. **CAUTION: Check the direction of needle bearing. Refer to <u>TM-361,</u> <u>"Location of Needle Bearings and Bearing Races"</u>.**
- SCIAB175J
- JPDIA0302Z

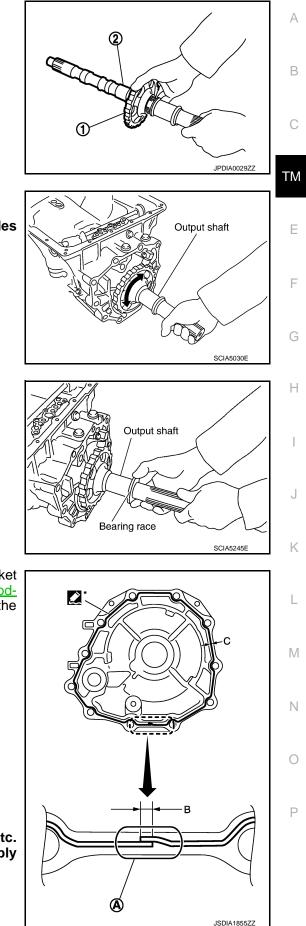
26. Install seal rings (1) to output shaft.

SCIA3423E

< UNIT DISASSEMBLY AND ASSEMBLY >

27. Install parking gear (1) to output shaft (2).

[7AT: RE7R01A]



28. Install output shaft to transmission case. CAUTION:

Be careful not to mistake front for rear because both sides looks similar. (Thinner end is front side.)

29. Install bearing race to output shaft.

 Apply recommended sealant (Genuine Anaerobic Liquid Gasket or equivalent. Refer to <u>GI-22</u>, <u>"Recommended Chemical Products and Sealants"</u>.) to rear extension assembly as shown in the figure.

Sealant starting point and end- point (A)	: Start and finish point shall be in the center of two bolts.	
Overlap width of sealant starting point and end- point (B)	: 3 – 5 mm (0.12 – 0.20 in)	
Sealant width (C)	: 1.0 – 2.0 mm (0.04 – 0.08 in)	
Sealant height (C)	: 0.4 – 1.0 mm (0.016 – 0.04 in)	

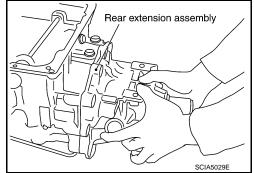
CAUTION:

Completely remove all moisture, oil and old sealant, etc. from the transmission case and rear extension assembly mounting surfaces.

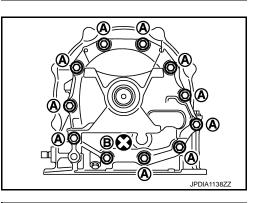
< UNIT DISASSEMBLY AND ASSEMBLY >

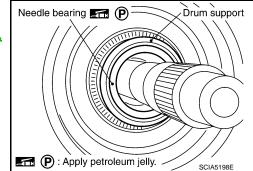
31. Install rear extension assembly to transmission case. CAUTION:

Insert the tip of parking rod between the parking pawl and the parking actuator support when assembling the rear extension assembly. [7AT: RE7R01A]



- 32. Tighten rear extension assembly bolts to the specified torque.
 - A : Bolt
 - B : Self-sealing bolt

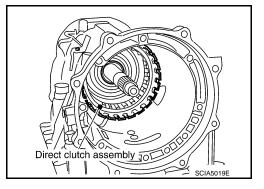


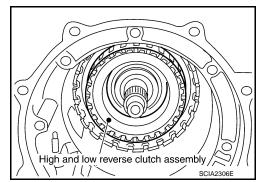


 Install needle bearing to drum support.
 CAUTION:
 Check the direction of needle bearing. Refer to <u>TM-361</u>, <u>"Location of Needle Bearings and Bearing Races"</u>.

 34. Install direct clutch assembly to reverse brake.
 CAUTION: Make sure that drum support edge surface and direct clutch inner boss edge surface come to almost same place.

35. Install high and low reverse clutch assembly to direct clutch.





< UNIT DISASSEMBLY AND ASSEMBLY >

36. Align the drive plate using a flat-bladed screwdriver.

37. Install high and low reverse clutch hub, mid sun gear assembly, and rear sun gear assembly as a unit.

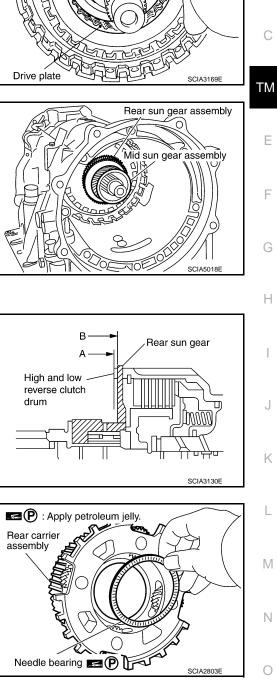
Make sure that portion "A" of high and low reverse clutch drum protrudes approximately 2 mm (0.08 in) beyond por-

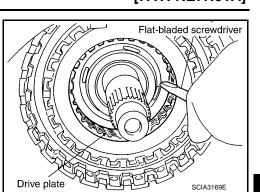
 Install needle bearing to rear carrier assembly.
 CAUTION:
 Check the direction of needle bearing. Refer to <u>TM-361</u>, <u>"Location of Needle Bearings and Bearing Races"</u>.

CAUTION:

tion "B" of rear sun gear.

Ρ





[7AT: RE7R01A]

А

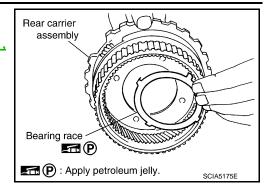
В

< UNIT DISASSEMBLY AND ASSEMBLY >

 Install bearing race to rear carrier assembly.
 CAUTION:
 Check the direction of needle bearing. Refer to <u>TM-361</u>, <u>"Location of Needle Bearings and Bearing Races"</u>.

[7AT: RE7R01A]

SCIA2462E



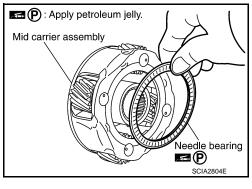
40. Install rear carrier assembly to direct clutch drum.

41. Install needle bearing (rear side) to mid carrier assembly. **CAUTION: Check the direction of needle bearing. Refer to TM**

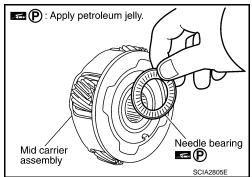
Check the direction of needle bearing. Refer to <u>TM-361</u>, <u>"Location of Needle Bearings and Bearing Races"</u>.

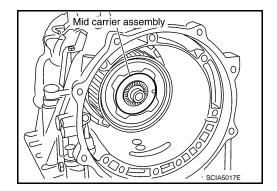
 42. Install needle bearing (front side) to mid carrier assembly.
 CAUTION:
 Check the direction of needle bearing. Refer to <u>TM-361</u>, <u>"Location of Needle Bearings and Bearing Races"</u>.

43. Install mid carrier assembly to rear carrier assembly.



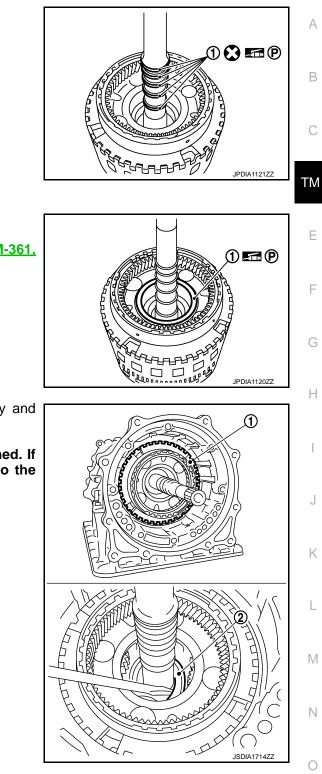
Rear carrier assembly





< UNIT DISASSEMBLY AND ASSEMBLY >

44. Install seal rings (1) to input clutch assembly.



- 45. Install needle bearing (1) to front carrier assembly. CAUTION: Check the direction of needle bearing. Refer to <u>TM-361</u>. <u>"Location of Needle Bearings and Bearing Races"</u>.
- 46. Install input clutch assembly (with front carrier assembly and rear internal gear) (1) to transmission case. CAUTION:

Check that the needle bearing (2) is securely positioned. If the needle bearing position is misaligned, adjust it to the specified position.

Ρ

< UNIT DISASSEMBLY AND ASSEMBLY >

- 47. Install 1st one-way clutch (1) to front brake hub (with under drive carrier) (2).
- 48. Check operation of 1st one-way clutch.
- a. Hold 1st one-way clutch.
- b. Check front brake hub for correct locking and unlocking directions.

: Unlocked

CAUTION:

If not shown in figure, check installation direction of 1st one-way clutch.

49. Install under drive carrier (with 1st one-way clutch) (1) to transmission case.

50. Install snap ring (1) to transmission case. CAUTION: Be careful not to damage snap ring.

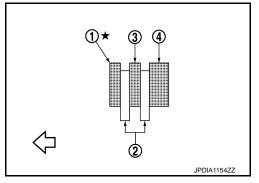
- 51. Install front brake component part (retaining plates, drive plates and driven plate) to transmission case.
 - 1 : Retaining plate (thin)
 - 2 : Drive plate
 - 3 : Driven plate
 - 4 : Retaining plate (thick)
 - <⊐ : Front

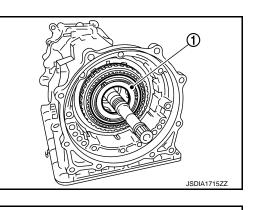
CAUTION: Check order of plates.

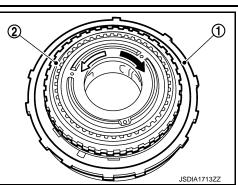


۩

JPDIA1116ZZ





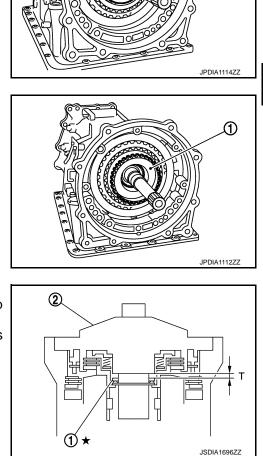


< UNIT DISASSEMBLY AND ASSEMBLY >

 52. Install needle bearing (1) to under drive carrier assembly.
 CAUTION:
 Check the direction of needle bearing. Refer to <u>TM-361</u>, "Location of Needle Bearings and Bearing Races".

53. Install under drive sun gear (1) to under drive carrier assembly.

- 54. Adjustment of total end play "T".
 - Measure clearance between bearing race (1) and oil pump cover (2).
 - Select proper thickness of bearing race so that end play is within specifications.

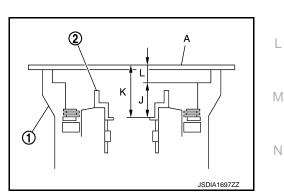


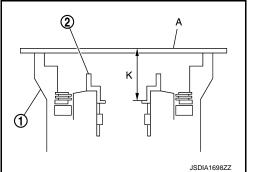
- a. Measure dimensions "K" and "L", and calculate dimension "J".
 - 1 : Transmission case
 - 2 : Under drive sun gear
 - A : Straightedge

"J" : Distance between the oil pump fitting surface of transmission case and the needle bearing mating surface of under drive sun gear.

$\mathbf{J} = \mathbf{K} - \mathbf{L}$

- Measure dimension "K" between the converter housing fitting surface of transmission case (1) and the needle bearing mating surface of under drive sun gear (2).
 CAUTION:
 - Never change the straightedge (A) installation position before the completion of "L" measurement.
 - Measure dimension "K" in at least three places, and take the average.





[7AT: RE7R01A]

() 🖬 ()

А

В

TΜ

F

Н

Κ

Ρ

< UNIT DISASSEMBLY AND ASSEMBLY >

- ii. Measure dimension "L" between the converter housing fitting surface of transmission case and the oil pump fitting surface of transmission case.
 - : Transmission case 1
 - А : Straightedge

CAUTION:

Measure dimension "L" in at least three places, and take the average.

iii. Calculate dimension "J".

J = K - L

- Measure dimensions "M1" and "M2", and calculate dimension b. "M".
 - 1 : Bearing race
 - 2 : Needle bearing
 - 3 : Oil pump assembly
 - : Straightedge А

"**M**" : Distance between the transmission case fitting surface of oil pump and the needle bearing on oil pump.

 $M = M_{1} - M_{2}$

i. Place bearing race (1) and needle bearing (2) on oil pump assembly (3).

Measure dimension "M1" between the transmission case fitting

Measure dimension "M1" in at least three places, and take

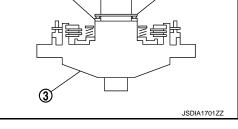
surface of oil pump and the end of oil pump.

: Bearing race

: Straightedge

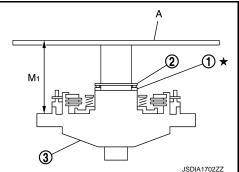
: Needle bearing

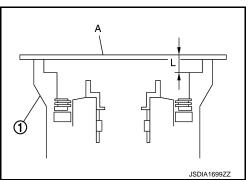
: Oil pump assembly

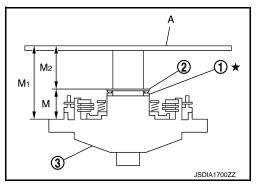


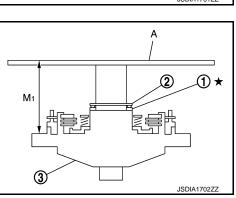
①★

(2)









ii.

1

2

3

А

CAUTION:

the average.

< UNIT DISASSEMBLY AND ASSEMBLY >

- iii. Measure dimension "M2" between the needle bearing on oil pump and the end of oil pump.
 - 1 : Bearing race
 - 2 : Needle bearing
 - 3 : Oil pump assembly
 - A : Straightedge

CAUTION:

Measure dimension "M2" in at least three places, and take the average.

iv. Calculate dimension "M".

$\mathbf{M} = \mathbf{M}\mathbf{1} - \mathbf{M}\mathbf{2}$

- c. Adjust total end play "T".
 - 1 : Bearing race
 - 2 : Oil pump assembly

T = J - M

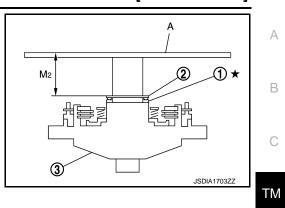
Total end play "T"

: Refer to <u>TM-428, "Total End</u> Play".

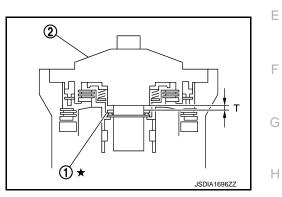
• Select proper thickness of bearing race so that total end play is within specifications.

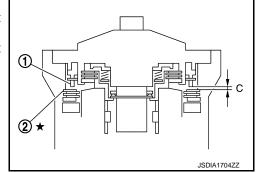
Bearing races : Refer to TM-428, "Total End Play".

- 55. Adjustment of front brake clearance "C".
 - Measure clearance between front brake piston (1) and front brake retaining plate (2).
 - Select proper thickness of front brake retaining plat so that clearance is within specifications.



[7AT: RE7R01A]

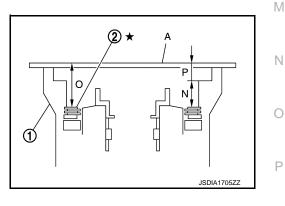




- a. Measure dimensions "O" and "P", and calculate dimension "N".
 - 1 : Transmission case
 - 2 : Front brake retaining plate
 - A : Straightedge

"N" : Distance between the oil pump fitting surface of transmission case and the front brake retaining plate.

 $\mathbf{N} = \mathbf{O} - \mathbf{P}$



Κ

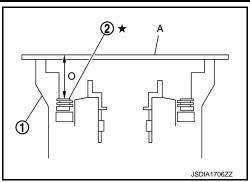
L

< UNIT DISASSEMBLY AND ASSEMBLY >

Measure dimension "O" between the converter housing fitting surface of transmission case (1) and the front brake retaining plate (2). CAUTION:

Never change the straightedge (A) installation position before the completion of "P" measurement.

• Measure dimension "O" in at least three places, and take the average.



[7AT: RE7R01A]

- ii. Measure dimension "P" between the converter housing fitting surface of transmission case and the oil pump fitting surface of transmission case.
 - 1 : Transmission case
 - A : Straightedge

CAUTION:

Measure dimension "P" in at least three places, and take the average.

iii. Calculate dimension "N".

 $\mathbf{N} = \mathbf{O} - \mathbf{P}$

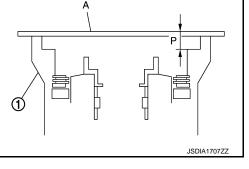
- b. Measure dimensions "Q1" and "Q2", and calculate dimension "Q".
 - 1 : Front brake piston
 - 2 : Oil pump assembly
 - A : Straightedge

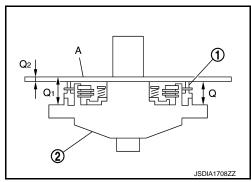
"Q" : Distance between the transmission case fitting surface of oil pump and the front brake piston.

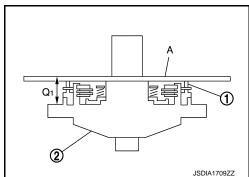
- $\mathbf{Q} = \mathbf{Q}\mathbf{1} \mathbf{Q}\mathbf{2}$
- i. Measure dimension "Q1" between the transmission case fitting surface of oil pump and the straightedge on front brake piston.
 - 1 : Front brake piston
 - 2 : Oil pump assembly
 - A : Straightedge

CAUTION:

Measure dimension "Q1" in at least three places, and take the average.

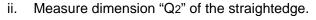






< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01A]



- 1 : Front brake piston
- 2 : Oil pump assembly
- A : Straightedge
- iii. Calculate dimension "Q".



- c. Adjust front brake clearance "C".
 - 1 : Front brake piston
 - 2 : Front brake retaining plate



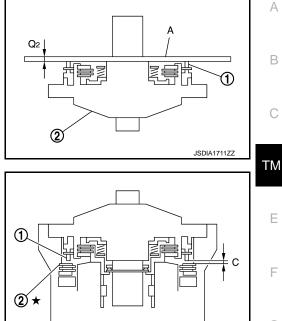
Front brake clearance "C"



• Select proper thickness of front brake retaining plate so that front brake clearance is within specifications.

Retaining plate : Refer to <u>TM-428</u>, "Front Brake <u>Clearance"</u>.

56. Remove under drive sun gear (1) from under drive carrier assembly.



JSDIA1704ZZ

JPDIA1112ZZ

Н

Κ

L

Ρ

- A A JPDIA1113ZZ
- 57. Install needle bearing (1) to under drive sun gear.
 CAUTION:
 Check the direction of needle bearing. Refer to <u>TM-361</u>, <u>"Location of Needle Bearings and Bearing Races"</u>.

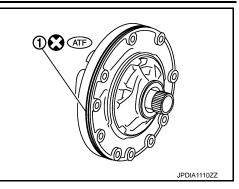
< UNIT DISASSEMBLY AND ASSEMBLY >

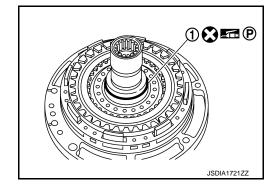
58. Install O-ring (1) to oil pump assembly.

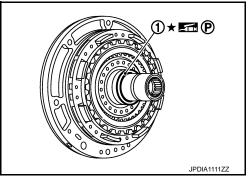
59. Install seal ring (1) to oil pump assembly.

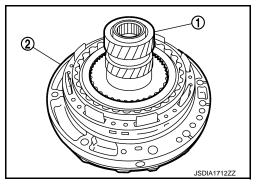
60. Install bearing race (1) to oil pump assembly.

[7AT: RE7R01A]

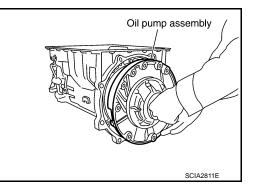








62. Install oil pump assembly (with under drive sun gear) to transmission case.
 CAUTION:
 Apply ATF to oil pump bearing.



61. Install under drive sun gear (with needle bearing) (1) to oil pump

assembly (2).

< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01A]

63. Apply recommended sealant to oil pump assembly as shown in the figure.



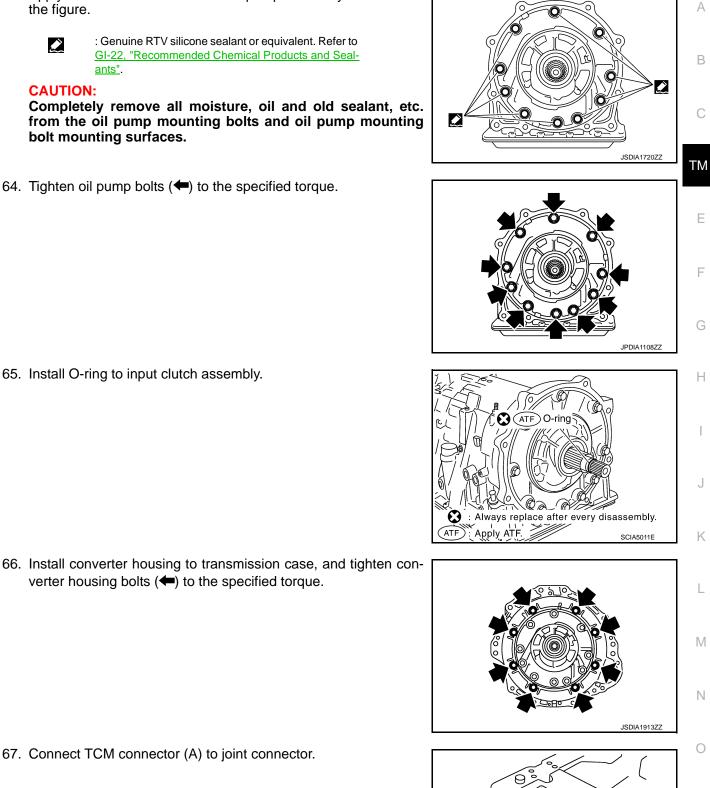
: Genuine RTV silicone sealant or equivalent. Refer to GI-22, "Recommended Chemical Products and Sealants".

CAUTION:

Completely remove all moisture, oil and old sealant, etc. from the oil pump mounting bolts and oil pump mounting bolt mounting surfaces.

64. Tighten oil pump bolts (+) to the specified torque.

65. Install O-ring to input clutch assembly.



67. Connect TCM connector (A) to joint connector.

verter housing bolts () to the specified torque.

JSDIA1813ZZ

0

(A)

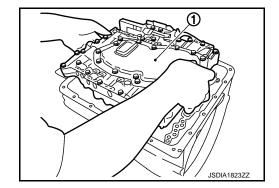
Ρ

< UNIT DISASSEMBLY AND ASSEMBLY >

68. Install joint connector (1) to the control valve & TCM. **CAUTION:** Apply ATF to O-ring of joint connector.

69. Install the control valve & TCM (1) to transmission case.

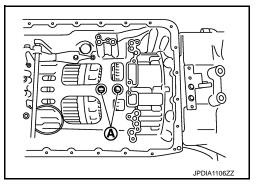
(ATF) JSDIA1719ZZ

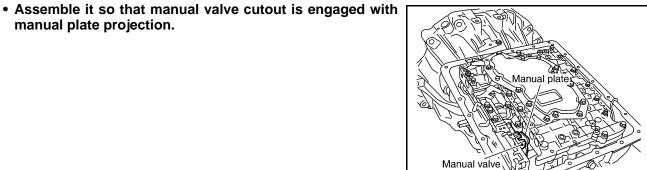


CAUTION:

manual plate projection.

- Make sure that input speed sensor securely installs input speed sensor holes (A).
- Hang down output speed sensor harness toward outside so as not to disturb installation of the control valve & TCM.
- Adjust joint connector of the control valve & TCM to terminal hole of transmission case.





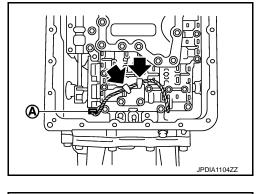
< UNIT DISASSEMBLY AND ASSEMBLY >

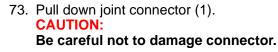
- 70. Install bolts and clip (1) to the control valve & TCM. Tighten bolt(E) to the specified torque before tightening the other than bolts.
 - : Front

Bolt symbol	Length mm (in)	Number of bolts
А	43 (1.69)	3
В	40 (1.57)	2
С	54 (2.13)	6
D	50 (1.97)	2
E*	50 (1.97)	1

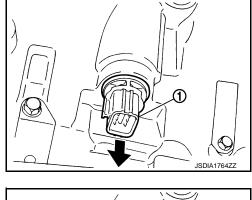
*: Reamer bolt

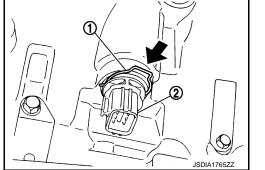
- 71. Connect output speed sensor connector (A).
- 72. Engage output speed sensor harness with terminal clips (-).





74. Install snap ring (1) to joint connector (2).





А

В

С

ТΜ

Ε

F

Н

J

Κ

L

Μ

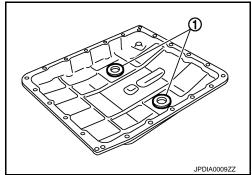
Ν

Ο

< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01A]

- 75. Install magnets (1) to oil pan.
- 76. Install oil pan gasket to transmission case. CAUTION:
 - Never reuse oil pan gasket.
 - Install it in the direction to align hole positions.
 - Completely remove all moisture, oil and old gasket, etc. from oil pan gasket mounting surface.



- 77. Install oil pan (2) and clips (1) to transmission case.
 - <⊐ : Front
 - : Oil pan mounting bolt

CAUTION:

- Be careful not to pinch harnesses.
- Completely remove all moisture, oil and old gasket, etc. from oil pan mounting surface.
- 78. Tighten oil pan mounting bolts to the specified torque in numerical order shown in the figure after temporarily tightening them. Tighten oil pan mounting bolts to the specified torque.

<□ : Front

CAUTION:

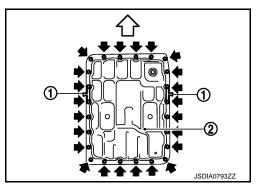
Never reuse oil pan mounting bolts.

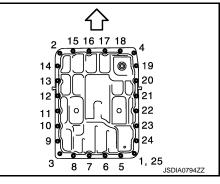
79. Install drain plug to oil pan. Tighten drain plug to the specified torque.

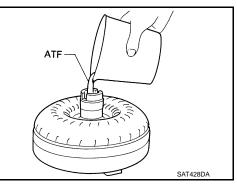
CAUTION:

Never reuse drain plug gasket.

- 80. Pour ATF into torque converter.
 - Approximately 2 liter (2-1/8 US qt, 1-3/4 Imp qt) of ATF is required for a new torque converter.
 - When reusing old torque converter, add the same amount of ATF as was drained.

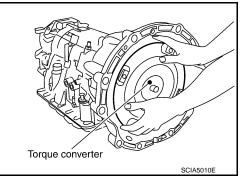






Install torque converter while aligning notches of torque converter with notches of oil pump.
 CAUTION:

Install torque converter while rotating it.

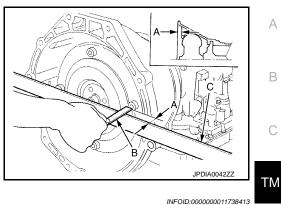


< UNIT DISASSEMBLY AND ASSEMBLY >

82. Measure dimension "A" to make sure that torgue converter is in proper position.

- В : Scale
- С : Straightedge

Dimension "A" : Refer to TM-428, "Torque Converter".



[7AT: RE7R01A]

Ε

F

Н

L

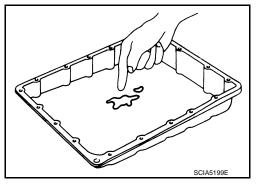
Inspection

INSPECTION AFTER REMOVAL

Oil Pan

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 TM-320, "Cleaning".



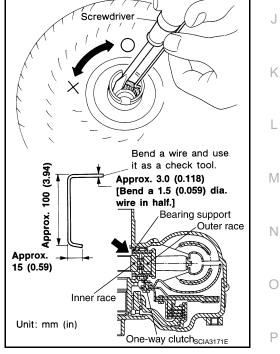
Torque Converter

Check torque converter one-way clutch using a check tool as shown at figure.

- 1. Insert a check tool into the groove of bearing support built into one-way clutch outer race.
- When fixing bearing support with a check tool, rotate one-way 2. clutch spline using a screwdriver.

3.

Make sure that inner race rotates clockwise only. If not, replace torque converter assembly.



1st One-way Clutch

< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01A]

Check operation of 1st one-way clutch.

- 1. Install 1st one-way clutch (1) to front brake hub (with under drive carrier).
- 2. Hold 1st one-way clutch.
- 3. Check front brake hub for correct locking and unlocking directions. If necessary, replace 1st one-way clutch.

+ : Unlocked

<□ : Locked

Under Drive Sun Gear

Check for deformation, fatigue or damage. If necessary, replace the under drive sun gear.

Mid Carrier Assembly

Check for deformation, fatigue or damage. If necessary, replace the mid carrier assembly.

Rear Carrier Assembly

Check for deformation, fatigue or damage. If necessary, replace the rear carrier assembly.

Reverse Brake Retaining Plate/Drive Plates/Driven Plates/Dish Plates Check facing for burns, cracks or damage. If necessary, replace the damaged plate.

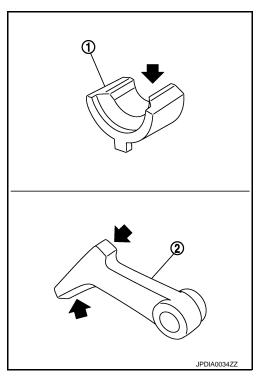
Front Brake Retaining Plates/Drive Plates/Driven Plate Check facing for burns, cracks or damage. If necessary, replace the damaged plate.

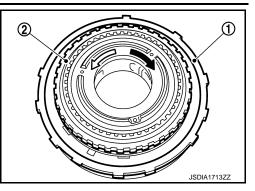
Each Snap Ring

Check for deformation, fatigue or damage. If necessary, replace the snap ring.

Parking Actuator Support and Parking Pawl

If the contact surface on parking actuator support (1), parking pawl (2) and etc. has excessive wear, abrasion, bend or any other damage, replace the components.





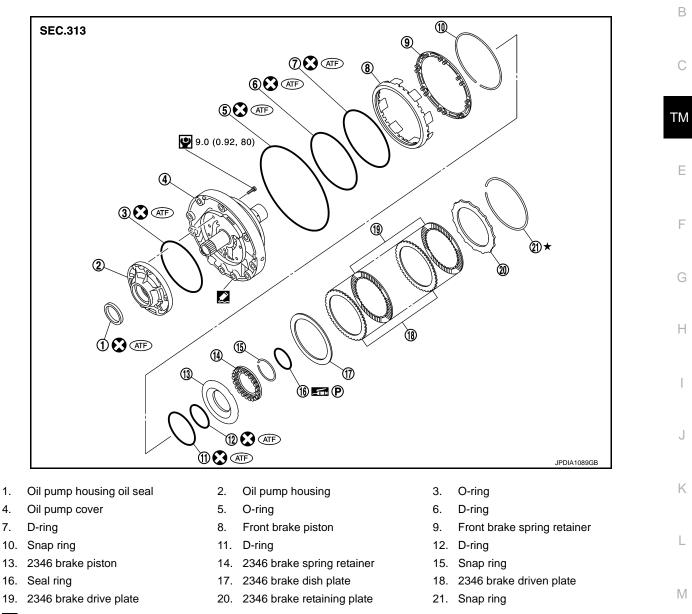
< UNIT DISASSEMBLY AND ASSEMBLY >

OIL PUMP, 2346 BRAKE, FRONT BRAKE PISTON

Exploded View

INFOID:000000011738414

[7AT: RE7R01A]



Apply Genuine RTV silicone sealant or equivalent. Refer to GI-22, "Recommended Chemical Products and Sealants". Refer to GI-4, "Components" for symbols not described on the above.

Disassembly

1.

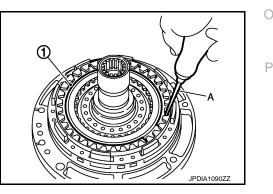
4.

7.

INFOID:000000011738415

Ν

- Remove snap ring (1) from oil pump assembly using a flat-1. bladed screwdriver (A). CAUTION:
 - Be careful not to scratch oil pump cover and 2346 brake retaining plate.
 - · Be careful not to damage snap ring.



А

< UNIT DISASSEMBLY AND ASSEMBLY >

3. Remove seal ring (1) from oil pump assembly.

2. Remove 2346 brake component part (retaining plate, drive plate, driven plate and dish plate) (1) from oil pump assembly.

Revision: 2015 June

6. Set the clutch spring compressor [SST: KV31102400 (J-34285 and J-34285-87)] (A) on 2346 brake spring retainer and remove snap ring (fixing 2346 brake spring retainer) (1) from oil pump assembly while compressing return spring.

B : Press

CAUTION:

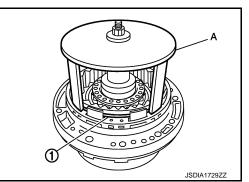
Be careful not to expand snap ring excessively.

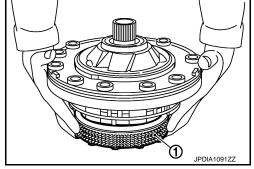
Set the clutch spring compressor [SST: KV31103800 (-)] 4. (A) on front brake spring retainer and remove snap ring (fixing front brake spring retainer) (1) from oil pump assembly while compressing return spring. **CAUTION:**

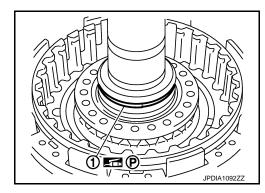
Be careful not to expand snap ring excessively.

- Remove front brake spring retainer (1) from oil pump assembly. 5.
- 00 Œ ⎄

0 \cap JPDIA1094ZZ









JSDIA1730ZZ

[7AT: RE7R01A]

< UNIT DISASSEMBLY AND ASSEMBLY >

7. Remove 2346 brake spring retainer (1) from oil pump assembly.

compressed air. Refer to TM-360, "Oil Channel".

: Front brake pressure hole

А

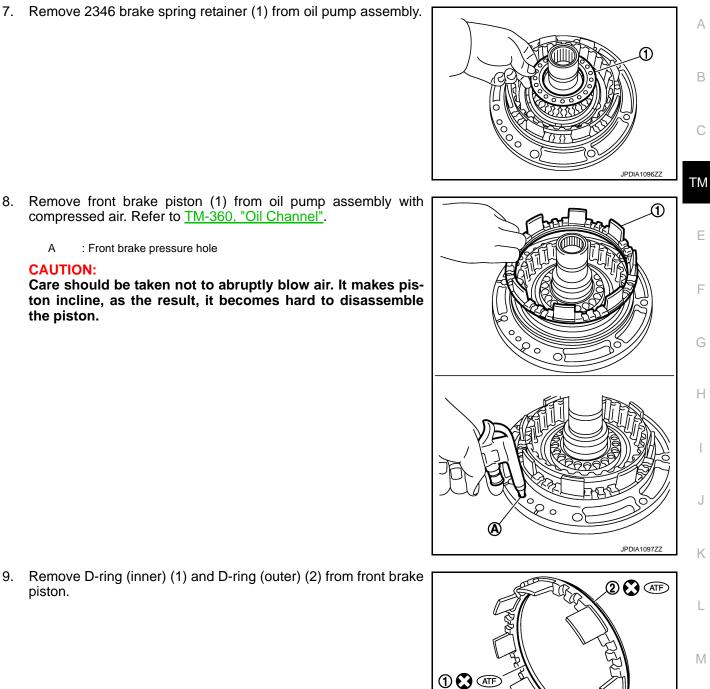
CAUTION:

the piston.

9.

piston.

[7AT: RE7R01A]



JPDIA1098ZZ

Ν

Ο

Ρ

< UNIT DISASSEMBLY AND ASSEMBLY >

- Remove 2346 brake piston (1) from oil pump assembly with compressed air. Refer to <u>TM-360, "Oil Channel"</u>.
 - A : 2346 brake pressure hole

CAUTION:

Care should be taken not to abruptly blow air. It makes piston incline, as the result, it becomes hard to disassemble the piston.

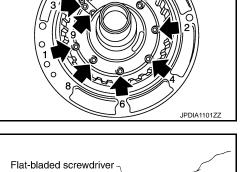
11. Remove D-ring (large) (1) and D-ring (small) (2) from 2346 brake piston.

12. loosen bolts in numerical order shown in the figure and remove oil pump housing from oil pump cover.

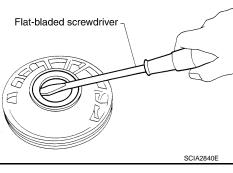
13. Remove oil pump housing oil seal using a flat-bladed screw-

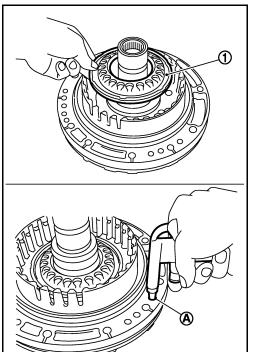
Be careful not to scratch oil pump housing.

Bolt



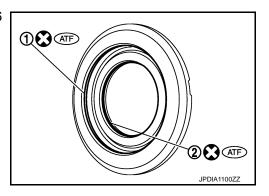
0





[7AT: RE7R01A]

JPDIA1099ZZ



driver.

CAUTION:

< UNIT DISASSEMBLY AND ASSEMBLY >

14. Remove O-ring from oil pump housing.

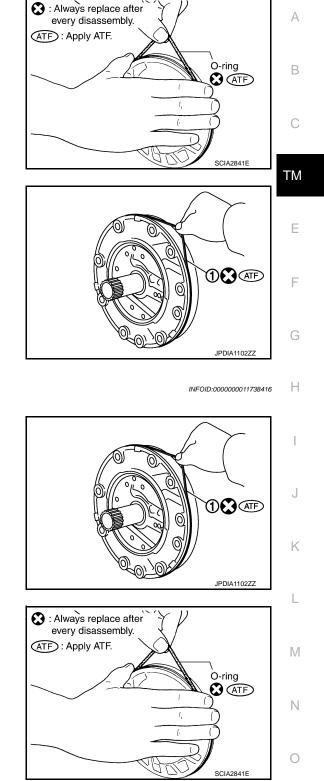
15. Remove O-ring (1) from oil pump cover.

2. Install O-ring to oil pump housing.

1. Install O-ring (1) to oil pump cover.

Assembly

Ρ

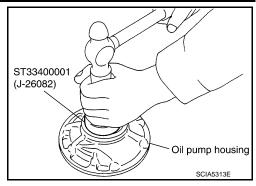


[7AT: RE7R01A]

< UNIT DISASSEMBLY AND ASSEMBLY >

- Using the drift (SST), install oil pump housing oil seal to the oil pump housing until it is flush. CAUTION:
 - Never reuse oil seal.
 - Apply ATF to oil seal.

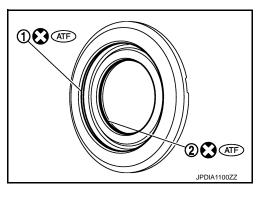
JPDIA1101ZZ



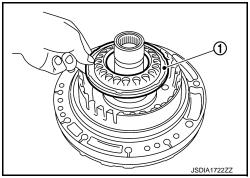
0

4. Install oil pump housing to oil pump cover and tighten bolts (←) to the specified torque in numerical order shown in the figure after temporarily tightening them.

5. Install D-ring (large) (1) and D-ring (small) (2) to 2346 brake piston.



6. Install 2346 brake piston (1) to oil pump assembly.



- 7. Install D-ring (inner) (1) and D-ring (outer) (2) to front brake piston.

< UNIT DISASSEMBLY AND ASSEMBLY >

8. Install front brake piston (1) to oil pump assembly.

9. Install 2346 brake spring retainer (1) to oil pump assembly.

10. Set the clutch spring compressor [SST: KV31102400 (J-34285 and J-34285-87)] (A) on 2346 brake spring retainer and install snap ring (fixing 2346 brake spring retainer) (1) to oil pump assembly while compressing return spring.

В : Press

CAUTION:

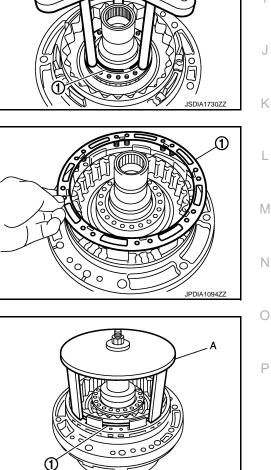
Be careful not to expand snap ring excessively.

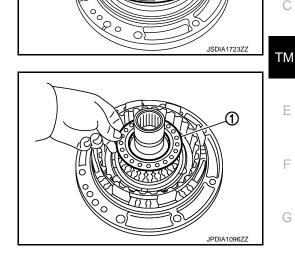
11. Install front brake spring retainer (1) to oil pump assembly.

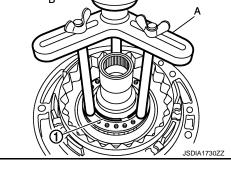
12. Set the clutch spring compressor [SST: KV31103800 (—)] (A) on front brake spring retainer and install snap ring (fixing front brake spring retainer) (1) to oil pump assembly while compressing return spring. **CAUTION:**

Be careful not to expand snap ring excessively.

JSDIA1729ZZ







[7AT: RE7R01A]

ⓓ

А

В

F

Н

Κ

L

Ρ

< UNIT DISASSEMBLY AND ASSEMBLY >

13. Install seal ring (1) to oil pump assembly.

Revision: 2015 June

driven plates, dish plate and snap ring) to oil pump assembly. 1

14. Install 2346 brake component part (retaining plate, drive plates,

- : Dish plate
- 2 : Driven plate (four pieces)
- 3 : Drive plate (four pieces)
- 4 : Retaining plate
- 5 : Snap ring
- **CAUTION:**
- Check the order of plates.
- Never install snap ring mating part (A) to the clearance groove [(B) shown in the figure] of oil pump cover.

Inspection and Adjustment

INSPECTION AFTER DISASSEMBLY

Each Snap Ring Check for deformation, fatigue or damage. If necessary, replace snap ring.

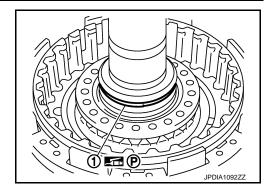
Each Spring Retainer Check for deformation, fatigue or damage. If necessary, replace spring retainer.

2346 Brake Retaining Plate/Drive Plates/Driven Plates/Dish Plate Check facing for burns, cracks or damage. If necessary, replace the damaged plate.

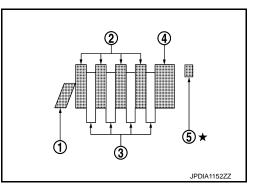
INSPECTION AFTER ASSEMBLY

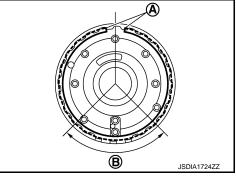
2346 Brake Clearance

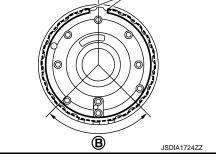




[7AT: RE7R01A]







INFOID:000000011738417

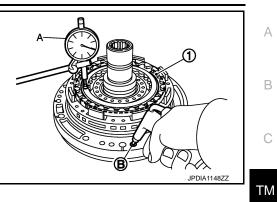
< UNIT DISASSEMBLY AND ASSEMBLY >

Set a dial indicator (A) as shown in the figure. Blow air into 2346 brake oil pressure hole (B), and measure 2346 brake clearance. If clearance is outside the specified value, adjust clearance by selecting an appropriate snap ring (1). Refer to <u>TM-360</u>, "Oil Channel".

Air pressure: 300 kPa (3.06 kg/cm², 43.5 psi)2346 brake: Refer to TM-428, "2346 Brake Clear-
clearanceclearanceance".

CAUTION:

Never exceed the specified air pressure value.



[7AT: RE7R01A]

F

G

Н

- J

Κ

L

M

Ν

0

Ρ

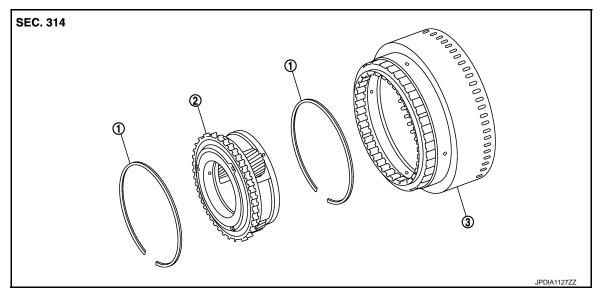
UNDER DRIVE CARRIER, FRONT BRAKE HUB

< UNIT DISASSEMBLY AND ASSEMBLY >

UNDER DRIVE CARRIER, FRONT BRAKE HUB

Exploded View

INFOID:000000011738418

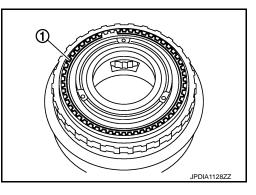


 1. Snap ring
 2. Under drive carrier assembly
 3. Front brake hub

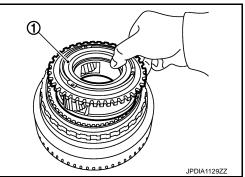
 Refer to GI-4, "Components" for symbols in the figure.
 3.

Disassembly

- 1. Remove snap ring (1) from front brake hub using a flat-bladed screwdriver. CAUTION:
 - Be careful not to scratch front brake hub and under drive carrier assembly.
 - Be careful not to damage snap ring.



2. Remove under drive carrier assembly (1) from front brake hub.

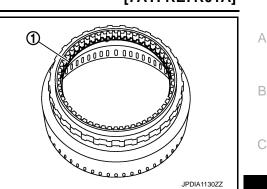


INFOID:000000011738419

UNDER DRIVE CARRIER, FRONT BRAKE HUB

< UNIT DISASSEMBLY AND ASSEMBLY >

- Remove snap ring (1) from front brake hub using a flat-bladed screwdriver.
 CAUTION:
 - Be careful not to scratch front brake hub.
 - Be careful not to damage snap ring.



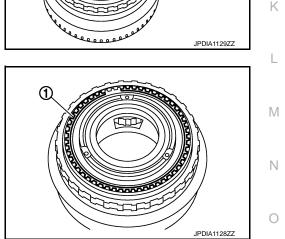
ቢ

Assembly

 Install snap ring (1) to front brake hub. CAUTION: Be careful not to damage snap ring.

2. Install under drive carrier assembly (1) to front brake hub.

- Install snap ring (1) to front brake hub using a flat-bladed screwdriver.
 CAUTION:
 - Be careful not to scratch front brake hub.
 - Be careful not to damage snap ring.



Inspection

INFOID:000000011738421

INSPECTION AFTER DISASSEMBLY

- Each Snap Ring
 - Check for deformation, fatigue or damage. If necessary, replace snap ring.
- Under Drive Carrier Assembly Check for deformation, fatigue or damage. If necessary, replace under drive carrier assembly.
- Front Brake Hub

TM-411

2016 370Z

[7AT: RE7R01A]

INFOID:000000011738420

JPDIA1130ZZ

ТΜ

Ε

F

Н

UNDER DRIVE CARRIER, FRONT BRAKE HUB

< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01A]

Check for deformation, fatigue or damage. If necessary, replace front brake hub.

< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01A]

FRONT CARRIER, INPUT CLUTCH, REAR INTERNAL GEAR

Exploded View

INFOID:000000011738422

А

В

С

Ε

F

Н

J

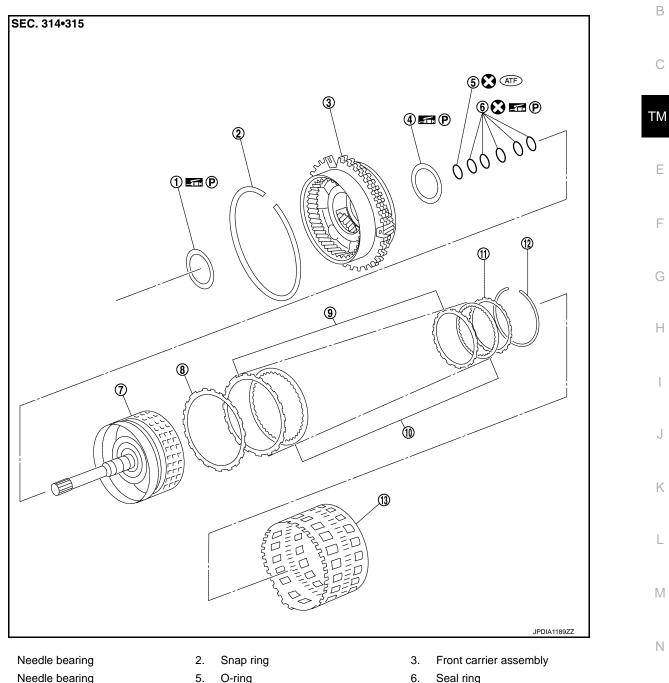
Κ

L

Μ

Ν

Ο



7. Input clutch drum

1.

4.

- 10. Input clutch drive plate
- 13. Rear internal gear

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

- O-ring
- 8. Input clutch dish plate
- 11. Input clutch retaining plate
- 6. Seal ring
- 9. Input clutch driven plate
- 12. Snap ring

< UNIT DISASSEMBLY AND ASSEMBLY >

Disassembly

CAUTION:

CAUTION:

6.

rear internal gear.

1. Remove needle bearing (1) from front carrier assembly.

2. Compress snap ring (1) using flat-bladed screwdrivers (A).

4. Remove front carrier assembly from input clutch assembly.

• Be careful not to scratch rear internal gear.

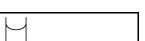
Remove snap ring (1) from front carrier assembly.

Be careful not to expand snap ring excessively.

7. Remove O-ring (1) and seal rings (2) from input clutch assem-

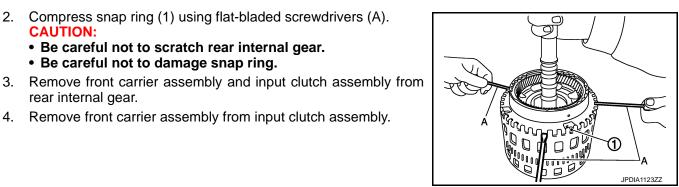
· Be careful not to damage snap ring.

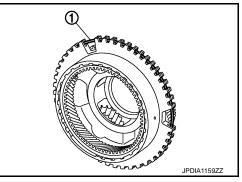
bly.

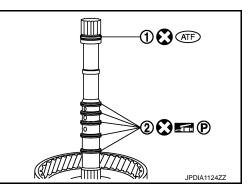


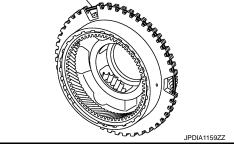
[7AT: RE7R01A]

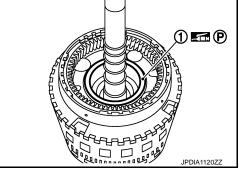
INFOID:000000011738423







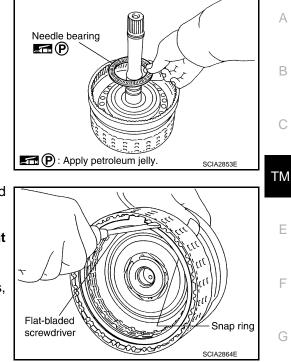




< UNIT DISASSEMBLY AND ASSEMBLY >

8. Remove needle bearing from input clutch assembly.

- Remove snap ring from input clutch drum using a flat-bladed screwdriver.
 CAUTION:
 - Be careful not to scratch rear input clutch drum and input clutch retaining plate.
 - Be careful not to damage snap ring.
- 10. Remove input clutch component part (drive plates, driven plates, retaining plate and dish plate) from input clutch drum.



[7AT: RE7R01A]

INFOID:0000000011738424

Н

Κ

Assembly

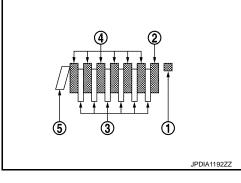
- 1. Install input clutch component part (drive plates, driven plates, retaining plate and dish plate) to input clutch drum.
 - 1 : Snap ring
 - 2 : Retaining plate
 - 3 : Drive plate (six pieces)
 - 4 : Driven plate (six pieces)
 - 5 : Dish plate

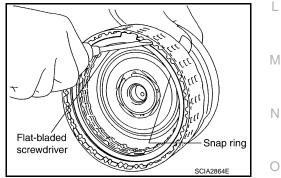
CAUTION: Check order of plates.

2. Install snap ring to input clutch drum using a flat-bladed screwdriver.

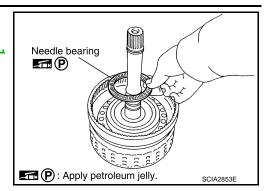
CAUTION:

- Be careful not to scratch input clutch drum and input clutch retaining plate.
- Be careful not to damage snap ring.

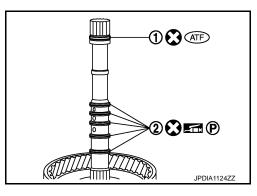




- < UNIT DISASSEMBLY AND ASSEMBLY >
- Install needle bearing to input clutch assembly.
 CAUTION:
 Check the direction of needle bearing. Refer to <u>TM-361</u>, <u>"Location of Needle Bearings and Bearing Races"</u>.

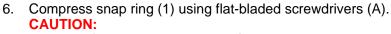


4. Install O-ring (1) and seal rings (2) to input clutch assembly.

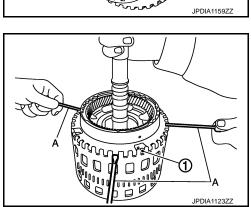


ⓓ

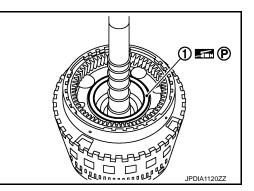
 Install snap ring (1) to front carrier assembly.
 CAUTION: Be careful not to expand snap ring excessively.



- Be careful not to scratch rear internal gear.
- Be careful not to damage snap ring.
- 7. Install front carrier assembly and input clutch assembly to rear internal gear.



Install needle bearing (1) to front carrier assembly.
 CAUTION:
 Check the direction of needle bearing. Refer to <u>TM-361</u>, <u>"Location of Needle Bearings and Bearing Races"</u>.



FRONT CARRIER, INPUT CLUTCH, REAR INTERNAL G < UNIT DISASSEMBLY AND ASSEMBLY >	EAR [7AT: RE7R01A]
Inspection	INFOID:000000011738425
INSPECTION AFTER DISASSEMBLY	
Front Carrier Snap Ring Check for deformation, fatigue or damage. If necessary, replace the snap ring.	
Input Clutch Snap Ring Check for deformation, fatigue or damage. If necessary, replace input clutch assembly.	
Input Clutch Drum Check for deformation, fatigue or damage or burns. If necessary, replace input clutch ass	embly.
Input Clutch Retaining Plate/Drive Plates/Driven Plates/Dish Plate Check facing for burns, cracks or damage. If necessary, replace input clutch assembly.	
Front Carrier Check for deformation, fatigue or damage. If necessary, replace front carrier assembly.	
Rear Internal Gear Check for deformation, fatigue or damage. If necessary, replace rear internal gear.	

L

Μ

Ν

0

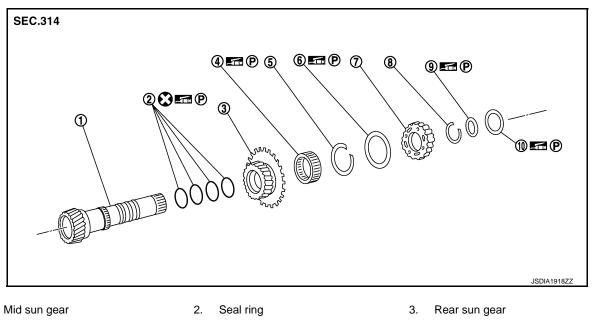
Ρ

MID SUN GEAR, REAR SUN GEAR, HIGH AND LOW REVERSE CLUTCH HUB < UNIT DISASSEMBLY AND ASSEMBLY > [7AT: RE7R01A]

MID SUN GEAR, REAR SUN GEAR, HIGH AND LOW REVERSE CLUTCH HUB

Exploded View

INFOID:000000011738426



- 4. 2nd one-way clutch 5. Snap ring
- 7. High and low reverse clutch hub 8. Snap ring
- 10. Needle bearing

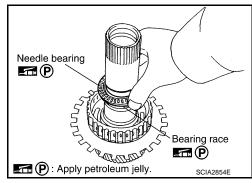
Refer to <u>GI-4, "Components"</u> for symbols in the figure.

Disassembly

1.

INFOID:000000011738427

1. Remove needle bearing and bearing race from high and low reverse clutch hub.



6.

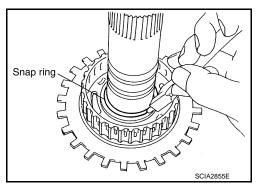
9.

Needle bearing

Bearing race

 Remove snap ring from mid sun gear assembly using pair of snap ring pliers.
 CAUTION:

Be careful not to expand snap ring excessively.



MID SUN GEAR, REAR SUN GEAR, HIGH AND LOW REVERSE CLUTCH HUB [7AT: RE7R01A]

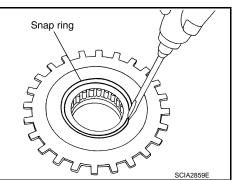
- < UNIT DISASSEMBLY AND ASSEMBLY >
- 3. Remove high and low reverse clutch hub from mid sun gear assembly.

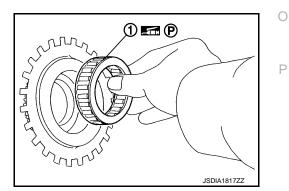
Remove needle bearing from high and low reverse clutch hub. 4.

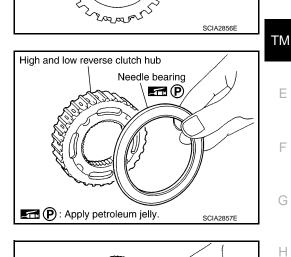
5. Remove rear sun gear assembly from mid sun gear assembly.

- 6. Remove snap ring from rear sun gear using a flat-bladed screwdriver. **CAUTION:**
 - Be careful not to scratch rear sun gear and 2nd one-way clutch.
 - Be careful not to damage snap ring.
- 7. Remove 2nd one-way clutch from rear sun gear.









А

В

С

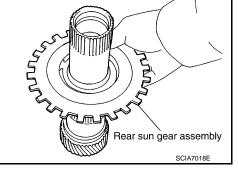
Κ

L

Μ

Ν

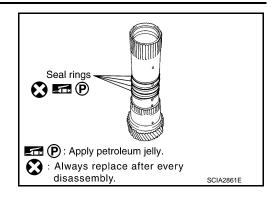
High and low reverse clutch hub



MID SUN GEAR, REAR SUN GEAR, HIGH AND LOW REVERSE CLUTCH HUB [7AT: RE7R01A]

< UNIT DISASSEMBLY AND ASSEMBLY >

8. Remove seal rings from mid sun gear.

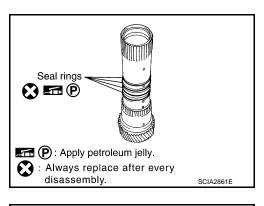


Assembly

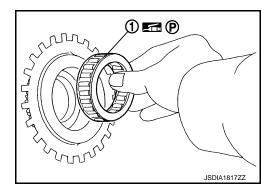
1. Install seal rings to mid sun gear.

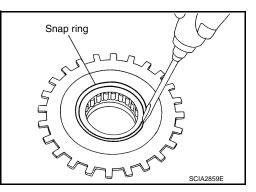
2. Install 2nd one-way clutch to rear sun gear.

- 3. Install snap ring to rear sun gear using a flat-bladed screwdriver. **CAUTION:**
 - · Be careful not to scratch rear sun gear and 2nd one-way clutch.
 - · Be careful not to damage snap ring.



INFOID:000000011738428

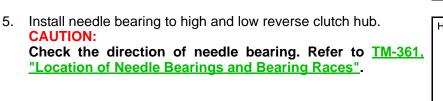




MID SUN GEAR, REAR SUN GEAR, HIGH AND LOW REVERSE CLUTCH HUB [7AT: RE7R01A]



4. Install rear sun gear assembly to mid sun gear assembly.



6. Install high and low reverse clutch hub to mid sun gear assembly.

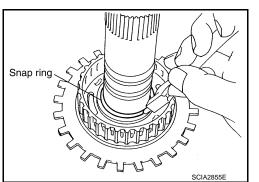
Install snap ring to mid sun gear assembly using pair of snap 7. ring pliers. **CAUTION:**

Be careful not to expand snap ring excessively.

Rear sun gear assembly SCIA7018E High and low reverse clutch hub Needle bearing E P P: Apply petroleum jelly. SCIA2857E High and low reverse clutch hub Lapans SCIA2856E

S

Solutor,



Check operation of 2nd one-way clutch. 8.

Ρ

А

В

С

TΜ

Ε

F

Н

Κ

L

Μ

Ν

MID SUN GEAR, REAR SUN GEAR, HIGH AND LOW REVERSE CLUTCH HUB

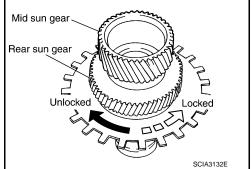
- < UNIT DISASSEMBLY AND ASSEMBLY >
- Hold mid sun gear and turn rear sun gear. a.
- b. Check 2nd one-way clutch for correct locking and unlocking directions.

"Location of Needle Bearings and Bearing Races".

CAUTION:

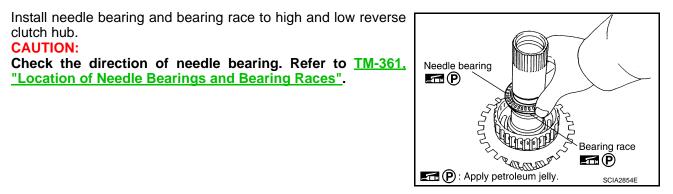
clutch hub. **CAUTION:**

If not as shown in the figure, check installation direction of 2nd one-way clutch.



[7AT: RE7R01A]

INFOID:000000011738429



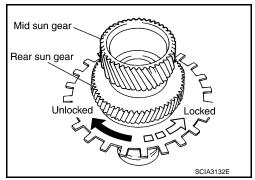
Inspection

9.

INSPECTION AFTER DISASSEMBLY

2nd One-way Clutch

- 1. Hold mid sun gear and turn rear sun gear.
- Check 2nd one-way clutch for correct locking and unlocking 2. directions. If necessary, replace 2nd one-way clutch.



Each Snap Ring Check for deformation, fatigue or damage. If necessary, replace the snap ring.

2nd One-way Clutch Check frictional surface for wear or damage. If necessary, replace the 2nd one-way clutch.

Mid Sun Gear Check for deformation, fatigue or damage. If necessary, replace the mid sun gear.

Rear Sun Gear Check for deformation, fatigue or damage. If necessary, replace the rear sun gear.

High and Low Reverse Clutch Hub

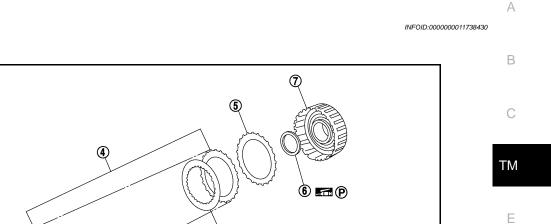
Check for deformation, fatigue or damage. If necessary, replace the high and low reverse clutch hub.

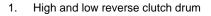
< UNIT DISASSEMBLY AND ASSEMBLY >

HIGH AND LOW REVERSE CLUTCH

Exploded View

SEC.315





(2)

- High and low reverse clutch driven 3. plate
- High and low reverse clutch drive 5. plate

3

High and low reverse clutch retaining plate

JPDIA1191ZZ

High and low reverse clutch dish 6. plate

7. Bearing race

Snap ring

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

Disassembly

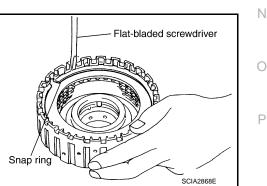
4.

Remove bearing race from high and low reverse clutch drum. 1.

2.

Κ Bearing race •P L Μ P : Apply petroleum jelly. SCIA5215E

- Remove snap ring from high and low reverse clutch drum using a flat-bladed screwdriver. **CAUTION:**
 - Be careful not to scratch high and low reverse clutch
 - drum. · Be careful not to damage snap ring.
- 3. Remove high and low reverse clutch component part (drive plates, driven plates, retaining plate and dish plate) from high and low reverse clutch drum.



INFOID:000000011738431

F

Н

< UNIT DISASSEMBLY AND ASSEMBLY >

Assembly

- Install high and low reverse clutch component part (dish plate, 1. drive plates, driven plates and retaining plate) to high and low reverse clutch drum.
 - 1 : Snap ring
 - 2 : Retaining plate
 - 3 : Drive plate (four pieces)
 - 4 : Driven plate (four pieces)
 - 5 : Dish plate

CAUTION: Check the order of plates.

2. Install snap ring to high and low reverse clutch drum using a flatbladed screwdriver.

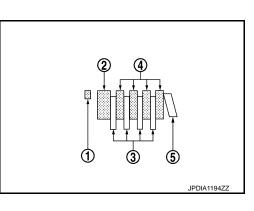
Install bearing race to high and low reverse clutch drum.

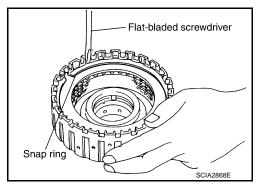
"Location of Needle Bearings and Bearing Races".

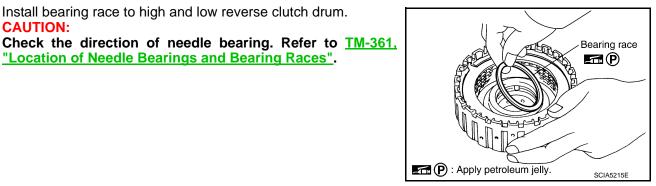
CAUTION:

CAUTION:

- Be careful not to scratch high and low reverse clutch drum.
- · Be careful not to damage snap ring.







Inspection

3.

INFOID:000000011738433

INSPECTION AFTER DISASSEMBLY

Check the following items. If necessary, replace high and low reverse clutch assembly.

Snap Ring

Check for deformation, fatigue or damage.

High and Low Reverse Clutch Retaining Plate/ Drive Plates/Driven Plates/Dish Plate Check facing for burns, cracks or damage.

High and Low Reverse Clutch Drum Check for deformation, fatigue or damage or burns.

DIRECT CLUTCH

< UNIT DISASSEMBLY AND ASSEMBLY >

DIRECT CLUTCH

Exploded View

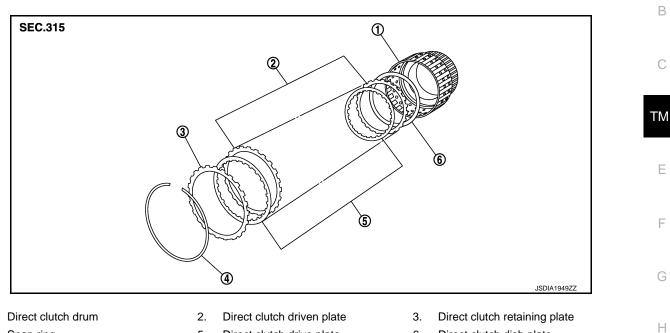
INFOID:000000011738434

INFOID:0000000011738435

INFOID:0000000011738436

Μ

А



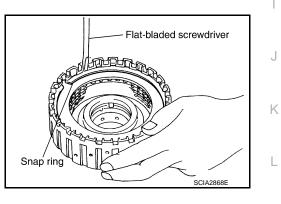
4. Snap ring

- 5. Direct clutch drive plate
- 6. Direct clutch dish plate

Disassembly

1.

- Remove snap rings from direct clutch drum using a flat-bladed 1. screwdriver.
 - **CAUTION:**
 - · Be careful not to scratch direct clutch drum and direct clutch retaining plate.
 - Be careful not to damage snap ring.
- 2. Remove direct clutch component part (drive plates, driven plates, retaining plate and dish plate) from direct clutch drum.

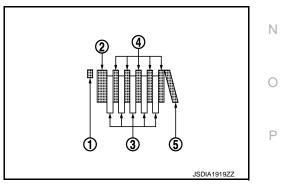


Assembly

- Install direct clutch component part (drive plates, driven plates, 1. retaining plate and dish plate) to direct clutch drum.
 - 1 : Snap ring
 - 2 : Retaining plate
 - 3 : Drive plate (five pieces)
 - 4 : Driven plate (five pieces)
 - 5 : Dish plate

CAUTION:

Check the order of plates.



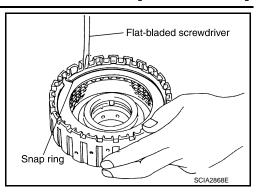
DIRECT CLUTCH

< UNIT DISASSEMBLY AND ASSEMBLY >

2. Install snap rings to direct clutch drum using a flat-bladed screwdriver.

CAUTION:

- Be careful not to scratch direct clutch drum and direct clutch retaining plate.
- Be careful not to damage snap ring.



INFOID:000000011738437

[7AT: RE7R01A]

Inspection

INSPECTION AFTER DISASSEMBLY

Check the following items. If necessary, replace direct clutch assembly.

Snap Ring

Check for deformation, fatigue or damage.

Direct Clutch Retaining Plate/Drive Plates/Driven Plates/Dish Plate Check facing for burns, cracks or damage.

Direct Clutch Drum Check for deformation, fatigue or damage or burns.

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS) SERVICE DATA AND SPECIFICATIONS (SDS)

General Specification

INFOID:0000000011738438 В

[7AT: RE7R01A]

	Engine	VQ37VHR	
Applied model	Axle	2WD	
Transmission model		RE7R01A	
Stall torque ratio		1.92 : 1	
Transmission gear ratio	1st	4.924	
	2nd	3.194	
	3rd	2.043	
	4th	1.412	
	5th	1.000	
	6th	0.862	
	7th	0.772	
	Reverse	3.972	
Recommended fluid and fluid ca	apacity	Refer to <u>MA-16, "FOR NORTH AMERICA : Fluids and Lubricants"</u> (For North America), <u>MA-18, "FOR MEXICO : Fluids and Lubri-</u> <u>cants"</u> (For Mexico)	

Vehicle Speed at Which Gear Shifting Occurs

INFOID:000000011738439

n	Throttle position	
Half throttle	Full throttle	Gear position
38 - 42 (24 - 26)	50 - 54 (32 - 33)	$D1 \rightarrow D2$
65 – 73 (41 – 45)	79 - 87 (50 - 54)	$D_2 \rightarrow D_3$
94 - 104 (59 - 64)	124 – 134 (78 – 83)	$D3 \rightarrow D4$
139 – 149 (87 – 92)	181 – 191 (113 – 118)	$D4 \rightarrow D5$
182 – 192 (114 – 119)	250 - 260 (156 - 161)	$D5 \rightarrow D6$
214 – 224 (133 – 139)	250 – 260 (156 – 161)	$D6 \rightarrow D7$
169 – 179 (105 – 111)	240 – 250 (150 – 155)	$D7 \rightarrow D6$
139 – 149 (87 – 92)	240 – 250 (150 – 155)	$D6 \rightarrow D5$
69 – 79 (43 – 49)	171 – 181 (107 – 112)	$D5 \rightarrow D4$
37 – 47 (23 – 29)	109 – 119 (68 – 73)	$D4 \rightarrow D3$
10 – 18 (7 – 11)	52 - 60 (33 - 37)	$D3 \rightarrow D2$
5 - 9 (4 - 5)	8 - 12 (5 - 7)	$D_2 \rightarrow D_1$

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

Vehicle Speed at Which Lock-up Occurs/Releases

INFOID:000000011738440 Unit: km/h (MPH)

Ρ

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)

А

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

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

Stall Speed

INFOID:0000000011738441

INFOID:000000011738442

INFOID:000000011738443

Unit: mm (in)

[7AT: RE7R01A]

2,475 – 2,775 rpm

0.25 - 0.55 (0.0098 - 0.0217)

1.0 (0.039) 1.2 (0.047) 1.4 (0.055)

1.6 (0.063) 1.8 (0.071) 2.0 (0.079) 2.2 (0.087)

25.0 mm (0.98 in)

Stall speed Torque Converter Dimension between end of converter housing and torque converter Total End Play Total end play Standard

Thickness of bearing race for adjusting total end play

Reverse Brake Clearance

Unit: mm (in)

INFOID:000000011738444

Reverse brake clearance	Standard	0.8 – 1.2 (0.031 – 0.047)	
Thickness of retaining plate for ad	usting reverse brake clearance	4.8 (0.189) 5.0 (0.197) 5.2 (0.205) 5.4 (0.213) 5.6 (0.220) 5.8 (0.228)	
		5.8 (0.228) 6.0 (0.236)	

Front Brake Clearance

INFOID:000000011738445 Unit: mm (in)

Front brake clearance	Standard	0.7 – 1.1 (0.028 – 0.043)
Thickness of retaining plate for adjusting	front brake clearance	2.0 (0.079) 2.2 (0.087) 2.4 (0.094) 2.6 (0.102) 2.8 (0.110)

2346 Brake Clearance

INFOID:000000011738446

Unit: mm (in)

2346 brake clearance	Standard	1.5 – 1.9 (0.059 – 0.075)	
Thickness of snap ring for adjusting 2346 brake clearance		2.0 (0.079)	
		2.2 (0.087) 2.4 (0.094)	
		2.6 (0.102)	
		2.8 (0.110)	
		3.0 (0.118)	