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SECTION

TRANSAXLE & TRANSMISSION

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PRECAUTION

PRECAUTIONS

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

INFOID:000000014714313

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 SR and SB section of this Service Manual.

WARNING:

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

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

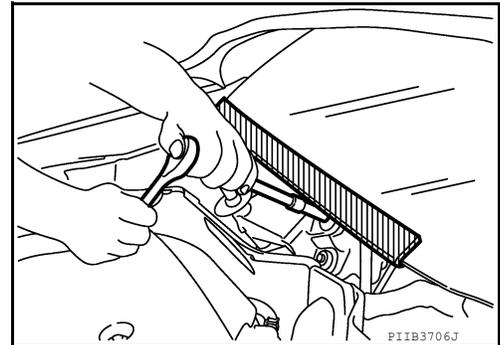
WARNING:

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

Precaution for Procedure without Cowl Top Cover

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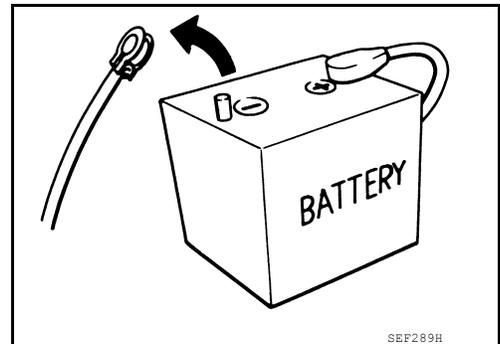
When performing the procedure after removing cowl top cover, cover the lower end of windshield with urethane, etc to prevent damage to windshield.



General Precautions

INFOID:000000014418858

- Turn ignition switch OFF and disconnect the battery cable from the negative terminal before connecting or disconnecting the TCM connector. Because battery voltage is applied to TCM even if ignition switch is turned OFF.

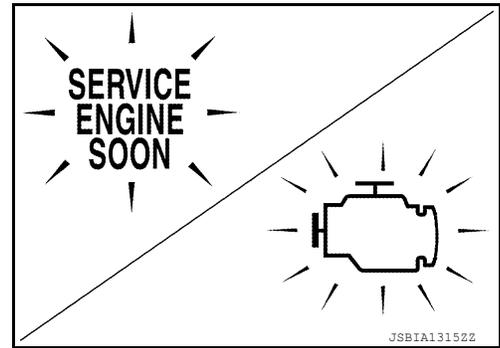


PRECAUTIONS

< PRECAUTION >

[6AT: RE6R01A]

- 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.
- 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.
- 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.



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PREPARATION

< PREPARATION >

[6AT: RE6R01A]

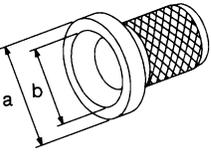
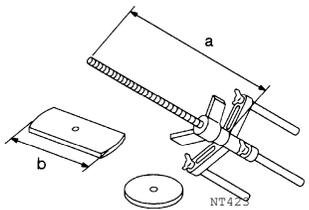
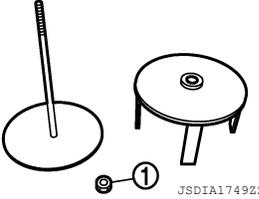
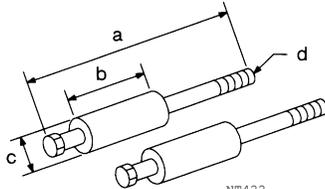
PREPARATION

PREPARATION

Special Service Tool

INFOID:000000014418859

The actual shapes of TechMate tools may differ from those of special service tools illustrated here.

Tool number (TechMate No.) Tool name	Description
ST33400001 (J-26082) Drift a: 60 mm (2.36 in) dia. b: 47 mm (1.85 in) dia.  <p style="text-align: center;">NT086</p>	<ul style="list-style-type: none"> • Installing rear oil seal (2WD) • Installing oil pump housing oil seal
KV31102400 (J-34285 and J-34285-87) Clutch spring compressor a: 320 mm (12.60 in) b: 174 mm (6.85 in)  <p style="text-align: center;">NT422</p>	<ul style="list-style-type: none"> • Installing reverse brake return spring retainer • Removing and installing 2346 brake spring retainer
KV31103800 Clutch spring compressor 1. M12×1.75P  <p style="text-align: center;">JSDIA1749ZZ</p>	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  <p style="text-align: center;">NT422</p>	Remove oil pump assembly

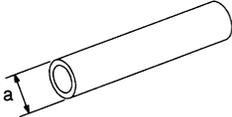
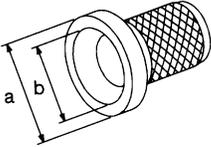
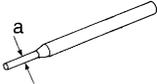
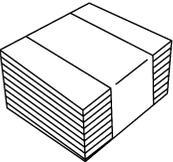
PREPARATION

< PREPARATION >

[6AT: RE6R01A]

Commercial Service Tool

INFOID:000000014418860

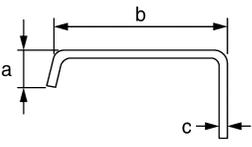
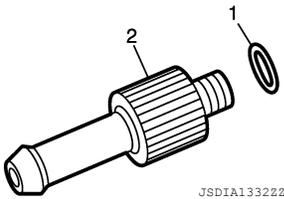
Tool name	Description	
Power tool  <p style="text-align: center; font-size: x-small;">PIIB1407E</p>	Loosening bolts and nuts	A B C
Oil seal remover  <p style="text-align: center; font-size: x-small;">JSDIA4998ZZ</p>	Removing oil seal	E F
Drift a: 22 mm (0.87 in) dia.  <p style="text-align: center; font-size: x-small;">NT083</p>	Installing manual shaft oil seals	G H
Drift a: 64 mm (2.52 in) dia.  <p style="text-align: center; font-size: x-small;">NT086</p>	Installing rear oil seal	I J K
Pin punch a: 4 mm (0.16 in) dia.  <p style="text-align: center; font-size: x-small;">NT410</p>	Removing retaining pin	L M
Lint-free paper  <p style="text-align: center; font-size: x-small;">JSDIA4746ZZ</p>	Cleaning transmission	N O P

TM

PREPARATION

< PREPARATION >

[6AT: RE6R01A]

Tool name	Description
<p>Wire a: Approx. 15 mm (0.59 in) b: Approx. 100 mm (3.94 in) c: Approx. 3 mm (0.118 in) [Bend a 1.5 (0.059) dia. wire in half.]</p> <div style="text-align: center;">  <p style="font-size: small; margin-top: 5px;">JSDIA4560ZZ</p> </div>	<p>Checking torque converter one-way clutch</p>
<ol style="list-style-type: none"> 1. 315268E000* O-ring 2. 310811EA5A* Charging pipe <div style="text-align: center;">  <p style="font-size: small; margin-top: 5px;">JSDIA1332ZZ</p> </div>	<p>Charging and adjustment A/T fluid</p>

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

COMPONENT PARTS

< SYSTEM DESCRIPTION >

[6AT: RE6R01A]

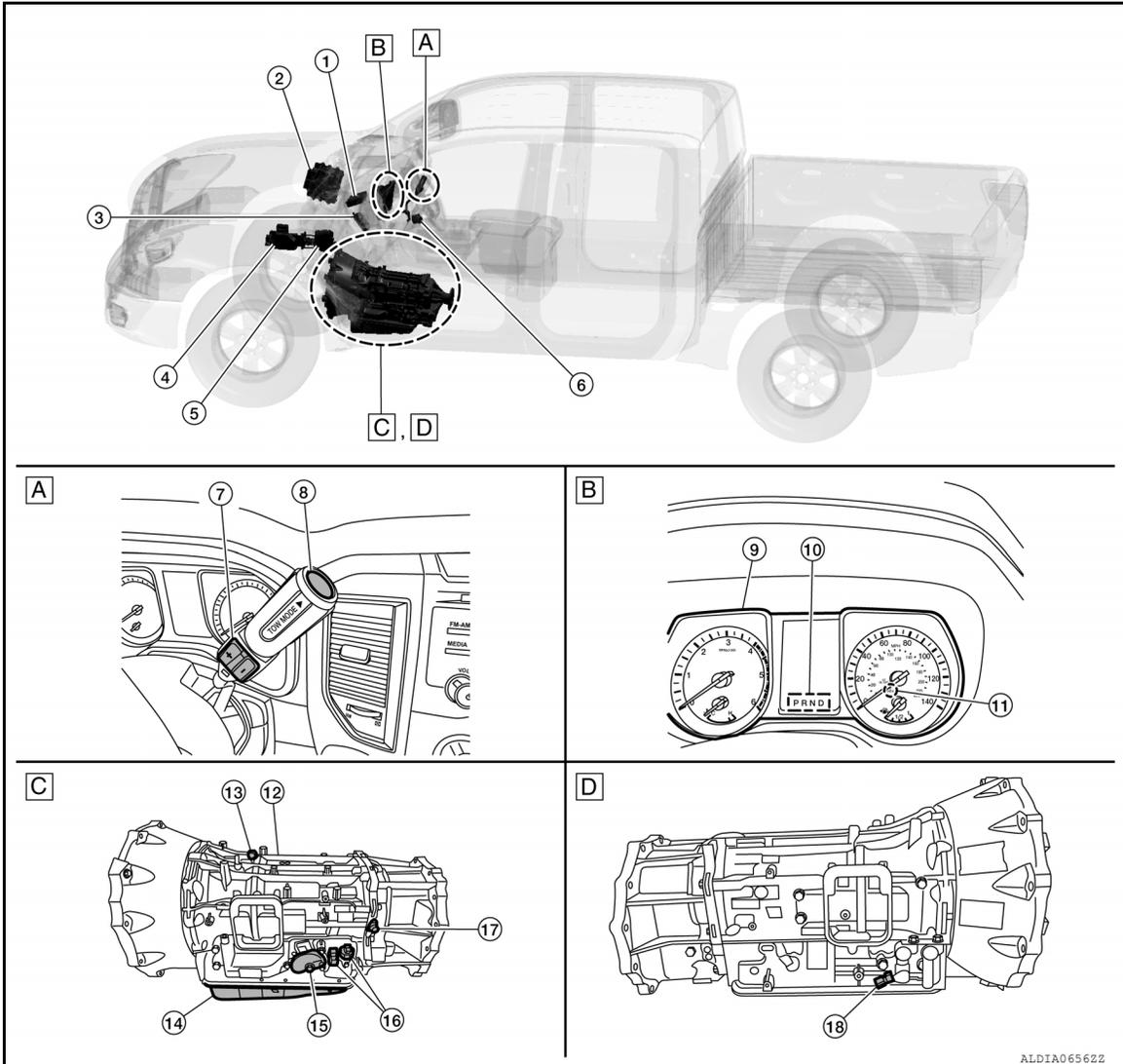
SYSTEM DESCRIPTION

COMPONENT PARTS

A/T CONTROL SYSTEM

A/T CONTROL SYSTEM : Component Parts Location

INFOID:000000014418861



A Shift lever

B Combination meter

C Transmission assembly

D Transmission assembly

COMPONENT PARTS

< SYSTEM DESCRIPTION >

[6AT: RE6R01A]

No.	Component	Function	
①	BCM	Mainly transmits the following signal to TCM via CAN communication. <ul style="list-style-type: none"> • Stop lamp switch signal Refer to BCS-5, "BODY CONTROL SYSTEM : Component Parts Location" for detailed installation location.	
②	ECM	Mainly transmits the following signal to TCM via CAN communication. <ul style="list-style-type: none"> • Engine speed signal • Engine torque signal • Accelerator pedal position signal Mainly receives the following signals from TCM via CAN communication. <ul style="list-style-type: none"> • Malfunction indicator lamp signal Refer to EC-816, "Reference Value" for detailed installation location.	
③	TCM	TM-17, "A/T CONTROL SYSTEM : TCM"	
④	ABS actuator and electric unit (control unit)	Refer to BRC-9, "Component Parts Location" for detailed installation location.	
⑤	Transfer control unit	Mainly transmits the following signal to TCM via CAN communication. <ul style="list-style-type: none"> • 4WD mode signal Refer to DLN-14, "WITHOUT AXLE DISCONNECT DEVICE : Component Parts Location" (without axle disconnect device) or DLN-17, "WITH AXLE DISCONNECT DEVICE : Component Parts Location" (with axle disconnect device) for detailed installation location.	
⑥	4WD mode switch	DLN-16, "WITHOUT AXLE DISCONNECT DEVICE : 4WD Shift Switch" (without axle disconnect device) DLN-20, "WITH AXLE DISCONNECT DEVICE : 4WD Shift Switch" (with axle disconnect device)	
⑦	Manual mode switch	TM-19, "A/T CONTROL SYSTEM : Manual Mode Switch"	
⑧	Tow mode switch	TM-20, "A/T CONTROL SYSTEM : Tow Mode Switch"	
⑨	Combination meter	Mainly transmits the following signal to TCM via CAN communication. <ul style="list-style-type: none"> • Tow mode switch signal • Manual mode (shift up) signal • Manual mode (shift down) signal Mainly receives the following signals from TCM via CAN communication. <ul style="list-style-type: none"> • AT CHECK indicator lamp signal Refer to MWI-8, "METER SYSTEM : Component Parts Location" (TYPE A), MWI-116, "METER SYSTEM : Component Parts Location" (TYPE B) for detailed installation location.	
⑩	Shift position indicator	TM-20, "A/T CONTROL SYSTEM : Shift Position Indicator"	
⑪	AT CHECK indicator lamp	TM-20, "A/T CONTROL SYSTEM : AT CHECK Indicator Lamp"	
⑫	Transmission assembly	—	
⑬	Input speed sensor	TM-18, "A/T CONTROL SYSTEM : Input Speed Sensor"	
⑭	Control valve	C1 clutch solenoid valve*	TM-18, "A/T CONTROL SYSTEM : C1 Clutch Solenoid Valve"
		C2 clutch solenoid valve*	TM-18, "A/T CONTROL SYSTEM : C2 Clutch Solenoid Valve"
		C3 clutch solenoid valve*	TM-19, "A/T CONTROL SYSTEM : C3 Clutch Solenoid Valve"
		B1 brake solenoid valve*	TM-19, "A/T CONTROL SYSTEM : B1 Brake Solenoid Valve"
		B2 brake solenoid valve*	TM-19, "A/T CONTROL SYSTEM : B2 Brake Solenoid Valve"
		Line pressure solenoid valve*	TM-19, "A/T CONTROL SYSTEM : Line Pressure Solenoid Valve"
		Torque converter clutch solenoid valve*	TM-19, "A/T CONTROL SYSTEM : Torque Converter Clutch Solenoid Valve"
		Fail-safe solenoid valve*	TM-19, "A/T CONTROL SYSTEM : Fail-safe Solenoid Valve"
		Oil pressure switch*	TM-19, "A/T CONTROL SYSTEM : Oil Pressure Switch"
		A/T fluid temperature sensor 2**	TM-18, "A/T CONTROL SYSTEM : A/T Fluid Temperature Sensor 2"
⑮	Transmission range switch	TM-17, "A/T CONTROL SYSTEM : Transmission Range Switch"	

COMPONENT PARTS

< SYSTEM DESCRIPTION >

[6AT: RE6R01A]

No.	Component	Function
⑩	A/T assembly connector	—
⑪	Output speed sensor	TM-18, "A/T CONTROL SYSTEM : Output Speed Sensor"
⑫	A/T fluid temperature sensor 1	TM-18, "A/T CONTROL SYSTEM : A/T Fluid Temperature Sensor 1"

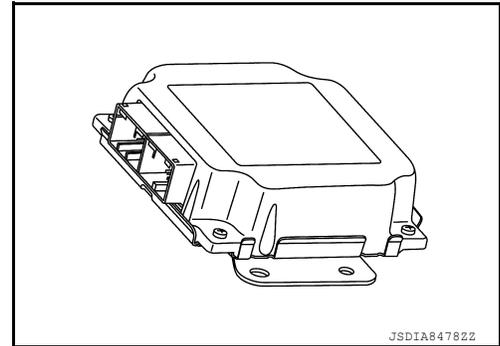
*: These components are included in control valve.

** : The A/T fluid temperature sensor 2 is part of the A/T assembly connector (12-pin).

A/T CONTROL SYSTEM : TCM

INFOID:000000014418862

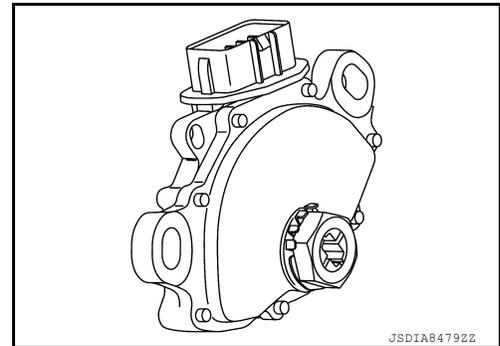
- The TCM consists of a microcomputer and connectors for signal input/output and for power supply.
- TCM judges the driving conditions of the vehicle according to signals from each sensor, each switch, and other ECUs and optimally controls the transmission.



A/T CONTROL SYSTEM : Transmission Range Switch

INFOID:000000014418863

- 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.



Select lever position	Transmission range switch			
	A (SW1)	B (SW2)	C (SW3)	PA (SW4)
P	ON	OFF	OFF	ON
Between P and R	ON	ON	OFF	ON
R	ON	ON	OFF	OFF
Between R and N	ON	ON	OFF	ON
N	OFF	ON	OFF	ON
Between N and D	OFF	ON	ON	ON
D	OFF	ON	ON	OFF

COMPONENT PARTS

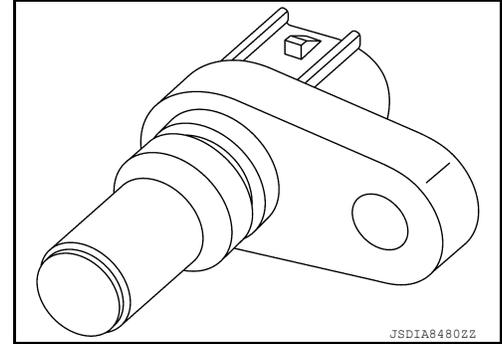
< SYSTEM DESCRIPTION >

[6AT: RE6R01A]

A/T CONTROL SYSTEM : Output Speed Sensor

INFOID:000000014418864

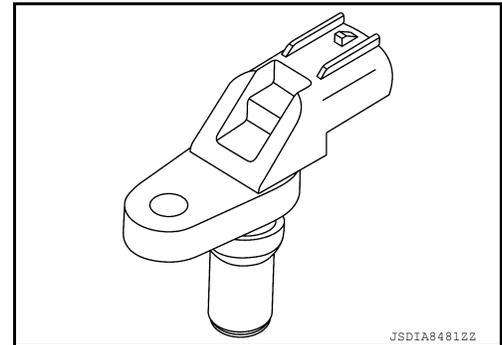
The output speed sensor detects the revolution of the parking gear and emits a pulse signal. The pulse signal is transmitted to the TCM which converts it into output shaft speed.



A/T CONTROL SYSTEM : Input Speed Sensor

INFOID:000000014418865

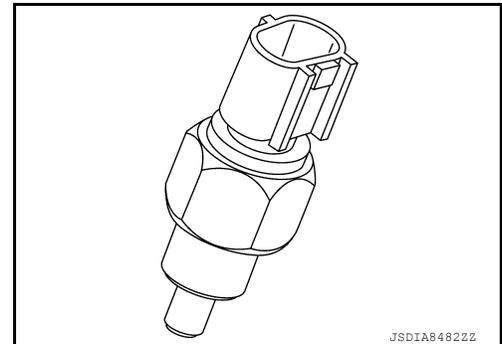
The input speed sensor detects input shaft speed.



A/T CONTROL SYSTEM : A/T Fluid Temperature Sensor 1

INFOID:000000014418866

A/T fluid temperature sensor 1 detects the temperature of A/T fluid discharged from the torque converter and transmits the information to TCM.



A/T CONTROL SYSTEM : A/T Fluid Temperature Sensor 2

INFOID:000000014418867

- The A/T fluid temperature sensor 2 is part of the A/T assembly connector (12-pin).
- The A/T fluid temperature sensor 2 detects the A/T fluid temperature in oil pan and transmits an information to the TCM.

A/T CONTROL SYSTEM : C1 Clutch Solenoid Valve

INFOID:000000014418868

- The C1 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.
- The C1 clutch solenoid valve controls the operation of C1 clutch.

A/T CONTROL SYSTEM : C2 Clutch Solenoid Valve

INFOID:000000014418869

- The C2 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.
- The C2 clutch solenoid valve controls the operation of C2 clutch.

COMPONENT PARTS

< SYSTEM DESCRIPTION >

[6AT: RE6R01A]

A/T CONTROL SYSTEM : C3 Clutch Solenoid Valve

INFOID:0000000014418870

- The C3 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.
- The C3 clutch solenoid valve controls the operation of C3 clutch.

A/T CONTROL SYSTEM : B1 Brake Solenoid Valve

INFOID:0000000014418871

- The B1 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.
- The B1 brake solenoid valve controls the operation of B1 brake.

A/T CONTROL SYSTEM : B2 Brake Solenoid Valve

INFOID:0000000014418872

- The B2 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.
- The B2 brake solenoid valve controls the operation of B2 brake.

A/T CONTROL SYSTEM : Fail-safe Solenoid Valve

INFOID:0000000014418873

The fail-safe solenoid valve fixes the transmission at the 3rd gear, 5th gear, or R and deactivates the lock-up control when A/T fluid temperature is low or during fail-safe.

A/T CONTROL SYSTEM : Torque Converter Clutch Solenoid Valve

INFOID:0000000014418874

- The torque converter clutch solenoid valve controls the torque converter clutch relay valve and the torque converter clutch control valve to start/cancel the lock-up control according to an operation signal transmitted from TCM based on driving conditions.
- The torque converter clutch solenoid valve is activated, with the gear in D, M2, M3, M4, M5, and M6 by the TCM in response to signals transmitted from the output speed sensor and accelerator pedal position sensor.

A/T CONTROL SYSTEM : Line Pressure Solenoid Valve

INFOID:0000000014418875

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

A/T CONTROL SYSTEM : Oil Pressure Switch

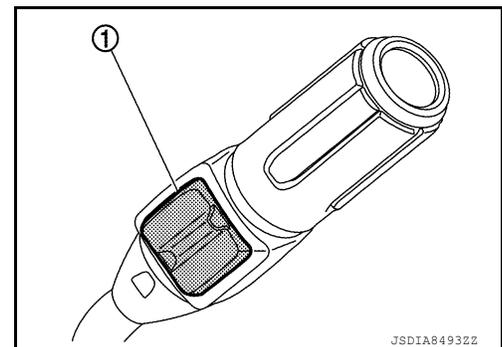
INFOID:0000000014418876

The oil pressure switch detects the oil pressure of B2 brake and transmits a signal to the TCM.

A/T CONTROL SYSTEM : Manual Mode Switch

INFOID:0000000014418877

- The manual mode switch ① is installed in the A/T shift selector.
- A manual mode (shift up) signal and a manual mode (shift down) signal are transmitted from the manual mode switch to the combination meter. These signals are received by TCM via CAN communication.



COMPONENT PARTS

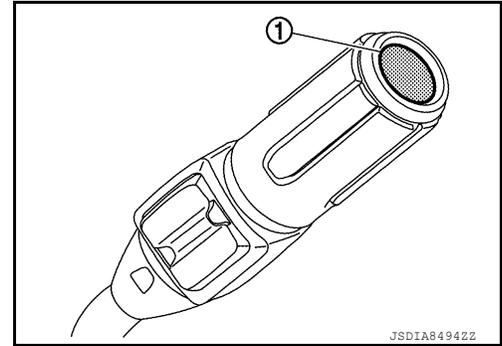
< SYSTEM DESCRIPTION >

[6AT: RE6R01A]

A/T CONTROL SYSTEM : Tow Mode Switch

INFOID:000000014418878

- The tow mode switch ① is installed in the A/T shift selector.
- When tow mode switch is pressed while tow mode indicator lamp on combination meter is OFF, the tow mode turns ON and tow mode indicator lamp turns ON.
- When tow mode switch is pressed while tow mode indicator lamp on combination meter is ON, the tow mode turns OFF and tow mode indicator lamp turns OFF.



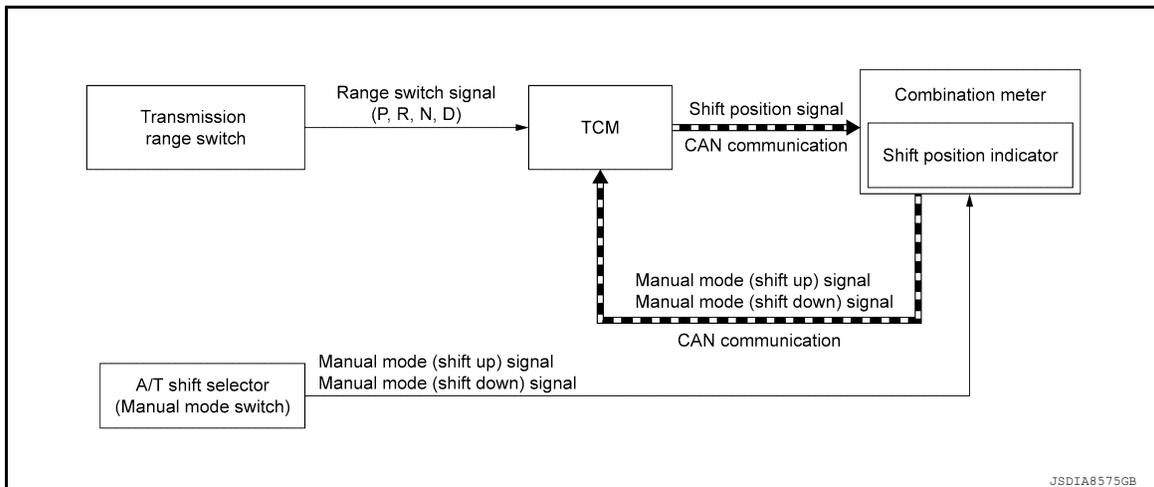
A/T CONTROL SYSTEM : Shift Position Indicator

INFOID:000000014418879

PURPOSE

The shift position indicator displays the shift position of transmission.

SYSTEM DIAGRAM



SIGNAL PATH

- The TCM judges the shift position by the range switch signal, manual mode (shift up) signal, and manual mode (shift down) signal.
- The TCM transmits the shift position signal to the combination meter via CAN communication. The combination meter shows the shift position indicator on the information display, according to the signal.

LIGHTING CONDITION

Ignition switch: ON

SHUTOFF CONDITION

Ignition switch: Other than ON

A/T CONTROL SYSTEM : AT CHECK Indicator Lamp

INFOID:000000014418880

PURPOSE

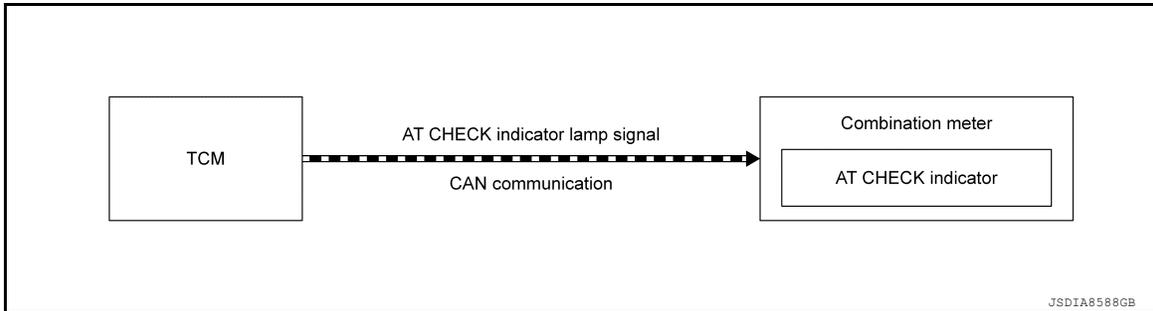
AT CHECK indicator lamp warns driver that the inspection and repair is required by turning ON AT CHECK indicator when TCM detects malfunction (DTC) of transmission.

COMPONENT PARTS

< SYSTEM DESCRIPTION >

[6AT: RE6R01A]

SYSTEM DIAGRAM



SIGNAL PATH

- When TCM detects malfunction (DTC) of transmission, TCM transmits the AT CHECK indicator lamp signal to the combination meter via CAN communication.
- The combination meter turns ON the AT CHECK indicator lamp on the combination meter, according to the signal.

LIGHTING CONDITION

When all of the following conditions are satisfied:

- When ignition switch is turned ON
- When TCM detects malfunction (DTC) of transmission

SHUTOFF CONDITION

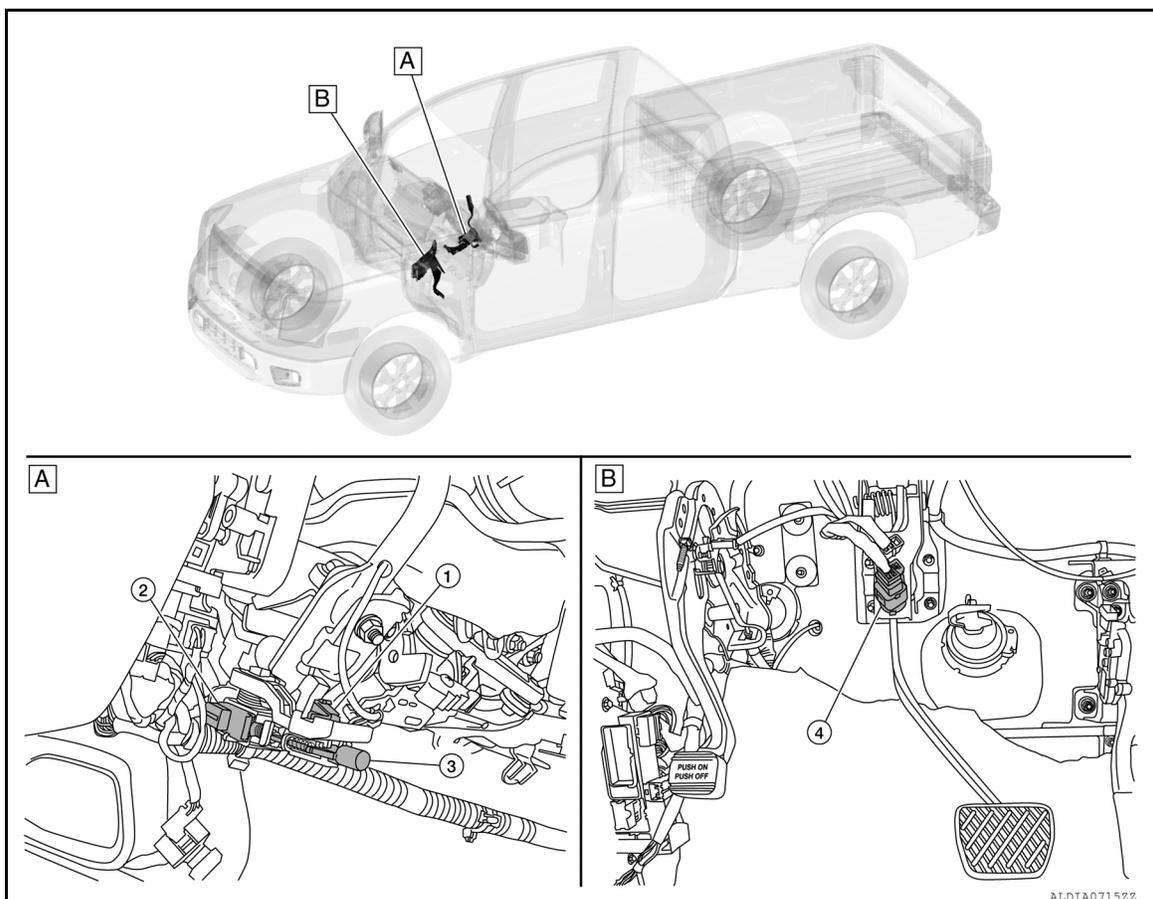
When any of the following conditions are satisfied:

- When ignition switch is turned OFF
- When the DTC is erased

SHIFT LOCK SYSTEM

SHIFT LOCK SYSTEM : Component Parts Location

INFOID:000000014418881



COMPONENT PARTS

< SYSTEM DESCRIPTION >

[6AT: RE6R01A]

- A. Steering column (view with steering column covers removed) B. Brake pedal area (view with instrument panel assembly removed)

COMPONENT DESCRIPTION

No.	Component	Function
1.	Park position switch (shift selector)	It detects that the selector lever is in "P" (Park) position.
2.	Shift lock solenoid	It operates according to the signal from the stop lamp switch and moves the lock lever.
3.	Shift lock release button	Forcibly releases the shift lock when pressed.
4.	Stop lamp switch	<ul style="list-style-type: none">• The stop lamp switch turns ON when the brake pedal is depressed.• When the stop lamp switch turns ON, the shift lock solenoid is energized.

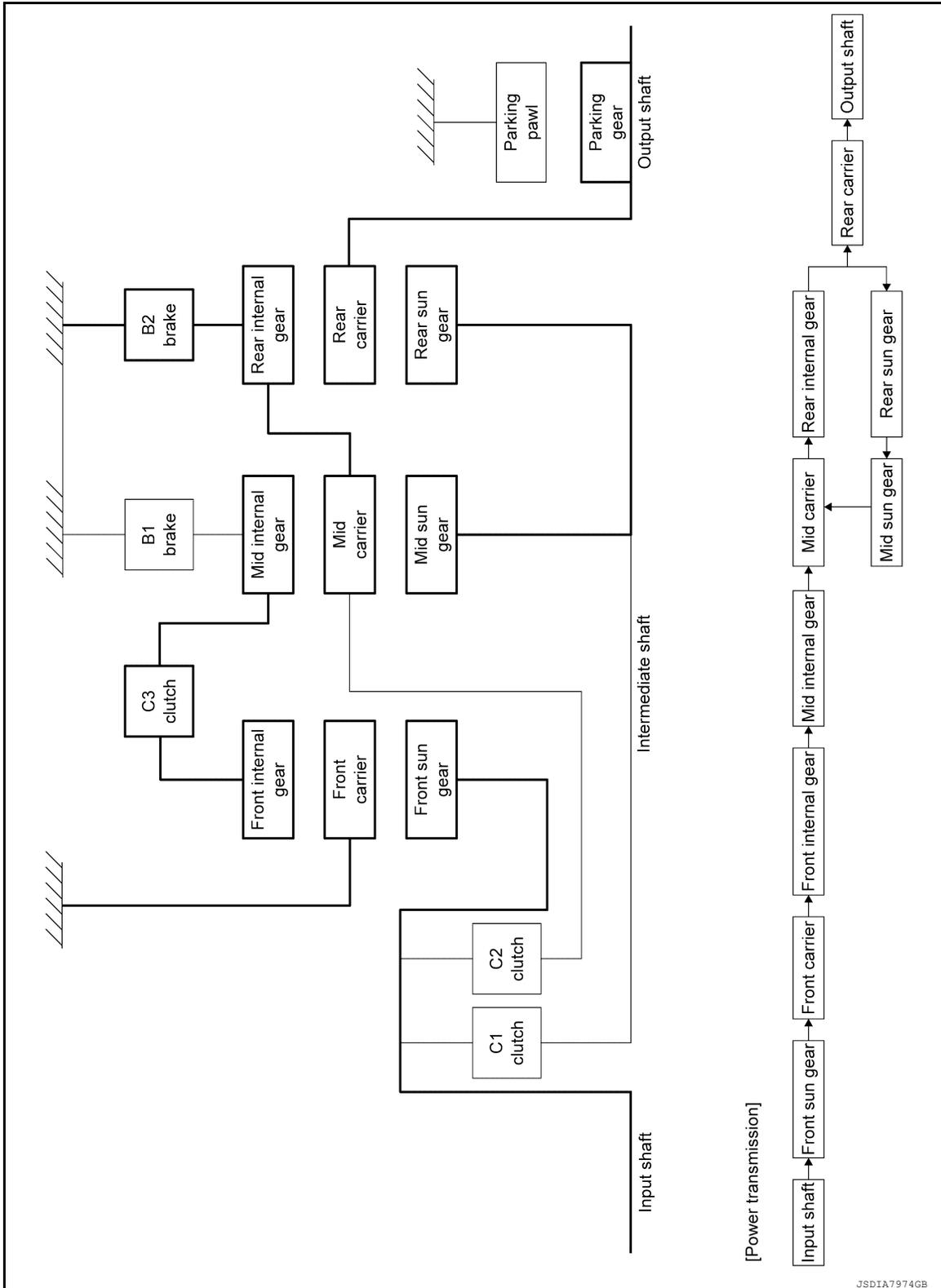
STRUCTURE AND OPERATION

< SYSTEM DESCRIPTION >

[6AT: RE6R01A]

Since C1 clutch, C2 clutch, and C3 clutch are in the disengaged state, the driving force of input shaft is not transmitted to output shaft. In addition, the output shaft is fixed because the parking pawl is engaged with the parking gear.

“R” Position



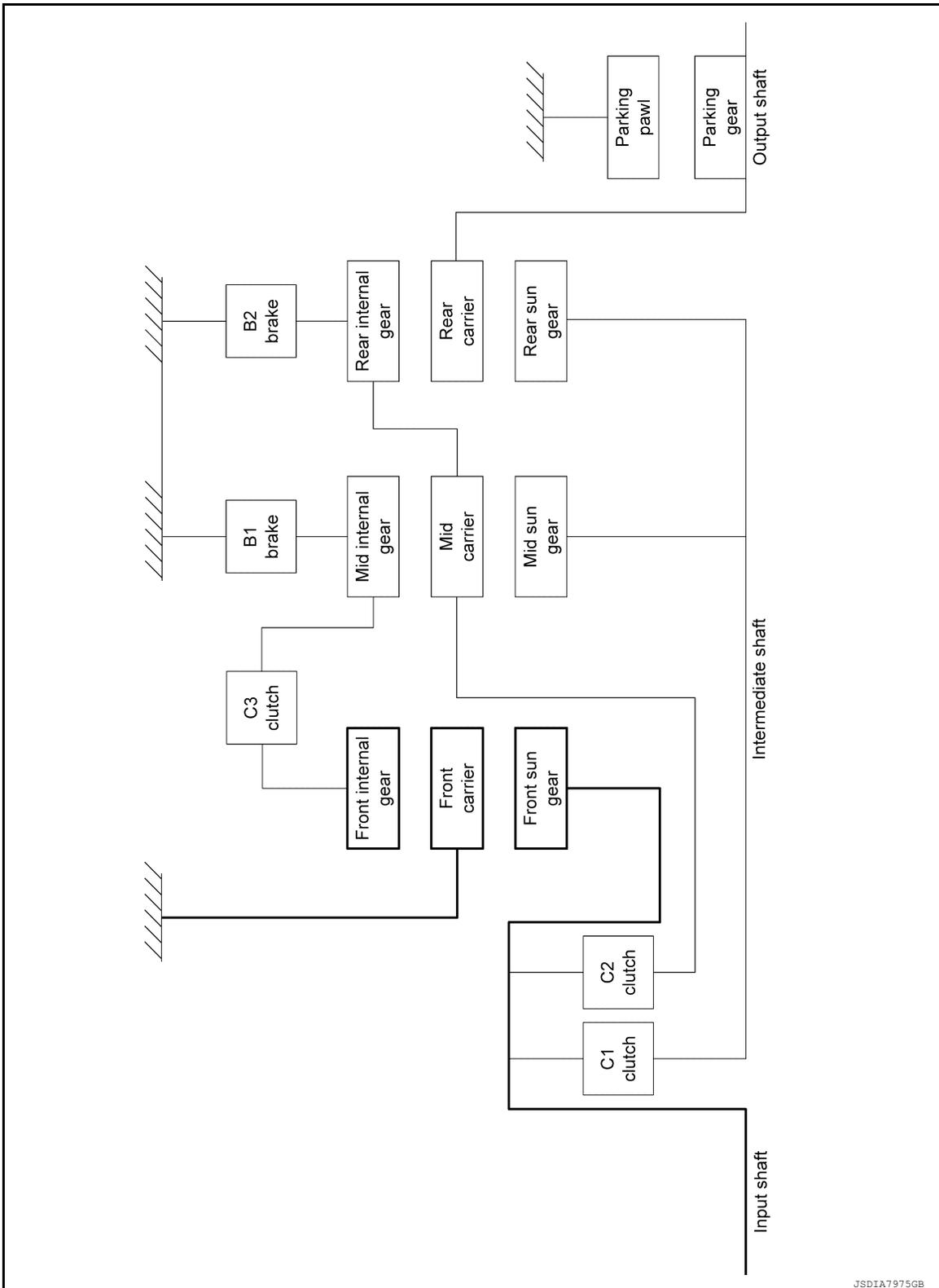
- The front internal gear and mid internal gear are engaged by the action of C3 clutch.
- The rear internal gear is fixed by the action of B2 brake.

“N” Position

STRUCTURE AND OPERATION

< SYSTEM DESCRIPTION >

[6AT: RE6R01A]



Since C1 clutch, C2 clutch, and C3 clutch are in the disengaged state, the driving force of input shaft is not transmitted to output shaft.

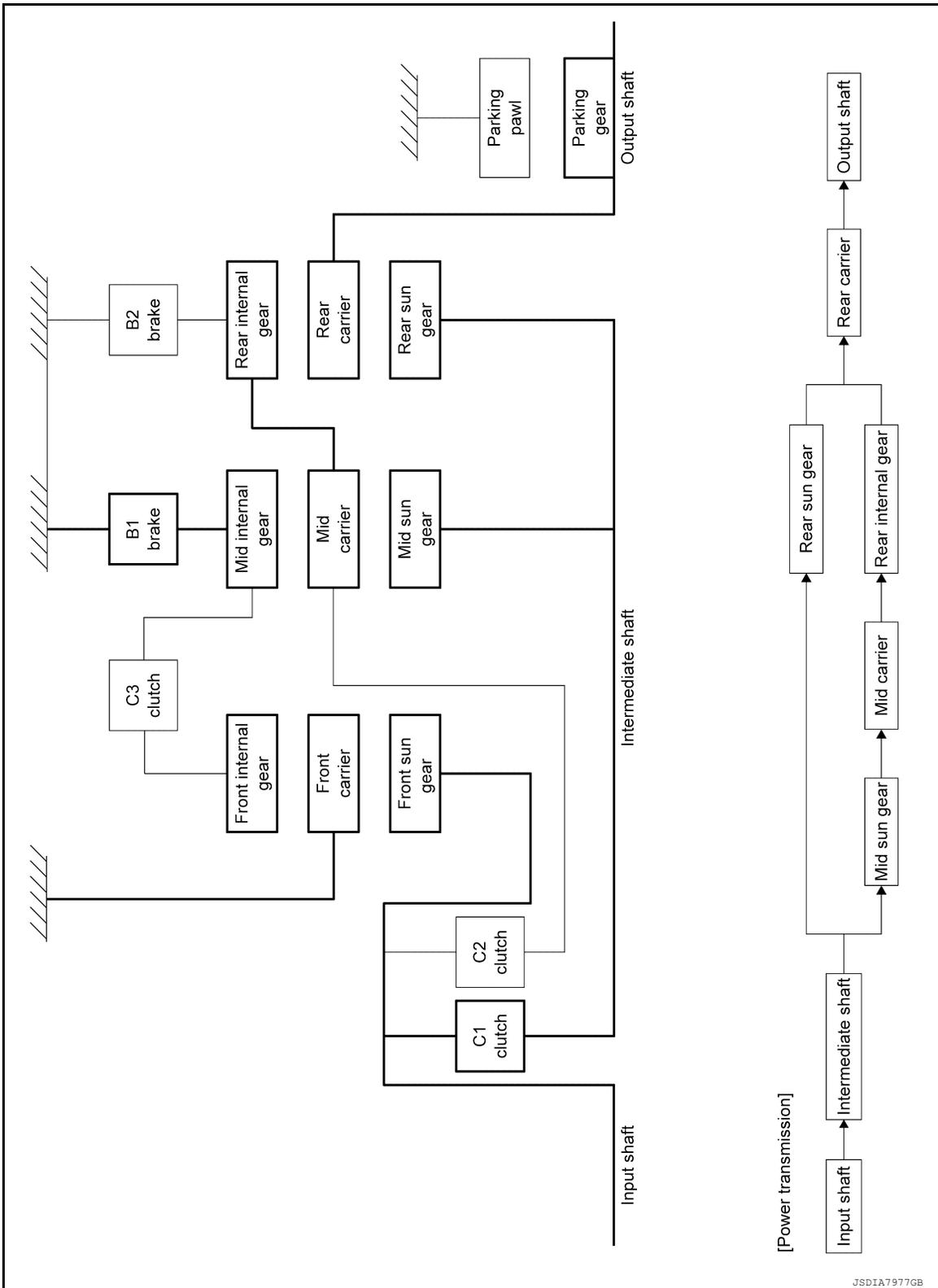
1st Gear

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STRUCTURE AND OPERATION

< SYSTEM DESCRIPTION >

[6AT: RE6R01A]



- The input shaft and intermediate shaft are engaged by the action of C1 clutch.
- The mid internal gear is fixed by the action of B1 brake.

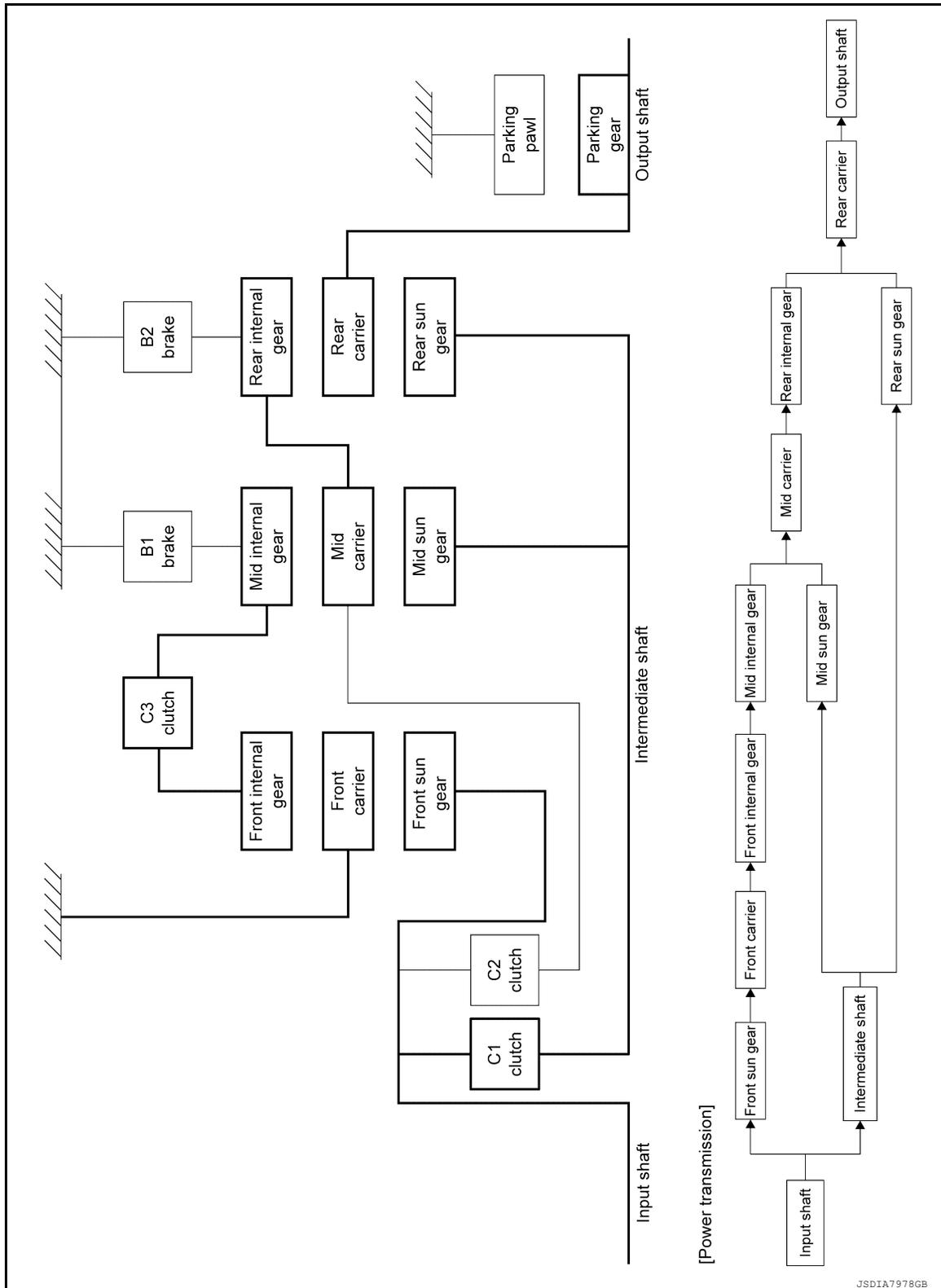
3rd Gear

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STRUCTURE AND OPERATION

< SYSTEM DESCRIPTION >

[6AT: RE6R01A]



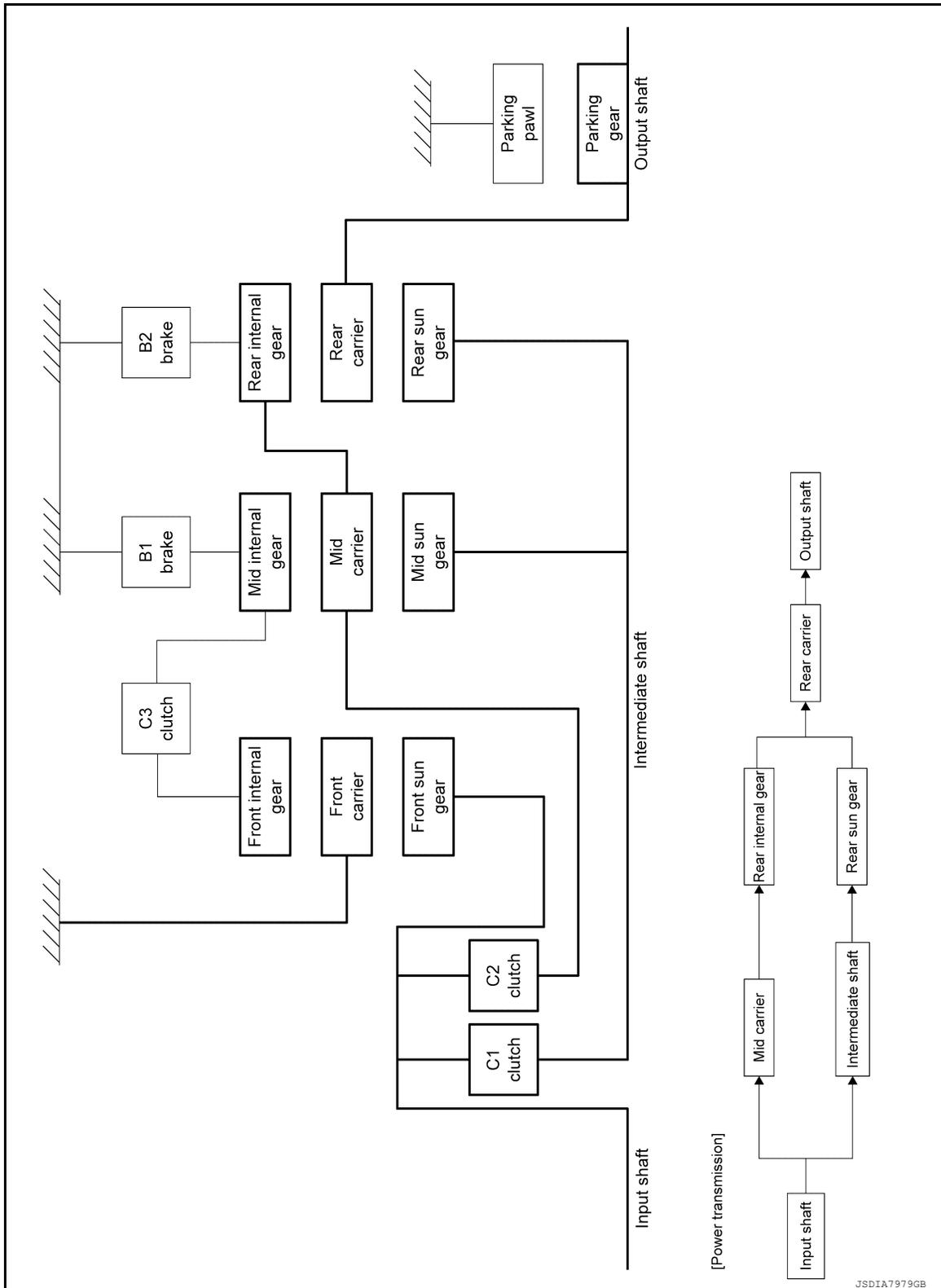
- The input shaft and intermediate shaft are engaged by the action of C1 clutch.
- The front internal gear and mid internal gear are engaged by the action of C3 clutch.

4th Gear

STRUCTURE AND OPERATION

< SYSTEM DESCRIPTION >

[6AT: RE6R01A]



- The input shaft and intermediate shaft are engaged by the action of C1 clutch.
- The input shaft and mid carrier are engaged by the action of C2 clutch.

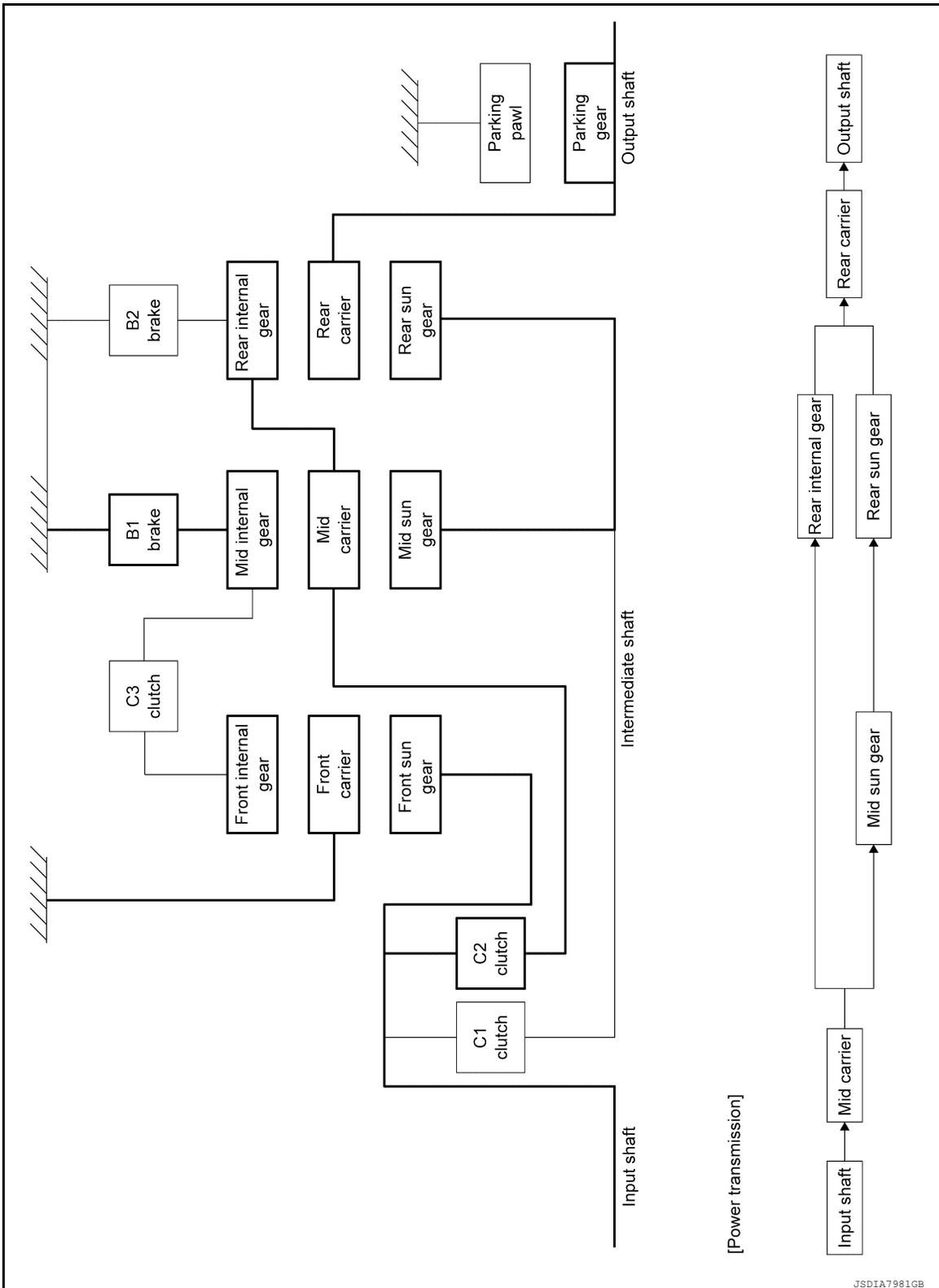
5th Gear

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STRUCTURE AND OPERATION

< SYSTEM DESCRIPTION >

[6AT: RE6R01A]



- The input shaft and mid carrier are engaged by the action of C2 clutch.
- The mid internal gear is fixed by the action of B1 brake.

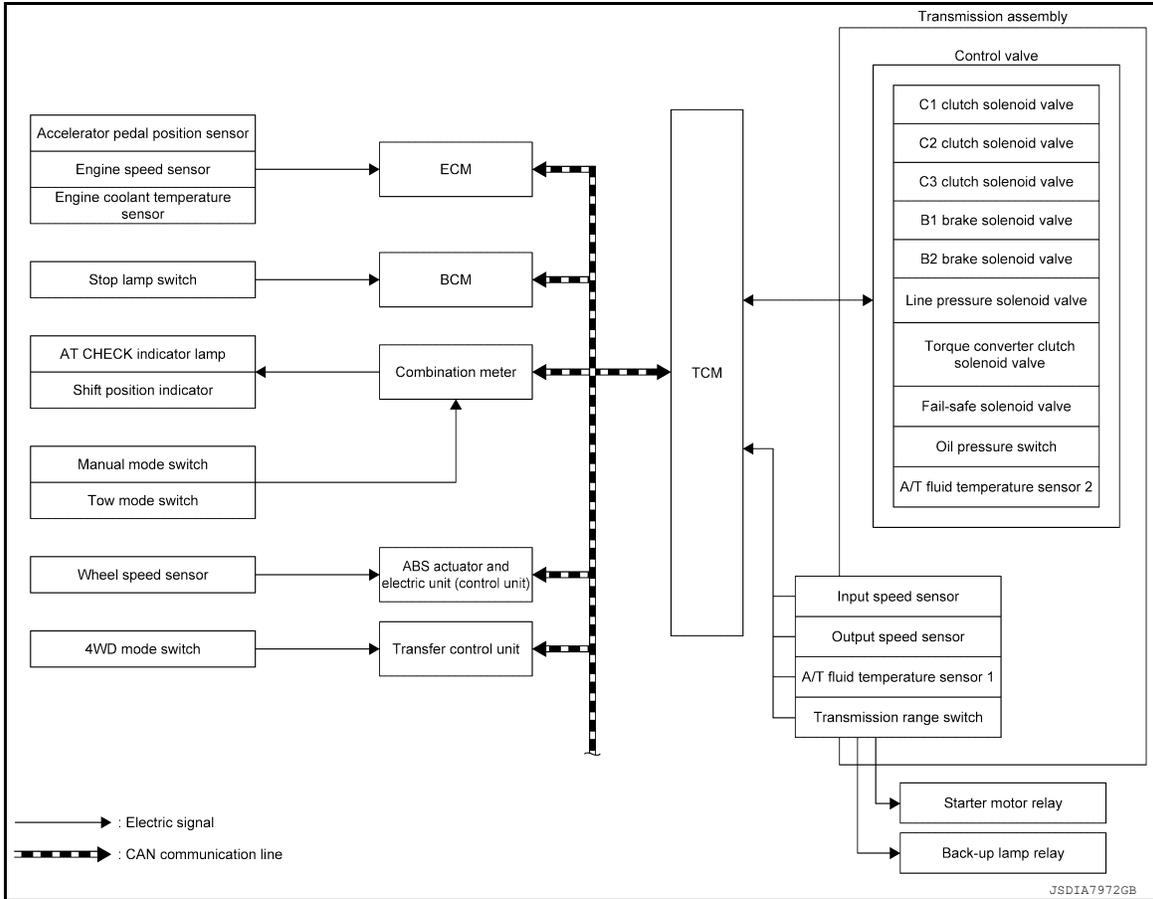
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SYSTEM

A/T CONTROL SYSTEM

A/T CONTROL SYSTEM : System Diagram

INFOID:000000014418883



A/T CONTROL SYSTEM : System Description

INFOID:000000014418884

INPUT/OUTPUT SIGNAL CHART

Sensor (or signal)	TCM function	Actuator
<ul style="list-style-type: none"> Transmission range switch Input speed sensor Output speed sensor A/T fluid temperature sensor 1 Accelerator pedal position signal Engine speed signal Engine coolant temperature signal Vehicle speed signal Manual mode switch signal Stop lamp switch signal 4WD mode switch signal Tow mode switch signal 	<ul style="list-style-type: none"> Line pressure control (TM-36) Shift change control (TM-37) Select control (TM-38) Lock-up control (TM-38) Fail-safe control (TM-64) Self-diagnosis (TM-43) CONSULT communication line (TM-43) 	<ul style="list-style-type: none"> C1 clutch solenoid valve C2 clutch solenoid valve C3 clutch solenoid valve B1 brake solenoid valve B2 brake solenoid valve Line pressure solenoid valve Torque converter clutch solenoid valve Fail-safe solenoid valve Oil pressure switch A/T CHECK indicator lamp A/T fluid temperature sensor 2 Back-up lamp relay Starter motor relay

A/T CONTROL SYSTEM : Fail-Safe

INFOID:000000014418885

FAIL-SAFE FUNCTION

SYSTEM

< SYSTEM DESCRIPTION >

[6AT: RE6R01A]

DTC	Vehicle behavior	Conditions of vehicle	
P0613	<ul style="list-style-type: none"> • Locks in 3rd gear or 5th gear (Reverse is available) • Lock-up is prohibited 	—	A
P0705	<ul style="list-style-type: none"> • Locks in 3rd gear or 5th gear (Reverse is available) • Lock-up is prohibited 	—	B
P0708	Not changed from normal driving	—	
P0711	Not changed from normal driving	—	C
P0712	Not changed from normal driving	—	
P0713	Not changed from normal driving	—	TM
P0715	<ul style="list-style-type: none"> • Lock-up is prohibited • Harsh shift 	—	
P0716	<ul style="list-style-type: none"> • Lock-up is prohibited • Harsh shift 	—	E
P0717	<ul style="list-style-type: none"> • Lock-up is prohibited • Harsh shift 	—	
P0720	<ul style="list-style-type: none"> • Locks in 3rd gear or 5th gear (Reverse is available) • Lock-up is prohibited 	—	F
P0721	<ul style="list-style-type: none"> • Locks in 3rd gear or 5th gear (Reverse is available) • Lock-up is prohibited 	—	G
P0722	<ul style="list-style-type: none"> • Locks in 3rd gear or 5th gear (Reverse is available) • Lock-up is prohibited 	—	
P0725	Lock-up is prohibited	—	H
P0729	<ul style="list-style-type: none"> • Locks in 3rd gear or 5th gear (Reverse is available) • Lock-up is prohibited 	—	
P0730	<ul style="list-style-type: none"> • Locks in 3rd gear or 5th gear (Reverse is available) • Lock-up is prohibited 	—	I
P0731	<ul style="list-style-type: none"> • Locks in 3rd gear or 5th gear (Reverse is available) • Lock-up is prohibited 	—	J
P0732	<ul style="list-style-type: none"> • Locks in 3rd gear or 5th gear (Reverse is available) • Lock-up is prohibited 	—	
P0733	<ul style="list-style-type: none"> • Locks in 3rd gear or 5th gear (Reverse is available) • Lock-up is prohibited 	—	K
P0734	<ul style="list-style-type: none"> • Locks in 3rd gear or 5th gear (Reverse is available) • Lock-up is prohibited 	—	L
P0735	<ul style="list-style-type: none"> • Locks in 3rd gear or 5th gear (Reverse is available) • Lock-up is prohibited 	—	
P0736	<ul style="list-style-type: none"> • Locks in 3rd gear • Lock-up is prohibited 	—	M
P0743	<ul style="list-style-type: none"> • Locks in 3rd gear or 5th gear (Reverse is available) • Lock-up is prohibited 	—	N
P0748	<ul style="list-style-type: none"> • Locks in 3rd gear or 5th gear (Reverse is available) • Lock-up is prohibited 	—	
P0752	<ul style="list-style-type: none"> • Locks in 3rd gear or 5th gear (Reverse is available) • Lock-up is prohibited 	—	O
P0753	<ul style="list-style-type: none"> • Locks in 3rd gear or 5th gear (Reverse is available) • Lock-up is prohibited 	—	P
P0758	<ul style="list-style-type: none"> • Locks in 3rd gear or 5th gear (Reverse is available) • Lock-up is prohibited 	—	
P0763	<ul style="list-style-type: none"> • Locks in 3rd gear or 5th gear (Reverse is available) • Lock-up is prohibited 	—	
P0768	<ul style="list-style-type: none"> • Locks in 3rd gear or 5th gear (Reverse is available) • Lock-up is prohibited 	—	

SYSTEM

< SYSTEM DESCRIPTION >

[6AT: RE6R01A]

DTC	Vehicle behavior	Conditions of vehicle
P0770	<ul style="list-style-type: none"> Locks in 3rd gear or 5th gear (Reverse is available) Lock-up is prohibited 	—
P0773	<ul style="list-style-type: none"> Locks in 3rd gear or 5th gear (Reverse is available) Lock-up is prohibited 	—
P0826	Manual mode is prohibited	—
P0863	<ul style="list-style-type: none"> Lock-up is prohibited Harsh shift Acceleration is slow 	—
P0882	<ul style="list-style-type: none"> Locks in 3rd gear or 5th gear (Reverse is available) Lock-up is prohibited 	—
P0998	<ul style="list-style-type: none"> Locks in 3rd gear or 5th gear (Reverse is available) Lock-up is prohibited 	—
P0999	<ul style="list-style-type: none"> Locks in 3rd gear or 5th gear (Reverse is available) Lock-up is prohibited 	—
P1679	Not changed from normal driving	—
P1705	<ul style="list-style-type: none"> Harsh shift Acceleration is slow 	—
P1721	Not changed from normal driving	—
P215C	<ul style="list-style-type: none"> Locks in 3rd gear or 5th gear (Reverse is available) Lock-up is prohibited 	—
P2637	Harsh shift	—
P2741	Not changed from normal driving	—
P2742	Not changed from normal driving	—
P2743	Not changed from normal driving	—
P2757	Lock-up is prohibited	—
P279D	Not changed from normal driving	4WD mode switch: HI, 2WD
	Not shifted up until a high engine speed is achieved	4WD mode switch: LO
P2803	<ul style="list-style-type: none"> Locks in 3rd gear or 5th gear (Reverse is available) Lock-up is prohibited 	—
U0073	<ul style="list-style-type: none"> Lock-up is prohibited Harsh shift Acceleration is slow 	—
U0100	<ul style="list-style-type: none"> Lock-up is prohibited Harsh shift Acceleration is slow 	—
U0102	4WD mode switch: HI	—
U0140	Either of following status is observed <ul style="list-style-type: none"> Braking force may decrease Not changed from normal driving 	—
U0155	<ul style="list-style-type: none"> Manual mode is prohibited Tow mode is prohibited 	—
U0401	<ul style="list-style-type: none"> Lock-up is prohibited Harsh shift 	—
U0403	4WD mode switch: HI	—
U0416	Not changed from normal driving	—
U1000	—	—
U1117	<ul style="list-style-type: none"> Lock-up is prohibited Not changed from normal driving 	—

SYSTEM

< SYSTEM DESCRIPTION >

[6AT: RE6R01A]

A/T CONTROL SYSTEM : Protection Control

INFOID:000000014418886

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.

GEAR IS FIXED WHEN A/T FLUID TEMPERATURE IS LOW

Control	When A/T fluid temperature exceeds the specified temperature, the gear is fixed at 3GR in advanced range.
Vehicle behavior in control	Power performance may be lowered, compared to normal control.
Normal return condition	The control returns to the normal control when A/T fluid temperature is high.

TORQUE DOWN WHEN A/T FLUID TEMPERATURE IS HIGH

Control	When A/T fluid temperature is the specified temperature or higher, engine torque is reduced according to the temperature.
Vehicle behavior in control	Power performance may be lowered, compared to normal control.
Normal return condition	The control returns to the normal control when A/T fluid temperature is lowered.

REVERSE PROHIBIT CONTROL

Control	The gear becomes neutral when the selector lever is set in "R" position while driving in forward direction at more than the specified speed.
Vehicle behavior in control	If the selector lever is put at "R" position when driving with the forward gear, the gear becomes neutral.
Normal return condition	The control returns to normal control when the vehicle is driven at low speeds.

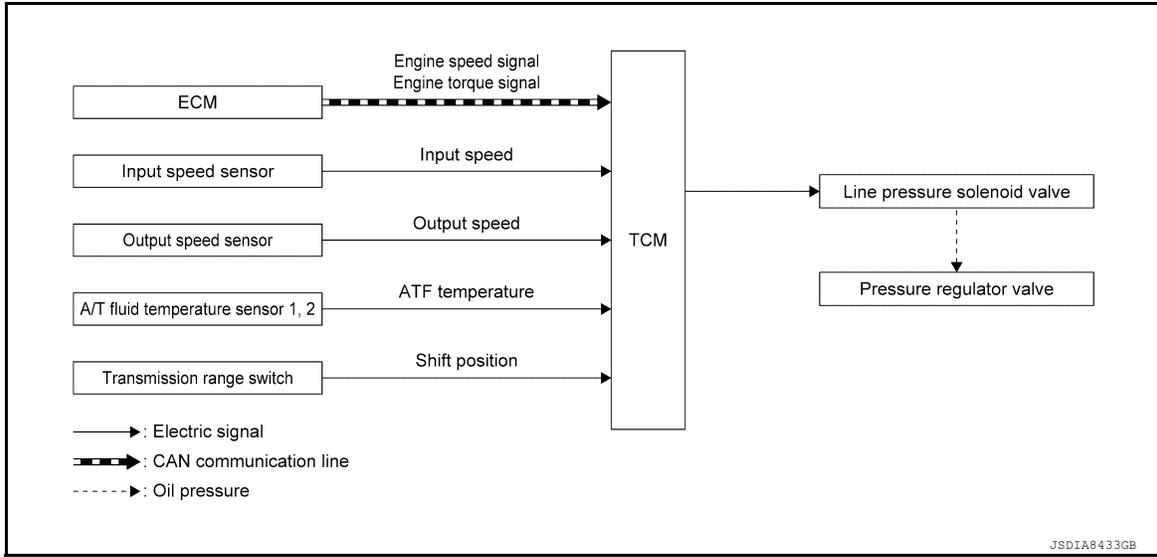
FORWARD PROHIBIT CONTROL

Control	The gear becomes neutral when the selector lever is set in "D" position while driving in reverse direction at more than the specified speed.
Vehicle behavior in control	If the selector lever is put at "D" position when driving with the reverse gear, the gear becomes neutral.
Normal return condition	The control returns to normal control when the vehicle is driven at low speeds.

LINE PRESSURE CONTROL

LINE PRESSURE CONTROL : System Diagram

INFOID:000000014418887



LINE PRESSURE CONTROL : System Description

INFOID:000000014418888

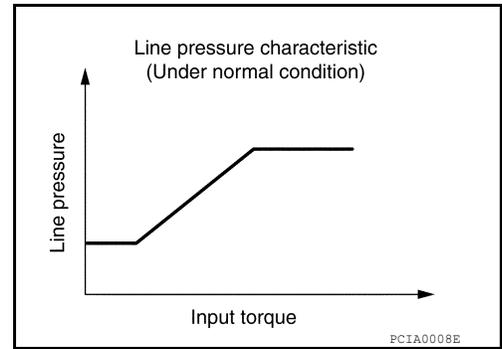
TCM judges an appropriate line pressure according to an input torque from the engine and torque amplification from the torque converter.

The output pressure of line pressure solenoid valve controls the pressure regulator valve and adequately adjusts operating oil pressure sent from the oil pump.

During shift control or select control, a constant pressure may be maintained for a steady oil pressure regardless of input torque.

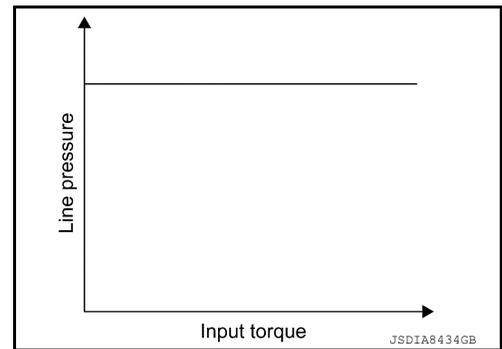
Normal Control

Each clutch adjusts pressure to obtain necessary pressure for maintaining input torque.



During Shift Change

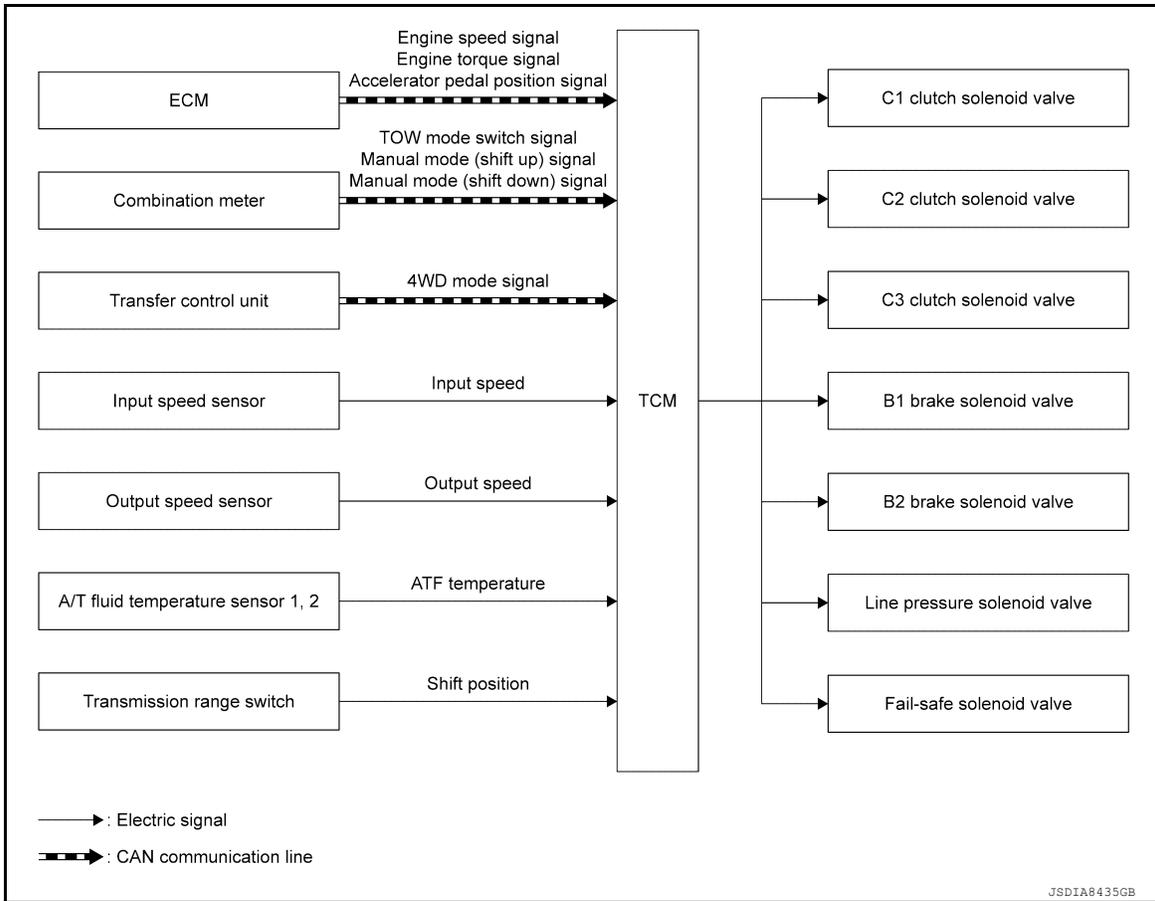
Independent of input torque, a constant pressure is maintained for steady oil pressure.



SHIFT CHANGE CONTROL

SHIFT CHANGE CONTROL : System Diagram

INFOID:000000014418889

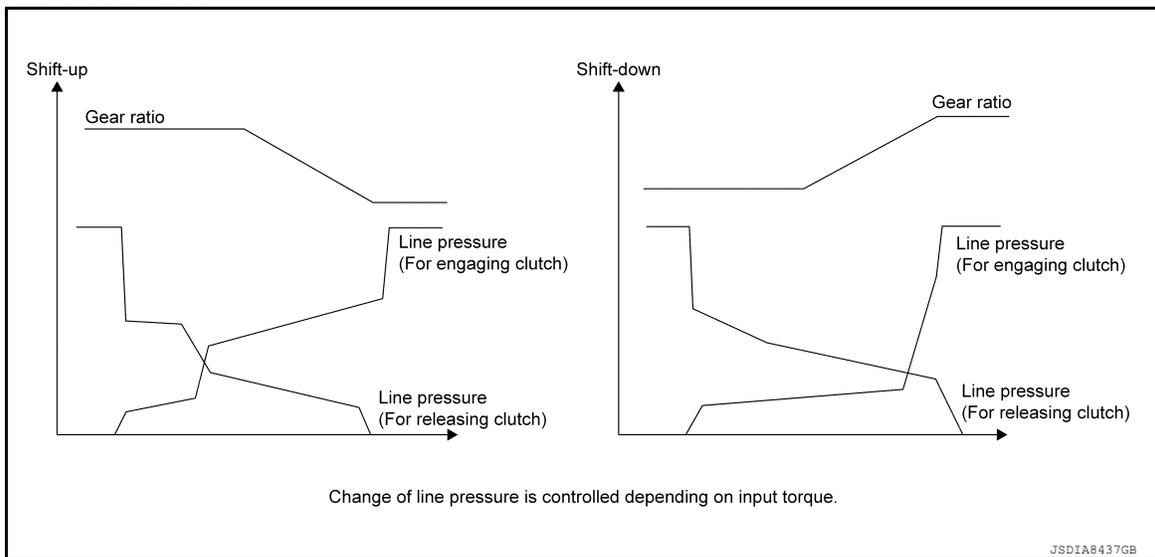


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SHIFT CHANGE CONTROL : System Description

INFOID:000000014418890

TCM activates the clutch pressure solenoid valve according to signals from each sensor and adjusts pressure to an adequate clutch pressure (releasing side, engaging side) based on engine load to achieve the smooth gear shift characteristics.



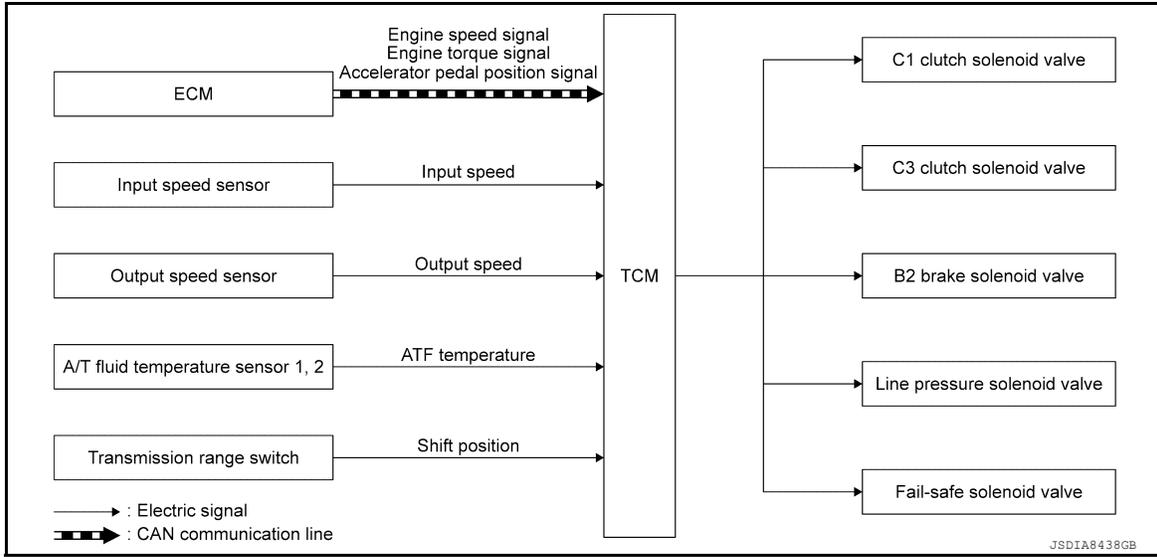
TOW MODE BRAKE ON COAST DOWN MODE

When the brake pedal is depressed with the accelerator pedal released during tow mode, this mode allows shift down to prevent the vehicle from being accelerated needlessly and enhances the engine brake force.

SELECT CONTROL

SELECT CONTROL : System Diagram

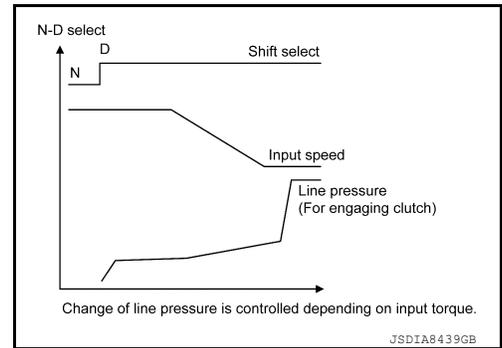
INFOID:000000014418891



SELECT CONTROL : System Description

INFOID:000000014418892

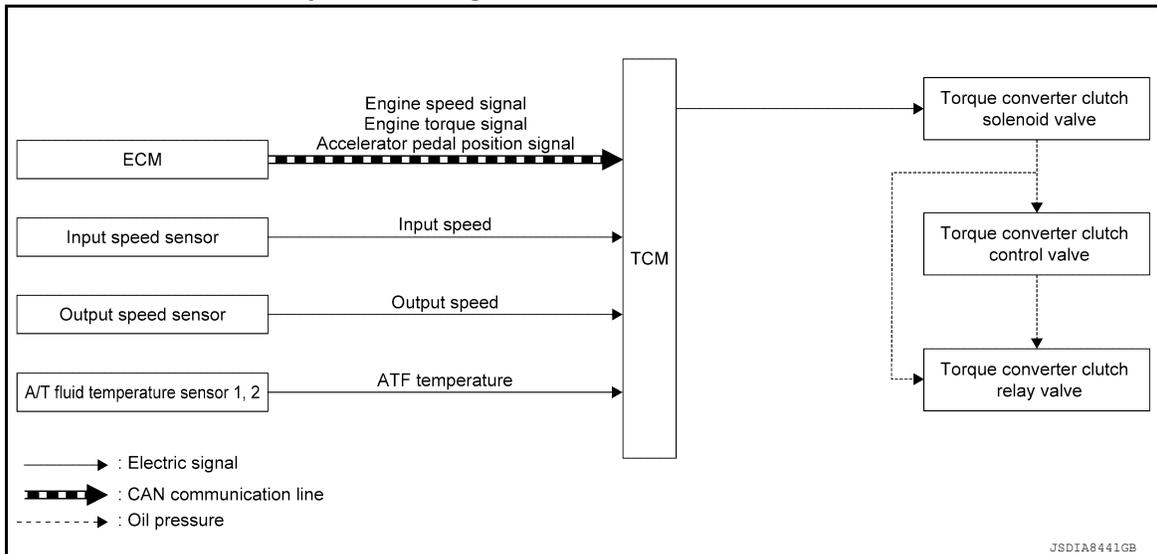
TCM activates the each solenoid valve according to signals from each sensor and achieves the smooth select characteristics by adjusting pressure to an adequate clutch (engaging side)



LOCK-UP CONTROL

LOCK-UP CONTROL : System Diagram

INFOID:000000014418893

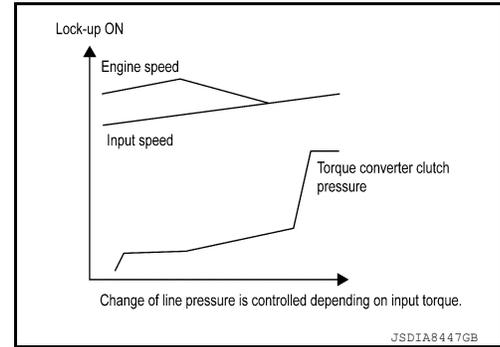


LOCK-UP CONTROL : System Description

INFOID:000000014418894

TCM prevents the torque converter from slipping and improves the transmission efficiency by engaging the lockup piston located in the torque converter. TCM judges an operating pressure of the torque converter clutch solenoid valve based on signals from each sensor.

The torque converter clutch relay valve is activated by the output pressure of the torque converter clutch solenoid valve, forming the oil path from the torque converter clutch control valve to the torque converter clutch. In addition, the output pressure of the torque converter clutch solenoid valve controls the torque converter clutch control valve. This adequately adjusts the torque converter clutch pressure, achieving the smooth lock-up gear shift characteristics.



A/T SHIFT LOCK SYSTEM

A/T SHIFT LOCK SYSTEM : System Description

INFOID:000000014418895

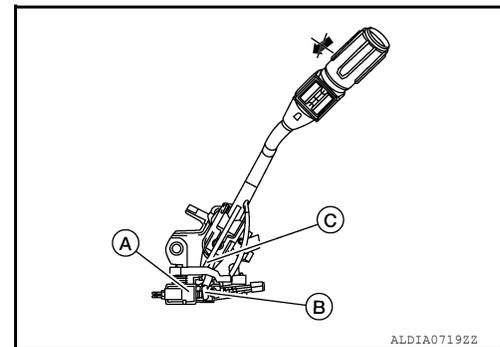
The shift lever cannot be shifted from the “P” (Park) position unless the brake pedal is depressed while the ignition switch is set to ON. The shift lock is unlocked by turning the shift lock solenoid ON when the ignition switch is set to ON, the park position switch (shift selector) is turned ON (selector lever is in “P” position), and the stop lamp switch is turned ON (brake pedal is depressed) as shown in the operation chart in the figure. Therefore, the shift lock solenoid receives no ON signal and the shift lock remains locked if all of the above conditions are not fulfilled. However, selector operation is allowed if the shift lock release button is pressed.

SHIFT LOCK OPERATION AT “P” POSITION

When Brake Pedal Is Not Depressed (No Selector Operation Allowed)

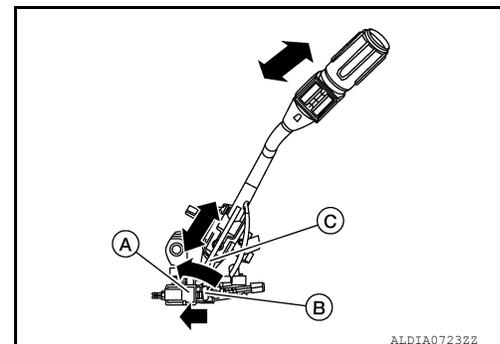
The shift lock solenoid (A) is turned OFF (not energized) when the brake pedal is not depressed (no selector operation allowed) with the ignition switch ON.

The connecting lock lever (B) is located at the position shown in the figure when the solenoid rod is extended. It prevents the movement of the detent rod (C). For these reasons, the selector lever cannot be shifted from the “P” position.



When Brake Pedal Is Depressed (Shift Operation Allowed)

The shift lock solenoid (A) is turned ON (energized) when the brake pedal is depressed with the ignition switch ON. The connecting lock lever (B) rotates when the solenoid is activated. Therefore, the detent rod (C) can be moved. For these reasons, the selector lever can be shifted to other positions.



“P” POSITION HOLD MECHANISM (IGNITION SWITCH LOCK)

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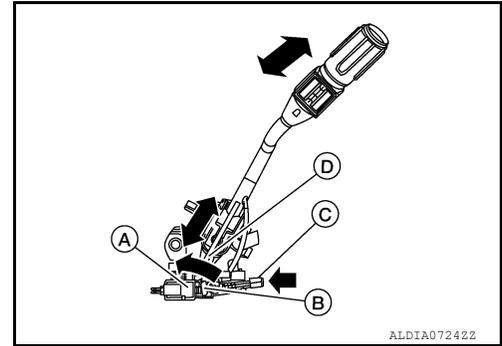
SYSTEM

< SYSTEM DESCRIPTION >

[6AT: RE6R01A]

The shift lock solenoid (A) is not energized when the ignition switch is in any position other than ON. In this condition, the shift mechanism is locked and "P" position is held. The operation cannot be performed from "P" position if the brake pedal is depressed with the ignition switch ON when the operation system of shift lock solenoid is malfunctioning. However, the lock lever (B) is forcibly rotated and the shift lock is released when the shift lock release button (C) is pressed from above. Then the selector operation from "P" position can be performed.

D : Detent rod



CAUTION:

Use the shift lock release button only when the selector lever cannot be operated even if the brake pedal is depressed with the ignition switch ON.

ON BOARD DIAGNOSTIC (OBD) SYSTEM

< SYSTEM DESCRIPTION >

[6AT: RE6R01A]

ON BOARD DIAGNOSTIC (OBD) SYSTEM

Description

INFOID:000000014418896

This is an on board diagnosis system which records diagnosis information related to the exhaust gases. It detects malfunctions related to sensors and actuators. The malfunctions are indicated by means of the malfunction indicator lamp (MIL) and are stored as DTC in the ECU memory. The diagnosis information can be checked using a diagnosis tool (GST: Generic Scan Tool).

Function of OBD

INFOID:000000014418897

The GST is connected to the diagnosis connector on the vehicle and communicates with the on-board control units to perform diagnosis. The diagnosis connector is the same as for CONSULT. Refer to [GI-55. "Description"](#).

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DIAGNOSIS SYSTEM (TCM)

DIAGNOSIS DESCRIPTION

DIAGNOSIS DESCRIPTION : 1 Trip Detection Diagnosis and 2 Trip Detection Diagnosis

INFOID:000000014418898

NOTE:

“Start the engine and turn OFF the ignition switch after warm-up.” This is defined as 1 trip.

1 TRIP DETECTION DIAGNOSIS

When initial malfunction is detected, TCM memorizes DTC. In these diagnoses, some illuminate MIL and some do not. Refer to [TM-69. "DTC Index"](#).

2 TRIP DETECTION DIAGNOSIS

When initial malfunction is detected, TCM memorizes DTC of the 1st trip. MIL does not light at this stage. <1 trip>

If the same malfunction is detected again in next driving, TCM memorizes DTC. When DTC is memorized, MIL lights. <2 trip>

“Trip” of the “2 trip detection diagnosis” indicates the driving mode that executes self-diagnosis during driving.

×: Check possible —: Check not possible

Item	DTC at the 1st trip		DTC		MIL	
	Display at the 1st trip	Display at the 2nd trip	Display at the 1st trip	Display at the 2nd trip	Illumination at the 1st trip	Illumination at the 2nd trip
1 trip detection diagnosis (Refer to TM-69. "DTC Index")	—	—	×	—	×	—
2 trip detection diagnosis (Refer to TM-69. "DTC Index")	×	—	—	×	—	×

DIAGNOSIS DESCRIPTION : DTC and DTC of 1st Trip

INFOID:000000014418899

2 TRIP DETECTION DIAGNOSIS THAT ILLUMINATES MIL

- The DTC number of the 1st trip is the same as the DTC number.
- When a malfunction is detected at the 1st trip, TCM memorizes DTC of the 1st trip. MIL does not light at this stage. If the same malfunction is not detected at the 2nd trip (conforming to necessary driving conditions), DTC at the 1st trip is erased from TCM. If the same malfunction is detected at the 2nd trip, TCM memorizes DTC and MIL lights at the same time.
- The DTC of the 1st trip is specified in Service \$01 of SAE J1979/ISO 15031-5. Since detection of DTC at the 1st trip does not illuminate MIL, warning for a problem is not given to a driver.
- For procedure to delete DTC and 1st trip DTC from TCM, refer to [TM-43. "CONSULT Function"](#).
- If DTC of the 1st trip is detected, it is necessary to check the cause according to the “Work Flow”. Refer to [TM-88. "Work Flow"](#).

DIAGNOSIS DESCRIPTION : Malfunction Indicator Lamp (MIL)

INFOID:000000014418900

- TCM not only detects DTC, but also sends the MIL signal to ECM through CAN communication. ECM sends the MIL signal to the combination meter through CAN communication according to the signal, and illuminates MIL.
- For malfunction indicator lamp (MIL) description, refer to [EC-788. "WARNING LAMPS/INDICATOR LAMPS : Malfunction Indicator Lamp \(MIL\)"](#).

DIAGNOSIS DESCRIPTION : Permanent Diagnostic Trouble Code (Permanent DTC)

INFOID:000000014418901

NOTE:

The adoption of permanent DTC is except for Mexico.

Permanent DTC is defined in SAE J1979/ISO 15031-5 Service \$0A.

Control module stores a DTC issuing a command of turning on MIL as a permanent DTC and keeps storing the DTC as a permanent DTC until control module judges that there is no presence of malfunction.

DIAGNOSIS SYSTEM (TCM)

< SYSTEM DESCRIPTION >

[6AT: RE6R01A]

Permanent DTCs cannot be erased by using the erase function of CONSULT or Generic Scan Tool (GST) and by disconnecting the 12V battery to shut off power to control module. This prevents a vehicle from passing the use inspection without repairing a malfunctioning part.

When not passing the use inspection due to more than one permanent DTC, permanent DTCs should be erased, referring to this manual.

NOTE:

- The important items in state emission inspection are that MIL is not ON, SRT test items are set, and permanent DTCs are not included.
- Permanent DTCs do not apply for regions that permanent DTCs are not regulated by law.

PERMANENT DTC SET TIMING

The setting timing of permanent DTC is stored in control module with the lighting of MIL when a DTC is confirmed.

CONSULT Function

INFOID:0000000014418902

APPLICATION ITEMS

Diagnostic test mode	Function
Work Support	This mode enables a technician to adjust some devices faster and more accurately.
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.
ECU Identification	Display the ECU identification number (part number etc.) of the selected system.

WORK SUPPORT

Item name	Description
Transmission adjustment	Correction data is written on TCM.

SELF DIAGNOSTIC RESULTS

Refer to [TM-69, "DTC Index"](#).

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.

Item name	Unit	Remarks
Solenoid 1 low pressure	kPa	Displays factory default oil pressure (Low side) of C1 clutch solenoid valve written on TCM
Solenoid 1 high pressure	kPa	Displays factory default oil pressure (High side) of C1 clutch solenoid valve written on TCM
Solenoid 2 low pressure	kPa	Displays factory default oil pressure (Low side) of C2 clutch solenoid valve written on TCM
Solenoid 2 high pressure	kPa	Displays factory default oil pressure (High side) of C2 clutch solenoid valve written on TCM
Solenoid 3 low pressure	kPa	Displays factory default oil pressure (Low side) of C3 clutch solenoid valve written on TCM
Solenoid 3 high pressure	kPa	Displays factory default oil pressure (High side) of C3 clutch solenoid valve written on TCM
Solenoid 4 low pressure	kPa	Displays factory default oil pressure (Low side) of B1 brake solenoid valve written on TCM
Solenoid 4 high pressure	kPa	Displays factory default oil pressure (High side) of B1 brake solenoid valve written on TCM
Solenoid 5 low pressure	kPa	Displays factory default oil pressure (Low side) of B2 brake solenoid valve written on TCM

DIAGNOSIS SYSTEM (TCM)

< SYSTEM DESCRIPTION >

[6AT: RE6R01A]

Item name	Unit	Remarks
Solenoid 5 high pressure	kPa	Displays factory default oil pressure (High side) of B2 brake solenoid valve written on TCM
Solenoid 6 low pressure	kPa	Displays factory default oil pressure (Low side) of torque converter clutch solenoid valve written on TCM
Solenoid 6 high pressure	kPa	Displays factory default oil pressure (High side) of torque converter clutch solenoid valve written on TCM
Solenoid 1 stroke time	ms	Displays factory default stroke time of C1 clutch solenoid valve written on TCM
Solenoid 2 stroke time	ms	Displays factory default stroke time of C2 clutch solenoid valve written on TCM
Solenoid 3 stroke time	ms	Displays factory default stroke time of C3 clutch solenoid valve written on TCM
Solenoid 4 stroke time	ms	Displays factory default stroke time of B1 brake solenoid valve written on TCM
Solenoid 5 stroke time	ms	Displays factory default stroke time of B2 brake solenoid valve written on TCM
Solenoid 6 stroke time 1	ms	Displays factory default stroke time 1 of torque converter clutch solenoid valve written on TCM
Solenoid 6 stroke time 2	ms	Displays factory default stroke time 2 of torque converter clutch solenoid valve written on TCM
Solenoid 6 stroke time 3	ms	Displays factory default stroke time 3 of torque converter clutch solenoid valve written on TCM
Adjust status	Incomp/Initial/Comp	Displays the status of factory default and transmission adjust
Adjust year	year	Displays the year that data is written
Adjust month	—	Displays the month that data is written
Unit number	—	Displays the transmission number
Number of Reprogramming	—	Displays the number of reprogramming
Torque converter slip speed	rpm	Displays the torque converter slip speed
Target gear 1	N/1GR-6GR/R/P/Other	Displays the target gear
Current gear 1	N/1GR-6GR/R/P/Other	Displays the current gear
Current mode	Normal/4Low/H temp/ Coast/L temp/Braking	Displays the current shift mode
Torque converter status 1	On/Off/Slip	Displays the status of torque converter
Shift position switch A	On/Off	Displays the status of transmission range switch (range signal A)
Shift position switch B	On/Off	Displays the status of transmission range switch (range signal B)
Shift position switch C	On/Off	Displays the status of transmission range switch (range signal C)
Shift position switch PA	On/Off	Displays the status of transmission range switch (range signal PA)
Shift position	P/R/N/D/P-R,R-N/N-D/ Abnormal	Displays the shift position
Transmission fluid temperature	°C/°F	Displays the fluid temperature of control valve
Torque converter fluid temp	°C/°F	Displays the fluid temperature of torque converter
Control valve fluid temp (A/D)	—	Displays the fluid temperature (Analog/Digital conversion value) of control valve
Torq converter fluid temp (A/D)	—	Displays the fluid temperature (Analog/Digital conversion value) of torque converter
Control valve fluid temp sensor	V	Displays the voltage of A/T fluid temperature sensor 2
Torq converter fluid temp sen	V	Displays the voltage of A/T fluid temperature sensor 1
Wheel speed	rpm	Displays the wheel speed
Output speed 1	rpm	Displays the output shaft speed

DIAGNOSIS SYSTEM (TCM)

< SYSTEM DESCRIPTION >

[6AT: RE6R01A]

Item name	Unit	Remarks
Input shaft speed 1	rpm	Displays the input shaft speed
Torque converter slip speed	rpm	Displays the torque converter slip speed
Output speed sensor (A/D)	—	Displays the output shaft speed (Analog/Digital conversion value)
Input speed sensor (A/D)	—	Displays the input speed (Analog/Digital conversion value)
Solenoid 1 pressure	kPa	Displays the pressure of C1 clutch solenoid valve
Solenoid 2 pressure	kPa	Displays the pressure of C2 clutch solenoid valve
Solenoid 3 pressure	kPa	Displays the pressure of C3 clutch solenoid valve
Solenoid 4 pressure	kPa	Displays the pressure of B1 brake solenoid valve
Solenoid 5 pressure	kPa	Displays the pressure of B2 brake solenoid valve
Solenoid 6 pressure	kPa	Displays the pressure of torque converter clutch solenoid valve
Solenoid 7 pressure	kPa	Displays the pressure of line pressure solenoid valve
On/off sol 1 (control modu)	On/Off	Displays the output status of fail-safe solenoid valve
Solenoid 1 current	mA	Displays the current value of C1 clutch solenoid valve
Solenoid 2 current	mA	Displays the current value of C2 clutch solenoid valve
Solenoid 3 current	mA	Displays the current value of C3 clutch solenoid valve
Solenoid 4 current	mA	Displays the current value of B1 brake solenoid valve
Solenoid 5 current	mA	Displays the current value of B2 brake solenoid valve
Solenoid 6 current	mA	Displays the current value of torque converter clutch solenoid valve
Solenoid 7 current	mA	Displays the current value of line pressure solenoid valve
On/off solenoid 1	On/Off	Displays the output status of fail-safe solenoid valve
Up sol cut field effect transist	On/Off	Displays the cut status of solenoid upper field effect transistor
Low sol cut field effect transist	On/Off	Displays the cut status of solenoid lower field effect transistor
ACC status	Before init/Initializ/Low volt/On/Off	Displays the status of accessory
IGN status	On/Off	Displays the status of ignition
Battery voltage	V	Displays the battery voltage
ACC voltage	V	Displays the accessory voltage
Battery voltage (A/D)	—	Displays the battery voltage (Analog/Digital conversion value)
ACC voltage (A/D)	—	Displays the accessory voltage (Analog/Digital conversion value)
Pressure switch	On/Off	Displays the status of oil pressure switch
Power hold output	On/Off	Displays the status of self-hold power
Number of key cycles	—	Displays the number of key cycles
General denominator	—	Displays the general denominator
1GR ratio fault numerator	—	Displays the numerator of 1GR incorrect ratio
1GR ratio fault denominator	—	Displays the denominator of 1GR incorrect ratio
1GR ratio fault rate	%	Displays the rate of 1GR incorrect ratio
2GR ratio fault numerator	—	Displays the numerator of 2GR incorrect ratio
2GR ratio fault denominator	—	Displays the denominator of 2GR incorrect ratio
2GR ratio fault rate	%	Displays the rate of 2GR incorrect ratio
3GR ratio fault numerator	—	Displays the numerator of 3GR incorrect ratio
3GR ratio fault denominator	—	Displays the denominator of 3GR incorrect ratio
3GR ratio fault rate	%	Displays the rate of 3GR incorrect ratio
4GR ratio fault numerator	—	Displays the numerator of 4GR incorrect ratio
4GR ratio fault denominator	—	Displays the denominator of 4GR incorrect ratio
4GR ratio fault rate	%	Displays the rate of 4GR incorrect ratio

DIAGNOSIS SYSTEM (TCM)

< SYSTEM DESCRIPTION >

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Item name	Unit	Remarks
5GR ratio fault numerator	—	Displays the numerator of 5GR incorrect ratio
5GR ratio fault denominator	—	Displays the denominator of 5GR incorrect ratio
5GR ratio fault rate	%	Displays the rate of 5GR incorrect ratio
6GR ratio fault numerator	—	Displays the numerator of 6GR incorrect ratio
6GR ratio fault denominator	—	Displays the denominator of 6GR incorrect ratio
6GR ratio fault rate	%	Displays the rate of 6GR incorrect ratio
R GR ratio fault numerator	—	Displays the numerator of reverse incorrect ratio
R GR ratio fault denominator	—	Displays the denominator of reverse incorrect ratio
Reverse gear ratio fault rate	%	Displays the rate of reverse incorrect ratio
Lock up stuck off numerator	—	Displays the numerator of lock-up OFF stuck
Lock up stuck off denominator	—	Displays the denominator of lock-up OFF stuck
Lock up stuck off rate	%	Displays the rate of lock-up OFF stuck
Neutral gear fault numerator	—	Displays the numerator of neutral gear malfunction
Neutral gear fault denominator	—	Displays the denominator of neutral gear malfunction
Neutral gear fault rate	%	Displays the rate of neutral gear malfunction
Solenoid 5 stick numerator	—	Displays the numerator of B2 brake solenoid valve stick malfunction
Solenoid 5 stick denominator	—	Displays the denominator of B2 brake solenoid valve stick malfunction
Solenoid 5 stick rate	%	Displays the rate of B2 brake solenoid valve stick malfunction
SP sen 2 no pulse numerator	—	Displays the numerator of output shaft speed no pulse malfunction
SP sen 2 no pulse denominator	—	Displays the denominator of output shaft speed no pulse malfunction
Speed sensor 2 no pulse rate	%	Displays the rate of output shaft speed no pulse malfunction
SP sen 2 sudd slow down num	—	Displays the numerator of output shaft speed sudden slowdown malfunction
SP sen 2 sudd slow down den	—	Displays the denominator of output shaft speed sudden slowdown malfunction
SP sen 2 sudd slow down ratio	%	Displays the rate of output shaft speed sudden slowdown malfunction
Turbin speed no pulse numerat	—	Displays the numerator of input speed no pulse malfunction
Trbin speed no puls denominat	—	Displays the denominator of input speed no pulse malfunction
Turbine speed no pulse rate	%	Displays the rate of input speed no pulse malfunction
Oil temp reliability numerator	—	Displays the numerator of ATF temperature reliability malfunction
Oil temp reliability denominator	—	Displays the denominator of ATF temperature reliability malfunction
Oil temperature reliability rate	%	Displays the rate of ATF temperature reliability malfunction
T/C temp reliability numerator	—	Displays the numerator of torque converter fluid temperature reliability malfunction
T/C temp reliability denominat	—	Displays the denominator of torque converter fluid temperature reliability malfunction
T/C temp reliability rate	%	Displays the rate of torque converter fluid temperature reliability malfunction
Sol 1 high stuck numerator	—	Displays the numerator of C1 clutch solenoid stuck malfunction (high)
Sol 1 high stuck denominator	—	Displays the denominator of C1 clutch solenoid stuck malfunction (high)
Sol 1 high stuck rate	%	Displays the rate of C1 clutch solenoid stuck malfunction (high)
Shift lever sequential numerat	—	Displays the numerator of selector lever sequential malfunction
Shift lever sequent denominat	—	Displays the denominator of selector lever sequential malfunction
Shift lever sequential rate	%	Displays the rate of selector lever sequential malfunction
Max engine speed	Tr/min	Displays the maximum value of engine speed

DIAGNOSIS SYSTEM (TCM)

< SYSTEM DESCRIPTION >

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Item name	Unit	Remarks
Max input shaft speed	rpm	Displays the maximum value of input shaft speed
Max output shaft speed	rpm	Displays the maximum value of output shaft speed
Max transmission fluid temp	°C/°F	Displays the maximum ATF temperature
Min transmission fluid temp	°C/°F	Displays the minimum ATF temperature
Max T/C fluid temp	°C/°F	Displays the maximum torque converter fluid temperature
Min T/C fluid temp	°C/°F	Displays the minimum torque converter fluid temperature
Estimated engine torque 2	Nm	Displays the estimated engine torque (except for AT request)
Powertrain set-point 1	%	Displays the powertrain set point
Pedal error 1	Normal/Abnormal	Displays the status of pedal error
Cruise control status 1	Inactive/ Recovry/Active	Displays the status of cruise control
Powertrain set-point 2	%	Displays the powertrain set point (mirror)
Engine speed	Tr/min	Displays the engine speed
Estimated engine torque 1	Nm	Displays the estimated engine torque
Engine torque 1	Nm	Displays the engine torque
Accelerator position 1	%	Displays the accelerator position
ECM P-RUN signal 1	—	Displays the P-RUN signal of ECM
Torque request status 1	Normal/Abnormal	Displays the status of torque request
ECM P-RUN signal 1	—	Displays the P-RUN signal of ECM
Engine status 1	Stopped/Stalled/Run- ning/Cranking	Displays the status of engine
Engine coolant temperature 1	°C/°F	Displays the engine coolant temperature
CAN diagnosis 1	Not auth/Authorise	Displays the authorization status of CAN transmit-receive diagnosis
Engine on/off 1	Not start/Started	Displays the status of engine start
ECM P-RUN signal 2	—	Displays the P-RUN signal of ECM
OBD marker signal 1	—	Displays the marker signal of OBD
OBD warm up cycle 1	Incomp/Comple	Displays the status of OBD warm up cycle
OBD general trip 1	Incomp/Comple	Displays the status of OBD general trip
OBD marker ID 1	—	Displays the marker ID of OBD
Shifting authorisation 1	Forbid/Up/down	Displays the status of gear hold request
VDC malfunction 1	Normal/Abnormal	Displays the fail status of VDC
VDC P-RUN signal 1	—	Displays the P-RUN signal of VDC
TCS operation status 1	Inactive/Active	Displays the TCS operation status
VDC operation status 1	Inactive/Active	Displays the VDC operation status
TCS malfunction 1	Normal/Abnormal	Displays the fail status of TCS
Shift map change request 1	No requ/Warm/Cold	Displays the status of shift schedule change request
Wheel speed RR 1	rpm	Displays the wheel speed (rear-right)
Wheel speed RL 1	rpm	Displays the wheel speed (rear-left)
ABS malfunction 1	Normal/Abnormal	Displays the fail status of ABS
ABS operation status 1	Inactive/Active	Displays the ABS operation status
Manual mode (-) 1	On/Off	Displays the status of manual mode switch (-)
Manual mode (+) 1	On/Off	Displays the status of manual mode switch (+)
TOW mode switch 1	On/Off	Displays the status of tow mode switch
Brake switch	Inactive/Active/Invalid	Displays the status of stop lamp switch
4WD control mode 1	Auto/4WD/2WD/4Low	Displays the status of 4WD mode switch
OBD general denominator 1	Not auth/Authorisa	Displays the count up status of OBD general denominator

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DIAGNOSIS SYSTEM (TCM)

< SYSTEM DESCRIPTION >

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Item name	Unit	Remarks
4WD P-RUN signal 1	—	Displays the P-RUN signal of transfer control unit
Engine soak status 1	Incomp/Comple	Displays the status of engine soak completion
Wheel speed FR 1	rpm	Displays the wheel speed (front-right)
Wheel speed FL 1	rpm	Displays the wheel speed (front-left)
Engine derate condition 1	On/Off	Displays the status of engine derate control
Estimated engine torque 3	Nm	Displays the estimated engine torque (except for AT request)
Powertrain set-point 3	%	Displays the powertrain set point
Pedal error 2	Normal/Abnormal	Displays the status of pedal error
Cruise control status 2	Inactive/Active	Displays the status of cruise control
Powertrain set-point 3	%	Displays the powertrain set point (mirror)
Engine speed (control)	Tr/min	Displays the engine speed
Estimated engine torque 2	Nm	Displays the estimated engine torque
Engine torque 2	Nm	Displays the engine torque
Accelerator position 2	%	Displays the accelerator position
ECM P-RUN signal 2	—	Displays the P-RUN signal of ECM
Torque request status 2	Normal/Abnormal	Displays the status of torque request
ECM P-RUN signal 3	—	Displays the P-RUN signal of ECM
Engine status 2	Stopped/Stalled/Run- ning/Cranking	Displays the status of engine
Engine coolant temperature 2	°C/°F	Displays the engine coolant temperature
CAN diagnosis 2	Not auth/Authorisa	Displays the authorization status of CAN transmit-receive diagnosis
Engine on/off 2	Not start/Started	Displays the status of engine start
ECM P-RUN signal 3	—	Displays the P-RUN signal of ECM
OBD marker signal 2	—	Displays the marker signal of OBD
OBD warm up cycle 2	Incomp/Comple	Displays the status of OBD warm up cycle
OBD general trip 2	Incomp/Comple	Displays the status of OBD general trip
OBD marker ID 2	—	Displays the marker ID of OBD
Shifting authorisation 2	Forbid/Up/down	Displays the status of gear hold request
VDC malfunction 2	Normal/Abnormal	Displays the fail status of VDC
VDC P-RUN signal 2	—	Displays the P-RUN signal of VDC
TCS operation status 2	Inactive/Active	Displays the TCS operation status
VDC operation status 2	Inactive/Active	Displays the VDC operation status
TCS malfunction 2	Normal/Abnormal	Displays the fail status of TCS
Shift map change request 2	No requ/Warm/Cold	Displays the status of shift schedule change request
Wheel speed RR 2	rpm	Displays the wheel speed (rear-right)
Wheel speed RL 2	rpm	Displays the wheel speed (rear-left)
ABS malfunction 2	Normal/Abnormal	Displays the fail status of ABS
ABS operation status 2	Inactive/Active	Displays the ABS operation status
Manual mode (-) 2	On/Off	Displays the status of manual mode switch (-)
Manual mode (+) 2	On/Off	Displays the status of manual mode switch (+)
TOW mode switch 2	On/Off	Displays the status of tow mode switch
Brake switch (control)	On/Off	Displays the status of stop lamp switch
4WD control mode 2	OT 4Low/4Low	Displays the status of 4WD mode switch
OBD general denominator 2	Not auth/Authorisa	Displays the count up status of OBD general denominator
4WD P-RUN signal 2	—	Displays the P-RUN signal of transfer control unit

DIAGNOSIS SYSTEM (TCM)

< SYSTEM DESCRIPTION >

[6AT: RE6R01A]

Item name	Unit	Remarks
Engine soak status 2	Incomp/Compleat	Displays the status of engine soak completion
Wheel speed FR 2	rpm	Displays the wheel speed (front-right)
Wheel speed FL 2	rpm	Displays the wheel speed (front-left)
Engine derate condition 2	On/Off	Displays the status of engine derate control
Torque request 1	Nm	Displays the torque request value
Limit/slow torque request 1	Nm	This monitor item does not use
Target gear 2	1GR-6GR/R/N or P/ Failmode	Displays the target gear
Current gear 2	1GR-6GR/R/N or P/ Failmode	Displays the current gear
Torque control type 1	Limit/Min	Displays the type of torque control
AT P-RUN signal 1	—	Displays the P-RUN signal of TCM
Torque converter status 2	Unlock/lock-up	Displays the status of torque converter
Output speed 2	rpm	Displays the output shaft speed
Input shaft speed 2	rpm	Displays the input shaft speed
AT P-RUN signal 2	—	Displays the P-RUN signal of TCM
Manual mode status 1	Not M/M-mode	Displays the manual mode status
AT malfunction 1	Normal/Abnormal	Displays the fail status of TCM
Idle up request rpm 1	rpm	Displays the idle up request revolution
Gear position 1	Off/P/R/N/D/M1-M6	Displays the gear position
AT warning lamp 1	On/Off	Displays the output status of AT CHECK indicator lamp
AT high temp waring lamp 1	On/Off	Displays the output status of AT OIL TEMP waring lamp
Gear shift refuse buzzer 1	No requ/Request	Displays the output request status of gear shift refuse buzzer
TOW mode indicator request 1	No requ/Request	Displays the status of tow mode indicator request
ATF temperature 1	°C/°F	Displays the A/T fluid temperature
MIL request 1	No requ/Request	Displays the status of MIL request
Gear shift authorisation stat 1	Accepted/Refused	Displays the status of gear shift authorisation
Torque request 2	Nm	Displays the torque request value
Limit/slow torque request 2	Nm	This monitor item does not use
Target gear 3	1GR-6GR/R/N or P/ Failmode	Displays the target gear
Current gear 3	1GR-6GR/R/N or P/ Failmode	Displays the current gear
Torque control type 2	Limit/Min	Displays the type of torque control
AT P-RUN signal 3	—	Displays the P-RUN signal of TCM
Torque converter status 3	Unlock/lock-up	Displays the status of torque converter
Output speed 3	rpm	Displays the output shaft speed
Input shaft speed 3	rpm	Displays the input shaft speed
AT P-RUN signal 4	—	Displays the P-RUN signal of TCM
Manual mode status 2	Not M/M-mode	Displays the manual mode status
AT malfunction 2	Normal/Abnormal	Displays the fail status of TCM
Idle up request rpm 2	rpm	Displays the idle up request revolution
Gear position 2	Off/P/R/N/D/M1-M6	Displays the gear position
AT warning lamp 2	On/Off	Displays the output status of AT CHECK indicator lamp
AT high temp waring lamp 2	On/Off	Displays the output status of AT OIL TEMP waring lamp
Gear shift refuse buzzer 2	No requ/Request	Displays the output request status of gear shift refuse buzzer

DIAGNOSIS SYSTEM (TCM)

< SYSTEM DESCRIPTION >

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Item name	Unit	Remarks
TOW mode indicator request 2	No requ/Request	Displays the status of tow mode indicator request
ATF temperature 2	°C/°F	Displays the A/T fluid temperature
MIL request 2	No requ/Request	Displays the status of MIL request
Gear shift authorisation stat 2	Accepted/Refused	Displays the status of gear shift authorisation

ECU DIAGNOSIS INFORMATION

TCM

Reference Value

INFOID:0000000014418903

VALUES ON THE DIAGNOSIS TOOL

NOTE:

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

DATA MONITOR ITEM

Item name	Condition	Value / Status (Approx.)
Solenoid 1 low pressure	Engine: Running	Other than the 0 kPa
Solenoid 1 high pressure	Engine: Running	Other than the 0 kPa
Solenoid 2 low pressure	Engine: Running	Other than the 0 kPa
Solenoid 2 high pressure	Engine: Running	Other than the 0 kPa
Solenoid 3 low pressure	Engine: Running	Other than the 0 kPa
Solenoid 3 high pressure	Engine: Running	Other than the 0 kPa
Solenoid 4 low pressure	Engine: Running	Other than the 0 kPa
Solenoid 4 high pressure	Engine: Running	Other than the 0 kPa
Solenoid 5 low pressure	Engine: Running	Other than the 0 kPa
Solenoid 5 high pressure	Engine: Running	Other than the 0 kPa
Solenoid 6 low pressure	Engine: Running	Other than the 0 kPa
Solenoid 6 high pressure	Engine: Running	Other than the 0 kPa
Solenoid 1 stroke time	Engine: Running	Other than the 0 ms
Solenoid 2 stroke time	Engine: Running	Other than the 0 ms
Solenoid 3 stroke time	Engine: Running	Other than the 0 ms
Solenoid 4 stroke time	Engine: Running	Other than the 0 ms
Solenoid 5 stroke time	Engine: Running	Other than the 0 ms
Solenoid 6 stroke time 1	Engine: Running	Other than the 0 ms
Solenoid 6 stroke time 2	Engine: Running	Other than the 0 ms
Solenoid 6 stroke time 3	Engine: Running	Other than the 0 ms
Adjust status	Offset data written in TCM is incomplete	Incomp
	When the offset data has been written in the factory	Initial
	When the offset data has been written in the dealer	Comp
Adjust year	Engine: Running	Displays year that correction data is written in TCM
Adjust month	Engine: Running	Displays month that correction data is written in TCM
Unit number	Engine: Running	Other than 0
Number of Reprogramming	—	—
Torque converter slip speed	While driving (lock-up ON)	100 rpm or less

TCM

< ECU DIAGNOSIS INFORMATION >

[6AT: RE6R01A]

Item name	Condition	Value / Status (Approx.)
Target gear 1	Driving with 1GR	1GR
	Driving with 2GR	2GR
	Driving with 3GR	3GR
	Driving with 4GR	4GR
	Driving with 5GR	5GR
	Driving with 6GR	6GR
	Selector lever: R	R
	Selector lever: P	P
	Selector lever: N	N
Current gear 1	Driving with 1GR	1GR
	Driving with 2GR	2GR
	Driving with 3GR	3GR
	Driving with 4GR	4GR
	Driving with 5GR	5GR
	Driving with 6GR	6GR
	Selector lever: R	R
	Selector lever: P	P
	Selector lever: N	N
Current mode	—	—
Torque converter status 1	While driving	Value changes according to lock-up map
Shift position switch A	Selector lever: P	On
	Selector lever: Between P and R	On
	Selector lever: R	On
	Selector lever: Between R and N	On
	Selector lever: N	Off
	Selector lever: Between N and D	Off
	Selector lever: D	Off
Shift position switch B	Selector lever: P	Off
	Selector lever: Between P and R	On
	Selector lever: R	On
	Selector lever: Between R and N	On
	Selector lever: N	On
	Selector lever: Between N and D	On
	Selector lever: D	On
Shift position switch C	Selector lever: P	Off
	Selector lever: Between P and R	Off
	Selector lever: R	Off
	Selector lever: Between R and N	Off
	Selector lever: N	Off
	Selector lever: Between N and D	On
	Selector lever: D	On

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Item name	Condition	Value / Status (Approx.)	
Shift position switch PA	Selector lever: P	On	A
	Selector lever: Between P and R	On	
	Selector lever: R	Off	B
	Selector lever: Between R and N	On	
	Selector lever: N	On	
	Selector lever: Between N and D	On	C
	Selector lever: D	Off	
Shift position	Operate the selector lever	Matches with selector lever position	TM
Transmission fluid temperature	Ignition switch: ON	Displays the ATF temperature.	
Torque converter fluid temp	Ignition switch: ON	Displays the ATF temperature.	E
Control valve fluid temp (A/D)	—	—	
Torq converter fluid temp (A/D)	—	—	
Control valve fluid temp sensor	ATF temperature: Approx. 20°C (68°F)	2.84 – 3.25 V	F
	ATF temperature: Approx. 50°C (122°F)	1.53 – 1.84 V	
	ATF temperature: Approx. 80°C (176°F)	0.75 – 0.92 V	G
Torq converter fluid temp sen	ATF temperature: Approx. 20°C (68°F)	3.17 – 3.47 V	
	ATF temperature: Approx. 50°C (122°F)	1.83 – 2.09 V	H
	ATF temperature: Approx. 80°C (176°F)	0.93 – 1.09 V	
Wheel speed	While driving	Almost same as the speedometer display	
Output speed 1	While driving	Almost same as the speedometer display	I
Input shaft speed 1	While driving (lock-up ON)	Almost same as the tachometer display	J
Torque converter slip speed	While driving (lock-up ON)	100 rpm or less	
Output speed sensor (A/D)	While driving	Almost same as the speedometer display	K
Input speed sensor (A/D)	While driving (lock-up ON)	Almost same as the tachometer display	
Solenoid 1 pressure	—	—	L
Solenoid 2 pressure	—	—	
Solenoid 3 pressure	—	—	
Solenoid 4 pressure	—	—	M
Solenoid 5 pressure	—	—	
Solenoid 6 pressure	—	—	N
Solenoid 7 pressure	—	—	
On/off sol 1 (control modu)	—	—	O
Solenoid 1 current	—	—	
Solenoid 2 current	—	—	
Solenoid 3 current	—	—	P
Solenoid 4 current	—	—	
Solenoid 5 current	—	—	
Solenoid 6 current	—	—	
Solenoid 7 current	—	—	
On/off solenoid 1	—	—	

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< ECU DIAGNOSIS INFORMATION >

[6AT: RE6R01A]

Item name	Condition	Value / Status (Approx.)
Up sol cut field effect transist	Engine: Running	Off
Low sol cut field effect transist	Engine: Running	Off
ACC status	—	—
IGN status	Ignition switch:ON	On
	Other than the above	Off
Battery voltage	Always	Battery voltage
ACC voltage	Ignition switch:ACC	Battery voltage
	Ignition switch:OFF	0 V
Battery voltage (A/D)	Always	Battery voltage
ACC voltage (A/D)	Ignition switch:ACC	Battery voltage
	Ignition switch:OFF	0 V
Pressure switch	Driving gear: Reverse, 1GR	On
	Driving gear: 2GR - 6GR	Off
Power hold output	Engine: Running	On
	Other than the above	Off
Number of key cycles	—	—
General denominator	—	—
1GR ratio fault numerator	—	—
1GR ratio fault denominator	—	—
1GR ratio fault rate	—	—
2GR ratio fault numerator	—	—
2GR ratio fault denominator	—	—
2GR ratio fault rate	—	—
3GR ratio fault numerator	—	—
3GR ratio fault denominator	—	—
3GR ratio fault rate	—	—
4GR ratio fault numerator	—	—
4GR ratio fault denominator	—	—
4GR ratio fault rate	—	—
5GR ratio fault numerator	—	—
5GR ratio fault denominator	—	—
5GR ratio fault rate	—	—
6GR ratio fault numerator	—	—
6GR ratio fault denominator	—	—
6GR ratio fault rate	—	—
R GR ratio fault numerator	—	—
R GR ratio fault denominator	—	—
Reverse gear ratio fault rate	—	—
Lock up stuck off numerator	—	—
Lock up stuck off denominator	—	—
Lock up stuck off rate	—	—
Neutral gear fault numerator	—	—
Neutral gear fault denominator	—	—
Neutral gear fault rate	—	—

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Item name	Condition	Value / Status (Approx.)	
Solenoid 5 stick numerator	—	—	A
Solenoid 5 stick denominator	—	—	
Solenoid 5 stick rate	—	—	B
SP sen 2 no pulse numerator	—	—	
SP sen 2 no pulse denominator	—	—	
Speed sensor 2 no pulse rate	—	—	C
SP sen 2 sudd slow down num	—	—	
SP sen 2 sudd slow down den	—	—	TM
SP sen 2 sudd slow down ratio	—	—	
Turbin speed no pulse numerat	—	—	
Trbin speed no puls denominat	—	—	E
Turbine speed no pulse rate	—	—	
Oil temp reliability numerator	—	—	
Oil temp reliability denominator	—	—	F
Oil temperature reliability rate	—	—	
T/C temp reliability numerator	—	—	
T/C temp reliability denominat	—	—	G
T/C temp reliability rate	—	—	
Sol 1 high stuck numerator	—	—	H
Sol 1 high stuck denominator	—	—	
Sol 1 high stuck rate	—	—	I
Shift lever sequential numerat	—	—	
Shift lever sequent denominat	—	—	J
Shift lever sequential rate	—	—	
Max engine speed	—	—	
Max input shaft speed	—	—	K
Max output shaft speed	—	—	
Max transmission fluid temp	—	—	
Min transmission fluid temp	—	—	L
Max T/C fluid temp	—	—	
Min T/C fluid temp	—	—	M
Estimated engine torque 2	—	—	
Powertrain set-point 1	Accelerator pedal released	0%	
	Other than the above	Other than the 0%	N
Pedal error 1	—	—	
Cruise control status 1	Cruise control: ON	Active	O
	Cruise control: OFF	Inactive	
	Cruise control: ON Accelerator pedal is depressed during the cruise control is on	Recovry	P
Powertrain set-point 2	Accelerator pedal released	0%	
	Other than the above	Other than the 0%	
Engine speed	Engine: Running	Almost same as the tachometer display	
Estimated engine torque 1	—	—	

TCM

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[6AT: RE6R01A]

Item name	Condition	Value / Status (Approx.)
Engine torque 1	—	—
Accelerator position 1	Accelerator pedal released	0%
	Other than the above	Other than the 0%
ECM P-RUN signal 1	—	—
Torque request status 1	—	—
ECM P-RUN signal 1	—	—
Engine status 1	Engine: Stopped	Stopped
	Engine: Stalled	Stalled
	Engine: Running	Running
	Engine: Cranking	Cranking
Engine coolant temperature 1	Ignition switch: ON	Displays the engine coolant temperature
CAN diagnosis 1	—	—
Engine on/off 1	Engine: Stopped	Not start
	Engine: Running	Started
ECM P-RUN signal 2	—	—
OBD marker signal 1	—	—
OBD warm up cycle 1	—	—
OBD general trip 1	—	—
OBD marker ID 1	—	—
Shifting authorisation 1	—	—
VDC malfunction 1	—	—
VDC P-RUN signal 1	—	—
TCS operation status 1	TCS: Active	Active
	TCS: Not active	Inactive
VDC operation status 1	VDC: Active	Active
	VDC: Not active	Inactive
TCS malfunction 1	—	—
Shift map change request 1	—	—
Wheel speed RR 1	Vehicle: Stopped	0 rpm
	Other than the above	Other than the 0 rpm
Wheel speed RL 1	Vehicle: Stopped	0 rpm
	Other than the above	Other than the 0 rpm
ABS malfunction 1	—	—
ABS operation status 1	ABS: Active	Active
	ABS: Not active	Inactive
Manual mode (-) 1	Press the manual mode switch (- side)	On
	Other than the above	Off
Manual mode (+) 1	Press the manual mode switch (+ side)	On
	Other than the above	Off
TOW mode switch 1	Tow mode switch: Pushed	On
	Other than the above	Off
Brake switch	Brake pedal is depressed	On
	Brake pedal is released	Off

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< ECU DIAGNOSIS INFORMATION >

[6AT: RE6R01A]

Item name	Condition	Value / Status (Approx.)	
4WD control mode 1	4WD mode switch: 2WD	2WD	A
	4WD mode switch: 4H	4WD	
	4WD mode switch: 4Lo	4Low	B
OBD general denominator 1	—	—	
4WD P-RUN signal 1	—	—	
Engine soak status 1	Engine soak: Completed	Comple	C
	Engine soak: Incompleted	Incomp	
Wheel speed FR 1	Vehicle: Stopped	0 rpm	TM
	Other than the above	Other than the 0 rpm	
Wheel speed FL 1	Vehicle: Stopped	0 rpm	E
	Other than the above	Other than the 0 rpm	
Engine derate condition 1	—	—	
Estimated engine torque 3	—	—	F
Powertrain set-point 3	Accelerator pedal released	0%	F
	Other than the above	Other than the 0%	
Pedal error 2	—	—	G
Cruise control status 2	Cruise control: ON	Active	H
	Cruise control: OFF	Inactive	
Powertrain set-point 3	Accelerator pedal released	0%	H
	Other than the above	Other than the 0%	
Engine speed (control)	Engine running	Almost same as the tachometer display	I
Estimated engine torque 2	—	—	
Engine torque 2	—	—	J
Accelerator position 2	Accelerator pedal released	0%	K
	Other than the above	Other than the 0%	
ECM P-RUN signal 2	—	—	
Torque request status 2	—	—	
ECM P-RUN signal 3	—	—	L
Engine status 2	Engine: Stopped	Stopped	M
	Engine: Stalled	Stalled	
	Engine: Running	Running	
	Engine: Cranking	Cranking	
Engine coolant temperature 2	Ignition switch: ON	Displays the engine coolant temperature	N
CAN diagnosis 2	—	—	
Engine on/off 2	Engine: Stopped	Not start	O
	Engine: Running	Started	
ECM P-RUN signal 3	—	—	
OBD marker signal 2	—	—	P
OBD warm up cycle 2	—	—	
OBD general trip 2	—	—	
OBD marker ID 2	—	—	
Shifting authorisation 2	—	—	
VDC malfunction 2	—	—	

TCM

< ECU DIAGNOSIS INFORMATION >

[6AT: RE6R01A]

Item name	Condition	Value / Status (Approx.)
VDC P-RUN signal 2	—	—
TCS operation status 2	TCS: Active	Active
	TCS: Not active	Inactive
VDC operation status 2	VDC: Active	Active
	VDC: Not active	Inactive
TCS malfunction 2	—	—
Shift map change request 2	—	—
Wheel speed RR 2	Vehicle: Stopped	0 rpm
	Other than the above	Other than the 0 rpm
Wheel speed RL 2	Vehicle: Stopped	0 rpm
	Other than the above	Other than the 0 rpm
ABS malfunction 2	—	—
ABS operation status 2	ABS: Active	Active
	ABS: Not active	Inactive
Manual mode (-) 2	Press the manual mode switch (- side)	On
	Other than the above	Off
Manual mode (+) 2	Press the manual mode switch (+ side)	On
	Other than the above	Off
TOW mode switch 2	Other than the above	Off
	Tow mode switch: Pushed	On
Brake switch (control)	Other than the above	Off
	Brake pedal is depressed	On
4WD control mode 2	4WD mode switch: 2WD	2WD
	4WD mode switch: 4H	4WD
	4WD mode switch: 4Lo	4Low
OBD general denominator 2	—	—
4WD P-RUN signal 2	—	—
Engine soak status 2	Engine soak: Completed	Comple
	Engine soak: Incompleted	Incomp
Wheel speed FR 2	Vehicle: Stopped	0 rpm
	Other than the above	Other than the 0 rpm
Wheel speed FL 2	Vehicle: Stopped	0 rpm
	Other than the above	Other than the 0 rpm
Engine derate condition 2	—	—
Torque request 1	—	—
Limit/slow torque request 1	—	—

TCM

< ECU DIAGNOSIS INFORMATION >

[6AT: RE6R01A]

Item name	Condition	Value / Status (Approx.)	
Target gear 2	Driving with 1GR	1GR	A
	Driving with 2GR	2GR	
	Driving with 3GR	3GR	B
	Driving with 4GR	4GR	
	Driving with 5GR	5GR	
	Driving with 6GR	6GR	C
	Selector lever: R	R	
	Selector lever: P or N	N or P	TM
	Transmission: Malfunction	Failmode	
Current gear 2	Driving with 1GR	1GR	
	Driving with 2GR	2GR	E
	Driving with 3GR	3GR	
	Driving with 4GR	4GR	F
	Driving with 5GR	5GR	
	Driving with 6GR	6GR	
	Selector lever: R	R	G
	Selector lever: P or N	N or P	
	Transmission: Malfunction	Failmode	H
Torque control type 1	—	—	
AT P-RUN signal 1	—	—	
Torque converter status 2	Lock up: ON	Lock-up	I
	Lock up: OFF	Unlock	
Output speed 2	While driving	Almost same as the speedometer display	J
Input shaft speed 2	While driving (lock-up ON)	Almost same as the tachometer display	
AT P-RUN signal 2	—	—	K
Manual mode status 1	Manual mode: ON	M-mode	
	Manual mode: OFF	Not M	L
AT malfunction 1	—	—	
Idle up request rpm 1	—	—	
Gear position 1	Selector lever: P	P	M
	Selector lever: R	R	
	Selector lever: N	N	
	Selector lever: D	D	N
	Manual mode: M1	M1	
	Manual mode: M2	M2	O
	Manual mode: M3	M3	
	Manual mode: M4	M4	
	Manual mode: M5	M5	P
	Manual mode: M6	M6	
AT warning lamp 1	AT CHECK indicator lamp: ON	On	
	AT CHECK indicator lamp: OFF	Off	
AT high temp warning lamp 1	AT OIL TEMPwarning lamp: ON	On	
	AT OIL TEMPwarning lamp: OFF	Off	

TCM

< ECU DIAGNOSIS INFORMATION >

[6AT: RE6R01A]

Item name	Condition	Value / Status (Approx.)
Gear shift refuse buzzer 1	—	—
TOW mode indicator request 1	—	—
ATF temperature 1	Ignition switch: ON	Displays the ATF temperature.
MIL request 1	—	—
Gear shift authorisation stat 1	—	—
Torque request 2	—	—
Limit/slow torque request 2	—	—
Target gear 3	Driving with 1GR	1GR
	Driving with 2GR	2GR
	Driving with 3GR	3GR
	Driving with 4GR	4GR
	Driving with 5GR	5GR
	Driving with 6GR	6GR
	Selector lever: R	R
	Selector lever: P or N	N or P
	Transmission: Malfunction	Failmode
Current gear 3	Driving with 1GR	1GR
	Driving with 2GR	2GR
	Driving with 3GR	3GR
	Driving with 4GR	4GR
	Driving with 5GR	5GR
	Driving with 6GR	6GR
	Selector lever: R	R
	Selector lever: P or N	N or P
	Transmission: Malfunction	Failmode
Torque control type 2	—	—
AT P-RUN signal 3	—	—
Torque converter status 3	While driving	Value changes according to lock-up map
Output speed 3	While driving	Almost same as the speedometer display
Input shaft speed 3	While driving (lock-up ON)	Almost same as the tachometer display
AT P-RUN signal 4	—	—
Manual mode status 2	Manual mode: ON	M-mode
	Manual mode: OFF	Not M
AT malfunction 2	—	—
Idle up request rpm 2	—	—

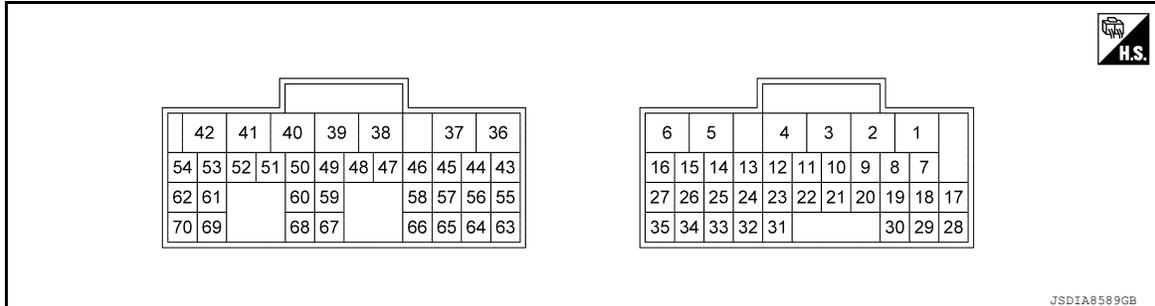
TCM

< ECU DIAGNOSIS INFORMATION >

[6AT: RE6R01A]

Item name	Condition	Value / Status (Approx.)
Gear position 2	Selector lever: P	P
	Selector lever: R	R
	Selector lever: N	N
	Selector lever: D	D
	Manual mode: M1	M1
	Manual mode: M2	M2
	Manual mode: M3	M3
	Manual mode: M4	M4
	Manual mode: M5	M5
	Manual mode: M6	M6
AT warning lamp 2	AT CHECK indicator lamp: ON	On
	AT CHECK indicator lamp: OFF	Off
AT high temp waring lamp 2	AT OIL TEMPwarning lamp: ON	On
	AT OIL TEMPwarning lamp: OFF	Off
Gear shift refuse buzzer 2	—	—
TOW mode indicator request 2	—	—
ATF temperature 2	Ignition switch: ON	Displays the ATF temperature.
MIL request 2	—	—
Gear shift authorisation stat 2	—	—

TERMINAL LAYOUT



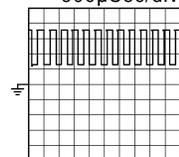
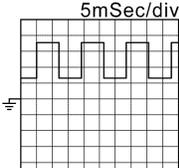
PHYSICAL VALUES

Terminal (Wire color)		Description		Condition	Value (Approx.)
+	-	Signal name	Input/Output		
2 (Y)	Ground	Range signal A	Input	Selector lever: P	Battery voltage
				Selector lever: Between P and R	Battery voltage
				Selector lever: R	Battery voltage
				Selector lever: Between R and N	Battery voltage
				Selector lever: N	0 V
				Selector lever: Between N and D	0 V
				Selector lever: D	0 V

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< ECU DIAGNOSIS INFORMATION >

[6AT: RE6R01A]

Terminal (Wire color)		Description		Condition	Value (Approx.)
+	-	Signal name	Input/ Output		
3 (V)	Ground	Range signal B	Input	Selector lever: P	0 V
				Selector lever: Between P and R	Battery voltage
				Selector lever: R	Battery voltage
				Selector lever: Between R and N	Battery voltage
				Selector lever: N	Battery voltage
				Selector lever: Between N and D	Battery voltage
				Selector lever: D	Battery voltage
8 (R)	Ground	Output speed sensor (+)	Input	Ignition switch ON	10 – 16 V
9 (Y/R)	Ground	Ignition power supply	Input	Ignition switch ON	Battery voltage
				Ignition switch OFF	0 V
10 (L)	Ground	Range signal C	Input	Selector lever: P	0 V
				Selector lever: Between P and R	0 V
				Selector lever: R	0 V
				Selector lever: Between R and N	0 V
				Selector lever: N	0 V
				Selector lever: Between N and D	Battery voltage
				Selector lever: D	Battery voltage
11 (GR)	Ground	Oil pressure switch	Input	Selector lever: P, R, N	0 V
				Driving with 1GR	0 V
				Driving with 2GR, 3GR, 4GR, 5GR, 6GR	Other than the 0 V
17 (BR)	Ground	Input speed sensor (-)	Input	<ul style="list-style-type: none"> • Vehicle speed: 0 km/h (0 MPH) • Selector lever: D, R 	0 Hz (0.6 V)
				<ul style="list-style-type: none"> • Vehicle speed: 20 km/h (12 MPH) • Gear: 1st 	2323 Hz 500µSec/div  0.5V/div <small>JSDIB00652Z</small>
				<ul style="list-style-type: none"> • Vehicle speed: 20 km/h (12 MPH) • Gear: 2nd 	1243 Hz 500µSec/div  0.5V/div <small>JSDIB00662Z</small>
19 (Y)	Ground	Output speed sensor (-)	Input	<ul style="list-style-type: none"> • Vehicle speed: 0 km/h (0 MPH) • Selector lever: P, R, N, D 	0 Hz (0.6 V)
				Vehicle speed: 20 km/h (12 MPH)	140 Hz 5mSec/div  0.5V/div <small>JSDIB00672Z</small>

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< ECU DIAGNOSIS INFORMATION >

[6AT: RE6R01A]

Terminal (Wire color)		Description		Condition	Value (Approx.)
+	-	Signal name	Input/ Output		
21 (GR/ Y)	Ground	Range signal PA	Input	Selector lever: P	Battery voltage
				Selector lever: Between P and R	Battery voltage
				Selector lever: R	0 V
				Selector lever: Between R and N	Battery voltage
				Selector lever: N	Battery voltage
				Selector lever: Between N and D	Battery voltage
				Selector lever: D	0 V
28 (W/R)	Ground	Input speed sensor (+)	Input	Ignition switch ON	10 – 16 V
36 (B)	Ground	Ground	Output	Always	0 V
37 (B)	Ground	Ground	Output	Always	0 V
38 (L/Y)	Ground	Line pressure solenoid valve (+)	Output	—	—
39 (O)	Ground	Line pressure solenoid valve (-)	Output	—	—
41 (R/W)	Ground	Battery power supply	Input	Always	Battery voltage
42 (R/W)	Ground	Battery power supply	Input	Always	Battery voltage
43 (L/R)	Ground	C1 clutch solenoid valve (+)	Output	—	—
44 (R/W)	Ground	C1 clutch solenoid valve (-)	Output	—	—
45 (R/Y)	Ground	C2 clutch solenoid valve (-)	Output	—	—
46 (R/Y)	Ground	C2 clutch solenoid valve (+)	Output	—	—
47 (B/R)	Ground	C3 clutch solenoid valve (+)	Output	—	—
48 (W)	Ground	C3 clutch solenoid valve (-)	Output	—	—
49 (R/L)	Ground	B1 brake solenoid valve (-)	Output	Selector lever: R, N	Other than the 0 V
				Driving with 1GR, 3GR, 4GR, 5GR	Other than the 0 V
				Driving with 2GR, 6GR	0 V
50 (L/W)	Ground	B1 brake solenoid valve (+)	Output	—	—
54 (P)	Ground	Accessory relay-2	Input	Ignition switch ON or ACC	Battery voltage
				Ignition switch OFF	0 V
57 (V)	Ground	A/T fluid temperature sensor 1 (+)	Input	ATF temperature: Approx. 20°C (68°F)	3.17 – 3.47 V
				ATF temperature: Approx. 50°C (122°F)	1.83 – 2.09 V
				ATF temperature: Approx. 80°C (176°F)	0.93 – 1.09 V
58 (SB)	Ground	A/T fluid temperature sensor 1 (-)	Input	Always	0 V
59 (Y)	Ground	B2 brake solenoid valve (-)	Output	—	—

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< ECU DIAGNOSIS INFORMATION >

[6AT: RE6R01A]

Terminal (Wire color)		Description		Condition	Value (Approx.)
+	-	Signal name	Input/ Output		
60 (W/L)	Ground	B2 brake solenoid valve (+)	Output	—	—
63 (L)	—	CAN-H	Input/ Output	—	—
64 (P)	—	CAN-L	Input/ Output	—	—
65 (L/B)	Ground	A/T fluid temperature sensor 2 (+)	Input	ATF temperature: Approx. 20°C (68°F)	2.84 – 3.25 V
				ATF temperature: Approx. 50°C (122°F)	1.53 – 1.84 V
				ATF temperature: Approx. 80°C (176°F)	0.75 – 0.92 V
66 (L)	Ground	A/T fluid temperature sensor 2 (-)	Input	Always	0 V
67 (V/W)	Ground	Torque converter clutch solenoid valve (-)	Output	—	—
68 (Y/B)	Ground	Torque converter clutch solenoid valve (+)	Output	—	—
70 (W/R)	Ground	Fail-safe solenoid valve	Output	Ignition switch ON	10 – 16 V

Fail-Safe

INFOID:000000014418904

FAIL-SAFE FUNCTION

DTC	Vehicle behavior	Conditions of vehicle
P0613	<ul style="list-style-type: none"> • Locks in 3rd gear or 5th gear (Reverse is available) • Lock-up is prohibited 	—
P0705	<ul style="list-style-type: none"> • Locks in 3rd gear or 5th gear (Reverse is available) • Lock-up is prohibited 	—
P0708	Not changed from normal driving	—
P0711	Not changed from normal driving	—
P0712	Not changed from normal driving	—
P0713	Not changed from normal driving	—
P0715	<ul style="list-style-type: none"> • Lock-up is prohibited • Harsh shift 	—
P0716	<ul style="list-style-type: none"> • Lock-up is prohibited • Harsh shift 	—
P0717	<ul style="list-style-type: none"> • Lock-up is prohibited • Harsh shift 	—
P0720	<ul style="list-style-type: none"> • Locks in 3rd gear or 5th gear (Reverse is available) • Lock-up is prohibited 	—
P0721	<ul style="list-style-type: none"> • Locks in 3rd gear or 5th gear (Reverse is available) • Lock-up is prohibited 	—
P0722	<ul style="list-style-type: none"> • Locks in 3rd gear or 5th gear (Reverse is available) • Lock-up is prohibited 	—
P0725	Lock-up is prohibited	—
P0729	<ul style="list-style-type: none"> • Locks in 3rd gear or 5th gear (Reverse is available) • Lock-up is prohibited 	—
P0730	<ul style="list-style-type: none"> • Locks in 3rd gear or 5th gear (Reverse is available) • Lock-up is prohibited 	—

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< ECU DIAGNOSIS INFORMATION >

[6AT: RE6R01A]

DTC	Vehicle behavior	Conditions of vehicle	
P0731	<ul style="list-style-type: none"> • Locks in 3rd gear or 5th gear (Reverse is available) • Lock-up is prohibited 	—	A
P0732	<ul style="list-style-type: none"> • Locks in 3rd gear or 5th gear (Reverse is available) • Lock-up is prohibited 	—	B
P0733	<ul style="list-style-type: none"> • Locks in 3rd gear or 5th gear (Reverse is available) • Lock-up is prohibited 	—	C
P0734	<ul style="list-style-type: none"> • Locks in 3rd gear or 5th gear (Reverse is available) • Lock-up is prohibited 	—	
P0735	<ul style="list-style-type: none"> • Locks in 3rd gear or 5th gear (Reverse is available) • Lock-up is prohibited 	—	TM
P0736	<ul style="list-style-type: none"> • Locks in 3rd gear • Lock-up is prohibited 	—	
P0743	<ul style="list-style-type: none"> • Locks in 3rd gear or 5th gear (Reverse is available) • Lock-up is prohibited 	—	E
P0748	<ul style="list-style-type: none"> • Locks in 3rd gear or 5th gear (Reverse is available) • Lock-up is prohibited 	—	F
P0752	<ul style="list-style-type: none"> • Locks in 3rd gear or 5th gear (Reverse is available) • Lock-up is prohibited 	—	
P0753	<ul style="list-style-type: none"> • Locks in 3rd gear or 5th gear (Reverse is available) • Lock-up is prohibited 	—	G
P0758	<ul style="list-style-type: none"> • Locks in 3rd gear or 5th gear (Reverse is available) • Lock-up is prohibited 	—	H
P0763	<ul style="list-style-type: none"> • Locks in 3rd gear or 5th gear (Reverse is available) • Lock-up is prohibited 	—	
P0768	<ul style="list-style-type: none"> • Locks in 3rd gear or 5th gear (Reverse is available) • Lock-up is prohibited 	—	I
P0770	<ul style="list-style-type: none"> • Locks in 3rd gear or 5th gear (Reverse is available) • Lock-up is prohibited 	—	J
P0773	<ul style="list-style-type: none"> • Locks in 3rd gear or 5th gear (Reverse is available) • Lock-up is prohibited 	—	
P0826	Manual mode is prohibited	—	K
P0863	<ul style="list-style-type: none"> • Lock-up is prohibited • Harsh shift • Acceleration is slow 	—	L
P0882	<ul style="list-style-type: none"> • Locks in 3rd gear or 5th gear (Reverse is available) • Lock-up is prohibited 	—	
P0998	<ul style="list-style-type: none"> • Locks in 3rd gear or 5th gear (Reverse is available) • Lock-up is prohibited 	—	M
P0999	<ul style="list-style-type: none"> • Locks in 3rd gear or 5th gear (Reverse is available) • Lock-up is prohibited 	—	N
P1679	Not changed from normal driving	—	
P1705	<ul style="list-style-type: none"> • Harsh shift • Acceleration is slow 	—	O
P1721	Not changed from normal driving	—	
P215C	<ul style="list-style-type: none"> • Locks in 3rd gear or 5th gear (Reverse is available) • Lock-up is prohibited 	—	P
P2637	Harsh shift	—	
P2741	Not changed from normal driving	—	
P2742	Not changed from normal driving	—	
P2743	Not changed from normal driving	—	
P2757	Lock-up is prohibited	—	

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< ECU DIAGNOSIS INFORMATION >

[6AT: RE6R01A]

DTC	Vehicle behavior	Conditions of vehicle
P279D	Not changed from normal driving	4WD mode switch: HI, 2WD
	Not shifted up until a high engine speed is achieved	4WD mode switch: LO
P2803	<ul style="list-style-type: none"> • Locks in 3rd gear or 5th gear (Reverse is available) • Lock-up is prohibited 	—
U0073	<ul style="list-style-type: none"> • Lock-up is prohibited • Harsh shift • Acceleration is slow 	—
U0100	<ul style="list-style-type: none"> • Lock-up is prohibited • Harsh shift • Acceleration is slow 	—
U0102	4WD mode switch: HI	—
U0140	Either of following status is observed <ul style="list-style-type: none"> • Braking force may decrease • Not changed from normal driving 	—
U0155	<ul style="list-style-type: none"> • Manual mode is prohibited • Tow mode is prohibited 	—
U0401	<ul style="list-style-type: none"> • Lock-up is prohibited • Harsh shift 	—
U0403	4WD mode switch: HI	—
U0416	Not changed from normal driving	—
U1000	—	—
U1117	<ul style="list-style-type: none"> • Lock-up is prohibited • Not changed from normal driving 	—

Protection Control

INFOID:000000014418905

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.

GEAR IS FIXED WHEN A/T FLUID TEMPERATURE IS LOW

Control	When A/T fluid temperature exceeds the specified temperature, the gear is fixed at 3GR in advanced range.
Vehicle behavior in control	Power performance may be lowered, compared to normal control.
Normal return condition	The control returns to the normal control when A/T fluid temperature is high.

TORQUE DOWN WHEN A/T FLUID TEMPERATURE IS HIGH

Control	When A/T fluid temperature is the specified temperature or higher, engine torque is reduced according to the temperature.
Vehicle behavior in control	Power performance may be lowered, compared to normal control.
Normal return condition	The control returns to the normal control when A/T fluid temperature is lowered.

REVERSE PROHIBIT CONTROL

Control	The gear becomes neutral when the selector lever is set in "R" position while driving in forward direction at more than the specified speed.
Vehicle behavior in control	If the selector lever is put at "R" position when driving with the forward gear, the gear becomes neutral.
Normal return condition	The control returns to normal control when the vehicle is driven at low speeds.

FORWARD PROHIBIT CONTROL

Control	The gear becomes neutral when the selector lever is set in "D" position while driving in reverse direction at more than the specified speed.
Vehicle behavior in control	If the selector lever is put at "D" position when driving with the reverse gear, the gear becomes neutral.
Normal return condition	The control returns to normal control when the vehicle is driven at low speeds.

A
B
C

DTC Inspection Priority Chart

INFOID:000000014418906

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

TM

Priority	DTC	Items (CONSULT screen terms)
1	U0073	COMM BUS A OFF
2	U0100	LOST COMM (ECM) A
	U0102	LOST COMM (TRANSFER)
	U0140	LOST COMM (BCM)
	U0155	LOST COMM (IPC)
	U1000	CAN COMM CIRCUIT
	U1117	LOST COMM (ABS)

E
F
G
H

I
J
K
L
M
N
O
P

TCM

< ECU DIAGNOSIS INFORMATION >

[6AT: RE6R01A]

Priority	DTC	Items (CONSULT screen terms)
3	P0613	TCM PROCESSOR
	P0705	T/M RANGE SENSOR A
	P0708	TRANSMISSION RANGE SENSOR A
	P0711	FLUID TEMP SENSOR A
	P0712	FLUID TEMP SENSOR A
	P0713	FLUID TEMP SENSOR A
	P0715	INPUT SPEED SENSOR A
	P0716	INPUT SPEED SENSOR A
	P0717	INPUT SPEED SENSOR A
	P0720	OUTPUT SPEED SENSOR
	P0721	OUTPUT SPEED SENSOR
	P0722	OUTPUT SPEED SENSOR
	P0725	ENGINE SPEED
	P0729	6GR INCORRECT RATIO
	P0730	INCORRECT GR RATIO
	P0731	1GR INCORRECT RATIO
	P0732	2GR INCORRECT RATIO
	P0733	3GR INCORRECT RATIO
	P0734	4GR INCORRECT RATIO
	P0735	5GR INCORRECT RATIO
	P0736	Reverse incorrect ratio
	P0743	TORQUE CONVERTER
	P0748	Pressure control solenoid A
	P0752	SHIFT SOLENOID A
	P0753	SHIFT SOLENOID A
	P0758	SHIFT SOLENOID B
	P0763	SHIFT SOLENOID C
	P0768	SHIFT SOLENOID D
P0770	Shift solenoid E	
P0773	SHIFT SOLENOID E	
P0826	UP/DOWN SHIFT SWITCH	

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< ECU DIAGNOSIS INFORMATION >

[6AT: RE6R01A]

Priority	DTC	Items (CONSULT screen terms)
3	P0863	CONTROL UNIT(CAN)
	P0882	TCM POWER INPUT SIG
	P0998	SHIFT SOLENOID F
	P0999	SHIFT SOLENOID F
	P1679	INCOMPLETE LEARNING
	P1705	TP SENSOR
	P1721	VEHICLE SPEED SIGNAL
	P215C	OUTPUT SHAFT SPD - WHEEL SPD
	P2637	Torque management feedback Sig A
	P2741	TRANSMISSION FLUID TEMP SEN B
	P2742	TRANSMISSION FLUID TEMP SEN B
	P2743	TRANSMISSION FLUID TEMP SEN B
	P2757	TCC PRESSURE CONT SOLENOID
	P279D	4WD RANGE SIGNAL
	P2803	TRANSMISSION RANGE SENSOR B
	U0401	COMMUNICATION ERROR (INVALID)
	U0403	COMMUNICATION ERROR (INVALID)
U0416	COMMUNICATION ERROR (INVALID)	

DTC Index

INFOID:000000014418907

NOTE:

If some DTCs are displayed at the same time, perform inspections one by one based on the priority as per the following list. Refer to [TM-67, "DTC Inspection Priority Chart"](#).

DTC*		Items (CONSULT screen terms)	MIL	A/T CHECK in- dicator lamp	Trip (for MIL)	Trip (for DTC)	Reference
GST	CONSULT only "TRANSMISSION"						
P0613	P0613	TCM PROCESSOR	ON	ON	1	1	TM-102
P0705	P0705	T/M RANGE SWITCH A	ON	ON	2	1	TM-103
—	P0708	TRANSMISSION RANGE SENSOR A	OFF	OFF	—	2	TM-106
P0711	P0711	FLUID TEMP SENSOR A	ON	ON	2	2	TM-109
P0712	P0712	FLUID TEMP SENSOR A	ON	ON	2	1	TM-111
P0713	P0713	FLUID TEMP SENSOR A	ON	ON	2	1	TM-113
P0715	P0715	INPUT SPEED SENSOR A	ON	ON	2	2	TM-115
P0716	P0716	INPUT SPEED SENSOR A	ON	ON	2	2	TM-118
P0717	P0717	INPUT SPEED SENSOR A	ON	ON	2	2	TM-120
P0720	P0720	OUTPUT SPEED SENSOR	ON	ON	2	1	TM-122
P0721	P0721	OUTPUT SPEED SENSOR	ON	ON	2	1	TM-125
P0722	P0722	OUTPUT SPEED SENSOR	ON	ON	2	1	TM-127
P0725	P0725	ENGINE SPEED	ON	OFF	2	2	TM-129
P0729	P0729	6GR INCORRECT RATIO	ON	ON	1	1	TM-130
P0730	P0730	INCORRECT GR RATIO	ON	ON	2	1	TM-132
P0731	P0731	1GR INCORRECT RATIO	ON	ON	1	1	TM-133
P0732	P0732	2GR INCORRECT RATIO	ON	ON	1	1	TM-135
P0733	P0733	3GR INCORRECT RATIO	ON	ON	1	1	TM-137

TCM

< ECU DIAGNOSIS INFORMATION >

[6AT: RE6R01A]

DTC*		Items (CONSULT screen terms)	MIL	A/T CHECK in- dicator lamp	Trip (for MIL)	Trip (for DTC)	Reference
GST	CONSULT only "TRANSMISSION"						
P0734	P0734	4GR INCORRECT RATIO	ON	ON	1	1	TM-139
P0735	P0735	5GR INCORRECT RATIO	ON	ON	1	1	TM-141
P0736	P0736	Reverse incorrect ratio	ON	ON	1	1	TM-143
P0743	P0743	TORQUE CONVERTER	ON	ON	2	1	TM-145
P0748	P0748	Pressure control solenoid A	ON	ON	2	1	TM-147
P0752	P0752	SHIFT SOLENOID A	ON	ON	2	1	TM-149
P0753	P0753	SHIFT SOLENOID A	ON	ON	2	1	TM-151
P0758	P0758	SHIFT SOLENOID B	ON	ON	2	1	TM-154
P0763	P0763	SHIFT SOLENOID C	ON	ON	2	1	TM-157
P0768	P0768	SHIFT SOLENOID D	ON	ON	2	1	TM-160
P0770	P0770	Shift solenoid E	ON	ON	2	1	TM-163
P0773	P0773	SHIFT SOLENOID E	ON	ON	2	1	TM-165
—	P0826	UP/DOWN SHIFT SWITCH	OFF	OFF	—	1	TM-168
P0863	P0863	CONTROL UNIT(CAN)	ON	ON	1	1	TM-170
P0882	P0882	TCM POWER INPUT SIG	ON	OFF	2	1	TM-171
P0998	P0998	SHIFT SOLENOID F	ON	ON	2	1	TM-173
P0999	P0999	SHIFT SOLENOID F	ON	ON	2	1	TM-175
—	P1679	INCOMPLETE LEARNING	OFF	ON	—	1	TM-177
P1705	P1705	TP SENSOR	ON	OFF	1	1	TM-179
P1721	P1721	VEHICLE SPEED SIGNAL	ON	OFF	1	1	TM-180
P215C	P215C	OUTPUT SHAFT SPD - WHEEL SPD	ON	ON	2	1	TM-181
—	P2637	Torque management feedback Sig A	OFF	OFF	—	2	TM-183
—	P2741	TRANSMISSION FLUID TEMP SEN B	OFF	ON	—	2	TM-184
—	P2742	TRANSMISSION FLUID TEMP SEN B	OFF	ON	—	1	TM-186
—	P2743	TRANSMISSION FLUID TEMP SEN B	OFF	ON	—	1	TM-188
P2757	P2757	TCC PRESSURE CONT SOLENOID	ON	ON	2	2	TM-190
P279D	P279D	4WD RANGE SIGNAL	ON	OFF	2	2	TM-192
P2803	P2803	TRANSMISSION RANGE SENSOR B	ON	ON	2	1	TM-194
U0073	U0073	COMM BUS A OFF	ON	ON	1	1	TM-197
U0100	U0100	LOST COMM (ECM) A	ON	OFF	1	1	TM-198
U0102	U0102	LOST COMM (TRANSFER)	ON	OFF	1	1	TM-199
—	U0140	LOST COMM (BCM)	OFF	OFF	—	1	TM-200
—	U0155	LOST COMM (IPC)	OFF	OFF	—	1	TM-201
U0401	U0401	COMMUNICATION ERROR (INVALID)	ON	OFF	1	1	TM-202
U0403	U0403	COMMUNICATION ERROR (INVALID)	ON	OFF	1	1	TM-203
—	U0416	COMMUNICATION ERROR (INVALID)	OFF	OFF	—	1	TM-204
—	U1000	CAN COMM CIRCUIT	OFF	ON	—	1	TM-205
U1117	U1117	LOST COMM (ABS)	ON	OFF	1	1	TM-206

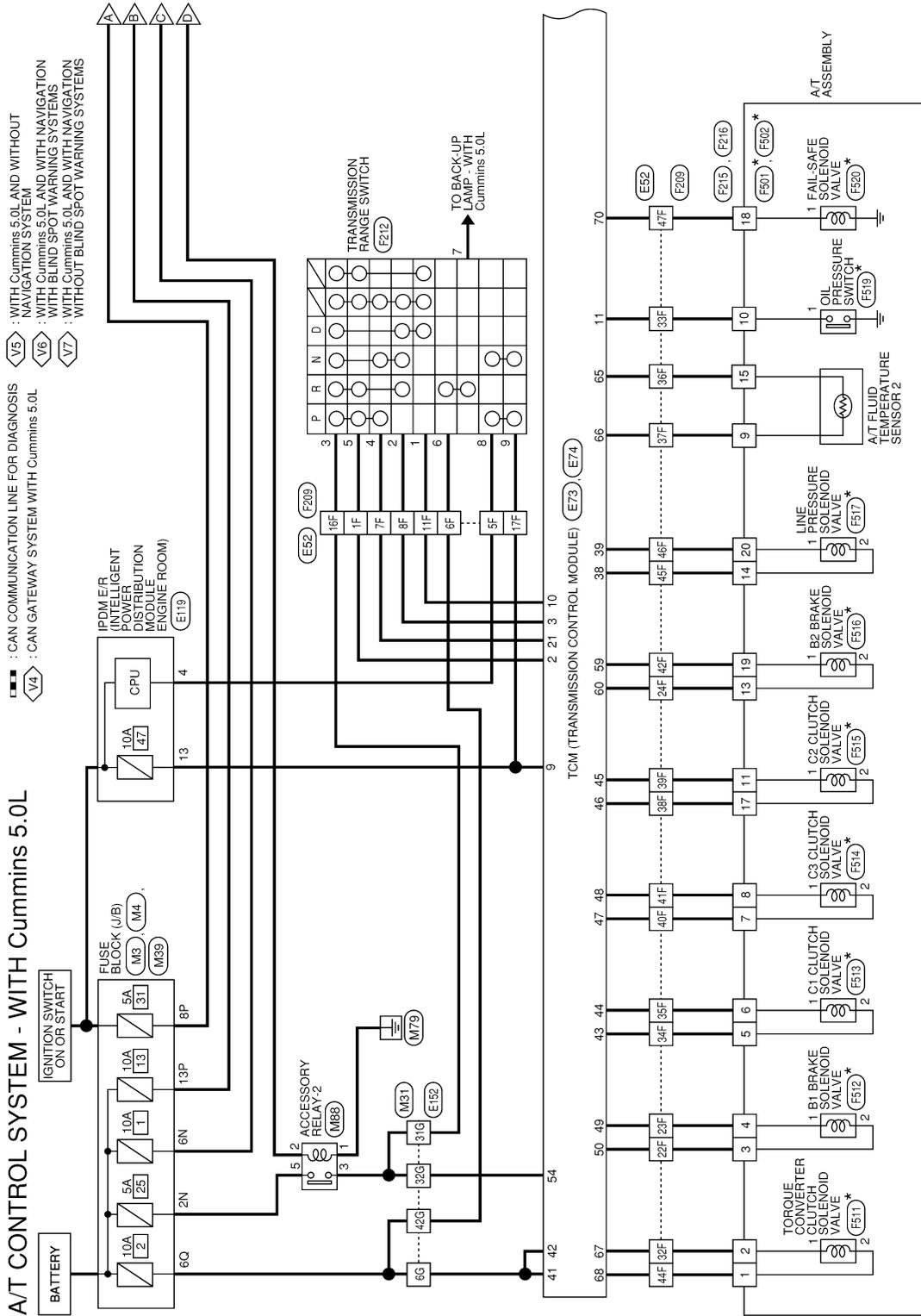
*: These numbers are prescribed by SAE J2012/ISO 15031-6.

WIRING DIAGRAM

A/T CONTROL SYSTEM

Wiring Diagram

INFOID:000000014418908



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

AADWA0453GB

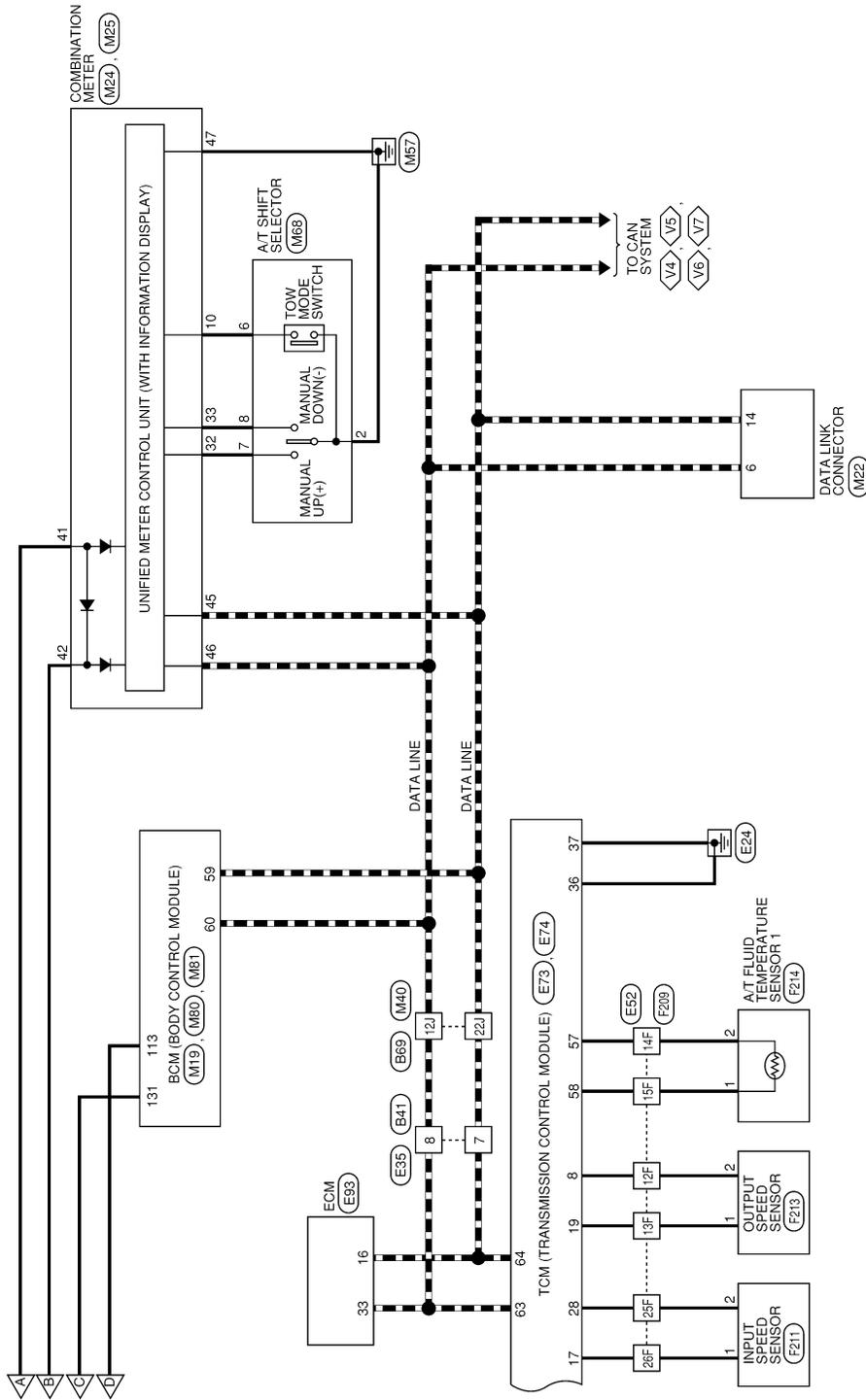
A
B
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P

A/T CONTROL SYSTEM

< WIRING DIAGRAM >

[6AT: RE6R01A]



AADWA0434GB

A/T CONTROL SYSTEM

< WIRING DIAGRAM >

[6AT: RE6R01A]

A/T CONTROL SYSTEM CONNECTORS - WITH Cummins 5.0L

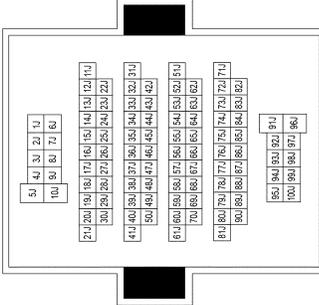
Connector No.	B41
Connector Name	WIRE TO WIRE
Connector Type	NS12MW-CS
Connector Color	WHITE



1	2	3	4	5
6	7	8	9	10
11	12			

Terminal No.	Color of Wire	Signal Name
1	Y	TO ENGINE ROOM HARNESS
2	V	TO ENGINE ROOM HARNESS
3	L	TO ENGINE ROOM HARNESS
4	L/G	TO ENGINE ROOM HARNESS
5	P/G	TO ENGINE ROOM HARNESS
6	SB	TO ENGINE ROOM HARNESS
7	P	TO ENGINE ROOM HARNESS
8	L	TO ENGINE ROOM HARNESS
9	SHIELD	TO ENGINE ROOM HARNESS
10	W/G	TO ENGINE ROOM HARNESS
11	L	TO ENGINE ROOM HARNESS
12	BR	TO ENGINE ROOM HARNESS

Connector No.	B69
Connector Name	WIRE TO WIRE
Connector Type	TH80MW-CS16-TM4
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
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54J	L	TO MAIN HARNESS
55J	R	TO MAIN HARNESS
56J	W	TO MAIN HARNESS
57J	L/G	TO MAIN HARNESS
58J	O	TO MAIN HARNESS
59J	-	TO MAIN HARNESS
60J	SHIELD	TO MAIN HARNESS
61J	G	TO MAIN HARNESS
62J	-	TO MAIN HARNESS
63J	R/W	TO MAIN HARNESS
64J	L/W	TO MAIN HARNESS
65J	SHIELD	TO MAIN HARNESS
66J	B	TO MAIN HARNESS
67J	SHIELD	TO MAIN HARNESS
68J	O/V	TO MAIN HARNESS
69J	SHIELD	TO MAIN HARNESS
70J	BR	TO MAIN HARNESS
71J	L/W	TO MAIN HARNESS
72J	-	TO MAIN HARNESS
73J	-	TO MAIN HARNESS
74J	SHIELD	TO MAIN HARNESS
75J	L/G/B	TO MAIN HARNESS
76J	R	TO MAIN HARNESS
77J	SHIELD	TO MAIN HARNESS
78J	GR/B	TO MAIN HARNESS
79J	B	TO MAIN HARNESS
80J	W	TO MAIN HARNESS
81J	SHIELD	TO MAIN HARNESS
82J	L/R	TO MAIN HARNESS
83J	-	TO MAIN HARNESS
84J	-	TO MAIN HARNESS
85J	Y/B	TO MAIN HARNESS
86J	G	TO MAIN HARNESS
87J	B/R	TO MAIN HARNESS
88J	SHIELD	TO MAIN HARNESS
89J	GR/R	TO MAIN HARNESS
90J	L	TO MAIN HARNESS
91J	L/B	TO MAIN HARNESS
92J	SB	TO MAIN HARNESS
93J	B	TO MAIN HARNESS
94J	L	TO MAIN HARNESS
95J	L/G	TO MAIN HARNESS
96J	R	TO MAIN HARNESS
97J	B/Y	TO MAIN HARNESS
98J	L/B	TO MAIN HARNESS
99J	W/L	TO MAIN HARNESS
100J	SB	TO MAIN HARNESS

Connector No.	E35
Connector Name	WIRE TO WIRE
Connector Type	NS12FW-CS
Connector Color	WHITE



5	4	3	2	1
12	11	10	9	8
7	6			

Terminal No.	Color of Wire	Signal Name
1	Y	TO BODY HARNESS
2	V	TO BODY HARNESS
3	L	TO BODY HARNESS
4	W	TO BODY HARNESS
5	P/G	TO BODY HARNESS
6	SB	TO BODY HARNESS
7	P	TO BODY HARNESS
8	L	TO BODY HARNESS
9	SHIELD	TO BODY HARNESS
10	B	TO BODY HARNESS
11	R	TO BODY HARNESS
12	BR	TO BODY HARNESS

A B C TM E F G H I J K L M N O P

A/T CONTROL SYSTEM

< WIRING DIAGRAM >

[6AT: RE6R01A]

A/T CONTROL SYSTEM CONNECTORS - WITH Cummins 5.0L

Connector No.	E52
Connector Name	WIRE TO WIRE
Connector Type	RK26FGY-RS20-X6
Connector Color	GRAY

Terminal No.	Color of Wire	Signal Name
1F	Y	TO ENGINE CONTROL NO. 2 HARNESS
2F	B	TO ENGINE CONTROL NO. 2 HARNESS
3F	BR	TO ENGINE CONTROL NO. 2 HARNESS
4F	WR	TO ENGINE CONTROL NO. 2 HARNESS
5F	B/R	TO ENGINE CONTROL NO. 2 HARNESS
6F	O	TO ENGINE CONTROL NO. 2 HARNESS
7F	GRAY	TO ENGINE CONTROL NO. 2 HARNESS
8F	V	TO ENGINE CONTROL NO. 2 HARNESS
9F	BR	TO ENGINE CONTROL NO. 2 HARNESS
10F	Y/B	TO ENGINE CONTROL NO. 2 HARNESS
11F	L	TO ENGINE CONTROL NO. 2 HARNESS
12F	R	TO ENGINE CONTROL NO. 2 HARNESS
13F	Y	TO ENGINE CONTROL NO. 2 HARNESS
14F	V	TO ENGINE CONTROL NO. 2 HARNESS
15F	SB	TO ENGINE CONTROL NO. 2 HARNESS
16F	P	TO ENGINE CONTROL NO. 2 HARNESS
17F	Y/R	TO ENGINE CONTROL NO. 2 HARNESS
18F	R	TO ENGINE CONTROL NO. 2 HARNESS
19F	V	TO ENGINE CONTROL NO. 2 HARNESS
20F	BR	TO ENGINE CONTROL NO. 2 HARNESS

21F	L/R	TO ENGINE CONTROL NO. 2 HARNESS
22F	L/W	TO ENGINE CONTROL NO. 2 HARNESS
23F	R/L	TO ENGINE CONTROL NO. 2 HARNESS
24F	W/L	TO ENGINE CONTROL NO. 2 HARNESS
25F	W/R	TO ENGINE CONTROL NO. 2 HARNESS
26F	B/R	TO ENGINE CONTROL NO. 2 HARNESS
27F	Y	TO ENGINE CONTROL NO. 2 HARNESS
28F	W/R	TO ENGINE CONTROL NO. 2 HARNESS
29F	L/O	TO ENGINE CONTROL NO. 2 HARNESS
30F	B	TO ENGINE CONTROL NO. 2 HARNESS
31F	B	TO ENGINE CONTROL NO. 2 HARNESS
32F	V/W	TO ENGINE CONTROL NO. 2 HARNESS
33F	GR	TO ENGINE CONTROL NO. 2 HARNESS
34F	L/R	TO ENGINE CONTROL NO. 2 HARNESS
35F	R/W	TO ENGINE CONTROL NO. 2 HARNESS
36F	L/B	TO ENGINE CONTROL NO. 2 HARNESS
37F	L	TO ENGINE CONTROL NO. 2 HARNESS
38F	R/Y	TO ENGINE CONTROL NO. 2 HARNESS
39F	R/Y	TO ENGINE CONTROL NO. 2 HARNESS
40F	B/R	TO ENGINE CONTROL NO. 2 HARNESS
41F	W	TO ENGINE CONTROL NO. 2 HARNESS
42F	Y	TO ENGINE CONTROL NO. 2 HARNESS
43F	B/P	TO ENGINE CONTROL NO. 2 HARNESS
44F	Y/B	TO ENGINE CONTROL NO. 2 HARNESS
45F	LY	TO ENGINE CONTROL NO. 2 HARNESS
46F	O	TO ENGINE CONTROL NO. 2 HARNESS
47F	W/R	TO ENGINE CONTROL NO. 2 HARNESS
48F	L	TO ENGINE CONTROL NO. 2 HARNESS
49F	BR	TO ENGINE CONTROL NO. 2 HARNESS
50F	SHIELD	TO ENGINE CONTROL NO. 2 HARNESS
51F	L	TO ENGINE CONTROL NO. 2 HARNESS

52F	BR	TO ENGINE CONTROL NO. 2 HARNESS
Connector No.	E73	
Connector Name	TCM (TRANSMISSION CONTROL MODULE) (WITH CUMMINS 5.0L)	
Connector Type	AAH28FW-TK7	
Connector Color	WHITE	

Terminal No.	Color of Wire	Signal Name
36	B	GND
37	B	GND
38	L/Y	LINE PRESSURE SOLENOID VALVE (+)
39	O	LINE PRESSURE SOLENOID VALVE (-)
40	-	-
41	R/W	BATT
42	R/W	BATT
43	L/R	C1 CLUTCH SOLENOID VALVE (+)
44	R/W	C1 CLUTCH SOLENOID VALVE (-)
45	R/Y	C2 CLUTCH SOLENOID VALVE (+)
46	R/Y	C2 CLUTCH SOLENOID VALVE (-)
47	B/R	C3 CLUTCH SOLENOID VALVE (+)
48	W	C3 CLUTCH SOLENOID VALVE (-)
49	R/L	B1 BRAKE SOLENOID VALVE (+)
50	L/W	B1 BRAKE SOLENOID VALVE (-)
51	-	-
52	-	-
53	-	-
54	P	ACCESSORY RELAY-2
55	-	-
56	-	-
57	V	A/T FLUID TEMPERATURE SENSOR 1 (+)
58	SB	A/T FLUID TEMPERATURE SENSOR 1 (-)
59	Y	B2 BRAKE SOLENOID VALVE (-)
60	W/L	B2 BRAKE SOLENOID VALVE (+)
61	-	-
62	-	-
63	L	CAN-H
64	P	CAN-L
65	L/B	A/T FLUID TEMPERATURE SENSOR 2 (+)

66	L	A/T FLUID TEMPERATURE SENSOR 2 (-)
67	W/W	TORQUE CONVERTER CLUTCH SOLENOID VALVE (-)
68	Y/B	TORQUE CONVERTER CLUTCH SOLENOID VALVE (+)
69	-	-
70	W/R	FAIL-SAFE SOLENOID VALVE

A/T CONTROL SYSTEM

< WIRING DIAGRAM >

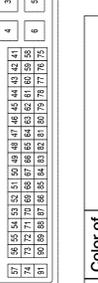
[6AT: RE6R01A]

A/T CONTROL SYSTEM CONNECTORS - WITH Cummins 5.0L

Connector No.	E74
Connector Name	TCM (TRANSMISSION CONTROL MODULE) (WITH CUMMINS 5.0L)
Connector Type	AAH29FW-TKG
Connector Color	WHITE




Connector No.	E93
Connector Name	ECM (WITH CUMMINS 5.0L)
Connector Type	1-928-405-452
Connector Color	BLACK

39	GR	FUEL PUMP RLY SIG
40	BR	SW RETURN
41		
42		
43		
44		
45		
46		
47		
48		
49		
50		
51		
52		
53	R/G	BRAKE SW OPEN
54	L	BRAKE NC
55		
56		
57		
58		
59	G/Y	ASC D SIGNAL
60		
61	B/Y	ASC D RETURN
62	R	PPS2 RETURN
63	R	PPS1 RETURN
64	R/W	REF PRESS SENS RETURN
65	L/W	IGNKEY/SWITCH
66		
67		
68		
69		
70		
71		
72		
73	B	DOSER RETURN
74	GR/R	DOSER HS
75	L/W	COOLANT SIGNAL
76		
77	L	WIF SIGNAL
78	L	PPS2 SIGNAL
79	BR	PPS1 SIGNAL
80	W	PPS1 SUPPLY
81	B	PPS2 SUPPLY
82		
83	BR	BATTERY
84		
85		
86		
87		
88		
89		
90		

91		
Connector No.	E119	
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)	
Connector Type	NS16FW-CS	
Connector Color	WHITE	




Terminal No.	Color of Wire	Signal Name
1	-	-
2	Y	RANGE SIGNAL A
3	V	RANGE SIGNAL B
4	-	-
5	-	-
6	-	-
7	-	-
8	R	OUTPUT SPEED SENSOR (+)
9	Y/R	IGN
10	L	RANGE SIGNAL C
11	GR	OIL PRESSURE SWITCH
12	-	-
13	-	-
14	-	-
15	-	-
16	-	-
17	B/R	INPUT SPEED SENSOR (-)
18	-	-
19	Y	OUTPUT SPEED SENSOR (-)
20	-	-
21	GR/Y	RANGE SIGNAL PA
22	-	-
23	-	-
24	-	-
25	-	-
26	-	-
27	-	-
28	W/R	INPUT SPEED SENSOR (+)
29	-	-
30	-	-
31	-	-
32	-	-
33	-	-
34	-	-
35	-	-

Terminal No.	Color of Wire	Signal Name
1	B	GROUND
2	B	GROUND
3	BR	SW/BATTERY
4	B	GROUND
5	BR	SW/BATTERY
6	BR	SW/BATTERY
7	O	DOF DELTA PRESS
8	-	-
9	-	-
10	-	-
11	-	-
12	-	-
13	-	-
14	-	-
15	L/R	AT SENSOR RTN
16	P	CAN-L
17	-	-
18	G	J1939 +
19	-	-
20	G	SMART POWER LSD
21	-	-
22	-	-
23	-	-
24	SB	DPF OUT PRESS
25	-	-
26	R/L	REF PRESS SENS SIGNAL
27	-	-
28	-	-
29	-	-
30	-	-
31	-	-
32	Y	AT SSR SUPPLY
33	L	CAN-H
34	-	-
35	Y	J1939 +
36	-	-
37	L	MAIN RLY LSD
38	-	-

Terminal No.	Color of Wire	Signal Name
3	-	-
4	B/R	NP SW
5	L/W	H/LAMP HI RH
6	G	H/LAMP HI LH
7	L	H/LAMP LO LH
8	R/Y	H/LAMP LO RH
9	G/W	FR FOG/L LH
10	-	-
11	P	ETC VB - (WITH CUMMINS 5.0L)
12	W/R	ETC VB - (WITH VK66VD)
13	Y/R	FR FOG/L RH
14	G	REVERSE LAMP IGN
15	GR	ABS ECU IGN
16	G	ETC RLY CONT - (WITH CUMMINS 5.0L)
17	W/R	ETC RLY CONT - (WITH VK66VD)
18	L/W	IGN COIL - (WITH CUMMINS 5.0L)
19	W	IGN COIL - (WITH VK66VD)
20	-	-

AAD1A1244GB

A
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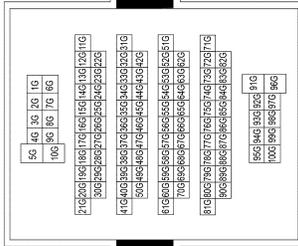
A/T CONTROL SYSTEM

< WIRING DIAGRAM >

[6AT: RE6R01A]

A/T CONTROL SYSTEM CONNECTORS - WITH Cummins 5.0L

Connector No.	E152
Connector Name	WIRE TO WIRE
Connector Type	TH80MW-CST16-TM4
Connector Color	WHITE



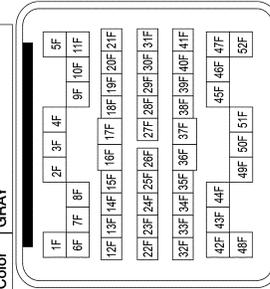
Terminal No.	Color of Wire	Signal Name
24G	G/B	TO MAIN HARNESS
25G	R/W	TO MAIN HARNESS
26G	R	TO MAIN HARNESS
27G	LG	TO MAIN HARNESS
28G	G/B	TO MAIN HARNESS
29G	G/B	TO MAIN HARNESS
30G	BR/Y	TO MAIN HARNESS
31G	P	TO MAIN HARNESS - (WITH CUMMINS 5.0L)
31G	R	TO MAIN HARNESS - (WITH V656VD)
32G	P	TO MAIN HARNESS
33G	Y/L	TO MAIN HARNESS
34G	GR	TO MAIN HARNESS
35G	G/R	TO MAIN HARNESS
36G	SB	TO MAIN HARNESS
37G	R/W	TO MAIN HARNESS
38G	BR	TO MAIN HARNESS
39G	BR	TO MAIN HARNESS
40G	-	TO MAIN HARNESS
41G	R/G	TO MAIN HARNESS
42G	O	TO MAIN HARNESS
43G	B	TO MAIN HARNESS - (WITH CUMMINS 5.0L)
43G	G	TO MAIN HARNESS - (WITH V656VD)
44G	R/Y	TO MAIN HARNESS
45G	G	TO MAIN HARNESS
46G	LG	TO MAIN HARNESS
47G	R	TO MAIN HARNESS
48G	W	TO MAIN HARNESS
49G	-	TO MAIN HARNESS
50G	BR	TO MAIN HARNESS
51G	R	TO MAIN HARNESS
52G	L	TO MAIN HARNESS
53G	W	TO MAIN HARNESS
54G	W	TO MAIN HARNESS
55G	G	TO MAIN HARNESS
56G	W	TO MAIN HARNESS
57G	Y	TO MAIN HARNESS
58G	BG	TO MAIN HARNESS
59G	BG	TO MAIN HARNESS
60G	BG	TO MAIN HARNESS
61G	B	TO MAIN HARNESS
62G	W	TO MAIN HARNESS
63G	R	TO MAIN HARNESS
64G	W/L	TO MAIN HARNESS
65G	W/R	TO MAIN HARNESS
66G	BG	TO MAIN HARNESS
67G	BG	TO MAIN HARNESS
68G	B	TO MAIN HARNESS
69G	Y	TO MAIN HARNESS
70G	L	TO MAIN HARNESS
71G	R/W	TO MAIN HARNESS

Terminal No.	Color of Wire	Signal Name
1G	G	TO MAIN HARNESS
2G	B/R	TO MAIN HARNESS
3G	W/B	TO MAIN HARNESS
4G	BR/W	TO MAIN HARNESS
5G	BR	TO MAIN HARNESS
6G	P	TO MAIN HARNESS - (WITH V656VD)
6G	R/W	TO MAIN HARNESS - (WITH CUMMINS 5.0L)
7G	Y	TO MAIN HARNESS
8G	G	TO MAIN HARNESS
9G	R	TO MAIN HARNESS
10G	W	TO MAIN HARNESS
11G	R/G	TO MAIN HARNESS
12G	W/B	TO MAIN HARNESS
13G	BR	TO MAIN HARNESS
14G	Y/B	TO MAIN HARNESS
15G	G/W	TO MAIN HARNESS
16G	G	TO MAIN HARNESS
17G	G/Y	TO MAIN HARNESS
18G	G/Y	TO MAIN HARNESS
19G	Y/V	TO MAIN HARNESS
20G	G/Y	TO MAIN HARNESS
21G	B/Y	TO MAIN HARNESS
22G	G/R	TO MAIN HARNESS
23G	Y/R	TO MAIN HARNESS

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Terminal No.	Color of Wire	Signal Name
72G	L/W	TO MAIN HARNESS
73G	SHIELD	TO MAIN HARNESS
74G	W	TO MAIN HARNESS
75G	R	TO MAIN HARNESS
76G	R/G	TO MAIN HARNESS
77G	G	TO MAIN HARNESS
78G	W	TO MAIN HARNESS
79G	-	TO MAIN HARNESS
80G	R	TO MAIN HARNESS
81G	L	TO MAIN HARNESS
82G	R	TO MAIN HARNESS
83G	L	TO MAIN HARNESS
84G	L	TO MAIN HARNESS
85G	W/B	TO MAIN HARNESS
86G	B/R	TO MAIN HARNESS
87G	W/B	TO MAIN HARNESS
88G	P	TO MAIN HARNESS
89G	L	TO MAIN HARNESS
90G	G	TO MAIN HARNESS
91G	G	TO MAIN HARNESS
92G	V/W	TO MAIN HARNESS
93G	BR	TO MAIN HARNESS
94G	G	TO MAIN HARNESS
95G	G	TO MAIN HARNESS
96G	W	TO MAIN HARNESS
97G	R	TO MAIN HARNESS
98G	W/B	TO MAIN HARNESS
99G	BR	TO MAIN HARNESS
100G	GR/W	TO MAIN HARNESS

Connector No.	F209
Connector Name	WIRE TO WIRE
Connector Type	RK26MGY-RS20-X6
Connector Color	GRAY

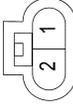


Terminal No.	Color of Wire	Signal Name
1F	Y/R	TO ENGINE ROOM HARNESS
2F	B	TO ENGINE ROOM HARNESS
3F	B/Y	TO ENGINE ROOM HARNESS

Terminal No.	Color of Wire	Signal Name
4F	W/R	TO ENGINE ROOM HARNESS
5F	B/R	TO ENGINE ROOM HARNESS
6F	O/L	TO ENGINE ROOM HARNESS
7F	GR	TO ENGINE ROOM HARNESS
8F	P	TO ENGINE ROOM HARNESS
9F	BR/W	TO ENGINE ROOM HARNESS
10F	G/Y	TO ENGINE ROOM HARNESS
11F	L/W	TO ENGINE ROOM HARNESS
12F	R/W	TO ENGINE ROOM HARNESS
13F	G/Y	TO ENGINE ROOM HARNESS
14F	V/W	TO ENGINE ROOM HARNESS
15F	LG	TO ENGINE ROOM HARNESS
16F	R/Y	TO ENGINE ROOM HARNESS
17F	BR/Y	TO ENGINE ROOM HARNESS
18F	R	TO ENGINE ROOM HARNESS
19F	V	TO ENGINE ROOM HARNESS
20F	BR	TO ENGINE ROOM HARNESS
21F	L/R	TO ENGINE ROOM HARNESS
22F	L/G	TO ENGINE ROOM HARNESS
23F	SB	TO ENGINE ROOM HARNESS
24F	W/L	TO ENGINE ROOM HARNESS
25F	W/B	TO ENGINE ROOM HARNESS
26F	B/Y	TO ENGINE ROOM HARNESS
27F	Y	TO ENGINE ROOM HARNESS
28F	W/R	TO ENGINE ROOM HARNESS
29F	L/O	TO ENGINE ROOM HARNESS
30F	B	TO ENGINE ROOM HARNESS
31F	B	TO ENGINE ROOM HARNESS
32F	V	TO ENGINE ROOM HARNESS
33F	BG	TO ENGINE ROOM HARNESS
34F	L/R	TO ENGINE ROOM HARNESS
35F	R/W	TO ENGINE ROOM HARNESS
36F	L/B	TO ENGINE ROOM HARNESS
37F	L/O	TO ENGINE ROOM HARNESS
38F	Y/W	TO ENGINE ROOM HARNESS
39F	R/Y	TO ENGINE ROOM HARNESS
40F	G/B	TO ENGINE ROOM HARNESS
41F	W	TO ENGINE ROOM HARNESS
42F	Y	TO ENGINE ROOM HARNESS
43F	B/P	TO ENGINE ROOM HARNESS
44F	Y/B	TO ENGINE ROOM HARNESS
45F	L/Y	TO ENGINE ROOM HARNESS
46F	O	TO ENGINE ROOM HARNESS
47F	W/L	TO ENGINE ROOM HARNESS
48F	L	TO ENGINE ROOM HARNESS
49F	BR	TO ENGINE ROOM HARNESS
50F	SHIELD	TO ENGINE ROOM HARNESS
51F	L	TO ENGINE ROOM HARNESS
52F	BR	TO ENGINE ROOM HARNESS

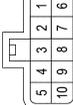
A/T CONTROL SYSTEM CONNECTORS - WITH Cummins 5.0L

Connector No.	F211
Connector Name	INPUT SPEED SENSOR
Connector Type	HS02FL
Connector Color	BLUE

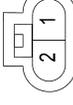
Terminal No.	Color of Wire	Signal Name
1	B/Y	INPUT SPEED SENSOR (-)
2	W/B	INPUT SPEED SENSOR (+)

Connector No.	F212
Connector Name	TRANSMISSION RANGE SWITCH
Connector Type	HS10FB
Connector Color	BLACK

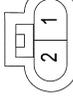
Terminal No.	Color of Wire	Signal Name
1	L/W	RANGE SIGNAL C
2	P	RANGE SIGNAL B
3	R/Y	IGNITION
4	GR	RANGE SIGNAL PA
5	Y/R	RANGE SIGNAL A
6	O/L	BATTERY
7	R	REVERSE RELAY CONT
8	B/R	NP SW
9	BR/Y	IGNITION RELAY
10	-	-

Connector No.	F213
Connector Name	OUTPUT SPEED SENSOR
Connector Type	HS02FL
Connector Color	BLUE

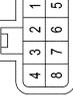
Terminal No.	Color of Wire	Signal Name
1	G/Y	OUTPUT SPEED SENSOR (-)
2	R/W	OUTPUT SPEED SENSOR (+)

Connector No.	F214
Connector Name	A/T FLUID TEMPERATURE SENSOR 1
Connector Type	HS02FGY-2V
Connector Color	GRAY

Terminal No.	Color of Wire	Signal Name
1	LG	A/T FLUID TEMPERATURE SENSOR 1 (-)
2	V/W	A/T FLUID TEMPERATURE SENSOR 1 (+)

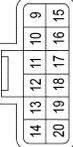
Connector No.	F215
Connector Name	A/T ASSEMBLY
Connector Type	HS08FW
Connector Color	WHITE

Terminal No.	Color of Wire	Signal Name
1	Y/B	TORQUE CONVERTER CLUTCH SOLENOID VALVE (+)

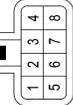
2	V	TORQUE CONVERTER CLUTCH SOLENOID VALVE (-)
3	L/LG	B1 BRAKE SOLENOID VALVE (+)
4	SB	B1 BRAKE SOLENOID VALVE (-)
5	L/R	C1 CLUTCH SOLENOID VALVE (+)
6	R/W	C1 CLUTCH SOLENOID VALVE (-)
7	G/B	C3 CLUTCH SOLENOID VALVE (+)
8	W	C3 CLUTCH SOLENOID VALVE (-)

Connector No.	F216
Connector Name	A/T ASSEMBLY
Connector Type	HS12FB
Connector Color	BLACK

Terminal No.	Color of Wire	Signal Name
9	L/O	A/T FLUID TEMPERATURE SENSOR 2 (-)
10	B/G	OIL PRESSURE SWITCH
11	R/Y	C2 CLUTCH SOLENOID VALVE (-)
12	-	-
13	W/L	B2 BRAKE SOLENOID VALVE (+)
14	L/Y	LINE PRESSURE SOLENOID VALVE (+)
15	L/B	A/T FLUID TEMPERATURE SENSOR 2 (+)
16	-	-
17	Y/W	C2 CLUTCH SOLENOID VALVE (+)
18	W/L	FAIL-SAFE SOLENOID VALVE (-)
19	Y	B2 BRAKE SOLENOID VALVE (-)
20	O	LINE PRESSURE SOLENOID VALVE (-)

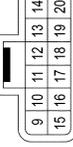
Connector No.	F501
Connector Name	A/T ASSEMBLY
Connector Type	-
Connector Color	GRAY

Terminal No.	Color of Wire	Signal Name
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1	GR	TORQUE CONVERTER CLUTCH SOLENOID VALVE (+)
2	L	TORQUE CONVERTER CLUTCH SOLENOID VALVE (-)
3	Y	B1 BRAKE SOLENOID VALVE (+)
4	LG	B1 BRAKE SOLENOID VALVE (-)
5	W	C1 CLUTCH SOLENOID VALVE (+)
6	Y	C1 CLUTCH SOLENOID VALVE (-)
7	G	C3 CLUTCH SOLENOID VALVE (+)
8	SB	C3 CLUTCH SOLENOID VALVE (-)

Connector No.	F502
Connector Name	A/T ASSEMBLY
Connector Type	-
Connector Color	BLACK

Terminal No.	Color of Wire	Signal Name
9	O	A/T FLUID TEMPERATURE SENSOR 2 (-)
10	BR	OIL PRESSURE SWITCH
11	BR	C2 CLUTCH SOLENOID VALVE (-)
12	-	-
13	P	B2 BRAKE SOLENOID VALVE (+)
14	B	LINE PRESSURE SOLENOID VALVE (+)
15	O	A/T FLUID TEMPERATURE SENSOR 2 (+)
16	-	-
17	P	C2 CLUTCH SOLENOID VALVE (+)
18	B	FAIL-SAFE SOLENOID VALVE (-)
19	BR	B2 BRAKE SOLENOID VALVE (-)
20	V	LINE PRESSURE SOLENOID VALVE (-)

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A/T CONTROL SYSTEM

< WIRING DIAGRAM >

[6AT: RE6R01A]

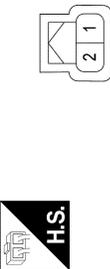
A/T CONTROL SYSTEM CONNECTORS - WITH Cummins 5.0L

Connector No.	F511
Connector Name	TORQUE CONVERTER CLUTCH SOLENOID VALVE
Connector Type	-
Connector Color	GREEN



Terminal No.	Color of Wire	Signal Name
1	L	TORQUE CONVERTER CLUTCH SOLENOID VALVE (-)
2	GR	TORQUE CONVERTER CLUTCH SOLENOID VALVE (+)

Connector No.	F512
Connector Name	B1 BRAKE SOLENOID VALVE
Connector Type	-
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1	LG	B1 BRAKE SOLENOID VALVE (-)
2	Y	B1 BRAKE SOLENOID VALVE (+)

Connector No.	F513
Connector Name	C1 CLUTCH SOLENOID VALVE
Connector Type	-
Connector Color	BLUE



Terminal No.	Color of Wire	Signal Name

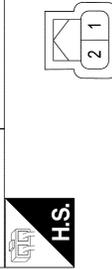
1	Y	C1 CLUTCH SOLENOID VALVE (-)
2	W	C1 CLUTCH SOLENOID VALVE (+)

Connector No.	F514
Connector Name	C3 CLUTCH SOLENOID VALVE
Connector Type	-
Connector Color	GREEN



Terminal No.	Color of Wire	Signal Name
1	SB	C3 CLUTCH SOLENOID VALVE (-)
2	G	C3 CLUTCH SOLENOID VALVE (+)

Connector No.	F515
Connector Name	C2 CLUTCH SOLENOID VALVE
Connector Type	-
Connector Color	WHITE



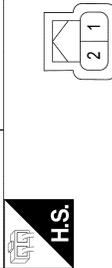
Terminal No.	Color of Wire	Signal Name
1	BR	C2 CLUTCH SOLENOID VALVE (-)
2	P	C2 CLUTCH SOLENOID VALVE (+)

Connector No.	F516
Connector Name	B2 BRAKE SOLENOID VALVE
Connector Type	-
Connector Color	BLUE



Terminal No.	Color of Wire	Signal Name
1	BR	B2 BRAKE SOLENOID VALVE (-)
2	P	B2 BRAKE SOLENOID VALVE (+)

Connector No.	F517
Connector Name	LINE PRESSURE SOLENOID VALVE
Connector Type	-
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1	V	LINE PRESSURE SOLENOID VALVE (-)
2	B	LINE PRESSURE SOLENOID VALVE (+)

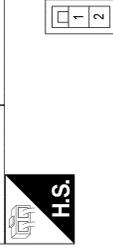
Connector No.	F519
Connector Name	OIL PRESSURE SWITCH
Connector Type	-
Connector Color	-



Terminal No.	Color of Wire	Signal Name

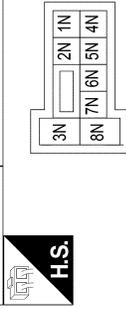
1	BR	OIL PRESSURE SWITCH
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Connector No.	F520
Connector Name	FAIL-SAFE SOLENOID VALVE
Connector Type	-
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1	B	FAIL-SAFE SOLENOID VALVE
2	-	-

Connector No.	M3
Connector Name	FUSE BLOCK (J/B)
Connector Type	CS06FW-M2
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1N	-	-
2N	W	BATTERY
3N	W	BLOWER FAN RELAY OUT
4N	V	BATTERY
5N	Y	BATTERY
6N	W	BATTERY
7N	L	ACC RELAY OUT
8N	W	IGNITION

A/T CONTROL SYSTEM

< WIRING DIAGRAM >

[6AT: RE6R01A]

A/T CONTROL SYSTEM CONNECTORS - WITH Cummins 5.0L

Connector No.	M4
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS16FW-CS
Connector Color	WHITE



7P	6P	5P	4P	3P	2P	1P
16P	15P	14P	13P	12P	11P	10P
9P	8P	7P	6P	5P	4P	3P

Terminal No.	Color of Wire	Signal Name
1P	R	IGNITION
2P	Y	IGNITION
3P	G	IGNITION RELAY OUT
4P	B/W	RR DEF RLY
5P	B/W	RR DEF RLY
6P	O	RR DEF RLY OUT
7P	G	IGNITION
8P	W	IGNITION
9P	L	BATTERY
10P	-	-
11P	-	-
12P	-	-
13P	R	BATTERY
14P	Y	BATTERY
15P	Y/LG	BATTERY
16P	W	BLOWER FAN RELAY OUT



63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41
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Connector No.	M19
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	TH40FB-NH
Connector Color	BLACK

Terminal No.	Color of Wire	Signal Name
41	Y/L	TRAILER LIGHT CHECK RELAY OUT
42	R/Y	CARGO LAMP OUT
43	-	-
44	-	-
45	-	-

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46	-	-
47	-	-
48	R	HIGH SIDE START SW LED
49	-	-
50	-	-
51	-	-
52	W	AUDIO DONGLE
53	-	-
54	W/L	PW UART
55	W/B	LAR SENSOR K-LINE
56	-	-
57	-	-
58	-	-
59	P	CAN-L
60	L	CAN-H
61	O	REAR DEFOGGER RELAY OUT
62	W	STARTER RELAY OUT
63	-	-
64	P	BUZZER OUT
65	-	-
66	W	BLOWER FAN RELAY OUT
67	G	IGN ELEC RELAY OUT 2
68	L	M/R OUTPUT
69	R/B	AT DEVICE OUT
70	P	IGN USM OUT 1
71	O	DR REQUEST SW
72	G	AS REQUEST SW
73	-	-
74	-	-
75	L/W	COMBI SW OUT 5
76	P	COMBI SW OUT 4
77	L	COMBI SW OUT 3
78	O/B	COMBI SW OUT 2
79	R/W	COMBI SW OUT 1
80	-	-

Connector No.	M22
Connector Name	DATA LINK CONNECTOR
Connector Type	BD16FW
Connector Color	WHITE



63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41
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9	10	11	12	13	14	15	16
1	2	3	4	5	6	7	8

Terminal No.	Color of Wire	Signal Name
1	-	-
2	-	-
3	LG	M-CAN-L

4	B	BODY GND
5	B	ENG GND
6	L	CAN-H
7	BR	K-LINE
8	G/R	IGN SW
9	-	-
10	-	-
11	SB	M-CAN-H
12	R	CAN-L
13	L	CAN-H
14	P	CAN-L
15	-	-
16	Y	BATTERY

Connector No.	M24
Connector Name	COMBINATION METER (WITH TYPE A)
Connector Type	TH40FW-NH
Connector Color	WHITE



21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
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23	R	STRG SW B
24	W	WASHER SW
25	-	-
26	G	PKB SW
27	P/L	AS BELT SW (WITH ODS)
28	O/B	DR BELT SW
29	-	-
30	-	-
31	-	-
32	BR	AT SHIFT UP
33	W/W	AT SHIFT DOWN
34	-	-
35	-	-
36	W	ILL UP SW
37	R	ILL DOWN SW
38	G	8P/OUTPUT
39	-	-
40	-	-

Connector No.	M25
Connector Name	COMBINATION METER (WITH TYPE A)
Connector Type	TH12FW-NH
Connector Color	WHITE



46	45	44	43	42	41
52	51	50	49	48	47

Terminal No.	Color of Wire	Signal Name
1	B	GND/STRG/SATELLITE SW (GND)
2	-	-
3	-	-
4	-	-
5	-	-
6	-	-
7	V	SECURITY
8	-	-
9	BG	AS BELT SW (W/O ODS)
10	LG	TOW MODE SW
11	BR	CHG
12	BR	LED-HEAD LAMP (R)
13	W	LED-HEAD LAMP (L)
14	R	ACC SW
15	W	OUTSIDE TEMP SENSOR (WITH VK69VD)
16	O	AIR BAG
17	-	-
18	P	TRIP RESET SW
19	-	-
20	R	OUTSIDE TEMP GND (WITH VK69VD)
21	-	-
22	P	STRG SW A

Terminal No.	Color of Wire	Signal Name
41	W	IGN
42	R	BAT
43	YV	FUEL SENSOR GND
44	GR	ILL CONT OUTPUT
45	P	CAN-L
46	L	CAN-H
47	B	G1
48	BRY	FUEL SENSOR
49	-	-
50	-	-
51	LG	M CAN-L
52	SB	M CAN-H

A B C TM E F G H I J K L M N O P

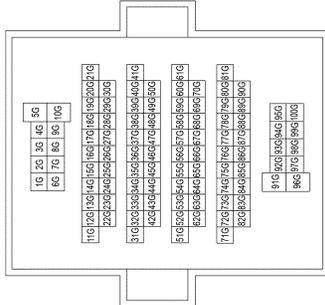
A/T CONTROL SYSTEM

< WIRING DIAGRAM >

[6AT: RE6R01A]

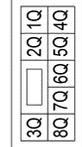
A/T CONTROL SYSTEM CONNECTORS - WITH Cummins 5.0L

Connector No.	M31
Connector Name	WIRE TO WIRE
Connector Type	TH80FW-C516-TM4
Connector Color	WHITE



80G	R	TO ENGINE ROOM HARNESS
81G	L	TO ENGINE ROOM HARNESS
82G	R	TO ENGINE ROOM HARNESS
83G	L	TO ENGINE ROOM HARNESS
84G	L	TO ENGINE ROOM HARNESS
85G	W	TO ENGINE ROOM HARNESS
86G	B/R	TO ENGINE ROOM HARNESS
87G	W	TO ENGINE ROOM HARNESS
88G	G	TO ENGINE ROOM HARNESS
89G	P	TO ENGINE ROOM HARNESS
90G	G	TO ENGINE ROOM HARNESS
91G	P	TO ENGINE ROOM HARNESS
92G	V/W	TO ENGINE ROOM HARNESS
93G	BR	TO ENGINE ROOM HARNESS
94G	B	TO ENGINE ROOM HARNESS
95G	G	TO ENGINE ROOM HARNESS
96G	R	TO ENGINE ROOM HARNESS
97G	R	TO ENGINE ROOM HARNESS
98G	W/B	TO ENGINE ROOM HARNESS
99G	R	TO ENGINE ROOM HARNESS
100G	GR/W	TO ENGINE ROOM HARNESS

Connector No.	M39
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS08FW-CS
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1Q	-	-
2Q	O/L	IGNITION
3Q	-	-
4Q	-	-
5Q	-	-
6Q	R/W	BATTERY
7Q	R/W	IGNITION
8Q	-	-

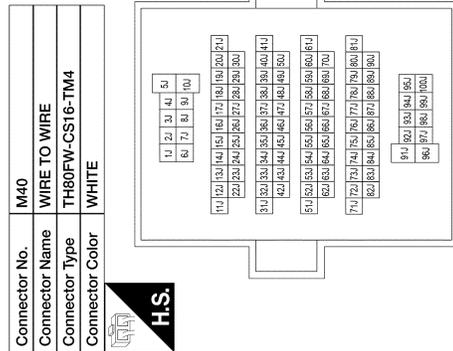
27G	LG	TO ENGINE ROOM HARNESS
28G	G/B	TO ENGINE ROOM HARNESS
29G	G/B	TO ENGINE ROOM HARNESS
30G	BR/Y	TO ENGINE ROOM HARNESS
31G	R	TO ENGINE ROOM HARNESS
32G	R	TO ENGINE ROOM HARNESS
33G	Y/L	TO ENGINE ROOM HARNESS
34G	GR	TO ENGINE ROOM HARNESS
35G	G/R	TO ENGINE ROOM HARNESS
36G	SB	TO ENGINE ROOM HARNESS
37G	R/W	TO ENGINE ROOM HARNESS
38G	BR	TO ENGINE ROOM HARNESS
39G	BR	TO ENGINE ROOM HARNESS
40G	-	TO ENGINE ROOM HARNESS
41G	R/G	TO ENGINE ROOM HARNESS
42G	O	TO ENGINE ROOM HARNESS
43G	G	TO ENGINE ROOM HARNESS
44G	R/Y	TO ENGINE ROOM HARNESS
45G	G	TO ENGINE ROOM HARNESS
46G	LG	TO ENGINE ROOM HARNESS
47G	R	TO ENGINE ROOM HARNESS
48G	W	TO ENGINE ROOM HARNESS
49G	-	TO ENGINE ROOM HARNESS
50G	BR	TO ENGINE ROOM HARNESS
51G	R	TO ENGINE ROOM HARNESS
52G	L	TO ENGINE ROOM HARNESS
53G	W	TO ENGINE ROOM HARNESS
54G	W	TO ENGINE ROOM HARNESS
55G	G	TO ENGINE ROOM HARNESS
56G	W	TO ENGINE ROOM HARNESS
57G	Y	TO ENGINE ROOM HARNESS
58G	BG	TO ENGINE ROOM HARNESS
59G	BG	TO ENGINE ROOM HARNESS
60G	BG	TO ENGINE ROOM HARNESS
61G	O	TO ENGINE ROOM HARNESS
62G	W	TO ENGINE ROOM HARNESS
63G	O	TO ENGINE ROOM HARNESS
64G	W/L	TO ENGINE ROOM HARNESS
65G	W/R	TO ENGINE ROOM HARNESS
66G	BG	TO ENGINE ROOM HARNESS
67G	O	TO ENGINE ROOM HARNESS
68G	B	TO ENGINE ROOM HARNESS
69G	Y	TO ENGINE ROOM HARNESS
70G	L	TO ENGINE ROOM HARNESS
71G	R/W	TO ENGINE ROOM HARNESS
72G	L/W	TO ENGINE ROOM HARNESS
73G	SHIELD	TO ENGINE ROOM HARNESS
74G	W	TO ENGINE ROOM HARNESS
75G	R	TO ENGINE ROOM HARNESS
76G	R/G	TO ENGINE ROOM HARNESS
77G	BG	TO ENGINE ROOM HARNESS
78G	P	TO ENGINE ROOM HARNESS
79G	-	TO ENGINE ROOM HARNESS

Terminal No.	Color of Wire	Signal Name
1G	G	TO ENGINE ROOM HARNESS
2G	B/R	TO ENGINE ROOM HARNESS
3G	W	TO ENGINE ROOM HARNESS
4G	BR/W	TO ENGINE ROOM HARNESS
5G	-	TO ENGINE ROOM HARNESS
6G	R/W	TO ENGINE ROOM HARNESS
7G	Y	TO ENGINE ROOM HARNESS
8G	G	TO ENGINE ROOM HARNESS
9G	R	TO ENGINE ROOM HARNESS
10G	W	TO ENGINE ROOM HARNESS
11G	R/G	TO ENGINE ROOM HARNESS
12G	W/B	TO ENGINE ROOM HARNESS
13G	BR	TO ENGINE ROOM HARNESS
14G	Y/B	TO ENGINE ROOM HARNESS
15G	G/W	TO ENGINE ROOM HARNESS
16G	G	TO ENGINE ROOM HARNESS
17G	O	TO ENGINE ROOM HARNESS
18G	G/Y	TO ENGINE ROOM HARNESS
19G	Y/V	TO ENGINE ROOM HARNESS
20G	G/Y	TO ENGINE ROOM HARNESS
21G	B/Y	TO ENGINE ROOM HARNESS
22G	G/R	TO ENGINE ROOM HARNESS
23G	Y/R	TO ENGINE ROOM HARNESS
24G	G/B	TO ENGINE ROOM HARNESS
25G	R/W	TO ENGINE ROOM HARNESS
26G	R	TO ENGINE ROOM HARNESS

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A/T CONTROL SYSTEM

A/T CONTROL SYSTEM CONNECTORS - WITH Cummins 5.0L

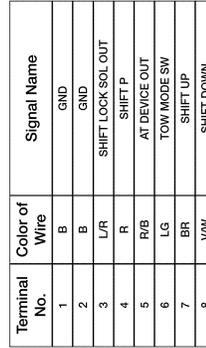


28J	L	TO BODY HARNESS
29J	G/O	TO BODY HARNESS
30J	SB	TO BODY HARNESS
31J	L/G	TO BODY HARNESS
32J	R	TO BODY HARNESS
33J	BG	TO BODY HARNESS
34J	Y	TO BODY HARNESS
35J	P	TO BODY HARNESS
36J	G/R	TO BODY HARNESS
37J	LG	TO BODY HARNESS
38J	SB	TO BODY HARNESS
39J	Y	TO BODY HARNESS
40J	SB	TO BODY HARNESS
41J	L	TO BODY HARNESS
42J	L	TO BODY HARNESS
43J	W	TO BODY HARNESS
44J	BR	TO BODY HARNESS
45J	BG	TO BODY HARNESS
46J	P	TO BODY HARNESS
47J	O	TO BODY HARNESS
48J	BR	TO BODY HARNESS
49J	G/W	TO BODY HARNESS
50J	G/W	TO BODY HARNESS
51J	-	TO BODY HARNESS
52J	SHIELD	TO BODY HARNESS
53J	R	TO BODY HARNESS
54J	L	TO BODY HARNESS
55J	R	TO BODY HARNESS
56J	W	TO BODY HARNESS
57J	R	TO BODY HARNESS
58J	B	TO BODY HARNESS
59J	-	TO BODY HARNESS
60J	SHIELD	TO BODY HARNESS
61J	G	TO BODY HARNESS
62J	-	TO BODY HARNESS
63J	R/W	TO BODY HARNESS
64J	L/W	TO BODY HARNESS
65J	SHIELD	TO BODY HARNESS
66J	B	TO BODY HARNESS
67J	SHIELD	TO BODY HARNESS
68J	W	TO BODY HARNESS
69J	SHIELD	TO BODY HARNESS
70J	B/R	TO BODY HARNESS
71J	L/W	TO BODY HARNESS
72J	-	TO BODY HARNESS
73J	-	TO BODY HARNESS
74J	SHIELD	TO BODY HARNESS
75J	R	TO BODY HARNESS
76J	O	TO BODY HARNESS
77J	SHIELD	TO BODY HARNESS
78J	W	TO BODY HARNESS
79J	B	TO BODY HARNESS
80J	W	TO BODY HARNESS

81J	SHIELD	TO BODY HARNESS
82J	L/R	TO BODY HARNESS
83J	-	TO BODY HARNESS
84J	-	TO BODY HARNESS
85J	W	TO BODY HARNESS
86J	G	TO BODY HARNESS
87J	W	TO BODY HARNESS
88J	SHIELD	TO BODY HARNESS
89J	R	TO BODY HARNESS
90J	L	TO BODY HARNESS
91J	L/B	TO BODY HARNESS
92J	SB	TO BODY HARNESS
93J	B	TO BODY HARNESS
94J	LG	TO BODY HARNESS
95J	L	TO BODY HARNESS
96J	G	TO BODY HARNESS
97J	B/Y	TO BODY HARNESS
98J	L/B	TO BODY HARNESS
99J	W/L	TO BODY HARNESS
100J	Y	TO BODY HARNESS



Terminal No.	Color of Wire	Signal Name
105	G/Y	FR FLASHER
106	-	-
107	W	LOW SIDE START SW LED
108	L/R	SHIFT LOCK SOLENOID OUT
109	-	-
110	-	-
111	P	ACC LED
112	-	-
113	L	ACC RELAY OUT
114	W	AS DOOR ANT A
115	BG	AS DOOR ANT B
116	W	ROOM ANT 2 A
117	G/B	FL FLASHER
118	-	-
119	R	RF NIMOCO
120	-	-
121	G	DR DOOR ANT B
122	P	DR DOOR ANT A
123	W	ROOM ANT 1 A
124	G	ROOM ANT 1 B
125	-	-
126	P	IMMO START BUTTON ANT B
127	BG	IMMO START BUTTON ANT A
128	B	ROOM ANT 2 B



Terminal No.	Color of Wire	Signal Name
1	B	GND
2	B	GND
3	L/R	SHIFT LOCK SOL OUT
4	R	SHIFT P
5	R/B	AT DEVICE OUT
6	LG	TOW MODE SW
7	BR	SHIFT UP
8	V/W	SHIFT DOWN

Terminal No.	Color of Wire	Signal Name
1J	G	TO BODY HARNESS
2J	R/Y	TO BODY HARNESS
3J	L	TO BODY HARNESS
4J	L/B	TO BODY HARNESS
5J	B	TO BODY HARNESS
6J	BR	TO BODY HARNESS
7J	BG	TO BODY HARNESS
8J	SB	TO BODY HARNESS
9J	BR	TO BODY HARNESS
10J	R	TO BODY HARNESS
11J	O/B	TO BODY HARNESS
12J	L	TO BODY HARNESS
13J	W	TO BODY HARNESS
14J	Y	TO BODY HARNESS
15J	-	TO BODY HARNESS
16J	R	TO BODY HARNESS
17J	G	TO BODY HARNESS
18J	SB	TO BODY HARNESS
19J	O	TO BODY HARNESS
20J	O/B	TO BODY HARNESS
21J	Y	TO BODY HARNESS
22J	P	TO BODY HARNESS
23J	W	TO BODY HARNESS
24J	W/R	TO BODY HARNESS
25J	P	TO BODY HARNESS
26J	L	TO BODY HARNESS
27J	R	TO BODY HARNESS

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A B C TM E F G H I J K L M N O P

A/T CONTROL SYSTEM CONNECTORS - WITH Cummins 5.0L

Connector No.	M81
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	FEA09FW-FHA6-SA
Connector Color	WHITE



137	136	135	134	133	132	131	130	129
143	142	141	140	139	138			

Terminal No.	Color of Wire	Signal Name
129	F/G	BATTERY SAVER OUT
130	LG	SUPER LOCK/DOOR UNLOCK AS
131	W	BAT BOM FUSE
132	Y	DOOR LOCK AS/RR/RL
133	BR	DOOR UNLOCK AS/RR/RL
134	B	GND2
135	O	DOOR LOCK DR/AS/FL
136	L	ROOM LAMP CONT
137	V	DOOR UNLOCK DR/AS/FL
138	V	BAT REAR DOOR
139	W	BAT-POWER F/L
140	LG	P/W POWER SUPPLY IGN
141	V	P/W POWER SUPPLY BAT
142	Y	BAT FRONT DOOR
143	B	GND1

Connector No.	M88
Connector Name	ACCESSORY RELAY-2
Connector Type	MS02FL-M2-LC
Connector Color	BLUE



Terminal No.	Color of Wire	Signal Name
1	B	GROUND
2	L	RELAY CONTROL
3	R	RELAY OUTPUT
5	W	BATTERY

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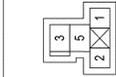
A/T SHIFT LOCK SYSTEM

< WIRING DIAGRAM >

[6AT: RE6R01A]

A/T SHIFT LOCK SYSTEM CONNECTORS

Connector No.	E12
Connector Name	STOP LAMP RELAY
Connector Type	MS02FL-M2-LC
Connector Color	BLUE



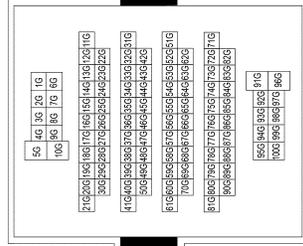
Terminal No.	Color of Wire	Signal Name
1	B	GROUND
2	W	RELAY CONTROL
3	R/G	STOP LAMPS
5	R/Y	BATTERY

Connector No.	E38
Connector Name	STOP LAMP SWITCH
Connector Type	M04FW-LC
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1	R/Y	BATTERY
2	W	RELAY CONT. - (WITHOUT LED REAR COMBINATION LAMPS)
2	R/G	STOP LAMPS - (WITH LED REAR COMBINATION LAMPS)
3	GR	IGNITION
4	R/B	STOP 2

Connector No.	E152
Connector Name	WIRE TO WIRE
Connector Type	TH80MW-CS16-TM4
Connector Color	WHITE

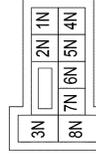


Terminal No.	Color of Wire	Signal Name
24G	G/B	TO MAIN HARNESS
25G	R/W	TO MAIN HARNESS
26G	R	TO MAIN HARNESS
27G	LG	TO MAIN HARNESS
28G	G/B	TO MAIN HARNESS
29G	G/B	TO MAIN HARNESS
30G	BR/Y	TO MAIN HARNESS - (WITH CUMMINS 5.0L)
31G	P	TO MAIN HARNESS - (WITH CUMMINS 5.0L)
31G	R	TO MAIN HARNESS - (WITH YK6VD)
32G	P	TO MAIN HARNESS
33G	Y/L	TO MAIN HARNESS
34G	GR	TO MAIN HARNESS
35G	G/R	TO MAIN HARNESS
36G	SB	TO MAIN HARNESS
37G	R/W	TO MAIN HARNESS
38G	BR	TO MAIN HARNESS
39G	BR	TO MAIN HARNESS
40G	-	TO MAIN HARNESS
41G	R/G	TO MAIN HARNESS
42G	O	TO MAIN HARNESS
43G	B	TO MAIN HARNESS - (WITH CUMMINS 5.0L)
43G	G	TO MAIN HARNESS - (WITH YK6VD)
44G	R/Y	TO MAIN HARNESS
45G	G	TO MAIN HARNESS
46G	LG	TO MAIN HARNESS
47G	R	TO MAIN HARNESS
48G	W	TO MAIN HARNESS
49G	-	TO MAIN HARNESS
50G	BR	TO MAIN HARNESS
51G	R	TO MAIN HARNESS
52G	L	TO MAIN HARNESS
53G	W	TO MAIN HARNESS
54G	W	TO MAIN HARNESS
55G	G	TO MAIN HARNESS
56G	W	TO MAIN HARNESS
57G	Y	TO MAIN HARNESS
58G	BG	TO MAIN HARNESS
59G	BG	TO MAIN HARNESS
60G	BG	TO MAIN HARNESS
61G	B	TO MAIN HARNESS
62G	W	TO MAIN HARNESS
63G	R	TO MAIN HARNESS
64G	W/L	TO MAIN HARNESS
65G	W/R	TO MAIN HARNESS
66G	BG	TO MAIN HARNESS
67G	BG	TO MAIN HARNESS
68G	B	TO MAIN HARNESS
69G	Y	TO MAIN HARNESS
70G	L	TO MAIN HARNESS
71G	R/W	TO MAIN HARNESS

Terminal No.	Color of Wire	Signal Name
1G	G	TO MAIN HARNESS
2G	B/R	TO MAIN HARNESS
3G	W/B	TO MAIN HARNESS
4G	BR/W	TO MAIN HARNESS
5G	BR	TO MAIN HARNESS
6G	P	TO MAIN HARNESS - (WITH YK6VD)
6G	R/W	TO MAIN HARNESS - (WITH CUMMINS 5.0L)
7G	Y	TO MAIN HARNESS
8G	G	TO MAIN HARNESS
9G	R	TO MAIN HARNESS
10G	W	TO MAIN HARNESS
11G	R/G	TO MAIN HARNESS
12G	W/B	TO MAIN HARNESS
13G	Y/B	TO MAIN HARNESS
14G	G/W	TO MAIN HARNESS
15G	G	TO MAIN HARNESS
16G	G/Y	TO MAIN HARNESS
18G	G/Y	TO MAIN HARNESS
19G	Y/V	TO MAIN HARNESS
20G	G/Y	TO MAIN HARNESS
21G	B/Y	TO MAIN HARNESS
22G	G/R	TO MAIN HARNESS
23G	Y/R	TO MAIN HARNESS

Terminal No.	Color of Wire	Signal Name
72G	L/W	TO MAIN HARNESS
73G	SHIELD	TO MAIN HARNESS
74G	W	TO MAIN HARNESS
75G	R	TO MAIN HARNESS
76G	R/G	TO MAIN HARNESS
77G	G	TO MAIN HARNESS
78G	W	TO MAIN HARNESS
79G	-	TO MAIN HARNESS
80G	R	TO MAIN HARNESS
81G	L	TO MAIN HARNESS
82G	R	TO MAIN HARNESS
83G	L	TO MAIN HARNESS
84G	L	TO MAIN HARNESS
85G	W/B	TO MAIN HARNESS
86G	B/R	TO MAIN HARNESS
87G	W/B	TO MAIN HARNESS
88G	P	TO MAIN HARNESS
89G	L	TO MAIN HARNESS
90G	G	TO MAIN HARNESS
91G	G	TO MAIN HARNESS
92G	W/W	TO MAIN HARNESS
93G	BR	TO MAIN HARNESS
94G	G	TO MAIN HARNESS
95G	G	TO MAIN HARNESS
96G	W	TO MAIN HARNESS
97G	R	TO MAIN HARNESS
98G	W/B	TO MAIN HARNESS
99G	BR	TO MAIN HARNESS
100G	GR/W	TO MAIN HARNESS

Connector No.	M3
Connector Name	FUSE BLOCK (J/B)
Connector Type	CS06FW-M2
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1N	-	BATTERY
2N	W	BLOWER FAN RELAY OUT
3N	W	BATTERY
4N	V	BATTERY
5N	Y	BATTERY
6N	W	BATTERY
7N	L	ACC RELAY OUT
8N	W	IGNITION

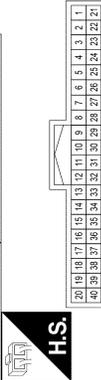
A/T SHIFT LOCK SYSTEM

< WIRING DIAGRAM >

[6AT: RE6R01A]

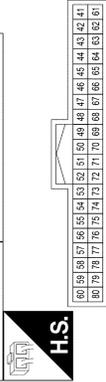
A/T SHIFT LOCK SYSTEM CONNECTORS

Connector No.	M18
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	TH40FG-NH
Connector Color	GREEN



39	B/R	SHIFT N/P
40	-	-

Connector No.	M19
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	TH40FB-NH
Connector Color	BLACK



75	L/W	COMBI SW OUT 5
76	P	COMBI SW OUT 4
77	L	COMBI SW OUT 3
78	O/B	COMBI SW OUT 2
79	R/W	COMBI SW OUT 1
80	-	-

Terminal No.	Color of Wire	Signal Name
1	G	ENG START SW NO ESCL
2	-	-
3	R	AIL POWER SUPPLY 5V
4	W/R	AIL SIGNAL
5	-	-
6	-	-
7	-	-
8	-	-
9	-	-
10	SB	COMBI SW IN 5
11	G/Y	COMBI SW IN 4
12	Y	COMBI SW IN 3
13	G/B	COMBI SW IN 2
14	V	COMBI SW IN 1
15	-	-
16	-	-
17	P	GND RF A/L
18	V	SECURITY INDICATOR
19	-	-
20	R	SHIFT P
21	R/W	STEP LAMP CONT
22	-	-
23	Y	AIRCON SW
24	-	-
25	W	BRAKE SW FUSE
26	L	SHORT IN PIN INPUT
27	R/G	BRAKE SW LAMP
28	-	-
29	W	BLOWER FAN SW
30	P	DR DOOR LOCK STATUS
31	-	-
32	Y	REAR DEFOGGER SW
33	-	-
34	-	-
35	R/G	REVERSE SW
36	W/B	HAZARD SW
37	-	-
38	-	-

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Terminal No.	Color of Wire	Signal Name
41	Y/L	TRAILER LIGHT CHECK RELAY OUT
42	R/Y	CARGO LAMP OUT
43	-	-
44	-	-
45	-	-
46	-	-
47	-	-
48	R	HIGH SIDE START SW LED
49	-	-
50	-	-
51	-	-
52	W	AUDIO DONGLE
53	-	-
54	W/L	PW UART
55	W/B	LAR SENSOR K-LINE
56	-	-
57	-	-
58	-	-
59	P	CAN-L
60	L	CAN-H
61	O	REAR DEFOGGER RELAY OUT
62	W	STARTER RELAY OUT
63	-	-
64	P	BUZZER OUT
65	-	-
66	W	BLOWER FAN RELAY OUT
67	G	IGN ELEC RELAY OUT 2
68	L	MR OUTPUT
69	R/B	AT DEVICE OUT
70	P	IGN USM OUT 1
71	O	DR REQUEST SW
72	G	AS REQUEST SW
73	-	-
74	-	-

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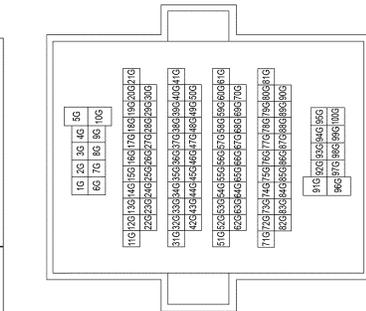
A/T SHIFT LOCK SYSTEM

< WIRING DIAGRAM >

[6AT: RE6R01A]

A/T SHIFT LOCK SYSTEM CONNECTORS

Connector No.	M31
Connector Name	WIRE TO WIRE
Connector Type	TH80FW-CST6-TM4
Connector Color	WHITE



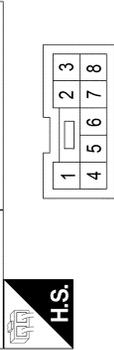
27G	LG	TO ENGINE ROOM HARNESS
28G	G/B	TO ENGINE ROOM HARNESS
29G	G/B	TO ENGINE ROOM HARNESS
30G	BR/Y	TO ENGINE ROOM HARNESS
31G	R	TO ENGINE ROOM HARNESS
32G	R	TO ENGINE ROOM HARNESS
33G	Y/L	TO ENGINE ROOM HARNESS
34G	GR	TO ENGINE ROOM HARNESS
35G	G/R	TO ENGINE ROOM HARNESS
36G	SB	TO ENGINE ROOM HARNESS
37G	R/W	TO ENGINE ROOM HARNESS
38G	BR	TO ENGINE ROOM HARNESS
39G	BR	TO ENGINE ROOM HARNESS
40G	-	TO ENGINE ROOM HARNESS
41G	R/G	TO ENGINE ROOM HARNESS
42G	O	TO ENGINE ROOM HARNESS
43G	G	TO ENGINE ROOM HARNESS
44G	R/Y	TO ENGINE ROOM HARNESS
45G	G	TO ENGINE ROOM HARNESS
46G	LG	TO ENGINE ROOM HARNESS
47G	R	TO ENGINE ROOM HARNESS
48G	W	TO ENGINE ROOM HARNESS
49G	-	TO ENGINE ROOM HARNESS
50G	BR	TO ENGINE ROOM HARNESS
51G	R	TO ENGINE ROOM HARNESS
52G	L	TO ENGINE ROOM HARNESS
53G	W	TO ENGINE ROOM HARNESS
54G	W	TO ENGINE ROOM HARNESS
55G	G	TO ENGINE ROOM HARNESS
56G	W	TO ENGINE ROOM HARNESS
57G	Y	TO ENGINE ROOM HARNESS
58G	BG	TO ENGINE ROOM HARNESS
59G	BG	TO ENGINE ROOM HARNESS
60G	BG	TO ENGINE ROOM HARNESS
61G	O	TO ENGINE ROOM HARNESS
62G	W	TO ENGINE ROOM HARNESS
63G	O	TO ENGINE ROOM HARNESS
64G	W/L	TO ENGINE ROOM HARNESS
65G	W/R	TO ENGINE ROOM HARNESS
66G	BG	TO ENGINE ROOM HARNESS
67G	O	TO ENGINE ROOM HARNESS
68G	B	TO ENGINE ROOM HARNESS
69G	Y	TO ENGINE ROOM HARNESS
70G	L	TO ENGINE ROOM HARNESS
71G	R/W	TO ENGINE ROOM HARNESS
72G	L/W	TO ENGINE ROOM HARNESS
73G	SHIELD	TO ENGINE ROOM HARNESS
74G	W	TO ENGINE ROOM HARNESS
75G	R	TO ENGINE ROOM HARNESS
76G	R/G	TO ENGINE ROOM HARNESS
77G	BG	TO ENGINE ROOM HARNESS
78G	P	TO ENGINE ROOM HARNESS
79G	-	TO ENGINE ROOM HARNESS

Terminal No.	Color of Wire	Signal Name
1G	G	TO ENGINE ROOM HARNESS
2G	B/R	TO ENGINE ROOM HARNESS
3G	W	TO ENGINE ROOM HARNESS
4G	BR/W	TO ENGINE ROOM HARNESS
5G	-	TO ENGINE ROOM HARNESS
6G	R/W	TO ENGINE ROOM HARNESS
7G	Y	TO ENGINE ROOM HARNESS
8G	G	TO ENGINE ROOM HARNESS
9G	R	TO ENGINE ROOM HARNESS
10G	W	TO ENGINE ROOM HARNESS
11G	R/G	TO ENGINE ROOM HARNESS
12G	W/B	TO ENGINE ROOM HARNESS
13G	BR	TO ENGINE ROOM HARNESS
14G	Y/B	TO ENGINE ROOM HARNESS
15G	G/W	TO ENGINE ROOM HARNESS
16G	G	TO ENGINE ROOM HARNESS
17G	O	TO ENGINE ROOM HARNESS
18G	G/Y	TO ENGINE ROOM HARNESS
19G	Y/V	TO ENGINE ROOM HARNESS
20G	G/Y	TO ENGINE ROOM HARNESS
21G	B/Y	TO ENGINE ROOM HARNESS
22G	G/R	TO ENGINE ROOM HARNESS
23G	Y/R	TO ENGINE ROOM HARNESS
24G	G/B	TO ENGINE ROOM HARNESS
25G	R/W	TO ENGINE ROOM HARNESS
26G	R	TO ENGINE ROOM HARNESS

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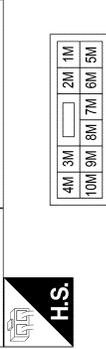
80G	R	TO ENGINE ROOM HARNESS
81G	L	TO ENGINE ROOM HARNESS
82G	R	TO ENGINE ROOM HARNESS
83G	L	TO ENGINE ROOM HARNESS
84G	L	TO ENGINE ROOM HARNESS
85G	W	TO ENGINE ROOM HARNESS
86G	B/R	TO ENGINE ROOM HARNESS
87G	W	TO ENGINE ROOM HARNESS
88G	G	TO ENGINE ROOM HARNESS
89G	P	TO ENGINE ROOM HARNESS
90G	G	TO ENGINE ROOM HARNESS
91G	P	TO ENGINE ROOM HARNESS
92G	V/W	TO ENGINE ROOM HARNESS
93G	BR	TO ENGINE ROOM HARNESS
94G	B	TO ENGINE ROOM HARNESS
95G	G	TO ENGINE ROOM HARNESS
96G	R	TO ENGINE ROOM HARNESS
97G	R	TO ENGINE ROOM HARNESS
98G	W/B	TO ENGINE ROOM HARNESS
99G	R	TO ENGINE ROOM HARNESS
100G	GR/W	TO ENGINE ROOM HARNESS

Connector No.	M68
Connector Name	A/T SHIFT SELECTOR
Connector Type	TK08FW
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1	B	GND
2	B	GND
3	L/R	SHIFT LOCK SOL OUT
4	R	SHIFT P
5	R/B	AT DEVICE OUT
6	LG	TOW MODE SW
7	BR	SHIFT UP
8	V/W	SHIFT DOWN

Connector No.	M69
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS10FW-CS
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1M	GR	IGNITION
2M	-	-
3M	-	-
4M	-	-
5M	R/Y	BATTERY
6M	R/W	TAIL LAMP 2
7M	-	-
8M	-	-
9M	-	-
10M	W/R	IGNITION

A/T SHIFT LOCK SYSTEM

< WIRING DIAGRAM >

[6AT: RE6R01A]

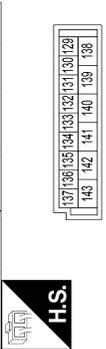
A/T SHIFT LOCK SYSTEM CONNECTORS

Connector No.	M80
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	TH24FB-NH
Connector Color	BLACK



H.S.

Connector No.	M81
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	FEA09FW-FHA6-SA
Connector Color	WHITE



H.S.

Terminal No.	Color of Wire	Signal Name
105	G/Y	FR FLASHER
106	-	-
107	W	LOW SIDE START SW LED
108	L/R	SHIFT LOCK SOLENOID OUT
109	-	-
110	-	-
111	P	ACC LED
112	-	-
113	L	ACC RELAY OUT
114	W	AS DOOR ANT A
115	BG	AS DOOR ANT B
116	W	ROOM ANT 2 A
117	G/B	FL FLASHER
118	-	-
119	R	RF NIMOCO
120	-	-
121	G	DR DOOR ANT B
122	P	DR DOOR ANT A
123	W	ROOM ANT 1 A
124	G	ROOM ANT 1 B
125	-	-
126	P	IMMO START BUTTON ANT B
127	BG	IMMO START BUTTON ANT A
128	B	ROOM ANT 2 B

Terminal No.	Color of Wire	Signal Name
129	R/G	BATTERY SAVER OUT
130	LG	SUPER LOCK/DOOR UNLOCK AS
131	W	BAT BCM FUSE
132	Y	DOOR LOCK AS/RR/RL
133	BR	DOOR UNLOCK AS/RR/RL
134	B	GND2
135	O	DOOR LOCK DR/AS/FL
136	L	ROOM LAMP CONT
137	V	DOOR UNLOCK DR/AS/FL
138	V	BAT REAR DOOR
139	W	BAT-POWER FL
140	LG	P/W POWER SUPPLY IGN
141	V	P/W POWER SUPPLY BAT
142	Y	BAT FRONT DOOR
143	B	GND1

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BASIC INSPECTION

DIAGNOSIS AND REPAIR WORK FLOW

Work Flow

INFOID:000000014418910

1. OBTAIN INFORMATION ABOUT SYMPTOM

Refer to [TM-89, "Diagnostic Work Sheet"](#) and interview the customer to obtain the malfunction information (conditions and environment when the malfunction occurred) as much as possible when the customer brings in the vehicle.

>> GO TO 2.

2. CHECK DTC

1. Before checking the malfunction, check whether any DTC exists.
2. If DTC exists, perform the following operations.
 - Record the DTC and freeze frame data. (Print out the data using CONSULT and affix them to the Work Order Sheet.)
 - Erase DTCs.
 - Check the relationship between the cause that is clarified with DTC and the malfunction information described by the customer. [TM-213, "Symptom Table"](#) is effective.
3. Check the information of related service bulletins and others also.

Do malfunction information and DTC exist?

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

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

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

3. REPRODUCE MALFUNCTION SYMPTOM

Check any malfunction described by a customer, except those with DTC on the vehicle. Also investigate whether the symptom is a fail-safe or normal operation. Refer to [TM-64, "Fail-Safe"](#). When a malfunction symptom is reproduced, the question sheet is effective. Refer to [TM-89, "Diagnostic Work Sheet"](#).

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

>> GO TO 5.

4. REPRODUCE MALFUNCTION SYMPTOM

Check the malfunction described by the customer on the vehicle. Also investigate whether the symptom is a fail-safe or normal operation. Refer to [TM-64, "Fail-Safe"](#). When a malfunction symptom is reproduced, the question sheet is effective. Refer to [TM-89, "Diagnostic Work Sheet"](#).

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

>> GO TO 6.

5. PERFORM "DTC CONFIRMATION PROCEDURE"

Perform "DTC CONFIRMATION PROCEDURE" of the appropriate DTC to check if DTC is detected again. Refer to [TM-67, "DTC Inspection Priority Chart"](#) when multiple DTCs are detected, and then determine the order for performing the diagnosis.

NOTE:

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

Is any DTC detected?

YES >> GO TO 7.

NO >> Check according to [GI-47, "Intermittent Incident"](#).

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

DIAGNOSIS AND REPAIR WORK FLOW

< BASIC INSPECTION >

[6AT: RE6R01A]

Use [TM-213, "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

INFOID:000000014418911

DESCRIPTION

There are many operating conditions that may cause a malfunction of the transmission parts. By understanding those conditions properly, a quick and exact diagnosis can be achieved.

In general, customers have their own criteria for a problem. Therefore, it is important to understand the symptom and status well enough by asking the customer about the concerns carefully. In order to systemize all the information for the diagnosis, prepare the question sheet referring to the question points.

KEY POINTS

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

SEF907L

WORKSHEET SAMPLE

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

DIAGNOSIS AND REPAIR WORK FLOW

< BASIC INSPECTION >

[6AT: RE6R01A]

Question Sheet

Symptoms	<input type="checkbox"/> Vehicle does not move (<input type="checkbox"/> Any position <input type="checkbox"/> Particular position) <input type="checkbox"/> No upshift (<input type="checkbox"/> 1GR → 2GR <input type="checkbox"/> 2GR → 3GR <input type="checkbox"/> 3GR → 4GR <input type="checkbox"/> 4GR → 5GR <input type="checkbox"/> 5GR → 6GR) <input type="checkbox"/> No downshift (<input type="checkbox"/> 6GR → 5GR <input type="checkbox"/> 5GR → 4GR <input type="checkbox"/> 4GR → 3GR <input type="checkbox"/> 3GR → 2GR <input type="checkbox"/> 2GR → 1GR) <input type="checkbox"/> Lock-up malfunction <input type="checkbox"/> Shift point too high or too low <input type="checkbox"/> Shift shock or slip <input type="checkbox"/> Noise or vibration <input type="checkbox"/> No kick down <input type="checkbox"/> No pattern select <input type="checkbox"/> Others																		
Frequency	<input type="checkbox"/> All the time <input type="checkbox"/> Under certain conditions <input type="checkbox"/> Sometimes (times a day)																		
Weather conditions	<input type="checkbox"/> Not affected <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">Weather</td> <td><input type="checkbox"/> Fine</td> <td><input type="checkbox"/> Clouding</td> <td><input type="checkbox"/> Raining</td> <td><input type="checkbox"/> Snowing</td> <td><input type="checkbox"/> Other ()</td> </tr> <tr> <td>Temp.</td> <td><input type="checkbox"/> Hot</td> <td><input type="checkbox"/> Warm</td> <td><input type="checkbox"/> Cool</td> <td><input type="checkbox"/> Cold</td> <td><input type="checkbox"/> Temp. [Approx. °C (°F)]</td> </tr> <tr> <td>Humidity</td> <td><input type="checkbox"/> High</td> <td><input type="checkbox"/> Middle</td> <td><input type="checkbox"/> Low</td> <td colspan="2"></td> </tr> </table>	Weather	<input type="checkbox"/> Fine	<input type="checkbox"/> Clouding	<input type="checkbox"/> Raining	<input type="checkbox"/> Snowing	<input type="checkbox"/> Other ()	Temp.	<input type="checkbox"/> Hot	<input type="checkbox"/> Warm	<input type="checkbox"/> Cool	<input type="checkbox"/> Cold	<input type="checkbox"/> Temp. [Approx. °C (°F)]	Humidity	<input type="checkbox"/> High	<input type="checkbox"/> Middle	<input type="checkbox"/> Low		
Weather	<input type="checkbox"/> Fine	<input type="checkbox"/> Clouding	<input type="checkbox"/> Raining	<input type="checkbox"/> Snowing	<input type="checkbox"/> Other ()														
Temp.	<input type="checkbox"/> Hot	<input type="checkbox"/> Warm	<input type="checkbox"/> Cool	<input type="checkbox"/> Cold	<input type="checkbox"/> Temp. [Approx. °C (°F)]														
Humidity	<input type="checkbox"/> High	<input type="checkbox"/> Middle	<input type="checkbox"/> Low																
Transmission conditions	<input type="checkbox"/> Not affected <input type="checkbox"/> Cold <input type="checkbox"/> During warm-up <input type="checkbox"/> After warm-up <input type="checkbox"/> Engine speed (rpm)																		
Road conditions	<input type="checkbox"/> Not affected <input type="checkbox"/> In town <input type="checkbox"/> In suburbs <input type="checkbox"/> Freeway <input type="checkbox"/> Off road (Up / Down)																		
Driving conditions	<input type="checkbox"/> Not affected <input type="checkbox"/> At starting <input type="checkbox"/> While idling <input type="checkbox"/> While engine racing <input type="checkbox"/> At racing <input type="checkbox"/> While cruising <input type="checkbox"/> While accelerating <input type="checkbox"/> While decelerating <input type="checkbox"/> While turning (Right / Left) <input type="checkbox"/> Vehicle speed [km/h (MPH)]																		
Other conditions																			

ADDITIONAL SERVICE WHEN REPLACING TCM

< BASIC INSPECTION >

[6AT: RE6R01A]

ADDITIONAL SERVICE WHEN REPLACING TCM

Description

INFOID:000000014418912

After TCM is replaced, individual data of transmission must be written in TCM to ensure the gear change quality. For work procedure, refer to [TM-91, "Work Procedure"](#).

Work Procedure

INFOID:000000014418913

NOTE:

Apply the parking brake before starting the transmission adjustment procedure.

1. PERFORM TRANSMISSION ADJUSTMENT

④ With CONSULT

1. Start the engine.
2. Select "Transmission adjustment" in "Work Support" in "TRANSMISSION".
3. Perform "Transmission adjustment" according to the CONSULT display.

>> WORK END

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ADDITIONAL SERVICE WHEN REPLACING TRANSMISSION ASSEMBLY

< BASIC INSPECTION >

[6AT: RE6R01A]

ADDITIONAL SERVICE WHEN REPLACING TRANSMISSION ASSEMBLY

Description

INFOID:000000014418914

After transmission is replaced, individual data of transmission must be written in TCM to ensure the gear change quality. For work procedure, refer to [TM-92. "Work Procedure"](#).

Work Procedure

INFOID:000000014418915

1. PERFORM TRANSMISSION ADJUSTMENT

Ⓟ With CONSULT

1. Start the engine.
2. Select "Transmission adjustment" in "Work Support" in "TRANSMISSION".
3. Perform "Transmission adjustment" according to the CONSULT display.

>> WORK END

HOW TO ERASE PERMANENT DTC

< BASIC INSPECTION >

[6AT: RE6R01A]

HOW TO ERASE PERMANENT DTC

Description

INFOID:000000014418916

Permanent DTC can be erased by driving each driving pattern.

Permanent DTC	Driving cycle
P0613	Perform the following cycles three times: 1. Start the engine and wait at least 5 seconds. 2. Stop the engine.
P0705	Perform the following cycles three times: 1. Start the engine. 2. Shift the selector lever through entire positions from P to D. 3. Stop the engine.
P0708	—
P0711	1. Soak the vehicle at least 8 hours. 2. Start the engine. 3. Set the vehicle to idling at least 180 seconds. 4. Shift the selector lever to D position. 5. Maintain the following condition at least 7 minutes: - Vehicle speed: 41 km/h (25 MPH) or more 6. Implement the following conditions: - ATF temperature at the time of the engine start: 20°C (68°F) or less - Selector lever: D - Accelerator pedal opening: 10% or more - ATF temperature: 25°C (77°F) or more
P0712	Perform the following cycles three times: 1. Start the engine and wait at least 10 seconds. 2. Stop the engine.
P0713	Perform the following cycles three times: 1. Start the engine and wait at least 10 seconds. 2. Stop the engine.
P0715	Perform the following cycles three times: 1. Start the engine and wait at least 5 seconds. 2. Stop the engine.
P0716	Perform the following cycles three times: 1. Start the engine and wait at least 10 seconds. 2. Stop the engine.
P0717	Perform the following cycles three times: 1. Start the engine. 2. Shift the selector lever to D position. 3. Maintain the following condition at least 6 seconds: - Vehicle speed: 55 km/h (34 MPH) or more 4. Stop the engine.
P0720	Perform the following cycles three times: 1. Start the engine. 2. Shift the selector lever to D position. 3. Drive the vehicle at least 5 seconds. 4. Stop the engine.
P0721	Perform the following cycles three times: 1. Start the engine. 2. Shift the selector lever to D position. 3. Drive the vehicle at least 10 seconds. 4. Stop the engine.
P0722	Perform the following cycles three times: 1. Start the engine. 2. Shift the selector lever to D position. 3. Maintain the following condition at least 6 seconds: - Vehicle speed: 55 km/h (34 MPH) or more 4. Stop the engine.

HOW TO ERASE PERMANENT DTC

< BASIC INSPECTION >

[6AT: RE6R01A]

Permanent DTC	Driving cycle
P0725	Perform the following cycles three times: 1. Start the engine. 2. Shift the selector lever to D position. 3. Maintain the following condition at least 2 seconds: - Vehicle speed: 39 km/h (24 MPH) or more 4. Stop the engine.
P0729	Perform the following cycles three times: 1. Start the engine. 2. Set the vehicle to idling at least 10 seconds. 3. Shift the selector lever to D position. 4. Drive the vehicle at least 2 seconds in 6GR. 5. Stop the engine.
P0730	Perform the following cycles three times: 1. Start the engine and wait at least 5 seconds. 2. Stop the engine.
P0731	Perform the following cycles three times: 1. Start the engine. 2. Set the vehicle to idling at least 10 seconds. 3. Shift the selector lever to D position at least 2 seconds. 4. Maintain the following condition at least 2 seconds in 1GR: - Vehicle speed: 2 km/h (1 MPH) or more 5. Stop the engine.
P0732	Perform the following cycles three times: 1. Start the engine. 2. Set the vehicle to idling at least 10 seconds. 3. Shift the selector lever to D position. 4. Drive the vehicle at least 2 seconds in 2GR. 5. Stop the engine.
P0733	Perform the following cycles three times: 1. Start the engine. 2. Set the vehicle to idling at least 10 seconds. 3. Shift the selector lever to D position. 4. Drive the vehicle at least 2 seconds in 3GR. 5. Stop the engine.
P0734	Perform the following cycles three times: 1. Start the engine. 2. Set the vehicle to idling at least 10 seconds. 3. Shift the selector lever to D position. 4. Drive the vehicle at least 2 seconds in 4GR. 5. Stop the engine.
P0735	Perform the following cycles three times: 1. Start the engine. 2. Set the vehicle to idling at least 10 seconds. 3. Shift the selector lever to D position. 4. Drive the vehicle at least 2 seconds in 5GR. 5. Stop the engine.
P0736	Perform the following cycles three times: 1. Start the engine. 2. Set the vehicle to idling at least 10 seconds. 3. Shift the selector lever to R position. 4. Drive the vehicle at least 2 second s. 5. Stop the engine.
P0743	Perform the following cycles three times: 1. Start the engine and wait at least 5 seconds. 2. Stop the engine.
P0748	Perform the following cycles three times: 1. Start the engine and wait at least 5 seconds. 2. Stop the engine.

HOW TO ERASE PERMANENT DTC

< BASIC INSPECTION >

[6AT: RE6R01A]

Permanent DTC	Driving cycle	
P0752	Perform the following cycles three times:	A
	1. Start the engine.	
	2. Warm A/T fluid.	
	- Transmission fluid temperature: 40°C (104°F) or more	B
	3. Shift the selector lever to D position.	
P0753	4. Drive the vehicle and shift the gear from 4th to 5th with the accelerator pedal released.	
	5. Stop the engine.	C
	Perform the following cycles three times:	
P0758	1. Start the engine and wait at least 5 seconds.	
	2. Stop the engine.	TM
P0763	Perform the following cycles three times:	
	1. Start the engine and wait at least 5 seconds.	E
P0768	2. Stop the engine.	
	Perform the following cycles three times:	F
P0770	1. Start the engine and wait at least 5 seconds.	
	2. Stop the engine.	
	Perform the following cycles three times:	G
	1. Start the engine.	
	2. Set the vehicle to idling at least 5 seconds.	
P0773	3. Shift the selector lever to D position.	
	4. Drive the vehicle at least 2 seconds in 2GR.	H
	5. Stop the engine.	
P0826	Perform the following cycles three times:	
	1. Start the engine and wait at least 5 seconds.	I
P0863	2. Stop the engine.	
	—	J
P0882	Perform the following cycles three times:	
	1. Start the engine and wait at least 5 seconds.	K
P0998	2. Stop the engine.	
	Perform the following cycles three times:	L
P0999	1. Start the engine and wait at least 5 seconds.	
	2. Stop the engine.	M
P1679	—	
	Perform the following cycles three times:	N
P1705	1. Start the engine and wait at least 5 seconds.	
	2. Stop the engine.	
P1721	Perform the following cycles three times:	O
	1. Start the engine.	
	2. Shift the selector lever to D position.	
	3. Drive the vehicle at least 2 seconds in creep.	
P215C	4. Stop the engine.	P
	Perform the following cycles three times:	
	1. Start the engine.	
	2. Shift the selector lever to D position.	
	3. Maintain the following condition at least 2 seconds:	
- Vehicle speed: 42 km/h (26 MPH) or more		
4. Release the accelerator pedal at least 1 second.		
5. Stop the engine.		
P2637	—	

HOW TO ERASE PERMANENT DTC

< BASIC INSPECTION >

[6AT: RE6R01A]

Permanent DTC	Driving cycle
P2741	—
P2742	—
P2743	—
P2757	Perform the following cycles three times: 1. Start the engine. 2. Shift the selector lever to D position. 3. Drive the vehicle at least 3 seconds in 3GR. 4. Stop the engine.
P279D	Perform the following cycles three times: 1. Start the engine. 2. Shift the selector lever to D position. 3. Maintain the following condition at least 11 seconds: - 4WD mode switch: 2WD - Vehicle speed: 60 km/h (37 MPH) or more 4. Maintain the following condition at least 11 seconds: - 4WD mode switch: 4WD LOW - Vehicle speed: 23 km/h (14 MPH) or more 5. Stop the engine.
P2803	Perform the following cycles three times: 1. Start the engine. 2. Shift the selector lever through entire positions from P to D. 3. Stop the engine.
U0073	Perform the following cycles three times: 1. Start the engine and wait at least 5 seconds. 2. Stop the engine.
U0100	Perform the following cycles three times: 1. Start the engine and wait at least 5 seconds. 2. Stop the engine.
U0102	Perform the following cycles three times: 1. Start the engine and wait at least 5 seconds. 2. Stop the engine.
U0140	—
U0155	—
U0401	Perform the following cycles three times: 1. Start the engine and wait at least 5 seconds. 2. Stop the engine.
U0403	Perform the following cycles three times: 1. Start the engine and wait at least 5 seconds. 2. Stop the engine.
U0416	—
U1000	—
U1117	Perform the following cycles three times: 1. Start the engine and wait at least 5 seconds. 2. Stop the engine.

A/T FLUID COOLER

Cleaning

INFOID:000000014418917

Whenever an A/T is replaced, the A/T fluid cooler mounted in the radiator must be inspected and cleaned. Metal debris and friction material, if present, can become trapped in the A/T fluid cooler. This debris can contaminate the newly serviced A/T or, in severe cases, can block or restrict the flow of ATF. In either case, malfunction of the newly serviced A/T may result.

Debris, if present, may build up as ATF enters the cooler inlet. It will be necessary to back flush the cooler through the cooler outlet in order to flush out any built up debris.

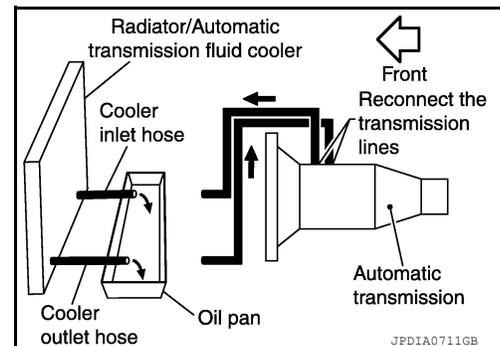
CLEANING PROCEDURE

1. Position an oil pan under the A/T inlet and outlet cooler hoses.
2. Identify the inlet and outlet fluid cooler hoses.
3. Disconnect the A/T fluid cooler inlet and outlet rubber hoses from the steel cooler tubes or by-pass valve.

NOTE:

Replace the cooler hoses if rubber material from the hose remains on the tube fitting.

4. Allow any ATF that remains in the cooler hoses to drain into the oil pan.

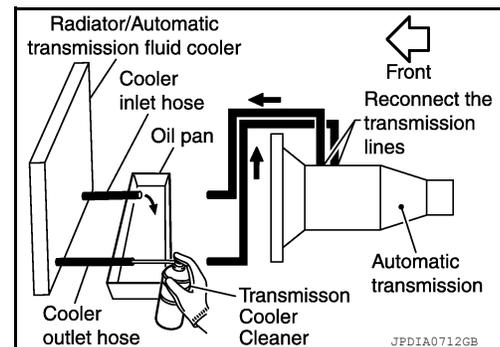


5. Insert the extension adapter hose of Transmission Cooler Cleaner into the cooler outlet hose.

Transmission Cooler Cleaner part no. : 999MP-AM006

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 breath vapors or spray mist.



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

7. Insert the tip of an air gun into the end of the cooler outlet hose.
8. Wrap a shop rag around the air gun tip and of the cooler outlet hose.

9. Blow compressed air regulated to 5 to 9 kg/cm² (71 to 128 psi) through the cooler outlet hose for 10 seconds to force out any remaining ATF.

10. Repeat steps 5 through 9 three additional times.

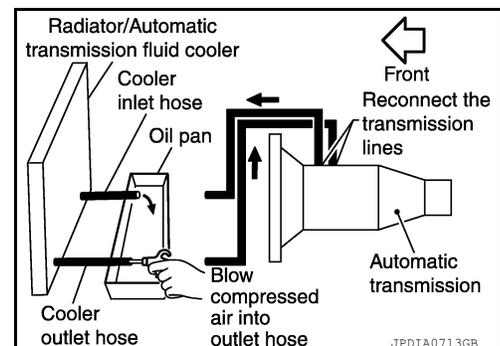
11. Position an oil pan under the banjo bolts that connect the A/T fluid cooler steel lines to the A/T.
12. Remove the banjo bolts.

13. Flush each steel line from the cooler side back toward the A/T by spraying Transmission Cooler Cleaner in a continuous stream for 5 seconds.

14. Blow compressed air regulated to 5 to 9 kg/cm² (71 to 128 psi) through each steel line from the cooler side back toward the A/T for 10 seconds to force out any remaining ATF.

15. Ensure all debris is removed from the steel cooler lines.

16. Ensure all debris is removed from the banjo bolts and fittings.



A/T FLUID COOLER

< BASIC INSPECTION >

[6AT: RE6R01A]

17. Perform "DIAGNOSIS PROCEDURE".

DIAGNOSIS PROCEDURE

NOTE:

Insufficient cleaning of the cooler inlet hose exterior may lead to inaccurate debris identification.

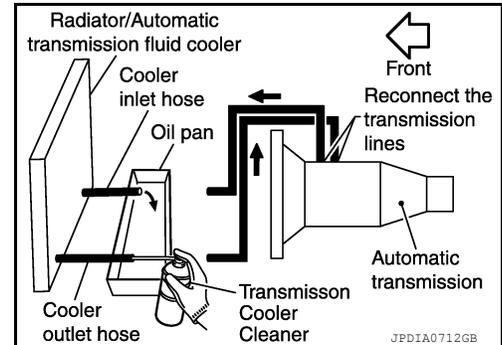
1. Position an oil pan under the A/T inlet and outlet cooler hoses.
2. Clean the exterior and tip of the cooler inlet hose.
3. Insert the extension adapter hose of Transmission Cooler Cleaner the cooler outlet hose.

Transmission Cooler Cleaner part no. : 999MP-AM006

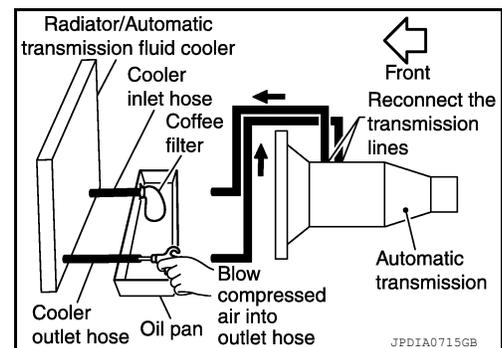
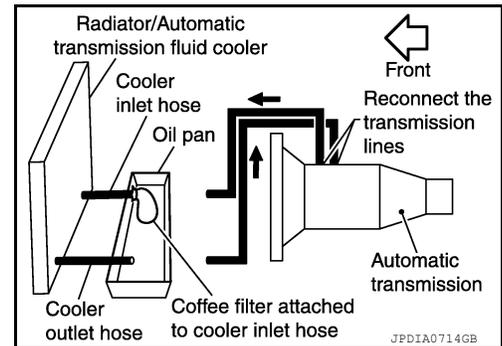
CAUTION:

- 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 breath vapors or spray mist.

4. Hold the hose and can as high as possible and spray Transmission Cooler Cleaner in a continuous stream into the cooler outlet hose until ATF flows out of the cooler inlet hose for 5 seconds.
5. Tie a common white, basket-type coffee filter to the end of the cooler inlet hose.

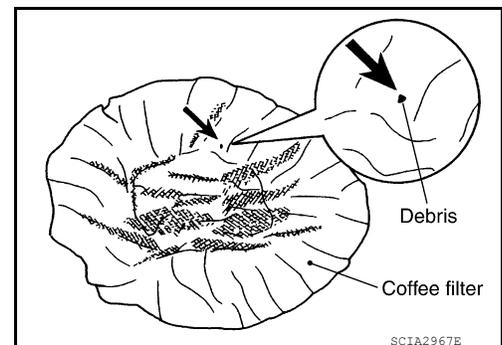


6. Insert the tip of an air gun into the end of the cooler outlet hose.
7. Wrap a shop rag around the air gun tip and end of cooler outlet hose.
8. Blow compressed air regulated to 5 to 9 kg/cm² (71 to 128 psi) through the cooler outlet hose to force any remaining ATF into the coffee filter.
9. Remove the coffee filter from the end of the cooler inlet hose.
10. Perform "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.

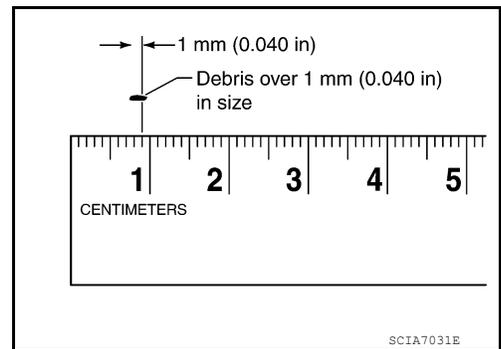


A/T FLUID COOLER

< BASIC INSPECTION >

[6AT: RE6R01A]

- 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 [TM-243, "Exploded View"](#).



Inspection

INFOID:000000014418918

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

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STALL TEST

Inspection and Judgment

INFOID:000000014418919

INSPECTION

1. Inspect the amount of engine oil. Replenish the engine oil if necessary.
2. Drive for about 10 minutes to warm up the vehicle so that the A/T fluid temperature is 70 to 80°C (158 to 176°F). Inspect the amount of ATF. Replenish if necessary.
3. Securely engage the parking brake so that the tires do not turn.
4. Start the engine, apply foot brake, and place selector lever in D position.
5. Gradually press down the accelerator pedal while holding down the foot brake.
6. Quickly read off the stall speed, and quickly release the accelerator pedal.

CAUTION:

Never hold down the accelerator pedal for more than 5 seconds during this test.

Stall speed : Refer to [TM-260, "Stall Speed"](#).

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

JUDGMENT OF STALL TEST

When stall speed is lower or higher than standard value: Replace the torque converter. Refer to [TM-256, "Dis-assembly"](#).

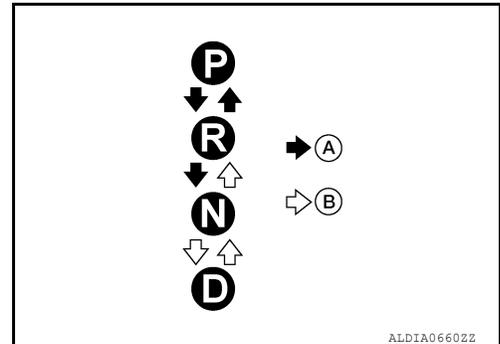
A/T POSITION

Inspection and Adjustment

INFOID:000000014418920

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 of the selector lever matches the position shown by the shift position indicator and the A/T body.
5. Make sure the shift selector is moved to all the shift positions in the manner shown.
 - (A): Pull control lever to operate shift selector.
 - (B): Shift selector can be operated without pulling control lever.
6. When selector lever is in "P", "R", or "N" position without applying forward/backward force to selector lever, check button operation for sticking.
7. Confirm that the back-up lamps illuminate only when lever is placed in the "R" position. Confirm that the back-up lamps do 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.



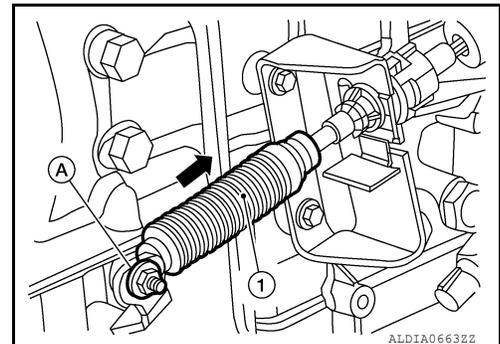
ADJUSTMENT

1. Loosen nut (A).
2. Place manual lever and selector lever in "P" position.
3. Rotate wheel and carry out park locking.
4. Pull control cable (1) toward the direction of arrow (➡) and release hand from cable to leave it in a natural state and then temporarily tighten nut by hand.

NOTE:

Pull control cable with a force of 9.8 N (approximately 1 kg, 2.2 lb).

5. Tighten nut to specified torque. Refer to [TM-221. "Exploded View"](#).



DTC/CIRCUIT DIAGNOSIS

P0613 TCM

DTC Description

INFOID:0000000014418921

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
		Diagnosis condition	Engine: Running
P0613	TCM PROCESSOR (TCM Processor)	Signal	—
		Threshold	When an internal error of TCM is detected
		Diagnosis delay time	—

POSSIBLE CAUSE

- TCM

FAIL-SAFE

- Locks in 3rd gear or 5th gear (Reverse is available)
- Lock-up is prohibited

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 25 seconds before performing the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

1. Start the engine and wait for at least 5 seconds.
2. Check the DTC.

Is "P0613" detected?

- YES >> Refer to [TM-102, "Diagnosis Procedure"](#).
- NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).
- NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000014418922

1. REPLACE TCM

Replace the TCM. Refer to [TM-223, "Removal and Installation"](#).

>> END

P0705 TRANSMISSION RANGE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

P0705 TRANSMISSION RANGE SENSOR A

DTC Description

INFOID:000000014418923

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
		Diagnosis condition	Engine: Running
P0705	T/M RANGE SWITCH A [Transmission Range Sensor "A" Circuit (PRNDL Input)]	Signal	—
		Threshold	When signals are input in an impossible combination
		Diagnosis delay time	Continuously for 2 seconds

POSSIBLE CAUSE

- Harness or connectors (Transmission range switch circuit is open or shorted.)
- Transmission range switch (A, B, C, PA)
- Corrosion of connectors

FAIL-SAFE

- Locks in 3rd gear or 5th gear (Reverse is available)
- Lock-up is prohibited

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 25 seconds before performing the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

1. Start the engine.
2. Shift the selector lever to P position and wait for at least 2 seconds.
3. Shift the selector lever to R position and wait for at least 2 seconds.
4. Shift the selector lever to N position and wait for at least 2 seconds.
5. Shift the selector lever to D position and wait for at least 2 seconds.
6. Check the DTC.

Is "P0705" detected?

- YES >> Refer to [TM-103, "Diagnosis Procedure"](#).
- NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).
- NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014418924

1. CHECK TCM INPUT SIGNALS

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Turn ignition switch ON.
4. Shift the selector lever from P to D and check voltage between TCM harness connector terminals and ground.

P0705 TRANSMISSION RANGE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

Condition	TCM							
	Connector: E74							
	Terminal							
	+	-	+	-	+	-	+	-
2	Ground	3	Ground	10	Ground	21	Ground	
Selector lever: P	Battery voltage		0 V		0 V		Battery voltage	
Selector lever: Between P and R	Battery voltage		Battery voltage		0 V		Battery voltage	
Selector lever: R	Battery voltage		Battery voltage		0 V		0 V	
Selector lever: Between R and N	Battery voltage		Battery voltage		0 V		Battery voltage	
Selector lever: N	0 V		Battery voltage		0 V		Battery voltage	
Selector lever: Between N and D	0 V		Battery voltage		Battery voltage		Battery voltage	
Selector lever: D	0 V		Battery voltage		Battery voltage		0 V	

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2. CHECK CIRCUIT BETWEEN TCM AND TRANSMISSION RANGE SWITCH

1. Turn ignition switch OFF.
2. Disconnect transmission range switch connector.
3. Check continuity between TCM harness connector terminals and transmission range switch harness connector terminals.

TCM		Transmission range switch		Continuity
Connector	Terminal	Connector	Terminal	
E74	2	F212	5	Existed
	3		2	
	10		1	
	21		4	

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning parts.

3. CHECK CIRCUIT BETWEEN TCM AND TRANSMISSION RANGE SWITCH

Check continuity between transmission range switch harness connector terminals and ground.

Transmission range switch		—	Continuity
Connector	Terminal		
F212	5	Ground	Not existed
	2		
	1		
	4		

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace malfunctioning parts.

4. CHECK CIRCUIT BETWEEN TCM AND TRANSMISSION RANGE SWITCH

P0705 TRANSMISSION RANGE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

Check continuity between TCM harness connector terminals.

TCM		Continuity
Connector	Terminal	
E74	2	Other than the 2, 3, 10 and 21 Not existed
	3	
	10	
	21	

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace malfunctioning parts.

5.CHECK POWER CIRCUIT

1. Turn ignition switch ON.
2. Check voltage between transmission range switch harness connector terminals and ground.

Transmission range switch		—	Voltage
Connector	Terminal		
F212	1	Ground	0 V
	2		
	4		
	5		

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace malfunctioning parts.

6.CHECK CONNECTOR

Check the damage and corrosion of connectors.

Is the inspection result normal?

YES >> Replace the transmission range switch. Refer to [TM-233, "Removal and Installation"](#).

NO >> Repair or replace malfunctioning parts.

A
B
C
TM
E
F
G
H
I
J
K
L
M
N
O
P

P0708 TRANSMISSION RANGE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

P0708 TRANSMISSION RANGE SENSOR A

DTC Description

INFOID:000000014418925

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
		Diagnosis condition	Engine: Running
P0708	TRANSMISSION RANGE SENSOR A (Transmission Range Sensor "A" Circuit High)	Signal	—
		Threshold	When transmission range switch (B) has a malfunction.
		Diagnosis delay time	—

POSSIBLE CAUSE

- Harness or connectors (Transmission range switch B circuit is shorted.)
- Transmission range switch (B)

FAIL-SAFE

Not changed from normal driving

DTC CONFIRMATION PROCEDURE

1. PREPARATION BEFORE WORK

If another "DTC CONFIRMATION PROCEDURE" occurs just before, turn ignition switch OFF and wait for at least 25 seconds, then perform the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

1. Start the engine and wait for at least 5 seconds.
2. Check the 1st trip DTC.

Is "P0708" detected?

- YES >> Refer to [TM-106, "Diagnosis Procedure"](#).
- NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).
- NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014418926

1. CHECK POWER CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect transmission range switch connector.
3. Turn ignition switch ON.
4. Check voltage between transmission range switch harness connector terminal and ground.

Transmission range switch		—	Voltage
Connector	Terminal		
F212	3	Ground	Battery voltage

Is the check result normal?

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

2. CHECK TCM INPUT SIGNALS

1. Turn ignition switch OFF.
2. Connect transmission range switch connector.
3. Disconnect TCM connector.
4. Turn ignition switch ON.

P0708 TRANSMISSION RANGE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

- Shift the selector lever from P to D and check voltage between TCM harness connector terminal and ground.

TCM		—	Condition	Voltage
Connector	Terminal			
E74	3	Ground	Selector lever: P	0 V
			Selector lever: Between P and R	Battery voltage
			Selector lever: R	Battery voltage
			Selector lever: Between R and N	Battery voltage
			Selector lever: N	Battery voltage
			Selector lever: Between N and D	Battery voltage
			Selector lever: D	Battery voltage

Is the check result normal?

- YES >> INSPECTION END
 NO >> GO TO 3.

3.CHECK CIRCUIT BETWEEN TCM AND TRANSMISSION RANGE SWITCH

- Turn ignition switch OFF.
- Disconnect transmission range switch connector.
- Check continuity between TCM harness connector terminal and transmission range switch harness connector terminal.

TCM		Transmission range switch		Continuity
Connector	Terminal	Connector	Terminal	
E74	3	F212	2	Existed

Is the check result normal?

- YES >> GO TO 4.
 NO >> Repair or replace malfunctioning parts.

4.CHECK CIRCUIT BETWEEN TCM AND TRANSMISSION RANGE SWITCH

Check continuity between transmission range switch harness connector terminal and ground.

Transmission range switch		—	Continuity
Connector	Terminal		
F212	2	Ground	Not existed

Is the check result normal?

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

5.CHECK CIRCUIT BETWEEN TCM AND TRANSMISSION RANGE SWITCH

Check continuity between transmission range switch harness connector terminal and TCM harness connector terminals.

Transmission range switch		TCM		Continuity
Connector	Terminal	Connector	Terminal	
F212	2	E74	Other than the 3	Not existed

Is the inspection result normal?

- YES >> Replace the transmission range switch. Refer to [TM-233, "Removal and Installation"](#).
 NO >> Repair or replace malfunctioning parts.

6.DETECT MALFUNCTIONING ITEMS

P0708 TRANSMISSION RANGE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

Check following items:

- Harness open circuit or short circuit between transmission range switch harness connector and accessory relay-2.
- Harness open circuit or short circuit between accessory relay-2 and fuse block (J/B).
- 5A fuse (No. 25)
- Accessory relay
- Battery

Is the check result normal?

YES >> INSPECTION END

NO >> Repair or replace malfunctioning parts.

P0711 TRANSMISSION FLUID TEMPERATURE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

P0711 TRANSMISSION FLUID TEMPERATURE SENSOR A

DTC Description

INFOID:000000014418927

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
P0711	FLUID TEMP SENSOR A (Transmission Fluid Temperature Sensor "A" Circuit Range/Performance)	Diagnosis condition	Engine: Running
		Signal	—
		Threshold	When any of following item detected: <ul style="list-style-type: none"> • When A/T fluid temperature is fixed • When A/T fluid temperature is unsteady • When the difference between A/T fluid temperature of engine start-up and engine water temperature is more than the specified value • When the A/T fluid temperature of after driving does not rise to the estimated temperature
		Diagnosis delay time	—

POSSIBLE CAUSE

- A/T fluid temperature sensor 2
- Harness or connectors (A/T fluid temperature sensor 2 circuit is shorted.)
- Corrosion of connectors

FAIL-SAFE

Not changed from normal driving

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 25 seconds before performing the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

1. Move the vehicle to a cool place.

NOTE:

Cool the vehicle in an environment of ambient air temperature between -10°C (14°F) and 35°C (95°F).

2. Turn ignition switch OFF and leave the vehicle for 8 hours.

CAUTION:

Never turn ignition switch ON during this procedure.

- A/T fluid temperature: 20 °C (68 °F) or less
3. Start the engine and wait for at least 5 seconds.
 4. Shift the selector lever to D position.
 5. Drive the vehicle and maintain the following conditions for at least 7 minutes.
 - Vehicle speed: 41 km/h (25 MPH) or more
 - Accelerator pedal position: 10 % or more
 6. Check the 1st trip DTC at following condition.
 - A/T fluid temperature: 25 °C (77 °F) or more

Is "P0711" detected?

YES >> Refer to [TM-110, "Diagnosis Procedure"](#).

NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).

NO-2 >> Confirmation after repair: INSPECTION END

P0711 TRANSMISSION FLUID TEMPERATURE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

INFOID:000000014418928

Diagnosis Procedure

1. CHECK A/T FLUID TEMPERATURE SENSOR 2 CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check continuity between TCM harness connector terminals and ground.

TCM		—	Continuity
Connector	Terminal		
E73	65	Ground	Not existed
	66		

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace malfunctioning parts.

2. CHECK CIRCUIT BETWEEN A/T FLUID TEMPERATURE SENSOR 2 AND ANOTHER CIRCUIT

Check continuity between TCM harness connector terminals.

TCM			Continuity
Connector	Terminal		
E73	65	Other than the 65	Not existed
	66	Other than the 66	

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning parts.

3. CHECK A/T FLUID TEMPERATURE SENSOR 2 CIRCUIT

1. Turn ignition switch ON.
2. Check voltage between TCM harness connector terminals and ground.

TCM		—	Voltage
Connector	Terminal		
E73	65	Ground	Other than the battery voltage
	66		

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace malfunctioning parts.

4. CHECK CONNECTOR

Check the damage and corrosion of connectors.

Is the inspection result normal?

YES >> Replace the A/T fluid temperature sensor 2. Refer to [TM-240. "A/T ASSEMBLY CONNECTOR \(12-PIN\) : Removal and Installation"](#).

NO >> Repair or replace malfunctioning parts.

P0712 TRANSMISSION FLUID TEMPERATURE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

P0712 TRANSMISSION FLUID TEMPERATURE SENSOR A

DTC Description

INFOID:000000014418929

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
P0712	FLUID TEMP SENSOR A (Transmission Fluid Temperature Sensor "A" Circuit Low)	Diagnosis condition	Engine: Running
		Signal	—
		Threshold	When the detection value (V) of A/T fluid temperature sensor 2 is less than the specified value
		Diagnosis delay time	—

POSSIBLE CAUSE

- Harness or connector (A/T fluid temperature sensor 2 circuit is shorted)
- A/T fluid temperature sensor 2
- Corrosion of connectors

FAIL-SAFE

Not changed from normal driving

DTC CONFIRMATION PROCEDURE

1. PREPARATION BEFORE WORK

If another "DTC CONFIRMATION PROCEDURE" occurs just before, turn ignition switch OFF and wait for at least 25 seconds, then perform the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

1. Start the engine and wait for at least 10 seconds.
2. Check the DTC.

Is "P0712" detected?

YES >> Refer to [TM-111, "Diagnosis Procedure"](#).

NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).

NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014418930

1. CHECK TCM INPUT SIGNALS

1. Start the engine.
2. Check voltage between TCM harness connector terminal and ground.

+		-	Condition	Voltage
TCM				
Connector	Terminal			
E73	65	Ground	ATF temperature: Approx. 20°C (68°F)	2.84 – 3.25 V
			ATF temperature: Approx. 50°C (122°F)	1.53 – 1.84 V
			ATF temperature: Approx. 80°C (176°F)	0.75 – 0.92 V

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2. CHECK CIRCUIT BETWEEN TCM AND A/T ASSEMBLY

P0712 TRANSMISSION FLUID TEMPERATURE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

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

TCM		A/T assembly		Continuity
Connector	Terminal	Connector	Terminal	
E73	65	F216	15	Existed
	66		9	

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning part.

3.CHECK CIRCUIT BETWEEN TCM AND A/T ASSEMBLY

Check continuity between TCM harness connector terminal and ground.

TCM		—	Continuity
Connector	Terminal		
E73	65	Ground	Not existed
	66		

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace malfunctioning part.

4.CHECK CIRCUIT BETWEEN A/T FLUID TEMPERATURE SENSOR 2 AND ANOTHER CIRCUIT

Check continuity between TCM harness connector terminals.

TCM			Continuity
Connector	Terminal		
E73	65	Other than the 65	Not existed
	66	Other than the 66	

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace malfunctioning part.

5.CHECK CONNECTOR

Check the damage and corrosion of connectors.

Is the inspection result normal?

YES >> Replace the A/T fluid temperature sensor 2. Refer to [TM-240, "A/T ASSEMBLY CONNECTOR \(12-PIN\) : Removal and Installation"](#).

NO >> Repair or replace malfunctioning parts.

P0713 TRANSMISSION FLUID TEMPERATURE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

P0713 TRANSMISSION FLUID TEMPERATURE SENSOR A

DTC Description

INFOID:000000014418931

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
P0713	FLUID TEMP SENSOR A (Transmission Fluid Temperature Sensor "A" Circuit High)	Diagnosis condition	Engine: Running
		Signal	—
		Threshold	When the detection value (V) of A/T fluid temperature sensor 2 is more than the specified value
		Diagnosis delay time	—

POSSIBLE CAUSE

- Harness or connector (A/T fluid temperature sensor circuit 2 circuit is open or shorted)
- A/T fluid temperature sensor 2
- Corrosion of connectors

FAIL-SAFE

Not changed from normal driving

DTC CONFIRMATION PROCEDURE

1. PREPARATION BEFORE WORK

If another "DTC CONFIRMATION PROCEDURE" occurs just before, turn ignition switch OFF and wait for at least 25 seconds, then perform the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

1. Start the engine and wait for at least 10 seconds.
2. Check the DTC.

Is "P0713" detected?

- YES >> Refer to [TM-113, "Diagnosis Procedure"](#).
- NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).
- NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014418932

1. CHECK TCM INPUT SIGNALS

1. Start the engine.
2. Check voltage between TCM harness connector terminal and ground.

+		-	Condition	Voltage
TCM				
Connector	Terminal			
E73	65	Ground	ATF temperature: Approx. 20°C (68°F)	2.84 – 3.25 V
			ATF temperature: Approx. 50°C (122°F)	1.53 – 1.84 V
			ATF temperature: Approx. 80°C (176°F)	0.75 – 0.92 V

Is the inspection result normal?

- YES >> INSPECTION END
- NO >> GO TO 2.

2. CHECK CIRCUIT BETWEEN TCM AND A/T ASSEMBLY

P0713 TRANSMISSION FLUID TEMPERATURE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

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

TCM		A/T assembly		Continuity
Connector	Terminal	Connector	Terminal	
E73	65	F216	15	Existed
	66		9	

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning part.

3.CHECK CIRCUIT BETWEEN TCM AND A/T ASSEMBLY

Check continuity between TCM harness connector terminal and ground.

TCM		—	Continuity
Connector	Terminal		
E73	65	Ground	Not existed
	66		

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace malfunctioning part.

4.CHECK CIRCUIT BETWEEN A/T FLUID TEMPERATURE SENSOR 2 AND ANOTHER CIRCUIT

Check continuity between TCM harness connector terminals.

TCM			Continuity
Connector	Terminal		
E73	65	Other than the 65	Not existed
	66	Other than the 66	

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace malfunctioning part.

5.CHECK CONNECTOR

Check the damage and corrosion of connectors.

Is the inspection result normal?

YES >> Replace the A/T fluid temperature sensor 2. Refer to [TM-240, "A/T ASSEMBLY CONNECTOR \(12-PIN\) : Removal and Installation"](#).

NO >> Repair or replace malfunctioning parts.

P0715 INPUT SPEED SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

P0715 INPUT SPEED SENSOR A

DTC Description

INFOID:000000014418933

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
		Diagnosis condition	Engine: Running
P0715	INPUT SPEED SENSOR A (Input/Turbine Shaft Speed Sensor "A" Circuit)	Signal	—
		Threshold	When the detection value (V) of input speed sensor is outside the specified value
		Diagnosis delay time	Continuously for 100 msec

POSSIBLE CAUSE

- Harness or connector (Input speed sensor circuit is open or shorted)
- Input speed sensor
- Corrosion of connectors

FAIL-SAFE

- Lock-up is prohibited
- Harsh shift

DTC CONFIRMATION PROCEDURE

1. PREPARATION BEFORE WORK

If another "DTC CONFIRMATION PROCEDURE" occurs just before, turn ignition switch OFF and wait for at least 25 seconds, then perform the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

1. Start the engine and wait for at least 2 second.
2. Check the 1st trip DTC.

Is "P0715" detected?

YES >> Refer to [TM-118, "Diagnosis Procedure"](#).

NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).

NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014418934

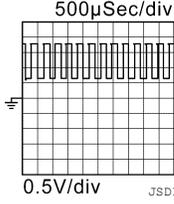
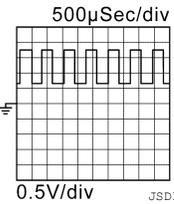
1. CHECK TCM INPUT SIGNALS

Check voltage between TCM harness connector terminal and ground.

P0715 INPUT SPEED SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

+		-	Condition	Voltage
TCM				
Connector	Terminal			
E74	17	Ground	<ul style="list-style-type: none"> • Vehicle speed: 0 km/h (0 MPH) • Selector lever: D, R 	0 Hz (0.6 V)
			<ul style="list-style-type: none"> • Vehicle speed: 20 km/h (12 MPH) • Gear: 1st 	2323 Hz 
	<ul style="list-style-type: none"> • Vehicle speed: 20 km/h (12 MPH) • Gear: 2nd 		1243 Hz 	
	28		Ignition switch ON	10 – 16 V

Is the inspection result normal?

- YES >> INSPECTION END
- NO >> GO TO 2.

2. CHECK CIRCUIT BETWEEN TCM AND INPUT SPEED SENSOR

1. Turn ignition switch OFF.
2. Disconnect TCM connector and input speed sensor connector.
3. Check continuity between TCM harness connector terminal and input speed sensor connector terminal.

TCM		Input speed sensor		Continuity
Connector	Terminal	Connector	Terminal	
E74	17	F211	1	Existed
	28		2	

Is the inspection result normal?

- YES >> GO TO 3.
- NO >> Repair or replace malfunctioning part.

3. CHECK CIRCUIT BETWEEN TCM AND INPUT SPEED SENSOR

Check continuity between TCM harness connector terminal and ground.

TCM		—	Continuity
Connector	Terminal		
E74	17	Ground	Not existed
	28		

Is the inspection result normal?

- YES >> GO TO 4.
- NO >> Repair or replace malfunctioning part.

4. CHECK CIRCUIT BETWEEN INPUT SPEED SENSOR AND ANOTHER CIRCUIT

Check continuity between TCM harness connector terminals.

P0715 INPUT SPEED SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

TCM		Continuity
Connector	Terminal	
E74	17	Other than the 17
	28	Other than the 28

A

B

C

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace malfunctioning parts.

5. CHECK CIRCUIT BETWEEN INPUT SPEED SENSOR AND TCM

TM

1. Turn ignition switch ON.
2. Check voltage between TCM harness connector terminals and ground.

E

TCM		—	voltage
Connector	Terminal		
E74	17	Ground	Other than the battery voltage
	28		

F

G

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace malfunctioning parts.

6. CHECK CONNECTOR

H

Check the damage and corrosion of connectors.

Is the inspection result normal?

I

YES >> Replace the input speed sensor. Refer to [TM-227. "Removal and Installation"](#).

NO >> Repair or replace malfunctioning parts.

J

K

L

M

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P

P0716 INPUT SPEED SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

P0716 INPUT SPEED SENSOR A

DTC Description

INFOID:000000014418935

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
P0716	INPUT SPEED SENSOR A (Input/Turbine Shaft Speed Sensor "A" Circuit Range/Performance)	Diagnosis condition	Engine: Running
		Signal	—
		Threshold	When the detection value (rpm) of input speed sensor is outside the specified value
		Diagnosis delay time	Continuously for 900 msec

POSSIBLE CAUSE

- Input speed sensor
- Harness or connectors (Input speed sensor circuit is shorted.)

FAIL-SAFE

- Lock-up is prohibited
- Harsh shift

DTC CONFIRMATION PROCEDURE

1. PREPARATION BEFORE WORK

If another "DTC CONFIRMATION PROCEDURE" occurs just before, turn ignition switch OFF and wait for at least 25 seconds, then perform the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

1. Start the engine and wait for at least 2 seconds.
2. Shift the selector lever to D position.
3. Drive the vehicle and maintain the following condition for at least 5 seconds.
 - Gear: 6th
4. Stop the vehicle.
5. Check the 1st trip DTC.

Is "P0716" detected?

YES >> Refer to [TM-118, "Diagnosis Procedure"](#).

NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).

NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014418936

1. CHECK CIRCUIT BETWEEN INPUT SPEED SENSOR AND OUTPUT SPEED SENSOR

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check continuity TCM harness connector terminals.

TCM			Continuity
Connector	Terminal		
E74	17	8	Not existed
		19	
	28	8	
		19	

Is the inspection result normal?

P0716 INPUT SPEED SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

- YES >> GO TO 2.
- NO >> Repair or replace malfunctioning parts.

A

2.CHECK CONNECTOR

Check the damage and corrosion of connectors.

B

Is the inspection result normal?

- YES >> Replace the input speed sensor. Refer to [TM-227, "Removal and Installation"](#).
- NO >> Repair or replace malfunctioning parts.

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P0717 INPUT SPEED SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

P0717 INPUT SPEED SENSOR A

DTC Description

INFOID:000000014418937

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
		Diagnosis condition	Engine: Running
P0717	INPUT SPEED SENSOR A (Input/Turbine Shaft Speed Sensor "A" Circuit No Signal)	Signal	—
		Threshold	When abnormal pulse is detected in input speed sensor
		Diagnosis delay time	—

POSSIBLE CAUSE

- Input speed sensor
- Harness or connectors (Input speed sensor circuit is open or shorted.)
- Corrosion of connector

FAIL-SAFE

- Lock-up is prohibited
- Harsh shift

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 25 seconds before performing the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

1. Start the engine.
2. Drive vehicle and maintain the following conditions for at least 10 seconds.

Vehicle speed : 56 km/h (34MPH) or more

3. Stop the vehicle.
4. Check the 1st trip DTC.

Is "P0717" detected?

- YES >> Refer to [TM-120, "Diagnosis Procedure"](#).
- NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).
- NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014418938

1. CHECK CIRCUIT BETWEEN TCM AND INPUT SPEED SENSOR

1. Turn ignition switch OFF.
2. Disconnect TCM connector and input speed sensor connector.
3. Check continuity between TCM harness connector terminal and input speed sensor connector terminal.

TCM		Input speed sensor		Continuity
Connector	Terminal	Connector	Terminal	
E74	17	F211	1	Existed
	28		2	

P0717 INPUT SPEED SENSOR A

[6AT: RE6R01A]

< DTC/CIRCUIT DIAGNOSIS >

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace malfunctioning parts.

2.CHECK CIRCUIT BETWEEN INPUT SPEED SENSOR AND ANOTHER CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between TCM harness connector terminals.

TCM		Terminal	Continuity
Connector	Terminal		
E74	17	Other than the 17	Not existed
	28	Other than the 28	

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning parts.

3.CHECK CIRCUIT BETWEEN TCM AND INPUT SPEED SENSOR

1. Turn ignition switch ON.
2. Check voltage between TCM harness connector terminals and ground.

TCM		—	Voltage
Connector	Terminal		
E74	17	Ground	Other than the battery voltage
	28		

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace malfunctioning parts.

4.CHECK CONNECTOR

Check the metal deposition, damage, and corrosion of connectors.

Is the inspection result normal?

YES >> Replace the input speed sensor. Refer to [TM-227. "Removal and Installation"](#).

NO >> Repair or replace malfunctioning parts.

P0720 OUTPUT SPEED SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

P0720 OUTPUT SPEED SENSOR

DTC Description

INFOID:000000014418939

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
P0720	OUTPUT SPEED SENSOR (Output Shaft Speed Sensor Circuit)	Diagnosis condition	Engine: Running
		Signal	—
		Threshold	When the detection value (V) of output speed sensor is outside the specified value
		Diagnosis delay time	Continuously for 100 msec

POSSIBLE CAUSE

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

FAIL-SAFE

- Locks in 3rd gear or 5th gear (Reverse is available)
- Lock-up is prohibited

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 25 seconds before performing the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

1. Start the engine and wait for at least 2 seconds.
2. Check the DTC.

Is "P0720" detected?

YES >> Refer to [TM-122, "Diagnosis Procedure"](#).

NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).

NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014418940

1. CHECK TCM INPUT SIGNALS

Check voltage between TCM harness connector terminal and ground.

P0720 OUTPUT SPEED SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

+		-	Condition	Voltage
TCM				
Connector	Terminal			
E74	8	Ground	Ignition switch ON	10 – 16 V
	19		<ul style="list-style-type: none"> Vehicle speed: 0 km/h (0 MPH) Selector lever: P, R, N, D 	0 Hz (0.6 V)
			Vehicle speed: 20 km/h (12 MPH)	

Is the inspection result normal?

- YES >> INSPECTION END
- NO >> GO TO 2.

2.CHECK CIRCUIT BETWEEN TCM AND OUTPUT SPEED SENSOR

1. Turn ignition switch OFF.
2. Disconnect TCM connector and output speed sensor connector.
3. Check continuity between TCM harness connector terminal and output speed sensor connector terminal.

TCM		Output speed sensor		Continuity
Connector	Terminal	Connector	Terminal	
E74	8	F213	2	Existed
	19		1	

Is the inspection result normal?

- YES >> GO TO 3.
- NO >> Repair or replace malfunctioning part.

3.CHECK CIRCUIT BETWEEN TCM AND OUTPUT SPEED SENSOR

Check continuity between TCM harness connector terminal and ground.

TCM		—	Continuity
Connector	Terminal		
E74	8	Ground	Not existed
	19		

Is the inspection result normal?

- YES >> GO TO 4.
- NO >> Repair or replace malfunctioning part.

4.CHECK CIRCUIT BETWEEN OUTPUT SPEED SENSOR AND ANOTHER CIRCUIT

Check continuity between TCM harness connector terminals.

TCM			Continuity
Connector	Terminal		
E74	8	Other than the 8	Not existed
	19	Other than the 19	

Is the inspection result normal?

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P0720 OUTPUT SPEED SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

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

5. CHECK CIRCUIT BETWEEN OUTPUT SPEED SENSOR AND TCM

1. Turn ignition switch ON.
2. Check voltage between TCM harness connector terminals and ground.

TCM		—	Voltage
Connector	Terminal		
E74	8	Ground	Other than the battery voltage
	19		

Is the inspection result normal?

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

6. CHECK CONNECTOR

Check the damage and corrosion of connectors.

Is the inspection result normal?

- YES >> Replace the output speed sensor. Refer to [TM-232. "Removal and Installation"](#).
NO >> Repair or replace malfunctioning parts.

P0721 OUTPUT SPEED SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

P0721 OUTPUT SPEED SENSOR

DTC Description

INFOID:000000014418941

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
		Diagnosis condition	Engine: Running
P0721	OUTPUT SPEED SENSOR (Output Shaft Speed Sensor Circuit Range/Performance)	Signal	—
		Threshold	When the detection value (rpm) of output speed sensor is outside the specified value
		Diagnosis delay time	Continuously for 900 msec

POSSIBLE CAUSE

- Harness or connector (Output speed sensor circuit is shorted.)
- Output speed sensor
- Corrosion of connector

FAIL-SAFE

- Locks in 3rd gear or 5th gear (Reverse is available)
- Lock-up is prohibited

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 25 seconds before performing the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

1. Start the engine and wait for at least 2 seconds.
2. Shift the selector lever to D position.
3. Drive the vehicle and maintain the following condition for at least 5 seconds.
 - Gear: 6th
4. Stop the vehicle.
5. Check the DTC.

Is "P0721" detected?

- YES >> Refer to [TM-125, "Diagnosis Procedure"](#).
- NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).
- NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014418942

1. CHECK CIRCUIT BETWEEN INPUT SPEED SENSOR AND OUTPUT SPEED SENSOR

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check continuity TCM harness connector terminals.

TCM			Continuity
Connector	Terminal		
E74	19	17	Not existed
		28	
	8	17	
		28	

P0721 OUTPUT SPEED SENSOR

[6AT: RE6R01A]

< DTC/CIRCUIT DIAGNOSIS >

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace malfunctioning parts.

2.CHECK CONNECTOR

Check the damage and corrosion of connectors.

Is the inspection result normal?

YES >> Replace the output speed sensor. Refer to [TM-232. "Removal and Installation"](#).

NO >> Repair or replace malfunctioning parts.

P0722 OUTPUT SPEED SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

P0722 OUTPUT SPEED SENSOR

DTC Description

INFOID:000000014418943

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
		Diagnosis condition	Engine: Running
P0722	OUTPUT SPEED SENSOR (Output Shaft Speed Sensor Circuit No Signal)	Signal	—
		Threshold	When abnormal pulse is detected in output speed sensor
		Diagnosis delay time	—

POSSIBLE CAUSE

- Harness or connectors (Output speed sensor circuit is open or shorted.)
- Output speed sensor
- Corrosion of connector

FAIL-SAFE

- Locks in 3rd gear or 5th gear (Reverse is available)
- Lock-up is prohibited

DTC CONFIRMATION PROCEDURE

CAUTION:

Be careful of the driving speed.

1. PREPARATION BEFORE WORK

If another "DTC CONFIRMATION PROCEDURE" occurs just before, turn ignition switch OFF and wait for at least 25 seconds, then perform the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

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

Engine speed : At least 56 km/h (34 MPH)

3. Stop the vehicle.
4. Check the DTC.

Is "P0722" detected?

- YES >> Refer to [TM-127, "Diagnosis Procedure"](#).
- NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).
- NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014418944

1. CHECK CIRCUIT BETWEEN TCM AND OUTPUT SPEED SENSOR

1. Turn ignition switch OFF.
2. Disconnect TCM connector and output speed sensor connector.
3. Check continuity between TCM harness connector terminal and output speed sensor connector terminal.

TCM		Output speed sensor		Continuity
Connector	Terminal	Connector	Terminal	
E74	8	F213	2	Existed
	19		1	

P0722 OUTPUT SPEED SENSOR

[6AT: RE6R01A]

< DTC/CIRCUIT DIAGNOSIS >

Is the inspection result normal?

- YES >> GO TO 2.
- NO >> Repair or replace malfunctioning part.

2.CHECK CIRCUIT BETWEEN TCM AND OUTPUT SPEED SENSOR

Check continuity between TCM harness connector terminal and ground.

TCM		—	Continuity
Connector	Terminal		
E74	8	Ground	Not existed
	19		

Is the inspection result normal?

- YES >> GO TO 3.
- NO >> Repair or replace malfunctioning part.

3.CHECK CIRCUIT BETWEEN OUTPUT SPEED SENSOR AND ANOTHER CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between TCM harness connector terminals.

TCM			Continuity
Connector	Terminal		
E74	8	Other than the 8	Not existed
	19	Other than the 19	

Is the inspection result normal?

- YES >> GO TO 4.
- NO >> Repair or replace malfunctioning parts.

4.CHECK CIRCUIT BETWEEN TCM AND OUTPUT SPEED SENSOR

1. Turn ignition switch ON.
2. Check voltage between TCM harness connector terminals and ground.

TCM		—	Voltage
Connector	Terminal		
E74	8	Ground	Other than the battery voltage
	19		

Is the inspection result normal?

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

5.CHECK CONNECTOR

Check the metal deposition, damage, and corrosion of connectors.

Is the inspection result normal?

- YES >> Replace the output speed sensor. Refer to [TM-232, "Removal and Installation"](#).
- NO >> Repair or replace malfunctioning parts.

P0725 ENGINE SPEED

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

P0725 ENGINE SPEED

DTC Description

INFOID:000000014418945

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
		Diagnosis condition	Engine: Running
P0725	ENGINE SPEED (Engine Speed Input Circuit)	Signal	—
		Threshold	When engine speed signal has a malfunction
		Diagnosis delay time	—

POSSIBLE CAUSE

CAN communication (Engine speed signal)

FAIL-SAFE

Lock-up is prohibited

DTC CONFIRMATION PROCEDURE

CAUTION:

Be careful of the driving speed.

1. PREPARATION BEFORE WORK

If another "DTC CONFIRMATION PROCEDURE" occurs just before, turn ignition switch OFF and wait for at least 25 seconds, then perform the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

1. Start the engine.
2. Drive vehicle and maintain the following conditions for at least 10 seconds.

Selector lever : "D" position
Vehicle speed : 40 km/h (25 MPH) or more

3. Stop the vehicle.
4. Check the 1st trip DTC.

Is "P0725" detected?

- YES >> Refer to [TM-129, "Diagnosis Procedure"](#).
NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014418946

1. CHECK DTC OF ECM

1. Turn ignition switch ON.
2. Perform "Self Diagnostic Results" in "ENGINE".

Is any DTC detected?

- YES >> Check DTC detected item. Refer to [EC-837, "DTC Index"](#).
NO >> GO TO 2.

2. CHECK DTC OF TCM

1. Turn ignition switch ON.
2. Perform "Self Diagnostic Results" in "TRANSMISSION".

Is any DTC detected?

- YES >> Check DTC detected item. Refer to [TM-69, "DTC Index"](#).
NO >> INSPECTION END

P0729 6GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

P0729 6GR INCORRECT RATIO

DTC Description

INFOID:000000014418947

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
P0729	6GR INCORRECT RATIO (Gear 6 Incorrect Ratio)	Diagnosis condition	Engine: Running
		Signal	—
		Threshold	When 6th gear ratio malfunction is detected
		Diagnosis delay time	—

POSSIBLE CAUSE

- C2 clutch solenoid valve (Low stuck)
- C3 clutch solenoid valve (High stuck)
- B1 brake solenoid valve (Low stuck)
- Line pressure solenoid valve (Low stuck)
- C2 clutch
- B1 brake
- Harness or connectors (Each solenoid valve circuit)

FAIL-SAFE

- Locks in 3rd gear or 5th gear (Reverse is available)
- Lock-up is prohibited

DTC CONFIRMATION PROCEDURE

CAUTION:

- **“[TM-130, "Diagnosis Procedure"](#)” must be performed before starting “DTC CONFIRMATION PROCEDURE”.**
- **Never perform “DTC CONFIRMATION PROCEDURE” before completing the repair, which may cause secondary malfunction.**
- **Always drive vehicle at a safe speed.**

1. PRECONDITIONING

If “DTC CONFIRMATION PROCEDURE” is previously conducted, always turn ignition switch OFF and wait at least 25 seconds before performing the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

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

Selector lever : D position
Gear position : 6th

3. Stop the vehicle.
4. Check the DTC.

Is “P0729” detected?

- YES >> Refer to [TM-130, "Diagnosis Procedure"](#).
- NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).
- NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014418948

1. PERFORM DIAGNOSIS PROCEDURES

Perform each diagnosis procedure.

- P0758 (Refer to [TM-154, "Diagnosis Procedure"](#).)

P0729 6GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

- P0763 (Refer to [TM-157, "Diagnosis Procedure"](#).)
- P0768 (Refer to [TM-160, "Diagnosis Procedure"](#).)

Is the inspection result normal?

- YES >> Replace the transmission assembly. Refer to [TM-248, "2WD : Removal and Installation"](#) (2WD), [TM-252, "4WD : Removal and Installation"](#) (4WD).
- NO >> Repair or replace malfunctioning parts.

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P0730 INCORRECT GEAR RATIO

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

P0730 INCORRECT GEAR RATIO

DTC Description

INFOID:000000014418949

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
P0730	INCORRECT GR RATIO (Incorrect Gear Ratio)	Diagnosis condition	Engine: Running
		Signal	—
		Threshold	When N gear ratio malfunction is detected
		Diagnosis delay time	—

POSSIBLE CAUSE

- C3 clutch solenoid valve (High stuck)
- Harness or connectors (C3 clutch solenoid valve circuit)

FAIL-SAFE

- Locks in 3rd gear or 5th gear (Reverse is available)
- Lock-up is prohibited

DTC CONFIRMATION PROCEDURE

CAUTION:

- **“[TM-132, "Diagnosis Procedure"](#)” must be performed before starting “DTC CONFIRMATION PROCEDURE”.**
- **Never perform “DTC CONFIRMATION PROCEDURE” before completing the repair, which may cause secondary malfunction.**

1. PRECONDITIONING

If “DTC CONFIRMATION PROCEDURE” is previously conducted, always turn ignition switch OFF and wait at least 25 seconds before performing the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

1. Start the engine and wait for following period depending on A/T fluid temperature.
 - A/T fluid temperature [-20°C (-4°F)]: At least 310 seconds
 - A/T fluid temperature [20°C (68°F)]: At least 70 seconds
 - A/T fluid temperature [80°C (176°F)]: At least 40 seconds
2. Check the DTC.

Is “P0730” detected?

- YES >> Refer to [TM-132, "Diagnosis Procedure"](#).
- NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).
- NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014418950

1. PERFORM DIAGNOSIS PROCEDURE

Perform diagnosis procedure of P0763. Refer to [TM-157, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES >> Replace the transmission assembly. Refer to [TM-248, "2WD : Removal and Installation"](#) (2WD), [TM-252, "4WD : Removal and Installation"](#) (4WD).
- NO >> Repair or replace malfunctioning parts.

P0731 1GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

P0731 1GR INCORRECT RATIO

DTC Description

INFOID:000000014418951

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
		Diagnosis condition	Engine: Running
P0731	1GR INCORRECT RATIO (Gear 1 Incorrect Ratio)	Signal	—
		Threshold	When 1st gear ratio malfunction is detected
		Diagnosis delay time	—

POSSIBLE CAUSE

- C1 clutch solenoid valve (Low stuck)
- C2 clutch solenoid valve (High stuck)
- C3 clutch solenoid valve (High stuck)
- B1 brake solenoid valve (High stuck)
- B2 brake solenoid valve (Low stuck)
- Line pressure solenoid valve (Low stuck)
- Fail-safe solenoid valve
- C1 clutch
- B2 brake
- Harness or connectors (Each solenoid valve circuit)
- Fail-safe solenoid valve (High stuck, Mechanical stuck)

FAIL-SAFE

- Locks in 3rd gear or 5th gear (Reverse is available)
- Lock-up is prohibited

DTC CONFIRMATION PROCEDURE

CAUTION:

- **“[TM-134, "Diagnosis Procedure"](#)” must be performed before starting “DTC CONFIRMATION PROCEDURE”.**
- **Never perform “DTC CONFIRMATION PROCEDURE” before completing the repair, which may cause secondary malfunction.**
- **Always drive vehicle at a safe speed.**

1. PRECONDITIONING

If “DTC CONFIRMATION PROCEDURE” is previously conducted, always turn ignition switch OFF and wait at least 25 seconds before performing the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

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

Selector lever : D position

Gear position : 1st

3. Stop the vehicle.
4. Check the DTC.

Is “P0731” detected?

YES >> Refer to [TM-134, "Diagnosis Procedure"](#).

NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).

NO-2 >> Confirmation after repair: INSPECTION END

P0731 1GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

Diagnosis Procedure

INFOID:000000014418952

1. PERFORM DIAGNOSIS PROCEDURES

Perform each diagnosis procedure.

- P0748 (Refer to [TM-147, "Diagnosis Procedure"](#).)
- P0753 (Refer to [TM-147, "Diagnosis Procedure"](#).)
- P0758 (Refer to [TM-154, "Diagnosis Procedure"](#).)
- P0763 (Refer to [TM-157, "Diagnosis Procedure"](#).)
- P0768 (Refer to [TM-160, "Diagnosis Procedure"](#).)
- P0773 (Refer to [TM-165, "Diagnosis Procedure"](#).)
- P0998 (Refer to [TM-173, "Diagnosis Procedure"](#).)
- P0999 (Refer to [TM-175, "Diagnosis Procedure"](#).)

Is the inspection result normal?

- YES >> Replace the transmission assembly. Refer to [TM-248, "2WD : Removal and Installation"](#) (2WD), [TM-252, "4WD : Removal and Installation"](#) (4WD).
- NO >> Repair or replace malfunctioning parts.

P0732 2GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

P0732 2GR INCORRECT RATIO

DTC Description

INFOID:000000014418953

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
		Diagnosis condition	Engine: Running
P0732	2GR INCORRECT RATIO (Gear 2 Incorrect Ratio)	Signal	—
		Threshold	When 2nd gear ratio malfunction is detected
		Diagnosis delay time	—

POSSIBLE CAUSE

- C1 clutch solenoid valve (Low stuck)
- C2 clutch solenoid valve (High stuck)
- C3 clutch solenoid valve (High stuck)
- B1 brake solenoid valve (Low stuck)
- Line pressure solenoid valve (Low stuck)
- C1 clutch
- B1 brake
- Harness or connectors (Each valve circuit)

FAIL-SAFE

- Locks in 3rd gear or 5th gear (Reverse is available)
- Lock-up is prohibited

DTC CONFIRMATION PROCEDURE

CAUTION:

- **“[TM-135, "Diagnosis Procedure"](#)” must be performed before starting “DTC CONFIRMATION PROCEDURE”.**
- **Never perform “DTC CONFIRMATION PROCEDURE” before completing the repair, which may cause secondary malfunction.**
- **Always drive vehicle at a safe speed.**

1. PRECONDITIONING

If “DTC CONFIRMATION PROCEDURE” is previously conducted, always turn ignition switch OFF and wait at least 25 seconds before performing the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

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

Selector lever : D position

Gear position : 2nd

3. Stop the vehicle.
4. Check the DTC.

Is “P0732” detected?

YES >> Refer to [TM-135, "Diagnosis Procedure"](#).

NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).

NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014418954

1. PERFORM DIAGNOSIS PROCEDURES

Perform each diagnosis procedure.

P0732 2GR INCORRECT RATIO

[6AT: RE6R01A]

< DTC/CIRCUIT DIAGNOSIS >

- P0748 (Refer to [TM-147, "Diagnosis Procedure"](#).)
- P0753 (Refer to [TM-147, "Diagnosis Procedure"](#).)
- P0758 (Refer to [TM-154, "Diagnosis Procedure"](#).)
- P0763 (Refer to [TM-157, "Diagnosis Procedure"](#).)
- P0768 (Refer to [TM-160, "Diagnosis Procedure"](#).)

Is the inspection result normal?

- YES >> Replace the transmission assembly. Refer to [TM-248, "2WD : Removal and Installation"](#) (2WD), [TM-252, "4WD : Removal and Installation"](#) (4WD).
- NO >> Repair or replace malfunctioning parts.

P0733 3GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

P0733 3GR INCORRECT RATIO

DTC Description

INFOID:000000014418955

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
P0733	3GR INCORRECT RATIO (Gear 3 Incorrect Ratio)	Diagnosis condition	Engine: Running
		Signal	—
		Threshold	When 3rd gear ratio malfunction is detected
		Diagnosis delay time	—

POSSIBLE CAUSE

- C1 clutch solenoid valve (Low stuck)
- C2 clutch solenoid valve (High stuck)
- C3 clutch solenoid valve (Low stuck)
- Line pressure solenoid valve (Low stuck)
- C1 clutch
- C3 clutch
- Harness or connectors (Each solenoid valve circuit)

FAIL-SAFE

- Locks in 3rd gear or 5th gear (Reverse is available)
- Lock-up is prohibited

DTC CONFIRMATION PROCEDURE

CAUTION:

- **“[TM-137, "Diagnosis Procedure"](#)” must be performed before starting “DTC CONFIRMATION PROCEDURE”.**
- **Never perform “DTC CONFIRMATION PROCEDURE” before completing the repair, which may cause secondary malfunction.**
- **Always drive vehicle at a safe speed.**

1. PRECONDITIONING

If “DTC CONFIRMATION PROCEDURE” is previously conducted, always turn ignition switch OFF and wait at least 25 seconds before performing the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

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

Selector lever : D position
Gear position : 3rd

3. Stop the vehicle.
4. Check the DTC.

Is “P0733” detected?

- YES >> Refer to [TM-137, "Diagnosis Procedure"](#).
- NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).
- NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014418956

1. PERFORM DIAGNOSIS PROCEDURES

Perform each diagnosis procedure.

- P0748 (Refer to [TM-147, "Diagnosis Procedure"](#).)

P0733 3GR INCORRECT RATIO

[6AT: RE6R01A]

< DTC/CIRCUIT DIAGNOSIS >

- P0753 (Refer to [TM-147, "Diagnosis Procedure"](#).)
- P0758 (Refer to [TM-154, "Diagnosis Procedure"](#).)
- P0763 (Refer to [TM-157, "Diagnosis Procedure"](#).)

Is the inspection result normal?

- YES >> Replace the transmission assembly. Refer to [TM-248, "2WD : Removal and Installation"](#) (2WD), [TM-252, "4WD : Removal and Installation"](#) (4WD).
- NO >> Repair or replace malfunctioning parts.

P0734 4GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

P0734 4GR INCORRECT RATIO

DTC Description

INFOID:000000014418957

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
		Diagnosis condition	Engine: Running
P0734	4GR INCORRECT RATIO (Gear 4 Incorrect Ratio)	Signal	—
		Threshold	When 4th gear ratio malfunction is detected
		Diagnosis delay time	—

POSSIBLE CAUSE

- C1 clutch solenoid valve (Low stuck)
- C2 clutch solenoid valve (Low stuck)
- C3 clutch solenoid valve (High stuck)
- B1 brake solenoid valve (High stuck)
- Line pressure solenoid valve (Low stuck)
- Fail-safe solenoid valve
- C1 clutch
- C2 clutch
- Harness or connectors (Each solenoid valve circuit)

FAIL-SAFE

- Locks in 3rd gear or 5th gear (Reverse is available)
- Lock-up is prohibited

DTC CONFIRMATION PROCEDURE

CAUTION:

- **“[TM-139, "Diagnosis Procedure"](#)” must be performed before starting “DTC CONFIRMATION PROCEDURE”.**
- **Never perform “DTC CONFIRMATION PROCEDURE” before completing the repair, which may cause secondary malfunction.**
- **Always drive vehicle at a safe speed.**

1. PRECONDITIONING

If “DTC CONFIRMATION PROCEDURE” is previously conducted, always turn ignition switch OFF and wait at least 25 seconds before performing the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

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

Selector lever : D position

Gear position : 4th

3. Stop the vehicle.
4. Check the DTC.

Is “P0734” detected?

YES >> Refer to [TM-139, "Diagnosis Procedure"](#).

NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).

NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014418958

1. PERFORM DIAGNOSIS PROCEDURES

P0734 4GR INCORRECT RATIO

[6AT: RE6R01A]

< DTC/CIRCUIT DIAGNOSIS >

Perform each diagnosis procedure.

- P0748 (Refer to [TM-147, "Diagnosis Procedure"](#).)
- P0753 (Refer to [TM-147, "Diagnosis Procedure"](#).)
- P0758 (Refer to [TM-154, "Diagnosis Procedure"](#).)
- P0763 (Refer to [TM-157, "Diagnosis Procedure"](#).)
- P0768 (Refer to [TM-160, "Diagnosis Procedure"](#).)
- P0998 (Refer to [TM-173, "Diagnosis Procedure"](#).)
- P0999 (Refer to [TM-175, "Diagnosis Procedure"](#).)

Is the inspection result normal?

- YES >> Replace the transmission assembly. Refer to [TM-248, "2WD : Removal and Installation"](#) (2WD), [TM-252, "4WD : Removal and Installation"](#) (4WD).
- NO >> Repair or replace malfunctioning parts.

P0735 5GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

P0735 5GR INCORRECT RATIO

DTC Description

INFOID:000000014418959

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
		Diagnosis condition	Engine: Running
P0735	5GR INCORRECT RATIO (Gear 5 Incorrect Ratio)	Signal	—
		Threshold	When 5th gear ratio malfunction is detected
		Diagnosis delay time	—

POSSIBLE CAUSE

- C2 clutch solenoid valve (Low stuck)
- C3 clutch solenoid valve (Low stuck)
- Line pressure solenoid valve (Low stuck)
- C2 clutch
- C3 clutch
- Harness or connectors (Each solenoid valve circuit)

FAIL-SAFE

- Locks in 3rd gear or 5th gear (Reverse is available)
- Lock-up is prohibited

DTC CONFIRMATION PROCEDURE

CAUTION:

- **“[TM-141, "Diagnosis Procedure"](#)” must be performed before starting “DTC CONFIRMATION PROCEDURE”.**
- **Never perform “DTC CONFIRMATION PROCEDURE” before completing the repair, which may cause secondary malfunction.**
- **Always drive vehicle at a safe speed.**

1. PRECONDITIONING

If “DTC CONFIRMATION PROCEDURE” is previously conducted, always turn ignition switch OFF and wait at least 25 seconds before performing the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

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

Selector lever : D position

Gear position : 5th

3. Stop the vehicle.
4. Check the DTC.

Is “P0735” detected?

YES >> Refer to [TM-141, "Diagnosis Procedure"](#).

NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).

NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014418960

1. PERFORM DIAGNOSIS PROCEDURES

Perform each diagnosis procedure.

- P0748 (Refer to [TM-147, "Diagnosis Procedure"](#).)
- P0758 (Refer to [TM-154, "Diagnosis Procedure"](#).)

P0735 5GR INCORRECT RATIO

[6AT: RE6R01A]

< DTC/CIRCUIT DIAGNOSIS >

- P0763 (Refer to [TM-157. "Diagnosis Procedure"](#).)

Is the inspection result normal?

- YES >> Replace the transmission assembly. Refer to [TM-248. "2WD : Removal and Installation"](#) (2WD),
[TM-252. "4WD : Removal and Installation"](#) (4WD).
- NO >> Repair or replace malfunctioning parts.

P0736 REVERSE INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

P0736 REVERSE INCORRECT RATIO

DTC Description

INFOID:000000014418961

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
		Diagnosis condition	Engine: Running
P0736	Reverse incorrect ratio (Reverse Incorrect Ratio)	Signal	—
		Threshold	When R gear ratio malfunction is detected
		Diagnosis delay time	—

POSSIBLE CAUSE

- C3 clutch solenoid valve (Low stuck)
- B2 brake solenoid valve (Low stuck)
- Line pressure solenoid valve (Low stuck)
- C3 clutch
- B2 brake
- Harness or connectors (Each solenoid valve circuit)

FAIL-SAFE

- Locks in 3rd gear
- Lock-up is prohibited

DTC CONFIRMATION PROCEDURE

CAUTION:

- **“[TM-143, "Diagnosis Procedure"](#)” must be performed before starting “DTC CONFIRMATION PROCEDURE”.**
- **Never perform “DTC CONFIRMATION PROCEDURE” before completing the repair, which may cause secondary malfunction.**
- **Always drive vehicle at a safe speed.**

1. PRECONDITIONING

If “DTC CONFIRMATION PROCEDURE” is previously conducted, always turn ignition switch OFF and wait at least 25 seconds before performing the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

1. Start the engine.
2. Shift the selector lever from P to R position.
3. Drive vehicle and maintain the following conditions for at least 5 seconds.

Selector lever : R position
 Accelerator pedal : Depressed
 Engine speed : At least 2,000 rpm

4. Stop the vehicle.
5. Check the DTC.

Is “P0736” detected?

- YES >> Refer to [TM-143, "Diagnosis Procedure"](#).
 NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).
 NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014418962

1. PERFORM DIAGNOSIS PROCEDURES

Perform each diagnosis procedure.

P0736 REVERSE INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

- P0748 (Refer to [TM-147, "Diagnosis Procedure"](#).)
- P0763 (Refer to [TM-157, "Diagnosis Procedure"](#).)
- P0773 (Refer to [TM-165, "Diagnosis Procedure"](#).)

Is the inspection result normal?

- YES >> Replace the transmission assembly. Refer to [TM-248, "2WD : Removal and Installation"](#) (2WD), [TM-252, "4WD : Removal and Installation"](#) (4WD).
- NO >> Repair or replace malfunctioning parts.

P0743 TORQUE CONVERTER

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

P0743 TORQUE CONVERTER

DTC Description

INFOID:000000014418963

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
P0743	TORQUE CONVERTER (Torque Converter Clutch Circuit Electrical)	Diagnosis condition	Engine: Running
		Signal	—
		Threshold	When the detection value (A) of torque converter clutch solenoid valve is outside the specified value
		Diagnosis delay time	Continuously for 100 msec

POSSIBLE CAUSE

- Harness or connector (Torque converter clutch solenoid valve circuit is open or shorted)
- Torque converter clutch solenoid valve
- Corrosion of connector

FAIL-SAFE

- Locks in 3rd gear or 5th gear (Reverse is available)
- Lock-up is prohibited

DTC CONFIRMATION PROCEDURE

CAUTION:

Be careful of the driving speed.

1. PREPARATION BEFORE OPERATION (PART 1)

If another "DTC CONFIRMATION PROCEDURE" occurs just before, turn ignition switch OFF and wait for at least 25 seconds, then perform the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

1. Start the engine and wait for at least 2 seconds.
2. Check the DTC.

Is "P0743" detected?

- YES >> Refer to [TM-145, "Diagnosis Procedure"](#).
 NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).
 NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014418964

1. CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check resistance between TCM harness connector terminals.

TCM		Condition	Resistance
Connector	Terminal		
E73	67 68	ATF temperature: 20 °C (68 °F)	5.0 – 5.6 Ω

Is the inspection result normal?

- YES >> INSPECTION END
 NO >> GO TO 2.

2. CHECK CIRCUIT BETWEEN TCM AND A/T ASSEMBLY

P0743 TORQUE CONVERTER

[6AT: RE6R01A]

< DTC/CIRCUIT DIAGNOSIS >

1. Disconnect A/T assembly connector.
2. Check continuity between TCM harness connector terminals and A/T assembly harness connector terminals.

TCM		A/T assembly		Continuity
Connector	Terminal	Connector	Terminal	
E73	67	F215	2	Existed
	68		1	

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning parts.

3.CHECK CIRCUIT BETWEEN TCM AND A/T ASSEMBLY

Check continuity between TCM harness connector terminals and ground.

TCM		—	Continuity
Connector	Terminal		
E73	67	Ground	Not existed
	68		

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace malfunctioning parts.

4.CHECK CIRCUIT BETWEEN TORQUE CONVERTER CLUTCH SOLENOID VALVE AND ANOTHER CIRCUIT

Check continuity between TCM harness connector terminals.

TCM			Continuity
Connector	Terminal		
E73	67	Other than the 67	Not existed
	68	Other than the 68	

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace malfunctioning parts.

5.CHECK CONNECTOR

Check the metal deposition, damage, and corrosion of connectors.

Is the inspection result normal?

YES >> Replace the transmission assembly. Refer to [TM-248, "2WD : Removal and Installation"](#) (2WD), [TM-252, "4WD : Removal and Installation"](#) (4WD).

NO >> Repair or replace malfunctioning parts.

P0748 PRESSURE CONTROL SOLENOID A

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

P0748 PRESSURE CONTROL SOLENOID A

DTC Description

INFOID:000000014418965

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
		Diagnosis condition	Engine: Running
P0748	Pressure control solenoid A (Pressure Control Solenoid "A" Electrical)	Signal	—
		Threshold	When the detection value (A) of line pressure solenoid valve is outside the specified value.
		Diagnosis delay time	Continuously for 100 msec

POSSIBLE CAUSE

- Harness or connectors (Line pressure solenoid valve circuit is open or shorted.)
- Line pressure solenoid valve
- Corrosion of connector

FAIL-SAFE

- Locks in 3rd gear or 5th gear (Reverse is available)
- Lock-up is prohibited

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 25 seconds before performing the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

1. Start the engine and wait for at least 2 seconds.
2. Check the DTC.

Is "P0748" detected?

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

NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).

NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014418966

1. CHECK LINE PRESSURE SOLENOID VALVE

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check resistance between TCM harness connector terminals.

TCM			Condition	Resistance
Connector	Terminal			
E73	38	39	ATF temperature: 20 °C (68 °F)	5.0 – 5.6 Ω

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2. CHECK CIRCUIT BETWEEN TCM AND A/T ASSEMBLY

1. Turn ignition switch OFF.
2. Disconnect TCM connector and A/T assembly connector.

P0748 PRESSURE CONTROL SOLENOID A

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

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

TCM		A/T assembly		Continuity
Connector	Terminal	Connector	Terminal	
E73	38	F216	14	Existed
	39		20	

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning parts.

3.CHECK CIRCUIT BETWEEN TCM AND A/T ASSEMBLY

Check continuity between TCM harness connector terminals and ground.

TCM		—	Continuity
Connector	Terminal		
E73	38	Ground	Not existed
	39		

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace malfunctioning parts.

4.CHECK CIRCUIT BETWEEN LINE PRESSURE SOLENOID VALVE AND ANOTHER CIRCUIT

Check continuity between TCM harness connector terminals.

TCM			Continuity
Connector	Terminal		
E73	38	Other than the 38	Not existed
	39	Other than the 39	

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace malfunctioning parts.

5.CHECK CONNECTOR

Check the metal deposition, damage, and corrosion of connectors.

Is the inspection result normal?

YES >> Replace the transmission assembly. Refer to [TM-248, "2WD : Removal and Installation"](#) (2WD), [TM-252, "4WD : Removal and Installation"](#) (4WD).

NO >> Repair or replace malfunctioning parts.

P0752 SHIFT SOLENOID A

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

P0752 SHIFT SOLENOID A

DTC Description

INFOID:000000014418967

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
		Diagnosis condition	Engine: Running
P0752	SHIFT SOLENOID A (Shift Solenoid "A" Stuck On)	Signal	—
		Threshold	When C1 clutch solenoid valve has a mal- function.
		Diagnosis delay time	—

POSSIBLE CAUSE

- C1 clutch solenoid valve (High stuck)
- Harness or connectors (C1 clutch solenoid valve circuit is shorted.)
- Corrosion of connector

FAIL-SAFE

- Locks in 3rd gear or 5th gear (Reverse is available)
- Lock-up is prohibited

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 25 seconds before performing the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

1. Start the engine.
2. Warm up the engine.
 - ATF temperature: 40 °C (104 °F) or more
3. Shift the selector lever to N position for at least 5 seconds.
4. Shift the selector lever to D position for at least 5 seconds.
5. Check the DTC.

Is "P0752" detected?

- YES >> Refer to [TM-149, "Diagnosis Procedure"](#).
- NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).
- NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014418968

1. CHECK CIRCUIT BETWEEN C1 CLUTCH SOLENOID VALVE AND ANOTHER CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check continuity between TCM harness connector terminals.

TCM		Continuity
Connector	Terminal	
E73	43	Other than the 43
	44	Other than the 44

Is the inspection result normal?

P0752 SHIFT SOLENOID A

[6AT: RE6R01A]

< DTC/CIRCUIT DIAGNOSIS >

- YES >> GO TO 2.
NO >> Repair or replace malfunctioning parts.

2.CHECK CIRCUIT BETWEEN C1 CLUTCH SOLENOID VALVE AND TCM

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

TCM		—	Voltage
Connector	Terminal		
E73	43	Ground	Other than the battery voltage
	44		

Is the inspection result normal?

- YES >> GO TO 3.
NO >> Repair or replace malfunctioning parts.

3.CHECK CONNECTOR

Check the damage and corrosion of connectors.

Is the inspection result normal?

- YES >> Replace the transmission assembly. Refer to [TM-248, "2WD : Removal and Installation"](#) (2WD), [TM-252, "4WD : Removal and Installation"](#) (4WD).
NO >> Repair or replace malfunctioning parts.

P0753 SHIFT SOLENOID A

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

P0753 SHIFT SOLENOID A

DTC Description

INFOID:000000014418969

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
		Diagnosis condition	Engine: Running
P0753	SHIFT SOLENOID A (Shift Solenoid "A" Electrical)	Signal	—
		Threshold	When the detection value (A) of C1 clutch solenoid valve is outside the specified value
		Diagnosis delay time	Continuously for 100 msec

POSSIBLE CAUSE

- Harness or connectors (C1 clutch solenoid valve circuit is open or shorted.)
- C1 clutch solenoid valve
- Corrosion of connector

FAIL-SAFE

- Locks in 3rd gear or 5th gear (Reverse is available)
- Lock-up is prohibited

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 25 seconds before performing the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

1. Start the engine and wait for at least 2 seconds.
2. Check the DTC.

Is "P0753" detected?

- YES >> Refer to [TM-151, "Diagnosis Procedure"](#).
- NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).
- NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014418970

1. CHECK C1 CLUTCH SOLENOID VALVE

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check resistance between TCM harness connector terminals.

TCM			Condition	Resistance
Connector	Terminal			
E73	43	44	ATF temperature: 20 °C (68 °F)	5.0 – 5.6 Ω

Is the inspection result normal?

- YES >> INSPECTION END
- NO >> GO TO 2.

2. CHECK CIRCUIT BETWEEN TCM AND A/T ASSEMBLY

1. Turn ignition switch OFF.

P0753 SHIFT SOLENOID A

[6AT: RE6R01A]

< DTC/CIRCUIT DIAGNOSIS >

2. Disconnect TCM connector and A/T assembly connector.
3. Check continuity between TCM harness connector terminals and A/T assembly harness connector terminals.

TCM		A/T assembly		Continuity
Connector	Terminal	Connector	Terminal	
E73	43	F215	5	Existed
	44		6	

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning parts.

3.CHECK CIRCUIT BETWEEN TCM AND A/T ASSEMBLY

Check continuity between TCM harness connector terminals and ground.

TCM		—	Continuity
Connector	Terminal		
E73	43	Ground	Not existed
	44		

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace malfunctioning parts.

4.CHECK CIRCUIT BETWEEN C1 CLUTCH SOLENOID VALVE AND ANOTHER CIRCUIT

Check continuity between TCM harness connector terminals.

TCM			Continuity
Connector	Terminal		
E73	43	Other than the 43	Not existed
	44	Other than the 44	

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace malfunctioning parts.

5.CHECK CIRCUIT BETWEEN C1 CLUTCH SOLENOID VALVE AND TCM

1. Turn ignition switch ON.
2. Check voltage between TCM harness connector terminals and ground.

TCM		—	Voltage
Connector	Terminal		
E73	43	Ground	Other than the battery voltage
	44		

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace malfunctioning parts.

6.CHECK CONNECTOR

Check the damage and corrosion of connectors.

Is the inspection result normal?

P0753 SHIFT SOLENOID A

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

- YES >> Replace the transmission assembly. Refer to [TM-248. "2WD : Removal and Installation"](#) (2WD),
[TM-252. "4WD : Removal and Installation"](#) (4WD).
- NO >> Repair or replace malfunctioning parts.

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P0758 SHIFT SOLENOID B

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

P0758 SHIFT SOLENOID B

DTC Description

INFOID:000000014418971

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
P0758	SHIFT SOLENOID B (Shift Solenoid "B" Electrical)	Diagnosis condition	Engine: Running
		Signal	—
		Threshold	When the detection value (A) of C2 clutch solenoid valve is outside the specified value.
		Diagnosis delay time	Continuously for 100 msec

POSSIBLE CAUSE

- Harness or connectors (C2 clutch solenoid valve circuit is open or shorted.)
- C2 clutch solenoid valve
- Corrosion of connector

FAIL-SAFE

- Locks in 3rd gear or 5th gear (Reverse is available)
- Lock-up is prohibited

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 25 seconds before performing the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

1. Start the engine and wait for at least 2 seconds.
2. Check the DTC.

Is "P0758" detected?

- YES >> Refer to [TM-154, "Diagnosis Procedure"](#) [TM-154, "Diagnosis Procedure"](#).
NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014418972

1. CHECK C2 CLUTCH SOLENOID VALVE

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check resistance between TCM harness connector terminals.

TCM		Condition	Resistance
Connector	Terminal		
E73	45 46	ATF temperature: 20 °C (68 °F)	5.0 – 5.6 Ω

Is the inspection result normal?

- YES >> INSPECTION END
NO >> GO TO 2.

2. CHECK CIRCUIT BETWEEN TCM AND A/T ASSEMBLY

1. Turn ignition switch OFF.
2. Disconnect TCM connector and A/T assembly connector.

P0758 SHIFT SOLENOID B

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

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

TCM		A/T assembly		Continuity
Connector	Terminal	Connector	Terminal	
E73	45	F216	11	Existed
	46		17	

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning parts.

3.CHECK CIRCUIT BETWEEN TCM AND A/T ASSEMBLY

Check continuity between TCM harness connector terminals and ground.

TCM		—	Continuity
Connector	Terminal		
E73	45	Ground	Not existed
	46		

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace malfunctioning parts.

4.CHECK CIRCUIT BETWEEN C2 CLUTCH SOLENOID VALVE AND ANOTHER CIRCUIT

Check continuity between TCM harness connector terminals.

TCM			Continuity
Connector	Terminal		
E73	45	Other than the 45	Not existed
	46	Other than the 46	

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace malfunctioning parts.

5.CHECK CIRCUIT BETWEEN C2 CLUTCH SOLENOID VALVE AND TCM

1. Turn ignition switch ON.
2. Check voltage between TCM harness connector terminals and ground.

TCM		—	Voltage
Connector	Terminal		
E73	45	Ground	Other than the battery voltage
	46		

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace malfunctioning parts.

6.CHECK CONNECTOR

Check the damage and corrosion of connectors.

Is the inspection result normal?

YES >> Replace the transmission assembly. Refer to [TM-248, "2WD : Removal and Installation"](#) (2WD), [TM-252, "4WD : Removal and Installation"](#) (4WD).

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P0758 SHIFT SOLENOID B

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

NO >> Repair or replace malfunctioning parts.

P0763 SHIFT SOLENOID C

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

P0763 SHIFT SOLENOID C

DTC Description

INFOID:000000014418973

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
		Diagnosis condition	Engine: Running
P0763	SHIFT SOLENOID C (Shift Solenoid "C" Electrical)	Signal	—
		Threshold	When the detection value (A) of C3 clutch solenoid valve is outside the specified value
		Diagnosis delay time	Continuously for 100 msec

POSSIBLE CAUSE

- Harness or connectors (C3 clutch solenoid valve circuit is open or shorted.)
- C3 clutch solenoid valve
- Corrosion of connector

FAIL-SAFE

- Locks in 3rd gear or 5th gear (Reverse is available)
- Lock-up is prohibited

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 25 seconds before performing the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

1. Start the engine and wait for at least 2 seconds.
2. Check the DTC.

Is "P0763" detected?

YES >> Refer to [TM-157, "Diagnosis Procedure"](#).

NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).

NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014418974

1. CHECK C3 CLUTCH SOLENOID VALVE

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check resistance between TCM harness connector terminals.

TCM		Condition	Resistance
Connector	Terminal		
E73	47 48	ATF temperature: 20 °C (68 °F)	5.0 – 5.6 Ω

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2. CHECK CIRCUIT BETWEEN TCM AND A/T ASSEMBLY

1. Turn ignition switch OFF.
2. Disconnect TCM connector and A/T assembly connector.

P0763 SHIFT SOLENOID C

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

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

TCM		A/T assembly		Continuity
Connector	Terminal	Connector	Terminal	
E73	47	F215	7	Existed
	48		8	

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning parts.

3.CHECK CIRCUIT BETWEEN TCM AND A/T ASSEMBLY

Check continuity between TCM harness connector terminals and ground.

TCM		—	Continuity
Connector	Terminal		
E73	47	Ground	Not existed
	48		

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace malfunctioning parts.

4.CHECK CIRCUIT BETWEEN C3 CLUTCH SOLENOID VALVE AND ANOTHER CIRCUIT

Check continuity between TCM harness connector terminals.

TCM			Continuity
Connector	Terminal		
E73	47	Other than the 47	Not existed
	48	Other than the 48	

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace malfunctioning parts.

5.CHECK CIRCUIT BETWEEN C3 CLUTCH SOLENOID VALVE AND TCM

1. Turn ignition switch ON.
2. Check voltage between TCM harness connector terminals and ground.

TCM		—	Voltage
Connector	Terminal		
E73	47	Ground	Other than the battery voltage
	48		

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace malfunctioning parts.

6.CHECK CONNECTOR

Check the damage and corrosion of connectors.

Is the inspection result normal?

YES >> Replace the transmission assembly. Refer to [TM-248, "2WD : Removal and Installation"](#) (2WD), [TM-252, "4WD : Removal and Installation"](#) (4WD).

P0763 SHIFT SOLENOID C

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

NO >> Repair or replace malfunctioning parts.

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P0768 SHIFT SOLENOID D

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

P0768 SHIFT SOLENOID D

DTC Description

INFOID:000000014418975

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
P0768	SHIFT SOLENOID D (Shift Solenoid "D" Electrical)	Diagnosis condition	Engine: Running
		Signal	—
		Threshold	When the detection value (A) of B1 brake solenoid valve is outside the specified value
		Diagnosis delay time	Continuously for 100 msec

POSSIBLE CAUSE

- Harness or connectors (B1 brake solenoid valve circuit is open or shorted.)
- B1 brake solenoid valve
- Corrosion of connector

FAIL-SAFE

- Locks in 3rd gear or 5th gear (Reverse is available)
- Lock-up is prohibited

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 25 seconds before performing the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

1. Start the engine and wait for at least 2 seconds.
2. Check the DTC.

Is "P0768" detected?

YES >> Refer to [TM-160, "Diagnosis Procedure"](#).

NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).

NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014418976

1. CHECK B1 BRAKE SOLENOID VALVE

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check resistance between TCM harness connector terminals.

TCM		Condition	Resistance
Connector	Terminal		
E73	49 50	ATF temperature: 20 °C (68 °F)	5.0 – 5.6 Ω

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2. CHECK CIRCUIT BETWEEN TCM AND A/T ASSEMBLY

1. Turn ignition switch OFF.
2. Disconnect TCM connector and A/T assembly connector.

P0768 SHIFT SOLENOID D

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

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

TCM		A/T assembly		Continuity
Connector	Terminal	Connector	Terminal	
E73	49	F215	4	Existed
	50		3	

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning parts.

3.CHECK CIRCUIT BETWEEN TCM AND A/T ASSEMBLY

Check continuity between TCM harness connector terminals and ground.

TCM		—	Continuity
Connector	Terminal		
E73	49	Ground	Not existed
	50		

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace malfunctioning parts.

4.CHECK CIRCUIT BETWEEN B1 BRAKE SOLENOID VALVE AND ANOTHER CIRCUIT

Check continuity between TCM harness connector terminals.

TCM			Continuity
Connector	Terminal		
E73	49	Other than the 49	Not existed
	50	Other than the 50	

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace malfunctioning parts.

5.CHECK CIRCUIT BETWEEN B1 BRAKE SOLENOID VALVE AND TCM

1. Turn ignition switch ON.
2. Check voltage between TCM harness connector terminals and ground.

TCM		—	Voltage
Connector	Terminal		
E73	49	Ground	Other than the battery voltage
	50		

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace malfunctioning parts.

6.CHECK CONNECTOR

Check the damage and corrosion of connectors.

Is the inspection result normal?

YES >> Replace the transmission assembly. Refer to [TM-248, "2WD : Removal and Installation"](#) (2WD), [TM-252, "4WD : Removal and Installation"](#) (4WD).

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P0768 SHIFT SOLENOID D

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

NO >> Repair or replace malfunctioning parts.

P0770 SHIFT SOLENOID E

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

P0770 SHIFT SOLENOID E

DTC Description

INFOID:000000014418977

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
P0770	Shift solenoid E (Shift Solenoid "E")	Diagnosis condition	Engine: Running
		Signal	—
		Threshold	When B2 brake solenoid valve has a mal- function
		Diagnosis delay time	—

POSSIBLE CAUSE

- B2 brake solenoid valve (High/Low stuck)
- Harness or connectors (B2 brake solenoid valve circuit is shorted.)
- Harness or connectors (Oil pressure switch circuit is shorted.)
- Corrosion of connector

FAIL-SAFE

- Locks in 3rd gear or 5th gear (Reverse is available)
- Lock-up is prohibited

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 25 seconds before performing the next test.

>> GO TO 2.

2. CHECK DTC DETECTION

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

Selector lever : D position
 Gear position : 2nd

3. Stop the vehicle.
4. Check the DTC.

Is "P0770" detected?

- YES >> Refer to [TM-163, "Diagnosis Procedure"](#).
 NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).
 NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014418978

1. CHECK CIRCUIT BETWEEN B2 BRAKE SOLENOID VALVE AND ANOTHER CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check continuity between TCM harness connector terminals.

P0770 SHIFT SOLENOID E

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

TCM			Continuity
Connector	Terminal		
E73	59	Other than the 59	Not existed
	60	Other than the 60	

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace malfunctioning parts.

2.CHECK CIRCUIT BETWEEN OIL PRESSURE SWITCH AND TCM

Check continuity between TCM harness connector terminals and ground.

TCM		—	Continuity
Connector	Terminal		
E74	11	Ground	Not existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning parts.

3.CHECK CIRCUIT BETWEEN OIL PRESSURE SWITCH AND ANOTHER CIRCUIT

Check continuity between TCM harness connector terminals.

TCM			Continuity
Connector	Terminal		
E74	11	Other than the 11	Not existed

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace malfunctioning parts.

4.CHECK CONNECTOR

Check the damage and corrosion of connectors.

Is the inspection result normal?

YES >> Replace the transmission assembly. Refer to [TM-248, "2WD : Removal and Installation"](#) (2WD), [TM-252, "4WD : Removal and Installation"](#) (4WD).

NO >> Repair or replace malfunctioning parts.

P0773 SHIFT SOLENOID E

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

P0773 SHIFT SOLENOID E

DTC Description

INFOID:000000014418979

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
		Diagnosis condition	Engine: Running
P0773	SHIFT SOLENOID E (Shift Solenoid "E" Electrical)	Signal	—
		Threshold	When the detection value (A) of B2 brake solenoid valve is outside the specified value
		Diagnosis delay time	Continuously for 100 msec

POSSIBLE CAUSE

- Harness or connectors (B2 brake solenoid valve circuit is open or shorted.)
- B2 brake solenoid valve
- Corrosion of connector

FAIL-SAFE

- Locks in 3rd gear or 5th gear (Reverse is available)
- Lock-up is prohibited

DTC CONFIRMATION PROCEDURE

CAUTION:

- **"[TM-165, "Diagnosis Procedure"](#)" must be performed before starting "DTC CONFIRMATION PROCEDURE".**
- **Never perform "DTC CONFIRMATION PROCEDURE" before completing the repair, which may cause secondary malfunction.**

1. PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 25 seconds before performing the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

1. Start the engine and wait for at least 2 seconds.
2. Check the DTC.

Is "P0773" detected?

- YES >> Refer to [TM-165, "Diagnosis Procedure"](#).
- NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).
- NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014418980

1. CHECK B2 BRAKE SOLENOID VALVE

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check resistance between TCM harness connector terminals.

TCM		Condition	Resistance
Connector	Terminal		
E73	59	ATF temperature: 20 °C (68 °F)	5.0 – 5.6 Ω
	60		

Is the inspection result normal?

- YES >> INSPECTION END
- NO >> GO TO 2.

P0773 SHIFT SOLENOID E

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

2. CHECK CIRCUIT BETWEEN TCM AND A/T ASSEMBLY

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

TCM		A/T assembly		Continuity
Connector	Terminal	Connector	Terminal	
E73	59	F216	19	Existed
	60		13	

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning parts.

3. CHECK CIRCUIT BETWEEN TCM AND A/T ASSEMBLY

Check continuity between TCM harness connector terminals and ground.

TCM		—	Continuity
Connector	Terminal		
E73	59	Ground	Not existed
	60		

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace malfunctioning parts.

4. CHECK CIRCUIT BETWEEN B2 BRAKE SOLENOID VALVE AND ANOTHER CIRCUIT

Check continuity between TCM harness connector terminals.

TCM			Continuity
Connector	Terminal		
E73	59	Other than the 59	Not existed
	60	Other than the 60	

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace malfunctioning parts.

5. CHECK CIRCUIT BETWEEN OUTPUT SPEED SENSOR AND TCM

1. Turn ignition switch ON.
2. Check voltage between TCM harness connector terminals and ground.

TCM		—	Voltage
Connector	Terminal		
E73	59	Ground	Other than the battery voltage
	60		

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace malfunctioning parts.

6. CHECK CONNECTOR

Check the damage and corrosion of connectors.

P0773 SHIFT SOLENOID E

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

Is the inspection result normal?

- YES >> Replace the transmission assembly. Refer to [TM-248, "2WD : Removal and Installation"](#) (2WD), [TM-252, "4WD : Removal and Installation"](#) (4WD).
- NO >> Repair or replace malfunctioning parts.

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P0826 UP AND DOWN SHIFT SW

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

P0826 UP AND DOWN SHIFT SW

DTC Description

INFOID:000000014418981

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
P0826	UP/DOWN SHIFT SWITCH (Up and Down Shift Switch Circuit)	Diagnosis condition	Engine: Running
		Signal	—
		Threshold	When any of item is detected: • When manual mode switch has a malfunction • When manual mode switch signal has a malfunction
		Diagnosis delay time	—

POSSIBLE CAUSE

- Mode select switch
- Mode select switch signal

FAIL-SAFE

Manual mode is prohibited

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 25 seconds before performing the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

1. Start the engine and wait for at least 70 seconds.
2. Check the DTC.

Is "P0826" detected?

- YES >> Refer to [TM-168, "Diagnosis Procedure"](#).
- NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).
- NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014418982

1. CHECK TCM INPUT SIGNAL

1. Turn ignition switch ON.
2. Select "Manual mode (-) 1" and "Manual mode (+) 1" in "Data Monitor" in "TRANSMISSION".
3. Check the ON/OFF operations of each monitor item.

Monitor Item	Condition	Status
Manual mode (-) 1	Press the manual mode switch (- side)	ON
	Other than the above	OFF
Manual mode (+) 1	Press the manual mode switch (+ side)	ON
	Other than the above	OFF

Is the inspection result normal?

- YES >> INSPECTION END
- NO >> GO TO 2.

P0826 UP AND DOWN SHIFT SW

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

2. CHECK COMBINATION METER INPUT SIGNAL

Check voltage between combination meter harness connector terminals and ground.

combination meter		Condition	Voltage (Approx.)	
Connector	Terminal			
	+ -			
M24	32	Ignition switch: ON	Press the manual mode switch (+ side)	0 V
			Other than the above	Battery voltage
	33		Press the manual mode switch (- side)	0 V
			Other than the above	Battery voltage

Is the inspection result normal?

YES >> Check combination meter. Refer to [MWI-77, "Work flow"](#) (TYPE A), [MWI-160, "Work flow"](#) (TYPE B).

NO >> GO TO 3.

3. CHECK CIRCUIT BETWEEN COMBINATION METER AND A/T SHIFT SELECTOR

1. Turn ignition switch OFF.
2. Disconnect combination meter connector and A/T shift selector connector.
3. Check continuity between A/T shift selector harness connector terminals and combination meter harness connector terminals.

A/T shift selector		Combination meter		Continuity
Connector	Terminal	Connector	Terminal	
M68	7	M24	33	Existed
	8		32	

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace malfunctioning parts.

4. CHECK CIRCUIT BETWEEN COMBINATION METER AND A/T SHIFT SELECTOR

Check continuity between combination meter harness connector terminals and ground.

Combination meter		—	Continuity
Connector	Terminal		
M24	32	Ground	Not existed
	33		

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace malfunctioning parts.

5. CHECK A/T SHIFT SELECTOR GROUND CIRCUIT

Check continuity between A/T shift selector connector harness connector terminals and ground.

A/T shift selector		—	Continuity
Connector	Terminal		
M68	2	Ground	Existed

Is the inspection result normal?

YES >> Replace the A/T shift selector. Refer to [TM-219, "Removal and Installation"](#).

NO >> Repair or replace malfunctioning parts.

P0863 TCM COMMUNICATION

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

P0863 TCM COMMUNICATION

DTC Description

INFOID:000000014418983

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
P0863	CONTROL UNIT(CAN) (TCM Communication Circuit)	Diagnosis condition	Engine: Running
		Signal	—
		Threshold	When an internal error is detected
		Diagnosis delay time	—

POSSIBLE CAUSE

TCM

FAIL-SAFE

- Lock-up is prohibited
- Harsh shift
- Acceleration is slow

DTC CONFIRMATION PROCEDURE

1. PREPARATION BEFORE WORK

If another "DTC CONFIRMATION PROCEDURE" occurs just before, turn ignition switch OFF and wait for at least 25 seconds, then perform the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

1. Start the engine and wait for at least 2 seconds.
2. Check the DTC.

Is "P0863" detected?

YES >> Refer to [TM-170, "Diagnosis Procedure"](#).

NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).

NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014418984

1. REPLACE TCM

Replace the TCM. Refer to [TM-223, "Removal and Installation"](#).

>> WORK END

P0882 TCM POWER INPUT SIGNAL

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

P0882 TCM POWER INPUT SIGNAL

DTC Description

INFOID:000000014418985

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
		Diagnosis condition	Engine: Running
P0882	TCM POWER INPUT SIG (TCM Power Input Signal Low)	Signal	—
		Threshold	When power supply circuit has a malfunction
		Diagnosis delay time	—

POSSIBLE CAUSE

Harness or connectors (TCM power supply circuit is open or shorted.)

FAIL-SAFE

- Locks in 3rd gear or 5th gear (Reverse is available)
- Lock-up is prohibited

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 25 seconds before performing the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

1. Start the engine and wait for at least 15 seconds.
2. Check the DTC.

Is "P0882" detected?

- YES >> Refer to [TM-171, "Diagnosis Procedure"](#).
- NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).
- NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014418986

1. CHECK TCM INPUT SIGNAL

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Turn ignition switch ON.
4. Check voltage between TCM harness connector terminal and ground.

TCM		—	Voltage
Connector	Terminal		
E74	9	Ground	Battery voltage

Is the inspection result normal?

- YES >> INSPECTION END
- NO >> GO TO 2.

2. DETECTION MALFUNCTIONING ITEMS

Check following items:

- Harness open circuit or short circuit between TCM and IPDM E/R.
- Harness open circuit or short circuit between IPDM E/R and ignition switch.

P0882 TCM POWER INPUT SIGNAL

[6AT: RE6R01A]

< DTC/CIRCUIT DIAGNOSIS >

- 10A fuse (No. 47)
- IPDM E/R
- Ignition switch

Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair or replace malfunctioning parts.

P0998 SHIFT SOLENOID F

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

P0998 SHIFT SOLENOID F

DTC Description

INFOID:000000014418987

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
		Diagnosis condition	Engine: Running
P0998	SHIFT SOLENOID F (Shift Solenoid "F" Control Circuit Low)	Signal	—
		Threshold	When fail-safe solenoid valve has a malfunction
		Diagnosis delay time	Continuously for 100 msec

POSSIBLE CAUSE

- Harness or connector (Fail-safe solenoid valve circuit is shorted.)
- Fail-safe solenoid valve
- Corrosion of connector

FAIL-SAFE

- Locks in 3rd gear or 5th gear (Reverse is available)
- Lock-up is prohibited

DTC CONFIRMATION PROCEDURE

1. PREPARATION BEFORE WORK

If another "DTC CONFIRMATION PROCEDURE" occurs just before, turn ignition switch OFF and wait for at least 25 seconds, then perform the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

1. Start the engine and wait for at least 2 seconds.
2. Check the DTC.

Is "P0998" detected?

- YES >> Refer to [TM-173, "Diagnosis Procedure"](#).
- NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).
- NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014418988

1. CHECK TCM INPUT SIGNAL

1. Check voltage between TCM harness connector terminal and ground.
2. Turn ignition switch ON.

TCM		—	Voltage
Connector	Terminal		
E73	70	Ground	10 – 16 V

Is the inspection result normal?

- YES >> INSPECTION END
- NO >> GO TO 2.

2. CHECK CIRCUIT BETWEEN TCM AND A/T ASSEMBLY

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

P0998 SHIFT SOLENOID F

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

TCM		A/T assembly		Continuity
Connector	Terminal	Connector	Terminal	
E73	70	F216	18	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning parts.

3.CHECK CIRCUIT BETWEEN TCM AND A/T ASSEMBLY

Check continuity between TCM harness connector terminals and ground.

TCM		—	Continuity
Connector	Terminal		
E73	70	Ground	Not existed

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace malfunctioning parts.

4.CHECK CIRCUIT BETWEEN FAIL-SAFE SOLENOID VALVE AND ANOTHER CIRCUIT

Check continuity between TCM harness connector terminals.

TCM			Continuity
Connector	Terminal		
E73	70	Other than the 70	Not existed

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace malfunctioning parts.

5.CHECK CONNECTOR

Check the damage and corrosion of connectors.

Is the inspection result normal?

YES >> Replace the transmission assembly. Refer to [TM-248. "2WD : Removal and Installation"](#) (2WD), [TM-252. "4WD : Removal and Installation"](#) (4WD).

NO >> Repair or replace malfunctioning parts.

P0999 SHIFT SOLENOID F

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

P0999 SHIFT SOLENOID F

DTC Description

INFOID:000000014418989

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
		Diagnosis condition	Engine: Running
P0999	SHIFT SOLENOID F (Shift Solenoid "F" Control Circuit High)	Signal	—
		Threshold	When fail-safe solenoid valve has a malfunction
		Diagnosis delay time	Continuously for 100 msec

POSSIBLE CAUSE

- Harness or connector (Fail-safe solenoid valve circuit is open or shorted.)
- Fail-safe solenoid valve
- Corrosion of connector

FAIL-SAFE

- Locks in 3rd gear or 5th gear (Reverse is available)
- Lock-up is prohibited

DTC CONFIRMATION PROCEDURE

1. PREPARATION BEFORE WORK

If another "DTC CONFIRMATION PROCEDURE" occurs just before, turn ignition switch OFF and wait for at least 25 seconds, then perform the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

1. Start the engine and wait for at least 2 seconds.
2. Check the DTC.

Is "P0999" detected?

YES >> Refer to [TM-175, "Diagnosis Procedure"](#).

NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).

NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014418990

1. CHECK TCM INPUT SIGNAL

1. Check voltage between TCM harness connector terminal and ground.
2. Turn ignition switch ON.

TCM		—	Voltage
Connector	Terminal		
E73	70	Ground	10 – 16 V

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2. CHECK CIRCUIT BETWEEN TCM AND A/T ASSEMBLY

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

P0999 SHIFT SOLENOID F

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

TCM		A/T assembly		Continuity
Connector	Terminal	Connector	Terminal	
E73	70	F216	18	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning parts.

3.CHECK CIRCUIT BETWEEN TCM AND A/T ASSEMBLY

Check continuity between TCM harness connector terminals and ground.

TCM		—	Continuity
Connector	Terminal		
E73	70	Ground	Not existed

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace malfunctioning parts.

4.CHECK CIRCUIT BETWEEN FAIL-SAFE SOLENOID VALVE AND ANOTHER CIRCUIT

Check continuity between TCM harness connector terminals.

TCM			Continuity
Connector	Terminal		
E73	70	Other than the 70	Not existed

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace malfunctioning parts.

5.CHECK CIRCUIT BETWEEN FAIL-SAFE SOLENOID VALVE AND TCM

1. Turn ignition switch ON.
2. Check voltage between TCM harness connector terminals and ground.

TCM		—	Voltage
Connector	Terminal		
E73	70	Ground	Other than the battery voltage

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace malfunctioning parts.

6.CHECK CONNECTOR

Check the damage and corrosion of connectors.

Is the inspection result normal?

YES >> Replace the transmission assembly. Refer to [TM-248, "2WD : Removal and Installation"](#) (2WD), [TM-252, "4WD : Removal and Installation"](#) (4WD).

NO >> Repair or replace malfunctioning parts.

P1679 INCOMPLETED LEARNING

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

P1679 INCOMPLETED LEARNING

DTC Description

INFOID:000000014418991

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
		Diagnosis condition	Engine: Running
P1679	INCOMPLETE LEARNING (Incomplete learning)	Signal	—
		Threshold	When data of correction value is not written in TCM
		Diagnosis delay time	—

POSSIBLE CAUSE

- When data of correction value is not written in TCM
- Harness or connectors (Between IPDM E/R and TCM)
- Harness or connectors (Between accessory relay-2 and TCM)
- Accessory relay-2

FAIL-SAFE

Not changed from normal driving

DTC CONFIRMATION PROCEDURE

1. PREPARATION BEFORE WORK

If another "DTC CONFIRMATION PROCEDURE" occurs just before, turn ignition switch OFF and wait for at least 25 seconds, then perform the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

1. Start the engine and wait for at least 2 seconds.
2. Check the DTC.

Is "P1679" detected?

- YES >> Refer to [TM-177, "Diagnosis Procedure"](#).
- NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).
- NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014418992

1. PERFORM TRANSMISSION ADJUSTMENT

1. Perform transmission adjustment. Refer to [TM-91, "Work Procedure"](#).
2. Perform DTC CONFIRMATION PROCEDURE. Refer to [TM-177, "DTC Description"](#).

Is "P1679" detected?

- YES >> GO TO 2.
- NO >> INSPECTION END

2. CHECK TCM INPUT SIGNAL

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check voltage between TCM harness connector terminals and ground.

P1679 INCOMPLETED LEARNING

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

TCM		—	Condition	Voltage (Approx.)
Connector	Terminal			
E74	9	Ground	Ignition switch ON	Battery voltage
			Ignition switch OFF	0 V

Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 3.

3. DETECT MALFUNCTIONING ITEM

Check the following.

- Harness short circuit between IPDM E/R and TCM to power supply or other circuit.
- 10 A fuse (No. 47)
- IPDM E/R
- Ignition switch
- Battery

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace malfunctioning parts.

4. CHECK TCM INPUT SIGNAL

Check voltage between TCM harness connector terminals and ground.

TCM		—	Condition	Voltage (Approx.)
Connector	Terminal			
E73	54	Ground	Ignition switch ON or ACC	Battery voltage
			Ignition switch OFF	0 V

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 5.

5. DETECT MALFUNCTIONING ITEM

Check the following.

- Harness short circuit between accessory relay-2 and TCM to power supply or other circuit.
- 5 A fuse (No. 25)
- Accessory relay-2
- Ignition switch
- Battery

Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair or replace malfunctioning parts.

P1705 TP SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

P1705 TP SENSOR

DTC Description

INFOID:000000014418993

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
		Diagnosis condition	Engine: Running
P1705	TP SENSOR (TP SENSOR)	Signal	—
		Threshold	When accelerator pedal position signal has a malfunction
		Diagnosis delay time	—

POSSIBLE CAUSE

CAN communication (Accelerator pedal position signal)

FAIL-SAFE

- Harsh shift
- Acceleration is slow

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 25 seconds before performing the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

1. Start the engine and wait for at least 2 seconds.
2. Check the DTC.

Is "P1705" detected?

YES >> Refer to [TM-179, "Diagnosis Procedure"](#).

NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).

NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014418994

1. CHECK DTC OF ECM

1. Turn ignition switch ON.
2. Perform "Self Diagnostic Results" in "ENGINE".

Is any DTC detected?

YES >> Check DTC detected item. Refer to [EC-837, "DTC Index"](#).

NO >> GO TO 2.

2. CHECK DTC OF TCM

Perform "Self Diagnostic Results" in "TRANSMISSION".

Is any DTC other than "P1705" detected?

YES >> Check DTC detected item. Refer to [TM-69, "DTC Index"](#).

NO >> INSPECTION END

P1721 VEHICLE SPEED SIGNAL

[6AT: RE6R01A]

< DTC/CIRCUIT DIAGNOSIS >

P1721 VEHICLE SPEED SIGNAL

DTC Description

INFOID:000000014418995

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
		Diagnosis condition	Engine: Running
P1721	VEHICLE SPEED SIGNAL (VEHICLE SPEED SIGNAL)	Signal	—
		Threshold	When wheel speed signal has a malfunction
		Diagnosis delay time	—

POSSIBLE CAUSE

CAN communication (Wheel speed signal)

FAIL-SAFE

Not changed from normal driving

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 25 seconds before performing the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

1. Start the engine and wait for at least 2 seconds.
2. Check the DTC.

Is "P1721" detected?

YES >> Refer to [TM-180, "Diagnosis Procedure"](#).

NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).

NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014418996

1. CHECK DTC OF ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

Perform "Self Diagnostic Results" in "ABS".

Is any DTC detected?

YES >> Check DTC detected item. Refer to [BRC-55, "DTC Index"](#).

NO >> GO TO 2.

2. CHECK DTC OF TCM

Perform "Self Diagnostic Results" in "TRANSMISSION".

Is any DTC other than "P1721" detected?

YES >> Check DTC detected item. Refer to [TM-69, "DTC Index"](#).

NO >> INSPECTION END

P215C OUTPUT SHAFT SPEED - WHEEL SPEED

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

P215C OUTPUT SHAFT SPEED - WHEEL SPEED

DTC Description

INFOID:000000014418997

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
P215C	OUTPUT SHAFT SPD - WHEEL SPD (Output Shaft Speed - Wheel Speed Correlation)	Diagnosis condition	<ul style="list-style-type: none">• Engine: Running• Selector lever: D or R
		Signal	—
		Threshold	When an abrupt deceleration is detected in detection value (rpm) of output speed sensor
		Diagnosis delay time	—

POSSIBLE CAUSE

- Output speed sensor
- Harness or connectors (Output speed sensor circuit is open or shorted.)
- Corrosion of connector

FAIL-SAFE

- Locks in 3rd gear or 5th gear (Reverse is available)
- Lock-up is prohibited

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 25 seconds before performing the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

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

Vehicle speed : At least 41 km/h (25MPH)

3. Stop the vehicle.
4. Check the DTC.

Is "P215C" detected?

YES >> Refer to [TM-181, "Diagnosis Procedure"](#).

NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).

NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014418998

1. CHECK CIRCUIT BETWEEN TCM AND OUTPUT SPEED SENSOR

1. Turn ignition switch OFF.
2. Disconnect TCM connector and output speed sensor connector.
3. Check continuity between TCM harness connector terminal and output speed sensor connector terminal.

P215C OUTPUT SHAFT SPEED - WHEEL SPEED

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

TCM		Output speed sensor		Continuity
Connector	Terminal	Connector	Terminal	
E74	8	F213	2	Existed
	19		1	

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace malfunctioning part.

2.CHECK CIRCUIT BETWEEN TCM AND OUTPUT SPEED SENSOR

Check continuity between TCM harness connector terminal and ground.

TCM		—	Continuity
Connector	Terminal		
E74	8	Ground	Not existed
	19		

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning part.

3.CHECK CIRCUIT BETWEEN OUTPUT SPEED SENSOR AND ANOTHER CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between TCM harness connector terminals.

TCM			Continuity
Connector	Terminal		
E74	8	Other than the 8	Not existed
	19	Other than the 19	

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace malfunctioning parts.

4.CHECK CIRCUIT BETWEEN TCM AND OUTPUT SPEED SENSOR

1. Turn ignition switch ON.
2. Check voltage between TCM harness connector terminals and ground.

TCM		—	Voltage
Connector	Terminal		
E74	8	Ground	Other than the battery voltage
	19		

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace malfunctioning parts.

5.CHECK CONNECTOR

Check the metal deposition, damage, and corrosion of connectors.

Is the inspection result normal?

YES >> Replace the output speed sensor. Refer to [TM-232, "Removal and Installation"](#).

NO >> Repair or replace malfunctioning parts.

P2637 TORQUE MANAGEMENT FEEDBACK SIGNAL A

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

P2637 TORQUE MANAGEMENT FEEDBACK SIGNAL A

DTC Description

INFOID:000000014418999

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
		Diagnosis condition	Engine: Running
P2637	Torque management feedback Sig A (Torque Management Feedback Signal "A")	Signal	—
		Threshold	When engine torque signal has a malfunction
		Diagnosis delay time	—

POSSIBLE CAUSE

CAN communication (Engine torque signal)

FAIL-SAFE

Harsh shift

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 25 seconds before performing the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

1. Start the engine and wait for at least 2 seconds.
2. Check the 1st trip DTC.

Is "P2637" detected?

- YES >> Refer to [TM-183, "Diagnosis Procedure"](#).
NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014419000

1. CHECK DTC OF ECM

1. Turn ignition switch ON.
2. Perform "Self Diagnostic Results" in "ENGINE".

Is any DTC detected?

- YES >> Check DTC detected item. Refer to [EC-837, "DTC Index"](#).
NO >> GO TO 2.

2. CHECK DTC OF TCM

Perform "Self Diagnostic Results" in "TRANSMISSION".

Is any DTC other than "P2637" detected?

- YES >> Check DTC detected item. Refer to [TM-69, "DTC Index"](#).
NO >> INSPECTION END

P2741 TRANSMISSION FLUID TEMPERATURE SENSOR B

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

P2741 TRANSMISSION FLUID TEMPERATURE SENSOR B

DTC Description

INFOID:000000014419001

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
P2741	TRANSMISSION FLUID TEMP SEN B (Torque Management Feedback Signal "B")	Diagnosis condition	Engine: Running
		Signal	—
		Threshold	When any of following item detected: <ul style="list-style-type: none">• When A/T fluid temperature is fixed• When A/T fluid temperature is unsteady• When the difference between A/T fluid temperature of engine start-up and engine water temperature is more than the specified value• When the A/T fluid temperature of after driving does not rise to the estimated temperature
		Diagnosis delay time	—

POSSIBLE CAUSE

- A/T fluid temperature sensor 1
- Harness or connectors (A/T fluid temperature sensor 1 circuit is shorted.)
- Corrosion of connector

FAIL-SAFE

Not changed from normal driving

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 25 seconds before performing the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

1. Move the vehicle to a cool place.

NOTE:

Cool the vehicle in an environment of ambient air temperature between -10°C (14°F) and 35°C (95°F).

2. Turn ignition switch OFF and leave the vehicle for 8 hours.

CAUTION:

Never turn ignition switch ON during this procedure.

- A/T fluid temperature: 20°C (68°F) or less
3. Start the engine and wait for at least 5 seconds.
 4. Shift the selector lever to D position.
 5. Drive the vehicle and maintain the following conditions for at least 7 minutes.
 - Vehicle speed: 41 km/h (25 MPH) or more
 - Accelerator pedal position: 10 % or more
 6. Check the 1st trip DTC at following condition.
 - A/T fluid temperature: 25°C (77°F) or more

Is "P2741" detected?

YES >> Refer to [TM-185, "Diagnosis Procedure"](#).

NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).

NO-2 >> Confirmation after repair: INSPECTION END

P2741 TRANSMISSION FLUID TEMPERATURE SENSOR B

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

Diagnosis Procedure

INFOID:000000014419002

1. CHECK CIRCUIT BETWEEN A/T FLUID TEMPERATURE SENSOR 1 AND TCM

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check continuity between TCM harness connector terminals and ground.

TCM		—	Continuity
Connector	Terminal		
E73	57	Ground	Not existed
	58		

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace malfunctioning parts.

2. CHECK CIRCUIT BETWEEN A/T FLUID TEMPERATURE SENSOR 1 AND ANOTHER CIRCUIT

Check continuity between TCM harness connector terminals.

TCM			Continuity
Connector	Terminal		
E73	57	Other than the 57	Not existed
	58	Other than the 58	

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning parts.

3. CHECK CIRCUIT BETWEEN A/T FLUID TEMPERATURE SENSOR 1 AND TCM

1. Turn ignition switch OFF.
2. Disconnect A/T fluid temperature sensor 1 connector.
3. Turn ignition switch ON.
4. Check voltage between TCM harness connector terminals and ground.

TCM		—	Voltage
Connector	Terminal		
E73	57	Ground	Other than the battery voltage
	58		

Is the inspection result normal?

YES >> Replace A/T fluid temperature sensor 1. Refer to [TM-235, "Removal and Installation"](#).

NO >> Repair or replace malfunctioning parts.

P2742 TRANSMISSION FLUID TEMPERATURE SENSOR B

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

P2742 TRANSMISSION FLUID TEMPERATURE SENSOR B

DTC Description

INFOID:000000014419003

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
P2742	TRANSMISSION FLUID TEMP SEN B (Transmission fluid temperature sensor B)	Diagnosis condition	Engine: Running
		Signal	—
		Threshold	When the detection value (V) of A/T fluid temperature sensor 1 is less than the specified value
		Diagnosis delay time	—

POSSIBLE CAUSE

- Harness or connector (A/T fluid temperature sensor 1 circuit is shorted.)
- A/T fluid temperature sensor 1
- Corrosion of connector

FAIL-SAFE

Not changed from normal driving

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 25 seconds before performing the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

1. Start the engine and wait for at least 10 seconds.
2. Check the DTC.

Is "P2742" detected?

YES >> Refer to [TM-186, "Diagnosis Procedure"](#).

NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).

NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014419004

1. CHECK TCM INPUT SIGNALS

1. Start the engine.
2. Check voltage between TCM harness connector terminal and ground.

+		-	Condition	Voltage
TCM				
Connector	Terminal			
E73	57	Ground	ATF temperature: Approx. 20°C (68°F)	3.17 – 3.47 V
			ATF temperature: Approx. 50°C (122°F)	1.83 – 2.09 V
			ATF temperature: Approx. 80°C (176°F)	0.93 – 1.09 V

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2. CHECK CIRCUIT BETWEEN TCM AND A/T FLUID TEMPERATURE SENSOR 1

P2742 TRANSMISSION FLUID TEMPERATURE SENSOR B

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

1. Turn ignition switch OFF.
2. Disconnect TCM connector and A/T fluid temperature sensor 1 connector.
3. Check continuity between TCM harness connector terminal and A/T fluid temperature sensor 1 connector terminal.

TCM		A/T fluid temperature sensor 1		Continuity
Connector	Terminal	Connector	Terminal	
E73	57	F214	2	Existed
	58		1	

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning part.

3. CHECK CIRCUIT BETWEEN TCM AND A/T FLUID TEMPERATURE SENSOR 1

Check continuity between TCM harness connector terminal and ground.

TCM		—	Continuity
Connector	Terminal		
E73	57	Ground	Not existed
	58		

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace malfunctioning part.

4. CHECK CIRCUIT BETWEEN A/T FLUID TEMPERATURE SENSOR 1 AND ANOTHER CIRCUIT

Check continuity between TCM harness connector terminals.

TCM			Continuity
Connector	Terminal		
E73	57	Other than the 57	Not existed
	58	Other than the 58	

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace malfunctioning parts.

5. CHECK CONNECTOR

Check the damage and corrosion of connectors.

Is the inspection result normal?

YES >> Replace A/T fluid temperature sensor 1. Refer to [TM-235, "Removal and Installation"](#).

NO >> Repair or replace malfunctioning parts.

P2743 TRANSMISSION FLUID TEMPERATURE SENSOR B

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

P2743 TRANSMISSION FLUID TEMPERATURE SENSOR B

DTC Description

INFOID:000000014419005

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
		Diagnosis condition	Engine: Running
P2743	TRANSMISSION FLUID TEMP SEN B (Transmission fluid temperature sensor B)	Signal	—
		Threshold	When the detection value (V) of A/T fluid temperature sensor 1 is more than the specified value
		Diagnosis delay time	—

POSSIBLE CAUSE

- Harness or connector (A/T fluid temperature sensor 1 circuit is open or shorted.)
- A/T fluid temperature sensor 1
- Corrosion of connector

FAIL-SAFE

Not changed from normal driving

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 25 seconds before performing the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

1. Start the engine and wait for at least 10 seconds.
2. Check the DTC.

Is "P2743" detected?

- YES >> Refer to [TM-160, "Diagnosis Procedure"](#).
- NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).
- NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014419006

1. CHECK TCM INPUT SIGNALS

1. Start the engine.
2. Check voltage between TCM harness connector terminal and ground.

+		-	Condition	Voltage
TCM				
Connector	Terminal			
E73	57	Ground	ATF temperature: Approx. 20°C (68°F)	3.17 – 3.47 V
			ATF temperature: Approx. 50°C (122°F)	1.83 – 2.09 V
			ATF temperature: Approx. 80°C (176°F)	0.93 – 1.09 V

Is the inspection result normal?

- YES >> INSPECTION END
- NO >> GO TO 2.

2. CHECK CIRCUIT BETWEEN TCM AND A/T FLUID TEMPERATURE SENSOR 1

P2743 TRANSMISSION FLUID TEMPERATURE SENSOR B

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

1. Turn ignition switch OFF.
2. Disconnect TCM connector and A/T fluid temperature sensor 1 connector.
3. Check continuity between TCM harness connector terminal and A/T fluid temperature sensor 1 connector terminal.

TCM		A/T fluid temperature sensor 1		Continuity
Connector	Terminal	Connector	Terminal	
E73	57	F214	2	Existed
	58		1	

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning part.

3. CHECK CIRCUIT BETWEEN TCM AND A/T FLUID TEMPERATURE SENSOR 1

Check continuity between TCM harness connector terminal and ground.

TCM		—	Continuity
Connector	Terminal		
E73	57	Ground	Not existed
	58		

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace malfunctioning part.

4. CHECK CIRCUIT BETWEEN A/T FLUID TEMPERATURE SENSOR 1 AND ANOTHER CIRCUIT

Check continuity between TCM harness connector terminals.

TCM			Continuity
Connector	Terminal		
E73	57	Other than the 57	Not existed
	58	Other than the 58	

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace malfunctioning parts.

5. CHECK CONNECTOR

Check the damage and corrosion of connectors.

Is the inspection result normal?

YES >> Replace A/T fluid temperature sensor 1. Refer to [TM-235, "Removal and Installation"](#).

NO >> Repair or replace malfunctioning parts.

P2757 TORQUE CONVERTER CLUTCH PRESSURE CONTROL SOLENOID

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

P2757 TORQUE CONVERTER CLUTCH PRESSURE CONTROL SOLENOID

DTC Description

INFOID:000000014419007

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
P2757	TCC PRESSURE CONT SOLENOID (Torque converter clutch pressure control solenoid)	Diagnosis condition	Engine: Running
		Signal	—
		Threshold	When torque converter clutch solenoid valve has a malfunction
		Diagnosis delay time	—

POSSIBLE CAUSE

- Torque converter clutch solenoid valve (Low stuck)
- Harness or connectors (Torque converter clutch solenoid valve circuit is shorted.)
- Torque converter
- Corrosion of connector

FAIL-SAFE

Lock-up is prohibited

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 25 seconds before performing the next test.

>> GO TO 2.

2. CHECK DTC DETECTION

1. Start the engine.
2. Drive vehicle and maintain the following conditions.

Selector lever : D position
Vehicle speed : 57 km/h (35 MPH) or more

3. Release the accelerator pedal for at least 5 seconds.
4. Stop the vehicle.
5. Check the 1st trip DTC.

Is "P2757" detected?

YES >> Refer to [TM-190, "Diagnosis Procedure"](#).

NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).

NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014419008

1. CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check resistance between TCM harness connector terminals.

P2757 TORQUE CONVERTER CLUTCH PRESSURE CONTROL SOLENOID

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

TCM			Condition	Resistance
Connector	Terminal			
E73	67	68	ATF temperature: 20 °C (68 °F)	5.0 – 5.6 Ω

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2. CHECK CIRCUIT BETWEEN TCM AND A/T ASSEMBLY

1. Disconnect A/T assembly connector.
2. Check continuity between TCM harness connector terminals and A/T assembly harness connector terminals.

TCM		A/T assembly		Continuity
Connector	Terminal	Connector	Terminal	
E73	67	F215	2	Existed
	68		1	

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning parts.

3. CHECK CIRCUIT BETWEEN TCM AND A/T ASSEMBLY

Check continuity between TCM harness connector terminals and ground.

TCM		—	Continuity
Connector	Terminal		
E73	67	Ground	Not existed
	68		

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace malfunctioning parts.

4. CHECK CIRCUIT BETWEEN TORQUE CONVERTER CLUTCH SOLENOID VALVE AND ANOTHER CIRCUIT

Check continuity between TCM harness connector terminals.

TCM			Continuity
Connector	Terminal		
E74	67	Other than the 67	Not existed
	68	Other than the 68	

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace malfunctioning parts.

5. CHECK CONNECTOR

Check the metal deposition, damage, and corrosion of connectors.

Is the inspection result normal?

YES >> Replace the transmission assembly. Refer to [TM-248, "2WD : Removal and Installation"](#) (2WD), [TM-252, "4WD : Removal and Installation"](#) (4WD).

NO >> Repair or replace malfunctioning parts.

P279D 4WD RANGE SIGNAL

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

P279D 4WD RANGE SIGNAL

DTC Description

INFOID:000000014419009

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
P279D	4WD RANGE SIGNAL (Four Wheel Drive (4WD) Range Signal)	Diagnosis condition	<ul style="list-style-type: none">• Engine: Running• Selector lever: D
		Signal	—
		Threshold	When 4WD mode switch signal has a malfunction
		Diagnosis delay time	—

POSSIBLE CAUSE

CAN communication (4WD mode switch signal)

FAIL-SAFE

4WD mode switch: HI, 2WD

Not changed from normal driving

4WD mode switch: LO

Not shifted up until a high engine speed is achieved

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 25 seconds before performing the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

1. Start the engine.
2. Drive vehicle and maintain the following conditions for at least 15 seconds.

Vehicle speed : At least 60 km/h (37MPH)

3. Stop the vehicle.
4. Check the 1st trip DTC.

Is "P279D" detected?

YES >> Refer to [TM-192, "Diagnosis Procedure"](#).

NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).

NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014419010

1. CHECK DTC OF TRANSFER CONTROL UNIT

1. Turn ignition switch ON.
2. Perform "Self Diagnostic Results" in "ALL MODE AWD/4WD".

Is any DTC detected?

YES >> Check DTC detected item. Refer to [DLN-38, "DTC Index"](#).

NO >> GO TO 2.

2. CHECK DTC OF TCM

P279D 4WD RANGE SIGNAL

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

Perform "Self Diagnostic Results" in "TRANSMISSION".

Is any DTC other than "P279D" detected?

- YES >> Check DTC detected item. Refer to [TM-69. "DTC Index"](#).
- NO >> INSPECTION END

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P2803 TRANSMISSION RANGE SENSOR B

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

P2803 TRANSMISSION RANGE SENSOR B

DTC Description

INFOID:000000014419011

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
P2803	TRANSMISSION RANGE SENSOR B (Transmission range sensor B)	Diagnosis condition	Engine: Running
		Signal	—
		Threshold	When intermediate position is detected in transmission range switch for a certain period of time
		Diagnosis delay time	—

POSSIBLE CAUSE

- Harness or connectors (Transmission range switch PA circuit is shorted.)
- Transmission range switch (PA)
- Control cable

FAIL-SAFE

- Locks in 3rd gear or 5th gear (Reverse is available)
- Lock-up is prohibited

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" is previously conducted, always turn ignition switch OFF and wait at least 25 seconds before performing the next test.

>> GO TO 2.

2. CHECK DTC DETECTION

1. Start the engine.
2. Repeat the following steps 3 to 4 for two times.
3. Shift the selector lever to "R" position for at least 10 seconds.
4. Shift the selector lever to "P" position.
5. Check the DTC.

Is "P2803" detected?

YES >> Refer to [TM-194, "Diagnosis Procedure"](#).

NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).

NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014419012

1. CHECK POWER CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect transmission range switch connector.
3. Turn ignition switch ON.
4. Check voltage between transmission range switch harness connector terminal and ground.

Transmission range switch		—	Voltage
Connector	Terminal		
F212	3	Ground	Battery voltage

Is the check result normal?

YES >> GO TO 2.

NO >> GO TO 5.

P2803 TRANSMISSION RANGE SENSOR B

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

2. CHECK TCM INPUT SIGNALS

1. Turn ignition switch OFF.
2. Connect transmission range switch connector.
3. Disconnect TCM connector.
4. Turn ignition switch ON.
5. Shift the selector lever from P to D and check voltage between TCM harness connector terminal and ground.

TCM		—	Condition	Voltage
Connector	Terminal			
E74	21	Ground	Selector lever: P	Battery voltage
			Selector lever: Between P and R	Battery voltage
			Selector lever: R	0 V
			Selector lever: Between R and N	Battery voltage
			Selector lever: N	Battery voltage
			Selector lever: Between N and D	Battery voltage
			Selector lever: D	0 V

Is the check result normal?

YES >> INSPECTION END

NO >> GO TO 3.

3. CHECK CIRCUIT BETWEEN TCM AND TRANSMISSION RANGE SWITCH

1. Turn ignition switch OFF.
2. Disconnect transmission range switch connector.
3. Check continuity between TCM harness connector terminal and transmission range switch harness connector terminal.

TCM		Transmission range switch		Continuity
Connector	Terminal	Connector	Terminal	
E74	21	F212	4	Existed

Is the check result normal?

YES >> GO TO 4.

NO >> Repair or replace malfunctioning parts.

4. CHECK CIRCUIT BETWEEN TCM AND TRANSMISSION RANGE SWITCH

Check continuity between transmission range switch harness connector terminal and ground.

Transmission range switch		—	Continuity
Connector	Terminal		
F212	4	Ground	Not existed

Is the check result normal?

YES >> Replace the transmission range switch.

NO >> Repair or replace malfunctioning parts.

5. DETECT MALFUNCTIONING ITEMS

Check following items:

- Harness open circuit or short circuit between transmission range switch harness connector and accessory relay-2.
- Harness open circuit or short circuit between accessory relay-2 and fuse block (J/B).
- 5A fuse (No. 25)
- Accessory relay
- Battery

P2803 TRANSMISSION RANGE SENSOR B

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

Is the check result normal?

YES >> INSPECTION END

NO >> Repair or replace malfunctioning parts.

U0073 COMMUNICATION BUS A OFF

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

U0073 COMMUNICATION BUS A OFF

DTC Description

INFOID:000000014419013

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

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
		Diagnosis condition	Engine: Running
U0073	COMM BUS A OFF (Control Module Communication Bus "A" Off)	Signal	—
		Threshold	When CAN communication error (bus off) is detected
		Diagnosis delay time	—

POSSIBLE CAUSE

Harness or connector (CAN communication line is error)

FAIL-SAFE

- Lock-up is prohibited
- Harsh shift
- Acceleration is slow

DTC CONFIRMATION PROCEDURE

1. PREPARATION BEFORE WORK

If another "DTC CONFIRMATION PROCEDURE" occurs just before, turn ignition switch OFF and wait for at least 25 seconds, then perform the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

1. Start the engine and wait for at least 2 seconds.
2. Check the DTC.

Is "U0073" detected?

- YES >> Refer to [TM-197, "Diagnosis Procedure"](#).
- NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).
- NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014419014

For the diagnosis procedure, refer to [LAN-53, "Trouble Diagnosis Flow Chart"](#).

U0100 LOST COMMUNICATION (ECM A)

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

U0100 LOST COMMUNICATION (ECM A)

DTC Description

INFOID:000000014419015

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
		Diagnosis condition	Engine: Running
U0100	LOST COMM (ECM) A (Lost Communication With ECM/PCM "A")	Signal	—
		Threshold	TCM is unable to receive the CAN communication signal from ECM
		Diagnosis delay time	—

POSSIBLE CAUSE

- ECM
- Harness or connector (CAN communication line is open or shorted)

FAIL-SAFE

- Lock-up is prohibited
- Harsh shift
- Acceleration is slow

DTC CONFIRMATION PROCEDURE

1. PREPARATION BEFORE WORK

If another "DTC CONFIRMATION PROCEDURE" occurs just before, turn ignition switch OFF and wait for at least 25 seconds, then perform the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

1. Start the engine and wait for at least 2 seconds.
2. Check the DTC.

Is "U0100" detected?

YES >> Refer to [TM-198, "Diagnosis Procedure"](#).

NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).

NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014419016

For the diagnosis procedure, refer to [LAN-53, "Trouble Diagnosis Flow Chart"](#).

U0102 LOST COMMUNICATION (TRANSFER)

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

U0102 LOST COMMUNICATION (TRANSFER)

DTC Description

INFOID:000000014419017

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
		Diagnosis condition	Engine: Running
U0102	LOST COMM (TRANSFER) (Lost Communication with Transfer Case Control Module)	Signal	—
		Threshold	TCM is unable to receive the CAN communi- cation signal from transfer control unit
		Diagnosis delay time	—

POSSIBLE CAUSE

- Transfer control unit
- Harness or connector (CAN communication line is open or shorted)

FAIL-SAFE

4WD mode switch: HI

DTC CONFIRMATION PROCEDURE

1. PREPARATION BEFORE WORK

If another "DTC CONFIRMATION PROCEDURE" occurs just before, turn ignition switch OFF and wait for at least 25 seconds, then perform the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

1. Start the engine and wait for at least 2 seconds.
2. Check the DTC.

Is "U0102" detected?

YES >> Refer to [TM-199, "Diagnosis Procedure"](#).

NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).

NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014419018

For the diagnosis procedure, refer to [LAN-53, "Trouble Diagnosis Flow Chart"](#).

U0140 LOST COMMUNICATION (BCM)

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

U0140 LOST COMMUNICATION (BCM)

DTC Description

INFOID:000000014419019

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
		Diagnosis condition	Engine: Running
U0140	LOST COMM (BCM) (Lost Communication With Body Control Module)	Signal	—
		Threshold	TCM is unable to receive the CAN communication signal from BCM
		Diagnosis delay time	—

POSSIBLE CAUSE

- BCM
- Harness or connector (CAN communication line is open or shorted)

FAIL-SAFE

Either of following status is observed

- Braking force may decrease
- Not changed from normal driving

DTC CONFIRMATION PROCEDURE

1. PREPARATION BEFORE WORK

If another "DTC CONFIRMATION PROCEDURE" occurs just before, turn ignition switch OFF and wait for at least 25 seconds, then perform the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

④ With CONSULT

1. Start the engine and wait for at least 2 seconds.
2. Check the DTC.

Is "U0140" detected?

YES >> Refer to [TM-200, "Diagnosis Procedure"](#).

NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).

NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014419020

For the diagnosis procedure, refer to [LAN-53, "Trouble Diagnosis Flow Chart"](#).

U0155 LOST COMMUNICATION (IPC)

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

U0155 LOST COMMUNICATION (IPC)

DTC Description

INFOID:000000014419021

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
		Diagnosis condition	Engine: Running
U0155	LOST COMM (IPC) (Lost Communication With Instrument Panel Cluster (IPC) Control Module)	Signal	—
		Threshold	TCM is unable to receive the CAN communication signal from combination meter
		Diagnosis delay time	—

POSSIBLE CAUSE

- Combination meter
- Harness or connector (CAN communication line is open or shorted)

FAIL-SAFE

- Manual mode is prohibited
- Tow mode is prohibited

DTC CONFIRMATION PROCEDURE

1. PREPARATION BEFORE WORK

If another "DTC CONFIRMATION PROCEDURE" occurs just before, turn ignition switch OFF and wait for at least 25 seconds, then perform the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

Ⓜ With CONSULT

1. Start the engine and wait for at least 2 seconds.
2. Check the DTC.

Is "U0155" detected?

- YES >> Refer to [TM-201, "Diagnosis Procedure"](#).
- NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).
- NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014419022

For the diagnosis procedure, refer to [LAN-53, "Trouble Diagnosis Flow Chart"](#).

U0401 COMMUNICATION ERROR (INVALID)

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

U0401 COMMUNICATION ERROR (INVALID)

DTC Description

INFOID:000000014419023

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
		Diagnosis condition	Engine: Running
U0401	COMMUNICATION ERROR (INVALID) (Invalid Data Received From ECM/ PCM "A")	Signal	—
		Threshold	When CAN communication with ECM has a malfunction
		Diagnosis delay time	—

POSSIBLE CAUSE

- ECM
- Harness or connector (CAN communication line is open or shorted)

FAIL-SAFE

- Lock-up is prohibited
- Harsh shift

DTC CONFIRMATION PROCEDURE

1. PREPARATION BEFORE WORK

If another "DTC CONFIRMATION PROCEDURE" occurs just before, turn ignition switch OFF and wait for at least 25 seconds, then perform the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

1. Start the engine and wait for at least 1 second.
2. Check the DTC.

Is "U0401" detected?

- YES >> Refer to [TM-202, "Diagnosis Procedure"](#).
NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014419024

For the diagnosis procedure, refer to [LAN-53, "Trouble Diagnosis Flow Chart"](#).

U0403 COMMUNICATION ERROR (INVALID)

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

U0403 COMMUNICATION ERROR (INVALID)

DTC Description

INFOID:000000014419025

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
		Diagnosis condition	Engine: Running
U0403	COMMUNICATION ERROR (INVALID) (Invalid Data Received From Transfer Case Control Module)	Signal	—
		Threshold	When CAN communication with transfer control unit has a malfunction
		Diagnosis delay time	—

POSSIBLE CAUSE

- Transfer control unit
- Harness or connector (CAN communication line is open or shorted)

FAIL-SAFE

4WD mode switch: HI

DTC CONFIRMATION PROCEDURE

1. PREPARATION BEFORE WORK

If another "DTC CONFIRMATION PROCEDURE" occurs just before, turn ignition switch OFF and wait for at least 25 seconds, then perform the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

1. Start the engine and wait for at least 1 second.
2. Check the DTC.

Is "U0403" detected?

YES >> Refer to [TM-204, "Diagnosis Procedure"](#).

NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).

NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014419026

For the diagnosis procedure, refer to [LAN-53, "Trouble Diagnosis Flow Chart"](#).

U0416 COMMUNICATION ERROR (INVALID)

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

U0416 COMMUNICATION ERROR (INVALID)

DTC Description

INFOID:000000014419027

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
U0416	COMMUNICATION ERROR (INVALID) (Invalid Data Received From Vehicle Dynamics Control Module)	Diagnosis condition	Engine: Running
		Signal	—
		Threshold	When CAN communication with VDC has a malfunction
		Diagnosis delay time	—

POSSIBLE CAUSE

- ABS actuator and electric unit (control unit)
- Harness or connector (CAN communication line is open or shorted)

FAIL-SAFE

Not changed from normal driving

DTC CONFIRMATION PROCEDURE

1. PREPARATION BEFORE WORK

If another "DTC CONFIRMATION PROCEDURE" occurs just before, turn ignition switch OFF and wait for at least 25 seconds, then perform the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

Ⓟ With CONSULT

1. Start the engine and wait for at least 1 second.
2. Check the DTC.

Is "U0416" detected?

- YES >> Refer to [TM-204, "Diagnosis Procedure"](#).
NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014419028

For the diagnosis procedure, refer to [LAN-53, "Trouble Diagnosis Flow Chart"](#).

U1000 CAN COMM CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

U1000 CAN COMM CIRCUIT

DTC Description

INFOID:000000014419029

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
		Diagnosis condition	Engine: Running
U1000	CAN COMM CIRCUIT (CAN COMM CIRCUIT)	Signal	—
		Threshold	TCM cannot send the CAN communication signal
		Diagnosis delay time	—

POSSIBLE CAUSE

- TCM
- Harness or connector (CAN communication line is open or shorted)

FAIL-SAFE

—

DTC CONFIRMATION PROCEDURE

1. PREPARATION BEFORE WORK

If another "DTC CONFIRMATION PROCEDURE" occurs just before, turn ignition switch OFF and wait for at least 25 seconds, then perform the next test.

>> GO TO 2.

2. CHECK DTC DETECTION

1. Start the engine and wait for at least 2 seconds.
2. Check the DTC.

Is "U1000" detected?

YES >> Refer to [TM-205, "Diagnosis Procedure"](#).

NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).

NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014419030

For the diagnosis procedure, refer to [LAN-53, "Trouble Diagnosis Flow Chart"](#).

U1117 LOST COMMUNICATION (ABS)

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

U1117 LOST COMMUNICATION (ABS)

DTC Description

INFOID:000000014419031

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
		Diagnosis condition	Engine: Running
U1117	LOST COMM (ABS) (LOST COMM (ABS))	Signal	—
		Threshold	TCM is unable to receive the CAN communication signal from ABS/VDC
		Diagnosis delay time	—

POSSIBLE CAUSE

- ABS actuator and electric unit (control unit)
- Harness or connector (CAN communication line is open or shorted)

FAIL-SAFE

- Lock-up is prohibited
- Not changed from normal driving

DTC CONFIRMATION PROCEDURE

1. PREPARATION BEFORE WORK

If another "DTC CONFIRMATION PROCEDURE" occurs just before, turn ignition switch OFF and wait for at least 25 seconds, then perform the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

1. Start the engine and wait for at least 2 seconds.
2. Check the DTC.

Is "U1117" detected?

YES >> Refer to [TM-206, "Diagnosis Procedure"](#).

NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).

NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014419032

For the diagnosis procedure, refer to [LAN-53, "Trouble Diagnosis Flow Chart"](#).

TOW MODE SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

TOW MODE SWITCH

Diagnosis Procedure

INFOID:000000014419033

1. CHECK TCM INPUT SIGNAL

1. Turn ignition switch ON.
2. Select "TOW mode switch 1" in "Data Monitor" in "TRANSMISSION".
3. Check the ON/OFF operations of each monitor item.

Monitor Item	Condition	Status
TOW mode switch 1	TOW mode switch: Pushed	ON
	Other than the above	OFF

Is the inspection result normal?

- YES >> Check intermittent incident. Refer to [GI-47, "Intermittent Incident"](#).
 NO >> GO TO 2.

2. CHECK CIRCUIT BETWEEN COMBINATION METER AND A/T SHIFT SELECTOR

1. Turn ignition switch OFF.
2. Disconnect combination meter connector and A/T shift selector connector.
3. Check continuity between A/T shift selector harness connector terminals and combination meter harness connector terminals.

A/T shift selector		Combination meter		Continuity
Connector	Terminal	Connector	Terminal	
M68	6	M24	10	Existed

Is the inspection result normal?

- YES >> GO TO 3.
 NO >> Repair or replace malfunctioning parts.

3. CHECK CIRCUIT BETWEEN COMBINATION METER AND A/T SHIFT SELECTOR

Check continuity between combination meter harness connector terminals and ground.

Combination meter		—	Continuity
Connector	Terminal		
M24	10	Ground	Not existed

Is the inspection result normal?

- YES >> GO TO 4.
 NO >> Repair or replace malfunctioning parts.

4. CHECK A/T SHIFT SELECTOR GROUND CIRCUIT

Check continuity between A/T shift selector connector harness connector terminals and ground.

A/T shift selector		—	Continuity
Connector	Terminal		
M68	2	Ground	Existed

Is the inspection result normal?

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

5. CHECK COMBINATION METER

Check combination meter. Refer to [MWI-77, "Work flow"](#) (TYPE A), [MWI-160, "Work flow"](#) (TYPE B).

Is the inspection result normal?

- YES >> Replace the A/T shift selector. Refer to [TM-219, "Removal and Installation"](#).

TOW MODE SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

NO >> Replace the combination meter. Refer to [MWI-108, "Removal and Installation"](#) (TYPE A), [MWI-187, "Removal and Installation"](#) (TYPE B).

MAIN POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

MAIN POWER SUPPLY AND GROUND CIRCUIT

Diagnosis Procedure

INFOID:000000014419034

1. CHECK TCM POWER SOURCE

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check voltage between TCM harness connector terminals and ground.

TCM		—	Condition	Voltage (Approx.)
Connector	Terminal			
E74	9	Ground	Turn ignition switch ON	Battery voltage
			Turn ignition switch OFF	0 V
E73	41		Always	Battery voltage
	42			

Is the inspection result normal?

- YES >> GO TO 2.
 NO >> GO TO 3.

2. CHECK TCM GROUND CIRCUIT

Check continuity between TCM harness connector terminals and ground.

TCM		—	Continuity
Connector	Terminal		
E73	36	Ground	Existed
	37		

Is the inspection result normal?

- YES >> Check intermittent incident. Refer to [GI-47. "Intermittent Incident"](#).
 NO >> Repair or replace malfunctioning parts.

3. DETECT MALFUNCTIONING ITEM

Check the following.

- Harness open circuit or short circuit between fuse block (J/B) and TCM.
- Harness open circuit or short circuit between fuse block (J/B) and battery.
- 10A fuse (No. 2)
- Fuse block (J/B)
- Battery
- Harness open circuit or short circuit between IPDM E/R and TCM.
- Harness open circuit or short circuit between IPDM E/R and ignition switch.
- 10A fuse (No. 47)
- IPDM E/R
- Ignition switch

Is the inspection result normal?

- YES >> Check intermittent incident. Refer to [GI-47. "Intermittent Incident"](#).
 NO >> Repair or replace malfunctioning parts.

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SHIFT LOCK SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

SHIFT LOCK SYSTEM

Component Function Check

INFOID:000000014419035

1. CHECK SHIFT LOCK OPERATION (1)

1. Turn ignition ON.
2. Shift the selector lever to "P" (Park) 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?

- YES >> Refer to [TM-210, "Diagnosis Procedure"](#).
NO >> GO TO 2.

2. CHECK SHIFT LOCK OPERATION (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 >> Refer to [TM-210, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000014419036

Regarding Wiring Diagram information, refer to [TM-83, "Wiring Diagram"](#).

1. CHECK POWER SOURCE

1. Turn ignition switch OFF.
2. Disconnect BCM connector M18.
3. Check voltage between BCM connector M18 terminal 27 and ground while pressing the brake pedal.

BCM		Ground	Condition	Voltage (Approx.)
Connector	Terminal		Brake pedal depressed	Battery voltage
M18	27			

Is the inspection result normal?

- YES >> GO TO 3.
NO >> GO TO 2.

2. CHECK STOP LAMPS

Do the stop lamps operate normally?

Is the inspection result normal?

- YES >> Check the following:
- Harness between fuse block (J/B) and BCM
 - Fuse block (J/B)
- NO >> Refer to [EXL-77, "Wiring Diagram"](#) (with halogen headlamps) or [EXL-233, "Wiring Diagram"](#) (with LED headlamps).

3. CHECK HARNESS BETWEEN BCM AND A/T SHIFT SELECTOR

1. Disconnect A/T shift selector connector.
2. Check continuity between BCM connector M80 terminal 108 and A/T shift selector connector M68 terminal 3.

BCM		A/T shift selector		Continuity
Connector	Terminal	Connector	Terminal	
M80	108	M68	3	Yes

3. Check continuity between BCM connector M80 terminal 108 and ground.

SHIFT LOCK SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

BCM		Ground	Continuity
Connector	Terminal		
M80	108		No

Is the inspection result normal?

- YES >> GO TO 4.
- NO >> Repair or replace harness or connector.

4.CHECK GROUND CIRCUIT (A/T SHIFT SELECTOR)

Check continuity between A/T shift selector connector M68 terminal 3 and ground.

A/T shift selector		Ground	Continuity
Connector	Terminal		
M68	3		Yes

Is the inspection result normal?

- YES >> Replace A/T shift selector. Refer to [TM-219, "Removal and Installation"](#).
- NO >> Repair or replace harness or connector.

Component Inspection (Shift Lock Solenoid)

INFOID:0000000014419037

1.CHECK SHIFT LOCK SOLENOID

Apply voltage to terminals of shift lock solenoid and park position switch (shift selector) connector and check that shift lock solenoid is activated.

CAUTION:

- Connect the fuse between the terminals when applying the voltage.
- Never cause shorting between terminals.

+	-	Condition	Status
Shift lock solenoid			
Terminals			
1	3	Apply 12 V between terminals 1 and 3 with the park position switch (shift selector) in the "P" (park) position.	Shift lock solenoid operates.

Is the inspection result normal?

- YES >> Inspection End.
- NO >> Replace A/T shift selector. Refer to [TM-220, "Inspection and Adjustment"](#).

Component Inspection (Park Position Switch)

INFOID:0000000014419038

1.CHECK PARK POSITION SWITCH (SHIFT SELECTOR)

Apply voltage to terminals of shift lock solenoid and park position switch (shift selector) connector and check that shift lock solenoid is activated.

CAUTION:

- Connect the fuse between the terminals when applying the voltage.
- Never cause shorting between terminals.

+	-	Condition	Status
Shift lock solenoid			
Terminals			
1	3	Apply 12 V between terminals 1 and 3 with the park position switch (shift selector) in the "P" (park) position.	Shift lock solenoid operates.

Is the inspection result normal?

SHIFT LOCK SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

[6AT: RE6R01A]

- YES >> Inspection End.
NO >> Replace A/T shift selector. Refer to [TM-219, "Removal and Installation"](#).

Component Inspection (Stop Lamp Switch)

INFOID:0000000014419039

1. CHECK STOP LAMP SWITCH

Check the continuity between the stop lamp switch connector terminals.

Stop lamp switch		Condition	Continuity
Terminals			
1	2	Brake pedal depressed	Yes
		Brake pedal released	No

Is the inspection result normal?

- YES >> Inspection End.
NO >> Replace stop lamp switch. Refer to [BR-21, "Exploded View"](#).

Component Inspection (Stop Lamp Relay)

INFOID:0000000014419040

1. CHECK STOP LAMP RELAY

Check continuity between stop lamp relay terminals.

CAUTION:

Connect the fuse between the terminals when applying the voltage.

Stop lamp relay connector		Condition	Continuity
Terminal			
3	5	Apply 12 V direct current between terminals 1 and 2.	Yes
		OFF	No

Is the inspection result normal?

- YES >> Inspection End.
NO >> Replace stop lamp relay.

SYSTEM SYMPTOM

< SYMPTOM DIAGNOSIS >

[6AT: RE6R01A]

SYMPTOM DIAGNOSIS

SYSTEM SYMPTOM

Symptom Table

INFOID:0000000014419041

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

		Diagnostic item																							
		Output speed sensor	Input speed sensor	Engine speed signal	A/T fluid temperature sensor 1	A/T fluid temperature sensor 2	Transmission range switch	C1 clutch solenoid valve	C2 clutch solenoid valve	C3 clutch solenoid valve	B1 brake solenoid valve	B2 brake solenoid valve	Torque converter clutch solenoid valve	Line pressure solenoid valve	Fail-safe solenoid valve	C1 clutch	C2 clutch	C3 clutch	B1 brake	B2 brake	Torque converter clutch	Battery voltage	Oil pressure switch	Accelerator pedal position	CAN communication
Power transmission	Does not power transmission	Engine does not start.					①																		
		Engine stall		④	①								③									⑤			②
		Driving is not possible in "D" position.						⑦	②	③	④	⑤	⑥		①	⑧	⑨	⑨	⑨	⑨	⑨	⑩			
		Driving is not possible in "R" position.						④			②		③		①				⑤		⑥	⑦			
	Poor power transmission	Engine brake does not work											①									②			
		Poor power transmission	①	③	④			⑦	⑧	⑨	⑩	⑪		⑥			⑫	⑫	⑫	⑫	⑫			②	⑤
Switch the power transmission	Vehicle moves forward with the "R" position.						①	②	③	④	⑤	⑥				⑦	⑦	⑦	⑦	⑦					
	Vehicle moves backward with the "D" position.						①			②		③						④		⑤					
	Vehicle moves forward with A/T in "N" position.						①	②	③	④	⑤	⑥				⑦	⑦	⑦	⑦	⑦					
	Vehicle moves backward with the "N" position.						①			②		③						④		⑤					

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SYSTEM SYMPTOM

< SYMPTOM DIAGNOSIS >

[6AT: RE6R01A]

Symptom		Diagnostic item																								
		Output speed sensor	Input speed sensor	Engine speed signal	A/T fluid temperature sensor 1	A/T fluid temperature sensor 2	Transmission range switch	C1 clutch solenoid valve	C2 clutch solenoid valve	C3 clutch solenoid valve	B1 brake solenoid valve	B2 brake solenoid valve	Torque converter clutch solenoid valve	Line pressure solenoid valve	Fail-safe solenoid valve	C1 clutch	C2 clutch	C3 clutch	B1 brake	B2 brake	Torque converter clutch	Battery voltage	Oil pressure switch	Accelerator pedal position	CAN communication	
Gear does no change	Locks in 3GR	①				⑮	⑫	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑯	⑯	⑯	⑯	⑯		⑬	⑭	②	③	
	Locks in 4GR	①					⑫	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑮	⑮	⑮	⑮	⑮		⑬	⑭	②	③	
	Locks in 5GR	①					⑫	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑮	⑮	⑮	⑮	⑮		⑬	⑭	②	③	
	Shift point is high in "D" position.	①				④																		②	③	
	Shift point is low in "D" position.	①				④																		②	③	
Shift Large shock When shifting gears	1GR ⇔ 2GR	①	③	④		⑥		⑧			⑩	⑨		⑦		⑪	⑪	⑪	⑪	⑪				②	⑤	
	2GR ⇔ 3GR	①	③	④		⑥		⑧		⑩	⑨			⑦		⑪	⑪	⑪	⑪	⑪				②	⑤	
	3GR ⇔ 4GR	①	③	④		⑥		⑧	⑩	⑨				⑦		⑪	⑪	⑪	⑪	⑪				②	⑤	
	4GR ⇔ 5GR	①	③	④		⑥		⑧	⑨	⑩				⑦		⑪	⑪	⑪	⑪	⑪				②	⑤	
	5GR ⇔ 6GR	①	③	④		⑥			⑧	⑨	⑩			⑦		⑪	⑪	⑪	⑪	⑪				②	⑤	
	6GR → 4GR position	①	③	④		⑥		⑧	⑨		⑩			⑦		⑪	⑪	⑪	⑪	⑪				②	⑤	
	5GR → 3GR position	①	③	④		⑥		⑧	⑩	⑨				⑦		⑪	⑪	⑪	⑪	⑪				②	⑤	
	4GR → 2GR position	①	③	④		⑥		⑧	⑨		⑩			⑦		⑪	⑪	⑪	⑪	⑪				②	⑤	
	3GR → 1GR position	①	③	④		⑥		⑧		⑩		⑨		⑦		⑪	⑪	⑪	⑪	⑪				②	⑤	
	"N" → "D" position	③	②	①		⑥	⑦	⑨				⑩		⑧		⑪	⑪	⑪	⑪	⑪				④	⑤	
	"D" → "N" position		②	①			④	⑥					⑦		⑤		⑧	⑧	⑧	⑧	⑧					③
	"N" → "R" position	③	②	①		⑥	⑦	⑨				⑩		⑧		⑪	⑪	⑪	⑪	⑪				④	⑤	
	"R" → "N" position		②	①			④	⑥					⑦		⑤		⑧	⑧	⑧	⑧	⑧					③
	Lock-up		②	①		⑤								⑦	⑥							⑧			③	④

SYSTEM SYMPTOM

< SYMPTOM DIAGNOSIS >

[6AT: RE6R01A]

Symptom		Diagnostic item																									
		Output speed sensor	Input speed sensor	Engine speed signal	A/T fluid temperature sensor 1	A/T fluid temperature sensor 2	Transmission range switch	C1 clutch solenoid valve	C2 clutch solenoid valve	C3 clutch solenoid valve	B1 brake solenoid valve	B2 brake solenoid valve	Torque converter clutch solenoid valve	Line pressure solenoid valve	Fail-safe solenoid valve	C1 clutch	C2 clutch	C3 clutch	B1 brake	B2 brake	Torque converter clutch	Battery voltage	Oil pressure switch	Accelerator pedal position	CAN communication		
Shift	Slip	When shifting gears	1GR ⇄ 2GR	①	③	④		⑥		⑧		⑩	⑨		⑦		⑪	⑪	⑪	⑪	⑪				②	⑤	
			2GR ⇄ 3GR	①	③	④		⑥		⑧		⑩	⑨			⑦		⑪	⑪	⑪	⑪	⑪				②	⑤
			3GR ⇄ 4GR	①	③	④		⑥		⑧	⑩	⑨				⑦		⑪	⑪	⑪	⑪	⑪				②	⑤
			4GR ⇄ 5GR	①	③	④		⑥		⑧	⑨	⑩				⑦		⑪	⑪	⑪	⑪	⑪				②	⑤
			5GR ⇄ 6GR	①	③	④		⑥			⑧	⑨	⑩			⑦		⑪	⑪	⑪	⑪	⑪				②	⑤
			6GR → 4GR position	①	③	④		⑥		⑧	⑨		⑩			⑦		⑪	⑪	⑪	⑪	⑪				②	⑤
			5GR → 3GR position	①	③	④		⑥		⑧	⑩	⑨				⑦		⑪	⑪	⑪	⑪	⑪				②	⑤
			4GR → 2GR position	①	③	④		⑥		⑧	⑨		⑩			⑦		⑪	⑪	⑪	⑪	⑪				②	⑤
			3GR → 1GR position	①	③	④		⑥		⑧		⑩		⑨		⑦		⑪	⑪	⑪	⑪	⑪				②	⑤
			"N" → "D" position	③	②	①		⑥	⑦	⑨				⑩		⑧		⑪	⑪	⑪	⑪	⑪				④	⑤
			"D" → "N" position		②	①			④	⑥				⑦		⑤		⑧	⑧	⑧	⑧	⑧					③
			"N" → "R" position	③	②	①		⑥	⑦	⑨				⑩		⑧		⑪	⑪	⑪	⑪	⑪				④	⑤
			"R" → "N" position		②	①			④	⑥				⑦		⑤		⑧	⑧	⑧	⑧	⑧					③
			Lock-up		②	①		⑤							⑦	⑥								⑧		③	④
Vehicle does not enter parking condition.						①																					
Parking condition is not cancelled.						①																					

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PERIODIC MAINTENANCE

A/T FLUID

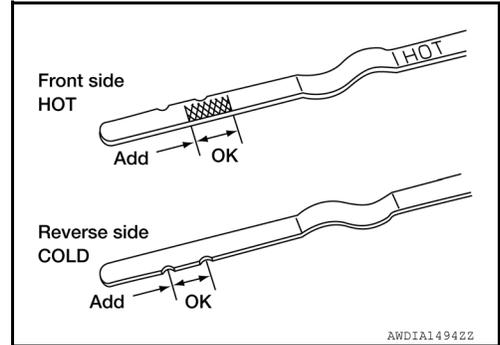
Checking the A/T Fluid (ATF)

INFOID:000000014419042

CAUTION:

If using the vehicle for towing, the A/T fluid must be replaced as specified. Refer to [MA-9, "Introduction of Periodic Maintenance"](#).

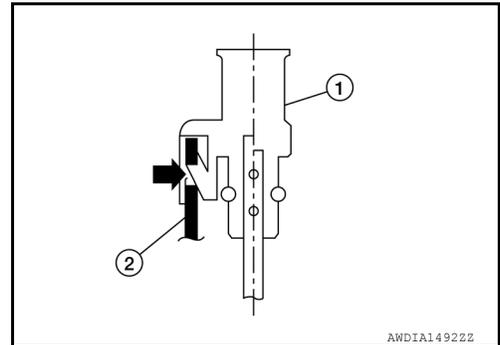
1. Before driving, the A/T fluid level can be checked at A/T fluid temperatures of 30° to 50° C (86° to 122° F) using the "COLD" range on the A/T fluid level gauge as follows:
 - a. Park the vehicle on a level surface and set the parking brake.
 - b. Start the engine and move the selector lever through each gear position. Shift the selector lever into the "P" position.
 - c. Check the A/T fluid level with the engine idling.



- d. Pull out the A/T fluid level gauge (1) from the A/T fluid charging pipe (2) after pressing the A/T fluid level gauge in the direction shown (←) to release the lock, and wipe it clean with a lint-free paper.

CAUTION:

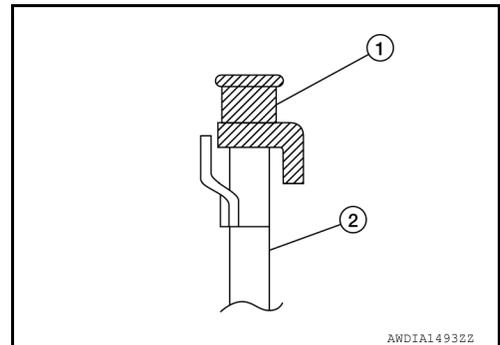
When wiping the A/T fluid from the A/T fluid level gauge, always use a lint-free paper, not a cloth.



- e. Re-insert the A/T fluid level gauge (1) rotating 180° from the originally installed position, then securely push the A/T fluid level gauge until it meets the top end of the A/T fluid charging pipe (2).

CAUTION:

To check A/T fluid level, insert the A/T fluid level gauge until the cap contacts the top of the A/T fluid charging pipe, with the gauge reversed from the normal inserted position.



- f. Remove the A/T fluid level gauge and note the A/T fluid level. If the A/T fluid level is at low side of range, add A/T fluid to the transmission through the A/T fluid charging pipe.

CAUTION:

Do not overfill the transmission with A/T fluid.

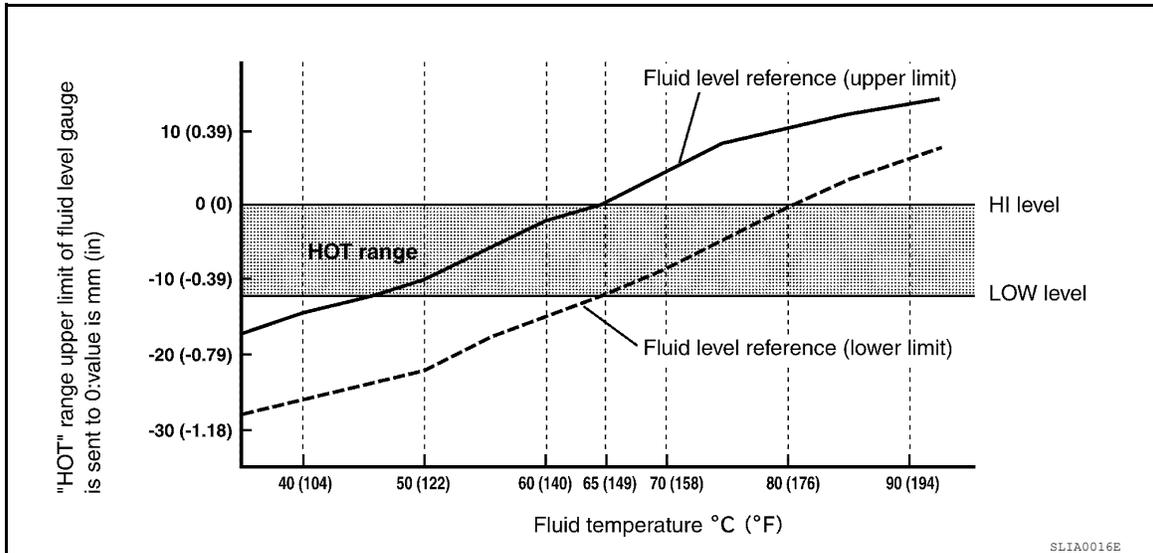
- g. Install the A/T fluid level gauge.
2. Warm up the engine and transmission.
3. Check for any A/T fluid leaks.
4. Drive the vehicle to increase the A/T fluid temperature to 80° C (176° F).

A/T FLUID

< PERIODIC MAINTENANCE >

[6AT: RE6R01A]

- Allow the A/T fluid temperature to fall to approximately 65°C (149°F). Use the CONSULT to monitor the A/T fluid temperature as follows:



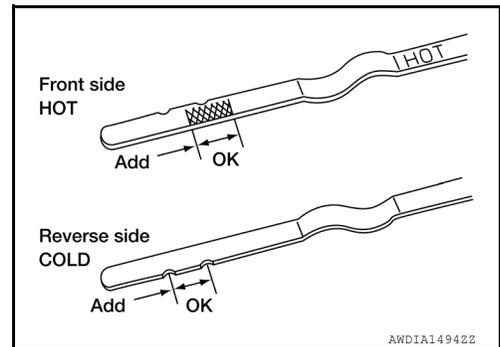
NOTE:

The A/T fluid level will be significantly affected by the A/T fluid temperature as shown. Therefore monitor the A/T fluid temperature data using the CONSULT.

- Connect CONSULT to data link connector.
 - Select "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT.
 - Read out the value of "ATF TEMP 1".
- Re-check the A/T fluid level at A/T fluid temperatures of approximately 65°C (149°F) using the "HOT" range on the A/T fluid level gauge as shown. The HOT range is between 50° - 80° C (122° - 176° F).

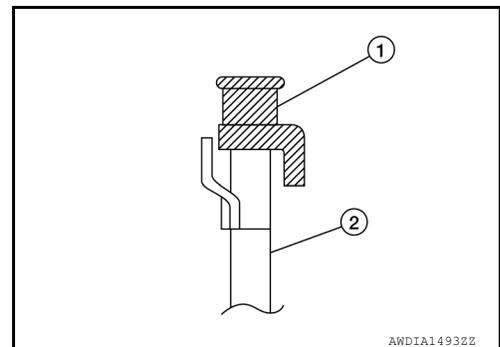
CAUTION:

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



CAUTION:

To check the A/T fluid level, insert the A/T fluid level gauge (1) until the cap contacts the top of the A/T fluid charging pipe (2), with the gauge reversed from the normal inserted position as shown.



- Check the A/T fluid condition.
 - If the A/T fluid is very dark or has some burned smell, there may be an internal problem with the transmission. Flush the transmission cooling system after repairing the transmission.
 - If the A/T fluid contains frictional material (clutches, bands, etc.), replace the radiator and flush the transmission cooler lines using cleaning solvent and compressed air after repairing the transmission.
- Install the A/T fluid level gauge in the A/T fluid charging pipe.

CAUTION:

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P

A/T FLUID

< PERIODIC MAINTENANCE >

[6AT: RE6R01A]

When reinstalling A/T fluid level gauge, insert it into the A/T fluid charging pipe and rotate it to the original installation position until it is securely locked.

Changing the A/T Fluid (ATF)

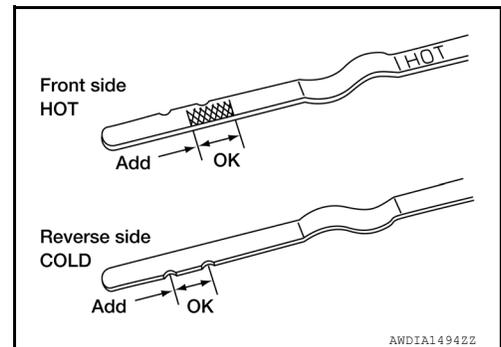
INFOID:000000014419043

CAUTION:

If using the vehicle for towing, the A/T fluid must be replaced as specified. Refer to [MA-58, "Introduction of Periodic Maintenance"](#).

1. Drive the vehicle to warm up the A/T fluid to approximately 80° C (176° F).
2. Stop the engine.
3. Remove the A/T fluid level gauge.
4. Drain the A/T fluid from the drain plug hole, then install the drain plug with a new gasket. Refill the transmission with new A/T fluid. Always refill with the same volume as the drained A/T fluid. Use the A/T fluid level gauge to check the A/T fluid level as shown. Add A/T fluid as necessary.

Drain plug : Refer to [TM-224, "Exploded View"](#).

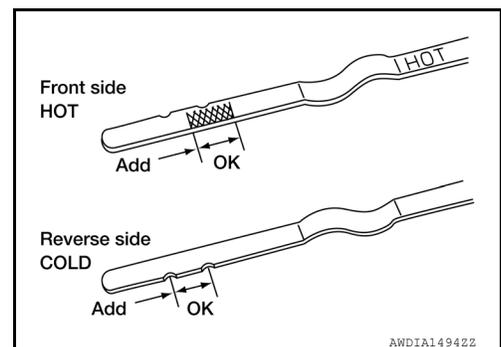


- To flush out the old A/T fluid from the transmission oil coolers, pour new A/T fluid into the A/T fluid charging pipe with the engine idling and at the same time drain the old A/T fluid from the auxiliary transmission oil cooler hose return line.
- When the color of the A/T fluid coming out of the auxiliary transmission oil cooler hose return line is about the same as the color of the new A/T fluid, flushing out the old A/T fluid is complete. The amount of new A/T fluid used for flushing should be 30% to 50% increase of the specified capacity.

A/T fluid grade and capacity : Refer to [MA-62, "Cummins 5.0L Engine : Fluids and Lubricants"](#).

CAUTION:

- If genuine NISSAN Matic K ATF is not available, Genuine NISSAN Matic J ATF may also be used. Using automatic transmission fluid other than Genuine NISSAN Matic K ATF or Matic J ATF will cause deterioration in driveability and automatic transmission durability, and may damage the automatic transmission, which is not covered by the NISSAN new vehicle limited warranty
 - When filling the transmission with A/T fluid, do not spill the A/T fluid on any heat generating parts such as the exhaust manifold.
 - Do not reuse the drain plug gasket.
5. Install the A/T fluid level gauge in the A/T fluid charging pipe.
 6. Drive the vehicle to warm up the A/T fluid to approximately 80° C (176° F).
 7. Check the fluid level and condition. If the A/T fluid is still dirty, repeat steps 2 through 6.



8. Install the A/T fluid level gauge in the A/T fluid charging pipe.

CAUTION:

When reinstalling A/T fluid level gauge, insert it into the A/T fluid charging pipe and rotate it to the original installation position until it is securely locked.

A/T SHIFT SELECTOR

< REMOVAL AND INSTALLATION >

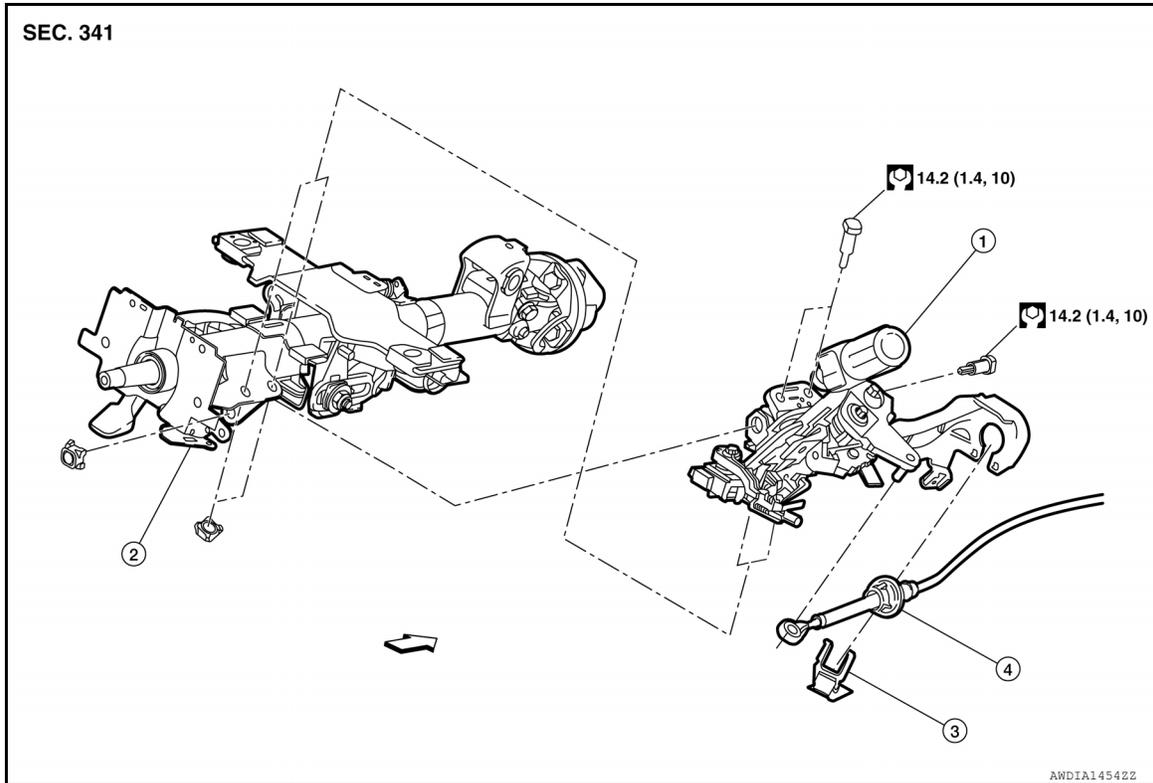
[6AT: RE6R01A]

REMOVAL AND INSTALLATION

A/T SHIFT SELECTOR

Exploded View

INFOID:0000000014419044



1. A/T shift selector

2. Steering column

3. Lock plate

4. Control cable

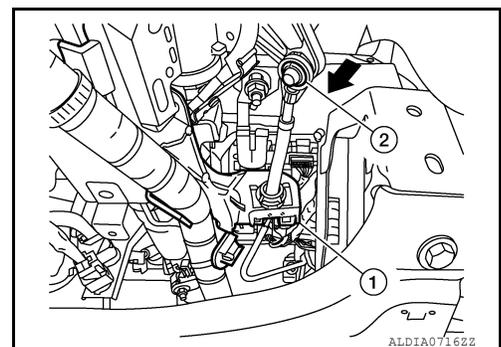
⇐ : Front

Removal and Installation

INFOID:0000000014419045

REMOVAL

1. Remove steering column covers. Refer to [ST-39. "Removal and Installation"](#).
2. Remove lock plate (1) and pull control cable (2) in the direction shown (⇐) to disconnect A/T shift selector.



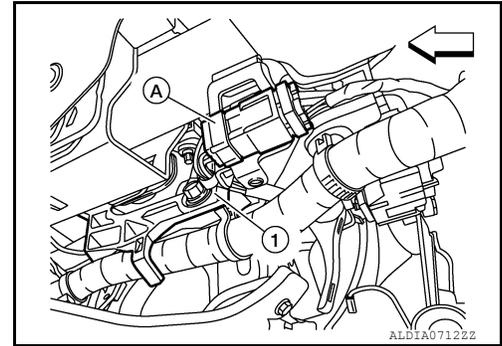
A/T SHIFT SELECTOR

< REMOVAL AND INSTALLATION >

[6AT: RE6R01A]

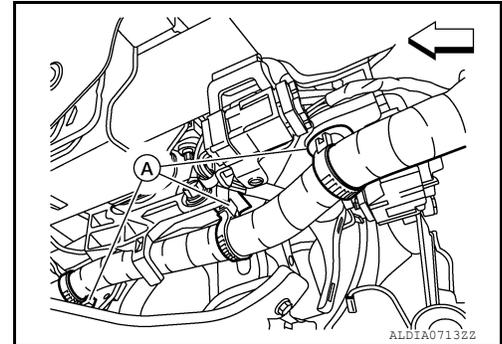
3. Disconnect harness connector (A) from A/T shift selector (1).

↩ : Front



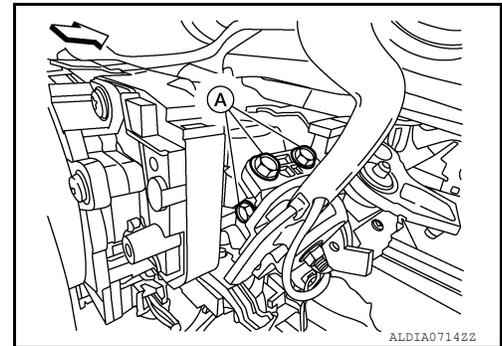
4. Release the harness clips (A) using a suitable tool.

↩ : Front



5. Remove bolts (A) from A/T shift selector.

↩ : Front



6. Remove A/T shift selector from steering column.

INSTALLATION

Installation is 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.
- Apply multi-purpose grease on the surface so that the shift lock unit plate slides vertically.

Inspection and Adjustment

INFOID:000000014419046

INSPECTION AFTER INSTALLATION

Check A/T positions after adjusting A/T positions. Refer to [TM-101, "Inspection and Adjustment"](#).

ADJUSTMENT AFTER INSTALLATION

Adjust A/T positions. Refer to [TM-101, "Inspection and Adjustment"](#).

CONTROL CABLE

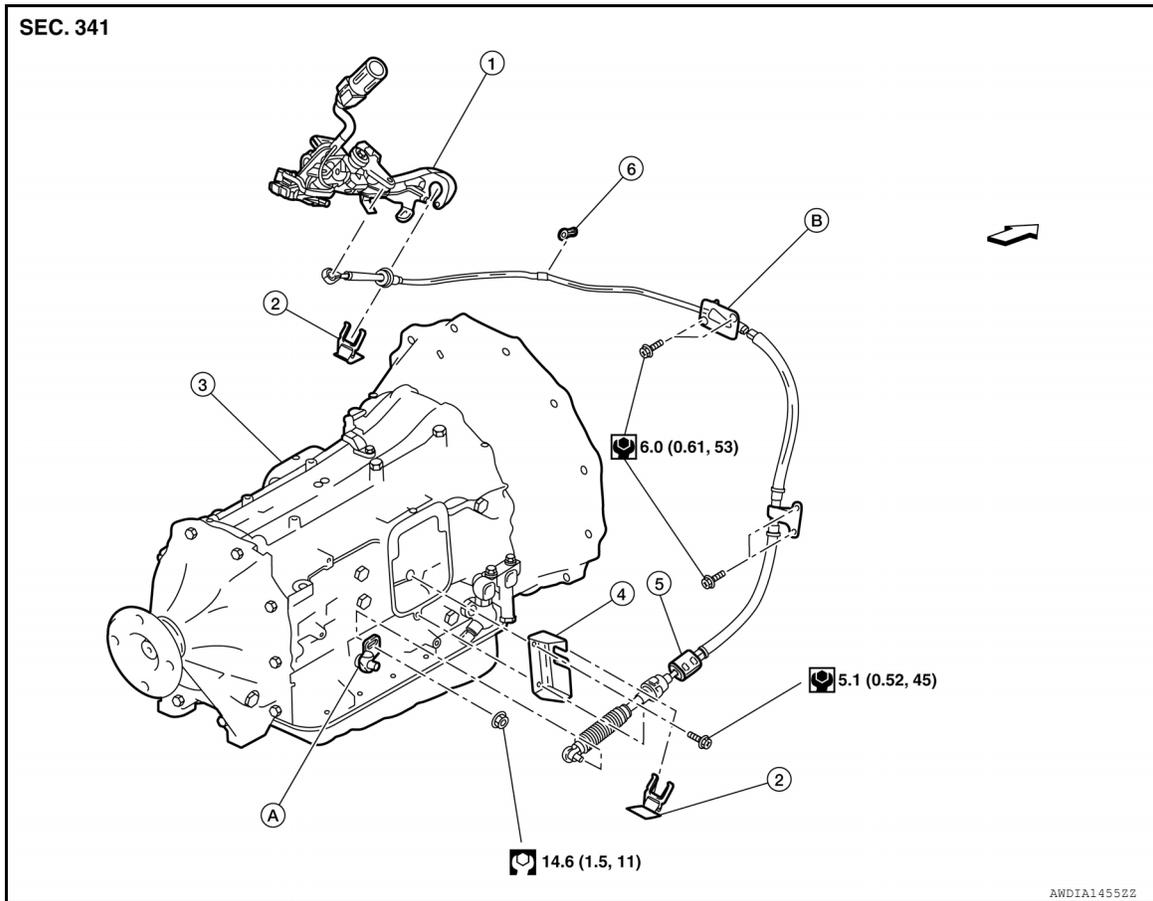
< REMOVAL AND INSTALLATION >

[6AT: RE6R01A]

CONTROL CABLE

Exploded View

INFOID:000000014419047



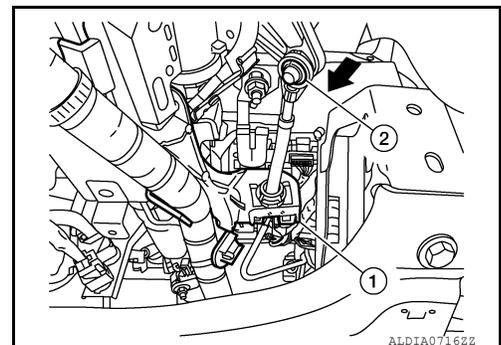
- | | | |
|-----------------------|------------------|-----------------|
| 1. A/T shift selector | 2. Lock plate | 3. A/T assembly |
| 4. Bracket | 5. Control cable | 6. Clip |
| A. Manual lever | B. Grommet | ← Front |

Removal and Installation

INFOID:000000014419048

REMOVAL

1. Remove heating and cooling unit and steering member from the vehicle as an assembly. Refer to [ST-77, "Removal and Installation"](#) for steering member and [HA-49, "HEATING AND COOLING UNIT ASSEMBLY : Removal and Installation"](#) or [HA-49, "HEATING AND COOLING UNIT ASSEMBLY : Removal and Installation"](#) for heating and cooling unit.
2. Remove lock plate (1) and pull control cable (2) in the direction shown (←) to disconnect control cable from A/T shift selector.



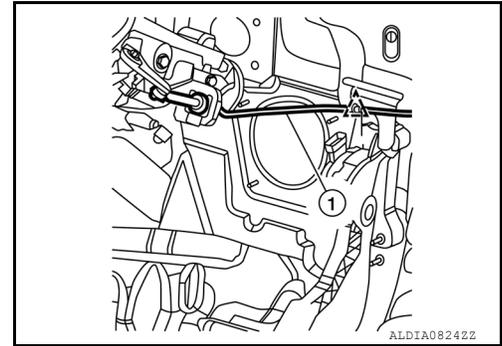
CONTROL CABLE

< REMOVAL AND INSTALLATION >

[6AT: RE6R01A]

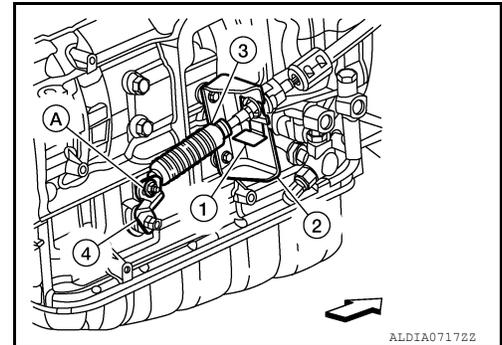
3. Release clip fastening control cable to accelerator pedal.

 : Clip

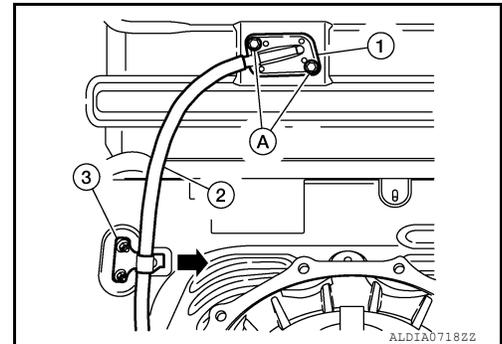


4. Remove nut (A) and remove control cable (3) from manual lever (4).
5. Remove lock plate (1) and disconnect control cable (3) from bracket (2).

 : Front



6. Remove bolts (A) from control cable grommet (1).
7. Disconnect control cable (2) from bracket (3) in the direction shown ().



8. Remove control cable from vehicle.

INSTALLATION

Installation is 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

INFOID:000000014419049

INSPECTION AFTER INSTALLATION

Check A/T positions after adjusting A/T positions. Refer to [TM-101, "Inspection and Adjustment"](#).

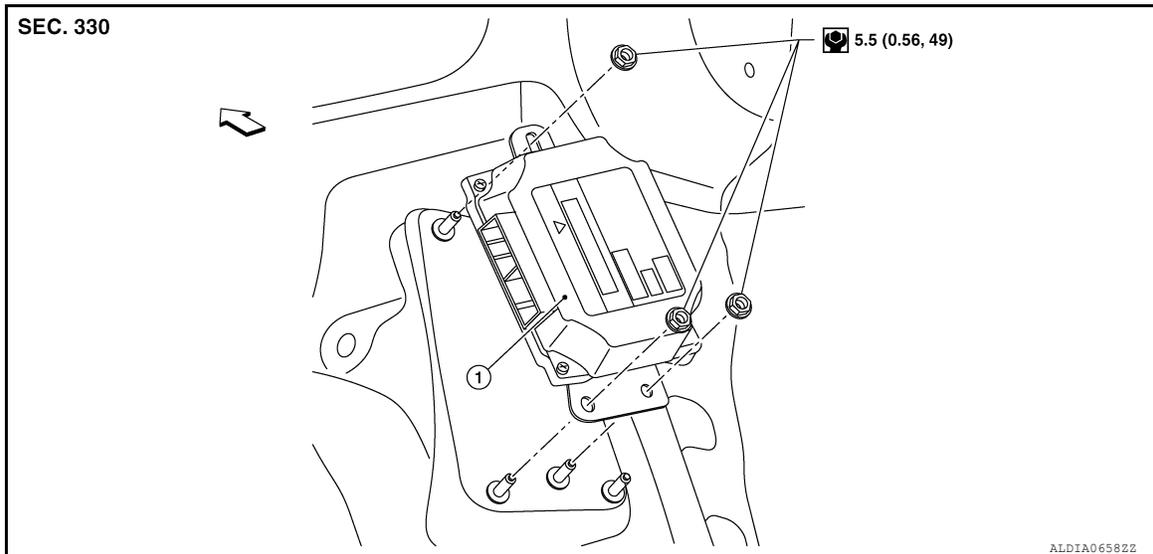
ADJUSTMENT AFTER INSTALLATION

Adjust A/T positions. Refer to [TM-101, "Inspection and Adjustment"](#).

TCM

Exploded View

INFOID:000000014419050



1. TCM
- ⇐ Front

Removal and Installation

INFOID:000000014419051

CAUTION:

- Do not impact the TCM when removing or installing TCM.
- When replacing TCM, perform "ADDITIONAL SERVICE WHEN REPLACING TCM". Refer to [TM-91, "Description"](#).
- When replacing TCM, note the "CVTF DETERIORATION DAT" value displayed on CONSULT "CONFIRM CVTF DETERIORATION" in MAINTENANCE BOOKLET, before starting the operation.

REMOVAL

1. Disconnect the battery or batteries. Refer to [PG-185, "Battery Disconnect"](#).
2. Pull back passenger side of front floor trim. Refer to [INT-30, "Removal and Installation"](#).
3. Disconnect harness connector from TCM.
4. Remove nuts and remove TCM from vehicle.

INSTALLATION

Installation is in the reverse order of removal.

ADJUSTMENT AFTER INSTALLATION

Perform "ADDITIONAL SERVICE WHEN REPLACING TCM." Refer to [TM-91, "Description"](#).

OIL PAN

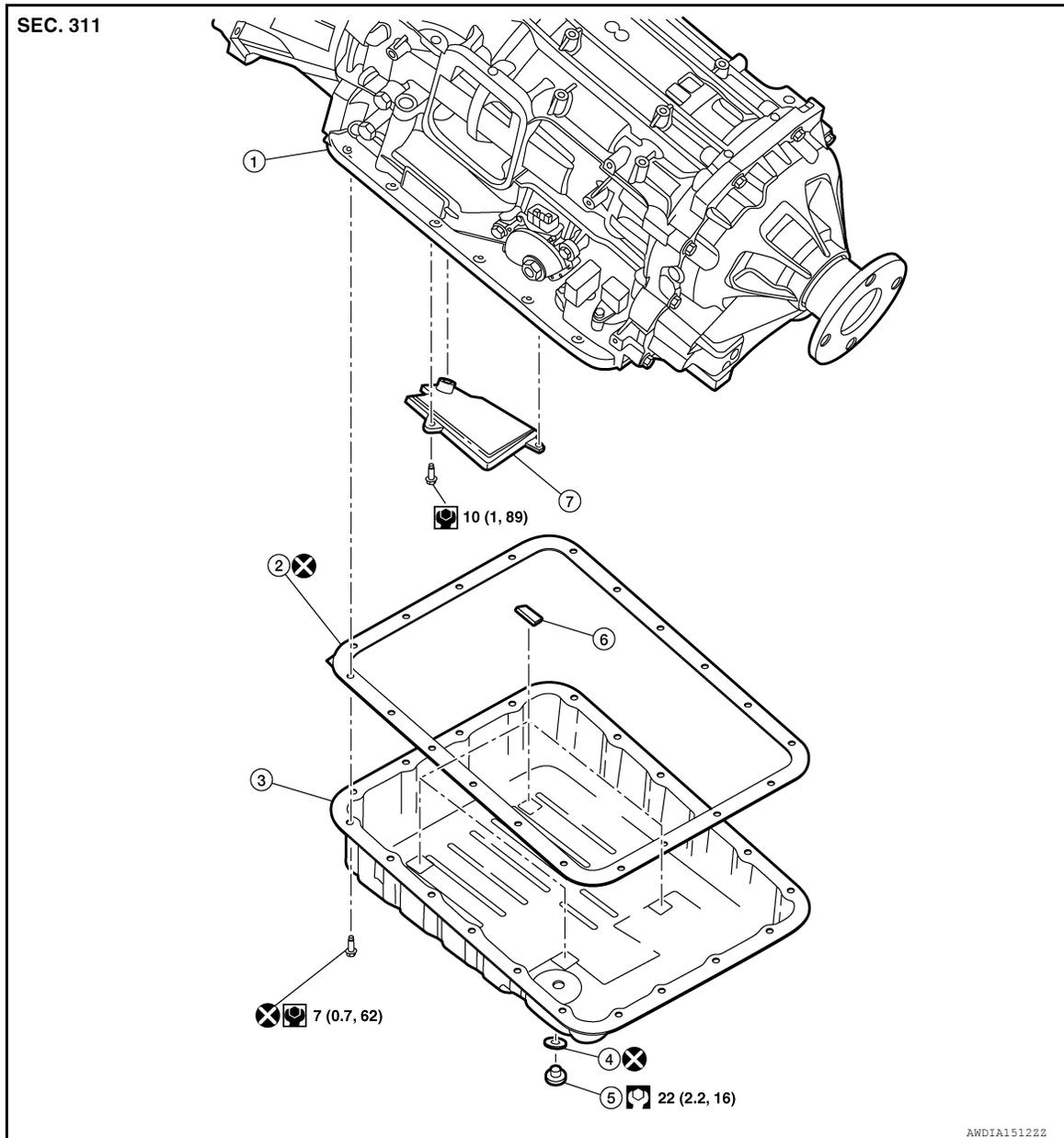
< REMOVAL AND INSTALLATION >

[6AT: RE6R01A]

OIL PAN

Exploded View

INFOID:000000014419052



- | | | |
|----------------------|-------------------|------------|
| 1. A/T assembly | 2. Oil pan gasket | 3. Oil pan |
| 4. Drain plug gasket | 5. Drain plug | 6. Magnet |
| 7. Oil strainer | | |

Removal and Installation

INFOID:000000014419053

REMOVAL

1. Drain fluid from the A/T. Refer to [TM-218, "Changing the A/T Fluid \(ATF\)"](#).

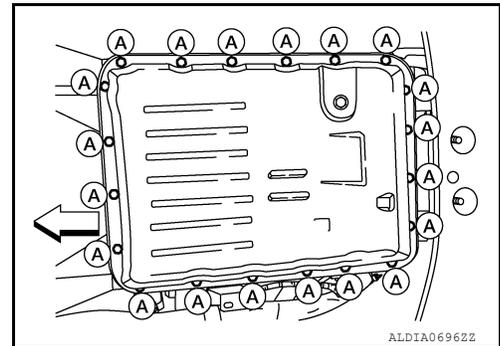
OIL PAN

< REMOVAL AND INSTALLATION >

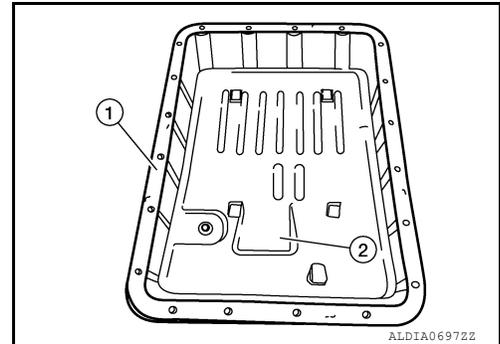
[6AT: RE6R01A]

2. Remove bolts (A) from the oil pan and remove oil pan.

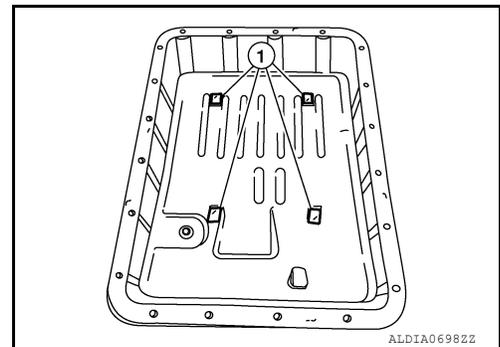
← : Front



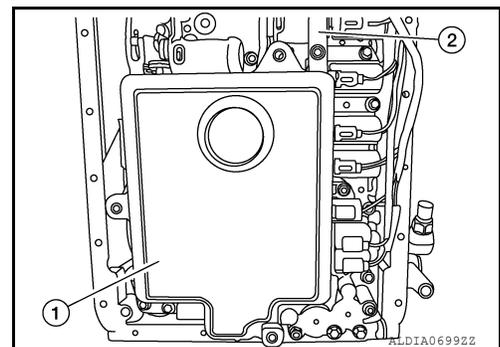
3. Remove oil pan gasket (1) from oil pan (2).



4. Remove magnets (1) from oil pan.



5. Remove oil strainer (1) from control valve (2).



INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

- Do not reuse oil pan gasket.
- Do not reuse drain plug gasket.

Inspection and Adjustment

INSPECTION AFTER REMOVAL

INFOID:000000014419054

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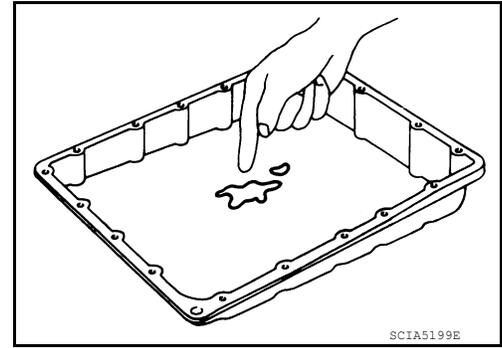
OIL PAN

< REMOVAL AND INSTALLATION >

[6AT: RE6R01A]

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-97, "Cleaning"](#).



INSPECTION AFTER INSTALLATION

Check A/T fluid leaks. Refer to [TM-216, "Checking the A/T Fluid \(ATF\)"](#).

ADJUSTMENT AFTER INSTALLATION

- Adjust A/T fluid level. Refer to [TM-218, "Changing the A/T Fluid \(ATF\)"](#).

INPUT SPEED SENSOR

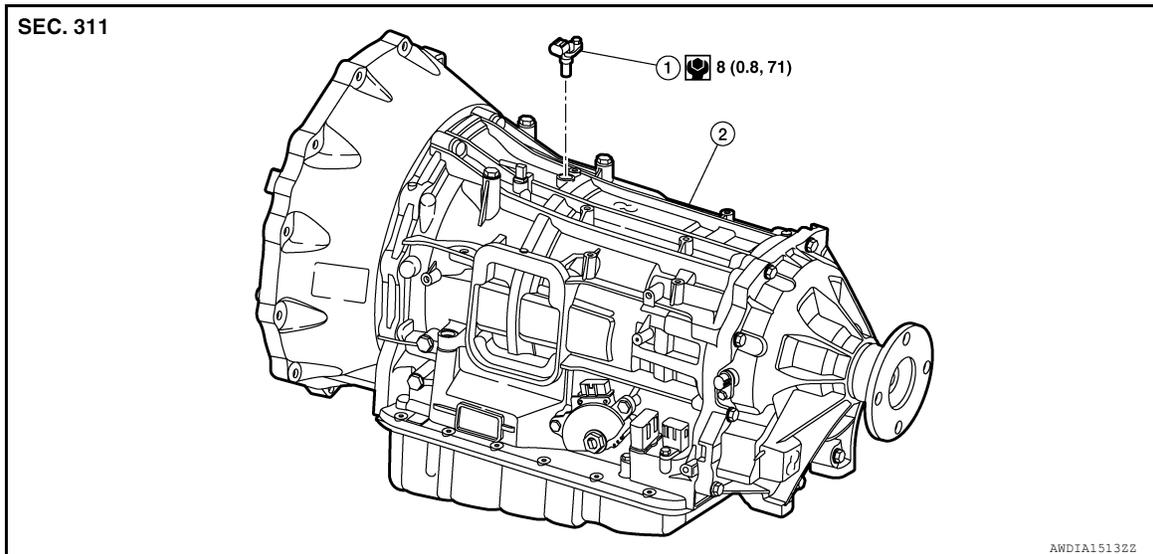
< REMOVAL AND INSTALLATION >

[6AT: RE6R01A]

INPUT SPEED SENSOR

Exploded View

INFOID:000000014419055



1. Input speed sensor
2. A/T assembly

Removal and Installation

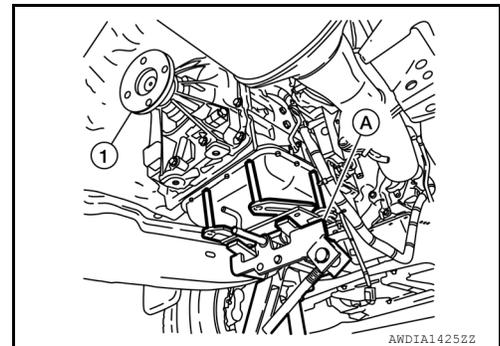
INFOID:000000014419056

REMOVAL

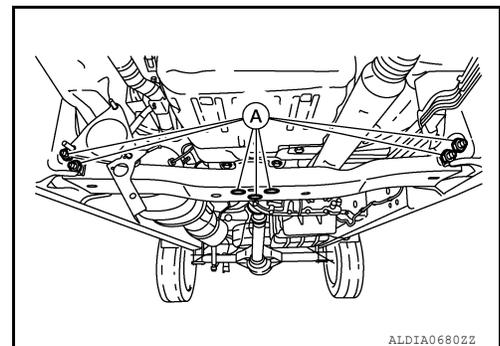
1. Disconnect the battery or batteries. Refer to [PG-185, "Battery Disconnect"](#).
2. Remove rear propeller shaft. Refer to [DLN-166, "Removal and Installation"](#).
3. For (4WD) remove front propeller shaft. Refer to [DLN-147, "Removal and Installation"](#) for Non-XD and [DLN-156, "Removal and Installation"](#) for XD.
4. Support A/T assembly (1) with a transmission jack (A).

CAUTION:

When setting transmission jack, be careful not to allow it to collide against the drain plug.



5. Remove nuts and bolts (A) and remove transmission cross member.



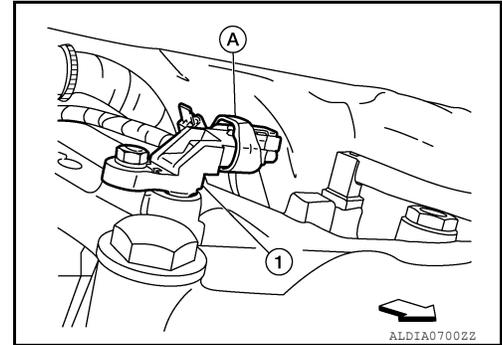
INPUT SPEED SENSOR

[6AT: RE6R01A]

< REMOVAL AND INSTALLATION >

6. Disconnect the oil charging pipe from A/T assembly.
7. Lower the A/T assembly enough to access the input speed sensor.
8. Disconnect the harness connector (A) from input speed sensor (1).

⇐ : Front



9. Remove input speed sensor from A/T assembly.

INSTALLATION

Installation is in the reverse order of removal.

Inspection and Adjustment

INFOID:000000014419057

INSPECTION AFTER INSTALLATION

- Check for A/T fluid leaks. Refer to [TM-216, "Checking the A/T Fluid \(ATF\)"](#).

REAR OIL SEAL

< REMOVAL AND INSTALLATION >

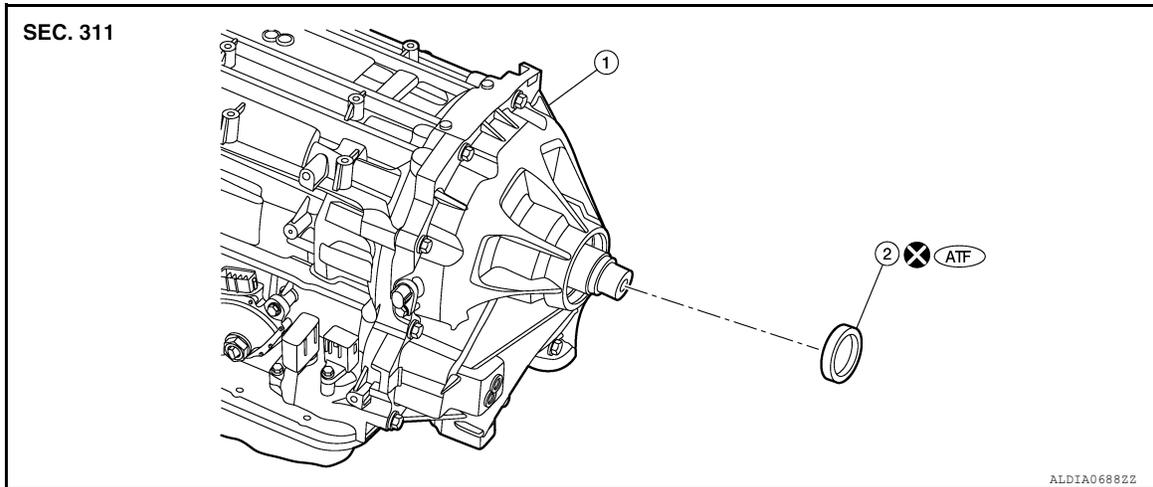
[6AT: RE6R01A]

REAR OIL SEAL

2WD

2WD : Exploded View

INFOID:000000014419058



1. A/T assembly

2. Rear oil seal

2WD : Removal and Installation

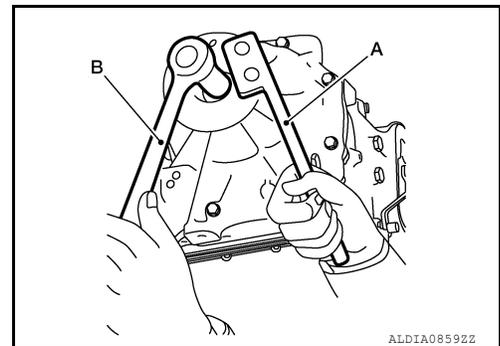
INFOID:000000014419059

REMOVAL

1. Remove rear propeller shaft. Refer to [DLN-166. "Removal and Installation"](#).
2. Use suitable tool (A) to hold companion flange while removing companion flange lock nut with suitable tool (B).

CAUTION:

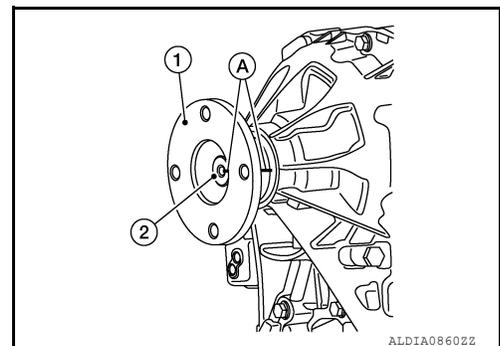
Do not reuse companion flange lock nut.



3. Put matching marks (A) on the companion flange (1) and output shaft (2).

CAUTION:

Use paint to make the matching marks. Do not damage the companion flange or output shaft.

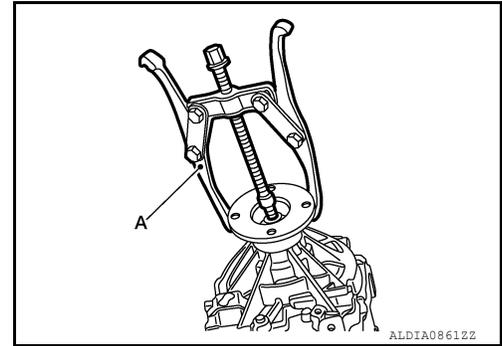


REAR OIL SEAL

< REMOVAL AND INSTALLATION >

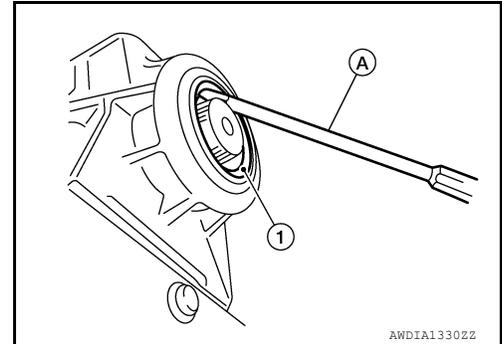
[6AT: RE6R01A]

4. Remove companion flange using suitable tool (A).



5. Remove rear oil seal (1) using suitable tool (A).

CAUTION:
Do not reuse rear oil seal.



INSTALLATION

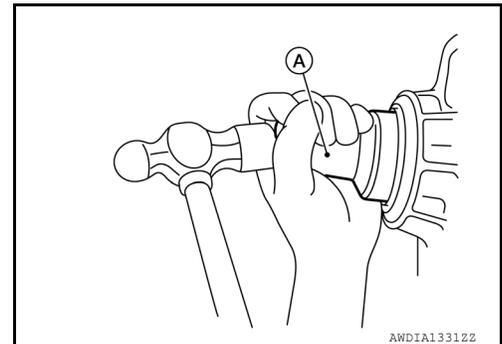
Installation is in the reverse order of removal.

- As shown in the figure, use Tool (A) to drive rear oil seal into rear extension assembly until it is flush.

Tool (A) : ST33400001 (J-26082)

CAUTION:

- Do not reuse rear oil seal.
- Apply ATF to rear oil seal.



2WD : Inspection

INFOID:000000014419060

INSPECTION AFTER INSTALLATION

Check for A/T fluid leaks. Refer to [TM-216. "Checking the A/T Fluid \(ATF\)".](#)

ADJUSTMENT AFTER INSTALLATION

Adjust A/T fluid level. Refer to [TM-218. "Changing the A/T Fluid \(ATF\)".](#)

4WD

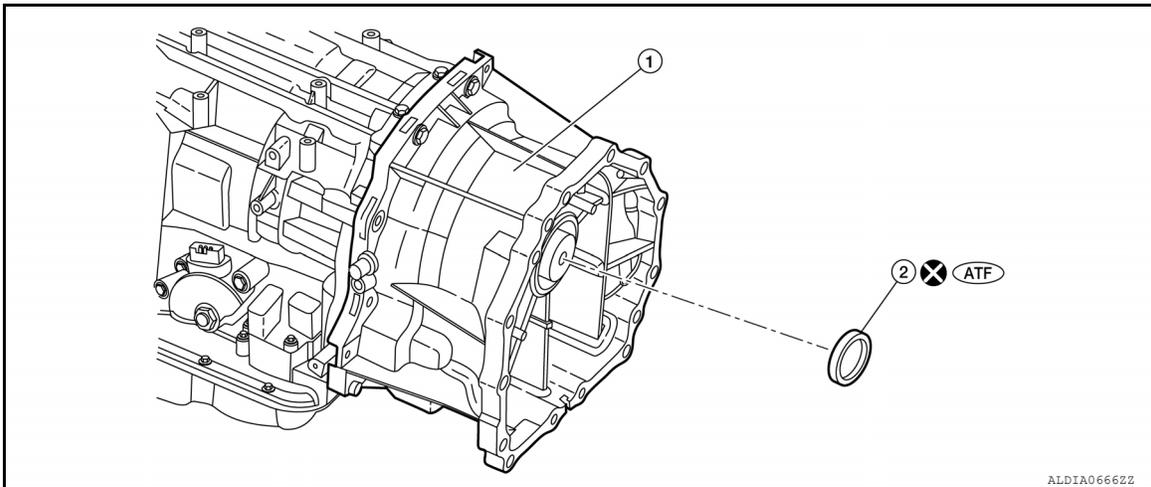
REAR OIL SEAL

< REMOVAL AND INSTALLATION >

[6AT: RE6R01A]

4WD : Exploded View

INFOID:000000014419061



4WD : Removal and Installation

INFOID:000000014419062

REMOVAL

1. Remove transfer assembly from A/T assembly. Refer to [DLN-140. "Removal and Installation"](#).
2. Remove rear oil seal using suitable tool.

CAUTION:

- Be careful not to scratch adapter case assembly.
- Do not reuse rear oil seal.

INSTALLATION

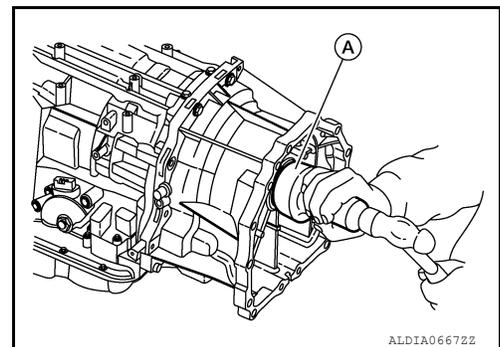
Installation is in the reverse order of removal.

- As shown in the figure, use suitable tool (A) to drive rear oil seal into adapter case assembly to specified depth.

Oil seal depth : 32 mm (1.3 in)

CAUTION:

- Do not reuse rear oil seal.
- Apply ATF to rear oil seal.



4WD : Inspection

INFOID:000000014419063

INSPECTION AFTER INSTALLATION

Check for A/T fluid leaks. Refer to [TM-216. "Checking the A/T Fluid \(ATF\)"](#).

ADJUSTMENT AFTER INSTALLATION

Adjust A/T fluid level. Refer to [TM-218. "Changing the A/T Fluid \(ATF\)"](#).

OUTPUT SPEED SENSOR

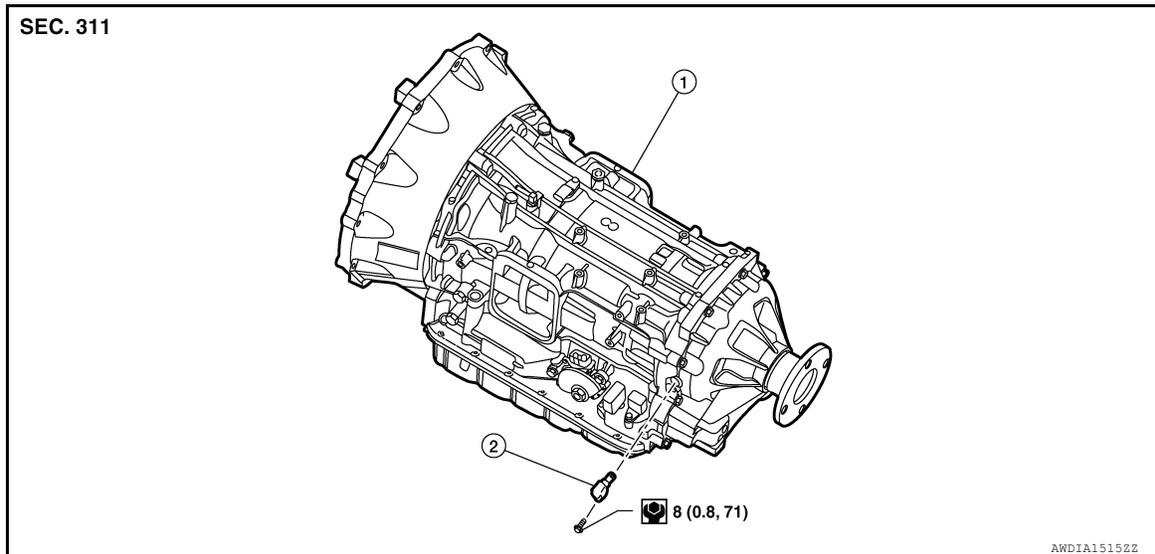
< REMOVAL AND INSTALLATION >

[6AT: RE6R01A]

OUTPUT SPEED SENSOR

Exploded View

INFOID:000000014419064



1. A/T assembly
2. Output speed sensor

Removal and Installation

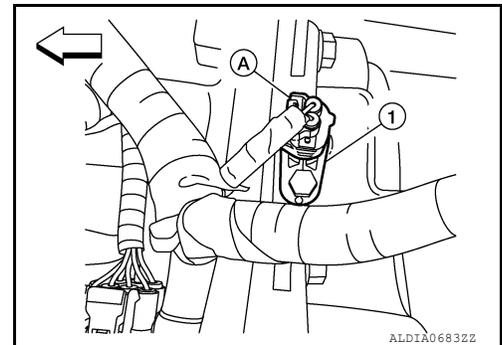
INFOID:000000014419065

REMOVAL

1. Disconnect harness connector (A) from output speed sensor (1).

↶ : Front

2. Remove output speed sensor (1).



INSTALLATION

Installation is in the reverse order removal.

Inspection

INFOID:000000014419066

INSPECTION AFTER INSTALLATION

- Check for A/T fluid leaks. Refer to [TM-216, "Checking the A/T Fluid \(ATF\)"](#).
- Check A/T positions after adjusting A/T positions. Refer to [TM-101, "Inspection and Adjustment"](#).

ADJUSTMENT AFTER INSTALLATION

- Adjust A/T positions. Refer to [TM-101, "Inspection and Adjustment"](#).
- Adjust A/T fluid level. Refer to [TM-218, "Changing the A/T Fluid \(ATF\)"](#).

TRANSMISSION RANGE SWITCH

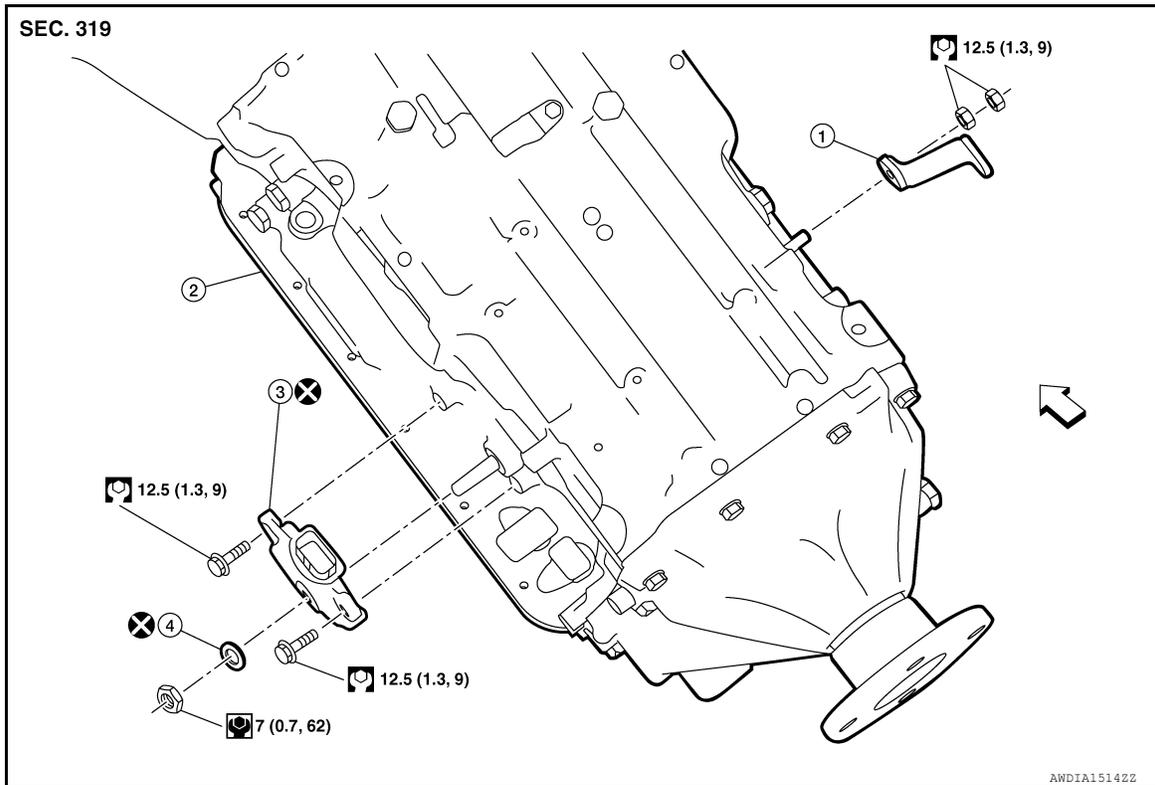
< REMOVAL AND INSTALLATION >

[6AT: RE6R01A]

TRANSMISSION RANGE SWITCH

Exploded View

INFOID:000000014419067



- 1. Lock washer
 - 2. Manual lever
 - 3. Transmission range switch
 - 4. Transaxle assembly
 - 5. Manual shaft
- ← Front

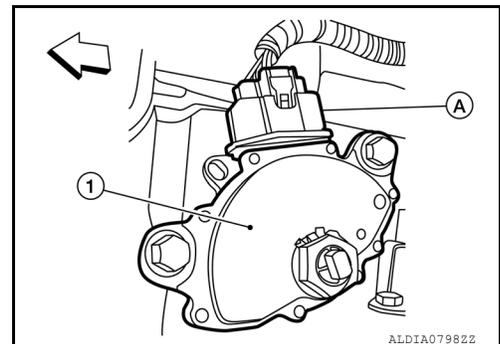
Removal and Installation

INFOID:000000014419068

REMOVE

1. Shift the A/T shift selector to P position.
2. Disconnect the harness connector (A) from the transmission range switch (1).

← : Front



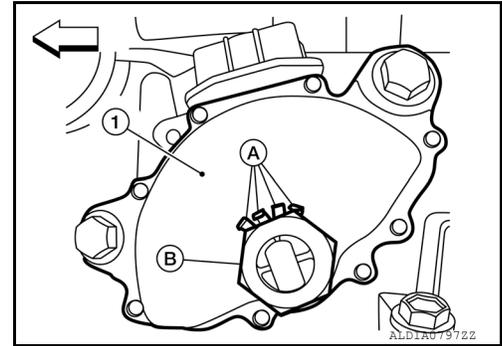
TRANSMISSION RANGE SWITCH

[6AT: RE6R01A]

< REMOVAL AND INSTALLATION >

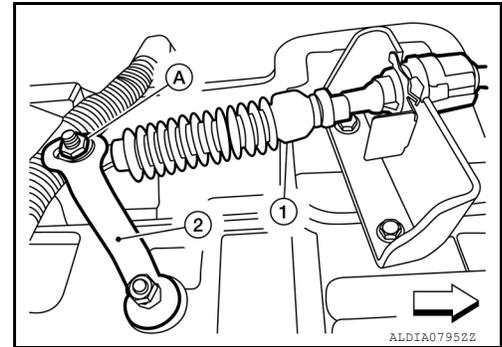
3. Release tabs on lock washer (A) remove transmission range switch nut (B) and lock washer (A) and remove transmission range switch (1).

⇐ : Front

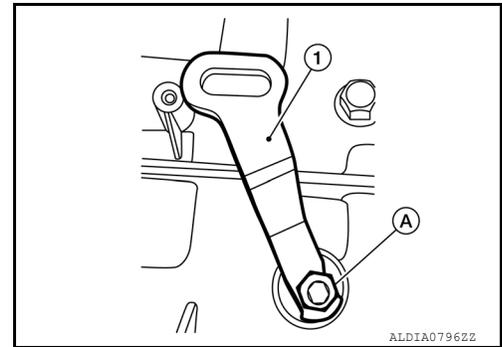


4. Remove the control cable nut (A) and remove the control cable (1) from the manual lever (2).

⇐ : Front



5. Remove manual lever nut (A) and remove manual lever (1).



INSTALLATION

Installation is in the reverse order of removal.

Inspection

INFOID:000000014419069

INSPECTION AFTER INSTALLATION

Check the A/T position. If a malfunction is found, adjust the A/T position. Refer to [TM-101, "Inspection and Adjustment"](#).

A/T FLUID TEMPERATURE SENSOR 1

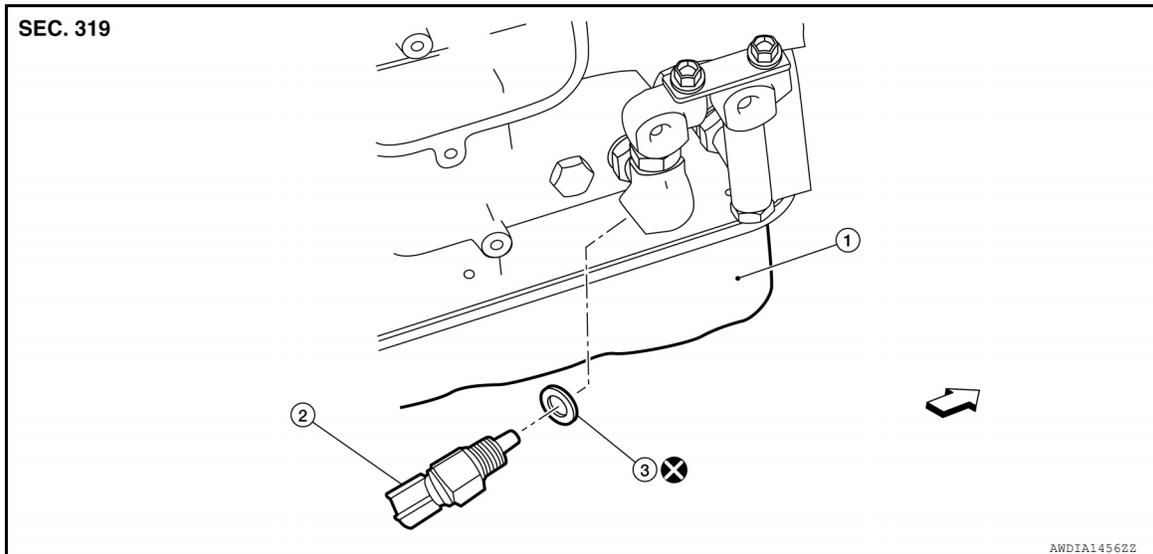
< REMOVAL AND INSTALLATION >

[6AT: RE6R01A]

A/T FLUID TEMPERATURE SENSOR 1

Exploded View

INFOID:000000014419070



1. A/T assembly

2. A/T temperature sensor

3. O-ring

⇐ Front

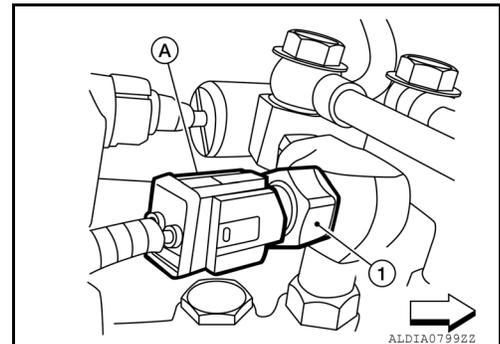
Removal and Installation

INFOID:000000014419071

REMOVAL

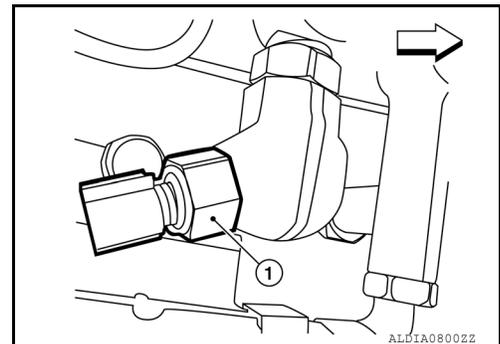
1. Turn the ignition switch OFF.
2. Disconnect the harness connector (A) from the A/T fluid temperature sensor (1).

⇐ : Front



3. Remove the A/T fluid temperature sensor (1).

⇐ : Front



INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

Do not reuse O-ring.

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A/T FLUID TEMPERATURE SENSOR 1

< REMOVAL AND INSTALLATION >

[6AT: RE6R01A]

Inspection and Adjustment

INFOID:000000014419072

INSPECTION AFTER INSTALLATION

Check for fluid leaks and the fluid level. Refer to [TM-216. "Checking the A/T Fluid \(ATF\)".](#)

A/T FLUID TEMPERATURE SENSOR 2

< REMOVAL AND INSTALLATION >

[6AT: RE6R01A]

A/T FLUID TEMPERATURE SENSOR 2

Removal and Installation

INFOID:000000014419073

A/T fluid temperature sensor 2 is part of A/T assembly connector (12-pin), and they must be replaced as an assembly. Refer to [TM-240, "A/T ASSEMBLY CONNECTOR \(12-PIN\) : Removal and Installation"](#).

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A/T ASSEMBLY CONNECTORS

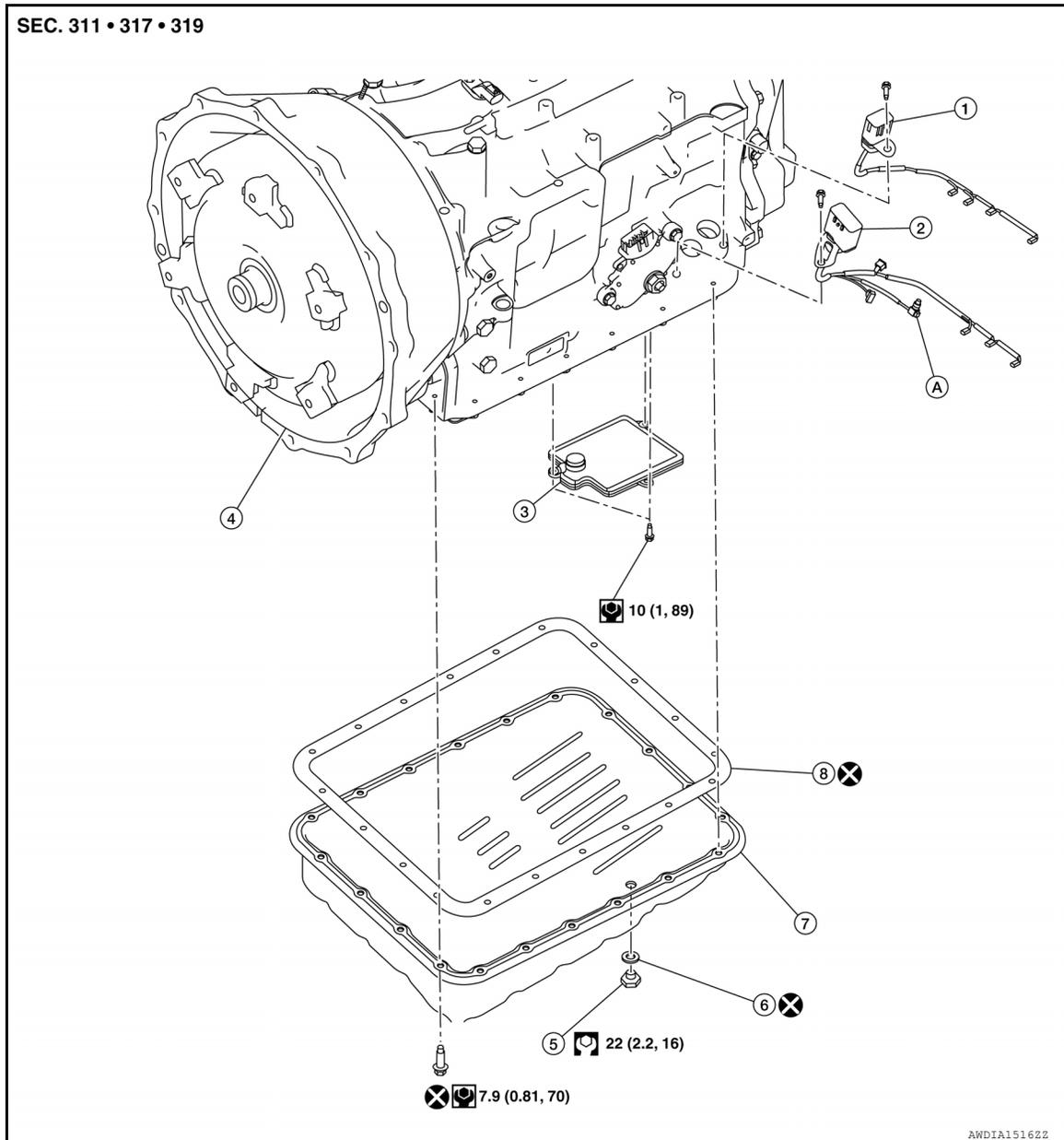
< REMOVAL AND INSTALLATION >

[6AT: RE6R01A]

A/T ASSEMBLY CONNECTORS

Exploded View

INFOID:000000014419074



- | | | |
|------------------------|------------------------|-------------------------|
| 1. Terminal assembly 2 | 2. Terminal assembly 1 | 3. Oil strainer |
| 4. A/T assembly | 5. Drain plug | 6. Drain plug gasket |
| 7. Oil pan | 8. Oil pan gasket | A. Temperature sensor 2 |
- ⇐ Front

NOTE:

A/T fluid temperature sensor 2 is part of A/T assembly connector (12-pin), and they must be replaced as an assembly.

A/T ASSEMBLY CONNECTOR (8-PIN)

A/T ASSEMBLY CONNECTOR (8-PIN) : Removal and Installation

INFOID:000000014419075

REMOVAL

A/T ASSEMBLY CONNECTORS

< REMOVAL AND INSTALLATION >

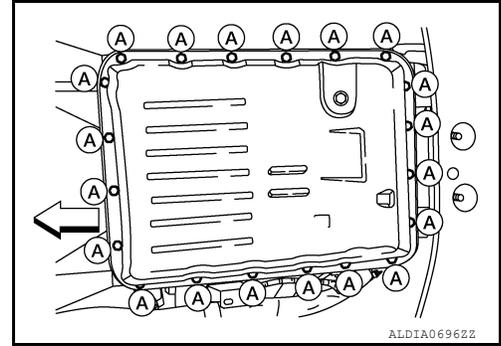
[6AT: RE6R01A]

1. Drain fluid from the A/T assembly. Refer to [TM-455, "Changing"](#).
2. Remove oil pan bolts (A) from the oil pan and remove oil pan.

CAUTION:

Do not reuse oil pan bolts.

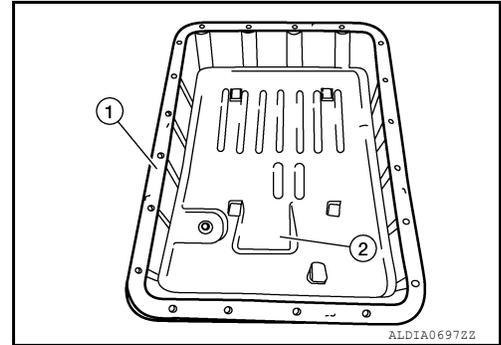
⇐ : Front



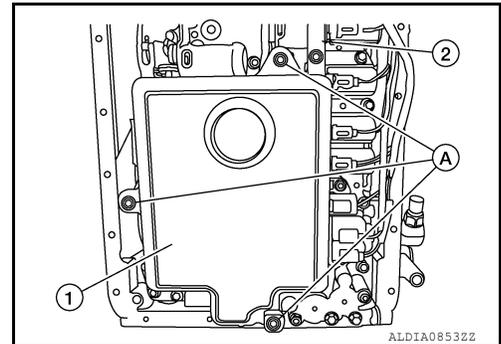
3. Remove oil pan gasket (1) from oil pan (2).

CAUTION:

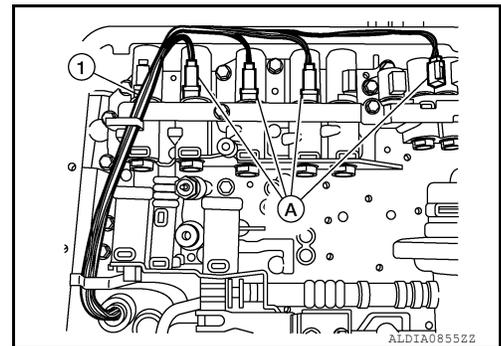
Do not reuse oil pan gasket.



4. Remove bolts (A) and remove oil strainer (1) from control valve (2)



5. Disconnect harness connectors (A) from solenoids and remove A/T assembly connector (8-pin) (1) from A/T assembly.



INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

- Do not reuse oil pan bolts.
- Do not reuse oil pan gasket.

A/T ASSEMBLY CONNECTOR (8-PIN) : Inspection and Adjustment

INFOID:000000014419076

INSPECTION AFTER INSTALLATION

Check for fluid leaks and the fluid level. Refer to [TM-216, "Checking the A/T Fluid \(ATF\)"](#).

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A/T ASSEMBLY CONNECTORS

< REMOVAL AND INSTALLATION >

[6AT: RE6R01A]

A/T ASSEMBLY CONNECTOR (12-PIN)

A/T ASSEMBLY CONNECTOR (12-PIN) : Removal and Installation

INFOID:000000014419077

NOTE:

A/T fluid temperature sensor 2 is part of the A/T assembly connector (12-pin), and they must be replaced as an assembly.

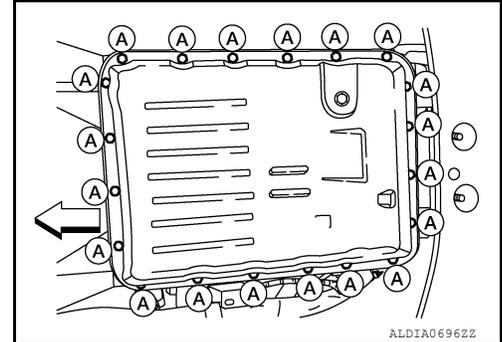
REMOVAL

1. Drain fluid from the A/T assembly. Refer to [TM-455, "Changing"](#).
2. Remove oil pan bolts (A) from the oil pan and remove oil pan.

CAUTION:

Do not reuse oil pan bolts.

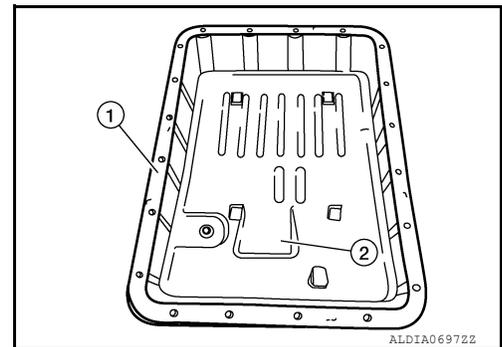
⇐ : Front



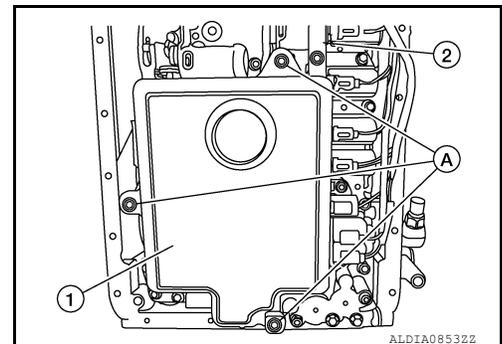
3. Remove oil pan gasket (1) from oil pan (2).

CAUTION:

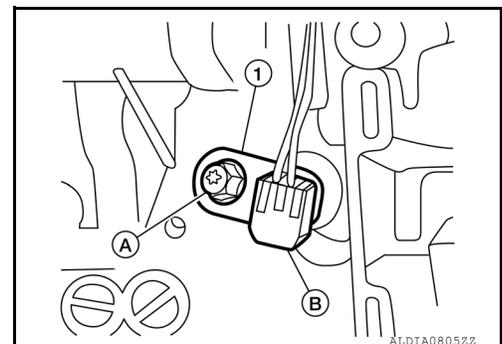
Do not reuse oil pan gasket.



4. Remove bolts (A) and remove oil strainer (1) from control valve (2)



5. Remove bolt (A) and remove clip (1) from A/T fluid temperature sensor 2 (B).

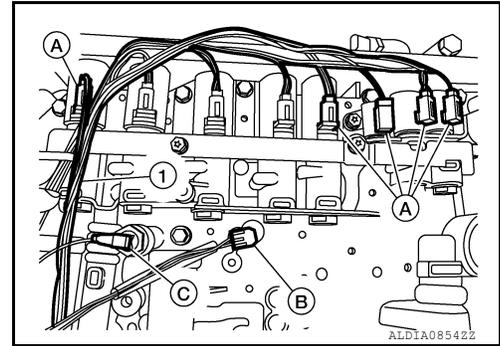


A/T ASSEMBLY CONNECTORS

< REMOVAL AND INSTALLATION >

[6AT: RE6R01A]

6. Disconnect harness connectors (A) from solenoids.
7. Disconnect the harness connector from oil pressure switch (C).
8. Remove A/T fluid temperature sensor 2 (B) and remove A/T assembly connector (12-pin) (1) from A/T assembly.



INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

- Do not reuse oil pan bolts.
- Do not reuse oil pan gasket.

A/T ASSEMBLY CONNECTOR (12-PIN) : Inspection and Adjustment

INFOID:000000014419078

INSPECTION AFTER INSTALLATION

Check for fluid leaks and the fluid level. Refer to [TM-216. "Checking the A/T Fluid \(ATF\)".](#)

AIR BREATHER HOSE

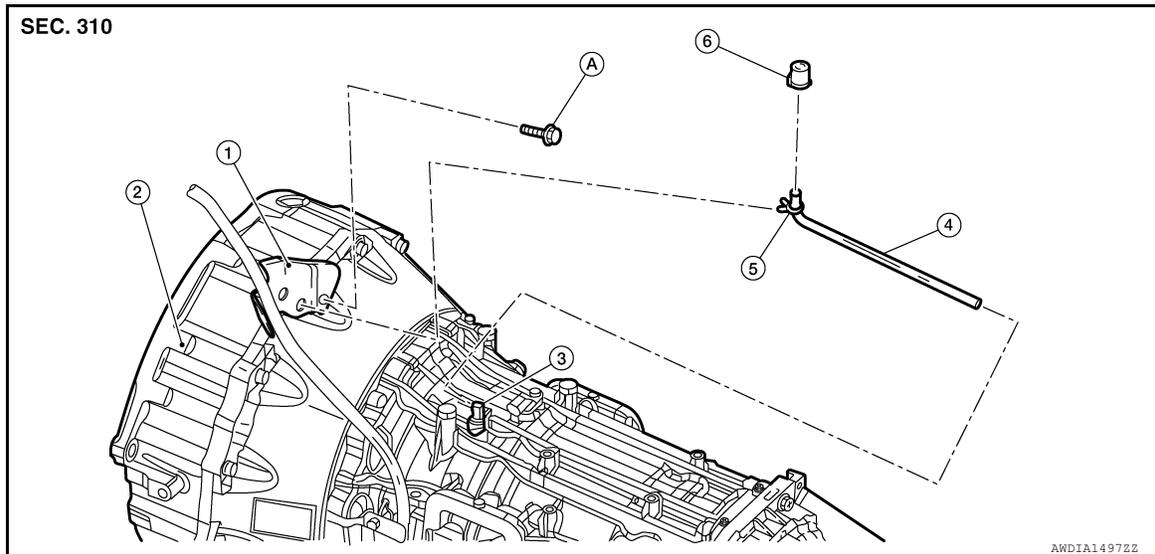
< REMOVAL AND INSTALLATION >

[6AT: RE6R01A]

AIR BREATHER HOSE

Exploded View

INFOID:000000014419079



- | | | |
|---------------------------|-----------------|---------------------|
| 1. Bracket | 2. A/T assembly | 3. Breather tube |
| 4. Breather hose | 5. Clip | 6. Air breather box |
| A. Refer to INSTALLATION. | | |

Removal and Installation

INFOID:000000014419080

REMOVAL

1. Remove cowl top extension. Refer to [EXT-36, "Removal and Installation - Cowl Top Extension"](#).
2. Remove clip of breather hose from bracket.
3. Remove breather hose from breather tube.
4. Remove bolt holding A/T assembly to engine assembly to remove bracket.
5. Remove bracket.

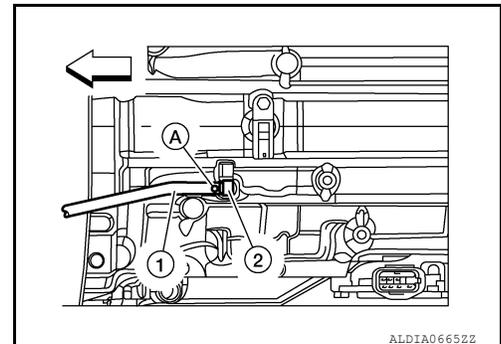
INSTALLATION

Note the following, and installation is in the reverse order of removal.

CAUTION:

- Do not bend the breather hose (1) to prevent damage to the hose.
- Be sure to insert it fully until its end reaches the stop when inserting breather hose (1) to breather tube (2).
- Install breather hose (1) to breather tube (2) so that the paint mark (A) is facing upward.
- Securely install the clips to the brackets when installing air breather hose to the brackets.

← : Front



FLUID COOLER SYSTEM

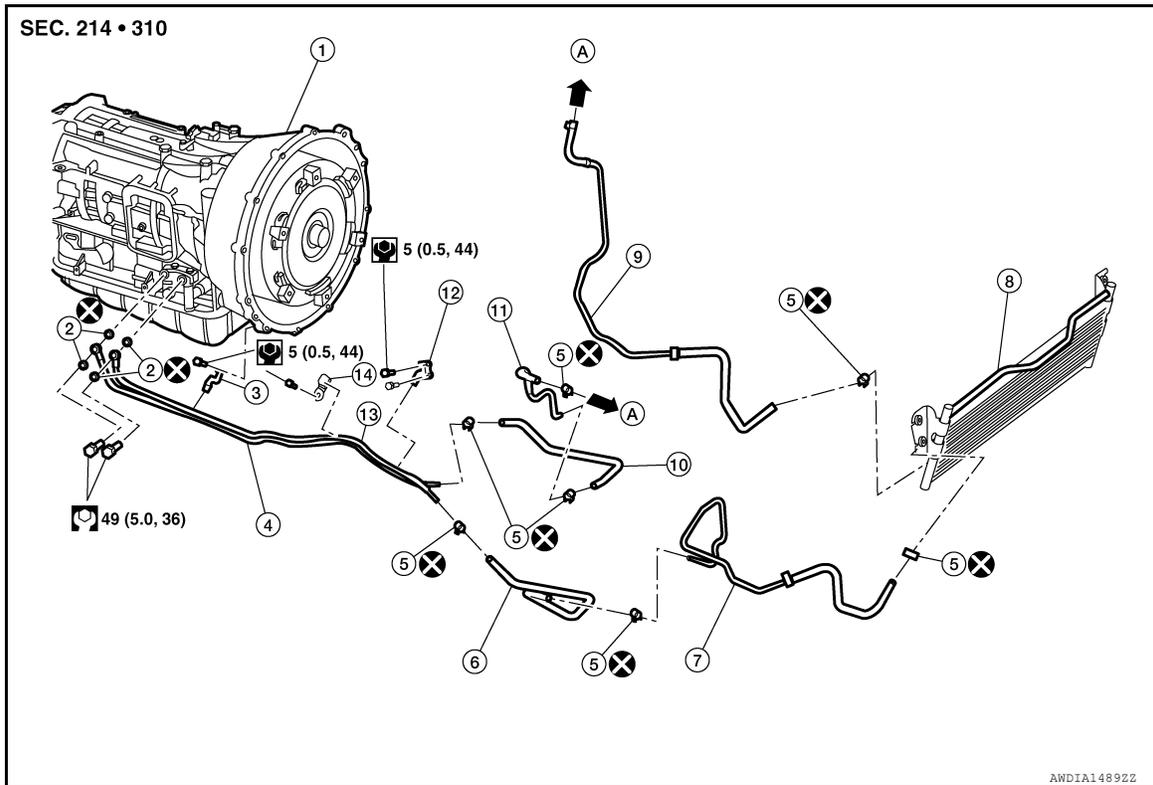
< REMOVAL AND INSTALLATION >

[6AT: RE6R01A]

FLUID COOLER SYSTEM

Exploded View

INFOID:000000014419081



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|-------------------------|-------------------------|------------------------|
| 1. A/T assembly | 2. Copper washer | 3. Bracket A |
| 4. Fluid cooler tube B | 5. Hose clamp | 6. Fluid cooler hose A |
| 7. Fluid cooler tube C | 8. A/T fluid cooler | 9. Fluid cooler tube D |
| 10. Fluid cooler hose B | 11. Fluid cooler tube E | 12. Bracket B |
| 13. Fluid cooler tube A | 14. Bracket C | A. To radiator |

Removal and Installation (A/T Fluid Cooler)

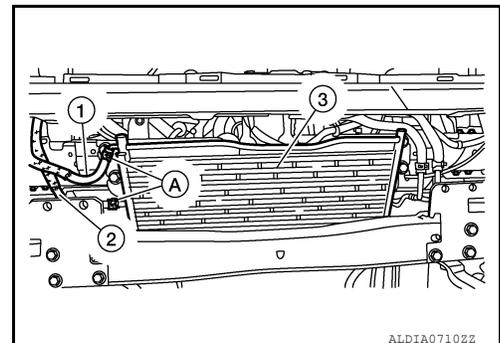
INFOID:000000014419082

NOTE:

When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid from spilling.

REMOVAL

1. Remove front under cover. Refer to [EXT-37, "FRONT UNDER COVER : Removal and Installation"](#).
2. Remove front bumper. Refer to [EXT-26, "Removal and Installation - Bumper Fascia Upper"](#).
3. Release hose clamps (A) and remove fluid cooler hose C (1) and fluid cooler hose D (2) from A/T fluid cooler (3).

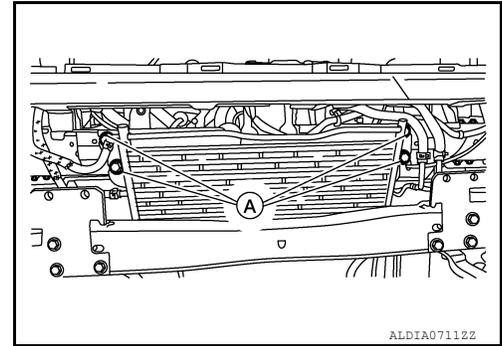


FLUID COOLER SYSTEM

< REMOVAL AND INSTALLATION >

[6AT: RE6R01A]

4. Remove bolts (A) and remove A/T fluid cooler.



INSTALLATION

Installation is in the reverse order of removal.

After installation, be sure to check the A/T fluid and add the specified fluid as necessary. Refer to [TM-216, "Checking the A/T Fluid \(ATF\)"](#).

CAUTION:

Do not reuse hose clamps.

Removal and Installation (Fluid Cooler Tubes & Hoses)

INFOID:000000014419083

REMOVAL

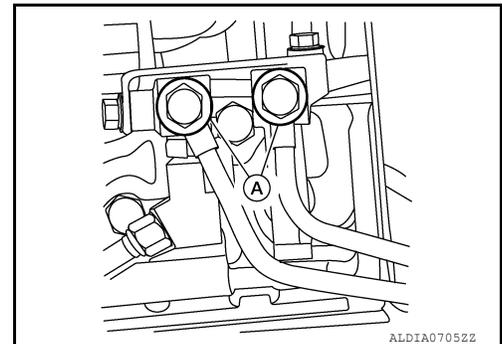
CAUTION:

Be careful not to bend A/T fluid cooler tubes.

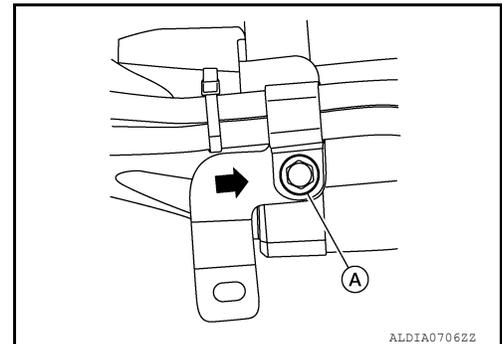
NOTE:

When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid from spilling.

1. Remove front under cover. Refer to [EXT-37, "FRONT UNDER COVER : Removal and Installation"](#).
2. Release hose clamps on fluid cooler hose A from fluid cooler tube A and fluid cooler tube C.
3. Release hose clamps and remove fluid cooler hose B from fluid cooler tube B and fluid cooler tube E.
4. Remove bolts (A) on fluid cooler tubes A and B.



5. Remove bolt (A) on bracket A.

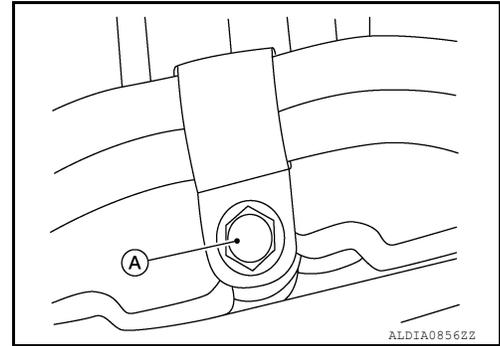


FLUID COOLER SYSTEM

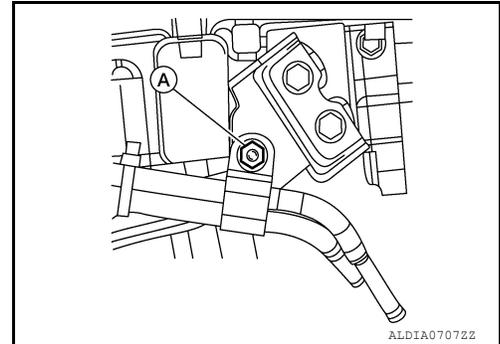
< REMOVAL AND INSTALLATION >

[6AT: RE6R01A]

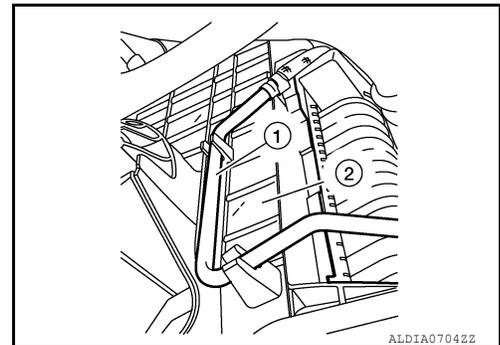
6. Remove bolt (A) on bracket C.



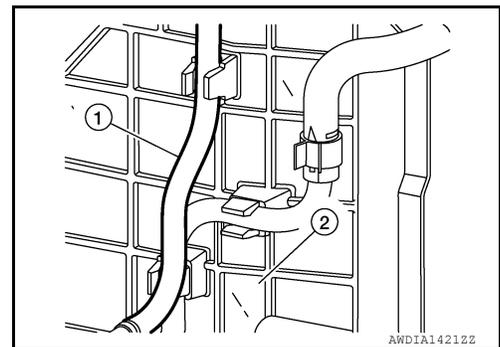
7. Remove nut (A) on bracket B.



8. Remove fluid cooler tubes A and B from A/T assembly.
9. Release hose clamp on radiator and un-clip fluid cooler tube E (1) from radiator shroud (2).



10. Release hose clamp connecting fluid cooler tube C and fluid cooler hose C, un-clip fluid cooler tube C (1) and remove from radiator shroud (2).



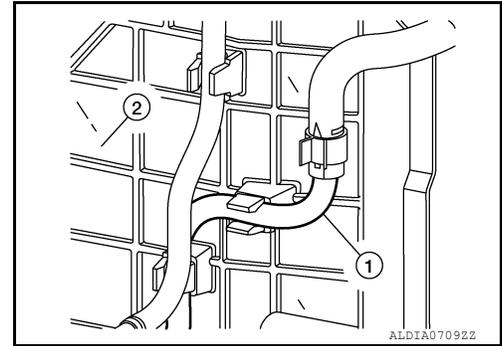
11. Release hose clamp on A/T fluid cooler and remove fluid cooler hose C.
12. Release hose clamps on fluid cooler tube D.

FLUID COOLER SYSTEM

< REMOVAL AND INSTALLATION >

[6AT: RE6R01A]

13. Un-clip fluid cooler tube D (1) from radiator shroud (2) and Remove fluid cooler tube D (1).



INSTALLATION

Note the following, and installation is in the reverse order of removal.

CAUTION:

Do not reuse copper washers.

- Refer to the following when installing A/T fluid cooler hoses.

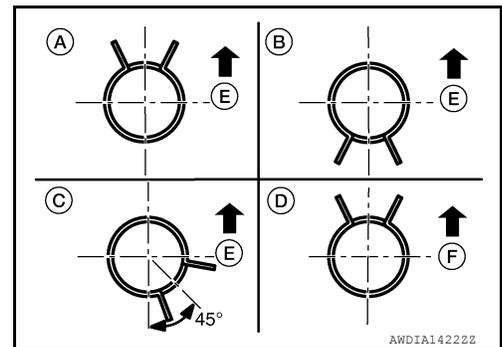
Hose name	Hose end	Paint mark	Position of hose clamp*
A/T fluid cooler hose A	Radiator assembly side	Facing backward	C
	A/T fluid cooler tube side	Facing downward	B
A/T fluid cooler hose B	Radiator assembly side	Facing downward	C
	A/T fluid cooler tube side	Facing downward	B
A/T fluid cooler hose C	A/T fluid cooler tube side	Facing upward	F
	A/T fluid cooler side	Facing frontward	A
A/T fluid cooler hose D	A/T fluid cooler tube side	Facing upward	A
	A/T fluid cooler side	Facing frontward	B

*: Refer to the illustrations for the specific position of each hose clamp tab.

- The illustrations indicate the view from the hose ends.

- ← D : Vehicle front
- ← E : Vehicle upper

- When installing hose clamps, center line of each hose clamp tab should be positioned as shown in the figure.



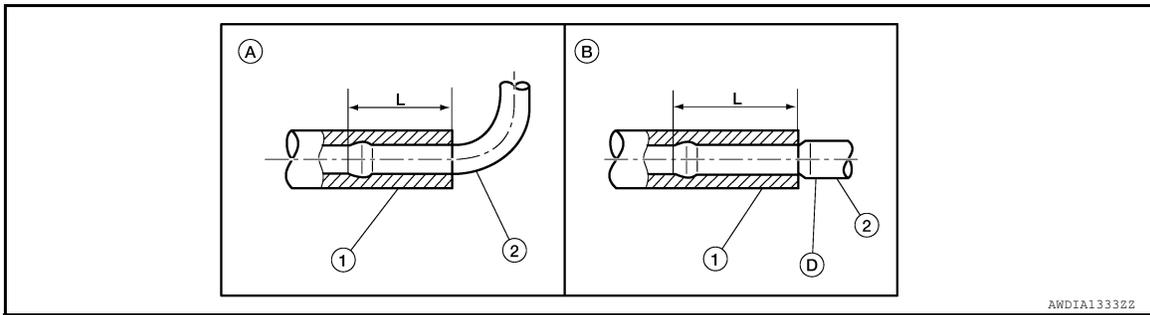
- Insert A/T fluid cooler hoses according to dimension "L" described below.

A/T fluid cooler hose (1)	Insertion side tube (2)	Tube type	Dimension "L"
A/T fluid cooler hose A	A/T fluid cooler tube A	A	End reaches the radius curve end.
	A/T fluid cooler tube C	B	
A/T fluid cooler hose B	A/T fluid cooler tube B	B	30 mm (1.18 in) [End reaches the 2-stage bulge (D).]
	A/T fluid cooler tube D	B	
A/T fluid cooler hose C	A/T fluid cooler tube	B	
	A/T fluid cooler	B	
A/T fluid cooler hose D	A/T fluid cooler tube	B	
	A/T fluid cooler	B	

FLUID COOLER SYSTEM

< REMOVAL AND INSTALLATION >

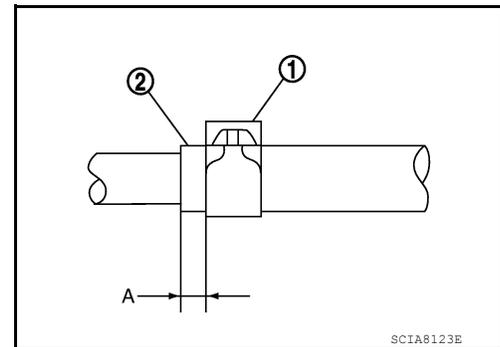
[6AT: RE6R01A]



- Set hose clamps (1) at 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)

- Hose clamp should not interfere with the bulge of fluid cooler tube.



Inspection and Adjustment

INFOID:000000014419084

INSPECTION AFTER INSTALLATION

Check A/T fluid leakage. Refer to [TM-216, "Checking the A/T Fluid \(ATF\)"](#).

ADJUSTMENT AFTER INSTALLATION

Adjust A/T fluid level. Refer to [TM-218, "Changing the A/T Fluid \(ATF\)"](#).

TRANSMISSION ASSEMBLY

< UNIT REMOVAL AND INSTALLATION >

[6AT: RE6R01A]

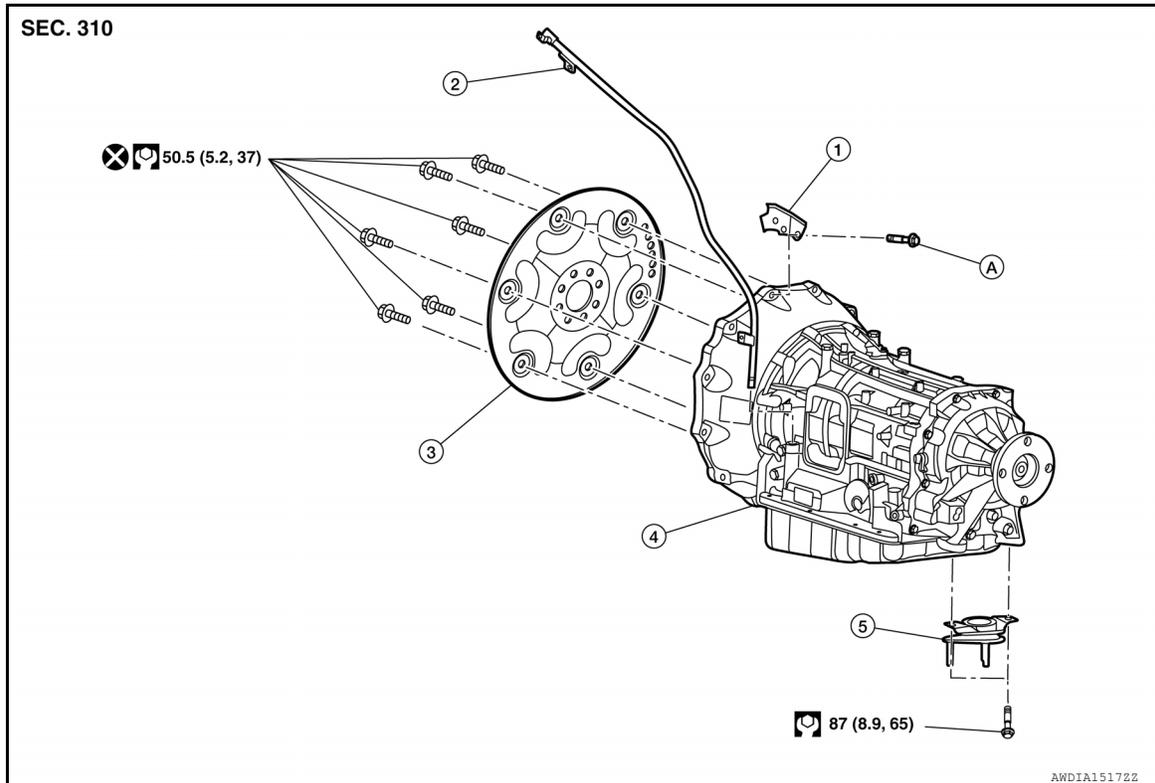
UNIT REMOVAL AND INSTALLATION

TRANSMISSION ASSEMBLY

2WD

2WD : Exploded View

INFOID:000000014419085



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|---------------------------|------------------------------------|----------------|
| 1. Bracket | 2. Oil charging pipe | 3. Drive plate |
| 4. A/T assembly | 5. Engine insulator bracket (rear) | |
| A. Refer to INSTALLATION. | | |

2WD : Removal and Installation

INFOID:000000014419086

REMOVAL

WARNING:

Do not remove radiator cap when the engine is hot. Serious burns could occur from high pressure coolant escaping from the radiator. Wrap a thick cloth around cap. Slowly turn a quarter turn to allow built-up pressure to escape. Carefully remove the cap by turning it all the way.

CAUTION:

- Perform when engine is cold.
- When replacing transmission assembly, perform "ADDITIONAL SERVICE WHEN REPLACING TRANSMISSION ASSEMBLY". Refer to [TM-92, "Description"](#).

NOTE:

When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid from spilling.

1. Shift the selector lever to "P" position, and release the parking brake.
2. Disconnect battery or batteries. Refer to [PG-185, "Battery Disconnect"](#).
3. Remove engine under cover. Refer to [EXT-37, "FRONT UNDER COVER : Removal and Installation"](#).
4. Drain A/T fluid. Refer to [TM-218, "Changing the A/T Fluid \(ATF\)"](#).
5. Remove rear propeller shaft. Refer to [DLN-166, "Removal and Installation"](#).

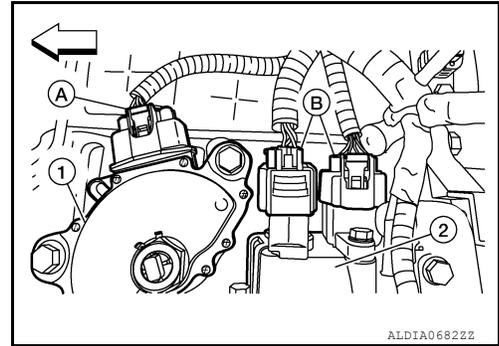
TRANSMISSION ASSEMBLY

< UNIT REMOVAL AND INSTALLATION >

[6AT: RE6R01A]

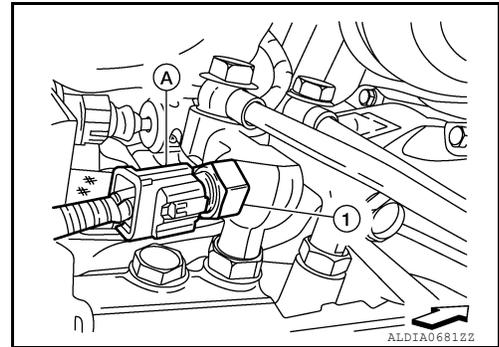
6. Disconnect harness connector (A) from the neutral start switch (1) and harness connectors (B) from the solenoid assembly (2).

⇐ : Front



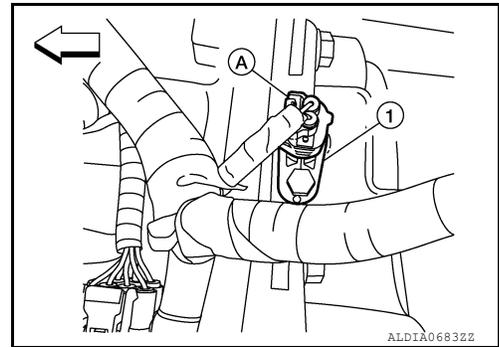
7. Disconnect the harness connector (A) from the temperature sensor (1).

⇐ : Front



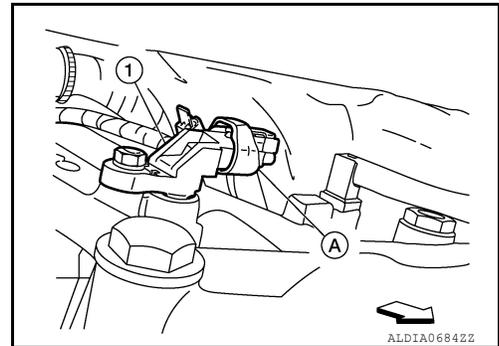
8. Disconnect the harness connector (A) from the output speed sensor (1).

⇐ : Front



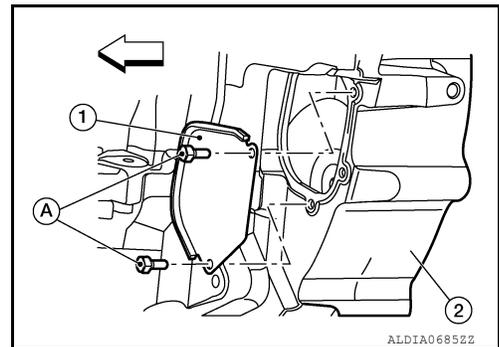
9. Disconnect the harness connector (A) from the input speed sensor (1).

⇐ : Front



10. Remove all harness brackets and clips from A/T assembly.
11. Remove screws (A) and remove cover plate (1) from converter housing (2).

⇐ : Front



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TRANSMISSION ASSEMBLY

< UNIT REMOVAL AND INSTALLATION >

[6AT: RE6R01A]

12. Turn crankshaft, and remove the six bolts for drive plate and torque converter.

CAUTION:

When turning the crankshaft, turn it clockwise as viewed from the front of the engine.

13. Remove control cable from A/T assembly. Refer to [TM-221, "Removal and Installation"](#) [TM-221, "Removal and Installation"](#).

14. Remove air breather hose, air breather box and bracket. Refer to [TM-242, "Exploded View"](#).

15. Remove A/T fluid cooler tubes from A/T assembly. Refer to [TM-244, "Removal and Installation \(Fluid Cooler Tubes & Hoses\)"](#).

NOTE:

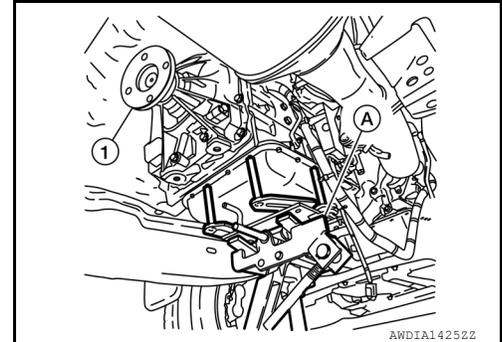
Cap or plug openings to prevent fluid from spilling.

16. Disconnect the oil charging pipe from the A/T assembly.

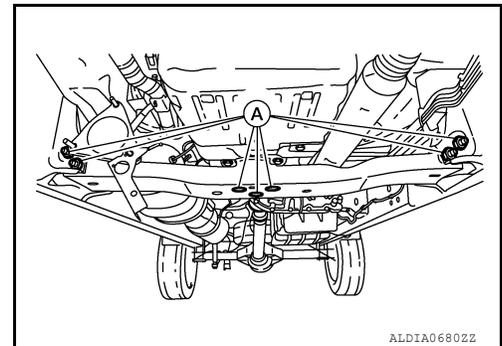
17. Support A/T assembly with a transmission jack.

CAUTION:

Be careful not to allow it to collide against the drain plug and overflow plug when setting the transmission jack.



18. Remove bolts (A) and remove transmission cross member.



19. Remove engine mount insulator (rear). Refer to [EM-493, "Exploded View"](#).

20. Remove bolts holding A/T assembly to engine.

21. Remove A/T assembly from the vehicle.

CAUTION:

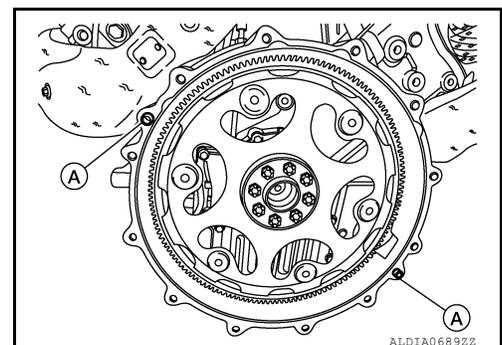
- Secure torque converter to prevent it from dropping.
- Secure A/T assembly to a transmission jack.
- Do not lift or support transmission using bottom of oil pan or oil pan damage will result.

22. Remove oil charging pipe from engine.

INSTALLATION

Note the following, and installation is in the reverse order of removal.

- Check fitting of dowel pins (A).



TRANSMISSION ASSEMBLY

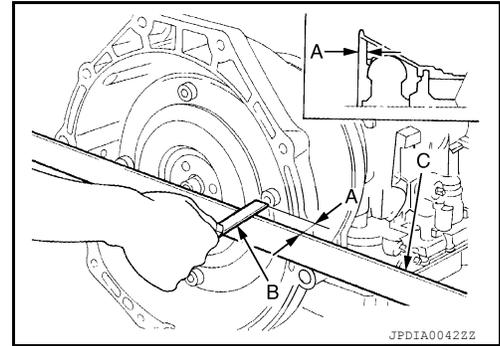
< UNIT REMOVAL AND INSTALLATION >

[6AT: RE6R01A]

- When installing A/T assembly to the engine, be sure to check dimension "A" to ensure it is within the reference value limit.

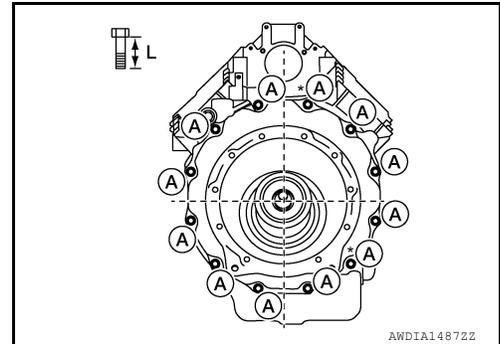
B : Scale
C : Straightedge

Dimension "A" : Refer to [TM-260, "Torque Converter"](#).



- When installing A/T assembly to the engine, attach the fixing bolts in accordance with the following standard.

Bolt symbol	A
Insertion direction	A/T assembly to engine
Number of bolts	12
Bolt length "L" mm (in)	43 (1.69)
Tightening torque N·m (kg-m, ft-lb)	45 (4.6, 33)



*: Tightening the bolt with bracket. Refer to [TM-242, "Exploded View"](#).

- Align the positions of bolts for drive plate with those of the torque converter, and temporarily tighten the bolts. Then, tighten the bolts to the specified torque.

CAUTION:

- Do not reuse drive plate bolts.
- When turning crankshaft, turn it clockwise as viewed from the front of the engine.
- When tightening the bolts for the torque converter after fixing the crankshaft pulley bolts, be sure to confirm the tightening torque of the crankshaft pulley bolts. Refer to [EM-493, "Exploded View"](#).
- Rotate crankshaft several turns and check to be sure that A/T rotates freely without binding after converter is installed to drive plate.

2WD : Inspection and Adjustment

INFOID:000000014419087

INSPECTION AFTER INSTALLATION

- Check for A/T fluid leaks. Refer to [TM-216, "Checking the A/T Fluid \(ATF\)"](#).
- Check A/T position after adjusting A/T positions. Refer to [TM-101, "Inspection and Adjustment"](#).

ADJUSTMENT AFTER INSTALLATION

- Adjust A/T fluid level. Refer to [TM-218, "Changing the A/T Fluid \(ATF\)"](#).
- Adjust A/T position. Refer to [TM-101, "Inspection and Adjustment"](#).
- Perform "ADDITIONAL SERVICE WHEN REPLACING TRANSMISSION ASSEMBLY". Refer to [TM-92, "Description"](#).

4WD

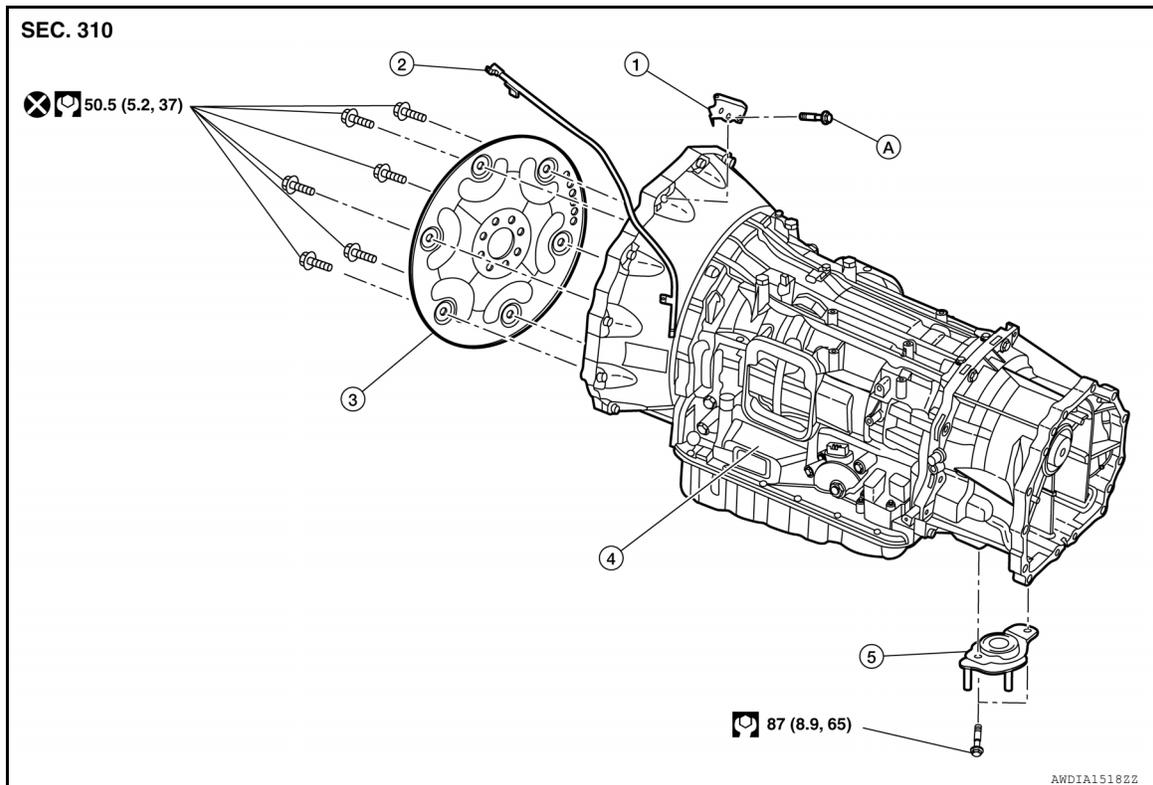
TRANSMISSION ASSEMBLY

< UNIT REMOVAL AND INSTALLATION >

[6AT: RE6R01A]

4WD : Exploded View

INFOID:000000014419088



- | | | |
|---------------------------|----------------------------------|----------------|
| 1. Bracket | 2. Oil charging pipe | 3. Drive plate |
| 4. A/T assembly | 5. Engine mount insulator (rear) | |
| A. Refer to INSTALLATION. | | |

4WD : Removal and Installation

INFOID:000000014419089

REMOVAL

WARNING:

Do not remove the radiator cap when the engine is hot. Serious burns could occur from high pressure coolant escaping from the radiator. Wrap a thick cloth around the cap. Slowly turn a quarter turn to allow built-up pressure to escape. Carefully remove the cap by turning it all the way.

CAUTION:

- Perform when the engine is cold.
- When replacing transmission assembly, perform "ADDITIONAL SERVICE WHEN REPLACING TRANSMISSION ASSEMBLY". Refer to [TM-92, "Description"](#).

NOTE:

When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid from spilling.

1. Shift the selector lever to "P" position, and release the parking brake.
2. Disconnect the battery or batteries. Refer to [PG-185, "Battery Disconnect"](#).
3. Remove front under cover. Refer to [EXT-37, "FRONT UNDER COVER : Removal and Installation"](#).
4. Drain A/T fluid. Refer to [TM-218, "Changing the A/T Fluid \(ATF\)"](#).
5. Remove transfer case. Refer to [DLN-140, "Removal and Installation"](#).

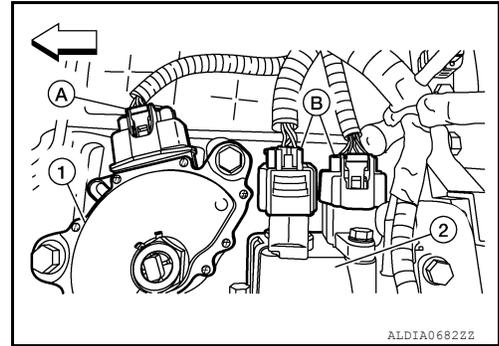
TRANSMISSION ASSEMBLY

< UNIT REMOVAL AND INSTALLATION >

[6AT: RE6R01A]

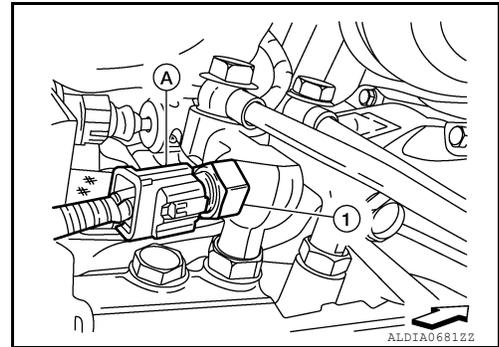
6. Disconnect harness connector (A) from the neutral start switch (1) and harness connectors (B) from the solenoid assembly (2).

⇐ : Front



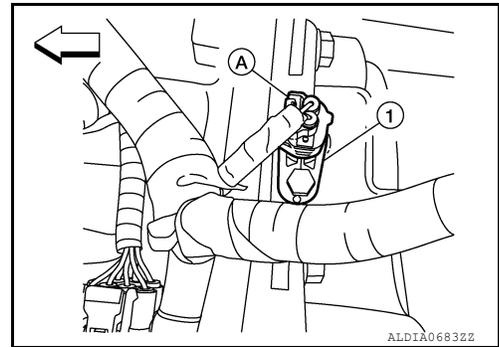
7. Disconnect the harness connector (A) from the temperature sensor (1).

⇐ : Front



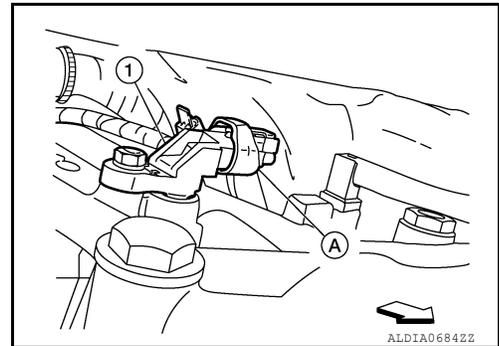
8. Disconnect the harness connector (A) from the output speed sensor (1).

⇐ : Front



9. Disconnect the harness connector (A) from the input speed sensor (1).

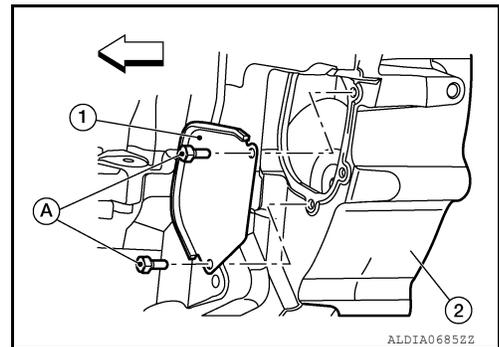
⇐ : Front



10. Remove all harness brackets and clips from A/T assembly.

11. Remove screws (A) and remove cover plate (1) from converter housing (2).

⇐ : Front



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TRANSMISSION ASSEMBLY

< UNIT REMOVAL AND INSTALLATION >

[6AT: RE6R01A]

12. Turn crankshaft, and remove the six bolts for drive plate and torque converter.

CAUTION:

When turning the crankshaft, turn it clockwise as viewed from the front of the engine.

13. Remove control cable from A/T assembly. Refer to [TM-221, "Removal and Installation"](#).

14. Remove air breather hose, air breather box and bracket. Refer to [TM-242, "Exploded View"](#).

15. Remove A/T fluid cooler tube bolts from A/T assembly. Refer to [TM-243, "Exploded View"](#).

NOTE:

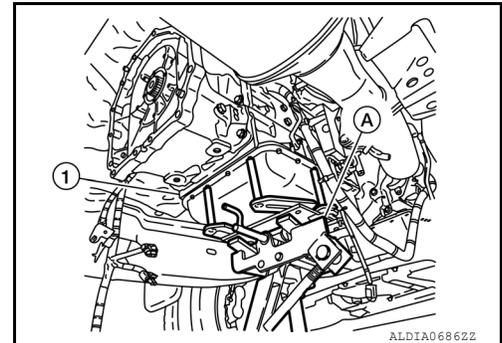
When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid from spilling.

16. Disconnect the oil charging pipe from A/T assembly.

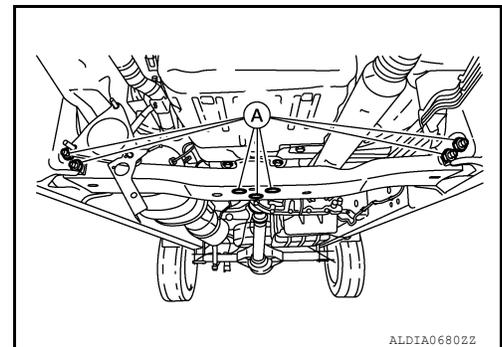
17. Support A/T assembly (1) with a transmission jack (A).

CAUTION:

- **When setting the transmission jack, be careful not to allow it to collide against the drain plug and overflow plug.**
- **Do not lift or support transmission using bottom of oil pan or oil pan damage will result.**



18. Remove bolts (A) and remove transmission cross member.



19. Remove rear engine mount insulator (rear). Refer to [EM-493, "Exploded View"](#).

20. Remove bolts fixing A/T assembly to engine.

21. Remove A/T assembly from the vehicle.

CAUTION:

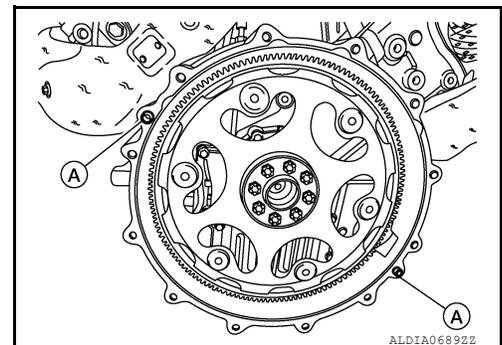
- **Secure torque converter to prevent it from dropping.**
- **Secure A/T assembly to a transmission jack.**

22. Disconnect oil charging pipe from engine.

INSTALLATION

Note the following, and installation is in the reverse order of removal.

- Check fitting of dowel pins (A).



TRANSMISSION ASSEMBLY

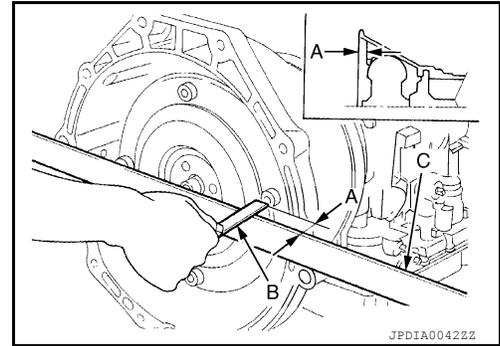
< UNIT REMOVAL AND INSTALLATION >

[6AT: RE6R01A]

- When installing A/T assembly to the engine, be sure to check dimension "A" to ensure it is within the reference value limit.

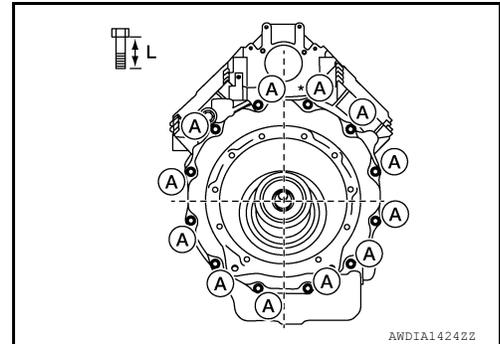
B : Scale
C : Straightedge

Dimension "A" : Refer to [TM-260, "Torque Converter"](#).



- When installing A/T assembly to the engine, attach the fixing bolts in accordance with the following standard.

Bolt symbol	A
Insertion direction	A/T assembly to engine
Number of bolts	12
Bolt length "L" mm (in)	43 (1.69)
Tightening torque N·m (kg·m, ft·lb)	45 (4.6, 33)



*: Tightening the bolt with bracket of air breather tube. Refer to [TM-242, "Exploded View"](#).

- Align the positions of bolts for drive plate with those of the torque converter, and temporarily tighten the bolts. Then, tighten the bolts with the specified torque.

CAUTION:

- Do not reuse drive plate bolts.
- When turning crankshaft, turn it clockwise as viewed from the front of the engine.
- When tightening the bolts for the torque converter after fixing the crankshaft pulley bolts, be sure to confirm the tightening torque of the crankshaft pulley mounting bolts. Refer to [EM-493, "Exploded View"](#).
- Rotate crankshaft several turns and check to be sure that A/T rotates freely without binding after converter is installed to drive plate.

4WD : Inspection and Adjustment

INFOID:000000014419090

INSPECTION AFTER INSTALLATION

- Check A/T fluid leakage.
- Check A/T position after adjusting A/T positions. Refer to [TM-101, "Inspection and Adjustment"](#).

ADJUSTMENT AFTER INSTALLATION

- Adjust A/T fluid level. Refer to [TM-218, "Changing the A/T Fluid \(ATF\)"](#).
- Adjust A/T position. Refer to [TM-101, "Inspection and Adjustment"](#).
- Perform "ADDITIONAL SERVICE WHEN REPLACING TRANSMISSION ASSEMBLY". Refer to [TM-92, "Description"](#).

TORQUE CONVERTER

< UNIT DISASSEMBLY AND ASSEMBLY >

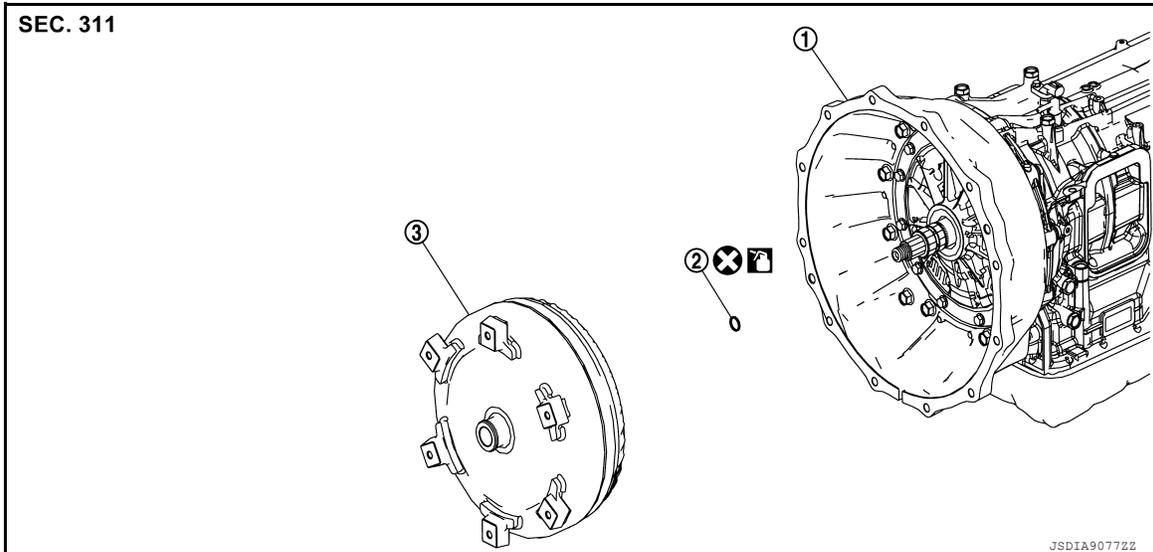
[6AT: RE6R01A]

UNIT DISASSEMBLY AND ASSEMBLY

TORQUE CONVERTER

Exploded View

INFOID:000000014419091



- ① Transmission assembly ② Input shaft oil seal ③ Torque converter

⊗ : Always replace after every disassembly.

◻ : A/T fluid

Disassembly

INFOID:000000014419092

1. Remove transmission assembly. Refer to [TM-248, "2WD : Removal and Installation"](#) (2WD), [TM-252, "4WD : Removal and Installation"](#) (4WD).
2. Remove torque converter.
3. Remove input shaft oil seal.

Assembly

INFOID:000000014419093

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

CAUTION:

Never reuse input shaft oil seal.

Inspection

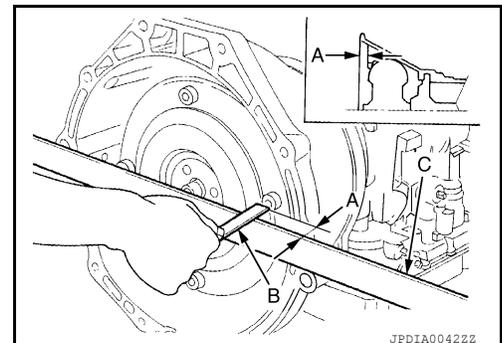
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INSPECTION AFTER INSTALLATION

After inserting a torque converter to the transmission assembly, check dimension (A) with in the reference value limit.

- B : Scale
C : Straightedge

Dimension "A" : Refer to [TM-260, "Torque Converter"](#).



SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

[6AT: RE6R01A]

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

General Specification

INFOID:0000000014419095

Axle		2WD	4WD
Transmission model		RE6R01A	
Stall torque ratio		1.688	
Transmission gear ratio	1st	3.742	
	2nd	2.003	
	3rd	1.343	
	4th	1.000	
	5th	0.773	
	6th	0.634	
	Reverse	3.539	
Recommended fluid and fluid capacity		Refer to MA-62, "Cummins 5.0L Engine : Fluids and Lubricants" .	

Vehicle Speed at Which Gear Shifting Occurs

INFOID:0000000014419096

TIRE RADIUS (M): 0.385

Normal mode

Unit: km/h (MPH)

Gear position	Throttle position	
	Full throttle	Half throttle
D1 → D2	38 (24)	19 (12)
D2 → D3	71 (44)	45 (28)
D3 → D4	106 (66)	66 (41)
D4 → D5	143 (89)	86 (53)
D5 → D6	185 (115)	120 (75)
D6 → D5	158 (98)	108 (67)
D5 → D4	120 (75)	73 (45)
D4 → D3	95 (59)	52 (32)
D3 → D2	51 (32)	35 (22)
D2 → D1	20 (12)	13 (8)

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

Tow mode

Unit: km/h (MPH)

Gear position	Throttle position	
	Full throttle	Half throttle
D1 → D2	38 (24)	30 (19)
D2 → D3	71 (44)	57 (35)
D3 → D4	106 (66)	77 (48)
D4 → D5	143 (89)	111 (69)
D5 → D6	—	—
D6 → D5	—	—
D5 → D4	120 (75)	76 (47)

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

[6AT: RE6R01A]

Gear position	Throttle position	
	Full throttle	Half throttle
D4 → D3	95 (59)	59 (37)
D3 → D2	65 (40)	46 (29)
D2 → D1	20 (12)	20 (12)

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

TIRE RADIUS (M): 0.393

Normal mode

Unit: km/h (MPH)

Gear position	Throttle position	
	Full throttle	Half throttle
D1 → D2	39 (24)	19 (12)
D2 → D3	73 (45)	46 (29)
D3 → D4	108 (67)	67 (42)
D4 → D5	146 (91)	88 (55)
D5 → D6	188 (117)	123 (76)
D6 → D5	161 (100)	111 (69)
D5 → D4	123 (76)	75 (47)
D4 → D3	96 (60)	53 (33)
D3 → D2	52 (32)	36 (22)
D2 → D1	21 (13)	13 (8)

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

Tow mode

Unit: km/h (MPH)

Gear position	Throttle position	
	Full throttle	Half throttle
D1 → D2	39 (24)	31 (19)
D2 → D3	73 (45)	59 (37)
D3 → D4	108 (67)	78 (48)
D4 → D5	146 (91)	114 (71)
D5 → D6	—	—
D6 → D5	—	—
D5 → D4	123 (76)	77 (48)
D4 → D3	96 (60)	61 (38)
D3 → D2	66 (41)	47 (29)
D2 → D1	21 (13)	21 (13)

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

TIRE RADIUS (M): 0.398

Normal mode

Unit: km/h (MPH)

Gear position	Throttle position	
	Full throttle	Half throttle
D1 → D2	39 (24)	19 (12)
D2 → D3	74 (46)	47 (29)
D3 → D4	110 (68)	68 (42)

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

[6AT: RE6R01A]

Gear position	Throttle position	
	Full throttle	Half throttle
D4 → D5	148 (92)	89 (55)
D5 → D6	191 (119)	124 (77)
D6 → D5	163 (101)	112 (70)
D5 → D4	125 (78)	75 (47)
D4 → D3	98 (61)	54 (34)
D3 → D2	53 (33)	36 (22)
D2 → D1	21 (13)	13 (8)

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

Tow mode

Unit: km/h (MPH)

Gear position	Throttle position	
	Full throttle	Half throttle
D1 → D2	39 (24)	31 (19)
D2 → D3	74 (46)	59 (37)
D3 → D4	110 (68)	79 (49)
D4 → D5	148 (92)	115 (71)
D5 → D6	—	—
D6 → D5	—	—
D5 → D4	125 (78)	78 (48)
D4 → D3	98 (61)	61 (38)
D3 → D2	67 (42)	48 (30)
D2 → D1	21 (13)	21 (13)

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

Vehicle Speed at Which Lock-up Occurs/Releases

INFOID:000000014419097

TIRE RADIUS (M): 0.385

Normal mode

Throttle position	Vehicle speed km/h (MPH)	
	Lock-up ON	Lock-up OFF
Closed throttle	24 – 33 (15 – 21)	18 – 25 (11 – 16)
Half throttle	24 (15)	18 (11)

Tow mode

Throttle position	Vehicle speed km/h (MPH)	
	Lock-up ON	Lock-up OFF
Closed throttle	30 (19)	24 (15)
Half throttle	30 (19)	24 (15)

TIRE RADIUS (M): 0.393

Normal mode

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

[6AT: RE6R01A]

Throttle position	Vehicle speed km/h (MPH)	
	Lock-up ON	Lock-up OFF
Closed throttle	25 – 34 (16 – 21)	18 – 26 (11 – 16)
Half throttle	25 (16)	18 (11)

Tow mode

Throttle position	Vehicle speed km/h (MPH)	
	Lock-up ON	Lock-up OFF
Closed throttle	30 (19)	25 (16)
Half throttle	30 (19)	25 (16)

TIRE RADIUS (M): 0.398

Normal mode

Throttle position	Vehicle speed km/h (MPH)	
	Lock-up ON	Lock-up OFF
Closed throttle	25 – 34 (16 – 21)	18 – 26 (11 – 16)
Half throttle	25 (16)	18 (11)

Tow mode

Throttle position	Vehicle speed km/h (MPH)	
	Lock-up ON	Lock-up OFF
Closed throttle	31 (19)	25 (16)
Half throttle	31 (19)	25 (16)

Stall Speed

INFOID:000000014419098

2WD MODELS

Stall speed	1,790 rpm
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4WD MODELS

Stall speed	2WD	4WD High	4WD Low
	1,790 rpm	1,790 rpm	1,710 rpm

Torque Converter

INFOID:000000014419099

Dimension between end of converter housing and torque converter	42.3 mm (1.665 in)
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PRECAUTION

PRECAUTIONS

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

INFOID:000000014419100

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, it is recommended that all maintenance and repair be performed by an authorized NISSAN/INFINITI dealer.
- Improper repair, 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:

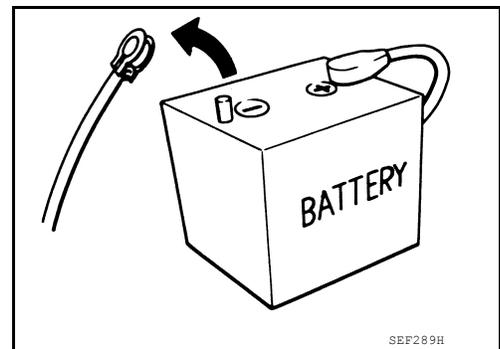
Always observe the following items for preventing accidental activation.

- 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 injury.
- When using air or electric power tools or hammers, always switch the ignition OFF, disconnect the battery or batteries, and wait at least 3 minutes before performing any service.

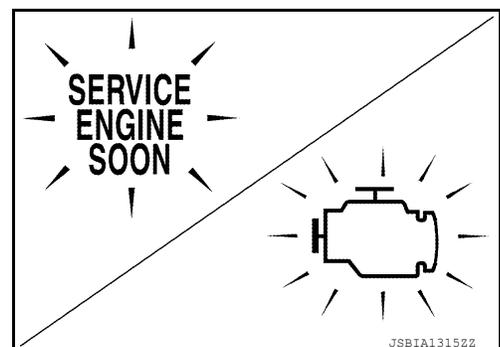
General Precautions

INFOID:000000014419101

- Turn ignition switch OFF and disconnect the battery cable from the negative terminal before connecting or disconnecting the TCM 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.
- 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.



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PRECAUTIONS

< PRECAUTION >

[7AT: RE7R01B]

- 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.
- 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.

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

INFOID:000000014419102

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

CAUTION:

- **Always 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 illuminate.**
- **Always connect and lock the connectors securely after work. A loose (unlocked) connector will cause the MIL to illuminate 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-7, "Harness Connector"](#).**
- **Always route and secure the harnesses properly after work. The interference of the harness with a bracket, etc. may cause the MIL to illuminate due to the short circuit.**
- **Always connect rubber tubes properly after work. A misconnected or disconnected rubber tube may cause the MIL to illuminate due to the malfunction of the EVAP system or fuel injection system, etc.**
- **Always erase the unnecessary malfunction information (repairs completed) from the ECM and TCM (Transmission control module) before returning the vehicle to the customer.**

Service Notice or Precaution

INFOID:000000014419103

ATF COOLER SERVICE

If ATF contains frictional material (clutches, bands, etc.), or if an A/T is repaired, overhauled, or replaced, inspect and clean the A/T fluid cooler mounted in the radiator or replace the radiator. Flush cooler lines using cleaning solvent and compressed air after repair. For A/T fluid cooler cleaning procedure, refer to [TM-359, "Cleaning"](#). For radiator replacement, refer to [CO-13, "Exploded View"](#).

PRECAUTIONS

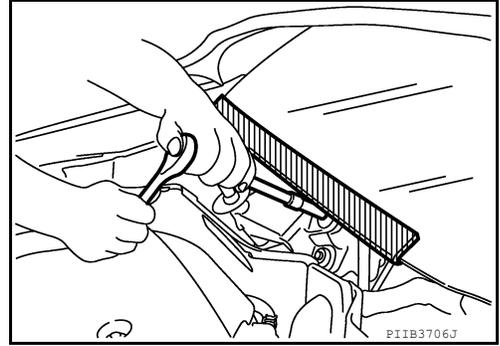
< PRECAUTION >

[7AT: RE7R01B]

Precaution for Procedure without Cowl Top Cover

INFOID:000000014419104

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



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PREPARATION

< PREPARATION >

[7AT: RE7R01B]

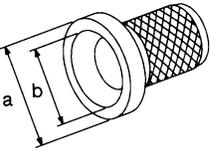
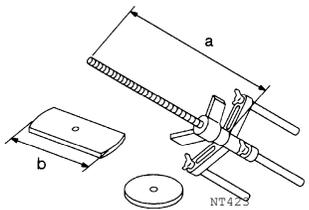
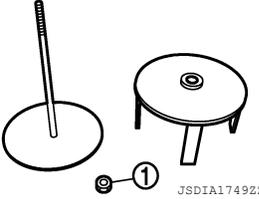
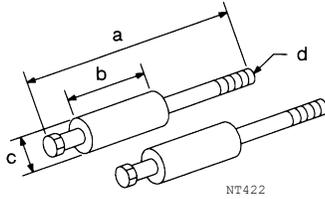
PREPARATION

PREPARATION

Special Service Tool

INFOID:000000014419105

The actual shapes of TechMate tools may differ from those of special service tools illustrated here.

Tool number (TechMate No.) Tool name	Description
ST33400001 (J-26082) Drift a: 60 mm (2.36 in) dia. b: 47 mm (1.85 in) dia.  <p style="text-align: center;">NT086</p>	<ul style="list-style-type: none"> • Installing rear oil seal (2WD) • Installing oil pump housing oil seal
KV31102400 (J-34285 and J-34285-87) Clutch spring compressor a: 320 mm (12.60 in) b: 174 mm (6.85 in)  <p style="text-align: center;">NT422</p>	<ul style="list-style-type: none"> • Installing reverse brake return spring retainer • Removing and installing 2346 brake spring retainer
KV31103800 (—) Clutch spring compressor 1. M12×1.75P  <p style="text-align: center;">JSDIA1749ZZ</p>	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  <p style="text-align: center;">NT422</p>	Remove oil pump assembly

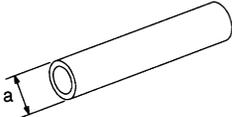
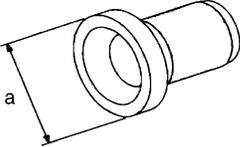
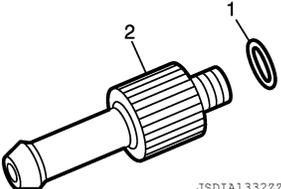
PREPARATION

< PREPARATION >

[7AT: RE7R01B]

Commercial Service Tool

INFOID:000000014419106

Tool name	Description
<p>Power tool</p>  <p style="text-align: center;">PIIB1407E</p>	<p>Loosening bolts and nuts</p>
<p>Drift a: 22 mm (0.87 in) dia.</p>  <p style="text-align: center;">NT083</p>	<p>Installing manual shaft oil seals</p>
<p>Drift a: 64 mm (2.52 in) dia.</p>  <p style="text-align: center;">SCIA5338E</p>	<p>Installing rear oil seal (4WD)</p>
<p>Pin punch a: 4 mm (0.16 in) dia.</p>  <p style="text-align: center;">NT410</p>	<p>Remove retaining pin</p>
<p>1. 315268E000* O-ring 2. 310811EA5A* Charging pipe</p>  <p style="text-align: center;">JSDIA13322Z</p>	<p>A/T fluid changing and adjustment</p>

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

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COMPONENT PARTS

< SYSTEM DESCRIPTION >

[7AT: RE7R01B]

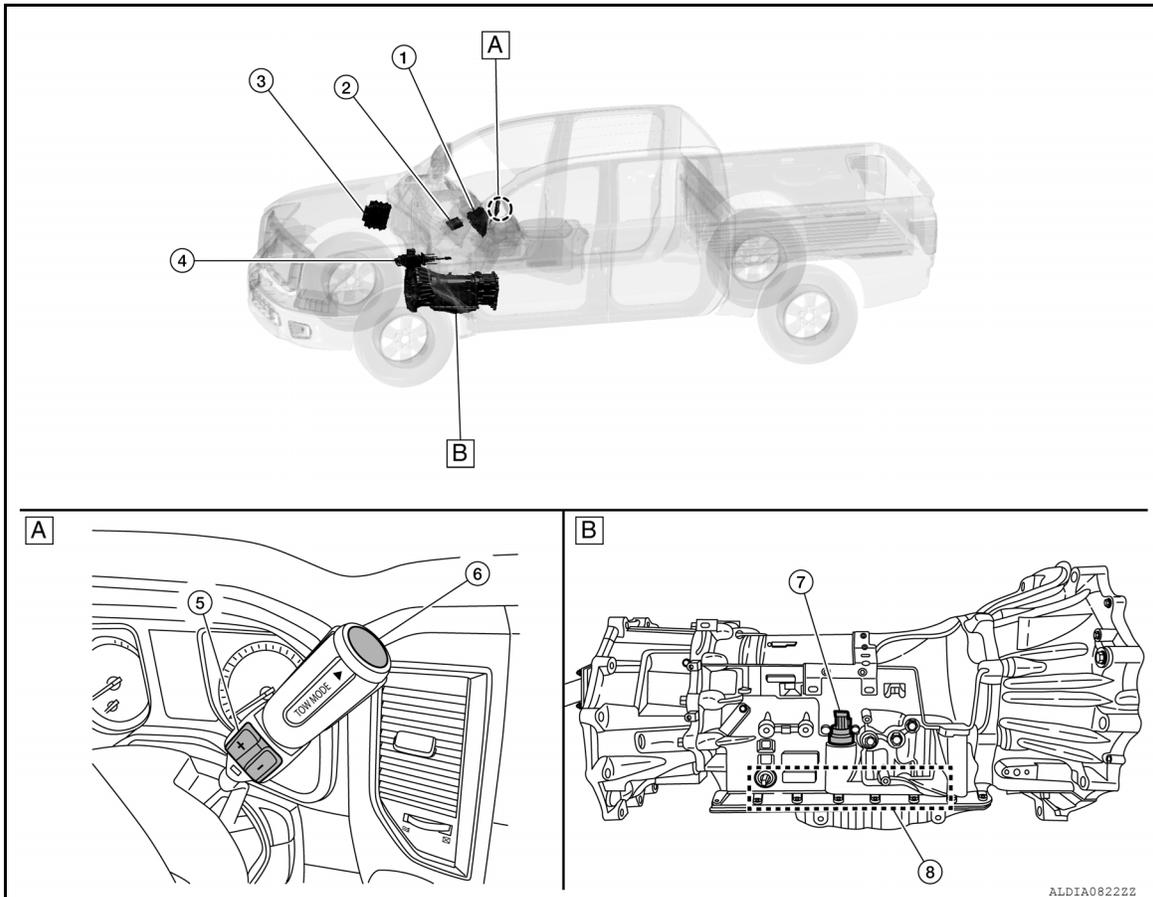
SYSTEM DESCRIPTION

COMPONENT PARTS

A/T CONTROL SYSTEM

A/T CONTROL SYSTEM : Component Parts Location

INFOID:0000000014419107



A A/T shift selector

B A/T assembly

No.	Component	Function
①	Combination meter	<p>Mainly transmits the following signal to TCM via CAN communication.</p> <ul style="list-style-type: none"> • Vehicle speed signal • Manual mode signal • Non-manual mode signal • Manual mode upshift signal • Manual mode downshift signal <p>Mainly receives the following signals from TCM via CAN communication.</p> <ul style="list-style-type: none"> • Shift position signal • Manual mode shift refusal signal <p>Refer to MWI-8. "METER SYSTEM : Component Parts Location" (TYPE A) or MWI-116. "METER SYSTEM : Component Parts Location" (TYPE B) for detailed installation location.</p> <p>NOTE: To identify vehicle type, refer to MWI-5. "Information".</p>
②	BCM	<p>Mainly transmits the following signal to TCM via CAN communication.</p> <ul style="list-style-type: none"> • Stop lamp switch signal <p>Refer to BCS-5. "BODY CONTROL SYSTEM : Component Parts Location" for detailed installation location.</p>

COMPONENT PARTS

< SYSTEM DESCRIPTION >

[7AT: RE7R01B]

No.	Component	Function	
③	ECM	Mainly transmits the following signal to TCM via CAN communication. <ul style="list-style-type: none"> • Engine and A/T integrated control signal NOTE: General term for the communication (torque-down permission, torque-down request, etc.) exchanged between the ECM and TCM. <ul style="list-style-type: none"> • Engine speed signal • Engine coolant temperature signal • Accelerator pedal position signal • Closed throttle position signal • Wide open throttle position signal • ASCD OD cancel request signal Refer to EC-36, "Component Parts Location" for detailed installation location.	
④	ABS actuator and electric unit (control unit)	Mainly transmits the following signal to TCM via CAN communication. <ul style="list-style-type: none"> • ABS operation signal • TCS gear keep request signal • A/T shift schedule change demand signal • Side G sensor signal Refer to BRC-9, "Component Parts Location" for detailed installation location.	
⑤	Manual mode switch	TM-269, "A/T CONTROL SYSTEM : Manual Mode Switch"	
⑥	TOW mode switch	TM-269, "A/T CONTROL SYSTEM : Tow Mode Switch"	
⑦	A/T assembly connector	—	
⑧	Control valve & TCM	TCM*	TM-267, "A/T CONTROL SYSTEM : TCM"
		Transmission range switch*	TM-267, "A/T CONTROL SYSTEM : Transmission Range Switch"
		Input speed sensor 1, 2*	TM-268, "A/T CONTROL SYSTEM : Input Speed Sensor"
		A/T fluid temperature sensor*	TM-268, "A/T CONTROL SYSTEM : A/T Fluid Temperature Sensor"
		Input clutch solenoid valve*	TM-268, "A/T CONTROL SYSTEM : Input Clutch Solenoid Valve"
		Direct clutch solenoid valve*	TM-268, "A/T CONTROL SYSTEM : Direct Clutch Solenoid Valve"
		High and low reverse clutch solenoid valve*	TM-268, "A/T CONTROL SYSTEM : High and Low Reverse Clutch Solenoid Valve"
		Front brake solenoid valve*	TM-268, "A/T CONTROL SYSTEM : Front Brake Solenoid Valve"
		Low brake solenoid valve*	TM-268, "A/T CONTROL SYSTEM : Low Brake Solenoid Valve"
		2346 brake solenoid valve*	TM-269, "A/T CONTROL SYSTEM : 2346 Brake Solenoid Valve"
		Anti-interlock solenoid valve*	TM-269, "A/T CONTROL SYSTEM : Anti-interlock Solenoid Valve"
		Line pressure solenoid valve*	TM-269, "A/T CONTROL SYSTEM : Line Pressure Solenoid Valve"
		Torque converter clutch solenoid valve*	TM-269, "A/T CONTROL SYSTEM : Torque Converter Clutch Solenoid Valve"

*: These components are included in control valve & TCM.

A/T CONTROL SYSTEM : TCM

INFOID:000000014419108

- The TCM consists of a microcomputer and connectors for signal input and output and for power supply. The TCM controls the A/T.
- The TCM is integral with the control valve assembly and built into the A/T assembly.

A/T CONTROL SYSTEM : Transmission Range Switch

INFOID:000000014419109

- 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.

COMPONENT PARTS

< SYSTEM DESCRIPTION >

[7AT: RE7R01B]

Select lever position	Transmission range switch			
	SW1	SW2	SW3	SW4
P	OFF	OFF	OFF	OFF
R	ON	OFF	OFF	ON
N	ON	ON	OFF	OFF
D and M	ON	ON	ON	ON

A/T CONTROL SYSTEM : Input Speed Sensor

INFOID:0000000014419110

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.

A/T CONTROL SYSTEM : Output Speed Sensor

INFOID:0000000014419111

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.

A/T CONTROL SYSTEM : A/T Fluid Temperature Sensor

INFOID:0000000014419112

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

A/T CONTROL SYSTEM : Input Clutch Solenoid Valve

INFOID:0000000014419113

- 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.

A/T CONTROL SYSTEM : Front Brake Solenoid Valve

INFOID:0000000014419114

- The front brake solenoid valve is controlled by the TCM in response to signals transmitted from the transmission range switch, output speed sensor and accelerator pedal position sensor. Gears will then be shifted to the optimum position.
- The front brake solenoid valve controls the front brake control valve in response to a signal transmitted from the TCM.

A/T CONTROL SYSTEM : Direct Clutch Solenoid Valve

INFOID:0000000014419115

- 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.

A/T CONTROL SYSTEM : High and Low Reverse Clutch Solenoid Valve

INFOID:0000000014419116

- 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.

A/T CONTROL SYSTEM : Low Brake Solenoid Valve

INFOID:0000000014419117

- 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.

COMPONENT PARTS

< SYSTEM DESCRIPTION >

[7AT: RE7R01B]

A/T CONTROL SYSTEM : Anti-interlock Solenoid Valve

INFOID:0000000014419118

- 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.

A/T CONTROL SYSTEM : 2346 Brake Solenoid Valve

INFOID:0000000014419119

- 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.

A/T CONTROL SYSTEM : Torque Converter Clutch Solenoid Valve

INFOID:0000000014419120

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.

A/T CONTROL SYSTEM : Line Pressure Solenoid Valve

INFOID:0000000014419121

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

A/T CONTROL SYSTEM : Accelerator Pedal Position Sensor

INFOID:0000000014419122

- 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. Then, the TCM receives accelerator pedal position signal from the ECM via CAN communication.

A/T CONTROL SYSTEM : Manual Mode Switch

INFOID:0000000014419123

- The manual mode switch [mode select switch and position select switch (shift-up/shift-down)] is installed in the A/T shift selector assembly.
- The 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 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 position select switch (shift-down) detects that the selector lever is shifted to the shift-down 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.

A/T CONTROL SYSTEM : Tow Mode Switch

INFOID:0000000014419124

- Tow mode switch is integrated in to SNOW MODE/TOW MODE/VDC OFF switch assembly (2WD models) or 4WD switch assembly (4WD models).
- When tow mode switch is pressed while tow mode indicator lamp on combination meter is OFF, the tow mode turns ON and tow mode indicator lamp turns ON.
- When tow mode switch is pressed while tow mode indicator lamp on combination meter is ON, the tow mode turns OFF and tow mode indicator lamp turns OFF.

A/T CONTROL SYSTEM : A/T CHECK Indicator Lamp

INFOID:0000000014419125

A/T CHECK INDICATOR LAMP

Turns ON when ignition switch turns ON and turns OFF when the system is normal, for bulb check purposes.

COMPONENT PARTS

< SYSTEM DESCRIPTION >

[7AT: RE7R01B]

Condition (status)	A/T CHECK indicator lamp
Ignition switch OFF	OFF
For approx. 2 seconds after the ignition switch is turned ON	ON
Approx. 2 seconds after ignition switch is turned ON	OFF
A/T is malfunctioning	OFF

A/T CONTROL SYSTEM : Tow Mode Indicator Lamp

INFOID:000000014419126

TOW MODE INDICATOR LAMP

Turns ON when tow mode is switched to operational status (ON) by tow mode switch.

Condition (status)	Tow mode indicator lamp
Ignition switch OFF	OFF
When ignition switch turns ON	OFF
Press tow mode switch while tow mode indicator lamp is OFF.	ON
Press tow mode switch while tow mode indicator lamp is ON.	OFF

A/T CONTROL SYSTEM : Selector Lever Position Indicator

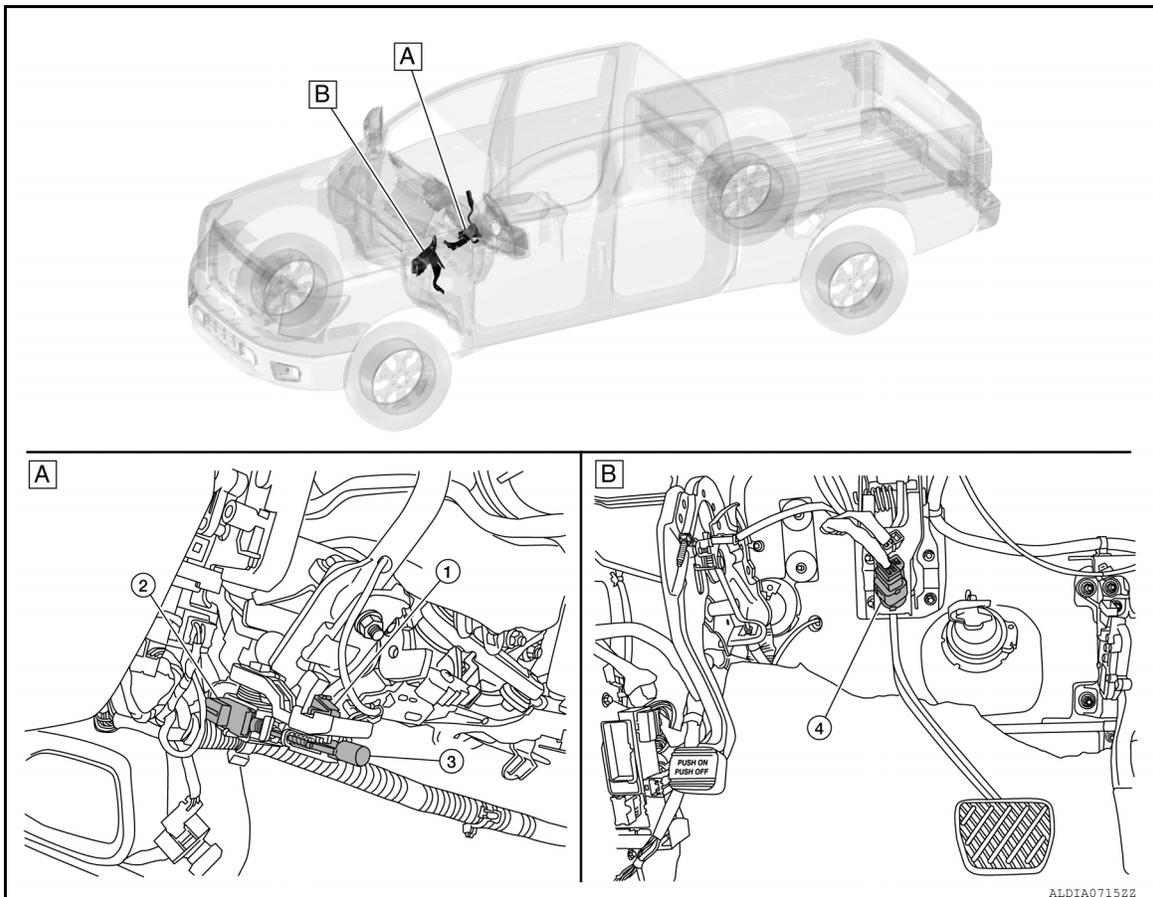
INFOID:000000014419127

Indicates selector lever position.

SHIFT LOCK SYSTEM

SHIFT LOCK SYSTEM : Component Parts Location

INFOID:000000014419128



A. Steering column (view with steering column covers removed)

B. Brake pedal area (view with instrument panel assembly removed)

COMPONENT PARTS

< SYSTEM DESCRIPTION >

[7AT: RE7R01B]

COMPONENT DESCRIPTION

No.	Component	Function
1.	Park position switch (shift selector)	It detects that the selector lever is in "P" (Park) position.
2.	Shift lock solenoid	It operates according to the signal from the stop lamp switch and moves the lock lever.
3.	Shift lock release button	Forcibly releases the shift lock when pressed.
4.	Stop lamp switch	<ul style="list-style-type: none">• The stop lamp switch turns ON when the brake pedal is depressed.• When the stop lamp switch turns ON, the shift lock solenoid is energized.

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STRUCTURE AND OPERATION

< SYSTEM DESCRIPTION >

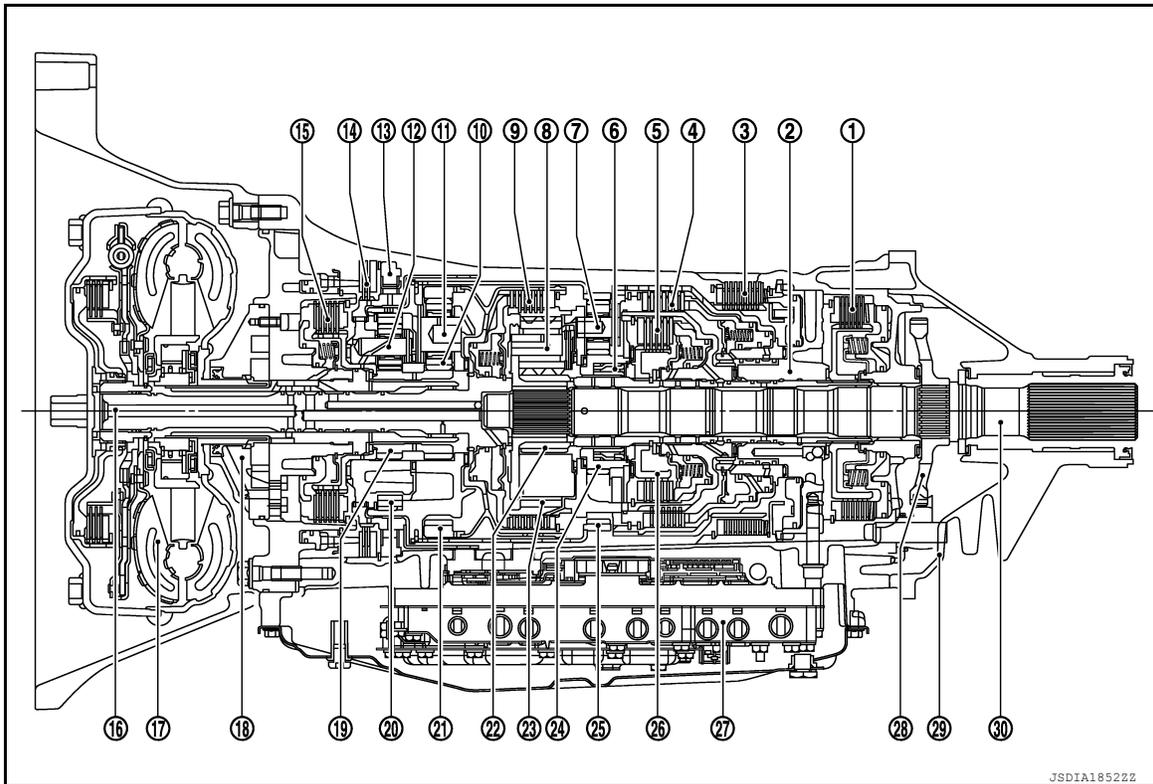
[7AT: RE7R01B]

STRUCTURE AND OPERATION TRANSMISSION

TRANSMISSION : Cross-Sectional View

INFOID:000000014419129

2WD MODELS



- | | | |
|--------------------------------------|---|-------------------------------------|
| ① Low brake | ② Drum support | ③ Reverse brake |
| ④ Direct clutch | ⑤ High and low reverse clutch | ⑥ 2nd one-way clutch |
| ⑦ Rear carrier ^{*1} | ⑧ Mid carrier | ⑨ Input clutch |
| ⑩ Front sun gear ^{*2} | ⑪ Front carrier ^{*3} | ⑫ Under drive carrier |
| ⑬ 1st one-way clutch | ⑭ Front brake | ⑮ 2346 brake |
| ⑯ Input shaft ^{*4} | ⑰ Torque converter | ⑱ Oil pump |
| ⑲ Under drive sun gear ^{*2} | ⑳ Under drive internal gear ^{*3} | ㉑ Front internal gear ^{*4} |
| ㉒ Mid sun gear | ㉓ Mid internal gear ^{*1} | ㉔ Rear sun gear |
| ㉕ Rear internal gear | ㉖ High and low reverse clutch hub | ㉗ Control valve & TCM |
| ㉘ Parking gear | ㉙ Rear extension | ㉚ Output shaft |

*1: 7 and 23 are one unit.

*2: 10 and 19 are one unit.

*3: 11 and 20 are one unit.

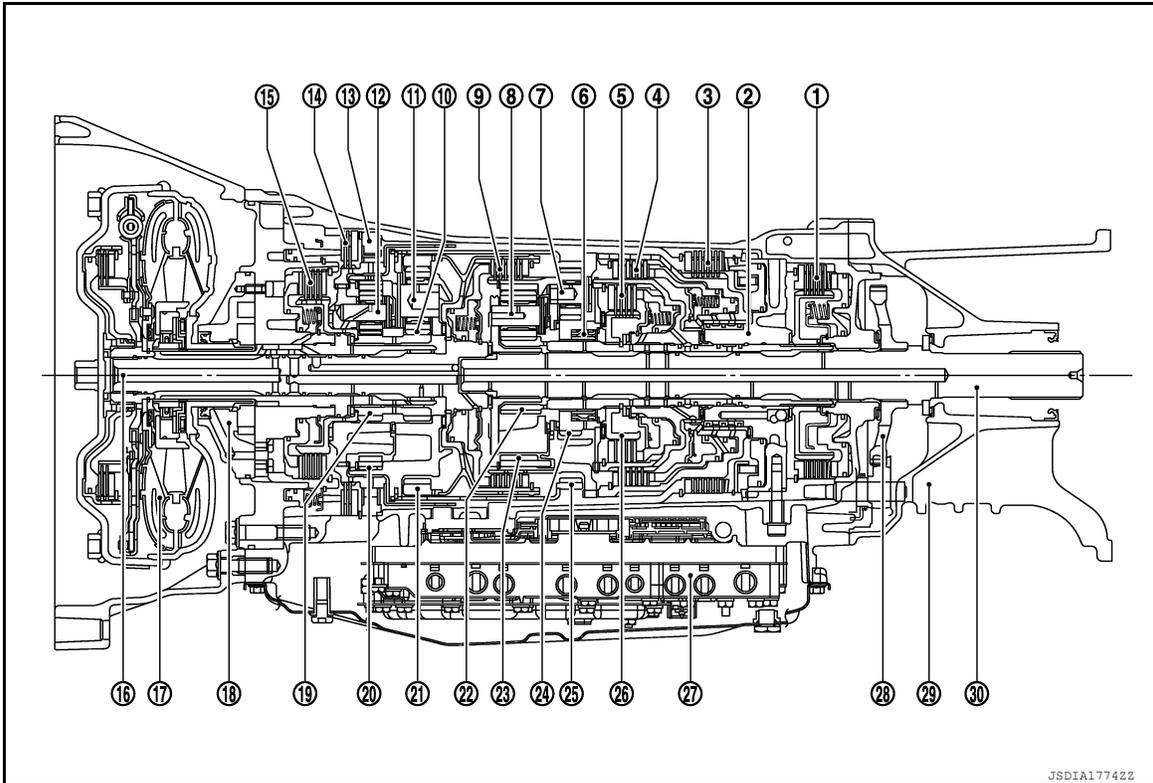
*4: 16 and 21 are one unit.

4WD MODELS

STRUCTURE AND OPERATION

< SYSTEM DESCRIPTION >

[7AT: RE7R01B]



- | | | |
|--------------------------------------|---|-------------------------------------|
| ① Low brake | ② Drum support | ③ Reverse brake |
| ④ Direct clutch | ⑤ High and low reverse clutch | ④ 2nd one-way clutch |
| ⑦ Rear carrier ^{*1} | ⑧ Mid carrier | ⑨ Input clutch |
| ⑩ Front sun gear ^{*2} | ⑪ Front carrier ^{*3} | ⑫ Under drive carrier |
| ⑬ 1st one-way clutch | ⑭ Front brake | ⑮ 2346 brake |
| ⑯ Input shaft ^{*4} | ⑰ Torque converter | ⑱ Oil pump |
| ⑲ Under drive sun gear ^{*2} | ⑳ Under drive internal gear ^{*3} | ㉑ Front internal gear ^{*4} |
| ㉒ Mid sun gear | ㉓ Mid internal gear ^{*1} | ㉔ Rear sun gear |
| ㉕ Rear internal gear | ㉖ High and low reverse clutch hub | ㉗ Control valve & TCM |
| ㉘ Parking gear | ㉙ Adapter case | ㉚ Output shaft |

*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.

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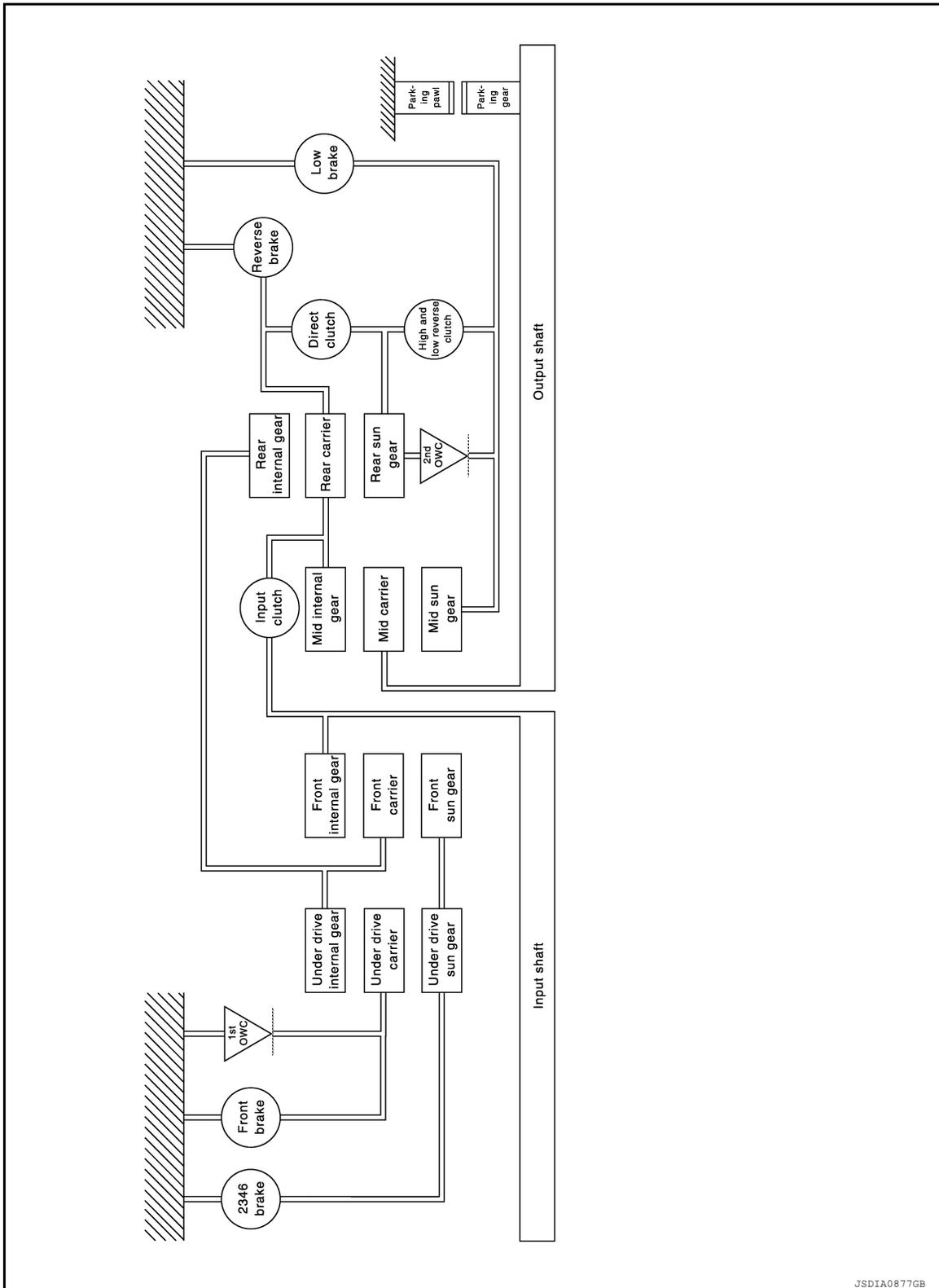
STRUCTURE AND OPERATION

< SYSTEM DESCRIPTION >

[7AT: RE7R01B]

TRANSMISSION : System Diagram

INFOID:000000014419130



JSDIA0877GB

TRANSMISSION : System Description

INFOID:000000014419131

DESCRIPTION

STRUCTURE AND OPERATION

< SYSTEM DESCRIPTION >

[7AT: RE7R01B]

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 BRAKE CHART

Shift position	Name of the part	I/C	D/C		H&LR/C	F/B	L/B		2346/B	REV/B	1st OWC	2nd OWC	Remarks
			FRONT	REAR			INNER	OUTER					
P					△	△							Park position
R					◇	◇				○	◎	◎	Reverse position
N					△	△							Neutral position
D	1st				☆	☆	○	○			◎	◎	Automatic shift 1⇔2⇔3⇔4⇔5⇔6⇔7
	2nd						○	○	○			◎	
	3rd		○	○			○		○				
	4th		○	○	○				○				
	5th	○		○	○								
	6th	○			○				○				
	7th	○			○	○							
7M	7th	○			○	○							Locks* (held stationary) in 7GR
6M	6th	○			○			○					Locks* (held stationary) in 6GR
5M	5th	○		○	○								Locks* (held stationary) in 5GR
4M	4th		○	○	○				○				Locks* (held stationary) in 4GR
3M	3rd		○	○			○		○				Locks* (held stationary) in 3GR
2M	2nd				◇		○	○	○			◎	Locks* (held stationary) in 2GR
1M	1st				◇	◇	○	○			◎	◎	Locks (held stationary) in 1GR

- - Operates
- ◎ - Operates during "progressive" acceleration.
- ◇ - Operates and affects power transmission while coasting.
- △ - Line pressure is applied but does not affect power transmission.
- ☆ - Operates at the fixed speed or less.

*: Down shift automatically according to the vehicle speed.

JSDIA1455GB

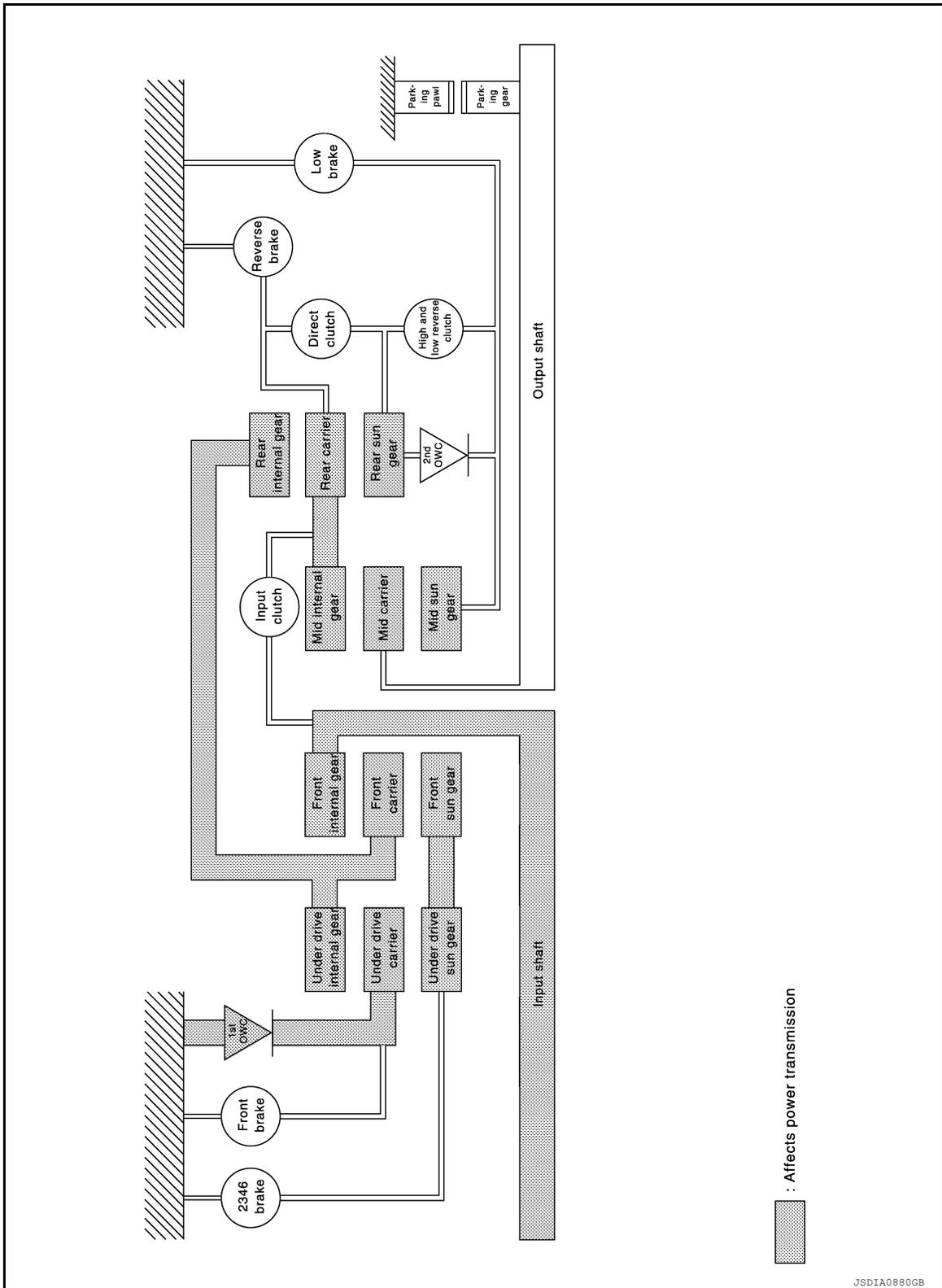
POWER TRANSMISSION

"N" Position

STRUCTURE AND OPERATION

< SYSTEM DESCRIPTION >

[7AT: RE7R01B]



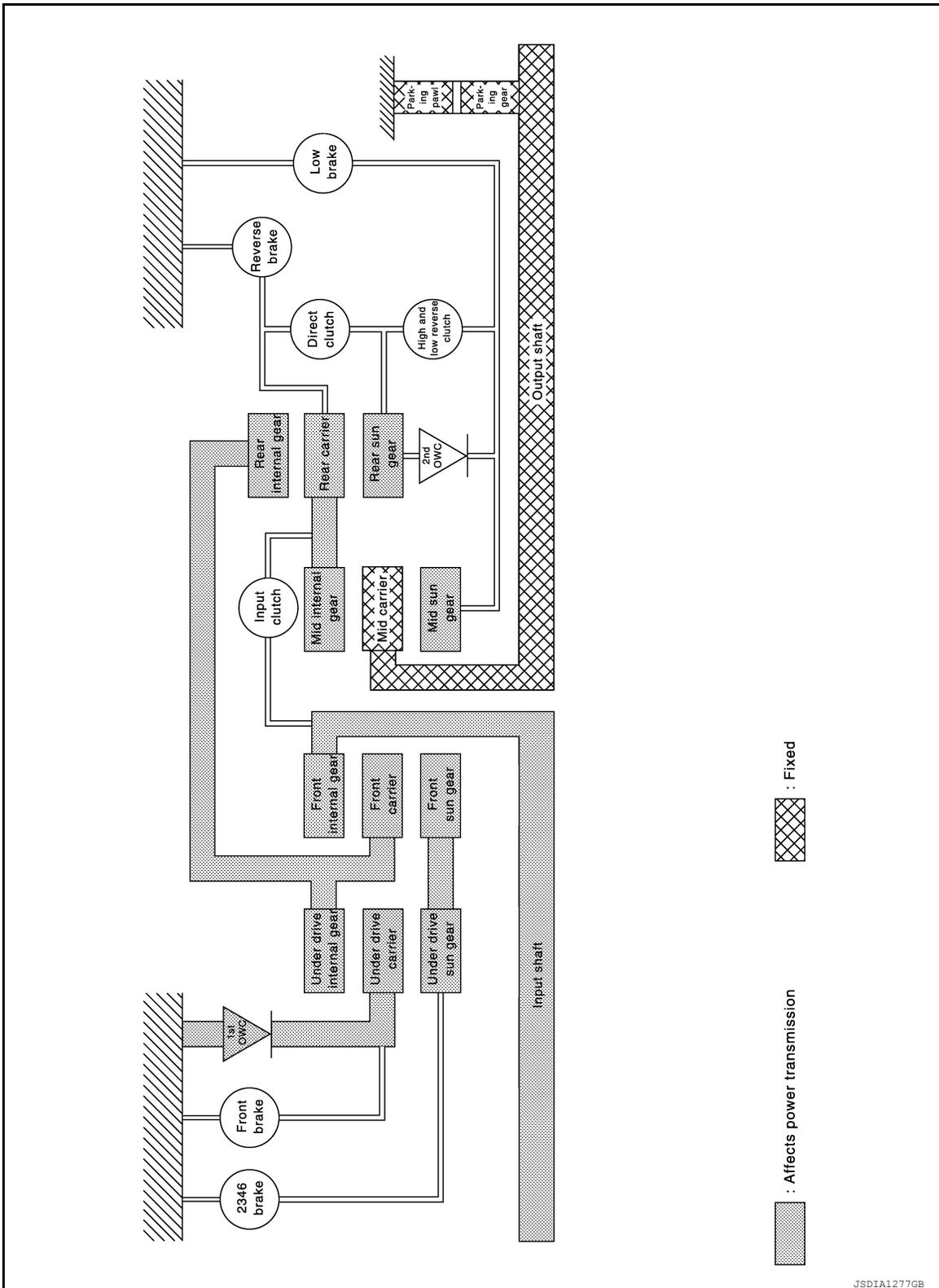
Since the low brake is released, torque from the input shaft drive is not transmitted to the output shaft.

“P” Position

STRUCTURE AND OPERATION

< SYSTEM DESCRIPTION >

[7AT: RE7R01B]



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

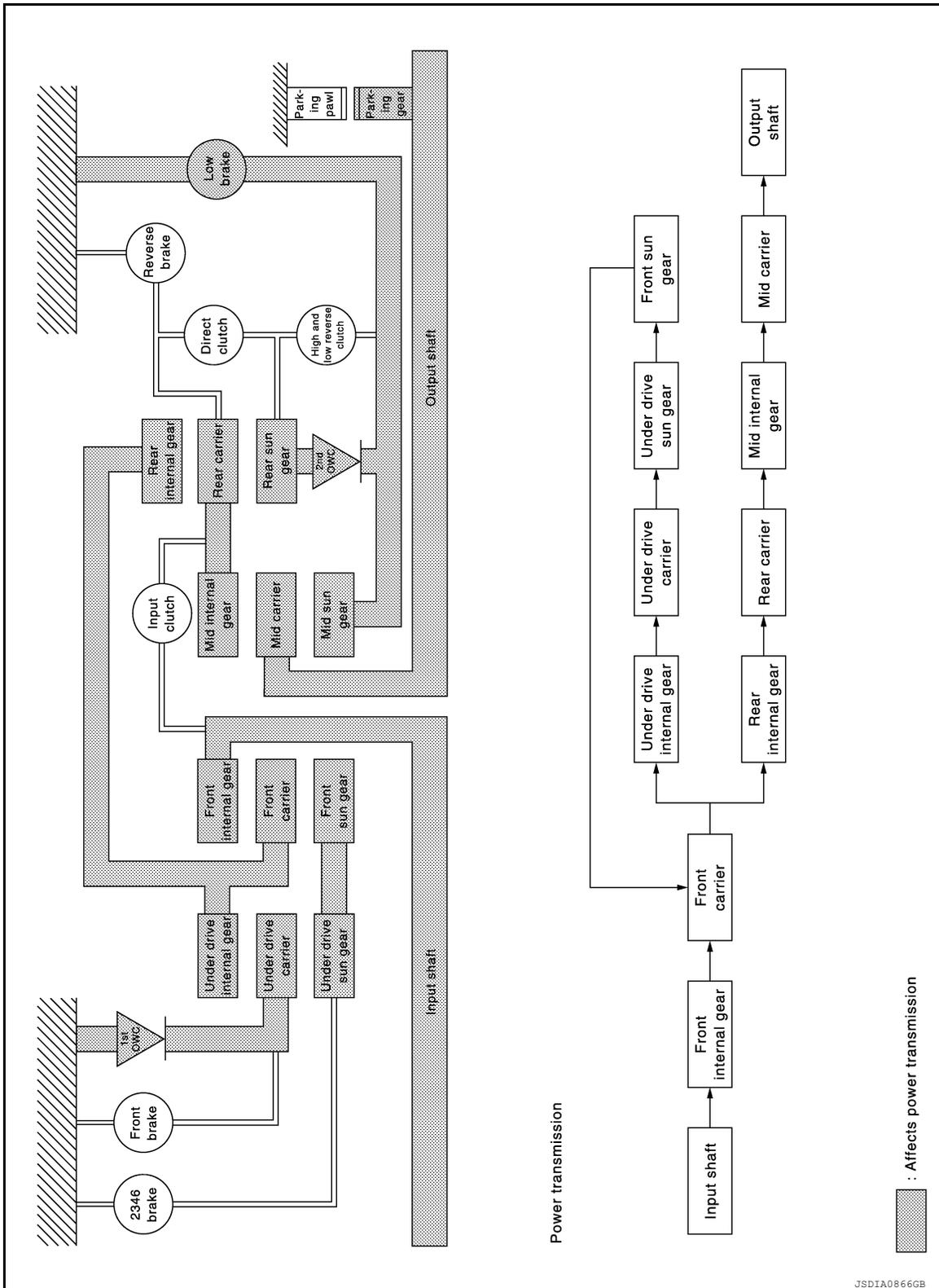
“D1” Position

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STRUCTURE AND OPERATION

< SYSTEM DESCRIPTION >

[7AT: RE7R01B]



- The 1st one-way clutch regulates counterclockwise rotation of the under drive carrier.
- The 2nd one-way clutch regulates counterclockwise rotation of the rear sun gear.
- The mid sun gear is fixed by the low brake.
- Each planetary gear enters the state described below.

STRUCTURE AND OPERATION

< SYSTEM DESCRIPTION >

[7AT: RE7R01B]

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 gear			
Name	Under drive sun gear	Under drive carrier	Under drive internal gear
Condition	—	Fixed	Input/Output
Direction of rotation	Counterclockwise revolution	—	Clockwise revolution
Number of revolutions	Acceleration from under drive internal gear	—	Same number of revolution as the front carrier
Rear planetary gear			
Name	Rear sun gear	Rear carrier	Rear internal gear
Condition	Fixed	Output	Input
Direction of rotation	—	Clockwise revolution	Clockwise revolution
Number of revolutions	—	Deceleration from rear internal gear	Same number of revolution as the under drive internal gear
Mid planetary gear			
Name	Mid sun gear	Mid carrier	Mid internal gear
Condition	Fixed	Output	Input
Direction of rotation	—	Clockwise revolution	Clockwise revolution
Number of revolutions	—	Deceleration from mid internal gear	Same number of revolution as the rear carrier

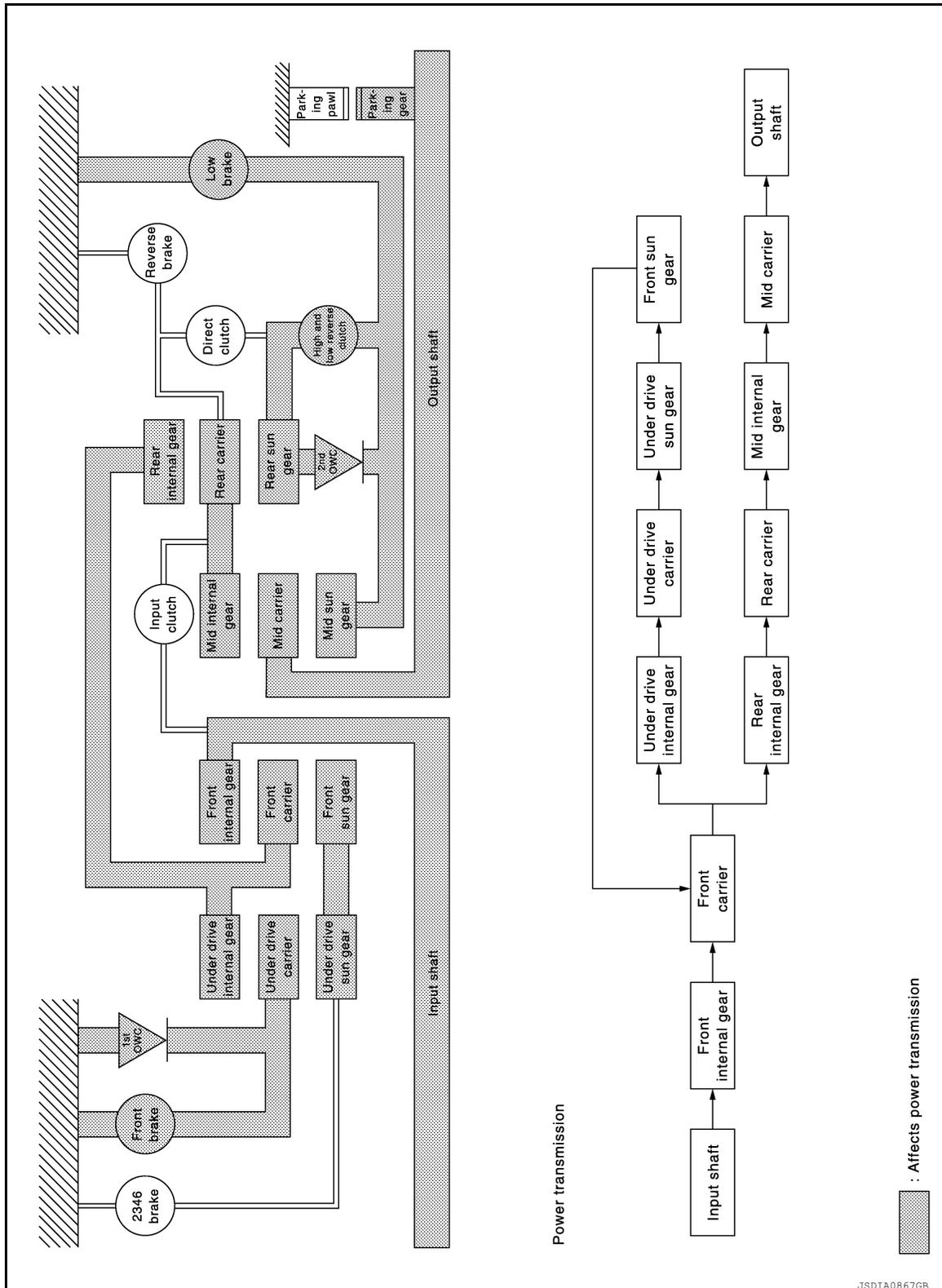
"M1" Position

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STRUCTURE AND OPERATION

< SYSTEM DESCRIPTION >

[7AT: RE7R01B]



- The 1st one-way clutch and the front brake regulate counterclockwise rotation of the under drive carrier.

NOTE:

The front brake operates only while coasting.

- The 2nd one-way clutch and the high and low reverse clutch regulate counterclockwise rotation of the rear sun gear.

NOTE:

The high and low reverse clutch operates only while coasting.

- The mid sun gear is fixed by the low brake.

STRUCTURE AND OPERATION

< SYSTEM DESCRIPTION >

[7AT: RE7R01B]

- Each planetary gear enters the state described below.

Front planetary gear			
Name	Front sun gear	Front carrier	Front internal gear
Condition	—	Output	Input
Direction of rotation	Counterclockwise revolution	Clockwise revolution	Clockwise revolution
Number of revolutions	Deceleration from front internal gear	Deceleration from front internal gear	Same number of revolution as the input shaft
Under drive planetary gear			
Name	Under drive sun gear	Under drive carrier	Under drive internal gear
Condition	—	Fixed	Input/Output
Direction of rotation	Counterclockwise revolution	—	Clockwise revolution
Number of revolutions	Acceleration from under drive internal gear	—	Same number of revolution as the front carrier
Rear planetary gear			
Name	Rear sun gear	Rear carrier	Rear internal gear
Condition	Fixed	Output	Input
Direction of rotation	—	Clockwise revolution	Clockwise revolution
Number of revolutions	—	Deceleration from rear internal gear	Same number of revolution as the under drive internal gear
Mid planetary gear			
Name	Mid sun gear	Mid carrier	Mid internal gear
Condition	Fixed	Output	Input
Direction of rotation	—	Clockwise revolution	Clockwise revolution
Number of revolutions	—	Deceleration from mid internal gear	Same number of revolution as the rear carrier

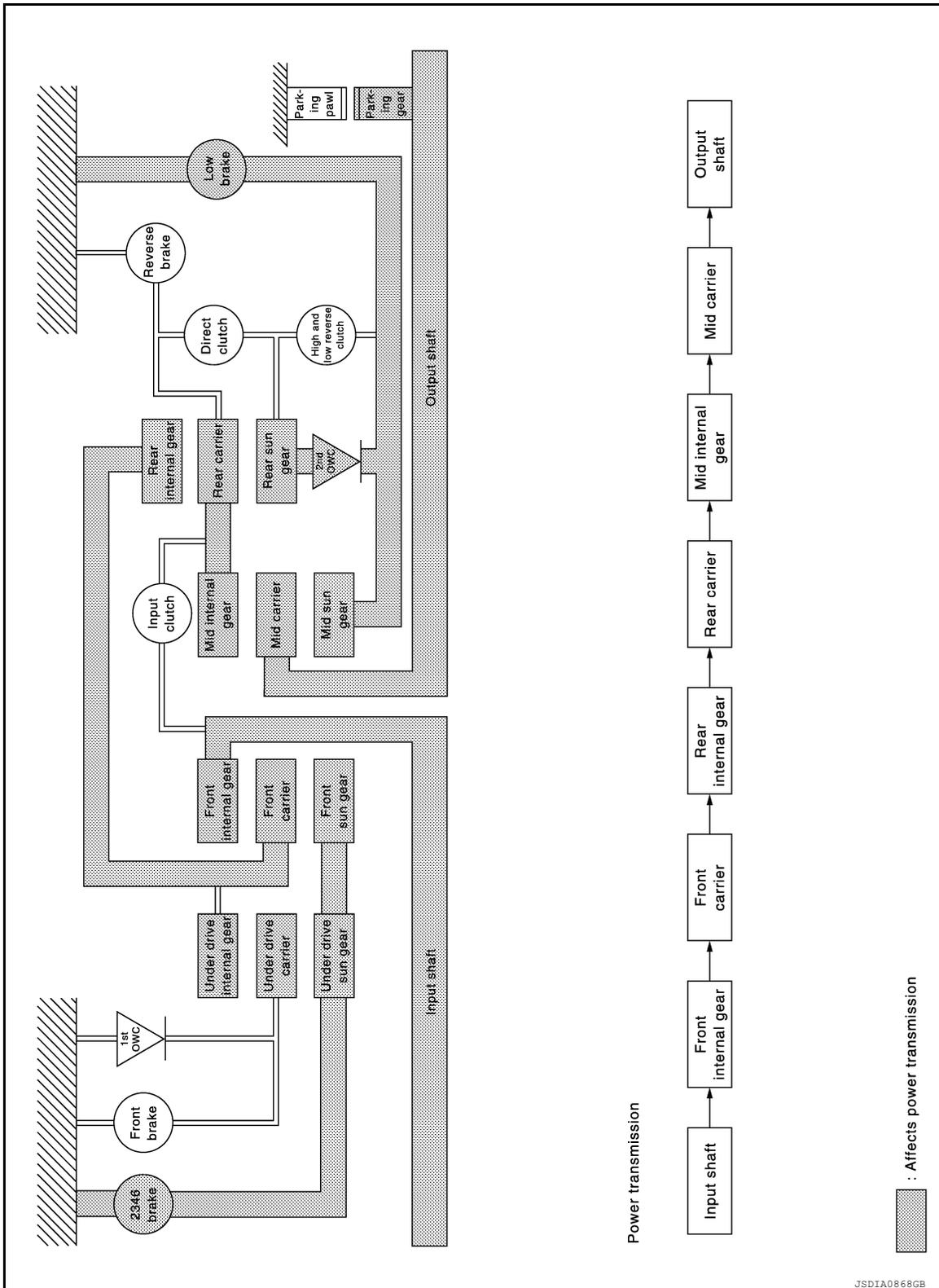
“D2” Position

A
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C
TM
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F
G
H
I
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K
L
M
N
O
P

STRUCTURE AND OPERATION

< SYSTEM DESCRIPTION >

[7AT: RE7R01B]



- 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.

STRUCTURE AND OPERATION

< SYSTEM DESCRIPTION >

[7AT: RE7R01B]

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 gear			
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 internal gear	Same number of revolution as the front carrier
Rear planetary gear			
Name	Rear sun gear	Rear carrier	Rear internal gear
Condition	Fixed	Output	Input
Direction of rotation	—	Clockwise revolution	Clockwise revolution
Number of revolutions	—	Deceleration from rear internal gear	Same number of revolution as the under drive internal gear
Mid planetary gear			
Name	Mid sun gear	Mid carrier	Mid internal gear
Condition	Fixed	Output	Input
Direction of rotation	—	Clockwise revolution	Clockwise revolution
Number of revolutions	—	Deceleration from mid internal gear	Same number of revolution as the rear carrier

"M2" Position

A
B
C
TM
E
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M
N
O
P

STRUCTURE AND OPERATION

< SYSTEM DESCRIPTION >

[7AT: RE7R01B]

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 gear			
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 internal gear	Same number of revolution as the front carrier
Rear planetary gear			
Name	Rear sun gear	Rear carrier	Rear internal gear
Condition	Fixed	Output	Input
Direction of rotation	—	Clockwise revolution	Clockwise revolution
Number of revolutions	—	Deceleration from rear internal gear	Same number of revolution as the under drive internal gear
Mid planetary gear			
Name	Mid sun gear	Mid carrier	Mid internal gear
Condition	Fixed	Output	Input
Direction of rotation	—	Clockwise revolution	Clockwise revolution
Number of revolutions	—	Deceleration from mid internal gear	Same number of revolution as the rear carrier

“D3” and “M3” Positions

A
B
C
TM
E
F
G
H
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J
K
L
M
N
O
P

STRUCTURE AND OPERATION

< SYSTEM DESCRIPTION >

[7AT: RE7R01B]

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 gear			
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 internal 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

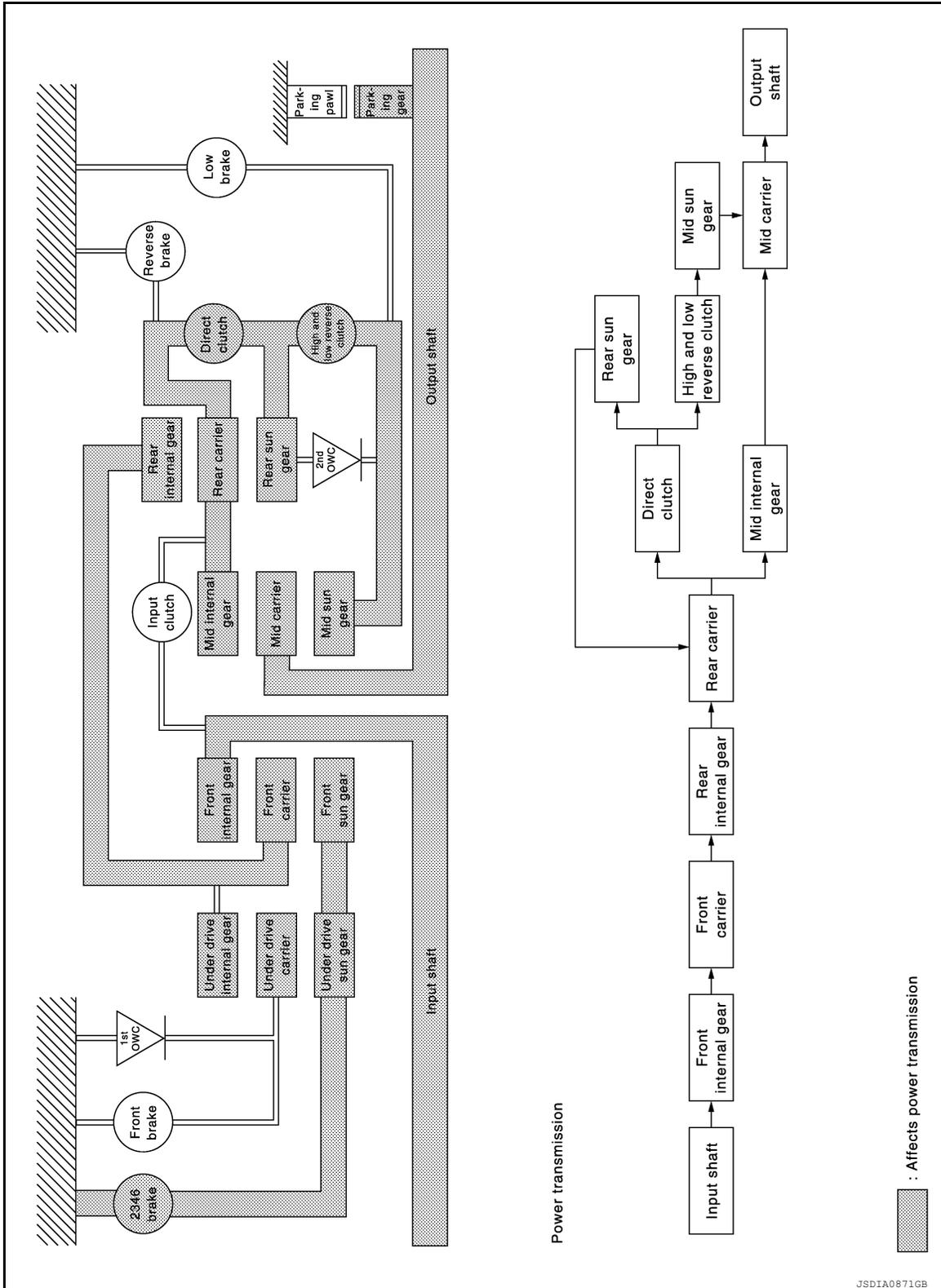
“D4” and “M4” Positions

A
B
C
TM
E
F
G
H
I
J
K
L
M
N
O
P

STRUCTURE AND OPERATION

< SYSTEM DESCRIPTION >

[7AT: RE7R01B]



- 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.

STRUCTURE AND OPERATION

< SYSTEM DESCRIPTION >

[7AT: RE7R01B]

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 gear			
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 internal gear	Same number of revolution as the front carrier
Rear planetary gear			
Name	Rear sun gear	Rear carrier	Rear internal gear
Condition	—	Output	Input
Direction of rotation	Clockwise revolution	Clockwise revolution	Clockwise revolution
Number of revolutions	Same number of revolution as the rear internal gear	Same number of revolution as the rear internal gear	Same number of revolution as the under drive internal gear
Mid planetary gear			
Name	Mid sun gear	Mid carrier	Mid internal gear
Condition	—	Output	Input
Direction of rotation	Clockwise revolution	Clockwise revolution	Clockwise revolution
Number of revolutions	Same number of revolution as the mid internal gear	Same number of revolution as the mid internal gear	Same number of revolution as the rear carrier

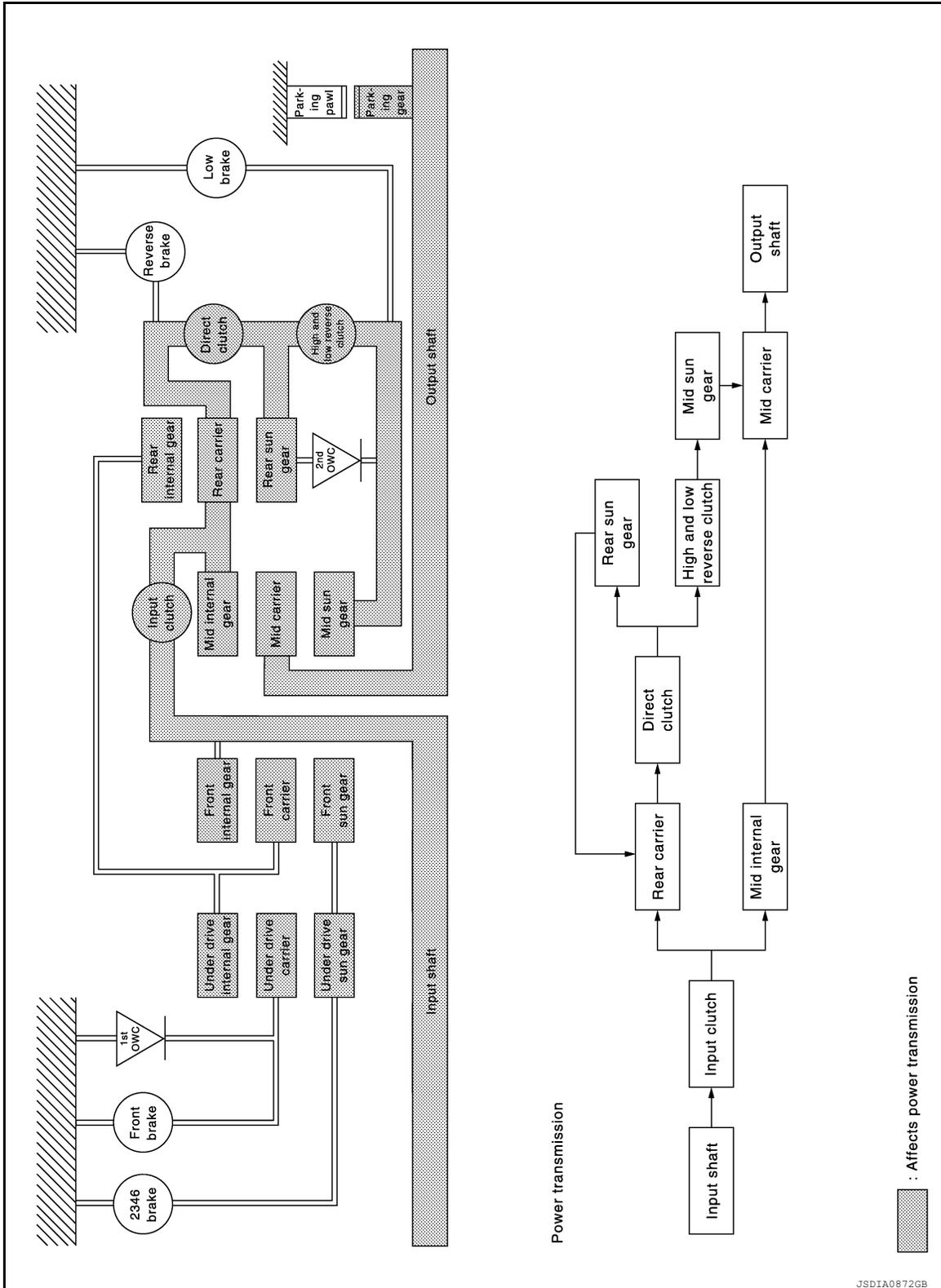
“D5” and “M5” Positions

A
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TM
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F
G
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STRUCTURE AND OPERATION

< SYSTEM DESCRIPTION >

[7AT: RE7R01B]



- 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.

STRUCTURE AND OPERATION

< SYSTEM DESCRIPTION >

[7AT: RE7R01B]

Rear planetary gear			
Name	Rear sun gear	Rear carrier	Rear internal gear
Condition	—	input/Output	—
Direction of rotation	Clockwise revolution	Clockwise revolution	Clockwise revolution
Number of revolutions	Same number of revolution as the rear carrier	Same number of revolution as the input shaft	Same number of revolution as the rear carrier
Mid planetary gear			
Name	Mid sun gear	Mid carrier	Mid internal gear
Condition	—	Output	Input
Direction of rotation	Clockwise revolution	Clockwise revolution	Clockwise revolution
Number of revolutions	Same number of revolution as the mid internal gear	Same number of revolution as the mid internal gear	Same number of revolution as the input shaft

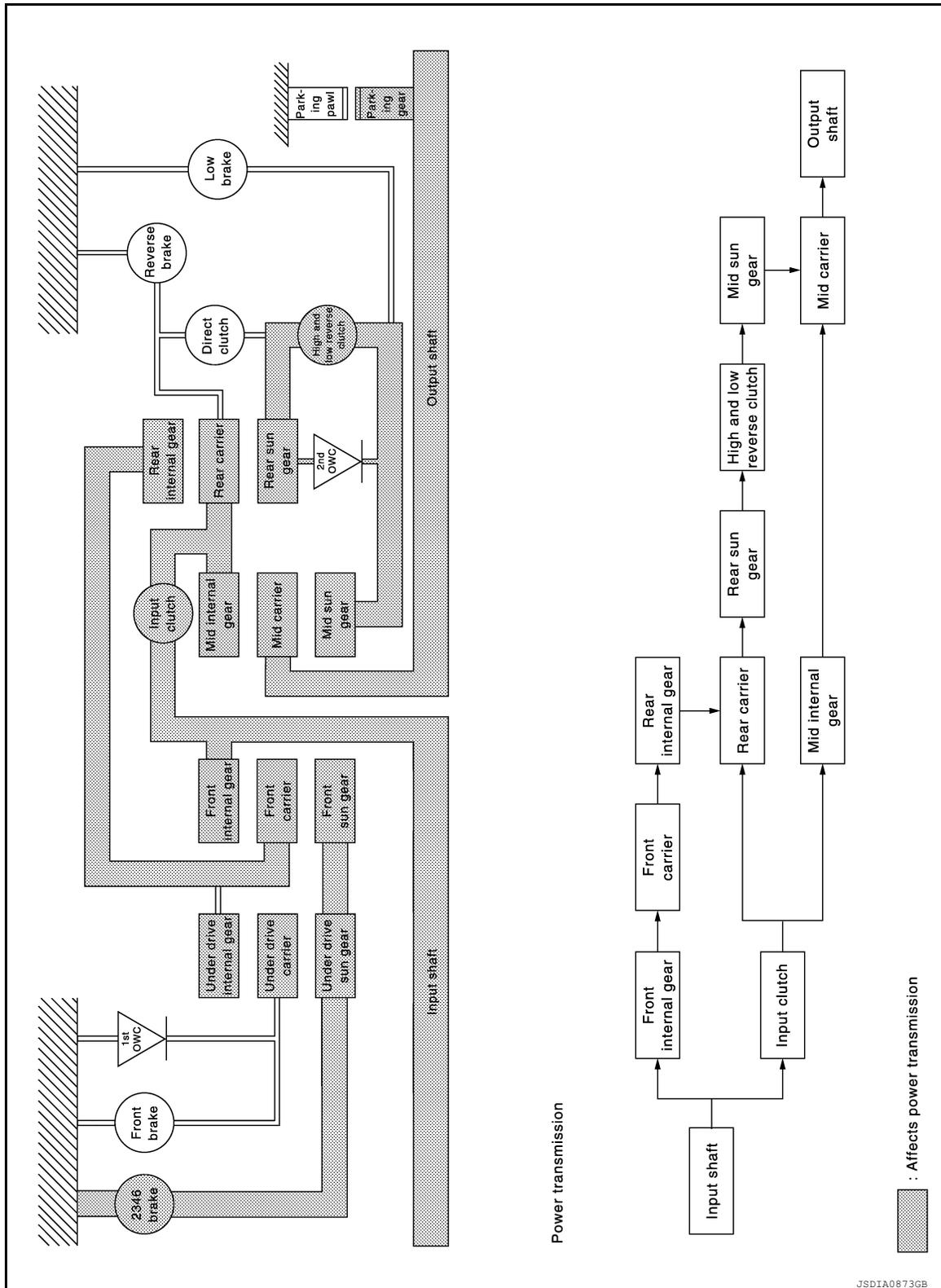
"D6" and "M6" Positions

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STRUCTURE AND OPERATION

< SYSTEM DESCRIPTION >

[7AT: RE7R01B]



- 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.

STRUCTURE AND OPERATION

< SYSTEM DESCRIPTION >

[7AT: RE7R01B]

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” and “M7” Positions

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STRUCTURE AND OPERATION

< SYSTEM DESCRIPTION >

[7AT: RE7R01B]

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 gear			
Name	Under drive sun gear	Under drive carrier	Under drive internal gear
Condition	—	Fixed	Input/Output
Direction of rotation	Counterclockwise revolution	—	Clockwise revolution
Number of revolutions	Acceleration from under drive internal gear	—	Same number of revolution as the front carrier
Rear planetary gear			
Name	Rear sun gear	Rear carrier	Rear internal gear
Condition	—	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 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

A
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TM
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P

STRUCTURE AND OPERATION

< SYSTEM DESCRIPTION >

[7AT: RE7R01B]

- Each planetary gear enters the state described below.

Front planetary gear			
Name	Front sun gear	Front carrier	Front internal gear
Condition	—	Output	Input
Direction of rotation	Counterclockwise revolution	Clockwise revolution	Clockwise revolution
Number of revolutions	Deceleration from front internal gear	Deceleration from front internal gear	Same number of revolution as the input shaft
Under drive planetary gear			
Name	Under drive sun gear	Under drive carrier	Under drive internal gear
Condition	—	Fixed	Input/Output
Direction of rotation	Counterclockwise revolution	—	Clockwise revolution
Number of revolutions	Acceleration from under drive internal gear	—	Same number of revolution as the front carrier
Rear planetary gear			
Name	Rear sun gear	Rear carrier	Rear internal gear
Condition	Output	Fixed	Input
Direction of rotation	Counterclockwise revolution	—	Clockwise revolution
Number of revolutions	Acceleration 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	Input	Output	Fixed
Direction of rotation	Counterclockwise revolution	Counterclockwise revolution	—
Number of revolutions	Same number of revolution as the rear sun gear	Deceleration from mid sun gear	—

TRANSMISSION : Component Description

INFOID:000000014419132

Name of the Part (Abbreviation)	Function
Front brake (FR/B)	Fastens the under drive carrier.
Input clutch (I/C)	Connects the input shaft, the mid internal gear and the rear carrier.
Direct clutch (D/C)	Connects the rear carrier and the rear sun gear.
High and low reverse clutch (HLR/C)	Connects the rear sun gear and the mid sun gear.
Reverse brake (R/B)	Fastens the rear carrier.
Low brake (L/B)	Fastens the mid sun gear.
2346 brake (2346/B)	Fastens the under drive sun gear.
1st one-way clutch (1st OWC)	Allows the under drive carrier to turn freely in the forward direction but fastens it for reverse rotation.
2nd one-way clutch (2nd OWC)	Allows the rear sun gear to turn freely in the forward direction but fastens it for reverse rotation.
Torque converter	Amplifies driving force the engine, and transmits it to transmission input shaft.
Oil pump	Driven by the engine, oil pump supplies oil to torque converter, control valve assembly, and each lubricating system.

FLUID COOLER & FLUID WARMER SYSTEM

FLUID COOLER & FLUID WARMER SYSTEM : System Description

INFOID:000000014419133

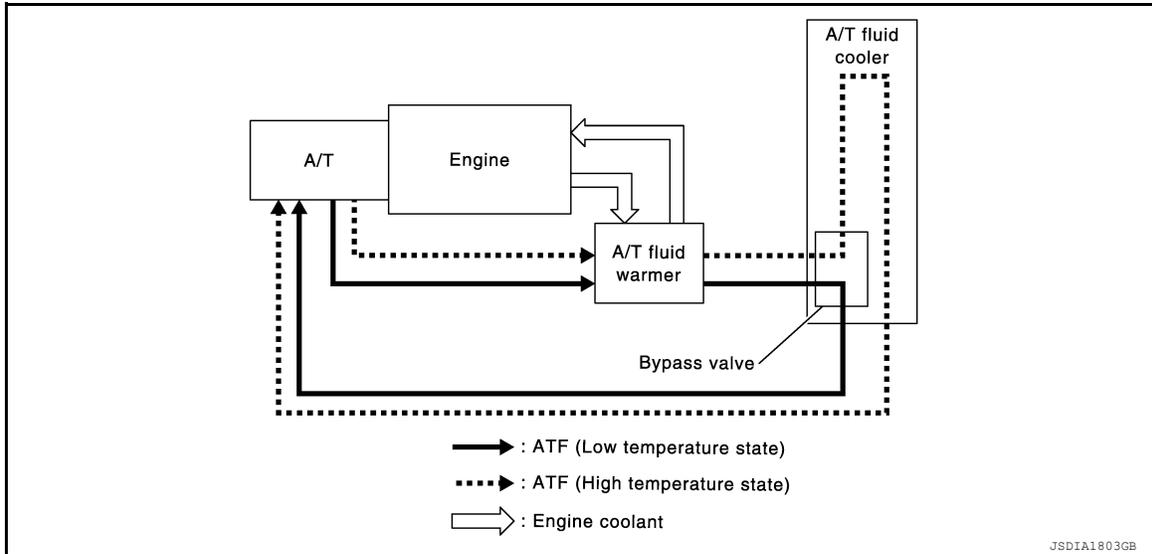
The A/T fluid temperature is controlled to an appropriate level by the A/T fluid cooler and A/T fluid warmer.

STRUCTURE AND OPERATION

< SYSTEM DESCRIPTION >

[7AT: RE7R01B]

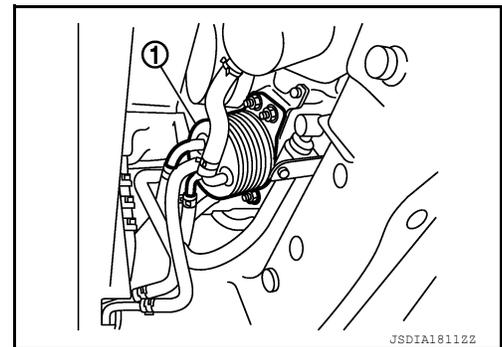
A/T FLUID COOLER SCHEMATIC



COMPONENT DESCRIPTION

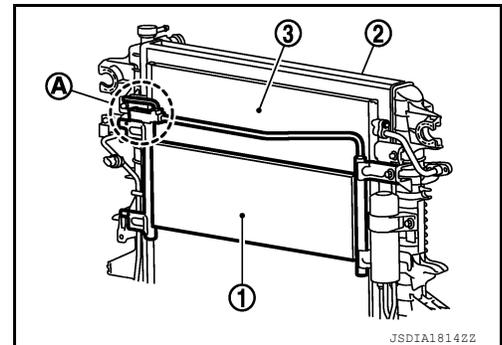
A/T fluid warmer

- The A/T fluid warmer (1) is installed on the front part of cylinder block of engine.
- When engine is started while engine and A/T are cold, engine coolant temperature rises more quickly than A/T fluid temperature. A/T fluid warmer is provided with two circuits for ATF and engine coolant respectively so that warmed engine coolant warms ATF quickly. This helps shorten A/T warming up time, improving fuel economy.
- A cooling effect is obtained when A/T fluid temperature is high.

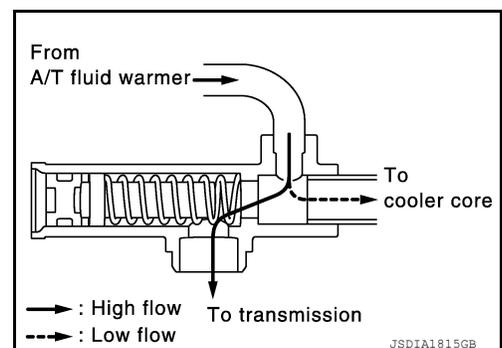


A/T fluid cooler (with bypass valve)

- A/T fluid cooler (1) is installed in the front of radiator (2) and condenser (3).
- A/T fluid cooler is provided with a bypass valve that controls ATF flow. Bypass valve operates by thermo wax and a return spring. Bypass valve fully opens when A/T fluid temperature is approximately 90°C (194°F) and fully closes when A/T fluid temperature is approximately 100°C (212°F).



- When A/T fluid temperature is low, the bypass valve is open. Most of ATF therefore returns to the transmission without flowing into the cooler core that has larger flow resistance.

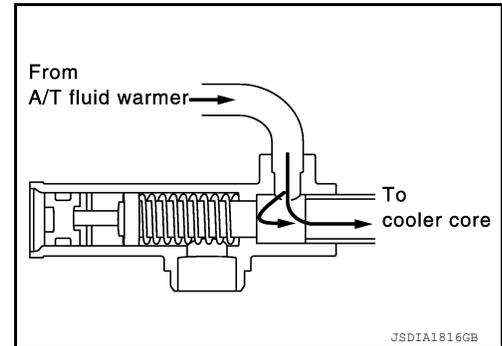


STRUCTURE AND OPERATION

< SYSTEM DESCRIPTION >

[7AT: RE7R01B]

- When A/T fluid temperature rises [to approximately 100°C (212°F)], bypass valve closes and allows ATF to flow into cooler core. ATF flowing into cooler core is cooled by air stream caused by vehicle travel and returned to transmission.



SHIFT LOCK SYSTEM

SHIFT LOCK SYSTEM : System Description

INFOID:0000000014419134

- The shift lock is the mechanism provided to prevent quick start of a vehicle by incorrect operation of a drive when the selector lever is in P position.
- Selector lever can be shifted from the P position to another position when the following conditions are satisfied.
 - Ignition is ON.
 - Stop lamp switch ON (brake pedal is depressed)

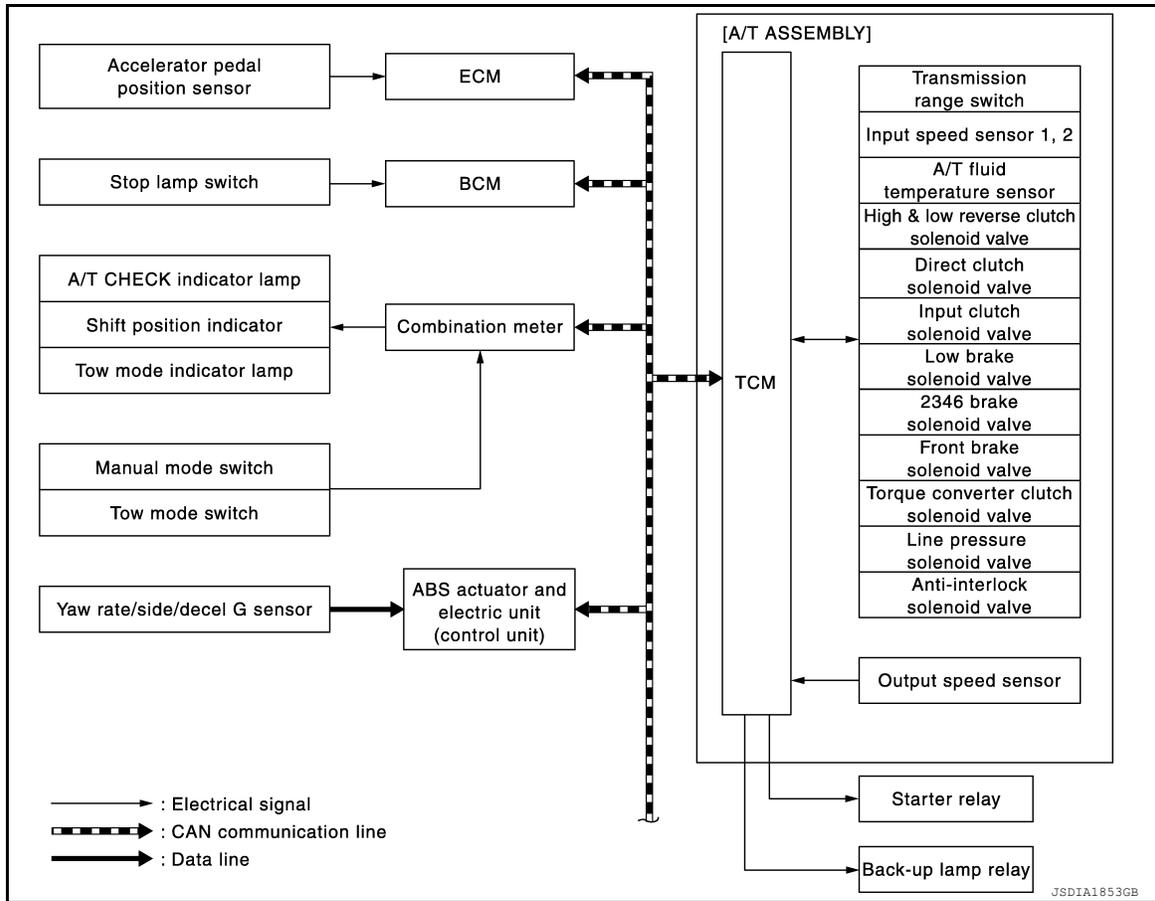
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SYSTEM

A/T CONTROL SYSTEM

A/T CONTROL SYSTEM : System Diagram

INFOID:000000014419135



A/T CONTROL SYSTEM : System Description

INFOID:000000014419136

INPUT/OUTPUT SIGNAL CHART

Sensor (or signal)	TCM function	Actuator
Transmission range switch	Line pressure control (TM-304)	Input clutch solenoid valve
Accelerator pedal position signal	Shift change control (TM-307)	Direct clutch solenoid valve
Closed throttle position signal	Shift pattern control (TM-311)	Front brake solenoid valve
Wide open throttle position signal	Lock-up control (TM-313)	High and low reverse clutch solenoid valve
Engine speed signal	Fail-safe control (TM-329)	Low brake solenoid valve
A/T fluid temperature sensor	Self-diagnosis (TM-317)	Torque converter clutch solenoid valve
Output speed sensor	CONSULT communication line (TM-317)	Line pressure solenoid valve
Vehicle speed signal	CAN communication line (TM-368)	Anti-interlock solenoid valve
Manual mode switch signal		2346 brake solenoid valve
Stop lamp switch signal		A/T CHECK indicator lamp
Input speed sensor 1, 2		Tow mode indicator lamp
Yaw rate/side/decel G sensor		Shift position indicator
Tow mode switch signal		Back-up lamp relay
		Starter relay

SYSTEM DESCRIPTION

- The A/T senses vehicle operating conditions through various sensors or signals. It always controls the optimum shift position and reduces shifting and lock-up shocks.
- Receive input signals transmitted from various switches and sensors.
- Determine required line pressure, shifting point, lock-up operation, etc.

SYSTEM

< SYSTEM DESCRIPTION >

[7AT: RE7R01B]

- Transmit required output signals to the respective solenoids.

A/T CONTROL SYSTEM : Fail-Safe

INFOID:000000014419137

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.

Consequently, the customer's vehicle may already return to the normal condition. Refer to [TM-353, "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 malfunctioning parts in the condition that the driving force required for the driving is secured.
Final Fail-Safe	<ul style="list-style-type: none"> • 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	—	<ul style="list-style-type: none"> • Fixed in the "D" position (The shifting can be performed) • 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 	—	<ul style="list-style-type: none"> • Fixed in the "D" position (The shifting can be performed) • 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	<ul style="list-style-type: none"> • The shifting between the gears of 1 - 2 - 3 can be performed • Manual mode is prohibited 	—	<ul style="list-style-type: none"> • The shifting between the gears of 1 - 2 - 3 can be performed • Manual mode is prohibited
	Between the gears of 4 - 5 - 6 - 7	<ul style="list-style-type: none"> • Fix the gear while driving • Manual mode is prohibited 	—	<ul style="list-style-type: none"> • Manual mode is prohibited
P0717	Between the gears of 1 - 2 - 3	<ul style="list-style-type: none"> • The shifting between the gears of 1 - 2 - 3 can be performed • Manual mode is prohibited 	—	<ul style="list-style-type: none"> • The shifting between the gears of 1 - 2 - 3 can be performed • Manual mode is prohibited
	Between the gears of 4 - 5 - 6 - 7	<ul style="list-style-type: none"> • Fix the gear while driving • Manual mode is prohibited 	—	<ul style="list-style-type: none"> • Manual mode is prohibited

SYSTEM

< SYSTEM DESCRIPTION >

[7AT: RE7R01B]

DTC	Vehicle condition		Vehicle behavior for 1st fail-safe	Vehicle behavior for 2nd fail-safe	Vehicle behavior for final fail-safe
P0720	Between the gears of 1 - 2 - 3		<ul style="list-style-type: none"> Only downshift can be performed Manual mode is prohibited A vehicle speed signal from the combination meter is regarded as an effective signal 	—	<ul style="list-style-type: none"> The shifting between the gears of 1 - 2 - 3 can be performed Manual mode is prohibited
	Between the gears of 4 - 5 - 6 - 7		<ul style="list-style-type: none"> Fix the gear at driving Manual mode is prohibited A vehicle speed signal from the combination meter is regarded as an effective signal 	—	
P0725	—		—	—	—
P0729 P0731 P0732 P0733 P0734 P0735 P1734	Small gear ratio difference		Engine torque limit: Max 150 Nm (15 kg-lb, 111 ft-lb)	—	Engine torque limit: Max 150 Nm (15 kg-lb, 111 ft-lb)
	Great gear ratio difference	Neutral malfunction between the gears of 1 - 2 - 3 and 7	<ul style="list-style-type: none"> Locks in 2GR, 3GR or 4GR Manual mode is prohibited 	—	<ul style="list-style-type: none"> 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
		Other than the above	<ul style="list-style-type: none"> Locks in 1GR, 2GR, 3GR, 4GR, 5GR or 6GR Fix the gear while driving Manual mode is prohibited 	<ul style="list-style-type: none"> The shifting between the gears of 1 - 2 - 3 can be performed Manual mode is prohibited 	<ul style="list-style-type: none"> 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	—		<ul style="list-style-type: none"> Locks in 5GR, 6GR or 7GR Manual mode is prohibited 	<ul style="list-style-type: none"> The shifting between the gears of 1 - 2 - 3 can be performed Manual mode is prohibited 	<ul style="list-style-type: none"> 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	—		<ul style="list-style-type: none"> Lock-up is prohibited Slip lock-up is prohibited 	—	<ul style="list-style-type: none"> Lock-up is prohibited Slip lock-up is prohibited
P0744	—		<ul style="list-style-type: none"> Lock-up is prohibited Slip lock-up is prohibited 	—	<ul style="list-style-type: none"> Lock-up is prohibited Slip lock-up is prohibited
P0745	—		—	—	—

SYSTEM

< SYSTEM DESCRIPTION >

[7AT: RE7R01B]

DTC	Vehicle condition	Vehicle behavior for 1st fail-safe	Vehicle behavior for 2nd fail-safe	Vehicle behavior for final fail-safe
P0750 P0775 P0795 P2713 P2722 P2731 P2807	—	<ul style="list-style-type: none"> Locks in 2GR, 3GR, 4GR, 5GR, 6GR or 7GR Manual mode is prohibited 	—	<ul style="list-style-type: none"> 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	—	<ul style="list-style-type: none"> Locks in 3GR Manual mode is prohibited 	—	<ul style="list-style-type: none"> The shifting between the gears of 1 - 2 - 3 can be performed Manual mode is prohibited
P0863	—	—	—	—
P1705	—	<ul style="list-style-type: none"> Downshift when accelerator pedal is depressed is prohibited Upshift when accelerator pedal is released is prohibited Manual mode is prohibited 	<ul style="list-style-type: none"> Downshift when accelerator pedal is depressed is prohibited Upshift when accelerator pedal is released is prohibited Manual mode is prohibited 	<ul style="list-style-type: none"> Downshift when accelerator pedal is depressed is prohibited Upshift when accelerator pedal is released is prohibited Manual mode is prohibited
P1730	—	<ul style="list-style-type: none"> Locks in 1GR, 2GR, 3GR, 4GR, 5GR, 6GR or 7GR Manual mode is prohibited 	<ul style="list-style-type: none"> The shifting between the gears of 1 - 2 - 3 can be performed Manual mode is prohibited 	<ul style="list-style-type: none"> Locks in 1GR The shifting between the gears of 2 - 3 - 4 can be performed The shifting between the gears of 3 - 4 can be performed The shifting between the gears of 4 - 5 - 6 can be performed Manual mode is prohibited
P1815	—	Manual mode is prohibited	—	Manual mode is prohibited
U0100 U0300 U1000	Between the gears of 1 - 2 - 3	<ul style="list-style-type: none"> The shifting between the gears of 1 - 2 - 3 can be performed Manual mode is prohibited 	—	<ul style="list-style-type: none"> The shifting between the gears of 1 - 2 - 3 can be performed Line pressure is set to the maximum hydraulic pressure Manual mode is prohibited
	Between the gears of 4 - 5 - 6 - 7	<ul style="list-style-type: none"> Fix the gear at driving Manual mode is prohibited 	—	
P0720 and P1721	—	Locks in 5GR	—	Locks in 5GR

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A/T CONTROL SYSTEM : Protection Control

INFOID:000000014419138

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.

SYSTEM

< SYSTEM DESCRIPTION >

[7AT: RE7R01B]

Malfunction detection condition	Vehicle speed: 10 km/h (7 MPH) or more
Control at malfunction	Neutral
Normal return condition	<ul style="list-style-type: none"> Vehicle speed: 8 km/h (5 MPH) or less and Engine speed: 2,200 rpm or less
Vehicle behavior	<ul style="list-style-type: none"> The torque transmission cannot be performed There is a shock just before a vehicle stop

1ST ENGINE BRAKE PROTECTION CONTROL

Controls the engine brake so as not to make effective by turning the front brake solenoid output to OFF when each solenoid becomes the electricity pattern of 1st engine brake during driving at the vehicle speed 25 km/h or more in any positions other than “R” position and 1GR.

Malfunction detection condition	<ul style="list-style-type: none"> 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

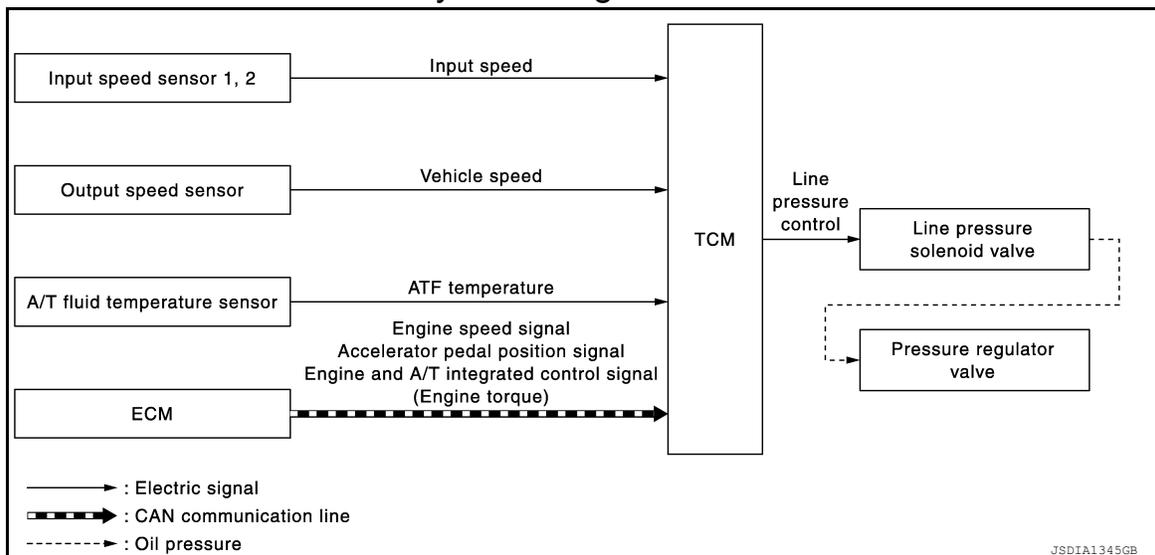
Limit the accelerator opening and forcibly control the vehicle to the low torque driving when the electronic substrate in TCM reaches the high temperature.

Malfunction detection condition	TCM electronic substrate temperature <ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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

LINE PRESSURE CONTROL

LINE PRESSURE CONTROL : System Diagram

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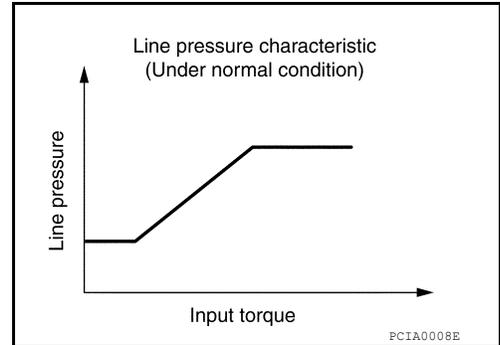
LINE PRESSURE CONTROL : System Description

INFOID:000000014419140

- When an engine and A/T integrated control signal (engine torque) equivalent to the engine drive force is transmitted from the ECM to the TCM, the TCM controls the line pressure solenoid valve. This line pressure solenoid controls the pressure regulator valve as the signal pressure and adjusts the pressure of the operating oil discharged from the oil pump to the line pressure most appropriate to the driving state.
- The TCM has stored in memory a number of patterns for the optimum line pressure characteristic for the driving state.
- In order to obtain the most appropriate line pressure characteristic to meet the current driving state, the TCM controls the line pressure solenoid current value and thus controls the line pressure.

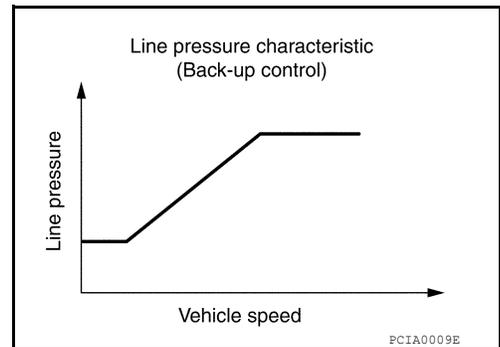
Normal Control

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



Back-up Control (Engine Brake)

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



During Shift Change

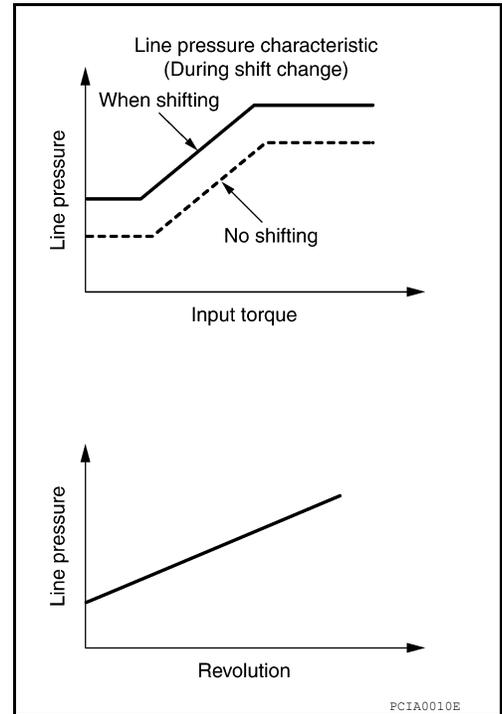
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SYSTEM

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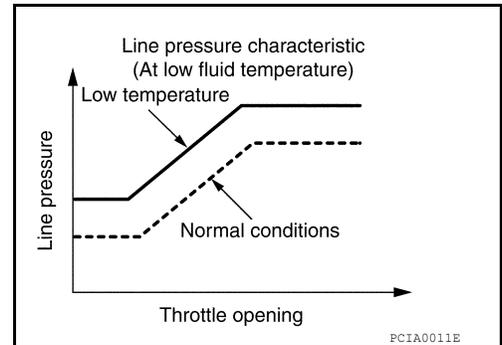
[7AT: RE7R01B]

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



At Low Fluid Temperature

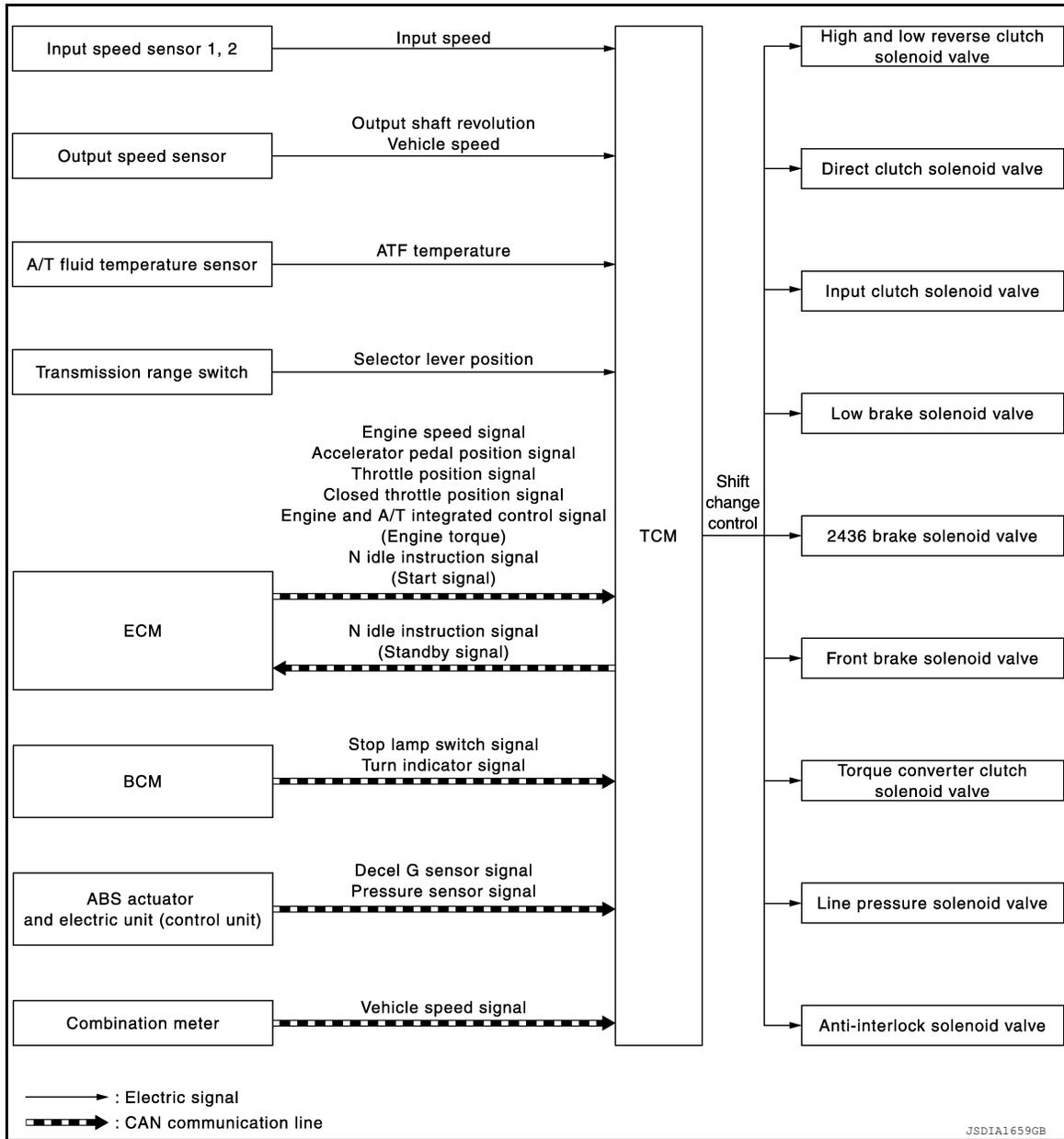
When the A/T fluid temperature drops below the prescribed temperature, in order to speed up the action of each friction element, the line pressure is set higher than the normal line pressure characteristic.



SHIFT CHANGE CONTROL

SHIFT CHANGE CONTROL : System Diagram

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SHIFT CHANGE CONTROL : System Description

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Input/Output Signal Chart

Item	Signal	TCM function	Actuator
Input speed sensor 1, 2	Input speed	Shift change control	<ul style="list-style-type: none"> High and low reverse clutch solenoid valve Direct clutch solenoid valve Input clutch solenoid valve Low brake solenoid valve 2346 brake solenoid valve Front brake solenoid valve Torque converter clutch solenoid valve Line pressure solenoid valve Anti-interlock solenoid valve
Output speed sensor	Vehicle speed		
A/T fluid temperature sensor	ATF temperature		
ECM	Engine speed signal*		
	Accelerator pedal position signal*		
	Closed throttle position signal*		
	Engine and A/T integrated control signal (Engine torque)*		
BCM	Stop lamp switch signal*		

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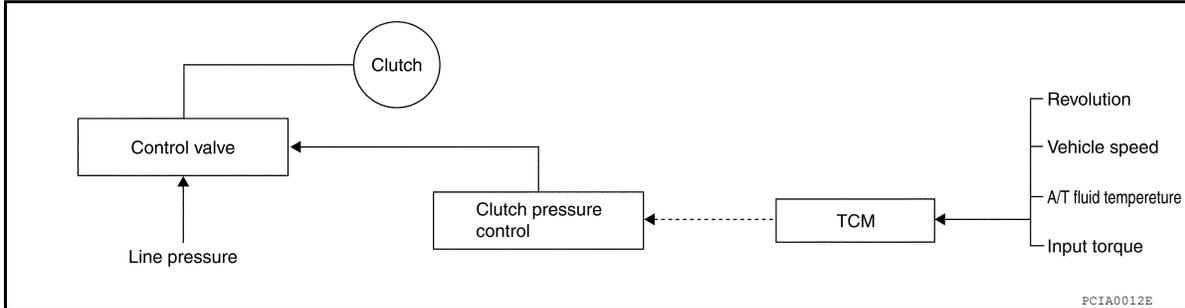
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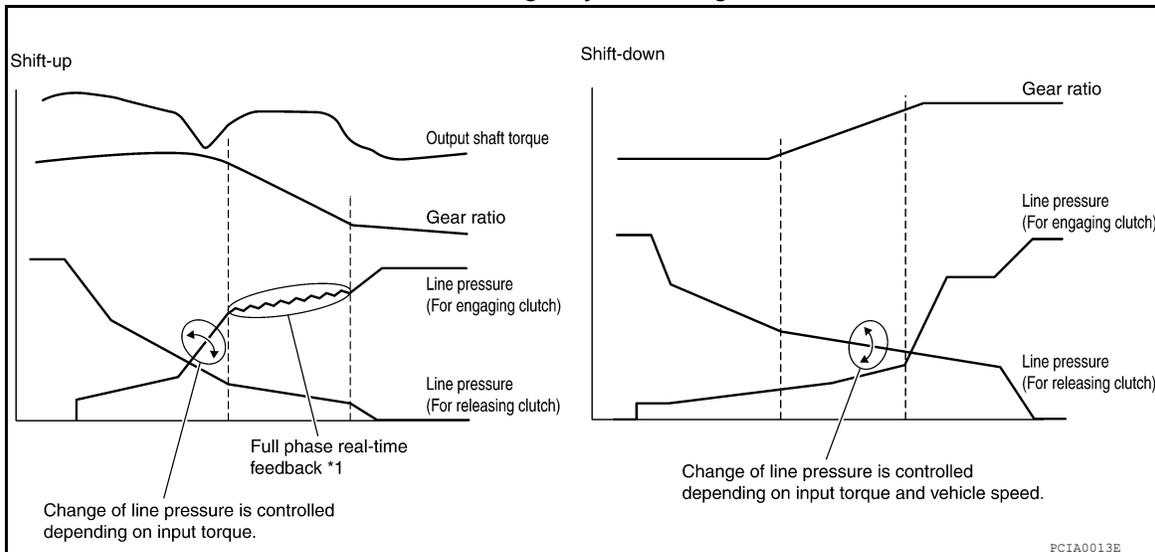
*: This signal is transmitted via communication line.

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



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

It controls (synchronizes) engine speed to have a quick shift clutch coupling, by calculating engine speed after downshifting and by cooperating with ASC (Adaptive Shift Control).

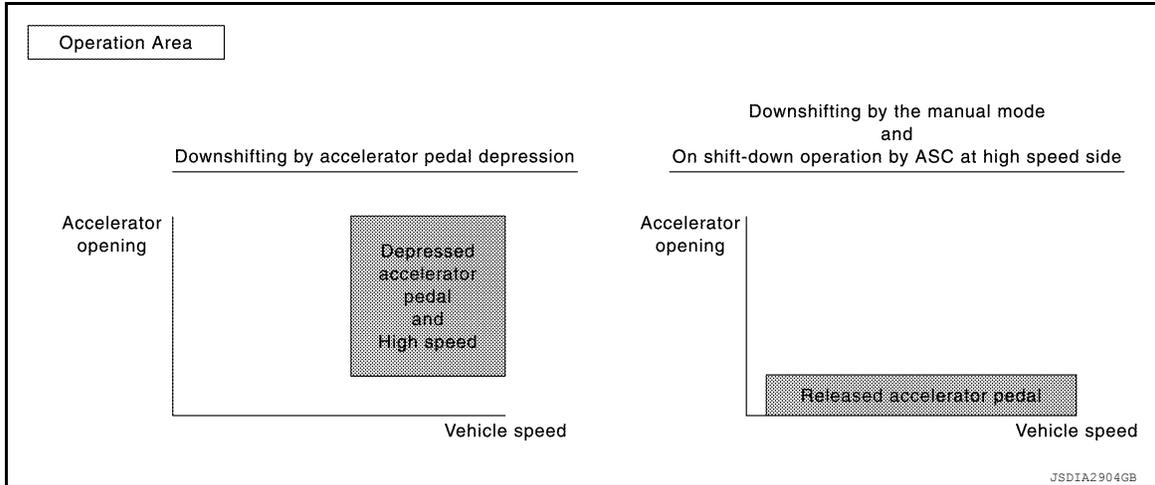
- "BLIPPING CONTROL" functions.
- When downshifting by accelerator pedal depression.
- When downshifting by the manual mode.

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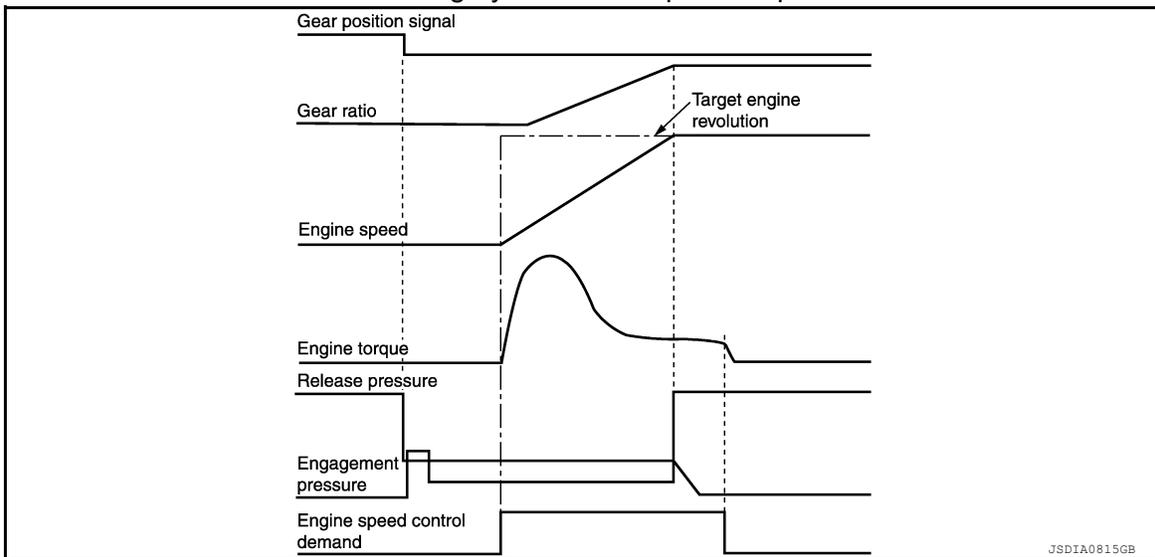
[7AT: RE7R01B]

- It works on shift-down operation by ASC at high speed side when driving at D position or in DS mode.

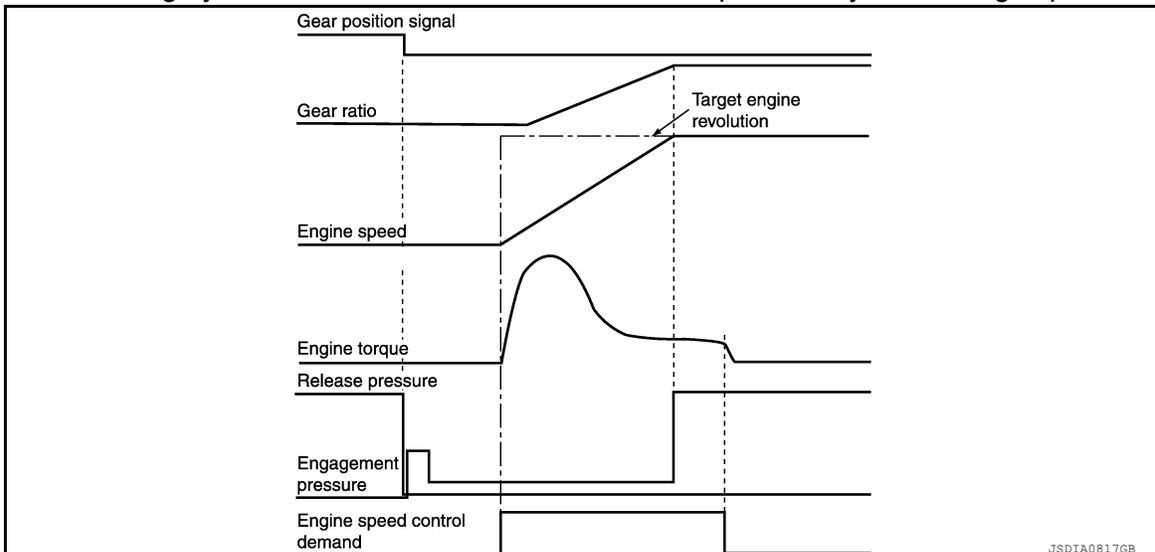


- TCM selects "BLIPPING CONTROL" or "NORMAL SHIFT CONTROL" according to the gear position, the selector lever position, the engine torque and the speed when accelerating by pedal depression.
- Engine speed control demand signal is transmitted from TCM to ECM under "BLIPPING CONTROL".
- ECM synchronizes the engine speed according to the engine speed control demand signal.

Downshifting by accelerator pedal depression



Downshifting by the manual mode and On shift-down operation by ASC at high speed side



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[7AT: RE7R01B]

IDLE NEUTRAL CONTROL

Input/Output Signal Chart

Item	Signal			TCM function	Actuator
	Each sensor, switch and control unit ⇒ TCM	TCM ⇒ ECM	ECM ⇒ TCM		
Input speed sensor 1, 2	Input speed	N idle instruction signal (Standby signal)*	N idle instruction signal (Start signal)*	Idle neutral control	Low brake solenoid valve
Output speed sensor	Output shaft revolution				
A/T fluid temperature sensor	ATF temperature				
Transmission range switch	Selector lever position				
ECM	Engine speed signal*				
	Accelerator pedal position signal*				
	Throttle position signal*				
BCM	Stop lamp switch signal*				
	Turn indicator signal*				
ABS actuator electric unit (control unit)	Pressure sensor signal*				
	Decel G sensor signal*				
Combination meter	Vehicle speed signal*				

*: This signal is transmitted via communication line.

The TCM activates low brake solenoid valve and controls the low brake oil pressure to the low pressure level if the driver does not intend to start the vehicle while the vehicle is being stopped in the “D” position. Therefore, the low brake is in the release (slip) status and the power transmission route of A/T is the same status as the “N” position. This can decrease the engine load and improves the fuel economy because the drive force of engine is not transmitted to the output shaft of A/T.

Idle Neutral Control Start Condition

Idle neutral control starts when all of the following conditions are satisfied. However, the control ends when any one of the following conditions becomes insufficient during idle neutral control.

Driving location	: Level road and gentle slope
Selector lever position	: “D” position
Vehicle speed	: 0 km/h (0 MPH)
Accelerator pedal opening	: 0.0 / 8
Brake pedal	: Depress
Engine speed	: Idle speed
Snow mode switch	: OFF
Turn signal lamp and hazard warning lamp	: OFF

NOTE:

The idle neutral control is terminated or prohibited when the TCM and ECM detect that the vehicle is in any of the conditions as per the following.

- Engine cooling water temperature and A/T fluid temperature are below or above a prescribed temperature.
- A/T malfunction occurs.
- DTC is detected.
- Fail-safe mode activates.
- Idle neutral control is performed continuously for a certain period of time.
- When idle speed increases due to heavy electric load*.

*: When any one of rear window defogger switch, A/C switch, headlamp, fog lamp is turned ON. In addition, when the steering wheel is operated.

Idle Neutral Control Resume Condition

Idle neutral control can be resumed when its start condition is fulfilled after any of the following operations is performed (unless a malfunction occurs in the vehicle).

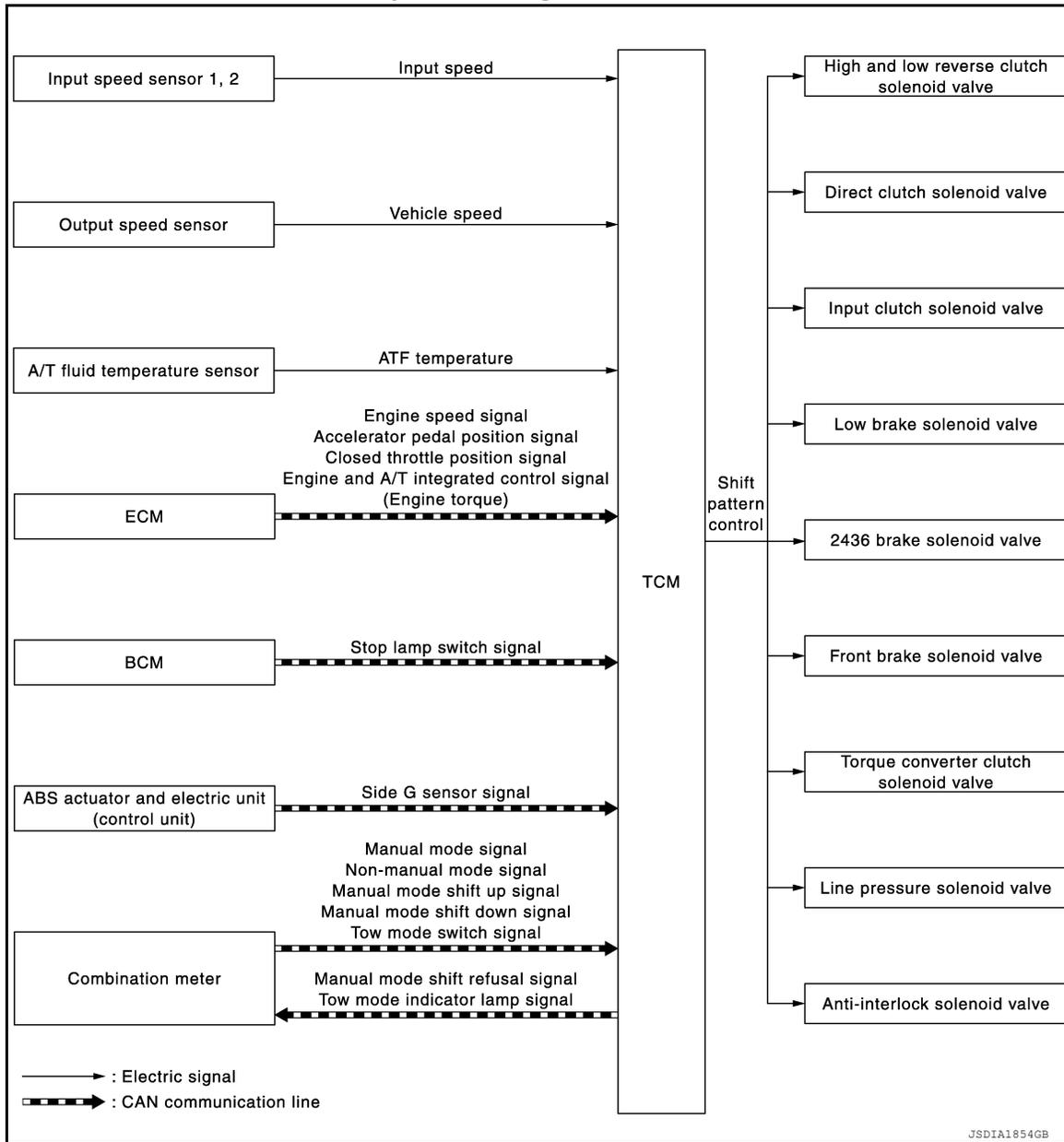
- After driving at more than a prescribed speed.

- When idle neutral control start conditions are fulfilled for a certain period of time.

SHIFT PATTERN CONTROL

SHIFT PATTERN CONTROL : System Diagram

INFOID:0000000014419143



SHIFT PATTERN CONTROL : System Description

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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.

ASC (ADAPTIVE SHIFT CONTROL)

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SYSTEM

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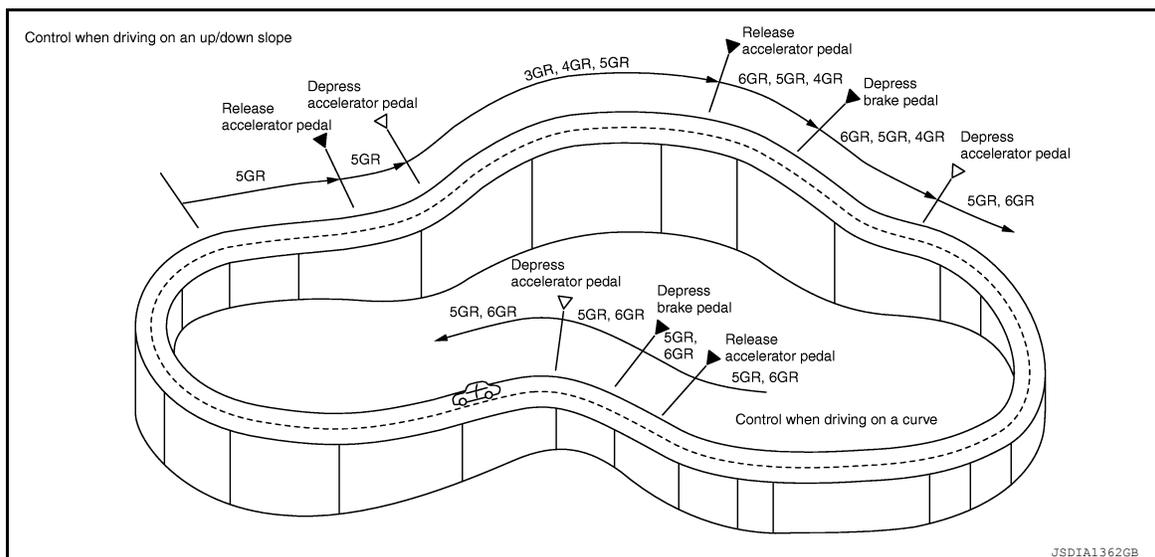
[7AT: RE7R01B]

Input/Output Signal Chart

Item	Signal	TCM function	Actuator
Input speed sensor 1, 2	Input speed	ASC (Adaptive shift control)	<ul style="list-style-type: none"> • High and low reverse clutch solenoid valve • Direct clutch solenoid valve • Input clutch solenoid valve • Low brake solenoid valve • 2346 brake solenoid valve • Front brake solenoid valve • Torque converter clutch solenoid valve • Line pressure solenoid valve • Anti-interlock solenoid valve
Output speed sensor	Vehicle speed		
A/T fluid temperature sensor	ATF temperature		
ECM	Engine speed signal*		
	Accelerator pedal position signal*		
	Closed throttle position signal*		
	Engine and A/T integrated control signal (engine torque)*		
ABS actuator and electric unit (control unit)	Side G sensor signal*		
BCM	Stop lamp switch signal*		
Combination meter	Tow mode switch signal*		

*: This signal is transmitted via CAN communication line.

- When driving on an up/down slope
ASC 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.
- When driving on a curve
TCM receives the side G sensor signal from the ABS actuator and electric unit (control unit). It locks to 4GR, 5GR or 6GR position in moderate cornering or to 3GR position in sharp cornering based on this signal. This prevents any upshift and kickdown during cornering, maintaining smooth vehicle travel.
- In driving condition where acceleration, deceleration, or lateral acceleration continues, it corrects gear selection in order to keep a smooth vehicle speed during the curve and to give an adequate driving force at the curve end.
- When acceleration pedal is quickly released at curve entrance etc, it prevents an unnecessary shift-up.
- On braking operation at curve entrance, it gives an early shift-down according to the deceleration.
- In a sporty driving condition, it selects lower gear early even on a light braking operation, giving greater importance on driving force.
- TCM receives the side G sensor signal from the ABS actuator and electric unit (control unit). It locks to 4GR, 5GR or 6GR position in moderate cornering or to 3GR position in sharp cornering based on this signal. This prevents any upshift and kickdown during cornering, maintaining smooth vehicle travel.



Tow Mode

- High driving torque is required for towing a heavy load. The tow mode enables torque-oriented driving by changing the shift schedule to that of delaying A/T gear shift timing (compared to normal driving).

SYSTEM

< SYSTEM DESCRIPTION >

[7AT: RE7R01B]

- TCM receives tow mode switch signal from combination meter via CAN communication. The tow mode turns ON when TCM receives the signal. TCM transmits a tow mode indicator lamp signal to the combination meter via CAN communication to turn ON the tow mode indicator lamp mounted in the combination meter.

MANUAL MODE

Input/Output Signal Chart

Item	Signal	TCM function	Actuator
Output speed sensor	Vehicle speed	Manual mode	<ul style="list-style-type: none"> • High and low reverse clutch solenoid valve • Direct clutch solenoid valve • Input clutch solenoid valve • Low brake solenoid valve • 2346 brake solenoid valve • Front brake solenoid valve • Torque converter clutch solenoid valve • Line pressure solenoid valve • Anti-interlock solenoid valve
A/T fluid temperature sensor	ATF temperature		
ECM	Engine speed signal*		
	Accelerator pedal position signal*		
Combination meter	Manual mode signal*		
	Non-manual mode signal*		
	Manual mode shift up signal*		
	Manual mode shift down signal*		

*: This signal is transmitted via CAN communication line.

- The TCM receives the manual mode signal, non-manual mode signal, manual mode shift up signal and manual mode shift down signal from combination meter via CAN communication line. The TCM shifts shift pattern control to the manual mode based on these signals, and then shifts the A/T by operating each solenoid valve according to the shift operation of the driver.
- The TCM prohibits the manual mode while being in fail-safe mode due to an A/T malfunction, etc. Refer to [TM-329, "Fail-Safe"](#).

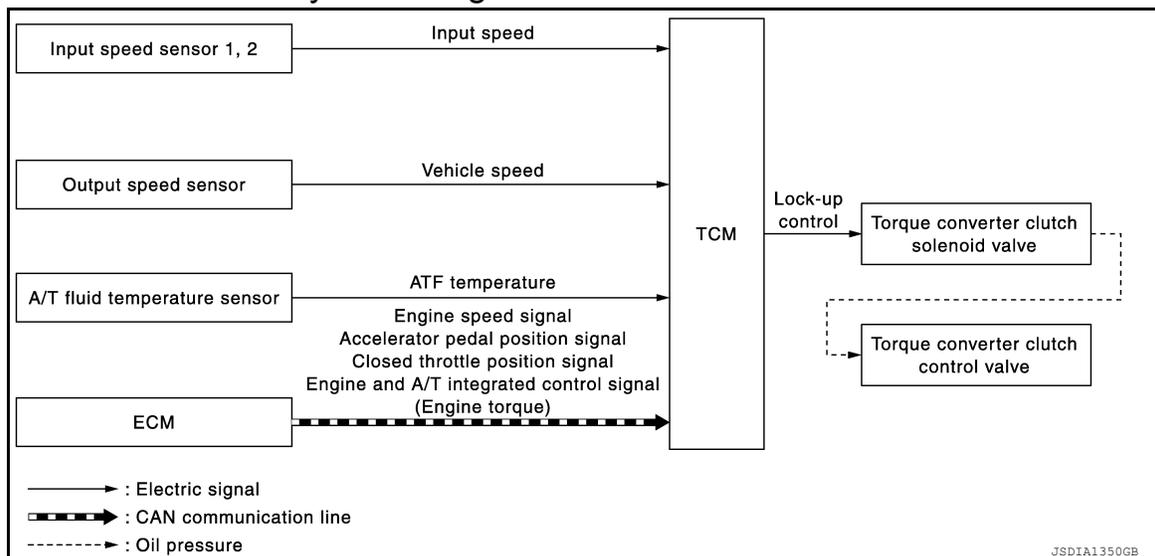
Manual Mode Information

- 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 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 shifts to "DOWN (- side)" side in 1GR.
 - When the selector lever shifts to "UP (+ side)" side in 7GR.

LOCK-UP CONTROL

LOCK-UP CONTROL : System Diagram

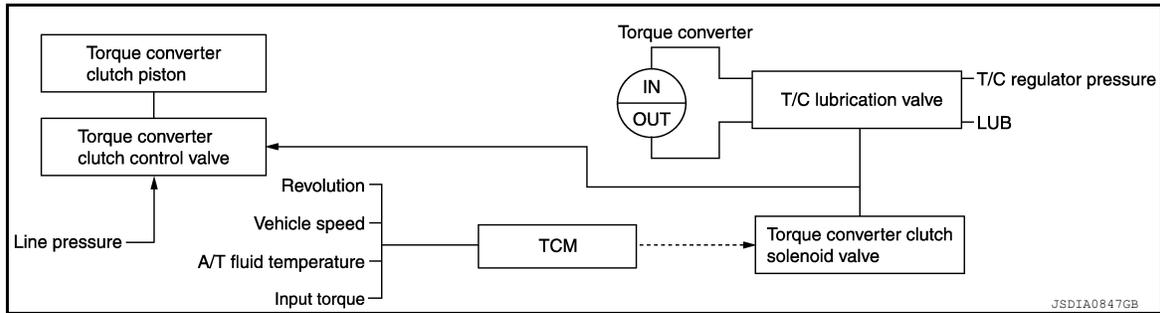
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LOCK-UP CONTROL : System Description

INFOID:000000014419146

- The torque converter clutch piston in the torque converter is engaged to eliminate torque converter slip to increase power transmission efficiency.
- Lock-up operation, however, is prohibited when A/T fluid temperature is too low.
- The torque converter clutch control valve operation is controlled by the torque converter clutch solenoid valve, which is controlled by a signal from TCM, and the torque converter clutch control valve engages or releases the torque converter clutch piston.



Lock-up Operation Condition Table

Selector lever	"D" position						"M" position					
	7	6	5	4	3	2	7	6	5	4	3	2
Lock-up	x	-	-	-	-	-	x	x	x	x	x	x
Slip lock-up	x	x	x	x	x	x	x	x	x	x	x	x

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.

A/T SHIFT LOCK SYSTEM

A/T SHIFT LOCK SYSTEM : System Description

INFOID:000000014419147

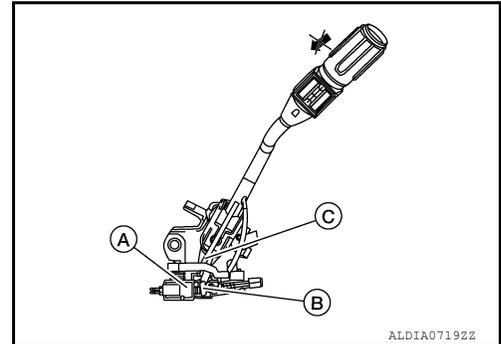
The shift lever cannot be shifted from the "P" (Park) position unless the brake pedal is depressed while the ignition switch is set to ON. The shift lock is unlocked by turning the shift lock solenoid ON when the ignition switch is set to ON, the park position switch (shift selector) is turned ON (selector lever is in "P" position), and the stop lamp switch is turned ON (brake pedal is depressed) as shown in the operation chart in the figure. Therefore, the shift lock solenoid receives no ON signal and the shift lock remains locked if all of the above conditions are not fulfilled. However, selector operation is allowed if the shift lock release button is pressed.

SHIFT LOCK OPERATION AT “P” POSITION

When Brake Pedal Is Not Depressed (No Selector Operation Allowed)

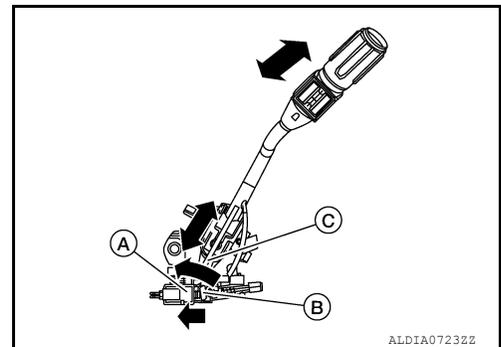
The shift lock solenoid (A) is turned OFF (not energized) when the brake pedal is not depressed (no selector operation allowed) with the ignition switch ON.

The connecting lock lever (B) is located at the position shown in the figure when the solenoid rod is extended. It prevents the movement of the detent rod (C). For these reasons, the selector lever cannot be shifted from the “P” position.



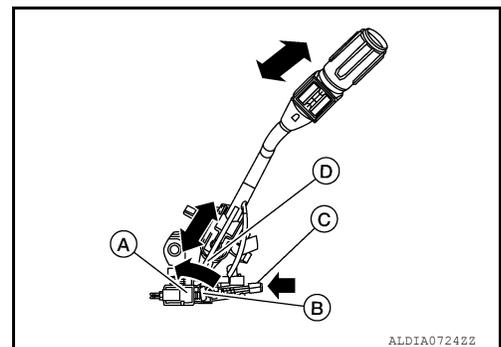
When Brake Pedal Is Depressed (Shift Operation Allowed)

The shift lock solenoid (A) is turned ON (energized) when the brake pedal is depressed with the ignition switch ON. The connecting lock lever (B) rotates when the solenoid is activated. Therefore, the detent rod (C) can be moved. For these reasons, the selector lever can be shifted to other positions.



“P” POSITION HOLD MECHANISM (IGNITION SWITCH LOCK)

The shift lock solenoid (A) is not energized when the ignition switch is in any position other than ON. In this condition, the shift mechanism is locked and “P” position is held. The operation cannot be performed from “P” position if the brake pedal is depressed with the ignition switch ON when the operation system of shift lock solenoid is malfunctioning. However, the lock lever (B) is forcibly rotated and the shift lock is released when the shift lock release button (C) is pressed from above. Then the selector operation from “P” position can be performed.



D : Detent rod

CAUTION:

Use the shift lock release button only when the selector lever cannot be operated even if the brake pedal is depressed with the ignition switch ON.

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ON BOARD DIAGNOSTIC (OBD) SYSTEM

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[7AT: RE7R01B]

ON BOARD DIAGNOSTIC (OBD) SYSTEM

Diagnosis Description

INFOID:000000014419148

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-334. "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 [EC-84. "DIAGNOSIS DESCRIPTION : 1st Trip Detection Logic and Two Trip Detection Logic"](#).

DIAGNOSIS SYSTEM (TCM)

CONSULT Function

INFOID:000000014419149

APPLICATION ITEMS

Diagnostic test mode	Function
Work Support	This mode enables a technician to adjust some devices faster and more accurately.
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-334, "DTC Index"](#).

IGN Counter

The IGN counter is indicated in Freeze frame data (FFD) and indicates the number of times that the ignition switch is turned ON after returning to the normal state from DTC.

- CAN malfunction
 - The number is 0 when a malfunction is detected now.
 - The number increases like 1 → 2 → 3...38 → 39 after returning to the normal condition whenever ignition switch OFF → 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 → 2 → 3...254 → 255 after returning to the normal condition whenever ignition switch OFF → 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

Monitored item (Unit)	Monitor Item Selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM ITEM	
VHCL/S SE-A/T (km/h or mph)	X	X	▼	Displays the vehicle speed calculated by the TCM from the output shaft revolution.
ESTM VSP SIG (km/h or mph)	X	—	▼	Displays the vehicle speed signal received via CAN communication.
OUTPUT REV (rpm)	X	X	▼	Displays the output speed calculated from the pulse signal of output speed sensor.
INPUT SPEED (rpm)	X	X	▼	Displays the input speed calculated from front sun gear revolution and front carrier revolution.
F SUN GR REV (rpm)	—	—	▼	Displays the front sun gear revolution calculated from the pulse signal of input speed sensor 1.

DIAGNOSIS SYSTEM (TCM)

< SYSTEM DESCRIPTION >

[7AT: RE7R01B]

Monitored item (Unit)	Monitor Item Selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM ITEM	
F CARR GR REV (rpm)	—	—	▼	Displays the front carrier gear revolution calculated from the pulse signal of input speed sensor 2.
ENGINE SPEED (rpm)	X	X	▼	Displays the engine speed received via CAN communication.
TC SLIP SPEED (rpm)	—	X	▼	Displays the revolution difference between input speed and engine speed.
ACCELE POSI (0.0/8)	X	—	▼	Displays the accelerator position estimated value received via CAN communication.
THROTTLE POSI (0.0/8)	X	X	▼	Displays the throttle position received via CAN communication.
ATF TEMP 1 (°C or °F)	X	X	▼	Displays the ATF temperature of oil pan calculated from the signal voltage of A/T fluid temperature sensor.
ATF TEMP 2 (°C or °F)	X	X	▼	Displays the ATF temperature estimated value of torque converter outlet calculated from the signal voltage of A/T fluid temperature sensor.
ATF TEMP SE 1 (V)	—	—	▼	Displays the signal voltage of A/T fluid temperature sensor.
BATTERY VOLT (V)	X	—	▼	Displays the power supply voltage of TCM.
LINE PRES SOL (A)	—	X	▼	Displays the command current from TCM to the line pressure solenoid.
TCC SOLENOID (A)	—	X	▼	Displays the command current from TCM to the torque converter clutch solenoid.
L/B SOLENOID (A)	—	X	▼	Displays the command current from TCM to the low brake solenoid.
FR/B SOLENOID (A)	—	X	▼	Displays the command current from TCM to the front brake solenoid.
HLR/C SOL (A)	—	X	▼	Displays the command current from TCM to the high and low reverse clutch solenoid.
I/C SOLENOID (A)	—	X	▼	Displays the command current from TCM to the input clutch solenoid.
D/C SOLENOID (A)	—	X	▼	Displays the command current from TCM to the direct clutch solenoid.
2346/B SOL (A)	—	X	▼	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.
TCC SOL MON (A)	—	—	▼	Monitors the command current from TCM to the torque converter clutch solenoid, and displays the monitor value.
L/B SOL MON (A)	—	—	▼	Monitors the command current from TCM to the low brake solenoid, and displays the monitor value.
FR/B SOL MON (A)	—	—	▼	Monitors the command current from TCM to the front brake solenoid, and displays the monitor value.

DIAGNOSIS SYSTEM (TCM)

< SYSTEM DESCRIPTION >

[7AT: RE7R01B]

Monitored item (Unit)	Monitor Item Selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM ITEM	
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	—	X	▼	Displays the gear ratio calculated from input speed and output speed.
ENGINE TORQUE (Nm)	—	—	▼	Displays the engine torque estimated value received via CAN communication.
ENG TORQUE D (Nm)	—	—	▼	Displays the engine torque estimated value reflected the requested torque of each control unit received via CAN communication.
INPUT TRQ S (Nm)	—	—	▼	Displays the input torque using for the oil pressure calculation process of shift change control.
INPUT TRQ L/P (Nm)	—	—	▼	Displays the input torque using for the oil pressure calculation process of line pressure control.
TRGT PRES L/P (kPa, kg/cm ² or psi)	—	—	▼	Displays the target oil pressure value of torque converter clutch solenoid valve calculated by the oil pressure calculation process of lock-up control.
TRGT PRES TCC (kPa, kg/cm ² or psi)	—	—	▼	Displays the target oil pressure value of torque converter clutch solenoid valve calculated by the oil pressure calculation process of shift change control.
TRGT PRES L/B (kPa, kg/cm ² or psi)	—	—	▼	Displays the target oil pressure value of low brake solenoid valve calculated by the oil pressure calculation process of shift change control.
TRGT PRE FR/B (kPa, kg/cm ² or psi)	—	—	▼	Displays the target oil pressure value of front brake solenoid valve calculated by the oil pressure calculation process of shift change control.
TRG PRE HLR/C (kPa, kg/cm ² or psi)	—	—	▼	Displays the target oil pressure value of high and low reverse clutch solenoid valve calculated by the oil pressure calculation process of shift change control.
TRGT PRES I/C (kPa, kg/cm ² or psi)	—	—	▼	Displays the target oil pressure value of input clutch solenoid valve calculated by the oil pressure calculation process of shift change control.
TRGT PRES D/C (kPa, kg/cm ² or psi)	—	—	▼	Displays the target oil pressure value of direct clutch solenoid valve calculated by the oil pressure calculation process of shift change control.
TRG PRE 2346/B (kPa, kg/cm ² or psi)	—	—	▼	Displays the target oil pressure value of 2346 brake solenoid valve calculated by the oil pressure calculation process of shift change control.
SHIFT PATTERN	—	—	▼	Displays the gear change data using the shift pattern control.

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DIAGNOSIS SYSTEM (TCM)

< SYSTEM DESCRIPTION >

[7AT: RE7R01B]

Monitored item (Unit)	Monitor Item Selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM ITEM	
VEHICLE SPEED (km/h or mph)	—	—	▼	Displays the vehicle speed for control using the control of TCM.
G SEN SLOPE (%)	X	—	▼	Displays the inclination angle calculated by the G sensor signal received via CAN communication.
RANGE SW 4 (ON/OFF)	X	—	▼	Displays the operation status of transmission range switch 4.
RANGE SW 3 (ON/OFF)	X	—	▼	Displays the operation status of transmission range switch 3.
RANGE SW 2 (ON/OFF)	X	—	▼	Displays the operation status of transmission range switch 2.
RANGE SW 1 (ON/OFF)	X	—	▼	Displays the operation status of transmission range switch 1.
SFT DWN ST SW (ON/OFF)	X	—	▼	<ul style="list-style-type: none"> • Displays the operation status of paddle shifter (down switch). • Not mounted but displayed.
SFT UP ST SW (ON/OFF)	X	—	▼	<ul style="list-style-type: none"> • Displays the operation status of paddle shifter (up switch). • Not mounted but displayed.
DOWN SW LEVER (ON/OFF)	X	—	▼	Displays the operation status of selector lever (down switch).
UP SW LEVER (ON/OFF)	X	—	▼	Displays the operation status of selector lever (up switch).
NON M-MODE SW (ON/OFF)	X	—	▼	Displays whether the selector lever is in any position other than manual shift gate position.
MANU MODE SW (ON/OFF)	X	—	▼	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 communication.
DS RANGE (ON/OFF)	—	—	▼	<ul style="list-style-type: none"> • Displays whether it is the DS mode. • Not mounted but displayed.
1 POSITION SW (ON/OFF)	X	—	▼	<ul style="list-style-type: none"> • Displays the reception status of 1 position switch signal received via CAN communication. • Not mounted but displayed.
OD CONT SW (ON/OFF)	X	—	▼	<ul style="list-style-type: none"> • Displays the reception status of overdrive control switch signal received via CAN communication. • Not mounted but displayed.
BRAKESW (ON/OFF)	X	—	▼	Displays the reception status of stop lamp switch signal received via CAN communication.
POWERSHIFT SW (ON/OFF)	X	—	▼	<ul style="list-style-type: none"> • Displays the reception status of POWER mode signal received via CAN communication. • Not mounted but displayed.
ASCD-OD CUT (ON/OFF)	X	—	▼	Displays the reception status of ASCD OD cancel request signal received via CAN communication.
ASCD-CRUISE (ON/OFF)	X	—	▼	Displays the reception status of ASCD operation signal received via CAN communication.

DIAGNOSIS SYSTEM (TCM)

< SYSTEM DESCRIPTION >

[7AT: RE7R01B]

Monitored item (Unit)	Monitor Item Selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM ITEM	
ABS SIGNAL (ON/OFF)	X	—	▼	Displays the reception status of ABS operation signal received via CAN communication.
TCS GR/P KEEP (ON/OFF)	X	—	▼	Displays the reception status of TCS gear keep request signal received via CAN communication.
TCS SIGNAL 2 (ON/OFF)	X	—	▼	Displays whether the reception value of A/T shift schedule change demand signal received via CAN communication is "cold".
TCS SIGNAL 1 (ON/OFF)	X	—	▼	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 input clutch or front brake.
HLR/C PARTS (FAIL/NOTFAIL)	—	—	▼	Displays whether the identified malfunction point judged by TCM is the related parts of high and low reversed clutch.
W/O THL POS (ON/OFF)	X	—	▼	Displays the kickdown condition signal status received via CAN communication.
CLSD THL POS (ON/OFF)	X	—	▼	Displays the idling status signal status received via CAN communication.
DRV CST JUDGE (DRIVE/COAST)	—	—	▼	Displays the judgment results of "driving" or "coasting" judged by TCM.
SHIFT IND SIGNAL	—	—	▼	Displays the transmission value of shift position signal transmitted via CAN communication.
STARTER RELAY (ON/OFF)	—	—	▼	Displays the command status from TCM to starter relay.
F-SAFE IND/L (ON/OFF)	—	—	▼	Displays the transmission status of A/T CHECK indicator lamp signal transmitted via CAN communication.
ATF WARN LAMP (ON/OFF)	—	—	▼	Displays the transmission status of ATF temperature signal transmitted via CAN communication.
MANU MODE IND (ON/OFF)	—	—	▼	Displays the transmission status of manual mode signal transmitted via CAN communication.
ON OFF SOL MON (ON/OFF)	—	—	▼	Monitors the command value from TCM to the anti-interlock solenoid, and displays the monitor status.
START RLY MON (ON/OFF)	—	—	▼	Monitors the command value from TCM to the starter relay, and displays the monitor status.
ON OFF SOL (ON/OFF)	—	—	▼	Displays the command status from TCM to anti-interlock solenoid.
SLCT LVR POSI	—	X	▼	Displays the shift positions recognized by TCM.

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DIAGNOSIS SYSTEM (TCM)

< SYSTEM DESCRIPTION >

[7AT: RE7R01B]

Monitored item (Unit)	Monitor Item Selection			Remarks
	ECU IN-PUT SIG-NALS	MAIN SIG-NALS	SELEC-TION FROM ITEM	
GEAR	—	X	▼	Displays the current transmission gear position recognized by TCM.
NEXT GR POSI	—	—	▼	Displays the target gear position of gear change that is calculated based on the vehicle speed information and throttle information.
SHIFT MODE	—	—	▼	Displays the transmission driving mode recognized by TCM.
D/C PARTS (FAIL/NOTFAIL)	—	—	▼	Displays whether the identified malfunction point judged by TCM is the related parts of direct clutch.
FR/B PARTS (FAIL/NOTFAIL)	—	—	▼	Displays whether the identified malfunction point judged by TCM is the related parts of front brake.
2346/B PARTS (FAIL/NOTFAIL)	—	—	▼	Displays whether the identified malfunction point judged by TCM is the related parts of 2346 brake.
2346B/DC PARTS (FAIL/NOTFAIL)	—	—	▼	Displays whether the identified malfunction point judged by TCM is the related parts of 2346 brake or direct clutch.
N IDLE STATUS (ON/OFF)	—	—	▼	Displays the control status of idle neutral control.

WORK SUPPORT

Item name	Description
G SENSOR CALIBRATION	Calibrates G sensor.

DTC WORK SUPPORT

DIAGNOSIS SYSTEM (TCM)

< SYSTEM DESCRIPTION >

[7AT: RE7R01B]

Item name	Description	Check item
1ST GR FNCTN P0731	Following items for "1GR incorrect ratio" can be confirmed. • Self-diagnosis status (whether the diagnosis is being performed or not) • Self-diagnostic results (OK or NG)	<ul style="list-style-type: none"> • Input clutch solenoid valve • Front brake solenoid valve • Direct clutch solenoid valve • High and low reverse clutch solenoid valve • 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
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)	
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)	
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)	
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)	
6TH GR FNCTN P0729	Following items for "6GR incorrect ratio" can be confirmed. • Self-diagnosis status (whether the diagnosis is being performed or not) • Self-diagnostic results (OK or NG)	
7TH GR FNCTN P1734	Following items for "7GR incorrect ratio" can be confirmed. • Self-diagnosis status (whether the diagnosis is being performed or not) • Self-diagnostic results (OK or NG)	
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)	<ul style="list-style-type: none"> • Harness or connectors • Torque converter clutch solenoid valve • Torque converter • Input speed sensor 1, 2 • Hydraulic control circuit

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ECU DIAGNOSIS INFORMATION

TCM

Reference Value

INFOID:000000014419150

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 in accordance with the specified diagnostic procedures.
- Shift schedule (that implies gear position) on CONSULT may slightly differ from that is described in Service Manual. This occurs because of the reasons as per the following:
 - Actual shift schedule has more or less tolerance or allowance
 - Shift schedule in Service Manual refers to the point where shifting starts
 - Gear position on CONSULT indicates the point where shifting completes
- 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.

Item name	Condition	Value / Status (Approx.)
VHCL/S SE-AT	During driving	Approximately equals the speedometer reading.
ESTM VSP SIG	During driving	Approximately equals the speedometer reading.
OUTPUT REV	During driving (lock-up ON)	Tachometer / Gear ratio
INPUT SPEED	During driving (lock-up ON)	Approximately equals the engine speed.
F SUN GR REV	During driving	Revolution of front sun gear is indicated.
F CARR GR REV	During driving	Revolution of front carrier is indicated.
ENGINE SPEED	Engine running	Closely equals the tachometer reading.
TC SLIP SPEED	During driving	Engine speed – Input speed
ACCELE POSI	Accelerator pedal is released	0.0/8
	Accelerator pedal is fully depressed	8.0/8
THROTTLE POSI	Accelerator pedal is released	0.0/8
	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	—	—

TCM

< ECU DIAGNOSIS INFORMATION >

[7AT: RE7R01B]

Item name	Condition	Value / Status (Approx.)	
I/C SOLENOID	—	—	A
D/C SOLENOID	—	—	
2346/B SOL	—	—	B
L/P SOL MON	—	—	
TCC SOL MON	—	—	
L/B SOL MON	—	—	C
FR/B SOL MON	—	—	
HLR/C SOL MON	—	—	TM
I/C SOL MON	—	—	
D/C SOL MON	—	—	
2346/B SOL MON	—	—	E
GEAR RATIO	Driving with 1GR	4.887	
	Driving with 2GR	3.170	F
	Driving with 3GR	2.027	
	Driving with 4GR	1.412	
	Driving with 5GR	1.000	G
	Driving with 6GR	0.864	
	Driving with 7GR	0.775	H
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.	I
INPUT TRQ S	During driving	Changes the value according to the acceleration or deceleration.	J
INPUT TRQ L/P	During driving	Changes the value according to the acceleration or deceleration.	J
TRGT PRES L/P	Selector lever in "P" and "N" positions	490 kPa	
	Other than the above	490 – 1370 kPa	K
TRGT PRES TCC	Slip lock-up is active	0 – 600 kPa	
	Lock-up is active	600 kPa	L
	Other than the above	0 kPa	
TRGT PRES L/B	Low brake is engaged	1370 kPa	
	Low brake is disengaged	0 kPa	M
TRGT PRES FR/B	Front brake is engaged	1370 kPa	
	Front brake is disengaged	0 kPa	N
TRG PRE HLR/C	High and low reverse clutch is engaged	1370 kPa	
	High and low reverse clutch is disengaged	0 kPa	O
TRGT PRES I/C	Input clutch is engaged	1370 kPa	
	Input clutch is disengaged	0 kPa	O
TRGT PRES D/C	Direct clutch is engaged	1370 kPa	
	Direct clutch is disengaged	0 kPa	P
TRG PRE 2346/B	2346 brake is engaged	1370 kPa	
	2346 brake is disengaged	0 kPa	
SHIFT PATTERN	During normal driving (without shift changes)	FF	
VEHICLE SPEED	During driving	Approximately equals the speedometer reading.	

TCM

< ECU DIAGNOSIS INFORMATION >

[7AT: RE7R01B]

Item name	Condition	Value / Status (Approx.)
G SEN SLOPE	Level road	0%
	Uphill slope	Positive value (maximum 40.45%)
	Downhill slope	Negative value (minimum – 40.45%)
RANGE SW 4	Selector lever in “P” and “N” positions	OFF
	Other than the above	ON
RANGE SW 3	Selector lever in “P”, “R” and “N” positions	OFF
	Other than the above	ON
RANGE SW 2	Selector lever in “P” and “R” positions	OFF
	Other than the above	ON
RANGE SW 1	Selector lever in “P” position	OFF
	Other than the above	ON
SFT DWN ST SW*	Paddle shifter (shift-down) is pulled	ON
	Other than the above	OFF
SFT UP ST SW*	Paddle shifter (shift-up) is pulled	ON
	Other than the above	OFF
DOWN SW LEVER	Selector lever is shifted to – side	ON
	Other than the above	OFF
UP SW LEVER	Selector lever is shifted to + side	ON
	Other than the above	OFF
NON M-MODE SW	Selector lever is shifted to manual shift gate side	OFF
	Other than the above	ON
MANU MODE SW	Selector lever is shifted to manual shift gate side	ON
	Other than the above	OFF
TOW MODE SW	Tow mode	ON
	Other than the above	OFF
DS RANGE*	Driving with DS mode	ON
	Other than the above	OFF
1 POSITION SW*	Selector lever in “1” position	ON
	Other than the above	OFF
OD CONT SW*	When overdrive control switch is depressed	ON
	When overdrive control switch is released	OFF
BRAKESW	Brake pedal is depressed	ON
	Brake pedal is released	OFF
POWERSHIFT SW*	Power mode	ON
	Other than the above	OFF
ASCD-OD CUT	When TCM receives ASCD OD cancel request signal	ON
	Other than the above	OFF
ASCD-CRUISE	ASCD operate	ON
	Other than the above	OFF
ABS SIGNAL	ABS operate	ON
	Other than the above	OFF
TCS GR/P KEEP	When TCM receives TCS gear keep request signal	ON
	Other than the above	OFF

TCM

< ECU DIAGNOSIS INFORMATION >

[7AT: RE7R01B]

Item name	Condition	Value / Status (Approx.)	
TCS SIGNAL 2	When the reception value of A/T shift schedule change demand signal is "cold"	ON	A
	Other than the above	OFF	
TCS SIGNAL 1	When the reception value of A/T shift schedule change demand signal is "warm"	ON	B
	Other than the above	OFF	C
LOW/B PARTS	At 4GR - 5GR - 6GR shift control	FAIL	
	Other than the above	NOTFAIL	
HC/IC/FRB PARTS	At 1GR - 2GR - 3GR shift control	FAIL	TM
	Other than the above	NOTFAIL	
IC/FRB PARTS	At 4GR - 5GR - 6GR shift control	FAIL	
	Other than the above	NOTFAIL	E
HLR/C PARTS	At 4GR - 5GR - 6GR shift control	FAIL	
	Other than the above	NOTFAIL	F
W/O THL POS	Accelerator pedal is fully depressed	ON	
	Accelerator pedal is released	OFF	G
CLSD THL POS	Accelerator pedal is released	ON	
	Accelerator pedal is fully depressed	OFF	H
DRV CST JUDGE	Accelerator pedal is depressed	DRIVE	
	Accelerator pedal is released	COAST	I
SHIFT IND SIGNAL	When the selector lever is positioned in between each position.	OFF	
	Selector lever in "P" position	P	
	Selector lever in "R" position	R	J
	Selector lever in "N" position	N	
	Selector lever in "D" position	D	
	Selector lever in "D" position: 7GR	6	K
	Selector lever in "D" position: 6GR	5	
	Selector lever in "D" position: 5GR	4	L
	Selector lever in "D" position: 4GR	3	
	Selector lever in "D" position: 3GR	2	M
	Selector lever in "D" position: 2GR	1	
	Selector lever in "D" position: 1GR	M1	
	Selector lever in "M" position: 1GR	M2	N
	Selector lever in "M" position: 2GR	M3	
	Selector lever in "M" position: 3GR	M4	O
	Selector lever in "M" position: 4GR	M5	
	Selector lever in "M" position: 5GR	M6	P
	Selector lever in "M" position: 6GR	M7	
	Selector lever in "M" position: 7GR	DS	
	Driving with DS mode		
STARTER RELAY	Selector lever in "P" and "N" positions	ON	
	Other than the above	OFF	
F-SAFE IND/L	For 2 seconds after the ignition switch is turned ON	ON	
	Other than the above	OFF	

TCM

< ECU DIAGNOSIS INFORMATION >

[7AT: RE7R01B]

Item name	Condition	Value / Status (Approx.)
ATF WARN LAMP*	When TCM transmits the ATF indicator lamp signal	ON
	Other than the above	OFF
MANU MODE IND	Driving with manual mode	ON
	Other than the above	OFF
ON OFF SOL MON	Selector lever in "P" and "N" positions	ON
	Driving with 1GR to 3GR	
	Other than the above	OFF
START RLY MON	Selector lever in "P" and "N" positions	ON
	Other than the above	OFF
ON OFF SOL	Selector lever in "P" and "N" positions	ON
	Driving with 1GR to 3GR	
	Other than the above	OFF
SLCT LVR POSI	Selector lever in "N" and "P" positions	N/P
	Selector lever in "R" position	R
	Selector lever in "D" and "DS" positions	D
	Selector lever in "M" position: 7GR	
	Selector lever in "M" position: 6GR	6
	Selector lever in "M" position: 5GR	5
	Selector lever in "M" position: 4GR	4
	Selector lever in "M" position: 3GR	3
	Selector lever in "M" position: 2GR	2
Selector lever in "M" position: 1GR	1	
GEAR	During driving	1st, 2nd, 3rd, 4th, 5th, 6th, 7th
NEXT GR POSI	During driving	1st, 2nd, 3rd, 4th, 5th, 6th, 7th
SHIFT MODE	Driving with the D position	0 or 3
	Driving with the manual mode	4 or 8
D/C PARTS	At 1GR - 2GR shift control	FAIL
	Other than the above	NOTFAIL
FR/B PARTS	At control fixed to 1GR	FAIL
	Other than the above	NOTFAIL
2346/B PARTS	At control fixed to 1GR	FAIL
	Other than the above	NOTFAIL
2346B/DC PARTS	At 2GR - 3GR - 4GR shift control	FAIL
	Other than the above	NOTFAIL
N IDLE STATUS	Idle neutral is active	ON
	Other than the above	OFF

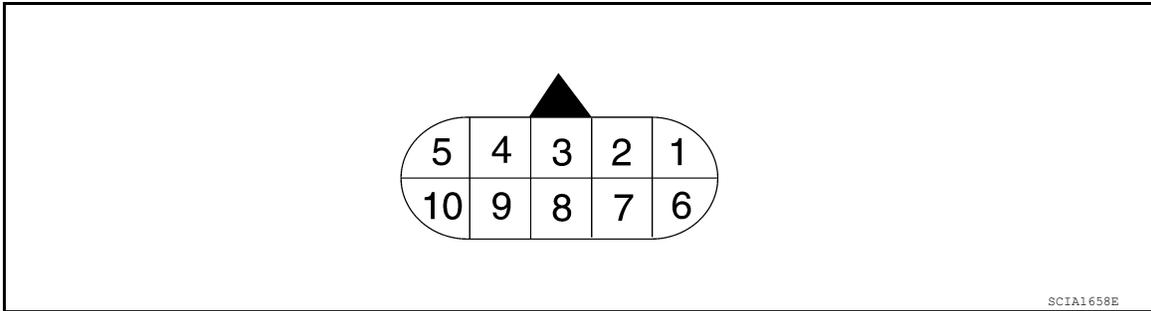
*: Not mounted but always display as OFF.

TERMINAL LAYOUT

TCM

< ECU DIAGNOSIS INFORMATION >

[7AT: RE7R01B]



PHYSICAL VALUES

Terminal (Wire color)		Description		Condition	Value (Approx.)
+	-	Signal name	Input/ Output		
1 (Y/R)	Ground	Ignition power supply	Input	Ignition switch ON	Battery voltage
				Ignition switch OFF	0 V
2 (P)	Ground	Battery power supply (Memory back-up)	Input	Always	Battery voltage
3 (L)	—	CAN-H	Input/ Output	—	—
4 (BR)	—	K-line	Input/ Output	—	—
5 (B)	Ground	Ground	—	Always	0 V
6 (Y/R)	Ground	Ignition power supply	Input	Ignition switch ON	Battery voltage
				Ignition switch OFF	0 V
7 (R)	Ground	Back-up lamp relay	Output	Ignition switch ON	Selector lever in "R" position.
					Selector lever in other than above.
8 (P)	—	CAN-L	Input/ Output	—	—
9 (B/R)	Ground	Starter relay	Output	Ignition switch ON	Selector lever in "N" and "P" positions.
					Selector lever in other than above.
10 (B)	Ground	Ground	—	Always	0 V

Fail-Safe

INFOID:0000000014419151

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.

Consequently, the customer's vehicle may already return to the normal condition. Refer to [TM-353, "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 malfunctioning parts in the condition that the driving force required for the driving is secured.
Final Fail-Safe	<ul style="list-style-type: none"> • 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	—	<ul style="list-style-type: none"> • Fixed in the “D” position (The shifting can be performed) • 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 	—	<ul style="list-style-type: none"> • Fixed in the “D” position (The shifting can be performed) • 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	<ul style="list-style-type: none"> • The shifting between the gears of 1 - 2 - 3 can be performed • Manual mode is prohibited 	—	<ul style="list-style-type: none"> • The shifting between the gears of 1 - 2 - 3 can be performed • Manual mode is prohibited
	Between the gears of 4 - 5 - 6 - 7	<ul style="list-style-type: none"> • Fix the gear while driving • Manual mode is prohibited 	—	
P0717	Between the gears of 1 - 2 - 3	<ul style="list-style-type: none"> • The shifting between the gears of 1 - 2 - 3 can be performed • Manual mode is prohibited 	—	<ul style="list-style-type: none"> • The shifting between the gears of 1 - 2 - 3 can be performed • Manual mode is prohibited
	Between the gears of 4 - 5 - 6 - 7	<ul style="list-style-type: none"> • Fix the gear while driving • Manual mode is prohibited 	—	
P0720	Between the gears of 1 - 2 - 3	<ul style="list-style-type: none"> • Only downshift can be performed • Manual mode is prohibited • A vehicle speed signal from the combination meter is regarded as an effective signal 	—	<ul style="list-style-type: none"> • The shifting between the gears of 1 - 2 - 3 can be performed • Manual mode is prohibited
	Between the gears of 4 - 5 - 6 - 7	<ul style="list-style-type: none"> • Fix the gear at driving • Manual mode is prohibited • A vehicle speed signal from the combination meter is regarded as an effective signal 	—	
P0725	—	—	—	—

TCM

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[7AT: RE7R01B]

DTC	Vehicle condition		Vehicle behavior for 1st fail-safe	Vehicle behavior for 2nd fail-safe	Vehicle behavior for final fail-safe
P0729 P0731 P0732 P0733 P0734 P0735 P1734	Small gear ratio difference		Engine torque limit: Max 150 Nm (15 kg-lb, 111 ft-lb)	—	Engine torque limit: Max 150 Nm (15 kg-lb, 111 ft-lb)
	Great gear ratio difference	Neutral malfunction between the gears of 1 - 2 - 3 and 7	<ul style="list-style-type: none"> Locks in 2GR, 3GR or 4GR Manual mode is prohibited 	—	<ul style="list-style-type: none"> 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
		Other than the above	<ul style="list-style-type: none"> Locks in 1GR, 2GR, 3GR, 4GR, 5GR or 6GR Fix the gear while driving Manual mode is prohibited 	<ul style="list-style-type: none"> The shifting between the gears of 1 - 2 - 3 can be performed Manual mode is prohibited 	<ul style="list-style-type: none"> 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	—		<ul style="list-style-type: none"> Locks in 5GR, 6GR or 7GR Manual mode is prohibited 	<ul style="list-style-type: none"> The shifting between the gears of 1 - 2 - 3 can be performed Manual mode is prohibited 	<ul style="list-style-type: none"> 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	—		<ul style="list-style-type: none"> Lock-up is prohibited Slip lock-up is prohibited 	—	<ul style="list-style-type: none"> Lock-up is prohibited Slip lock-up is prohibited
P0744	—		<ul style="list-style-type: none"> Lock-up is prohibited Slip lock-up is prohibited 	—	<ul style="list-style-type: none"> Lock-up is prohibited Slip lock-up is prohibited
P0745	—		—	—	—
P0750 P0775 P0795 P2713 P2722 P2731 P2807	—		<ul style="list-style-type: none"> Locks in 2GR, 3GR, 4GR, 5GR, 6GR or 7GR Manual mode is prohibited 	—	<ul style="list-style-type: none"> 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

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[7AT: RE7R01B]

DTC	Vehicle condition	Vehicle behavior for 1st fail-safe	Vehicle behavior for 2nd fail-safe	Vehicle behavior for final fail-safe
P0780	—	<ul style="list-style-type: none"> Locks in 3GR Manual mode is prohibited 	—	<ul style="list-style-type: none"> The shifting between the gears of 1 - 2 - 3 can be performed Manual mode is prohibited
P0863	—	—	—	—
P1705	—	<ul style="list-style-type: none"> Downshift when accelerator pedal is depressed is prohibited Upshift when accelerator pedal is released is prohibited Manual mode is prohibited 	<ul style="list-style-type: none"> Downshift when accelerator pedal is depressed is prohibited Upshift when accelerator pedal is released is prohibited Manual mode is prohibited 	<ul style="list-style-type: none"> Downshift when accelerator pedal is depressed is prohibited Upshift when accelerator pedal is released is prohibited Manual mode is prohibited
P1730	—	<ul style="list-style-type: none"> Locks in 1GR, 2GR, 3GR, 4GR, 5GR, 6GR or 7GR Manual mode is prohibited 	<ul style="list-style-type: none"> The shifting between the gears of 1 - 2 - 3 can be performed Manual mode is prohibited 	<ul style="list-style-type: none"> Locks in 1GR The shifting between the gears of 2 - 3 - 4 can be performed The shifting between the gears of 3 - 4 can be performed The shifting between the gears of 4 - 5 - 6 can be performed Manual mode is prohibited
P1815	—	Manual mode is prohibited	—	Manual mode is prohibited
U0100 U0300 U1000	Between the gears of 1 - 2 - 3	<ul style="list-style-type: none"> The shifting between the gears of 1 - 2 - 3 can be performed Manual mode is prohibited 	—	<ul style="list-style-type: none"> The shifting between the gears of 1 - 2 - 3 can be performed Line pressure is set to the maximum hydraulic pressure Manual mode is prohibited
	Between the gears of 4 - 5 - 6 - 7	<ul style="list-style-type: none"> Fix the gear at driving Manual mode is prohibited 	—	
P0720 and P1721	—	Locks in 5GR	—	Locks in 5GR

Protection Control

INFOID:0000000014419152

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
Control at malfunction	Neutral
Normal return condition	<ul style="list-style-type: none"> Vehicle speed: 8 km/h (5 MPH) or less and Engine speed: 2,200 rpm or less
Vehicle behavior	<ul style="list-style-type: none"> The torque transmission cannot be performed There is a shock just before a vehicle stop

1ST ENGINE BRAKE PROTECTION CONTROL

Controls the engine brake so as not to make effective by turning the front brake solenoid output to OFF when each solenoid becomes the electricity pattern of 1st engine brake during driving at the vehicle speed 25 km/h or more in any positions other than “R” position and 1GR.

TCM

< ECU DIAGNOSIS INFORMATION >

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Malfunction detection condition	<ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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:000000014419153

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-364, "DTC Description"
	U1000 CAN COMM CIRCUIT	TM-368, "DTC Description"
	P0863 CONTROL UNIT (CAN)	TM-416, "DTC Description"
2	P0615 STARTER RELAY	TM-370, "DTC Description"
	P0705 T/M RANGE SENSOR A	TM-372, "DTC Description"
	P0710 FLUID TEMP SENSOR A	TM-374, "DTC Description"
	P0717 INPUT SPEED SENSOR A	TM-377, "DTC Description"
	P0720 OUTPUT SPEED SENSOR	TM-379, "DTC Description"
	P0740 TORQUE CONVERTER	TM-403, "DTC Description"
	P0745 PC SOLENOID A	TM-407, "DTC Description"
	P0750 SHIFT SOLENOID A	TM-408, "DTC Description"
	P0775 PC SOLENOID B	TM-410, "DTC Description"
	P0795 PC SOLENOID C	TM-414, "DTC Description"
	P2713 PC SOLENOID D	TM-429, "DTC Description"
	P2722 PC SOLENOID E	TM-431, "DTC Description"
	P2731 PC SOLENOID F	TM-433, "DTC Description"
P2807 PC SOLENOID G	TM-435, "DTC Description"	

TCM

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Priority	Detected items (DTC)	Reference
3	P0729 6GR INCORRECT RATIO	TM-383, "DTC Description"
	P0730 INCORRECT GR RATIO	TM-386, "DTC Description"
	P0731 1GR INCORRECT RATIO	TM-388, "DTC Description"
	P0732 2GR INCORRECT RATIO	TM-391, "DTC Description"
	P0733 3GR INCORRECT RATIO	TM-394, "DTC Description"
	P0734 4GR INCORRECT RATIO	TM-397, "DTC Description"
	P0735 5GR INCORRECT RATIO	TM-400, "DTC Description"
	P0744 TORQUE CONVERTER	TM-405, "DTC Description"
	P0780 SHIFT	TM-412, "DTC Description"
	P1730 INTERLOCK	TM-421, "DTC Description"
	P1734 7GR INCORRECT RATIO	TM-423, "DTC Description"
4	U0300 CAN COMM DATA	TM-366, "DTC Description"
	P0725 ENGINE SPEED	TM-381, "DTC Description"
	P1705 TP SENSOR	TM-417, "DTC Description"
	P1721 VEHICLE SPEED SIGNAL	TM-419, "DTC Description"
	P1815 M-MODE SWITCH	TM-426, "DTC Description"

DTC Index

INFOID:0000000014419154

NOTE:

- If some DTCs are displayed at the same time, perform inspections one by one based on the priority as per the following list. Refer to [TM-333, "DTC Inspection Priority Chart"](#).
- The IGN counter is indicated in Freeze frame data (FFD). Refer to [TM-317, "CONSULT Function"](#).

DTC*1		Items (CONSULT screen terms)	Reference
MIL*2, "ENGINE" with CONSULT or GST	CONSULT only "TRANS- MISSION"		
—	P0615	STARTER RELAY	TM-370
P0705	P0705	T/M RANGE SENSOR A	TM-372
P0710	P0710	FLUID TEMP SENSOR A	TM-374
P0717	P0717	INPUT SPEED SENSOR A	TM-377
P0720	P0720	OUTPUT SPEED SENSOR	TM-379
—	P0725	ENGINE SPEED	TM-381
P0729	P0729	6GR INCORRECT RATIO	TM-383
P0730	P0730	INCORRECT GR RATIO	TM-386
P0731	P0731	1GR INCORRECT RATIO	TM-388
P0732	P0732	2GR INCORRECT RATIO	TM-391
P0733	P0733	3GR INCORRECT RATIO	TM-394
P0734	P0734	4GR INCORRECT RATIO	TM-397
P0735	P0735	5GR INCORRECT RATIO	TM-400
P0740	P0740	TORQUE CONVERTER	TM-403
P0744	P0744	TORQUE CONVERTER	TM-405
P0745	P0745	PC SOLENOID A	TM-407
P0750	P0750	SHIFT SOLENOID A	TM-408
P0775	P0775	PC SOLENOID B	TM-410
P0780	P0780	SHIFT	TM-412
P0795	P0795	PC SOLENOID C	TM-414

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[7AT: RE7R01B]

DTC*1		Items (CONSULT screen terms)	Reference
MIL*2, "ENGINE" with CONSULT or GST	CONSULT only "TRANS- MISSION"		
—	P0863	CONTROL UNIT (CAN)	TM-416
—	P1705	TP SENSOR	TM-417
—	P1721	VEHICLE SPEED SIGNAL	TM-419
P1730	P1730	INTERLOCK	TM-421
P1734	P1734	7GR INCORRECT RATIO	TM-423
—	P1815	M-MODE SWITCH	TM-426
P2713	P2713	PC SOLENOID D	TM-429
P2722	P2722	PC SOLENOID E	TM-431
P2731	P2731	PC SOLENOID F	TM-433
P2807	P2807	PC SOLENOID G	TM-435
U0100	U0100	LOST COMM (ECM A)	TM-364
—	U0300	CAN COMM DATA	TM-366
—	U1000	CAN COMM CIRCUIT	TM-368

*1: These numbers are prescribed by SAE J2012.

*2: Refer to [TM-316, "Diagnosis Description"](#).

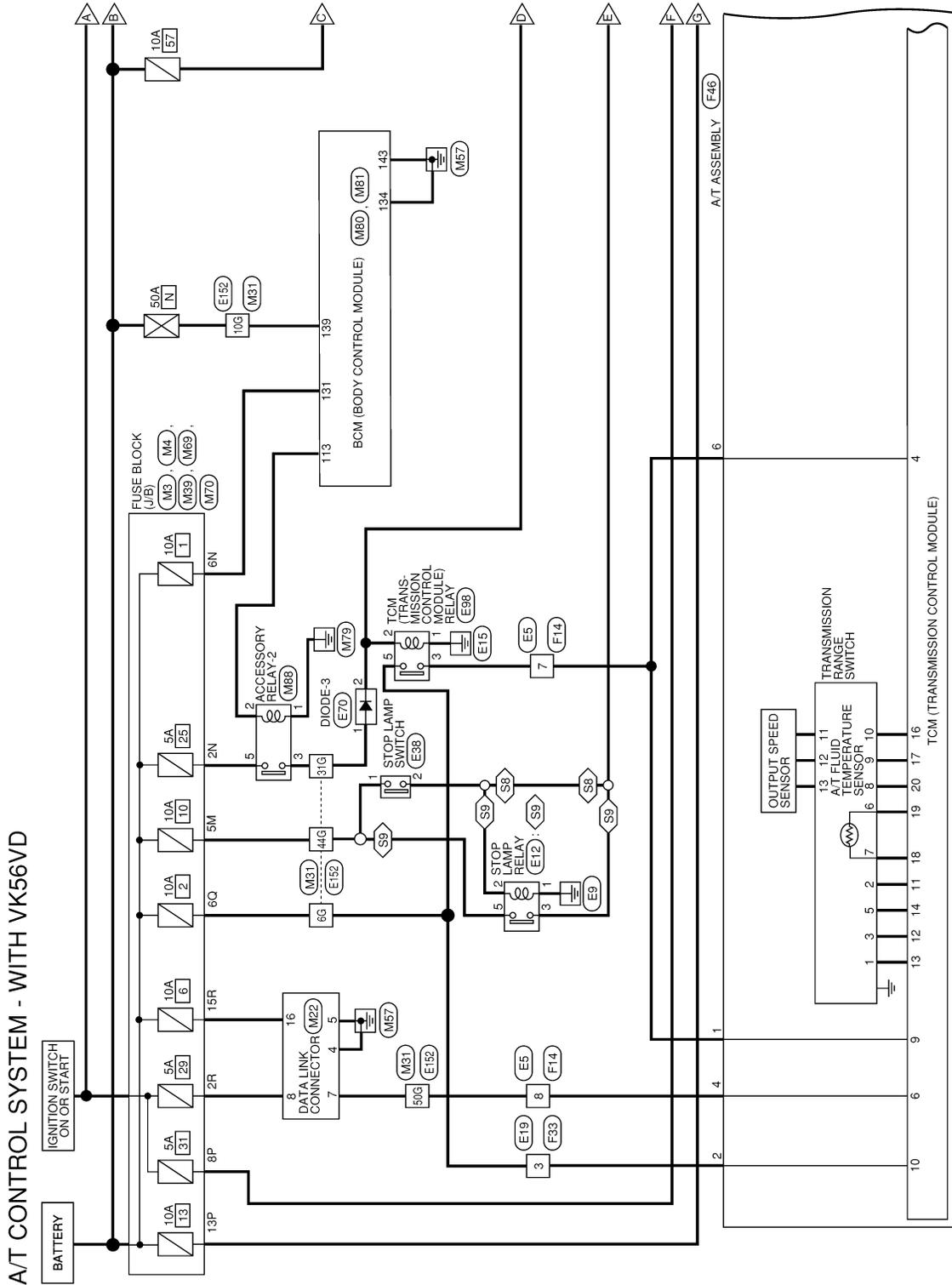
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WIRING DIAGRAM

A/T CONTROL SYSTEM

Wiring Diagram

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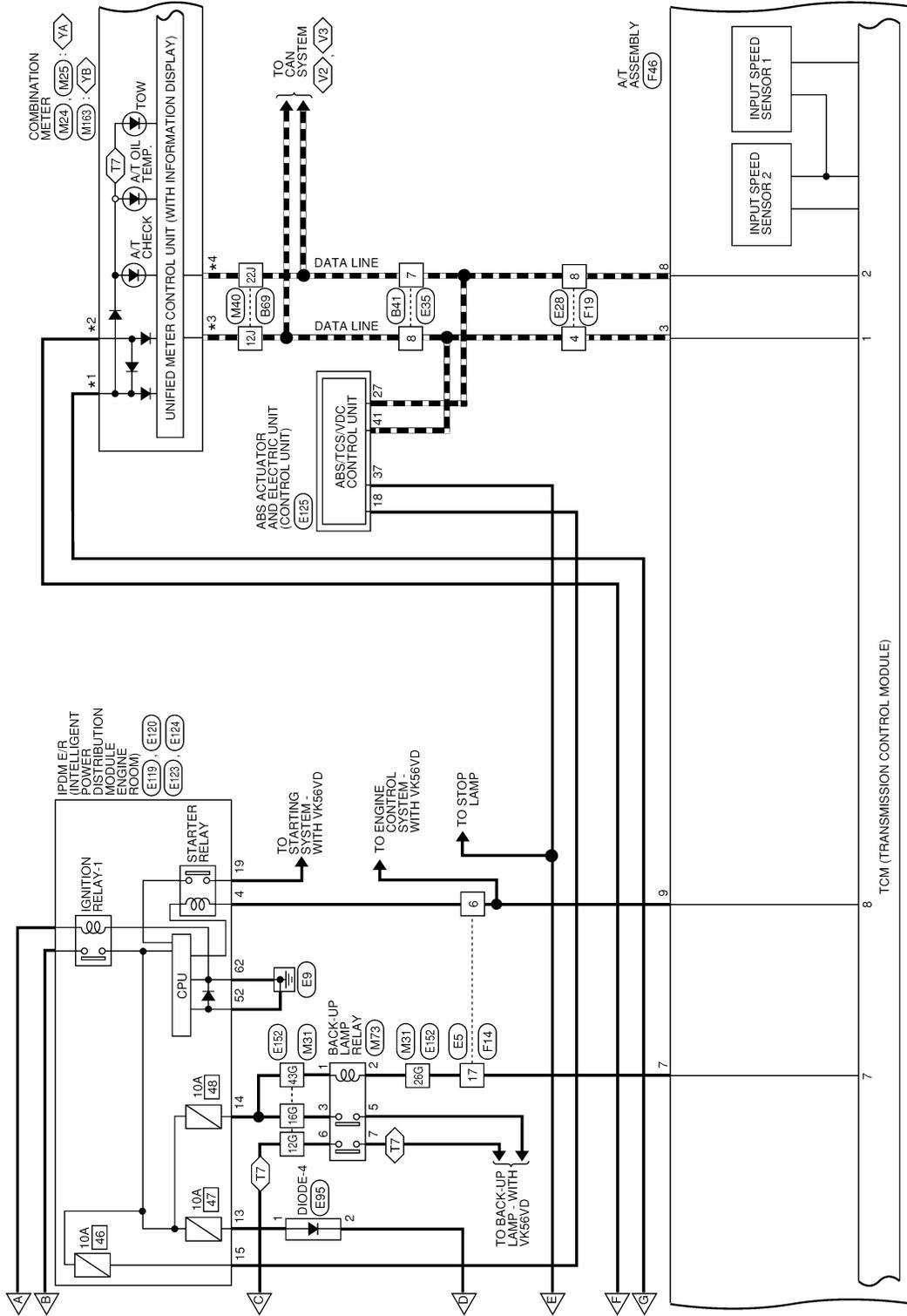
*: THIS CONNECTOR IS NOT SHOWN IN "HARNES LAYOUT" OF PG SECTION.

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A/T CONTROL SYSTEM

< WIRING DIAGRAM >

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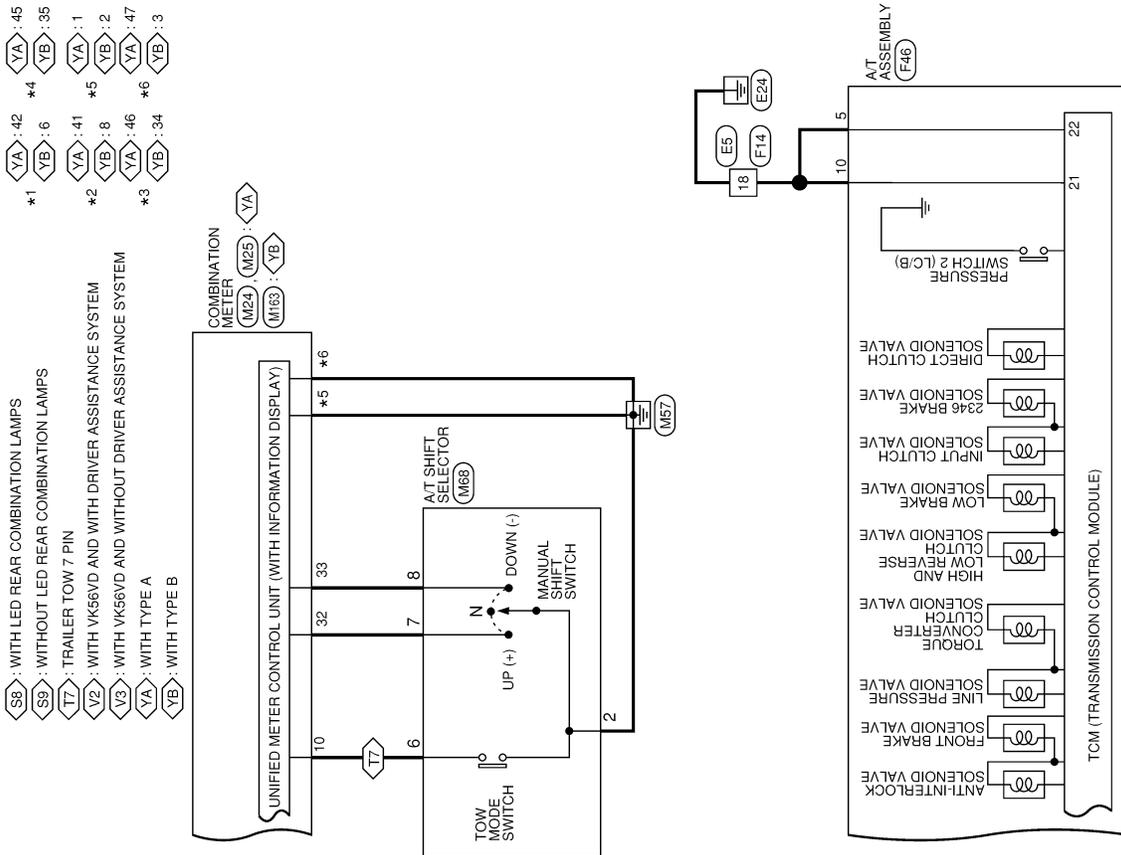
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A/T CONTROL SYSTEM

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[7AT: RE7R01B]



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A/T CONTROL SYSTEM

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[7AT: RE7R01B]

A/T CONTROL SYSTEM CONNECTORS - WITH VK56VD

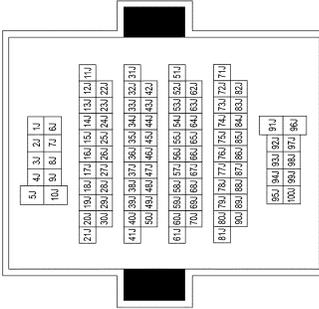
Connector No.	B41
Connector Name	WIRE TO WIRE
Connector Type	NS12MW-CS
Connector Color	WHITE



1	2	3	4	5
6	7	8	9	10
11	12			

Terminal No.	Color of Wire	Signal Name
1	Y	TO ENGINE ROOM HARNESS
2	V	TO ENGINE ROOM HARNESS
3	L	TO ENGINE ROOM HARNESS
4	L/G	TO ENGINE ROOM HARNESS
5	P/G	TO ENGINE ROOM HARNESS
6	SB	TO ENGINE ROOM HARNESS
7	P	TO ENGINE ROOM HARNESS
8	L	TO ENGINE ROOM HARNESS
9	SHIELD	TO ENGINE ROOM HARNESS
10	W/G	TO ENGINE ROOM HARNESS
11	L	TO ENGINE ROOM HARNESS
12	BR	TO ENGINE ROOM HARNESS

Connector No.	B69
Connector Name	WIRE TO WIRE
Connector Type	TH80MW-CS16-TM4
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
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Terminal No.	Color of Wire	Signal Name
54J	L	TO MAIN HARNESS
55J	R	TO MAIN HARNESS
56J	W	TO MAIN HARNESS
57J	L/G	TO MAIN HARNESS
58J	O	TO MAIN HARNESS
59J	-	TO MAIN HARNESS
60J	SHIELD	TO MAIN HARNESS
61J	G	TO MAIN HARNESS
62J	-	TO MAIN HARNESS
63J	R/W	TO MAIN HARNESS
64J	L/W	TO MAIN HARNESS
65J	SHIELD	TO MAIN HARNESS
66J	B	TO MAIN HARNESS
67J	SHIELD	TO MAIN HARNESS
68J	O/V	TO MAIN HARNESS
69J	SHIELD	TO MAIN HARNESS
70J	BR	TO MAIN HARNESS
71J	L/W	TO MAIN HARNESS
72J	-	TO MAIN HARNESS
73J	-	TO MAIN HARNESS
74J	SHIELD	TO MAIN HARNESS
75J	L/G/B	TO MAIN HARNESS
76J	R	TO MAIN HARNESS
77J	SHIELD	TO MAIN HARNESS
78J	GR/B	TO MAIN HARNESS
79J	B	TO MAIN HARNESS
80J	W	TO MAIN HARNESS
81J	SHIELD	TO MAIN HARNESS
82J	L/R	TO MAIN HARNESS
83J	-	TO MAIN HARNESS
84J	-	TO MAIN HARNESS
85J	Y/B	TO MAIN HARNESS
86J	G	TO MAIN HARNESS
87J	B/R	TO MAIN HARNESS
88J	SHIELD	TO MAIN HARNESS
89J	GR/R	TO MAIN HARNESS
90J	L	TO MAIN HARNESS
91J	L/B	TO MAIN HARNESS
92J	SB	TO MAIN HARNESS
93J	B	TO MAIN HARNESS
94J	L	TO MAIN HARNESS
95J	L/G	TO MAIN HARNESS
96J	R	TO MAIN HARNESS
97J	B/Y	TO MAIN HARNESS
98J	L/B	TO MAIN HARNESS
99J	W/L	TO MAIN HARNESS
100J	SB	TO MAIN HARNESS

Connector No.	E5
Connector Name	WIRE TO WIRE
Connector Type	TH24MW-NH
Connector Color	WHITE



1	2	3	4	5	6	7	8	9	10	11	12
13	14	15	16	17	18	19	20	21	22	23	24

Terminal No.	Color of Wire	Signal Name
1	L/R	TO ENGINE CONTROL HARNESS
2	BR	TO ENGINE CONTROL HARNESS
3	V	TO ENGINE CONTROL HARNESS
4	L/O	TO ENGINE CONTROL HARNESS
5	W	TO ENGINE CONTROL HARNESS
6	B/R	TO ENGINE CONTROL HARNESS
7	Y/R	TO ENGINE CONTROL HARNESS
8	BR	TO ENGINE CONTROL HARNESS
9	W/L	TO ENGINE CONTROL HARNESS
10	L/Y	TO ENGINE CONTROL HARNESS
11	SB	TO ENGINE CONTROL HARNESS
12	L	TO ENGINE CONTROL HARNESS
13	W/R	TO ENGINE CONTROL HARNESS
14	Y	TO ENGINE CONTROL HARNESS
15	B	TO ENGINE CONTROL HARNESS
16	B	TO ENGINE CONTROL HARNESS
17	R	TO ENGINE CONTROL HARNESS
18	B	TO ENGINE CONTROL HARNESS
19	B/R	TO ENGINE CONTROL HARNESS
20	GR	TO ENGINE CONTROL HARNESS
21	W/R	TO ENGINE CONTROL HARNESS
22	B	TO ENGINE CONTROL HARNESS
23	B	TO ENGINE CONTROL HARNESS
24	P	TO ENGINE CONTROL HARNESS

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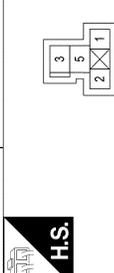
A/T CONTROL SYSTEM

< WIRING DIAGRAM >

[7AT: RE7R01B]

A/T CONTROL SYSTEM CONNECTORS - WITH VK56VD

Connector No.	E12
Connector Name	STOP LAMP RELAY
Connector Type	MS02FL-M2-LC
Connector Color	BLUE



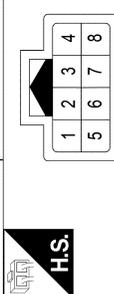
Terminal No.	Color of Wire	Signal Name
1	B	GROUND
2	W	RELAY CONTROL
3	R/G	STOP LAMPS
5	R/Y	BATTERY

Connector No.	E19
Connector Name	WIRE TO WIRE
Connector Type	NS04MW-CS
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1	L	TO ENGINE CONTROL HARNESS
2	W	TO ENGINE CONTROL HARNESS
3	P	TO ENGINE CONTROL HARNESS
4	SB	TO ENGINE CONTROL HARNESS

Connector No.	E28
Connector Name	WIRE TO WIRE
Connector Type	RH08MB
Connector Color	BLACK



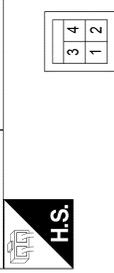
Terminal No.	Color of Wire	Signal Name
1	V	TO ENGINE CONTROL HARNESS
2	G	TO ENGINE CONTROL HARNESS
3	-	TO ENGINE CONTROL HARNESS
4	L	TO ENGINE CONTROL HARNESS
5	R	TO ENGINE CONTROL HARNESS
6	SB	TO ENGINE CONTROL HARNESS
7	L	TO ENGINE CONTROL HARNESS
8	P	TO ENGINE CONTROL HARNESS

Connector No.	E35
Connector Name	WIRE TO WIRE
Connector Type	NS12FW-CS
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1	Y	TO BODY HARNESS
2	V	TO BODY HARNESS
3	L	TO BODY HARNESS
4	W	TO BODY HARNESS
5	R/G	TO BODY HARNESS
6	SB	TO BODY HARNESS
7	P	TO BODY HARNESS
8	L	TO BODY HARNESS
9	SHIELD	TO BODY HARNESS
10	B	TO BODY HARNESS
11	R	TO BODY HARNESS
12	BR	TO BODY HARNESS

Connector No.	E38
Connector Name	STOP LAMP SWITCH
Connector Type	M04FW-LC
Connector Color	WHITE



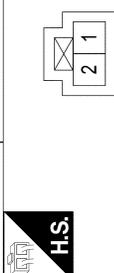
Terminal No.	Color of Wire	Signal Name
1	R/Y	BATTERY
2	W	RELAY CONT. (WITHOUT LED REAR COMBINATION LAMPS)
2	R/G	STOP LAMPS. (WITH LED REAR COMBINATION LAMPS)
3	GR	IGNITION
4	R/B	STOP 2

Connector No.	E70
Connector Name	DIODE-3
Connector Type	24335_C9900
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1	R	ACC
2	BR	ACC

Connector No.	E95
Connector Name	DIODE-4
Connector Type	24335_C9900
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1	Y/R	A/T ECU IGN
2	BR	A/T ECU IGN

Connector No.	E98
Connector Name	TCM (TRANSMISSION CONTROL MODULE) RELAY
Connector Type	MS02FL-M2-LC
Connector Color	BLUE



Terminal No.	Color of Wire	Signal Name
1	B	GROUND
2	BR	IGNITION RELAY CONT
3	Y/R	W/GN
5	P	BATTERY

A/T CONTROL SYSTEM

< WIRING DIAGRAM >

[7AT: RE7R01B]

A/T CONTROL SYSTEM CONNECTORS - WITH VK56VD

Connector No.	E119
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	NS16FW-CS
Connector Color	WHITE

9	8	7	6	5	4	3		
18	17	16	15	14	13	12	11	10

H.S.

Terminal No.	Color of Wire	Signal Name
3	-	-
4	B/R	NP SW
5	L/W	H/LAMP HI RH
6	G	H/LAMP HI LH
7	L	H/LAMP LO LH
8	R/Y	H/LAMP LO RH
9	G/W	FR FOG/L LH
10	-	-
11	P	ETC VB - (WITH CUMMINS 5.0L)
11	O	ETC VB - (WITH VK56VD)
12	W/R	FR FOG/L RH
13	Y/R	A/T ECU IGN
14	G	REVERSE LAMP IGN
15	GR	ABS ECU IGN
16	G	ETC RLY CONT - (WITH CUMMINS 5.0L)
16	V/R	ETC RLY CONT - (WITH VK56VD)
17	L/W	IGN COIL - (WITH CUMMINS 5.0L)
17	W	IGN COIL - (WITH VK56VD)
18	-	-

H.S.

21	20	19
24	23	22

Terminal No.	Color of Wire	Signal Name

19	W/R	STARTER MOTOR
20	L	F/L IGNSW
21	-	-
22	-	-
23	-	-
24	-	-

Connector No.	E123
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	NS08FBR-CS
Connector Color	BROWN

51	50	49		
56	55	54	53	52

H.S.

Terminal No.	Color of Wire	Signal Name
49	Y/B	A/C COMP - (WITH CUMMINS 5.0L)
49	GR/R	A/C COMP - (WITH VK56VD)
50	BR	TRAILER TOW
51	-	-
52	B	S-GND
53	-	-
54	-	-
55	-	-
56	-	-

Connector No.	E124
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	M08FB-LC
Connector Color	BLACK

H.S.

59	58	57
62	61	60

Terminal No.	Color of Wire	Signal Name
57	W/B	RR DEF
58	BR	FUEL PUMP - (WITH CUMMINS 5.0L)

58	B/Y	FUEL PUMP - (WITH VK56VD)
59	-	-
60	-	-
61	-	-
62	B	P GND

Connector No.	E125
Connector Name	ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)
Connector Type	SAZ42FB-SJ24
Connector Color	BLACK

46	45	44	43	42	41	40	39	38	37	36	35	34	33	32			
18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

H.S.

Terminal No.	Color of Wire	Signal Name
1	G	ABS SOL
2	B	GND 1
3	B	GND 2
4	W	MTR POWER 1
5	-	-
6	-	-
7	-	-
8	-	-
9	BR	YG CAN-H
10	LG	YG CAN-L
11	-	-
12	-	-
13	P/B	LRL
14	-	-
15	-	-
16	-	-
17	R/B	STP2
18	GR	IGN 1
19	V	FR SENS-
20	SB	FL SENS+
21	R	RR SENS-
22	V	RL SENS+
23	-	-
24	-	-
25	-	-
26	-	-
27	P	CAN-L
28	-	-
29	-	-
30	-	-
31	-	-

32	-	-
33	LG	FR SENS+
34	LG	FL SENS-
35	BR	RR SENS+
36	P	RL SENS-
37	R/G	STP
38	-	-
39	G	VDC OFF
40	-	-
41	L	CAN-H
42	-	-
43	G/W	HDC ON
44	-	-
45	-	-
46	W	STPO

A
B
C
TM
E
F
G
H
I
J
K
L
M
N
O
P

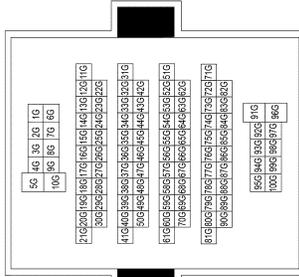
A/T CONTROL SYSTEM

< WIRING DIAGRAM >

[7AT: RE7R01B]

A/T CONTROL SYSTEM CONNECTORS - WITH VK56VD

Connector No.	E152
Connector Name	WIRE TO WIRE
Connector Type	TH80MW-CST6-TM4
Connector Color	WHITE



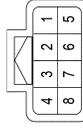
24G	G/B	TO MAIN HARNESS
25G	R/W	TO MAIN HARNESS
26G	R	TO MAIN HARNESS
27G	LG	TO MAIN HARNESS
28G	G/B	TO MAIN HARNESS
29G	G/B	TO MAIN HARNESS
30G	BR/Y	TO MAIN HARNESS
31G	P	TO MAIN HARNESS - (WITH CUMMINS 5.0L)
31G	R	TO MAIN HARNESS - (WITH VK56VD)
32G	P	TO MAIN HARNESS
33G	Y/L	TO MAIN HARNESS
34G	GR	TO MAIN HARNESS
35G	G/R	TO MAIN HARNESS
36G	SB	TO MAIN HARNESS
37G	R/W	TO MAIN HARNESS
38G	BR	TO MAIN HARNESS
39G	BR	TO MAIN HARNESS
40G	-	TO MAIN HARNESS
41G	R/G	TO MAIN HARNESS
42G	O	TO MAIN HARNESS
43G	B	TO MAIN HARNESS - (WITH CUMMINS 5.0L)
43G	G	TO MAIN HARNESS - (WITH VK56VD)
44G	R/Y	TO MAIN HARNESS
45G	G	TO MAIN HARNESS
46G	LG	TO MAIN HARNESS
47G	R	TO MAIN HARNESS
48G	W	TO MAIN HARNESS
49G	-	TO MAIN HARNESS
50G	BR	TO MAIN HARNESS
51G	R	TO MAIN HARNESS
52G	L	TO MAIN HARNESS
53G	W	TO MAIN HARNESS
54G	W	TO MAIN HARNESS
55G	G	TO MAIN HARNESS
56G	W	TO MAIN HARNESS
57G	Y	TO MAIN HARNESS
58G	BG	TO MAIN HARNESS
59G	BG	TO MAIN HARNESS
60G	BG	TO MAIN HARNESS
61G	B	TO MAIN HARNESS
62G	R	TO MAIN HARNESS
63G	R	TO MAIN HARNESS
64G	W/L	TO MAIN HARNESS
65G	W/R	TO MAIN HARNESS
66G	BG	TO MAIN HARNESS
67G	BG	TO MAIN HARNESS
68G	B	TO MAIN HARNESS
69G	Y	TO MAIN HARNESS
70G	L	TO MAIN HARNESS
71G	R/W	TO MAIN HARNESS

Terminal No.	Color of Wire	Signal Name
1G	G	TO MAIN HARNESS
2G	B/R	TO MAIN HARNESS
3G	W/B	TO MAIN HARNESS
4G	BR/W	TO MAIN HARNESS
5G	BR	TO MAIN HARNESS
6G	P	TO MAIN HARNESS - (WITH VK56VD)
6G	R/W	TO MAIN HARNESS - (WITH CUMMINS 5.0L)
7G	Y	TO MAIN HARNESS
8G	G	TO MAIN HARNESS
9G	R	TO MAIN HARNESS
10G	W	TO MAIN HARNESS
11G	R/G	TO MAIN HARNESS
12G	W/B	TO MAIN HARNESS
13G	BR	TO MAIN HARNESS
14G	Y/B	TO MAIN HARNESS
15G	G/W	TO MAIN HARNESS
16G	G	TO MAIN HARNESS
17G	G/Y	TO MAIN HARNESS
18G	G/Y	TO MAIN HARNESS
19G	Y/V	TO MAIN HARNESS
20G	G/Y	TO MAIN HARNESS
21G	B/Y	TO MAIN HARNESS
22G	G/R	TO MAIN HARNESS
23G	Y/R	TO MAIN HARNESS

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10	L/Y	TO ENGINE ROOM HARNESS
11	SB	TO ENGINE ROOM HARNESS
12	L	TO ENGINE ROOM HARNESS
13	W/R	TO ENGINE ROOM HARNESS
14	Y	TO ENGINE ROOM HARNESS
15	B	TO ENGINE ROOM HARNESS
16	B	TO ENGINE ROOM HARNESS
17	R	TO ENGINE ROOM HARNESS
18	B	TO ENGINE ROOM HARNESS
19	B/R	TO ENGINE ROOM HARNESS
20	GR	TO ENGINE ROOM HARNESS
21	V/R	TO ENGINE ROOM HARNESS
22	SHIELD	TO ENGINE ROOM HARNESS
23	SHIELD	TO ENGINE ROOM HARNESS
24	P	TO ENGINE ROOM HARNESS

Connector No.	F19
Connector Name	WIRE TO WIRE
Connector Type	RH08FB
Connector Color	BLACK



Terminal No.	Color of Wire	Signal Name
1	V	TO ENGINE ROOM HARNESS
2	LG	TO ENGINE ROOM HARNESS
3	-	TO ENGINE ROOM HARNESS
4	L	TO ENGINE ROOM HARNESS
5	R	TO ENGINE ROOM HARNESS
6	SB	TO ENGINE ROOM HARNESS
7	L	TO ENGINE ROOM HARNESS
8	P	TO ENGINE ROOM HARNESS

72G	L/W	TO MAIN HARNESS
73G	SHIELD	TO MAIN HARNESS
74G	W	TO MAIN HARNESS
75G	R	TO MAIN HARNESS
76G	R/G	TO MAIN HARNESS
77G	G	TO MAIN HARNESS
78G	W	TO MAIN HARNESS
79G	-	TO MAIN HARNESS
80G	R	TO MAIN HARNESS
81G	L	TO MAIN HARNESS
82G	R	TO MAIN HARNESS
83G	L	TO MAIN HARNESS
84G	L	TO MAIN HARNESS
85G	W/B	TO MAIN HARNESS
86G	B/R	TO MAIN HARNESS
87G	W/B	TO MAIN HARNESS
88G	P	TO MAIN HARNESS
89G	L	TO MAIN HARNESS
90G	G	TO MAIN HARNESS
91G	G	TO MAIN HARNESS
92G	V/W	TO MAIN HARNESS
93G	BR	TO MAIN HARNESS
94G	G	TO MAIN HARNESS
95G	G	TO MAIN HARNESS
96G	W	TO MAIN HARNESS
97G	R	TO MAIN HARNESS
98G	W/B	TO MAIN HARNESS
99G	BR	TO MAIN HARNESS
100G	GR/W	TO MAIN HARNESS

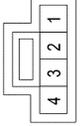
Connector No.	F14
Connector Name	WIRE TO WIRE
Connector Type	TH24FW-NH
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1	L/R	TO ENGINE ROOM HARNESS
2	BR	TO ENGINE ROOM HARNESS
3	V	TO ENGINE ROOM HARNESS
4	L/O	TO ENGINE ROOM HARNESS
5	W	TO ENGINE ROOM HARNESS
6	B/R	TO ENGINE ROOM HARNESS
7	Y/R	TO ENGINE ROOM HARNESS
8	BR	TO ENGINE ROOM HARNESS
9	W/L	TO ENGINE ROOM HARNESS

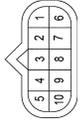
A/T CONTROL SYSTEM CONNECTORS - WITH VK56VD

Connector No.	F33
Connector Name	WIRE TO WIRE
Connector Type	NS04FW-CS
Connector Color	WHITE

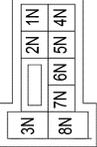



Terminal No.	Color of Wire	Signal Name
1	L	TO ENGINE ROOM HARNESS
2	W	TO ENGINE ROOM HARNESS
3	P	TO ENGINE ROOM HARNESS
4	SB	TO ENGINE ROOM HARNESS

Connector No.	F46
Connector Name	A/T ASSEMBLY (WITH VK56VD)
Connector Type	RK10FG
Connector Color	GREEN

Connector No.	M3
Connector Name	FUSE BLOCK (J/B)
Connector Type	CS06FW-M2
Connector Color	WHITE

Terminal No.	Color of Wire	Signal Name
1N	-	-
2N	W	BATTERY
3N	W	BLOWER FAN RELAY OUT
4N	V	BATTERY
5N	Y	BATTERY
6N	W	BATTERY
7N	L	ACC RELAY OUT
8N	W	IGNITION

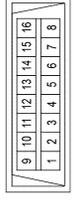
Connector No.	M4
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS16FW-CS
Connector Color	WHITE




Terminal No.	Color of Wire	Signal Name
1P	R	IGNITION
2P	Y	IGNITION
3P	G	IGNITION RELAY OUT
4P	B/W	RR DEF RLY
5P	B/W	RR DEF RLY
6P	O	RR DEF RLY OUT
7P	G	IGNITION
8P	W	IGNITION
9P	L	BATTERY
10P	-	-
11P	-	-
12P	-	-
13P	R	BATTERY
14P	Y	BATTERY
15P	Y/LG	BATTERY

16P	W	BLOWER FAN RELAY OUT
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Connector No.	M22
Connector Name	DATA LINK CONNECTOR
Connector Type	BD16FW
Connector Color	WHITE

Terminal No.	Color of Wire	Signal Name
1	-	-
2	-	-
3	LG	M-CAN-L
4	B	BODY GND
5	B	ENG GND
6	L	CAN-H
7	BR	K-LINE
8	G/R	IGN SW
9	-	-
10	-	-
11	SB	M-CAN-H
12	R	CAN-L
13	L	CAN-H
14	P	CAN-L
15	-	-
16	Y	BATTERY

Connector No.	M24
Connector Name	COMBINATION METER (WITH TYPE A)
Connector Type	TH40FW-NH
Connector Color	WHITE




Terminal No.	Color of Wire	Signal Name
1	B	GND(STRG/SATELLITE SW GND)
2	-	-
3	-	-
4	-	-

5	-	-
6	-	-
7	V	SECURITY
8	-	-
9	BG	AS BELT SW (W/O ODS)
10	LG	TOW MODE SW
11	BR	CHG
12	BR	LED HEAD LAMP (R)
13	W	LED HEAD LAMP (L)
14	R	ACC SW
15	W	OUTSIDE TEMP SENSOR (WITH VK56VD)
16	O	AIR BAG
17	-	-
18	P	TRIP RESET SW
19	-	-
20	R	OUTSIDE TEMP GND (WITH VK56VD)
21	-	-
22	P	STRG SW A
23	R	STRG SW B
24	W	WASHER SW
25	-	-
26	G	PKB SW
27	P/L	AS BELT SW (WITH ODS)
28	O/B	DR BELT SW
29	-	-
30	-	-
31	-	-
32	BR	AT SHIFT UP
33	W/W	AT SHIFT DOWN
34	-	-
35	-	-
36	W	ILL UP SW
37	R	ILL DOWN SW
38	G	8P/R OUTPUT
39	-	-
40	-	-

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A/T CONTROL SYSTEM

< WIRING DIAGRAM >

[7AT: RE7R01B]

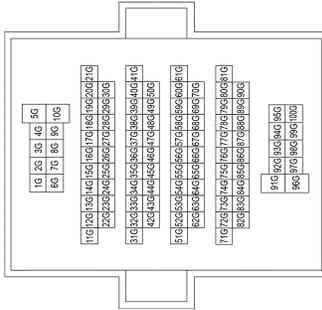
A/T CONTROL SYSTEM CONNECTORS - WITH VK56VD

Connector No.	M25
Connector Name	COMBINATION METER (WITH TYPE A)
Connector Type	TH12FW-NH
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
41	W	IGN
42	R	BAT
43	Y/V	FUEL SENSOR GND
44	GR	ILL CONT OUTPUT
45	P	CAN-L
46	L	CAN-H
47	B	G1
48	BR/Y	FUEL SENSOR
49	-	-
50	-	-
51	LG	M CAN-L
52	SB	M CAN-H

Connector No.	M31
Connector Name	WIRE TO WIRE
Connector Type	TH80FW-CS16-TM4
Connector Color	WHITE

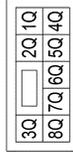


Terminal No.	Color of Wire	Signal Name
1G	G	TO ENGINE ROOM HARNESS
2G	B/R	TO ENGINE ROOM HARNESS
3G	W	TO ENGINE ROOM HARNESS
4G	BR/W	TO ENGINE ROOM HARNESS
5G	-	TO ENGINE ROOM HARNESS
6G	R/W	TO ENGINE ROOM HARNESS
7G	Y	TO ENGINE ROOM HARNESS
8G	G	TO ENGINE ROOM HARNESS
9G	R	TO ENGINE ROOM HARNESS
10G	W	TO ENGINE ROOM HARNESS
11G	R/G	TO ENGINE ROOM HARNESS
12G	W/B	TO ENGINE ROOM HARNESS
13G	BR	TO ENGINE ROOM HARNESS
14G	Y/B	TO ENGINE ROOM HARNESS
15G	G/W	TO ENGINE ROOM HARNESS
16G	G	TO ENGINE ROOM HARNESS
17G	O	TO ENGINE ROOM HARNESS
18G	G/Y	TO ENGINE ROOM HARNESS
19G	Y/V	TO ENGINE ROOM HARNESS
20G	G/Y	TO ENGINE ROOM HARNESS
21G	B/Y	TO ENGINE ROOM HARNESS
22G	G/R	TO ENGINE ROOM HARNESS
23G	Y/R	TO ENGINE ROOM HARNESS
24G	G/B	TO ENGINE ROOM HARNESS
25G	R/W	TO ENGINE ROOM HARNESS
26G	R	TO ENGINE ROOM HARNESS

27G	LG	TO ENGINE ROOM HARNESS
28G	G/B	TO ENGINE ROOM HARNESS
29G	G/B	TO ENGINE ROOM HARNESS
30G	BR/Y	TO ENGINE ROOM HARNESS
31G	R	TO ENGINE ROOM HARNESS
32G	R	TO ENGINE ROOM HARNESS
33G	Y/L	TO ENGINE ROOM HARNESS
34G	GR	TO ENGINE ROOM HARNESS
35G	G/R	TO ENGINE ROOM HARNESS
36G	SB	TO ENGINE ROOM HARNESS
37G	R/W	TO ENGINE ROOM HARNESS
38G	BR	TO ENGINE ROOM HARNESS
39G	BR	TO ENGINE ROOM HARNESS
40G	-	TO ENGINE ROOM HARNESS
41G	R/G	TO ENGINE ROOM HARNESS
42G	O	TO ENGINE ROOM HARNESS
43G	G	TO ENGINE ROOM HARNESS
44G	R/Y	TO ENGINE ROOM HARNESS
45G	G	TO ENGINE ROOM HARNESS
46G	LG	TO ENGINE ROOM HARNESS
47G	R	TO ENGINE ROOM HARNESS
48G	W	TO ENGINE ROOM HARNESS
49G	-	TO ENGINE ROOM HARNESS
50G	BR	TO ENGINE ROOM HARNESS
51G	R	TO ENGINE ROOM HARNESS
52G	L	TO ENGINE ROOM HARNESS
53G	W	TO ENGINE ROOM HARNESS
54G	W	TO ENGINE ROOM HARNESS
55G	G	TO ENGINE ROOM HARNESS
56G	W	TO ENGINE ROOM HARNESS
57G	Y	TO ENGINE ROOM HARNESS
58G	BG	TO ENGINE ROOM HARNESS
59G	BG	TO ENGINE ROOM HARNESS
60G	BG	TO ENGINE ROOM HARNESS
61G	O	TO ENGINE ROOM HARNESS
62G	W	TO ENGINE ROOM HARNESS
63G	O	TO ENGINE ROOM HARNESS
64G	W/L	TO ENGINE ROOM HARNESS
65G	W/R	TO ENGINE ROOM HARNESS
66G	BG	TO ENGINE ROOM HARNESS
67G	O	TO ENGINE ROOM HARNESS
68G	B	TO ENGINE ROOM HARNESS
69G	Y	TO ENGINE ROOM HARNESS
70G	L	TO ENGINE ROOM HARNESS
71G	R/W	TO ENGINE ROOM HARNESS
72G	L/W	TO ENGINE ROOM HARNESS
73G	SHIELD	TO ENGINE ROOM HARNESS
74G	W	TO ENGINE ROOM HARNESS
75G	R	TO ENGINE ROOM HARNESS
76G	R/G	TO ENGINE ROOM HARNESS
77G	BG	TO ENGINE ROOM HARNESS
78G	P	TO ENGINE ROOM HARNESS
79G	-	TO ENGINE ROOM HARNESS

80G	R	TO ENGINE ROOM HARNESS
81G	L	TO ENGINE ROOM HARNESS
82G	R	TO ENGINE ROOM HARNESS
83G	L	TO ENGINE ROOM HARNESS
84G	L	TO ENGINE ROOM HARNESS
85G	W	TO ENGINE ROOM HARNESS
86G	B/R	TO ENGINE ROOM HARNESS
87G	W	TO ENGINE ROOM HARNESS
88G	G	TO ENGINE ROOM HARNESS
89G	P	TO ENGINE ROOM HARNESS
90G	G	TO ENGINE ROOM HARNESS
91G	P	TO ENGINE ROOM HARNESS
92G	V/W	TO ENGINE ROOM HARNESS
93G	BR	TO ENGINE ROOM HARNESS
94G	B	TO ENGINE ROOM HARNESS
95G	G	TO ENGINE ROOM HARNESS
96G	R	TO ENGINE ROOM HARNESS
97G	R	TO ENGINE ROOM HARNESS
98G	W/B	TO ENGINE ROOM HARNESS
99G	R	TO ENGINE ROOM HARNESS
100G	GR/W	TO ENGINE ROOM HARNESS

Connector No.	M39
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS08FW-CS
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1Q	-	-
2Q	O/L	IGNITION
3Q	-	-
4Q	-	-
5Q	-	-
6Q	R/W	BATTERY
7Q	R/W	IGNITION
8Q	-	-

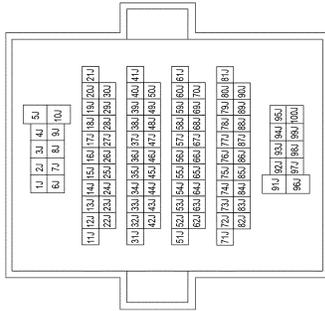
A/T CONTROL SYSTEM

< WIRING DIAGRAM >

[7AT: RE7R01B]

A/T CONTROL SYSTEM CONNECTORS - WITH VK56VD

Connector No.	M40
Connector Name	WIRE TO WIRE
Connector Type	TH80FW-CS16-TM4
Connector Color	WHITE



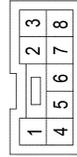
28J	L	TO BODY HARNESS
29J	G/O	TO BODY HARNESS
30J	SB	TO BODY HARNESS
31J	L/G	TO BODY HARNESS
32J	R	TO BODY HARNESS
33J	BG	TO BODY HARNESS
34J	Y	TO BODY HARNESS
35J	P	TO BODY HARNESS
36J	G/R	TO BODY HARNESS
37J	LG	TO BODY HARNESS
38J	SB	TO BODY HARNESS
39J	Y	TO BODY HARNESS
40J	SB	TO BODY HARNESS
41J	L	TO BODY HARNESS
42J	L	TO BODY HARNESS
43J	W	TO BODY HARNESS
44J	BR	TO BODY HARNESS
45J	BG	TO BODY HARNESS
46J	P	TO BODY HARNESS
47J	O	TO BODY HARNESS
48J	V	TO BODY HARNESS
49J	BR	TO BODY HARNESS
50J	G/W	TO BODY HARNESS
51J	-	TO BODY HARNESS
52J	SHIELD	TO BODY HARNESS
53J	R	TO BODY HARNESS
54J	L	TO BODY HARNESS
55J	R	TO BODY HARNESS
56J	W	TO BODY HARNESS
57J	R	TO BODY HARNESS
58J	B	TO BODY HARNESS
59J	-	TO BODY HARNESS
60J	SHIELD	TO BODY HARNESS
61J	G	TO BODY HARNESS
62J	-	TO BODY HARNESS
63J	R/W	TO BODY HARNESS
64J	L/W	TO BODY HARNESS
65J	SHIELD	TO BODY HARNESS
66J	B	TO BODY HARNESS
67J	SHIELD	TO BODY HARNESS
68J	W	TO BODY HARNESS
69J	SHIELD	TO BODY HARNESS
70J	B/R	TO BODY HARNESS
71J	L/W	TO BODY HARNESS
72J	-	TO BODY HARNESS
73J	-	TO BODY HARNESS
74J	SHIELD	TO BODY HARNESS
75J	R	TO BODY HARNESS
76J	O	TO BODY HARNESS
77J	SHIELD	TO BODY HARNESS
78J	W	TO BODY HARNESS
79J	B	TO BODY HARNESS
80J	W	TO BODY HARNESS

Terminal No.	Color of Wire	Signal Name
1J	G	TO BODY HARNESS
2J	R/Y	TO BODY HARNESS
3J	L	TO BODY HARNESS
4J	L/B	TO BODY HARNESS
5J	B	TO BODY HARNESS
6J	BR	TO BODY HARNESS
7J	BG	TO BODY HARNESS
8J	SB	TO BODY HARNESS
9J	BR	TO BODY HARNESS
10J	R	TO BODY HARNESS
11J	O/B	TO BODY HARNESS
12J	L	TO BODY HARNESS
13J	W	TO BODY HARNESS
14J	Y	TO BODY HARNESS
15J	-	TO BODY HARNESS
16J	R	TO BODY HARNESS
17J	G	TO BODY HARNESS
18J	SB	TO BODY HARNESS
19J	O	TO BODY HARNESS
20J	O/B	TO BODY HARNESS
21J	Y	TO BODY HARNESS
22J	P	TO BODY HARNESS
23J	W	TO BODY HARNESS
24J	W/R	TO BODY HARNESS
25J	P	TO BODY HARNESS
26J	L	TO BODY HARNESS
27J	R	TO BODY HARNESS

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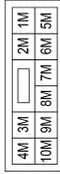
81J	SHIELD	TO BODY HARNESS
82J	L/R	TO BODY HARNESS
83J	-	TO BODY HARNESS
84J	-	TO BODY HARNESS
85J	W	TO BODY HARNESS
86J	G	TO BODY HARNESS
87J	W	TO BODY HARNESS
88J	SHIELD	TO BODY HARNESS
89J	R	TO BODY HARNESS
90J	L	TO BODY HARNESS
91J	L/B	TO BODY HARNESS
92J	SB	TO BODY HARNESS
93J	B	TO BODY HARNESS
94J	LG	TO BODY HARNESS
95J	L	TO BODY HARNESS
96J	G	TO BODY HARNESS
97J	B/Y	TO BODY HARNESS
98J	L/B	TO BODY HARNESS
99J	W/L	TO BODY HARNESS
100J	Y	TO BODY HARNESS

Connector No.	M68
Connector Name	A/T SHIFT SELECTOR
Connector Type	TK08FW
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1	B	GND
2	B	GND
3	L/R	SHIFT LOCK SOL OUT
4	R	SHIFT P
5	R/B	AT DEVICE OUT
6	LG	TOW MODE SW
7	BR	SHIFT UP
8	V/W	SHIFT DOWN

Connector No.	M69
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS10FW-CS
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1M	GR	IGNITION
2M	-	-
3M	-	-
4M	-	-
5M	B/Y	BATTERY
6M	R/W	TAIL LAMP 2
7M	-	-
8M	-	-
9M	-	-
10M	W/R	IGNITION

A B C TM E F G H I J K L M N O P

A/T CONTROL SYSTEM

< WIRING DIAGRAM >

[7AT: RE7R01B]

A/T CONTROL SYSTEM CONNECTORS - WITH VK56VD

Connector No.	M70
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS16FBR-CS
Connector Color	BROWN




Terminal No.	Color of Wire	Signal Name
1R	L	TAIL LAMP 2
2R	G/R	IGNITION
3R	Y/R	BATTERY
4R	-	-
5R	W	BATTERY
6R	G/W	ACCESSORY
7R	-	-
8R	-	-
9R	-	-
10R	W	BATTERY
11R	-	-
12R	BG	BATTERY
13R	B	ACCESSORY
14R	G/Y	BATTERY
15R	Y	BATTERY
16R	G/R	ACCESSORY



Connector No.	M73
Connector Name	BACK-UP LAMP RELAY
Connector Type	M06FBR-R-LC
Connector Color	BROWN



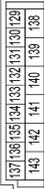
Terminal No.	Color of Wire	Signal Name
1	G	GROUND
2	R	REV LAMP RELAY CONTROL
3	G	IGNITION
5	G/W	REVERSE
6	W/B	BATTERY
7	Y/R	REVERSE

Connector No.	M80
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	TH24FB-NH
Connector Color	BLACK




Terminal No.	Color of Wire	Signal Name
105	G/Y	FR FLASHER
106	-	-
107	W	LOW SIDE START SW LED
108	L/R	SHIFT LOCK SOLENOID OUT
109	-	-
110	-	-
111	P	ACC LED
112	-	-
113	L	ACC RELAY OUT
114	W	AS DOOR ANT A
115	BG	AS DOOR ANT B
116	W	ROOM ANT 2 A
117	G/B	FL FLASHER
118	-	-
119	R	RF NIMCOO
120	-	-
121	G	DR DOOR ANT B
122	P	DR DOOR ANT A
123	W	ROOM ANT 1 A
124	G	ROOM ANT 1 B
125	-	-
126	P	IMMO START BUTTON ANT B
127	BG	IMMO START BUTTON ANT A
128	B	ROOM ANT 2 B

Connector No.	M81
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	FEA09FW-FHA6-SA
Connector Color	WHITE

Terminal No.	Color of Wire	Signal Name
129	R/G	BATTERY SAVER OUT
130	LG	SUPER LOCK/DOOR UNLOCK AS
131	W	BAT BCM FUSE
132	Y	DOOR LOCK AS/RR/L
133	BR	DOOR UNLOCK AS/RR/L
134	B	GND2
135	O	DOOR LOCK DR/AS/FL
136	L	ROOM LAMP CONT
137	V	DOOR UNLOCK DR/AS/FL
138	V	BAT REAR DOOR
139	W	BAT-POWER F/L
140	LG	P/W POWER SUPPLY IGN
141	V	P/W POWER SUPPLY BAT
142	Y	BAT FRONT DOOR
143	B	GND1

Connector No.	M88
Connector Name	ACCESSORY RELAY-2
Connector Type	MS02FL-M2-LC
Connector Color	BLUE

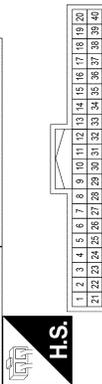



Terminal No.	Color of Wire	Signal Name
1	B	GROUND
2	L	RELAY CONTROL
3	R	RELAY OUTPUT
5	W	BATTERY

A/T CONTROL SYSTEM CONNECTORS - WITH VK56VD

39	-	-
40	GR	ILL CONT OUT

Connector No.	M163
Connector Name	COMBINATION METER (WITH TYPE B)
Connector Type	TH40FW-NH
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1	B	GND (ILL)
2	B	GND (CIRCUIT)
3	B	GND (POWER)
4	-	-
5	-	-
6	R	BAT
7	V	SECURITY
8	W	IGN
9	BG	AS BELT SW (W/O ODS)
10	LG	TOW MODE SW
11	BR	CHG
12	B	SATELLITE SW GND
13	B	STRG SW GND
14	R	ACC
15	W	OUTSIDE TEMP SENSOR
16	O	AIR BAG
17	-	-
18	P	TRIP RESET SW
19	-	-
20	R	OUTSIDE TEMP GND
21	-	-
22	P	STRG SW A
23	R	STRG SW B
24	W	WASHER SW
25	-	-
26	G	PXB SW
27	P/L	AS BELT SW (WITH ODS)
28	O/B	DR BELT SW
29	-	-
30	Y/V	FUEL SENSOR GND
31	BR/Y	FUEL SENSOR
32	BR	AT SHIFT UP
33	V/W	AT SHIFT DOWN
34	L	CAN-H
35	P	CAN-L
36	W	ILL UP SW
37	R	ILL DOWN SW
38	G	8P/OUTPUT

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A/T SHIFT LOCK SYSTEM

< WIRING DIAGRAM >

[7AT: RE7R01B]

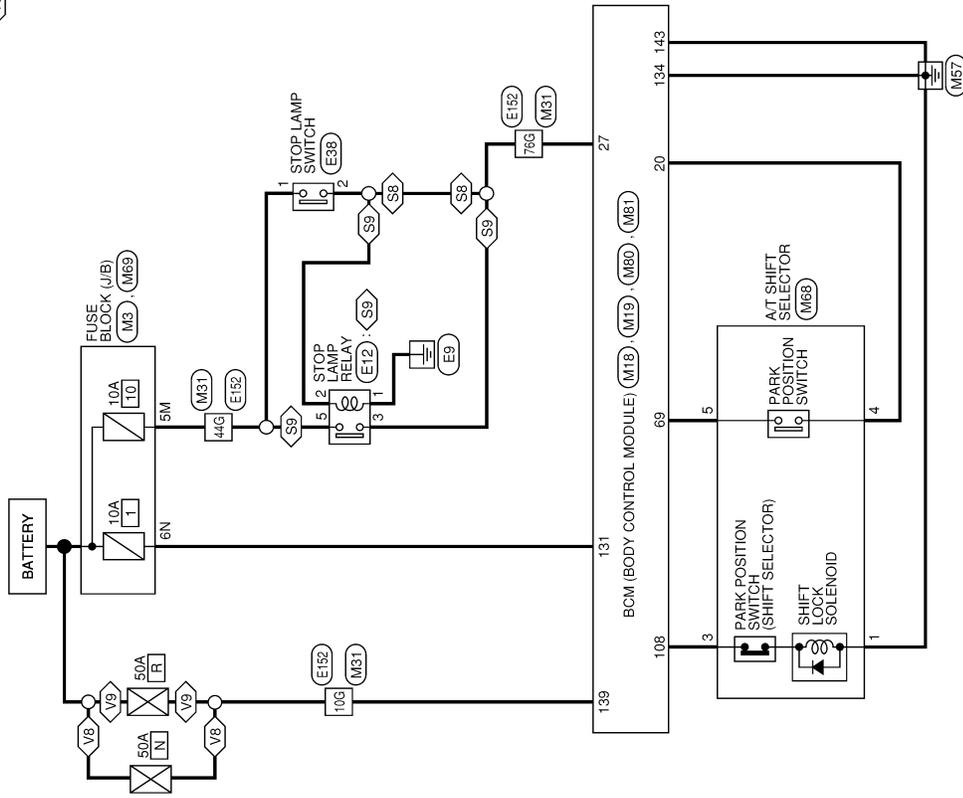
A/T SHIFT LOCK SYSTEM

Wiring Diagram

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- ⬡ S8 : WITH LED REAR COMBINATION LAMPS
- ⬡ S9 : WITHOUT LED REAR COMBINATION LAMPS
- ⬡ V8 : WITH VK56VD
- ⬡ V9 : WITH Cummins 5.0L

A/T SHIFT LOCK SYSTEM



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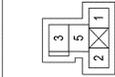
A/T SHIFT LOCK SYSTEM

< WIRING DIAGRAM >

[7AT: RE7R01B]

A/T SHIFT LOCK SYSTEM CONNECTORS

Connector No.	E12
Connector Name	STOP LAMP RELAY
Connector Type	M502FL-M2-LC
Connector Color	BLUE



H.S.

Terminal No.	Color of Wire	Signal Name
1	B	GROUND
2	W	RELAY CONTROL
3	R/G	STOP LAMPS
5	R/Y	BATTERY

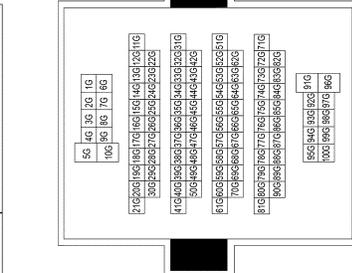
Connector No.	E38
Connector Name	STOP LAMP SWITCH
Connector Type	M04FW-LC
Connector Color	WHITE



H.S.

Terminal No.	Color of Wire	Signal Name
1	R/Y	BATTERY
2	W	RELAY CONT. - (WITHOUT LED REAR COMBINATION LAMPS)
2	R/G	STOP LAMPS - (WITH LED REAR COMBINATION LAMPS)
3	GR	IGNITION
4	R/B	STOP 2

Connector No.	E152
Connector Name	WIRE TO WIRE
Connector Type	TH80MW-CS16-TM4
Connector Color	WHITE

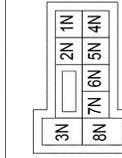


H.S.

Terminal No.	Color of Wire	Signal Name
1G	G	TO MAIN HARNESS
2G	B/R	TO MAIN HARNESS
3G	W/B	TO MAIN HARNESS
4G	BR/W	TO MAIN HARNESS
5G	BR	TO MAIN HARNESS
6G	P	TO MAIN HARNESS - (WITH V66VD)
6G	R/W	TO MAIN HARNESS - (WITH CUMMINS 5.0L)
7G	Y	TO MAIN HARNESS
8G	G	TO MAIN HARNESS
9G	R	TO MAIN HARNESS
10G	W	TO MAIN HARNESS
11G	R/G	TO MAIN HARNESS
12G	W/B	TO MAIN HARNESS
13G	BR	TO MAIN HARNESS
14G	Y/B	TO MAIN HARNESS
15G	G/W	TO MAIN HARNESS
16G	G	TO MAIN HARNESS
17G	G/Y	TO MAIN HARNESS
18G	G/Y	TO MAIN HARNESS
19G	Y/W	TO MAIN HARNESS
20G	G/Y	TO MAIN HARNESS
21G	B/R	TO MAIN HARNESS
22G	G/R	TO MAIN HARNESS
23G	Y/R	TO MAIN HARNESS

72G	L/W	TO MAIN HARNESS
73G	SHIELD	TO MAIN HARNESS
74G	W	TO MAIN HARNESS
75G	R	TO MAIN HARNESS
76G	R/G	TO MAIN HARNESS
77G	G	TO MAIN HARNESS
78G	W	TO MAIN HARNESS
79G	-	TO MAIN HARNESS
80G	R	TO MAIN HARNESS
81G	L	TO MAIN HARNESS
82G	R	TO MAIN HARNESS
83G	L	TO MAIN HARNESS
84G	L	TO MAIN HARNESS
85G	W/B	TO MAIN HARNESS
86G	B/R	TO MAIN HARNESS
87G	W/B	TO MAIN HARNESS
88G	P	TO MAIN HARNESS
89G	L	TO MAIN HARNESS
90G	G	TO MAIN HARNESS
91G	G	TO MAIN HARNESS
92G	W/W	TO MAIN HARNESS
93G	BR	TO MAIN HARNESS
94G	G	TO MAIN HARNESS
95G	G	TO MAIN HARNESS
96G	W	TO MAIN HARNESS
97G	R	TO MAIN HARNESS
98G	W/B	TO MAIN HARNESS
99G	BR	TO MAIN HARNESS
100G	GR/W	TO MAIN HARNESS

Connector No.	M3
Connector Name	FUSE BLOCK (J/B)
Connector Type	CS06FW-M2
Connector Color	WHITE



H.S.

Terminal No.	Color of Wire	Signal Name
1N	-	-
2N	W	BATTERY
3N	W	BLOWER FAN RELAY OUT
4N	V	BATTERY
5N	Y	BATTERY
6N	W	BATTERY
7N	L	ACC RELAY OUT
8N	W	IGNITION

A B C TM E F G H I J K L M N O P

A/T SHIFT LOCK SYSTEM

< WIRING DIAGRAM >

[7AT: RE7R01B]

A/T SHIFT LOCK SYSTEM CONNECTORS

Connector No.	M18
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	TH40FG-NH
Connector Color	GREEN

20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21

H.S.

39	B/R	SHIFT N/P
40	-	-

Connector No.	M19
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	TH40FB-NH
Connector Color	BLACK

60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41
80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61

H.S.

75	L/W	COMBI SW OUT 5
76	P	COMBI SW OUT 4
77	L	COMBI SW OUT 3
78	O/B	COMBI SW OUT 2
79	R/W	COMBI SW OUT 1
80	-	-

Terminal No.	Color of Wire	Signal Name
1	G	ENG START SW NO ESCL
2	-	-
3	R	ALL POWER SUPPLY SV
4	W/R	ALL SIGNAL
5	-	-
6	-	-
7	-	-
8	-	-
9	-	-
10	SB	COMBI SW IN 5
11	G/Y	COMBI SW IN 4
12	Y	COMBI SW IN 3
13	G/B	COMBI SW IN 2
14	V	COMBI SW IN 1
15	-	-
16	-	-
17	P	GND RF ALL
18	V	SECURITY INDICATOR
19	-	-
20	R	SHIFT P
21	R/W	STEP LAMP CONT
22	-	-
23	Y	AIRCON SW
24	-	-
25	W	BRAKE SW FUSE
26	L	SHORT IN PIN INPUT
27	P/G	BRAKE SW LAMP
28	-	-
29	W	BLOWER FAN SW
30	P	DR DOOR LOCK STATUS
31	-	-
32	Y	REAR DEFOGGER SW
33	-	-
34	-	-
35	P/G	REVERSE SW
36	W/B	HAZARD SW
37	-	-
38	-	-

Terminal No.	Color of Wire	Signal Name
41	Y/L	TRAILER LIGHT CHECK RELAY OUT
42	R/Y	CARGO LAMP OUT
43	-	-
44	-	-
45	-	-
46	-	-
47	-	-
48	R	HIGH SIDE START SW LED
49	-	-
50	-	-
51	-	-
52	W	AUDIO DONGLE
53	-	-
54	W/L	PW L/ART
55	W/B	LAR SENSOR K-LINE
56	-	-
57	-	-
58	-	-
59	P	CAN-L
60	L	CAN-H
61	O	REAR DEFOGGER RELAY OUT
62	W	STARTER RELAY OUT
63	-	-
64	P	BUZZER OUT
65	-	-
66	W	BLOWER FAN RELAY OUT
67	G	IGN ELEC RELAY OUT 2
68	L	MR OUTPUT
69	P/B	AT DEVICE OUT
70	P	IGN USM OUT 1
71	O	DR REQUEST SW
72	G	AS REQUEST SW
73	-	-
74	-	-

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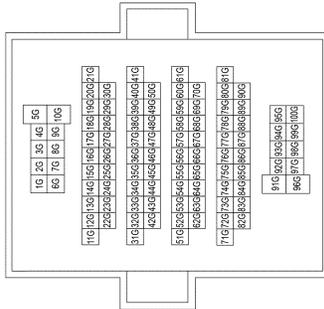
A/T SHIFT LOCK SYSTEM

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[7AT: RE7R01B]

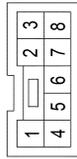
A/T SHIFT LOCK SYSTEM CONNECTORS

Connector No.	M31
Connector Name	WIRE TO WIRE
Connector Type	TH80FW-CS16-TM4
Connector Color	WHITE



80G	R	TO ENGINE ROOM HARNESS
81G	L	TO ENGINE ROOM HARNESS
82G	R	TO ENGINE ROOM HARNESS
83G	L	TO ENGINE ROOM HARNESS
84G	L	TO ENGINE ROOM HARNESS
85G	W	TO ENGINE ROOM HARNESS
86G	B/R	TO ENGINE ROOM HARNESS
87G	W	TO ENGINE ROOM HARNESS
88G	G	TO ENGINE ROOM HARNESS
89G	P	TO ENGINE ROOM HARNESS
90G	P	TO ENGINE ROOM HARNESS
91G	P	TO ENGINE ROOM HARNESS
92G	V/W	TO ENGINE ROOM HARNESS
93G	BR	TO ENGINE ROOM HARNESS
94G	B	TO ENGINE ROOM HARNESS
95G	G	TO ENGINE ROOM HARNESS
96G	R	TO ENGINE ROOM HARNESS
97G	R	TO ENGINE ROOM HARNESS
98G	W/B	TO ENGINE ROOM HARNESS
99G	R	TO ENGINE ROOM HARNESS
100G	GR/W	TO ENGINE ROOM HARNESS

Connector No.	M68
Connector Name	A/T SHIFT SELECTOR
Connector Type	TK08FW
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
1	B	GND
2	B	GND
3	L/R	SHIFT LOCK SOL OUT
4	R	SHIFT P
5	R/B	AT DEVICE OUT
6	LG	TOW MODE SW
7	BR	SHIFT UP
8	V/W	SHIFT DOWN

27G	LG	TO ENGINE ROOM HARNESS
28G	G/B	TO ENGINE ROOM HARNESS
29G	G/B	TO ENGINE ROOM HARNESS
30G	BR/Y	TO ENGINE ROOM HARNESS
31G	R	TO ENGINE ROOM HARNESS
32G	R	TO ENGINE ROOM HARNESS
33G	Y/L	TO ENGINE ROOM HARNESS
34G	GR	TO ENGINE ROOM HARNESS
35G	G/R	TO ENGINE ROOM HARNESS
36G	SB	TO ENGINE ROOM HARNESS
37G	R/W	TO ENGINE ROOM HARNESS
38G	BR	TO ENGINE ROOM HARNESS
39G	BR	TO ENGINE ROOM HARNESS
40G	-	TO ENGINE ROOM HARNESS
41G	R/G	TO ENGINE ROOM HARNESS
42G	O	TO ENGINE ROOM HARNESS
43G	G	TO ENGINE ROOM HARNESS
44G	R/Y	TO ENGINE ROOM HARNESS
45G	G	TO ENGINE ROOM HARNESS
46G	LG	TO ENGINE ROOM HARNESS
47G	R	TO ENGINE ROOM HARNESS
48G	W	TO ENGINE ROOM HARNESS
49G	-	TO ENGINE ROOM HARNESS
50G	BR	TO ENGINE ROOM HARNESS
51G	R	TO ENGINE ROOM HARNESS
52G	L	TO ENGINE ROOM HARNESS
53G	W	TO ENGINE ROOM HARNESS
54G	W	TO ENGINE ROOM HARNESS
55G	G	TO ENGINE ROOM HARNESS
56G	W	TO ENGINE ROOM HARNESS
57G	Y	TO ENGINE ROOM HARNESS
58G	BG	TO ENGINE ROOM HARNESS
59G	BG	TO ENGINE ROOM HARNESS
60G	BG	TO ENGINE ROOM HARNESS
61G	O	TO ENGINE ROOM HARNESS
62G	W	TO ENGINE ROOM HARNESS
63G	O	TO ENGINE ROOM HARNESS
64G	W/L	TO ENGINE ROOM HARNESS
65G	W/R	TO ENGINE ROOM HARNESS
66G	BG	TO ENGINE ROOM HARNESS
67G	O	TO ENGINE ROOM HARNESS
68G	B	TO ENGINE ROOM HARNESS
69G	Y	TO ENGINE ROOM HARNESS
70G	L	TO ENGINE ROOM HARNESS
71G	R/W	TO ENGINE ROOM HARNESS
72G	L/W	TO ENGINE ROOM HARNESS
73G	SHIELD	TO ENGINE ROOM HARNESS
74G	W	TO ENGINE ROOM HARNESS
75G	R	TO ENGINE ROOM HARNESS
76G	R/G	TO ENGINE ROOM HARNESS
77G	BG	TO ENGINE ROOM HARNESS
78G	P	TO ENGINE ROOM HARNESS
79G	-	TO ENGINE ROOM HARNESS

Terminal No.	Color of Wire	Signal Name
1G	G	TO ENGINE ROOM HARNESS
2G	B/R	TO ENGINE ROOM HARNESS
3G	W	TO ENGINE ROOM HARNESS
4G	BR/W	TO ENGINE ROOM HARNESS
5G	-	TO ENGINE ROOM HARNESS
6G	R/W	TO ENGINE ROOM HARNESS
7G	Y	TO ENGINE ROOM HARNESS
8G	G	TO ENGINE ROOM HARNESS
9G	R	TO ENGINE ROOM HARNESS
10G	W	TO ENGINE ROOM HARNESS
11G	R/G	TO ENGINE ROOM HARNESS
12G	W/B	TO ENGINE ROOM HARNESS
13G	BR	TO ENGINE ROOM HARNESS
14G	Y/B	TO ENGINE ROOM HARNESS
15G	G/W	TO ENGINE ROOM HARNESS
16G	G	TO ENGINE ROOM HARNESS
17G	O	TO ENGINE ROOM HARNESS
18G	G/Y	TO ENGINE ROOM HARNESS
19G	V/W	TO ENGINE ROOM HARNESS
20G	G/Y	TO ENGINE ROOM HARNESS
21G	B/Y	TO ENGINE ROOM HARNESS
22G	G/R	TO ENGINE ROOM HARNESS
23G	Y/R	TO ENGINE ROOM HARNESS
24G	G/B	TO ENGINE ROOM HARNESS
25G	R/W	TO ENGINE ROOM HARNESS
26G	R	TO ENGINE ROOM HARNESS

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A/T SHIFT LOCK SYSTEM

< WIRING DIAGRAM >

[7AT: RE7R01B]

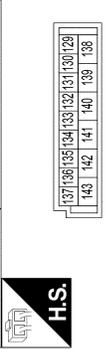
A/T SHIFT LOCK SYSTEM CONNECTORS

Connector No.	M80
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	TH24FB-NH
Connector Color	BLACK



H.S.

Connector No.	M81
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	FEA09FW-FHAG-SA
Connector Color	WHITE



H.S.

Terminal No.	Color of Wire	Signal Name
105	G/Y	FR FLASHER
106	-	-
107	W	LOW SIDE START SW LED
108	L/R	SHIFT LOCK SOLENOID OUT
109	-	-
110	-	-
111	P	ACC LED
112	-	-
113	L	ACC RELAY OUT
114	W	AS DOOR ANT A
115	B/G	AS DOOR ANT B
116	W	ROOM ANT 2 A
117	G/B	FL FLASHER
118	-	-
119	R	RF NIMCOO
120	-	-
121	G	DR DOOR ANT B
122	P	DR DOOR ANT A
123	W	ROOM ANT 1 A
124	G	ROOM ANT 1 B
125	-	-
126	P	IMMO START BUTTON ANT B
127	B/G	IMMO START BUTTON ANT A
128	B	ROOM ANT 2 B

Terminal No.	Color of Wire	Signal Name
129	R/G	BATTERY SAVER OUT
130	LG	SUPER LOCK/DOOR UNLOCK AS
131	W	BAT BCM FUSE
132	Y	DOOR LOCK AS/RR/RL
133	BR	DOOR UNLOCK AS/RR/RL
134	B	GND2
135	O	DOOR LOCK DR/AS/FL
136	L	ROOM LAMP CONT
137	V	DOOR UNLOCK DR/AS/FL
138	V	BAT REAR DOOR
139	W	BAT-POWER F/L
140	LG	P/W POWER SUPPLY IGN
141	V	P/W POWER SUPPLY BAT
142	Y	BAT FRONT DOOR
143	B	GND1

BASIC INSPECTION

DIAGNOSIS AND REPAIR WORK FLOW

Work Flow

INFOID:0000000014419157

1.OBTAIN INFORMATION ABOUT SYMPTOM

Refer to [TM-354, "Diagnostic Work Sheet"](#) and interview the customer to obtain the malfunction information (conditions and environment when the malfunction occurred) as much as possible when the customer brings in the vehicle.

>> GO TO 2.

2.CHECK DTC

1. Before checking the malfunction, check whether any DTC exists.
2. If DTC exists, perform the following operations.
 - Record the DTC and freeze frame data. (Print out the data using CONSULT and affix them to the Work Order Sheet.)
 - Erase DTCs.
 - Check the relationship between the cause that is clarified with DTC and the malfunction information described by the customer. [TM-445, "Symptom Table"](#) is effective.
3. Check the information of related service bulletins and others also.

Do malfunction information and DTC exists?

- Malfunction information and DTC exists. >>GO TO 3.
- Malfunction information exists, but no DTC. >>GO TO 4.
- No malfunction information, but DTC exists. >>GO TO 5.

3.REPRODUCE MALFUNCTION SYMPTOM

Check any malfunction described by a customer, except those with DTC on the vehicle. Also investigate whether the symptom is a fail-safe or normal operation. Refer to [TM-329, "Fail-Safe"](#). When a malfunction symptom is reproduced, the question sheet is effective. Refer to [TM-354, "Diagnostic Work Sheet"](#).

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

>> GO TO 5.

4.REPRODUCE MALFUNCTION SYMPTOM

Check the malfunction described by the customer on the vehicle. Also investigate whether the symptom is a fail-safe or normal operation. Refer to [TM-329, "Fail-Safe"](#). When a malfunction symptom is reproduced, the question sheet is effective. Refer to [TM-354, "Diagnostic Work Sheet"](#).

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

>> GO TO 6.

5.PERFORM "DTC CONFIRMATION PROCEDURE"

Perform "DTC CONFIRMATION PROCEDURE" of the appropriate DTC to check if DTC is detected again. Refer to [TM-333, "DTC Inspection Priority Chart"](#) when multiple DTCs are detected, and then determine the order for performing the diagnosis.

NOTE:

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

Is any DTC detected?

- YES >> GO TO 7.
- NO >> Check according to [GI-47, "Intermittent Incident"](#).

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

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DIAGNOSIS AND REPAIR WORK FLOW

< BASIC INSPECTION >

[7AT: RE7R01B]

Use [TM-445. "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

INFOID:000000014419158

DESCRIPTION

There are many operating conditions that may cause a malfunction of the transmission parts. By understanding those conditions properly, a quick and exact diagnosis can be achieved.

In general, customers have their own criteria for a problem. Therefore, it is important to understand the symptom and status well enough by asking the customer about the concerns carefully. In order to systemize all the information for the diagnosis, prepare the question sheet referring to the question points.

KEY POINTS

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

SEF907L

WORKSHEET SAMPLE

Question Sheet

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

DIAGNOSIS AND REPAIR WORK FLOW

< BASIC INSPECTION >

[7AT: RE7R01B]

Question Sheet	
Symptoms	<input type="checkbox"/> Vehicle does not move (<input type="checkbox"/> Any position <input type="checkbox"/> Particular position)
	<input type="checkbox"/> No upshift (<input type="checkbox"/> 1GR → 2GR <input type="checkbox"/> 2GR → 3GR <input type="checkbox"/> 3GR → 4GR <input type="checkbox"/> 4GR → 5GR <input type="checkbox"/> 5GR → 6GR <input type="checkbox"/> 6GR → 7GR)
	<input type="checkbox"/> No downshift (<input type="checkbox"/> 7GR → 6GR <input type="checkbox"/> 6GR → 5GR <input type="checkbox"/> 5GR → 4GR <input type="checkbox"/> 4GR → 3GR <input type="checkbox"/> 3GR → 2GR <input type="checkbox"/> 2GR → 1GR)
	<input type="checkbox"/> Lock-up malfunction
	<input type="checkbox"/> Shift point too high or too low
	<input type="checkbox"/> Shift shock or slip
	<input type="checkbox"/> Noise or vibration
	<input type="checkbox"/> No kick down
	<input type="checkbox"/> No pattern select
<input type="checkbox"/> Others	
Frequency	<input type="checkbox"/> All the time <input type="checkbox"/> Under certain conditions <input type="checkbox"/> Sometimes (times a day)
Weather conditions	<input type="checkbox"/> Not affected
	Weather <input type="checkbox"/> Fine <input type="checkbox"/> Clouding <input type="checkbox"/> Raining <input type="checkbox"/> Snowing <input type="checkbox"/> Other ()
	Temp. <input type="checkbox"/> Hot <input type="checkbox"/> Warm <input type="checkbox"/> Cool <input type="checkbox"/> Cold <input type="checkbox"/> Temp. Approx. °C/°F
Humidity	<input type="checkbox"/> High <input type="checkbox"/> Middle <input type="checkbox"/> Low
Transmission conditions	<input type="checkbox"/> Not affected
	<input type="checkbox"/> Cold <input type="checkbox"/> During warm-up <input type="checkbox"/> After warm-up
	<input type="checkbox"/> Engine speed (rpm)
Road conditions	<input type="checkbox"/> Not affected
	<input type="checkbox"/> In town <input type="checkbox"/> In suburbs <input type="checkbox"/> Freeway <input type="checkbox"/> Off road (Up/Down)
Driving conditions	<input type="checkbox"/> Not affected
	<input type="checkbox"/> At starting <input type="checkbox"/> While idling <input type="checkbox"/> While engine racing <input type="checkbox"/> At racing <input type="checkbox"/> While cruising
	<input type="checkbox"/> While accelerating <input type="checkbox"/> While decelerating <input type="checkbox"/> While turning (Right/Left)
	<input type="checkbox"/> Vehicle speed [km/h (MPH)]
Other conditions	

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ADDITIONAL SERVICE WHEN REPLACING TRANSMISSION ASSEMBLY

< BASIC INSPECTION >

[7AT: RE7R01B]

ADDITIONAL SERVICE WHEN REPLACING TRANSMISSION ASSEMBLY

Description

INFOID:000000014419159

When replaced transmission assembly, perform decel G sensor calibration. Refer to [TM-358, "Work Procedure"](#).

ADDITIONAL SERVICE WHEN REPLACING CONTROL VALVE & TCM

< BASIC INSPECTION >

[7AT: RE7R01B]

ADDITIONAL SERVICE WHEN REPLACING CONTROL VALVE & TCM

Description

INFOID:000000014419160

When replaced control valve & TCM, perform decel G sensor calibration. Refer to [TM-358. "Work Procedure"](#).

- A
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CALIBRATION OF DECEL G SENSOR

< BASIC INSPECTION >

[7AT: RE7R01B]

CALIBRATION OF DECEL G SENSOR

Description

INFOID:000000014419161

Decel G sensor calibration must be performed when the following operation is performed.

- Removal and installation or replacement of yaw rate/side/decel G sensor
- Replacement of A/T assembly
- Replacement of control valve & TCM
- Replacement of ABS actuator and electric unit (control unit)

CAUTION:

After removing/replacing the yaw rate/side/decel G sensor or replacing the ABS actuator and electric unit (control unit), the decel G sensor of the ABS actuator and electric unit (control unit) must be calibrated first. Refer to [BRC-72, "Description"](#).

Refer to [TM-358, "Work Procedure"](#).

Work Procedure

INFOID:000000014419162

CAUTION:

After removing/replacing the yaw rate/side/decel G sensor or replacing the ABS actuator and electric unit (control unit), the decel G sensor of the ABS actuator and electric unit (control unit) must be calibrated first. Refer to [BRC-72, "Description"](#).

1. PREPARATION BEFORE CALIBRATION PROCEDURE

1. Park the vehicle on a flat road.
2. Adjust pressure in all tires to the specified value. Refer to [WT-76, "Tire"](#).

>> GO TO 2.

2. PERFORM CALIBRATION

Ⓟ With CONSULT

1. Turn ignition switch ON.
CAUTION:
Never start the engine.
2. Select "G SENSOR CALIBRATION" in "Work Support" in "TRANSMISSION".
3. Touch "START".

CAUTION:

Never give any motion to the vehicle during the calibration.

Is "completed" displayed?

YES >> GO TO 3.

NO >> Perform the calibration again.

3. CHECK DTC

Ⓟ With CONSULT

1. Turn ignition switch OFF and wait 10 seconds or more.
2. Turn ignition switch ON.
3. Select "Self Diagnostic Results" in "ABS".

Is "C1145" or "C1146" detected?

YES >> Refer to [BRC-55, "DTC Index"](#).

NO >> WORK END

A/T FLUID COOLER

Cleaning

INFOID:000000014419163

Whenever an A/T is replaced, the A/T fluid cooler mounted in the radiator must be inspected and cleaned. Metal debris and friction material, if present, can become trapped in the A/T fluid cooler. This debris can contaminate the newly serviced A/T or, in severe cases, can block or restrict the flow of ATF. In either case, malfunction of the newly serviced A/T may result.

Debris, if present, may build up as ATF enters the cooler inlet. It will be necessary to back flush the cooler through the cooler outlet in order to flush out any built up debris.

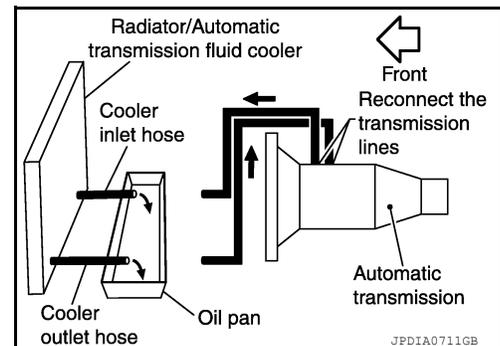
CLEANING PROCEDURE

1. Position an oil pan under the A/T inlet and outlet cooler hoses.
2. Identify the inlet and outlet fluid cooler hoses.
3. Disconnect the A/T fluid cooler inlet and outlet rubber hoses from the steel cooler tubes or by-pass valve.

NOTE:

Replace the cooler hoses if rubber material from the hose remains on the tube fitting.

4. Allow any ATF that remains in the cooler hoses to drain into the oil pan.

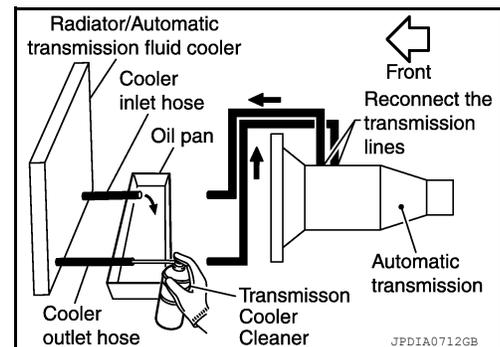


5. Insert the extension adapter hose of a can of Transmission Cooler Cleaner into the cooler outlet hose.

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 breath vapors or spray mist.**

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



7. Insert the tip of an air gun into the end of the cooler outlet hose.

8. Wrap a shop rag around the air gun tip and of the cooler outlet hose.

9. Blow compressed air regulated to 5 to 9 kg/cm² (71 to 128 psi) through the cooler outlet hose for 10 seconds to force out any remaining ATF.

10. Repeat steps 5 through 9 three additional times.

11. Position an oil pan under the banjo bolts that connect the A/T fluid cooler steel lines to the A/T.

12. Remove the banjo bolts.

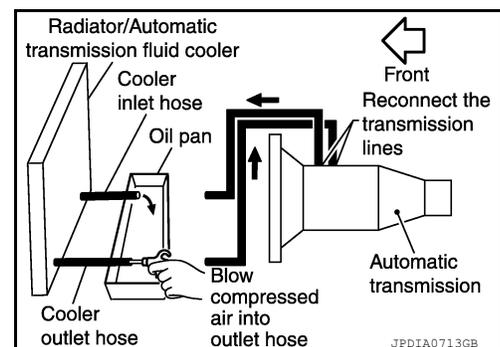
13. Flush each steel line from the cooler side back toward the A/T by spraying Transmission Cooler Cleaner in a continuous stream for 5 seconds.

14. Blow compressed air regulated to 5 to 9 kg/cm² (71 to 128 psi) through each steel line from the cooler side back toward the A/T for 10 seconds to force out any remaining ATF.

15. Ensure all debris is removed from the steel cooler lines.

16. Ensure all debris is removed from the banjo bolts and fittings.

17. Perform "DIAGNOSIS PROCEDURE".



A/T FLUID COOLER

< BASIC INSPECTION >

[7AT: RE7R01B]

DIAGNOSIS PROCEDURE

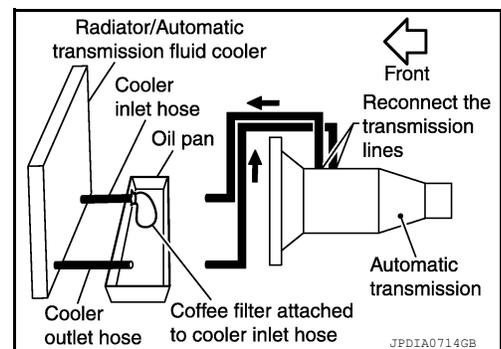
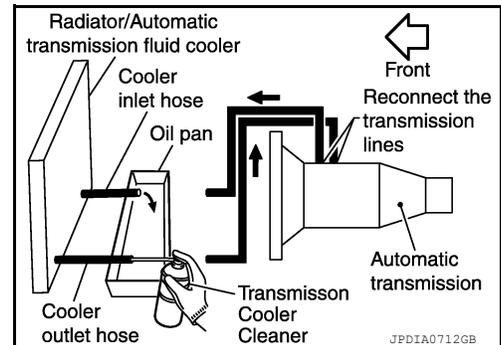
NOTE:

Insufficient cleaning of the cooler inlet hose exterior may lead to inaccurate debris identification.

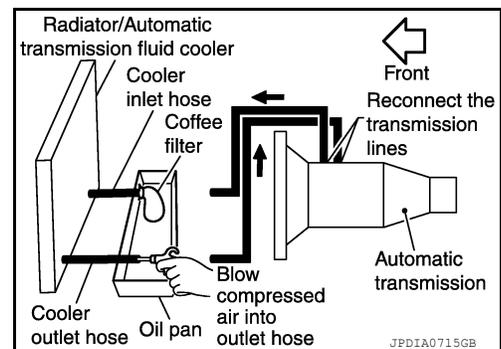
1. Position an oil pan under the A/T inlet and outlet cooler hoses.
2. Clean the exterior and tip of the cooler inlet hose.
3. Insert the extension adapter hose of a can of Transmission Cooler Cleaner into the cooler outlet hose.

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 breath vapors or spray mist.**
4. Hold the hose and can as high as possible and spray Transmission Cooler Cleaner in a continuous stream into the cooler outlet hose until ATF flows out of the cooler inlet hose for 5 seconds.
 5. Tie a common white, basket-type coffee filter to the end of the cooler inlet hose.

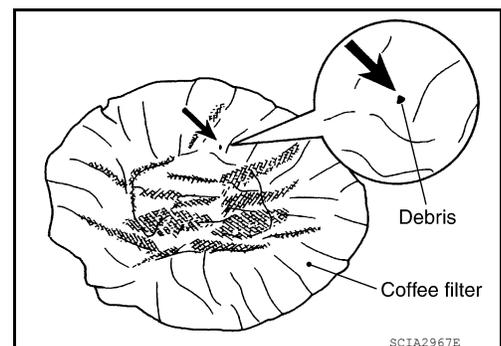


6. Insert the tip of an air gun into the end of the cooler outlet hose.
7. Wrap a shop rag around the air gun tip and end of cooler outlet hose.
8. Blow compressed air regulated to 5 to 9 kg/cm² (71 to 128 psi) through the cooler outlet hose to force any remaining ATF into the coffee filter.
9. Remove the coffee filter from the end of the cooler inlet hose.
10. Perform "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.

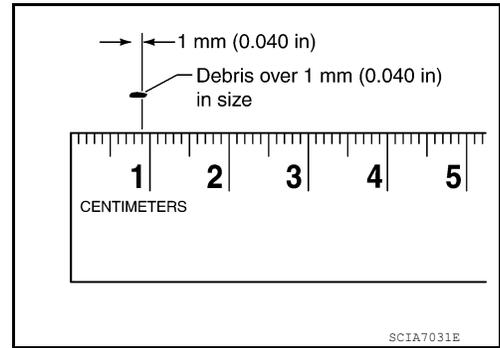


A/T FLUID COOLER

< BASIC INSPECTION >

[7AT: RE7R01B]

- 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 [TM-499, "Exploded View - Non-XD Models"](#).



Inspection

INFOID:000000014419164

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

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STALL TEST

< BASIC INSPECTION >

[7AT: RE7R01B]

STALL TEST

Work Procedure

INFOID:000000014419165

INSPECTION

1. Inspect the amount of engine oil. Replenish the engine oil if necessary.
2. Drive for about 10 minutes to warm up the vehicle so that the A/T fluid temperature is 50 to 80°C (122 to 176°F). Inspect the amount of ATF. Replenish if necessary.
3. Securely engage the parking brake so that the tires do not turn.
4. Start the engine, apply foot brake, and place selector lever in "D" position.
5. Gradually press down the accelerator pedal while holding down the foot brake.
6. Quickly read off the stall speed, and quickly release the accelerator pedal.

CAUTION:

Never hold down the accelerator pedal for more than 5 seconds during this test.

Stall speed : Refer to [TM-603, "Stall Speed"](#).

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

JUDGMENT OF STALL TEST

	Selector lever position		Possible location of malfunction
	"D" and "M"	"R"	
Stall speed	H	O	<ul style="list-style-type: none"> • Low brake • 1st one-way clutch • 2nd one-way clutch
	O	H	<ul style="list-style-type: none"> • Reverse brake • 1st one-way clutch • 2nd one-way clutch
	L	L	<ul style="list-style-type: none"> • Engine and torque converter one-way clutch
	H	H	<ul style="list-style-type: none"> • Line pressure low

O: Stall speed within standard value position

H: Stall speed higher than standard value

L: Stall speed lower than standard value

Stall test standard value position

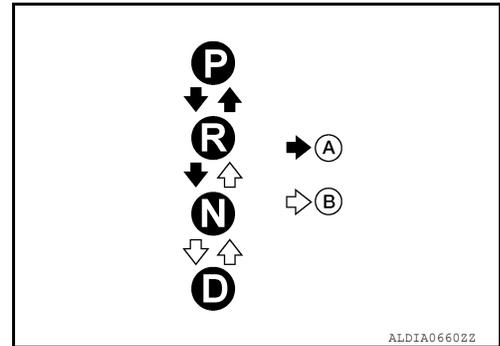
Does not shift-up "D" or "M" position 1 → 2	Slipping in 2GR, 3GR, 4GR or 6GR	2346 brake slippage
Does not shift-up "D" or "M" position 2 → 3	Slipping in 3GR, 4GR or 5GR	Direct clutch slippage
Does not shift-up "D" or "M" position 3 → 4	Slipping in 4GR, 5GR, 6GR or 7GR	High and low reverse clutch slippage
Does not shift-up "D" or "M" position 4 → 5	Slipping in 5GR, 6GR or 7GR	Input clutch slippage
Does not shift-up "D" or "M" position 5 → 6	Slipping in 2GR, 3GR, 4GR or 6GR	2346 brake slippage
Does not shift-up "D" or "M" position 6 → 7	Slipping in 7GR	Front brake slippage

A/T POSITION

Inspection

INFOID:000000014419166

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.
 - (A): Pull control lever to operate shift selector.
 - (B): Shift selector can be operated without pulling control lever.
6. When selector button is pressed in "P", "R", or "N" position without applying forward/backward force to selector lever, check button operation for sticking.
7. Confirm that the back-up lamps illuminate only when lever is placed in the "R" position. Confirm that the back-up lamps do 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.)



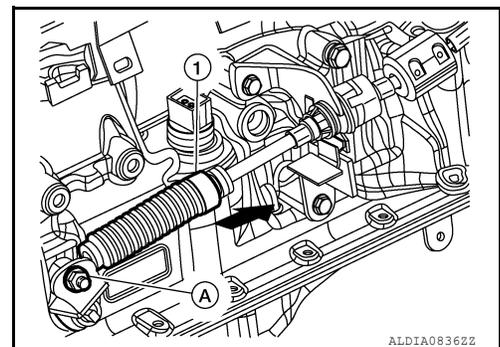
Adjustment

INFOID:000000014419167

1. Shift selector lever in "P" position.
2. Loosen nut (A).
3. Rotate wheel and carry out park locking.
4. Pull control cable (1) toward the direction of arrow (←) and release hand from cable to leave it in a natural state and then temporarily tighten nut by hand.

CAUTION:
Be careful not put any load to manual lever.

NOTE:
Pull control cable with a force of 9.8 N (approximately 1 kg, 2.2 lb).
5. Tighten nut to specified torque. Refer to [TM-460, "Exploded View"](#).



U0100 LOST COMMUNICATION (ECM A)

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

DTC/CIRCUIT DIAGNOSIS

U0100 LOST COMMUNICATION (ECM A)

DTC Description

INFOID:000000014419168

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
		Diagnosis condition	Signal
U0100	LOST COMM (ECM A) (Lost Communication With ECM/PCM "A")	Diagnosis condition	When the ignition switch is ON
		Signal	CAN communication signal
		Threshold	TCM is unable to receive the CAN communications signal from ECM
		Diagnosis delay time	Continuously for 2 seconds or more

POSSIBLE CAUSE

- ECM
- Harness or connector (CAN communication line is open or shorted)

FAIL-SAFE

1st Fail-safe	The mode that the vehicle can stop safely, to prompt the driver to stop if the malfunction occurs and to shift to 2nd fail-safe early. It shifts to 2nd fail-safe or final fail-safe after the vehicle stopped.
2nd Fail-safe	The mode that the vehicle shifts to final fail-safe without changing the behavior, by identifying the malfunctioning parts in the condition that the driving force required for the driving is secured.
Final Fail-safe	<ul style="list-style-type: none"> • 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.

Vehicle condition	Vehicle behavior for 1st fail-safe	Vehicle behavior for 2nd fail-safe	Vehicle behavior for final fail-safe
Between the gears of 1 - 2 - 3	<ul style="list-style-type: none"> • The shifting between the gears of 1 - 2 - 3 can be performed • Manual mode is prohibited 	—	<ul style="list-style-type: none"> • The shifting between the gears of 1 - 2 - 3 can be performed • Line pressure is set to the maximum hydraulic pressure • Manual mode is prohibited
Between the gears of 4 - 5 - 6 - 7	<ul style="list-style-type: none"> • Fix the gear at driving • Manual mode is prohibited 	—	<ul style="list-style-type: none"> • Manual mode is prohibited

DTC CONFIRMATION PROCEDURE

1. PREPARATION BEFORE WORK

If another "DTC CONFIRMATION PROCEDURE" occurs just before, turn ignition switch OFF and wait for at least 10 seconds, then perform the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Start the engine and wait for at least 5 seconds.
2. Check DTC.

With GST

Follow the procedure "With CONSULT".

Is "U0100" detected?

YES >> Go to [TM-365, "Diagnosis Procedure"](#).

NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).

NO-2 >> Confirmation after repair: INSPECTION END

U0100 LOST COMMUNICATION (ECM A)

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

Diagnosis Procedure

INFOID:000000014419169

For the diagnosis procedure, refer to [LAN-53, "Trouble Diagnosis Flow Chart"](#).

- A
- B
- C
- TM**
- E
- F
- G
- H
- I
- J
- K
- L
- M
- N
- O
- P

U0300 CAN COMMUNICATION DATA

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

U0300 CAN COMMUNICATION DATA

DTC Description

INFOID:000000014419170

DTC DETECTION LOGIC

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

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
U0300	CAN COMM DATA (Internal Control Module Software In-compatibility)	Diagnosis condition	When the ignition switch is ON
		Signal	CAN communication data
		Threshold	The data transmitted from each control unit is smaller than the specified amount
		Diagnosis delay time	—

POSSIBLE CAUSE

Control unit other than TCM

FAIL-SAFE

1st Fail-safe	The mode that the vehicle can stop safely, to prompt the driver to stop if the malfunction occurs and to shift to 2nd fail-safe early. It shifts to 2nd fail-safe or final fail-safe after the vehicle stopped.
2nd Fail-safe	The mode that the vehicle shifts to final fail-safe without changing the behavior, by identifying the malfunctioning parts in the condition that the driving force required for the driving is secured.
Final Fail-safe	<ul style="list-style-type: none"> • 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.

Vehicle condition	Vehicle behavior for 1st fail-safe	Vehicle behavior for 2nd fail-safe	Vehicle behavior for final fail-safe
Between the gears of 1 - 2 - 3	<ul style="list-style-type: none"> • The shifting between the gears of 1 - 2 - 3 can be performed • Manual mode is prohibited 	—	<ul style="list-style-type: none"> • The shifting between the gears of 1 - 2 - 3 can be performed • Line pressure is set to the maximum hydraulic pressure • Manual mode is prohibited
Between the gears of 4 - 5 - 6 - 7	<ul style="list-style-type: none"> • Fix the gear at driving • Manual mode is prohibited 	—	<ul style="list-style-type: none"> • Line pressure is set to the maximum hydraulic pressure • Manual mode is prohibited

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

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

Is "U0300" detected?

- YES >> Go to [TM-366, "Diagnosis Procedure"](#).
- NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).
- NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014419171

1. CHECK CONTROL UNIT

U0300 CAN COMMUNICATION DATA

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

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

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.

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P

U1000 CAN COMM CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

U1000 CAN COMM CIRCUIT

DTC Description

INFOID:000000014419172

DTC DETECTION LOGIC

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

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
		Diagnosis condition	Signal
U1000	CAN COMM CIRCUIT (Manufacturer Controlled DTC)	When the ignition switch is ON	CAN communication signal
		TCM is not transmitting or receiving CAN communication signal	
		Continuously for 2 seconds or more	

POSSIBLE CAUSE

- Harness or connector (CAN communication line is open or shorted)
- TCM

FAIL-SAFE

1st Fail-safe	The mode that the vehicle can stop safely, to prompt the driver to stop if the malfunction occurs and to shift to 2nd fail-safe early. It shifts to 2nd fail-safe or final fail-safe after the vehicle stopped.
2nd Fail-safe	The mode that the vehicle shifts to final fail-safe without changing the behavior, by identifying the malfunctioning parts in the condition that the driving force required for the driving is secured.
Final Fail-safe	<ul style="list-style-type: none"> • 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.

Vehicle condition	Vehicle behavior for 1st fail-safe	Vehicle behavior for 2nd fail-safe	Vehicle behavior for final fail-safe
Between the gears of 1 - 2 - 3	<ul style="list-style-type: none"> • The shifting between the gears of 1 - 2 - 3 can be performed • Manual mode is prohibited 	—	<ul style="list-style-type: none"> • The shifting between the gears of 1 - 2 - 3 can be performed • Line pressure is set to the maximum hydraulic pressure • Manual mode is prohibited
Between the gears of 4 - 5 - 6 - 7	<ul style="list-style-type: none"> • Fix the gear at driving • Manual mode is prohibited 	—	

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. Run engine for at least 2 consecutive seconds at idle speed.
3. Perform "Self Diagnostic Results" in "TRANSMISSION".

Is "U1000" detected?

YES >> Go to [TM-369, "Diagnosis Procedure"](#).

U1000 CAN COMM CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).

NO-2 >> Confirmation after repair: INSPECTION END

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Diagnosis Procedure

INFOID:0000000014419173

Go to [LAN-53, "Trouble Diagnosis Flow Chart"](#).

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P0615 STARTER RELAY

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

P0615 STARTER RELAY

DTC Description

INFOID:000000014419174

DTC DETECTION LOGIC

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

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
P0615	STARTER RELAY (Starter Relay "A" Circuit)	Diagnosis condition	—
		Signal	—
		Threshold	The ignition switch is ON at the "P" and "N" positions
		Diagnosis delay time	—

POSSIBLE CAUSE

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

FAIL-SAFE

1st Fail-safe	The mode that the vehicle can stop safely, to prompt the driver to stop if the malfunction occurs and to shift to 2nd fail-safe early. It shifts to 2nd fail-safe or final fail-safe after the vehicle stopped.
2nd Fail-safe	The mode that the vehicle shifts to final fail-safe without changing the behavior, by identifying the malfunctioning parts in the condition that the driving force required for the driving is secured.
Final Fail-safe	<ul style="list-style-type: none"> • 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.

Vehicle behavior for 1st fail-safe	Vehicle behavior for 2nd fail-safe	Vehicle behavior for final fail-safe
Starter is disabled	—	Starter is disabled

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. 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-370, "Diagnosis Procedure"](#).
- NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).
- NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014419175

1. CHECK STARTER RELAY SIGNAL

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

P0615 STARTER RELAY

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

+		-	Condition	Voltage (Approx.)
IPDM E/R				
Connector	Terminal			
E119	4	Ground	Selector lever in "P" and "N" positions.	Battery voltage
			Selector lever in other positions.	0 V

Is the inspection result normal?

- YES >> Check starter relay circuit. Refer to [STR-15, "Wiring Diagram- with VK56VD"](#).
 NO >> GO TO 2.

2. CHECK HARNESS BETWEEN IPDM E/R AND A/T ASSEMBLY (PART 1)

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

IPDM E/R		A/T assembly		Continuity
Connector	Terminal	Connector	Terminal	
E119	4	F46	9	Existed

Is the inspection result normal?

- YES >> GO TO 3.
 NO >> Repair or replace damaged parts.

3. CHECK HARNESS BETWEEN IPDM E/R AND A/T ASSEMBLY (PART 2)

Check short circuit in harness between IPDM E/R harness connector terminal 4 and A/T assembly harness connector terminal 9.

Is the inspection result normal?

- YES >> GO TO 4.
 NO >> Repair or replace damaged parts.

4. REPLACE CONTROL VALVE & TCM

Replace control valve & TCM. Refer to [TM-464, "Exploded View"](#).

>> WORK END

P0705 TRANSMISSION RANGE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

P0705 TRANSMISSION RANGE SENSOR A

DTC Description

INFOID:000000014419176

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
P0705	T/M RANGE SENSOR A [Transmission Range Sensor "A" Circuit (PRNDL Input)]	Diagnosis condition	—
		Signal	Transmission range switch signal
		Threshold	The TCM detects an ON/OFF combination pattern other than that of the transmission range switches 1, 2, 3 and 4
		Diagnosis delay time	Maintained for 2 seconds

POSSIBLE CAUSE

- Harness or connector (Transmission range switches 1, 2, 3, 4 and TCM circuit is open or shorted)
- Transmission range switches 1, 2, 3 and 4

FAIL-SAFE

1st Fail-safe	The mode that the vehicle can stop safely, to prompt the driver to stop if the malfunction occurs and to shift to 2nd fail-safe early. It shifts to 2nd fail-safe or final fail-safe after the vehicle stopped.
2nd Fail-safe	The mode that the vehicle shifts to final fail-safe without changing the behavior, by identifying the malfunctioning parts in the condition that the driving force required for the driving is secured.
Final Fail-safe	<ul style="list-style-type: none"> • 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.

Vehicle behavior for 1st fail-safe	Vehicle behavior for 2nd fail-safe	Vehicle behavior for final fail-safe
<ul style="list-style-type: none"> • Fixed in the "D" position (The shifting can be performed) • 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 	—	<ul style="list-style-type: none"> • Fixed in the "D" position (The shifting can be performed) • 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

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.

P0705 TRANSMISSION RANGE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

ACCELE POSI : More than 1.0/8
VHCL/S SE-A/T : 10 km/h (7 MPH) or more

A

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

With GST

B

Follow the procedure "With CONSULT".

Is "P0705" detected?

C

YES >> Go to [TM-373, "Diagnosis Procedure"](#).

NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).

NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014419177

TM

1. REPLACE CONTROL VALVE & TCM

E

Replace control valve & TCM. Refer to [TM-464, "Exploded View"](#).

>> WORK END

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P0710 TRANSMISSION FLUID TEMPERATURE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

P0710 TRANSMISSION FLUID TEMPERATURE SENSOR A

DTC Description

INFOID:000000014419178

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition		
P0710	FLUID TEMP SENSOR A (Transmission Fluid Temperature Sensor "A" Circuit)	1	Diagnosis condition	—
			Signal	A/T fluid temperature sensor signal
			Threshold	TCM judges that the A/T fluid temperature is -40°C (-40°F) or less continuously
			Diagnosis delay time	5 seconds while driving at 10 km/h (7 MPH) or more
		2	Diagnosis condition	—
			Signal	A/T fluid temperature sensor signal
			Threshold	TCM judges that the A/T fluid temperature is 180°C (356°F) or more continuously
			Diagnosis delay time	5 seconds while driving at 10 km/h (7 MPH) or more
		3	Diagnosis condition	A/T fluid temperature does not rise to 20°C (68°F) after driving for a certain period of time
			Signal	A/T fluid temperature sensor signal
			Threshold	TCM-received fluid temperature sensor value between -40°C (-40°F) and 19°C (66°F)
			Diagnosis delay time	—
		4	Diagnosis condition	—
			Signal	A/T fluid temperature sensor signal
			Threshold	The following conditions are maintained for 5 minutes after the completion of engine diagnosis P0111, P0116, and P0196: <ul style="list-style-type: none"> A/T fluid temperature – Engine coolant temperature $> 33^{\circ}\text{C}$ (91.4°F) A/T fluid temperature – Engine coolant temperature $< -19^{\circ}\text{C}$ (-2.2°F) NOTE: This malfunction is applied to vehicle for North America.
			Diagnosis delay time	—

POSSIBLE CAUSE

- TCM judges that the A/T fluid temperature is -40°C (-40°F) or less continuously
 - 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
 - Harness or connectors (Sensor circuit is open)
 - A/T fluid temperature sensor
- TCM-received fluid temperature sensor value between -40°C (-40°F) and 19°C (66°F)
 - Harness or connectors (Sensor circuit is open)
 - A/T fluid temperature sensor
- Maintained for 5 minutes after the completion of engine diagnosis P0111, P0116, and P0196
 - A/T fluid temperature sensor

FAIL-SAFE

P0710 TRANSMISSION FLUID TEMPERATURE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

1st Fail-safe	The mode that the vehicle can stop safely, to prompt the driver to stop if the malfunction occurs and to shift to 2nd fail-safe early. It shifts to 2nd fail-safe or final fail-safe after the vehicle stopped.
2nd Fail-safe	The mode that the vehicle shifts to final fail-safe without changing the behavior, by identifying the malfunctioning parts in the condition that the driving force required for the driving is secured.
Final Fail-safe	<ul style="list-style-type: none"> • 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.

Vehicle condition	Vehicle behavior for 1st fail-safe	Vehicle behavior for 2nd fail-safe	Vehicle behavior for final fail-safe
Between the gears of 1 - 2 - 3	<ul style="list-style-type: none"> • The shifting between the gears of 1 - 2 - 3 can be performed • Manual mode is prohibited 	—	<ul style="list-style-type: none"> • The shifting between the gears of 1 - 2 - 3 can be performed • Line pressure is set to the maximum hydraulic pressure • Manual mode is prohibited
Between the gears of 4 - 5 - 6 - 7	<ul style="list-style-type: none"> • Fix the gear at driving • Manual mode is prohibited 	—	<ul style="list-style-type: none"> • Line pressure is set to the maximum hydraulic pressure • Manual mode is prohibited

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)

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 [TM-376, "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

1. Turn ignition switch OFF and cool the engine.
 2. Turn ignition switch ON.
- CAUTION:**
Never start the engine.
3. Select “ATF TEMP 1” in “Data Monitor” in “TRANSMISSION”.
 4. Select “COOLANT TEMP/S” in “Data Monitor” in “ENGINE”.
 5. Check temperature difference between A/T fluid and engine coolant.

With GST

1. Complete engine diagnoses P0111, P0116, and P0196.
2. After starting the engine start, run the engine at idle for 5 minutes.
3. Check the DTC.

Is the temperature calculated by subtracting engine coolant temperature from A/T fluid temperature more than 33°C (91.4°F) or is it less than -19°C (-2.2°F)? (With CONSULT)/Is “P0710” detected? (With GST)

YES >> Go to [TM-376, "Diagnosis Procedure"](#).

P0710 TRANSMISSION FLUID TEMPERATURE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

NO-1 [With CONSULT: "ATF TEMP 1" is 20°C (68°F) or more]>>INSPECTION END

NO-2 [With CONSULT: "ATF TEMP 1" is 19°C (66°F) or less]>>GO TO 4.

NO-3 (With GST)>>GO TO 4.

4. CHECK DTC DETECTION (PART 2)

With CONSULT

1. Turn ignition switch OFF and cool the engine.
2. Turn ignition switch ON.

CAUTION:

Never start the engine.

3. Select "SLCT LVR POSI", "VHCL/S SE-A/T", "ACCELE POSI", "ATF TEMP 1" in "Data Monitor" in "TRANSMISSION".
4. Record A/T fluid temperature.
5. Start the engine and wait for at least 3 minutes.
6. Drive the vehicle for the total minutes specified in the Driving time column below with the following conditions satisfied.

SLCT LVR POSI	: D
VHCL/S SE-A/T	: 10 km/h (7 MPH) or more
ACCELE POSI	: 0.5/8 or more

A/T fluid temperature before engine start	Driving time
-40°C (-40°F) – -31°C (-23.8°F)	18 minutes or more
-30°C (-22°F) – -21°C (-5.8°F)	15 minutes or more
-20°C (-4°F) – -11°C (12.2°F)	12 minutes or more
-10°C (14°F) – -1°C (30.2°F)	9 minutes or more
0°C (32°F) – 9°C (48.2°F)	6 minutes or more
10°C (50°F) – 19°C (66.2°F)	3 minutes or more

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

With GST

1. Turn ignition switch OFF and cool the engine.
2. Start the engine and wait for at least 3 minutes.
3. Drive the vehicle and maintain the following conditions for 18 minutes or more.

Selector lever	: D position
Vehicle speed	: 10 km/h (7 MPH) or more
Accelerator pedal opening	: 0.5/8 or more

4. Check the DTC.

Is "P0710" detected?

YES >> Go to [TM-376, "Diagnosis Procedure"](#).

NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).

NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014419179

1. REPLACE CONTROL VALVE & TCM

Replace control valve & TCM. Refer to [TM-464, "Exploded View"](#).

>> WORK END

P0717 INPUT SPEED SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

P0717 INPUT SPEED SENSOR A

DTC Description

INFOID:000000014419180

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
P0717	INPUT SPEED SENSOR A [Input/Turbine Shaft Speed Sensor "A" Circuit No Signal]	Diagnosis condition	—
		Signal	Input speed sensor signal
		Threshold	The revolution of input speed sensor 1 and/or 2 is 270 rpm or less
		Diagnosis delay time	—

POSSIBLE CAUSE

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

FAIL-SAFE

1st Fail-safe	The mode that the vehicle can stop safely, to prompt the driver to stop if the malfunction occurs and to shift to 2nd fail-safe early. It shifts to 2nd fail-safe or final fail-safe after the vehicle stopped.
2nd Fail-safe	The mode that the vehicle shifts to final fail-safe without changing the behavior, by identifying the malfunctioning parts in the condition that the driving force required for the driving is secured.
Final Fail-safe	<ul style="list-style-type: none"> • 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.

Vehicle condition	Vehicle behavior for 1st fail-safe	Vehicle behavior for 2nd fail-safe	Vehicle behavior for final fail-safe
Between the gears of 1 - 2 - 3	<ul style="list-style-type: none"> • The shifting between the gears of 1 - 2 - 3 can be performed • Manual mode is prohibited 	—	<ul style="list-style-type: none"> • The shifting between the gears of 1 - 2 - 3 can be performed • Manual mode is prohibited
Between the gears of 4 - 5 - 6 - 7	<ul style="list-style-type: none"> • Fix the gear while driving • Manual mode is prohibited 	—	<ul style="list-style-type: none"> • Manual mode is prohibited

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 "SLCT LVR POSI", "GEAR", "VHCL/S SE-A/T", "W/O THL POS" and "ENGINE SPEED" in "Data Monitor" in "TRANSMISSION".
3. Drive vehicle and maintain the following conditions for 5 seconds or more.

CAUTION:

Keep the same gear position.

NOTE:

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

P0717 INPUT SPEED SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

SLCT LVR POSI : D
GEAR : 2nd, 3rd, 4th, 5th or 6th
VHCL/S SE-A/T : More than 40 km/h (25 MPH)
W/O THL POS : ON
ENGINE SPEED : More than 1,500 rpm

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

 **With GST**

Follow the procedure "With CONSULT".

Is "P0717" detected?

YES >> Go to [TM-378, "Diagnosis Procedure"](#).

NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).

NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014419181

1. REPLACE CONTROL VALVE & TCM

Replace control valve & TCM. Refer to [TM-464, "Exploded View"](#).

>> WORK END

P0720 OUTPUT SPEED SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

P0720 OUTPUT SPEED SENSOR

DTC Description

INFOID:000000014419182

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition		
P0720	OUTPUT SPEED SENSOR (Output Shaft Speed Sensor Circuit)	1	Diagnosis condition	The vehicle speed detected by the output speed sensor is 5 km/h (3 MPH) or less
			Signal	Output speed sensor signal
			Threshold	The vehicle speed transmitted from the combination meter to TCM is 20 km/h (13 MPH) or more (Only when starts after the ignition switch is turned ON)
			Diagnosis delay time	—
		2	Diagnosis condition	The vehicle speed transmitted from the combination meter to TCM does not decrease despite the 36 km/h (23 MPH) or more of deceleration in vehicle speed detected by the output speed sensor
			Signal	Output speed sensor signal
			Threshold	The vehicle 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
			Diagnosis delay time	—

POSSIBLE CAUSE

- The vehicle speed detected by the output speed sensor is 5 km/h (3 MPH) or less
 - Harness or connectors (Sensor circuit is open)
 - Output speed sensor
- The vehicle speed transmitted from the combination meter to TCM does not decrease despite the 36 km/h (23 MPH) or more of deceleration in vehicle speed detected by the output speed sensor
 - Harness or connectors (Sensor circuit is open)
 - Output speed sensor

FAIL-SAFE

1st Fail-safe	The mode that the vehicle can stop safely, to prompt the driver to stop if the malfunction occurs and to shift to 2nd fail-safe early. It shifts to 2nd fail-safe or final fail-safe after the vehicle stopped.
2nd Fail-safe	The mode that the vehicle shifts to final fail-safe without changing the behavior, by identifying the malfunctioning parts in the condition that the driving force required for the driving is secured.
Final Fail-safe	<ul style="list-style-type: none"> • 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.

P0720 OUTPUT SPEED SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

DTC	Vehicle condition	Vehicle behavior for 1st fail-safe	Vehicle behavior for 2nd fail-safe	Vehicle behavior for final fail-safe
P0720	Between the gears of 1 - 2 - 3	<ul style="list-style-type: none">• Only downshift can be performed• Manual mode is prohibited• A vehicle speed signal from the combination meter is regarded as an effective signal	—	<ul style="list-style-type: none">• The shifting between the gears of 1 - 2 - 3 can be performed• Manual mode is prohibited
	Between the gears of 4 - 5 - 6 - 7	<ul style="list-style-type: none">• Fix the gear at driving• Manual mode is prohibited• A vehicle speed signal from the combination meter is regarded as an effective signal	—	
P0720 and P1721	—	Locks in 5GR	—	Locks in 5GR

DTC CONFIRMATION PROCEDURE

CAUTION:

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

1. PRECONDITIONING

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

>> GO TO 2.

2. CHECK DTC DETECTION

With CONSULT

1. Start the engine.
2. Select "ESTM VSP SIG" in "Data Monitor" in "TRANSMISSION".
3. Drive vehicle and maintain the following conditions for 60 seconds or more.

ESTM VSP SIG : 40 km/h (25 MPH) or more

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

With GST

Follow the procedure "With CONSULT".

Is "P0720" detected?

- YES >> Go to [TM-380, "Diagnosis Procedure"](#).
- NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).
- NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014419183

1. REPLACE OUTPUT SPEED SENSOR AND CHECK DTC

1. Replace output speed sensor. Refer to [TM-516, "Exploded View"](#).
2. Perform "DTC CONFIRMATION PROCEDURE". Refer to [TM-379, "DTC Description"](#).

Is the inspection result normal?

- YES >> INSPECTION END
- NO >> Replace control valve & TCM. Refer to [TM-464, "Exploded View"](#).

P0725 ENGINE SPEED

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

P0725 ENGINE SPEED

DTC Description

INFOID:000000014419184

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition		
P0725	ENGINE SPEED (Engine Speed Input Circuit)	1	Diagnosis condition	—
			Signal	CAN communication signal
			Threshold	TCM does not receive the CAN communication signal from the ECM
			Diagnosis delay time	—
		2	Diagnosis condition	—
			Signal	CAN communication signal
			Threshold	The engine speed is more less 150 rpm even if the vehicle speed is more than 10 km/h (7 MPH)
			Diagnosis delay time	—

POSSIBLE CAUSE

- TCM does not receive the CAN communication signal from the ECM
 - Harness or connectors (ECM to TCM circuit is open or shorted)
- The engine speed is more less 150 rpm even if the vehicle speed is more than 10 km/h (7 MPH)
 - Harness or connectors (ECM to TCM circuit is open or shorted)

FAIL-SAFE

Not changed from normal driving

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 "SLCT LVR POSI" and "VHCL/S SE-A/T" in "Data Monitor" in "TRANSMISSION".
3. Drive vehicle and maintain the following conditions for 5 seconds or more.

SLCT LVR POSI : D
 VHCL/S SE-A/T : More than 10 km/h (7 MPH)

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

Is "P0725" detected?

- YES >> Go to [TM-381, "Diagnosis Procedure"](#).
- NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).
- NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014419185

1. CHECK DTC OF ECM

With CONSULT

P0725 ENGINE SPEED

[7AT: RE7R01B]

< DTC/CIRCUIT DIAGNOSIS >

1. Turn ignition switch ON.
2. Perform "Self Diagnostic Results" in "ENGINE".

Is any DTC detected?

- YES >> Check DTC detected item. Refer to [EC-136, "DTC Index"](#).
NO >> GO TO 2.

2.CHECK DTC OF TCM

Ⓟ **With CONSULT**

Perform "Self Diagnostic Results" in "TRANSMISSION".

Is any DTC other than "P0725" detected?

- YES >> Check DTC detected item. Refer to [TM-334, "DTC Index"](#).
NO >> GO TO 3.

3.REPLACE CONTROL VALVE & TCM

Replace control valve & TCM. Refer to [TM-464, "Removal and Installation"](#).

>> WORK END

P0729 6GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

P0729 6GR INCORRECT RATIO

DTC Description

INFOID:000000014419186

DTC DETECTION LOGIC

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	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
P0729	6GR INCORRECT RATIO (Gear 6 Incorrect Ratio)	Diagnosis condition	—
		Signal	—
		Threshold	The gear ratio is: • 0.915 or more • 0.813 or less
		Diagnosis delay time	—

POSSIBLE CAUSE

- 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

FAIL-SAFE

1st Fail-safe	The mode that the vehicle can stop safely, to prompt the driver to stop if the malfunction occurs and to shift to 2nd fail-safe early. It shifts to 2nd fail-safe or final fail-safe after the vehicle stopped.
2nd Fail-safe	The mode that the vehicle shifts to final fail-safe without changing the behavior, by identifying the malfunctioning parts in the condition that the driving force required for the driving is secured.
Final Fail-safe	<ul style="list-style-type: none"> • 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.

Vehicle condition	Vehicle behavior for 1st fail-safe	Vehicle behavior for 2nd fail-safe	Vehicle behavior for final fail-safe
Small gear ratio difference	Engine torque limit: Max 150 Nm (15 kg-lb, 111 ft-lb)	—	Engine torque limit: Max 150 Nm (15 kg-lb, 111 ft-lb)

P0729 6GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

Vehicle condition		Vehicle behavior for 1st fail-safe	Vehicle behavior for 2nd fail-safe	Vehicle behavior for final fail-safe
Great gear ratio difference	Neutral malfunction between the gears of 1 - 2 - 3 and 7	<ul style="list-style-type: none"> Locks in 2GR, 3GR or 4GR Manual mode is prohibited 	—	<ul style="list-style-type: none"> 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
	Other than the above	<ul style="list-style-type: none"> Locks in 1GR, 2GR, 3GR, 4GR, 5GR or 6GR Fix the gear while driving Manual mode is prohibited 	<ul style="list-style-type: none"> The shifting between the gears of 1 - 2 - 3 can be performed Manual mode is prohibited 	<ul style="list-style-type: none"> 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

DTC CONFIRMATION PROCEDURE

CAUTION:

- **“TM-385, "Diagnosis Procedure"”** must be performed before starting “DTC CONFIRMATION PROCEDURE”.
- **Never perform “DTC CONFIRMATION PROCEDURE” before completing the repair, which may cause secondary malfunction.**
- **Always drive vehicle at a safe speed.**

1. PRECONDITIONING

If “DTC CONFIRMATION PROCEDURE” is previously conducted, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

>> GO TO 2.

2. CHECK CLAMP CONNECTION

Check all clamp connections on the air duct from the air cleaner to throttle body.

>> GO TO 3.

3. 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?

P0729 6GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

- YES >> GO TO 4.
NO >> Drive vehicle to warm ATF or stop engine to cool ATF.

4.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.

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 CONDITION" 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 [TM-334, "DTC Index"](#).

With GST

1. Drive vehicle and maintain the following conditions for 2 seconds or more.

Selector lever : "M" position
Gear position : 6th
Accelerator pedal opening : 0.7/8 or more
Vehicle speed : 10 km/h (7 MPH) or more

2. Check DTC.

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 5.
YES-3 (COMPLETED RESULT NG)>>Go to [TM-385, "Diagnosis Procedure"](#).
YES-4 ("P0729" is detected)>>Go to [TM-385, "Diagnosis Procedure"](#).
NO >> GO TO 5.

5.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.

>> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).
>> INSPECTION END

Diagnosis Procedure

INFOID:0000000014419187

1.DETECT MALFUNCTIONING ITEM

Disassemble the A/T assembly to check component parts. Refer to [TM-533, "Disassembly"](#).

NOTE:

Check the component parts, referring to "Possible cause" in "DTC DETECTION LOGIC". Refer to [TM-383, "DTC Description"](#).

Is the inspection result normal?

- YES >> Replace the control valve & TCM. Refer to [TM-464, "Exploded View"](#).
NO >> Repair or replace damaged parts.

P0730 INCORRECT GEAR RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

P0730 INCORRECT GEAR RATIO

DTC Description

INFOID:000000014419188

DTC DETECTION LOGIC

- 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	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
		Diagnosis condition	Signal
P0730	INCORRECT GR RATIO (Incorrect Gear Ratio)	Diagnosis condition	—
		Signal	—
		Threshold	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.
		Diagnosis delay time	—

POSSIBLE CAUSE

- 2346 brake solenoid valve
- Front brake solenoid valve
- Input speed sensor 2

FAIL-SAFE

1st Fail-safe	The mode that the vehicle can stop safely, to prompt the driver to stop if the malfunction occurs and to shift to 2nd fail-safe early. It shifts to 2nd fail-safe or final fail-safe after the vehicle stopped.
2nd Fail-safe	The mode that the vehicle shifts to final fail-safe without changing the behavior, by identifying the malfunctioning parts in the condition that the driving force required for the driving is secured.
Final Fail-safe	<ul style="list-style-type: none"> • 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.

Vehicle behavior for 1st fail-safe	Vehicle behavior for 2nd fail-safe	Vehicle behavior for final fail-safe
<ul style="list-style-type: none"> • Locks in 5GR, 6GR or 7GR • Manual mode is prohibited 	<ul style="list-style-type: none"> • The shifting between the gears of 1 - 2 - 3 can be performed • Manual mode is prohibited 	<ul style="list-style-type: none"> • 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

DTC CONFIRMATION PROCEDURE

CAUTION:

- **“[TM-387, "Diagnosis Procedure"](#)” must be performed before starting “DTC CONFIRMATION PROCEDURE”.**
- **Never perform “DTC CONFIRMATION PROCEDURE” before completing the repair, which may cause secondary malfunction.**
- **Always drive vehicle at a safe speed.**

1. PRECONDITIONING

If “DTC CONFIRMATION PROCEDURE” is previously conducted, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

>> GO TO 2.

2. CHECK CLAMP CONNECTION

Check all clamp connections on the air duct from the air cleaner to throttle body.

P0730 INCORRECT GEAR RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

>> GO TO 3.

3. CHECK DTC DETECTION

With CONSULT

1. Start the engine.
2. Select "Self Diagnostic Results" in "ENGINE".
3. Drive vehicle under the similar conditions to (1st trip) Freeze Frame Data for 10 minutes. Refer to the table below.

Hold the accelerator pedal as steady as possible.

ENGINE SPEED	Same value as the Freeze Frame Data.
VEHICLE SPEED	Same value as the Freeze Frame Data.
B/FUEL SCHDL	Same value as the Freeze Frame Data.

With GST

Follow the procedure "With CONSULT".

Is "P0730" detected?

YES >> Go to [TM-387. "Diagnosis Procedure"](#).

NO-1 >> To check malfunction symptom before repair: Refer to [GI-47. "Intermittent Incident"](#).

NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014419189

1. DETECT MALFUNCTIONING ITEM

Disassemble the A/T assembly to check component parts. Refer to [TM-533. "Disassembly"](#).

NOTE:

Check the component parts, referring to "Possible cause" in "DTC DETECTION LOGIC". Refer to [TM-386. "DTC Description"](#).

Is the inspection result normal?

YES >> Replace the control valve & TCM. Refer to [TM-464. "Exploded View"](#).

NO >> Repair or replace damaged parts.

P0731 1GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

P0731 1GR INCORRECT RATIO

DTC Description

INFOID:000000014419190

DTC DETECTION LOGIC

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

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
P0731	1GR INCORRECT RATIO (Gear 1 Incorrect Ratio)	Diagnosis condition	—
		Signal	—
		Threshold	The gear ratio is: • 5.180 or more • 4.594 or less
		Diagnosis delay time	—

POSSIBLE CAUSE

- 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

FAIL-SAFE

1st Fail-safe	The mode that the vehicle can stop safely, to prompt the driver to stop if the malfunction occurs and to shift to 2nd fail-safe early. It shifts to 2nd fail-safe or final fail-safe after the vehicle stopped.
2nd Fail-safe	The mode that the vehicle shifts to final fail-safe without changing the behavior, by identifying the malfunctioning parts in the condition that the driving force required for the driving is secured.
Final Fail-safe	<ul style="list-style-type: none"> • 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.

Vehicle condition	Vehicle behavior for 1st fail-safe	Vehicle behavior for 2nd fail-safe	Vehicle behavior for final fail-safe
Small gear ratio difference	Engine torque limit: Max 150 Nm (15 kg-lb, 111 ft-lb)	—	Engine torque limit: Max 150 Nm (15 kg-lb, 111 ft-lb)

P0731 1GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

Vehicle condition	Vehicle behavior for 1st fail-safe	Vehicle behavior for 2nd fail-safe	Vehicle behavior for final fail-safe
Neutral malfunction between the gears of 1 - 2 - 3 and 7	<ul style="list-style-type: none"> Locks in 2GR, 3GR or 4GR Manual mode is prohibited 	—	<ul style="list-style-type: none"> 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
Great gear ratio difference	<ul style="list-style-type: none"> Locks in 1GR, 2GR, 3GR, 4GR, 5GR or 6GR Fix the gear while driving Manual mode is prohibited 	<ul style="list-style-type: none"> The shifting between the gears of 1 - 2 - 3 can be performed Manual mode is prohibited 	<ul style="list-style-type: none"> 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

DTC CONFIRMATION PROCEDURE

CAUTION:

- **“[TM-390, "Diagnosis Procedure"](#)” must be performed before starting “DTC CONFIRMATION PROCEDURE”.**
- **Never perform “DTC CONFIRMATION PROCEDURE” before completing the repair, which may cause secondary malfunction.**
- **Always drive vehicle at a safe speed.**

1. PRECONDITIONING

If “DTC CONFIRMATION PROCEDURE” is previously conducted, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

>> GO TO 2.

2. CHECK CLAMP CONNECTION

Check all clamp connections on the air duct from the air cleaner to throttle body.

>> GO TO 3.

3. 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?

P0731 1GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

- YES >> GO TO 4.
NO >> Drive vehicle to warm ATF or stop engine to cool ATF.

4.CHECK SYMPTOM (PART 1)

With CONSULT

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

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 CONDITION" 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 [TM-334](#), "DTC Index".

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 5.
YES-3 (COMPLETED RESULT NG)>>Go to [TM-390](#), "Diagnosis Procedure".
YES-4 ("P0731" is detected)>>Go to [TM-390](#), "Diagnosis Procedure".
NO >> GO TO 5.

5.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.

>> To check malfunction symptom before repair: Refer to [GI-47](#), "Intermittent Incident".
>> INSPECTION END

Diagnosis Procedure

INFOID:0000000014419191

1.DETECT MALFUNCTIONING ITEM

Disassemble the A/T assembly to check component parts. Refer to [TM-533](#), "Disassembly".

NOTE:

Check the component parts, referring to "Possible cause" in "DTC DETECTION LOGIC". Refer to [TM-388](#), "DTC Description".

Is the inspection result normal?

- YES >> Replace the control valve & TCM. Refer to [TM-464](#), "Exploded View".
NO >> Repair or replace damaged parts.

P0732 2GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

P0732 2GR INCORRECT RATIO

DTC Description

INFOID:000000014419192

DTC DETECTION LOGIC

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	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
P0732	2GR INCORRECT RATIO (Gear 2 Incorrect Ratio)	Diagnosis condition	—
		Signal	—
		Threshold	The gear ratio is: • 3.360 or more • 2.980 or less
		Diagnosis delay time	—

POSSIBLE CAUSE

- 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

FAIL-SAFE

1st Fail-safe	The mode that the vehicle can stop safely, to prompt the driver to stop if the malfunction occurs and to shift to 2nd fail-safe early. It shifts to 2nd fail-safe or final fail-safe after the vehicle stopped.
2nd Fail-safe	The mode that the vehicle shifts to final fail-safe without changing the behavior, by identifying the malfunctioning parts in the condition that the driving force required for the driving is secured.
Final Fail-safe	<ul style="list-style-type: none"> • 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.

Vehicle condition	Vehicle behavior for 1st fail-safe	Vehicle behavior for 2nd fail-safe	Vehicle behavior for final fail-safe
Small gear ratio difference	Engine torque limit: Max 150 Nm (15 kg-lb, 111 ft-lb)	—	Engine torque limit: Max 150 Nm (15 kg-lb, 111 ft-lb)

P0732 2GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

Vehicle condition		Vehicle behavior for 1st fail-safe	Vehicle behavior for 2nd fail-safe	Vehicle behavior for final fail-safe
Great gear ratio difference	Neutral malfunction between the gears of 1 - 2 - 3 and 7	<ul style="list-style-type: none"> Locks in 2GR, 3GR or 4GR Manual mode is prohibited 	—	<ul style="list-style-type: none"> 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
	Other than the above	<ul style="list-style-type: none"> Locks in 1GR, 2GR, 3GR, 4GR, 5GR or 6GR Fix the gear while driving Manual mode is prohibited 	<ul style="list-style-type: none"> The shifting between the gears of 1 - 2 - 3 can be performed Manual mode is prohibited 	<ul style="list-style-type: none"> 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

DTC CONFIRMATION PROCEDURE

CAUTION:

- **“[TM-393. "Diagnosis Procedure"](#)” must be performed before starting “DTC CONFIRMATION PROCEDURE”.**
- **Never perform “DTC CONFIRMATION PROCEDURE” before completing the repair, which may cause secondary malfunction.**
- **Always drive vehicle at a safe speed.**

1. PRECONDITIONING

If “DTC CONFIRMATION PROCEDURE” is previously conducted, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

>> GO TO 2.

2. CHECK CLAMP CONNECTION

Check all clamp connections on the air duct from the air cleaner to throttle body.

>> GO TO 3.

3. 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?

P0732 2GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

- YES >> GO TO 4.
NO >> Drive vehicle to warm ATF or stop engine to cool ATF.

4.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.

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 CONDITION" 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 [TM-334, "DTC Index"](#).

With GST

1. Drive vehicle and maintain the following conditions for 2 seconds or more.

Selector lever : "M" position
Gear position : 2nd
Accelerator pedal opening : 0.7/8 or more
Vehicle speed : 10 km/h (7 MPH) or more

2. Check DTC.

Is "OUT OF CONDITION", "STOP VEHICLE" or "COMPLETED RESULT NG" displayed? / Is "P0732" detected?

- YES-1 (OUT OF CONDITION)>>Perform "Step 3" again.
YES-2 (STOP VEHICLE)>>GO TO 5.
YES-3 (COMPLETED RESULT NG)>>Go to [TM-393, "Diagnosis Procedure"](#).
YES-4 ("P0732" is detected)>>Go to [TM-393, "Diagnosis Procedure"](#).
NO >> GO TO 5.

5.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.

>> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).
>> INSPECTION END

Diagnosis Procedure

INFOID:000000014419193

1.DETECT MALFUNCTIONING ITEM

Disassemble the A/T assembly to check component parts. Refer to [TM-533, "Disassembly"](#).

NOTE:

Check the component parts, referring to "Possible cause" in "DTC DETECTION LOGIC". Refer to [TM-391, "DTC Description"](#).

Is the inspection result normal?

- YES >> Replace the control valve & TCM. Refer to [TM-464, "Exploded View"](#).
NO >> Repair or replace damaged parts.

P0733 3GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

P0733 3GR INCORRECT RATIO

DTC Description

INFOID:000000014419194

DTC DETECTION LOGIC

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	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
P0733	3GR INCORRECT RATIO (Gear 3 Incorrect Ratio)	Diagnosis condition	—
		Signal	—
		Threshold	The gear ratio is: • 2.148 or more • 1.906 or less
		Diagnosis delay time	—

POSSIBLE CAUSE

- 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

FAIL-SAFE

1st Fail-safe	The mode that the vehicle can stop safely, to prompt the driver to stop if the malfunction occurs and to shift to 2nd fail-safe early. It shifts to 2nd fail-safe or final fail-safe after the vehicle stopped.
2nd Fail-safe	The mode that the vehicle shifts to final fail-safe without changing the behavior, by identifying the malfunctioning parts in the condition that the driving force required for the driving is secured.
Final Fail-safe	<ul style="list-style-type: none"> • 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.

Vehicle condition	Vehicle behavior for 1st fail-safe	Vehicle behavior for 2nd fail-safe	Vehicle behavior for final fail-safe
Small gear ratio difference	Engine torque limit: Max 150 Nm (15 kg-lb, 111 ft-lb)	—	Engine torque limit: Max 150 Nm (15 kg-lb, 111 ft-lb)

P0733 3GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

Vehicle condition		Vehicle behavior for 1st fail-safe	Vehicle behavior for 2nd fail-safe	Vehicle behavior for final fail-safe
Great gear ratio difference	Neutral malfunction between the gears of 1 - 2 - 3 and 7	<ul style="list-style-type: none"> Locks in 2GR, 3GR or 4GR Manual mode is prohibited 	—	<ul style="list-style-type: none"> 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
	Other than the above	<ul style="list-style-type: none"> Locks in 1GR, 2GR, 3GR, 4GR, 5GR or 6GR Fix the gear while driving Manual mode is prohibited 	<ul style="list-style-type: none"> The shifting between the gears of 1 - 2 - 3 can be performed Manual mode is prohibited 	<ul style="list-style-type: none"> 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

DTC CONFIRMATION PROCEDURE

CAUTION:

- **“TM-396, "Diagnosis Procedure"” must be performed before starting “DTC CONFIRMATION PROCEDURE”.**
- **Never perform “DTC CONFIRMATION PROCEDURE” before completing the repair, which may cause secondary malfunction.**
- **Always drive vehicle at a safe speed.**

1. PRECONDITIONING

If “DTC CONFIRMATION PROCEDURE” is previously conducted, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

>> GO TO 2.

2. CHECK CLAMP CONNECTION

Check all clamp connections on the air duct from the air cleaner to throttle body.

>> GO TO 3.

3. 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?

P0733 3GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

- YES >> GO TO 4.
NO >> Drive vehicle to warm ATF or stop engine to cool ATF.

4.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.

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 CONDITION" 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 [TM-334](#), "DTC Index".

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 5.
YES-3 (COMPLETED RESULT NG)>>Go to [TM-396](#), "Diagnosis Procedure".
YES-4 ("P0733" is detected)>>Go to [TM-396](#), "Diagnosis Procedure".
NO >> GO TO 5.

5.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.

>> To check malfunction symptom before repair: Refer to [GI-47](#), "Intermittent Incident".
>> INSPECTION END

Diagnosis Procedure

INFOID:0000000014419195

1.DETECT MALFUNCTIONING ITEM

Disassemble the A/T assembly to check component parts. Refer to [TM-533](#), "Disassembly".

NOTE:

Check the component parts, referring to "Possible cause" in "DTC DETECTION LOGIC". Refer to [TM-394](#), "DTC Description".

Is the inspection result normal?

- YES >> Replace the control valve & TCM. Refer to [TM-464](#), "Exploded View".
NO >> Repair or replace damaged parts.

P0734 4GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

P0734 4GR INCORRECT RATIO

DTC Description

INFOID:000000014419196

DTC DETECTION LOGIC

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	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
P0734	4GR INCORRECT RATIO (Gear 4 Incorrect Ratio)	Diagnosis condition	—
		Signal	—
		Threshold	The gear ratio is: • 1.496 or more • 1.328 or less
		Diagnosis delay time	—

POSSIBLE CAUSE

- 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

FAIL-SAFE

1st Fail-safe	The mode that the vehicle can stop safely, to prompt the driver to stop if the malfunction occurs and to shift to 2nd fail-safe early. It shifts to 2nd fail-safe or final fail-safe after the vehicle stopped.
2nd Fail-safe	The mode that the vehicle shifts to final fail-safe without changing the behavior, by identifying the malfunctioning parts in the condition that the driving force required for the driving is secured.
Final Fail-safe	<ul style="list-style-type: none"> • 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.

Vehicle condition	Vehicle behavior for 1st fail-safe	Vehicle behavior for 2nd fail-safe	Vehicle behavior for final fail-safe
Small gear ratio difference	Engine torque limit: Max 150 Nm (15 kg-lb, 111 ft-lb)	—	Engine torque limit: Max 150 Nm (15 kg-lb, 111 ft-lb)

P0734 4GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

Vehicle condition		Vehicle behavior for 1st fail-safe	Vehicle behavior for 2nd fail-safe	Vehicle behavior for final fail-safe
Great gear ratio difference	Neutral malfunction between the gears of 1 - 2 - 3 and 7	<ul style="list-style-type: none"> Locks in 2GR, 3GR or 4GR Manual mode is prohibited 	—	<ul style="list-style-type: none"> 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
	Other than the above	<ul style="list-style-type: none"> Locks in 1GR, 2GR, 3GR, 4GR, 5GR or 6GR Fix the gear while driving Manual mode is prohibited 	<ul style="list-style-type: none"> The shifting between the gears of 1 - 2 - 3 can be performed Manual mode is prohibited 	<ul style="list-style-type: none"> 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

DTC CONFIRMATION PROCEDURE

CAUTION:

- **“[TM-399, "Diagnosis Procedure"](#)” must be performed before starting “DTC CONFIRMATION PROCEDURE”.**
- **Never perform “DTC CONFIRMATION PROCEDURE” before completing the repair, which may cause secondary malfunction.**
- **Always drive vehicle at a safe speed.**

1. PRECONDITIONING

If “DTC CONFIRMATION PROCEDURE” is previously conducted, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

>> GO TO 2.

2. CHECK CLAMP CONNECTION

Check all clamp connections on the air duct from the air cleaner to throttle body.

>> GO TO 3.

3. 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?

P0734 4GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

- YES >> GO TO 4.
NO >> Drive vehicle to warm ATF or stop engine to cool ATF.

4.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.

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 CONDITION" 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 [TM-334, "DTC Index"](#).

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 5.
YES-3 (COMPLETED RESULT NG)>>Go to [TM-399, "Diagnosis Procedure"](#).
YES-4 ("P0734" is detected)>>Go to [TM-399, "Diagnosis Procedure"](#).
NO >> GO TO 5.

5.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.

>> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).
>> INSPECTION END

Diagnosis Procedure

INFOID:0000000014419197

1.DETECT MALFUNCTIONING ITEM

Disassemble the A/T assembly to check component parts. Refer to [TM-533, "Disassembly"](#).

NOTE:

Check the component parts, referring to "Possible cause" in "DTC DETECTION LOGIC". Refer to [TM-397, "DTC Description"](#).

Is the inspection result normal?

- YES >> Replace the control valve & TCM. Refer to [TM-516, "Exploded View"](#).
NO >> Repair or replace damaged parts.

P0735 5GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

P0735 5GR INCORRECT RATIO

DTC Description

INFOID:000000014419198

DTC DETECTION LOGIC

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	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
P0735	5GR INCORRECT RATIO (Gear 5 Incorrect Ratio)	Diagnosis condition	—
		Signal	—
		Threshold	The gear ratio is: • 1.060 or more • 0.940 or less
		Diagnosis delay time	—

POSSIBLE CAUSE

- 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

FAIL-SAFE

1st Fail-safe	The mode that the vehicle can stop safely, to prompt the driver to stop if the malfunction occurs and to shift to 2nd fail-safe early. It shifts to 2nd fail-safe or final fail-safe after the vehicle stopped.
2nd Fail-safe	The mode that the vehicle shifts to final fail-safe without changing the behavior, by identifying the malfunctioning parts in the condition that the driving force required for the driving is secured.
Final Fail-safe	<ul style="list-style-type: none"> • 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.

Vehicle condition	Vehicle behavior for 1st fail-safe	Vehicle behavior for 2nd fail-safe	Vehicle behavior for final fail-safe
Small gear ratio difference	Engine torque limit: Max 150 Nm (15 kg-lb, 111 ft-lb)	—	Engine torque limit: Max 150 Nm (15 kg-lb, 111 ft-lb)

P0735 5GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

Vehicle condition		Vehicle behavior for 1st fail-safe	Vehicle behavior for 2nd fail-safe	Vehicle behavior for final fail-safe
Great gear ratio difference	Neutral malfunction between the gears of 1 - 2 - 3 and 7	<ul style="list-style-type: none"> Locks in 2GR, 3GR or 4GR Manual mode is prohibited 	—	<ul style="list-style-type: none"> 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
	Other than the above	<ul style="list-style-type: none"> Locks in 1GR, 2GR, 3GR, 4GR, 5GR or 6GR Fix the gear while driving Manual mode is prohibited 	<ul style="list-style-type: none"> The shifting between the gears of 1 - 2 - 3 can be performed Manual mode is prohibited 	<ul style="list-style-type: none"> 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

DTC CONFIRMATION PROCEDURE

CAUTION:

- **“TM-402, "Diagnosis Procedure"” must be performed before starting “DTC CONFIRMATION PROCEDURE”.**
- **Never perform “DTC CONFIRMATION PROCEDURE” before completing the repair, which may cause secondary malfunction.**
- **Always drive vehicle at a safe speed.**

1. PRECONDITIONING

If “DTC CONFIRMATION PROCEDURE” is previously conducted, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

>> GO TO 2.

2. CHECK CLAMP CONNECTION

Check all clamp connections on the air duct from the air cleaner to throttle body.

>> GO TO 3.

3. 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?

P0735 5GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

- YES >> GO TO 4.
NO >> Drive vehicle to warm ATF or stop engine to cool ATF.

4.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.

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 CONDITION" 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 [TM-334](#), "DTC Index".

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 5.
YES-3 (COMPLETED RESULT NG)>>Go to [TM-402](#), "Diagnosis Procedure".
YES-4 ("P0735" is detected)>>Go to [TM-402](#), "Diagnosis Procedure".
NO >> GO TO 5.

5.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.

>> To check malfunction symptom before repair: Refer to [GI-47](#), "Intermittent Incident".
>> INSPECTION END

Diagnosis Procedure

INFOID:0000000014419199

1.DETECT MALFUNCTIONING ITEM

Disassemble the A/T assembly to check component parts. Refer to [TM-533](#), "Disassembly".

NOTE:

Check the component parts, referring to "Possible cause" in "DTC DETECTION LOGIC". Refer to [TM-400](#), "DTC Description".

Is the inspection result normal?

- YES >> Replace the control valve & TCM. Refer to [TM-464](#), "Exploded View".
NO >> Repair or replace damaged parts.

P0740 TORQUE CONVERTER

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

P0740 TORQUE CONVERTER

DTC Description

INFOID:000000014419200

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
P0740	TORQUE CONVERTER (Torque Converter Clutch Circuit/Open)	Diagnosis condition	The torque converter clutch solenoid valve command value is more than 0.75 A
		Signal	—
		Threshold	The torque converter clutch solenoid valve monitor value is 0.2 A or less
		Diagnosis delay time	—

POSSIBLE CAUSE

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

FAIL-SAFE

1st Fail-safe	The mode that the vehicle can stop safely, to prompt the driver to stop if the malfunction occurs and to shift to 2nd fail-safe early. It shifts to 2nd fail-safe or final fail-safe after the vehicle stopped.
2nd Fail-safe	The mode that the vehicle shifts to final fail-safe without changing the behavior, by identifying the malfunctioning parts in the condition that the driving force required for the driving is secured.
Final Fail-safe	<ul style="list-style-type: none">• 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.

Vehicle behavior for 1st fail-safe	Vehicle behavior for 2nd fail-safe	Vehicle behavior for final fail-safe
<ul style="list-style-type: none">• Lock-up is prohibited• Slip lock-up is prohibited	—	<ul style="list-style-type: none">• Lock-up is prohibited• Slip lock-up is prohibited

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 "MANU MODE SW", "GEAR" and "VEHICLE SPEED" in "Data Monitor" in "TRANSMISSION".
3. Drive vehicle and maintain the following conditions for 30 seconds or more.

NOTE:

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

MANU MODE SW : ON

GEAR : 2nd

VEHICLE SPEED : 40 km/h (25 MPH) or more

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

With GST

P0740 TORQUE CONVERTER

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

Follow the procedure "With CONSULT".

Is "P0740" detected?

YES >> Go to [TM-404. "Diagnosis Procedure"](#).

NO-1 >> To check malfunction symptom before repair: Refer to [GI-47. "Intermittent Incident"](#).

NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000014419201

1. REPLACE CONTROL VALVE & TCM

Replace control valve & TCM. Refer to [TM-464. "Exploded View"](#).

>> WORK END

P0744 TORQUE CONVERTER

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

P0744 TORQUE CONVERTER

DTC Description

INFOID:000000014419202

DTC DETECTION LOGIC

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

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
P0744	TORQUE CONVERTER (Torque Converter Clutch Circuit Intermittent)	Diagnosis condition	—
		Signal	—
		Threshold	The lock-up is not performed in spite of within the lock-up area
		Diagnosis delay time	—

POSSIBLE CAUSE

- Harness or connectors
- Torque converter clutch solenoid valve
- Torque converter
- Input speed sensor 1, 2
- Hydraulic control circuit

FAIL-SAFE

1st Fail-safe	The mode that the vehicle can stop safely, to prompt the driver to stop if the malfunction occurs and to shift to 2nd fail-safe early. It shifts to 2nd fail-safe or final fail-safe after the vehicle stopped.
2nd Fail-safe	The mode that the vehicle shifts to final fail-safe without changing the behavior, by identifying the malfunctioning parts in the condition that the driving force required for the driving is secured.
Final Fail-safe	<ul style="list-style-type: none"> • 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.

Vehicle behavior for 1st fail-safe	Vehicle behavior for 2nd fail-safe	Vehicle behavior for final fail-safe
<ul style="list-style-type: none"> • Lock-up is prohibited • Slip lock-up is prohibited 	—	<ul style="list-style-type: none"> • Lock-up is prohibited • Slip lock-up is prohibited

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 "MANU MODE SW", "GEAR" and "VEHICLE SPEED" in "Data Monitor" in "TRANSMISSION".
3. Drive vehicle and maintain the following conditions for 10 seconds or more.

NOTE:

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

P0744 TORQUE CONVERTER

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

MANU MODE SW : ON
GEAR : 2nd
VEHICLE SPEED : 40 km/h (25 MPH) or more

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

 **With GST**

Follow the procedure "With CONSULT".

Is "P0744" detected?

- YES >> Go to [TM-406, "Diagnosis Procedure"](#).
- NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).
- NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014419203

1. DETECT MALFUNCTIONING ITEM

Disassemble the A/T assembly to check component parts. Refer to [TM-533, "Disassembly"](#).

NOTE:

Check the component parts, referring to "Possible cause" in "DTC DETECTION LOGIC". Refer to [TM-405, "DTC Description"](#).

Is the inspection result normal?

- YES >> Replace the control valve & TCM. Refer to [TM-464, "Exploded View"](#).
- NO >> Repair or replace damaged parts.

P0745 PRESSURE CONTROL SOLENOID A

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

P0745 PRESSURE CONTROL SOLENOID A

DTC Description

INFOID:000000014419204

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
		Diagnosis condition	
P0745	PC SOLENOID A (Pressure Control Solenoid "A")	Diagnosis condition	The line pressure solenoid valve command value is more than 0.75 A
		Signal	—
		Threshold	The line pressure solenoid valve monitor value is 0.2 A or less
		Diagnosis delay time	—

POSSIBLE CAUSE

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

FAIL-SAFE

Not changed from normal driving

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. Wait for 5 seconds or more at idle speed in "N" position.
3. Perform "Self Diagnostic Results" in "TRANSMISSION".

With GST

Follow the procedure "With CONSULT".

Is "P0745" detected?

YES >> Go to [TM-407, "Diagnosis Procedure"](#).

NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).

NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014419205

1. REPLACE CONTROL VALVE & TCM

Replace control valve & TCM. Refer to [TM-464, "Exploded View"](#).

>> WORK END

P0750 SHIFT SOLENOID A

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

P0750 SHIFT SOLENOID A

DTC Description

INFOID:000000014419206

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition		
P0750	SHIFT SOLENOID A (Shift Solenoid "A")	Diagnosis condition		
		Signal		
		1	Threshold	The anti-interlock solenoid valve monitor value is ON when the anti-interlock solenoid valve command value is OFF
		2	Threshold	The anti-interlock solenoid valve monitor value is OFF when the anti-interlock solenoid valve command value is ON
		Diagnosis delay time		—

POSSIBLE CAUSE

- Harness or connectors (Solenoid valve circuit is open or shorted)
- Anti-interlock solenoid valve

FAIL-SAFE

1st Fail-safe	The mode that the vehicle can stop safely, to prompt the driver to stop if the malfunction occurs and to shift to 2nd fail-safe early. It shifts to 2nd fail-safe or final fail-safe after the vehicle stopped.
2nd Fail-safe	The mode that the vehicle shifts to final fail-safe without changing the behavior, by identifying the malfunctioning parts in the condition that the driving force required for the driving is secured.
Final Fail-safe	<ul style="list-style-type: none"> • 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.

Vehicle behavior for 1st fail-safe	Vehicle behavior for 2nd fail-safe	Vehicle behavior for final fail-safe
<ul style="list-style-type: none"> • Locks in 2GR, 3GR, 4GR, 5GR, 6GR or 7GR • Manual mode is prohibited 	—	<ul style="list-style-type: none"> • 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

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".

P0750 SHIFT SOLENOID A

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

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-409, "Diagnosis Procedure"](#).

NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).

NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014419207

1. REPLACE CONTROL VALVE & TCM

Replace control valve & TCM. Refer to [TM-464, "Exploded View"](#).

>> WORK END

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P0775 PRESSURE CONTROL SOLENOID B

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

P0775 PRESSURE CONTROL SOLENOID B

DTC Description

INFOID:000000014419208

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
P0775	PC SOLENOID B (Pressure Control Solenoid "B")	Diagnosis condition	Input clutch solenoid valve command value is more than 0.75 A
		Signal	—
		Threshold	Input clutch solenoid valve monitor value is 0.2 A or less
		Diagnosis delay time	—

POSSIBLE CAUSE

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

FAIL-SAFE

1st Fail-safe	The mode that the vehicle can stop safely, to prompt the driver to stop if the malfunction occurs and to shift to 2nd fail-safe early. It shifts to 2nd fail-safe or final fail-safe after the vehicle stopped.
2nd Fail-safe	The mode that the vehicle shifts to final fail-safe without changing the behavior, by identifying the malfunctioning parts in the condition that the driving force required for the driving is secured.
Final Fail-safe	<ul style="list-style-type: none"> • 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.

Vehicle behavior for 1st fail-safe	Vehicle behavior for 2nd fail-safe	Vehicle behavior for final fail-safe
<ul style="list-style-type: none"> • Locks in 2GR, 3GR, 4GR, 5GR, 6GR or 7GR • Manual mode is prohibited 	—	<ul style="list-style-type: none"> • 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

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.

P0775 PRESSURE CONTROL SOLENOID B

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

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 "P0775" detected?

- YES >> Go to [TM-411, "Diagnosis Procedure"](#).
- NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).
- NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014419209

1. REPLACE CONTROL VALVE & TCM

Replace control valve & TCM. Refer to [TM-511, "4WD : Exploded View"](#).

>> WORK END

P0780 SHIFT

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

P0780 SHIFT

DTC Description

INFOID:000000014419210

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 DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition		
P0780	SHIFT (Shift Error)	Diagnosis condition		—
		Signal		—
		1	Threshold	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)
		2	Threshold	When shifting from 5GR to 6GR or 6GR to 7GR, the engine speed exceeds the prescribed speed
		Diagnosis delay time		—

POSSIBLE CAUSE

- Anti-interlock solenoid valve
- Low brake solenoid valve
- Hydraulic control circuit

FAIL-SAFE

1st Fail-safe	The mode that the vehicle can stop safely, to prompt the driver to stop if the malfunction occurs and to shift to 2nd fail-safe early. It shifts to 2nd fail-safe or final fail-safe after the vehicle stopped.
2nd Fail-safe	The mode that the vehicle shifts to final fail-safe without changing the behavior, by identifying the malfunctioning parts in the condition that the driving force required for the driving is secured.
Final Fail-safe	<ul style="list-style-type: none"> • 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.

Vehicle behavior for 1st fail-safe	Vehicle behavior for 2nd fail-safe	Vehicle behavior for final fail-safe
<ul style="list-style-type: none"> • Locks in 3GR • Manual mode is prohibited 	—	<ul style="list-style-type: none"> • The shifting between the gears of 1 - 2 - 3 can be performed • Manual mode is prohibited

DTC CONFIRMATION PROCEDURE

CAUTION:

- **"[TM-413, "Diagnosis Procedure"](#)" must be performed before starting "DTC CONFIRMATION PROCEDURE".**
- **Never perform "DTC CONFIRMATION PROCEDURE" before completing the repair, which may cause secondary malfunction.**
- **Always drive vehicle at a safe speed.**

1. PRECONDITIONING

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

>> GO TO 2.

2. CHECK DTC DETECTION

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 → 4th → 5th → 6th → 7th

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

With GST

Follow the procedure "With CONSULT".

Is "P0780" detected?

- YES >> Go to [TM-413, "Diagnosis Procedure"](#).
- NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).
- NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000014419211

1. DETECT MALFUNCTIONING ITEM

Disassemble the A/T assembly to check component parts. Refer to [TM-533, "Disassembly"](#).

NOTE:

Check the component parts, referring to "Possible cause" in "DTC DETECTION LOGIC". Refer to [TM-412, "DTC Description"](#).

Is the inspection result normal?

- YES >> Replace the control valve & TCM. Refer to [TM-464, "Exploded View"](#).
- NO >> Repair or replace damaged parts.

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P0795 PRESSURE CONTROL SOLENOID C

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

P0795 PRESSURE CONTROL SOLENOID C

DTC Description

INFOID:000000014419212

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
P0795	PC SOLENOID C (Pressure Control Solenoid "C")	Diagnosis condition	Front brake solenoid valve command value is more than 0.75 A
		Signal	—
		Threshold	Front brake solenoid valve monitor value is 0.2 A or less
		Diagnosis delay time	—

POSSIBLE CAUSE

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

FAIL-SAFE

1st Fail-safe	The mode that the vehicle can stop safely, to prompt the driver to stop if the malfunction occurs and to shift to 2nd fail-safe early. It shifts to 2nd fail-safe or final fail-safe after the vehicle stopped.
2nd Fail-safe	The mode that the vehicle shifts to final fail-safe without changing the behavior, by identifying the malfunctioning parts in the condition that the driving force required for the driving is secured.
Final Fail-safe	<ul style="list-style-type: none"> • 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.

Vehicle behavior for 1st fail-safe	Vehicle behavior for 2nd fail-safe	Vehicle behavior for final fail-safe
<ul style="list-style-type: none"> • Locks in 2GR, 3GR, 4GR, 5GR, 6GR or 7GR • Manual mode is prohibited 	—	<ul style="list-style-type: none"> • 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

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.

P0795 PRESSURE CONTROL SOLENOID C

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

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 [TM-415, "Diagnosis Procedure"](#).
- NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).
- NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014419213

1. REPLACE CONTROL VALVE & TCM

Replace control valve & TCM. Refer to [TM-511, "4WD : Exploded View"](#).

>> WORK END

P0863 TCM COMMUNICATION

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

P0863 TCM COMMUNICATION

DTC Description

INFOID:000000014419214

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
P0863	CONTROL UNIT (CAN) (TCM Communication Circuit)	Diagnosis condition	Engine is started
		Signal	—
		Threshold	An error is detected at the initial CAN diagnosis of TCM
		Diagnosis delay time	Within 1 second

POSSIBLE CAUSE

TCM

FAIL-SAFE

Not changed from normal driving

DTC CONFIRMATION PROCEDURE

1. PREPARATION BEFORE WORK

If another "DTC CONFIRMATION PROCEDURE" occurs just before, turn ignition switch OFF and wait for at least 10 seconds, then perform the next test.

>> GO TO 2.

2. CHECK DTC DETECTION

1. Start the engine.
2. Check the DTC.

Is "P0863" detected?

- YES >> Go to [TM-416, "Diagnosis Procedure"](#).
- NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).
- NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014419215

1. REPLACE CONTROL VALVE & TCM

Replace control valve & TCM. Refer to [TM-464, "Removal and Installation"](#).

>> WORK END

P1705 TP SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

P1705 TP SENSOR

DTC Description

INFOID:000000014419216

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
P1705	TP SENSOR (Accelerator Pedal Position Sensor Signal Circuit)	Diagnosis condition	—
		Signal	—
		Threshold	TCM detects the difference between two accelerator pedal position signals received from ECM via CAN communication
		Diagnosis delay time	—

POSSIBLE CAUSE

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

FAIL-SAFE

1st Fail-safe	The mode that the vehicle can stop safely, to prompt the driver to stop if the malfunction occurs and to shift to 2nd fail-safe early. It shifts to 2nd fail-safe or final fail-safe after the vehicle stopped.
2nd Fail-safe	The mode that the vehicle shifts to final fail-safe without changing the behavior, by identifying the malfunctioning parts in the condition that the driving force required for the driving is secured.
Final Fail-safe	<ul style="list-style-type: none"> 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.

Vehicle behavior for 1st fail-safe	Vehicle behavior for 2nd fail-safe	Vehicle behavior for final fail-safe
<ul style="list-style-type: none"> Downshift when accelerator pedal is depressed is prohibited Upshift when accelerator pedal is released is prohibited Manual mode is prohibited 	<ul style="list-style-type: none"> Downshift when accelerator pedal is depressed is prohibited Upshift when accelerator pedal is released is prohibited Manual mode is prohibited 	<ul style="list-style-type: none"> Downshift when accelerator pedal is depressed is prohibited Upshift when accelerator pedal is released is prohibited Manual mode is prohibited

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.

SLCT LVR POSI : D
VHCL/S SE-A/T : 5 km/h (3 MPH) or more

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

Is "P1705" detected?

- YES >> Go to [TM-418, "Diagnosis Procedure"](#).
 NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).
 NO-2 >> Confirmation after repair: INSPECTION END

P1705 TP SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

Diagnosis Procedure

INFOID:000000014419217

1. CHECK DTC OF ECM

Ⓟ With CONSULT

1. Turn ignition switch ON.
2. Perform "Self Diagnostic Results" in "ENGINE".

Is any DTC detected?

- YES >> Check DTC detected item. Refer to [EC-136, "DTC Index"](#).
NO >> GO TO 2.

2. CHECK DTC OF TCM

Ⓟ With CONSULT

Perform "Self Diagnostic Results" in "TRANSMISSION".

Is any DTC other than "P1705" detected?

- YES >> Check DTC detected item. Refer to [TM-334, "DTC Index"](#).
NO >> Replace the control valve & TCM. Refer to [TM-464, "Removal and Installation"](#).

P1721 VEHICLE SPEED SIGNAL

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

P1721 VEHICLE SPEED SIGNAL

DTC Description

INFOID:000000014419218

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 DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition		
P1721	VEHICLE SPEED SIGNAL (Vehicle Speed Signal Circuit)	1	Diagnosis condition	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)
			Signal	—
			Threshold	Vehicle speed transmitted from the combination meter to TCM is 5 km/h (3 MPH) or less
			Diagnosis delay time	—
		2	Diagnosis condition	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
			Signal	—
			Threshold	Vehicle speed detected by the output speed sensor does not decrease despite the 36 km/h (23 MPH) or more of deceleration in vehicle speed received from the combination meter
			Diagnosis delay time	—

POSSIBLE CAUSE

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

FAIL-SAFE

1st Fail-safe	The mode that the vehicle can stop safely, to prompt the driver to stop if the malfunction occurs and to shift to 2nd fail-safe early. It shifts to 2nd fail-safe or final fail-safe after the vehicle stopped.
2nd Fail-safe	The mode that the vehicle shifts to final fail-safe without changing the behavior, by identifying the malfunctioning parts in the condition that the driving force required for the driving is secured.
Final Fail-safe	<ul style="list-style-type: none"> 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.

Vehicle behavior for 1st fail-safe	Vehicle behavior for 2nd fail-safe	Vehicle behavior for final fail-safe
Locks in 5GR	—	Locks in 5GR

DTC CONFIRMATION PROCEDURE

CAUTION:

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

1. PRECONDITIONING

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

>> GO TO 2.

P1721 VEHICLE SPEED SIGNAL

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

2.CHECK DTC DETECTION

📄 With CONSULT

1. Start the engine.
2. Select "VHCL/S SE-A/T" in "Data Monitor" in "TRANSMISSION".
3. Drive vehicle and maintain the following conditions for 60 seconds or more.

VHCL/S SE-A/T : 40 km/h (25 MPH) or more

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

Is "P1721" detected?

- YES >> Go to [TM-420, "Diagnosis Procedure"](#).
NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014419219

1.CHECK DTC OF UNIFIED METER AND A/C AMP.

📄 With CONSULT

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

Is any DTC detected?

- YES >> Check DTC detected item. Refer to [MWI-36, "DTC Index"](#) (TYPE A) or [MWI-139, "DTC Index"](#) (TYPE B). To identify vehicle type, refer to [MWI-5, "Information"](#).
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-334, "DTC Index"](#).
NO >> Replace the control valve & TCM. Refer to [TM-464, "Removal and Installation"](#).

P1730 INTERLOCK

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

P1730 INTERLOCK

DTC Description

INFOID:000000014419220

Fail-safe function to detect interlock conditions.

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
P1730	INTERLOCK (Interlock)	Diagnosis condition	—
		Signal	—
		Threshold	Output speed sensor detects the deceleration of 12 km/h (7 MPH) or more
		Diagnosis delay time	1 second

NOTE:

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

POSSIBLE CAUSE

- 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
- Hydraulic control circuit

FAIL-SAFE

1st Fail-safe	The mode that the vehicle can stop safely, to prompt the driver to stop if the malfunction occurs and to shift to 2nd fail-safe early. It shifts to 2nd fail-safe or final fail-safe after the vehicle stopped.
2nd Fail-safe	The mode that the vehicle shifts to final fail-safe without changing the behavior, by identifying the malfunctioning parts in the condition that the driving force required for the driving is secured.
Final Fail-safe	<ul style="list-style-type: none"> • 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.

Vehicle behavior for 1st fail-safe	Vehicle behavior for 2nd fail-safe	Vehicle behavior for final fail-safe
<ul style="list-style-type: none"> • Locks in 1GR, 2GR, 3GR, 4GR, 5GR, 6GR or 7GR • Manual mode is prohibited 	<ul style="list-style-type: none"> • The shifting between the gears of 1 - 2 - 3 can be performed • Manual mode is prohibited 	<ul style="list-style-type: none"> • Locks in 1GR • The shifting between the gears of 2 - 3 - 4 can be performed • The shifting between the gears of 3 - 4 can be performed • The shifting between the gears of 4 - 5 - 6 can be performed • Manual mode is prohibited

DTC CONFIRMATION PROCEDURE

CAUTION:

- **“[TM-422, "Diagnosis Procedure"](#)” must be performed before starting “DTC CONFIRMATION PROCEDURE”.**
- **Never perform “DTC CONFIRMATION PROCEDURE” before completing the repair, which may cause secondary malfunction.**
- **Always drive vehicle at a safe speed.**

P1730 INTERLOCK

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

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" and "GEAR" in "Data Monitor" in "TRANSMISSION".
3. Drive vehicle the following condition.

SLCT LVR POSI : D

GEAR : 1st through 7th

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

With GST

Follow the procedure "With CONSULT".

Is "P1730" detected?

YES >> Go to [TM-422, "Diagnosis Procedure"](#).

NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).

NO-2 >> Confirmation after repair: INSPECTION END

Judgment of Interlock

INFOID:000000014419221

Refer to [TM-329, "Fail-Safe"](#).

Diagnosis Procedure

INFOID:000000014419222

1. DETECT MALFUNCTIONING ITEM

Disassemble the A/T assembly to check component parts. Refer to [TM-533, "Disassembly"](#).

NOTE:

Check the component parts, referring to "Possible cause" in "DTC DETECTION LOGIC". Refer to [TM-421, "DTC Description"](#).

Is the inspection result normal?

YES >> Replace the control valve & TCM. Refer to [TM-464, "Exploded View"](#).

NO >> Repair or replace damaged parts.

P1734 7GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

P1734 7GR INCORRECT RATIO

DTC Description

INFOID:000000014419223

This malfunction is detected when the A/T does not shift into 7GR position as instructed by TCM. This is not only caused by electrical malfunction (circuits open or shorted) but by mechanical malfunction such as control valve sticking, improper solenoid valve operation, etc.

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
		Diagnosis condition	Signal
P1734	7GR INCORRECT RATIO (Gear 7 Incorrect Ratio)	Diagnosis condition	—
		Signal	—
		Threshold	The gear ratio is: • 0.821 or more • 0.729 or less
		Diagnosis delay time	—

POSSIBLE CAUSE

- 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

FAIL-SAFE

1st Fail-safe	The mode that the vehicle can stop safely, to prompt the driver to stop if the malfunction occurs and to shift to 2nd fail-safe early. It shifts to 2nd fail-safe or final fail-safe after the vehicle stopped.
2nd Fail-safe	The mode that the vehicle shifts to final fail-safe without changing the behavior, by identifying the malfunctioning parts in the condition that the driving force required for the driving is secured.
Final Fail-safe	<ul style="list-style-type: none"> • 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.

Vehicle condition	Vehicle behavior for 1st fail-safe	Vehicle behavior for 2nd fail-safe	Vehicle behavior for final fail-safe
Small gear ratio difference	Engine torque limit: Max 150 Nm (15 kg-lb, 111 ft-lb)	—	Engine torque limit: Max 150 Nm (15 kg-lb, 111 ft-lb)

P1734 7GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

Vehicle condition		Vehicle behavior for 1st fail-safe	Vehicle behavior for 2nd fail-safe	Vehicle behavior for final fail-safe
Great gear ratio difference	Neutral malfunction between the gears of 1 - 2 - 3 and 7	<ul style="list-style-type: none"> Locks in 2GR, 3GR or 4GR Manual mode is prohibited 	—	<ul style="list-style-type: none"> 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
	Other than the above	<ul style="list-style-type: none"> Locks in 1GR, 2GR, 3GR, 4GR, 5GR or 6GR Fix the gear while driving Manual mode is prohibited 	<ul style="list-style-type: none"> The shifting between the gears of 1 - 2 - 3 can be performed Manual mode is prohibited 	<ul style="list-style-type: none"> 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

DTC CONFIRMATION PROCEDURE

CAUTION:

- **“TM-425. "Diagnosis Procedure"” must be performed before starting “DTC CONFIRMATION PROCEDURE”.**
- **Never perform “DTC CONFIRMATION PROCEDURE” before completing the repair, which may cause secondary malfunction.**
- **Always drive vehicle at a safe speed.**

1. PRECONDITIONING

If “DTC CONFIRMATION PROCEDURE” is previously conducted, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

>> GO TO 2.

2. CHECK CLAMP CONNECTION

Check all clamp connections on the air duct from the air cleaner to throttle body.

>> GO TO 3.

3. 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?

P1734 7GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

- YES >> GO TO 4.
NO >> Drive vehicle to warm ATF or stop engine to cool ATF.

4.CHECK SYMPTOM (PART 1)

With CONSULT

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

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 CONDITION" 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 [TM-334, "DTC Index"](#).

With GST

1. Drive vehicle and maintain the following conditions for 2 seconds or more.

Selector lever : "M" position
Gear position : 7th
Accelerator pedal opening : 0.7/8 or more
Vehicle speed : 10 km/h (7 MPH) or more

2. Check DTC.

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 5.
YES-3 (COMPLETED RESULT NG)>>Go to [TM-425, "Diagnosis Procedure"](#).
YES-4 ("P1734" is detected)>>Go to [TM-425, "Diagnosis Procedure"](#).
NO >> GO TO 5.

5.CHECK SYMPTOM (PART 2)

With CONSULT

1. Stop vehicle.
2. Drive vehicle in "D" position allowing it to shift from 1GR to 7GR and check shift timing and shift shock.

>> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).
>> INSPECTION END

Diagnosis Procedure

INFOID:000000014419224

1.DETECT MALFUNCTIONING ITEM

Disassemble the A/T assembly to check component parts. Refer to [TM-533, "Disassembly"](#).

NOTE:

Check the component parts, referring to "Possible cause" in "DTC DETECTION LOGIC". Refer to [TM-423, "DTC Description"](#).

Is the inspection result normal?

- YES >> Replace the control valve & TCM. Refer to [TM-464, "Exploded View"](#).
NO >> Repair or replace damaged parts.

P1815 M-MODE SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

P1815 M-MODE SWITCH

DTC Description

INFOID:000000014419225

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
P1815	M-MODE SWITCH (Manual Mode Switch Circuit)	Diagnosis condition	—
		Signal	Up or down switch signal
		Threshold	Detects irregular when impossible input pattern
		Diagnosis delay time	2 second or more

POSSIBLE CAUSE

- Harness or connectors
(These switches circuit is open or shorted.)
- Manual mode switch

FAIL-SAFE

1st Fail-safe	The mode that the vehicle can stop safely, to prompt the driver to stop if the malfunction occurs and to shift to 2nd fail-safe early. It shifts to 2nd fail-safe or final fail-safe after the vehicle stopped.
2nd Fail-safe	The mode that the vehicle shifts to final fail-safe without changing the behavior, by identifying the malfunctioning parts in the condition that the driving force required for the driving is secured.
Final Fail-safe	<ul style="list-style-type: none">• 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.

Vehicle behavior for 1st fail-safe	Vehicle behavior for 2nd fail-safe	Vehicle behavior for final fail-safe
Manual mode is prohibited	—	Manual mode is prohibited

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 2 seconds.

SLCT LVR POSI : D

MANU MODE SW : ON

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

Is "P1815" detected?

YES >> Go to [TM-426, "Diagnosis Procedure"](#).

NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).

NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014419226

1. CHECK MANUAL MODE SWITCH CIRCUIT

P1815 M-MODE SWITCH

[7AT: RE7R01B]

< DTC/CIRCUIT DIAGNOSIS >

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 harness connector terminals.

A/T shift selector			Voltage (Approx.)
Connector	+	-	
	Terminal		
M68	7	Ground	Battery voltage
	8		

Is the inspection result normal?

- YES >> GO TO 2.
NO >> GO TO 3.

2.CHECK MANUAL MODE SWITCH

1. Turn ignition switch OFF.
2. Check manual mode switch. Refer to [TM-428, "Component Inspection"](#).

Is the inspection result normal?

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

3.CHECK GROUND CIRCUIT (MANUAL MODE SWITCH CIRCUIT)

1. Turn ignition switch OFF.
2. Check continuity between A/T shift selector harness connector terminal and ground.

A/T shift selector		—	Continuity
Connector	Terminal		
M68	2	Ground	Existed

Is the inspection result normal?

- YES >> GO TO 4.
NO >> Repair or replace damaged parts.

4.CHECK HARNESS BETWEEN A/T SHIFT SELECTOR AND COMBINATION METER (PART 1)

1. Disconnect unified meter and A/C amp. connector.
2. Check continuity between A/T shift selector harness connector terminals and combination meter harness connector terminals.

A/T shift selector		Combination meter		Continuity
Connector	Terminal	Connector	Terminal	
M68	7	M24*1	32	Existed
	8	M163*2	33	

*1: TYPE A

*2: TYPE B

For details, refer to [MWI-5, "Information"](#).

Is the inspection result normal?

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

5.CHECK HARNESS BETWEEN A/T SHIFT SELECTOR AND COMBINATION METER (PART 2)

Check continuity between A/T shift selector harness connector terminals and ground.

P1815 M-MODE SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

A/T shift selector		—	Continuity
Connector	Terminal		
M68	7	Ground	Not existed
	8		

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace damaged parts.

6. CHECK COMBINATION METER

1. Reconnect all the connectors.
2. Turn ignition switch ON.
3. Select "M RANGE SW", "NM RANGE SW", "AT SFT UP SW" and "AT SFT DWN SW" in "Data Monitor" in "METER/M&A".
4. Check the ON/OFF operations of each monitor item. Refer to [MWI-30, "Reference Value"](#) (TYPE A) or [MWI-134, "Reference Value"](#) (TYPE B). To identify vehicle type, refer to [MWI-5, "Information"](#).

Is the inspection result normal?

YES >> Replace the control valve & TCM. Refer to [TM-464, "Removal and Installation"](#).

NO >> Replace combination meter. Refer to [MWI-108, "Removal and Installation"](#) (TYPE A) or [MWI-187, "Removal and Installation"](#) (TYPE B). To identify vehicle type, refer to [MWI-5, "Information"](#).

Component Inspection

INFOID:000000014419227

1. CHECK MANUAL MODE SWITCH

Check continuity between A/T shift selector connector terminals.

A/T shift selector	Condition	Continuity
Terminal		
7 - 2	Selector lever is shifted to + side	Existed
	Other than the above	Not existed
8 - 2	Selector lever is shifted to - side	Existed
	Other than the above	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace A/T shift selector assembly. Refer to [TM-458, "Removal and Installation"](#).

P2713 PRESSURE CONTROL SOLENOID D

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

P2713 PRESSURE CONTROL SOLENOID D

DTC Description

INFOID:000000014419228

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
P2713	PC SOLENOID D (Pressure Control Solenoid "D")	Diagnosis condition	High and low reverse clutch solenoid valve command value is more than 0.75 A
		Signal	—
		Threshold	High and low reverse clutch solenoid valve monitor value is 0.2 A or less
		Diagnosis delay time	—

POSSIBLE CAUSE

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

FAIL-SAFE

1st Fail-safe	The mode that the vehicle can stop safely, to prompt the driver to stop if the malfunction occurs and to shift to 2nd fail-safe early. It shifts to 2nd fail-safe or final fail-safe after the vehicle stopped.
2nd Fail-safe	The mode that the vehicle shifts to final fail-safe without changing the behavior, by identifying the malfunctioning parts in the condition that the driving force required for the driving is secured.
Final Fail-safe	<ul style="list-style-type: none"> • 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.

Vehicle behavior for 1st fail-safe	Vehicle behavior for 2nd fail-safe	Vehicle behavior for final fail-safe
<ul style="list-style-type: none"> • Locks in 2GR, 3GR, 4GR, 5GR, 6GR or 7GR • Manual mode is prohibited 	—	<ul style="list-style-type: none"> • 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

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 the vehicle and maintain the following conditions for 5 seconds or more.

P2713 PRESSURE CONTROL SOLENOID D

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

BATTERY VOLT : 9 V or more
MANU MODE SW : ON
GEAR : 3rd
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 "P2713" detected?

YES >> Go to [TM-430, "Diagnosis Procedure"](#).
NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014419229

1. REPLACE CONTROL VALVE & TCM

Replace control valve & TCM. Refer to [TM-464, "Removal and Installation"](#).

>> WORK END

P2722 PRESSURE CONTROL SOLENOID E

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

P2722 PRESSURE CONTROL SOLENOID E

DTC Description

INFOID:000000014419230

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
P2722	PC SOLENOID E (Pressure Control Solenoid "E")	Diagnosis condition	Low brake solenoid valve command value is more than 0.75 A
		Signal	—
		Threshold	Low brake solenoid valve monitor value is 0.2 A or less
		Diagnosis delay time	—

POSSIBLE CAUSE

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

FAIL-SAFE

1st Fail-safe	The mode that the vehicle can stop safely, to prompt the driver to stop if the malfunction occurs and to shift to 2nd fail-safe early. It shifts to 2nd fail-safe or final fail-safe after the vehicle stopped.
2nd Fail-safe	The mode that the vehicle shifts to final fail-safe without changing the behavior, by identifying the malfunctioning parts in the condition that the driving force required for the driving is secured.
Final Fail-safe	<ul style="list-style-type: none"> • 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.

Vehicle behavior for 1st fail-safe	Vehicle behavior for 2nd fail-safe	Vehicle behavior for final fail-safe
<ul style="list-style-type: none"> • Locks in 2GR, 3GR, 4GR, 5GR, 6GR or 7GR • Manual mode is prohibited 	—	<ul style="list-style-type: none"> • 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

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.

P2722 PRESSURE CONTROL SOLENOID E

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

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 [TM-432, "Diagnosis Procedure"](#).

NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).

NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014419231

1. REPLACE CONTROL VALVE & TCM

Replace control valve & TCM. Refer to [TM-511, "4WD : Exploded View"](#).

>> WORK END

P2731 PRESSURE CONTROL SOLENOID F

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

P2731 PRESSURE CONTROL SOLENOID F

DTC Description

INFOID:000000014419232

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
P2731	PC SOLENOID F (Pressure Control Solenoid "F")	Diagnosis condition	2346 brake solenoid valve command value is more than 0.75 A
		Signal	—
		Threshold	2346 brake solenoid valve monitor value is 0.2 A or less
		Diagnosis delay time	—

POSSIBLE CAUSE

- Harness or connectors
(Solenoid valve circuit is open or shorted.)
- 2346 brake solenoid valve

FAIL-SAFE

1st Fail-safe	The mode that the vehicle can stop safely, to prompt the driver to stop if the malfunction occurs and to shift to 2nd fail-safe early. It shifts to 2nd fail-safe or final fail-safe after the vehicle stopped.
2nd Fail-safe	The mode that the vehicle shifts to final fail-safe without changing the behavior, by identifying the malfunctioning parts in the condition that the driving force required for the driving is secured.
Final Fail-safe	<ul style="list-style-type: none"> • 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.

Vehicle behavior for 1st fail-safe	Vehicle behavior for 2nd fail-safe	Vehicle behavior for final fail-safe
<ul style="list-style-type: none"> • Locks in 2GR, 3GR, 4GR, 5GR, 6GR or 7GR • Manual mode is prohibited 	—	<ul style="list-style-type: none"> • 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

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.

P2731 PRESSURE CONTROL SOLENOID F

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

BATTERY VOLT : 9 V or more
MANU MODE SW : ON
GEAR : 2nd
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 "P2731" detected?

YES >> Go to [TM-434, "Diagnosis Procedure"](#).

NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).

NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014419233

1. REPLACE CONTROL VALVE & TCM

Replace control valve & TCM. Refer to [TM-511, "4WD : Exploded View"](#).

>> WORK END

P2807 PRESSURE CONTROL SOLENOID G

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

P2807 PRESSURE CONTROL SOLENOID G

DTC Description

INFOID:000000014419234

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	
P2807	PC SOLENOID G (Pressure Control Solenoid "G")	Diagnosis condition	Direct clutch solenoid valve command value is more than 0.75 A
		Signal	—
		Threshold	Direct clutch solenoid valve monitor value is 0.2 A or less
		Diagnosis delay time	—

POSSIBLE CAUSE

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

FAIL-SAFE

1st Fail-safe	The mode that the vehicle can stop safely, to prompt the driver to stop if the malfunction occurs and to shift to 2nd fail-safe early. It shifts to 2nd fail-safe or final fail-safe after the vehicle stopped.
2nd Fail-safe	The mode that the vehicle shifts to final fail-safe without changing the behavior, by identifying the malfunctioning parts in the condition that the driving force required for the driving is secured.
Final Fail-safe	<ul style="list-style-type: none"> • 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.

Vehicle behavior for 1st fail-safe	Vehicle behavior for 2nd fail-safe	Vehicle behavior for final fail-safe
<ul style="list-style-type: none"> • Locks in 2GR, 3GR, 4GR, 5GR, 6GR or 7GR • Manual mode is prohibited 	—	<ul style="list-style-type: none"> • 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

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.

P2807 PRESSURE CONTROL SOLENOID G

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

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-436, "Diagnosis Procedure"](#).

NO-1 >> To check malfunction symptom before repair: Refer to [GI-47, "Intermittent Incident"](#).

NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:000000014419235

1. REPLACE CONTROL VALVE & TCM

Replace control valve & TCM. Refer to [TM-511, "4WD : Exploded View"](#).

>> WORK END

MAIN POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

MAIN POWER SUPPLY AND GROUND CIRCUIT

Diagnosis Procedure

INFOID:000000014419236

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 harness connector terminal and ground.

+		-	Condition	Voltage (Approx.)
A/T assembly				
Connector	Terminal			
F46	2	Ground	Always	Battery voltage

Is the inspection result normal?

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

2.CHECK TCM POWER SOURCE (PART 2)

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

+		-	Condition	Voltage (Approx.)
A/T assembly				
Connector	Terminal			
F46	1	Ground	Turn ignition switch ON	Battery voltage
			Turn ignition switch OFF	0 V
	6		Turn ignition switch ON	Battery voltage
			Turn ignition switch OFF	0 V

Is the inspection result normal?

- YES >> GO TO 3.
NO >> GO TO 7.

3.CHECK TCM GROUND CIRCUIT

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

A/T assembly		—	Continuity
Connector	Terminal		
F46	5	Ground	Existed
	10		

Is the inspection result normal?

- YES >> GO TO 4.
NO >> Repair or replace damaged parts.

4.CHECK INTERMITTENT INCIDENT

Refer to [GI-47. "Intermittent Incident"](#).

Is the inspection result normal?

- YES >> Replace the control valve & TCM. Refer to [TM-464. "Exploded View"](#).
NO >> Repair or replace damaged parts.

5.DETECT MALFUNCTIONING ITEM (PART 1)

Check the following.

- Open circuit or short circuit in harness between battery positive terminal and A/T assembly harness connector terminal 2.

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MAIN POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

- Battery
- 10A fuse [No.2, located in the fuse block (J/B)].

Is the inspection result normal?

YES >> Check intermittent incident. Refer to [GI-47, "Intermittent Incident"](#).

NO >> Repair or replace damaged parts.

6. CHECK HARNESS BETWEEN TCM RELAY E/R AND A/T ASSEMBLY

1. Turn ignition switch OFF.
2. Disconnect TCM relay connector.
3. Check continuity between TCM relay harness connector terminal and A/T assembly harness connector terminals.

TCM relay		A/T assembly		Continuity
Connector	Terminal	Connector	Terminal	
E98	3	F46	1	Existed
			6	

Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair or replace damaged parts.

7. DETECT MALFUNCTIONING ITEM (PART 2)

Check the following.

- Open circuit or short circuit in harness between battery and TCM relay.
- Short circuit in harness between TCM relay harness connector terminal 3 and A/T assembly harness connector terminal 1, and 6.
- 10A fuse [No.2, located in the fuse block (J/B)].
- TCM relay

Is the inspection result normal?

YES >> Check intermittent incident. Refer to [GI-47, "Intermittent Incident"](#).

NO >> Repair or replace damaged parts.

TOW MODE SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

TOW MODE SYSTEM

Diagnosis Procedure

INFOID:000000014419237

1. CHECK TCM INPUT SIGNAL

1. Turn ignition switch ON.
2. Select "TOW MODE SWITCH" in "Data Monitor" in "TRANSMISSION".
3. Check the ON/OFF operations of each monitor item.

Monitor Item	Condition	Status
TOW MODE SWITCH	TOW mode switch: Pushed	ON
	Other than the above	OFF

Is the inspection result normal?

- YES >> Check intermittent incident. Refer to [GI-47. "Intermittent Incident"](#).
 NO >> GO TO 2.

2. CHECK CIRCUIT BETWEEN COMBINATION METER AND A/T SHIFT SELECTOR

1. Turn ignition switch OFF.
2. Disconnect combination meter connector and A/T shift selector connector.
3. Check continuity between A/T shift selector harness connector terminals and combination meter harness connector terminals.

A/T shift selector		Combination meter		Continuity
Connector	Terminal	Connector	Terminal	
M68	6	M24*1	10	Existed
		M163*2		

*1: TYPE A

*2: TYPE B

NOTE:

To identify vehicle type, refer to [MWI-5. "Information"](#).

Is the inspection result normal?

- YES >> GO TO 3.
 NO >> Repair or replace malfunctioning parts.

3. CHECK CIRCUIT BETWEEN COMBINATION METER AND A/T SHIFT SELECTOR

Check continuity between combination meter harness connector terminals and ground.

Combination meter		—	Continuity
Connector	Terminal		
M24*1	10	Ground	Not existed
M163*2			

*1: TYPE A

*2: TYPE B

NOTE:

To identify vehicle type, refer to [MWI-5. "Information"](#).

Is the inspection result normal?

- YES >> GO TO 4.
 NO >> Repair or replace malfunctioning parts.

4. CHECK A/T SHIFT SELECTOR GROUND CIRCUIT

Check continuity between A/T shift selector connector harness connector terminals and ground.

TOW MODE SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

A/T shift selector		—	Continuity
Connector	Terminal		
M68	2	Ground	Existed

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace malfunctioning parts.

5. CHECK COMBINATION METER

Check combination meter. Refer to [MWI-77. "Work flow"](#) (TYPE A) or [MWI-160. "Work flow"](#) (TYPE B).

NOTE:

To identify vehicle type, refer to [MWI-5. "Information"](#).

Is the inspection result normal?

YES >> Replace the A/T shift selector. Refer to [TM-458. "Removal and Installation"](#).

NO >> Replace the combination meter. Refer to [MWI-108. "Removal and Installation"](#).

SHIFT POSITION INDICATOR CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

SHIFT POSITION INDICATOR CIRCUIT

Description

INFOID:000000014419238

TCM transmits a shift position signal to the combination meter via CAN communication line. While the vehicle is running, the combination meter displays a shift position in the information display, according to this signal. Refer to [TM-270, "A/T CONTROL SYSTEM : Selector Lever Position Indicator"](#).

Component Function Check

INFOID:000000014419239

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-441, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000014419240

1. CHECK INPUT SIGNALS

With CONSULT

1. Start the engine.
2. Select "SLCT LVR POSI" in "Data Monitor" in "TRANSMISSION".
3. Check the actual selector lever position ("P", "R", "N" and "D") and the indication of the "SLCT LVR POSI" mutually coincide. Refer to [TM-324, "Reference Value"](#).
4. Drive vehicle in the manual mode, and then check that the actual gear position and the indication of the "SLCT LVR POSI" mutually coincide when the selector lever is shifted to the "UP (+ side)" or "DOWN (- side)" side (1GR ⇔ 7GR). Refer to [TM-324, "Reference Value"](#).

Is the inspection result normal?

YES >> INSPECTION END

NO-1 [The actual gear position does not change, or shifting into the manual mode is not possible (no gear shifting in the manual mode possible). Or the shift position indicator is not indicated.]>>Check manual mode switch. Refer to [TM-428, "Component Inspection"](#).

- Check A/T main system (Fail-safe function actuated).

- Perform "Self Diagnostic Results" in "TRANSMISSION". Refer to [TM-334, "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-334, "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 [TM-334, "DTC Index"](#).

NO-4 (Only a specific position or positions is/are not indicated on the shift position indicator.)>>Check the combination meter. Refer to [MWI-30, "Reference Value"](#) (TYPE A) or [MWI-134, "Reference Value"](#) (TYPE B). To identify vehicle type, refer to [MWI-5, "Information"](#).

SHIFT LOCK SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

SHIFT LOCK SYSTEM

Component Function Check

INFOID:000000014419241

1. CHECK SHIFT LOCK OPERATION (1)

1. Turn ignition ON.
2. Shift the selector lever to "P" (Park) 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?

- YES >> Refer to [TM-442, "Diagnosis Procedure"](#).
NO >> GO TO 2.

2. CHECK SHIFT LOCK OPERATION (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 >> Refer to [TM-442, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000014419242

Regarding Wiring Diagram information, refer to [TM-348, "Wiring Diagram"](#).

1. CHECK POWER SOURCE

1. Turn ignition switch OFF.
2. Disconnect BCM connector M18.
3. Check voltage between BCM connector M18 terminal 27 and ground while pressing the brake pedal.

BCM		Ground	Condition	Voltage (Approx.)
Connector	Terminal		Brake pedal depressed	Battery voltage
M18	27			

Is the inspection result normal?

- YES >> GO TO 3.
NO >> GO TO 2.

2. CHECK STOP LAMPS

Do the stop lamps operate normally?

Is the inspection result normal?

- YES >> Check the following:
- Harness between fuse block (J/B) and BCM
 - Fuse block (J/B)
- NO >> Refer to [EXL-77, "Wiring Diagram"](#) (with halogen headlamps) or [EXL-233, "Wiring Diagram"](#) (with LED headlamps).

3. CHECK HARNESS BETWEEN BCM AND A/T SHIFT SELECTOR

1. Disconnect A/T shift selector connector.
2. Check continuity between BCM connector M80 terminal 108 and A/T shift selector connector M68 terminal 3.

BCM		A/T shift selector		Continuity
Connector	Terminal	Connector	Terminal	
M80	108	M68	3	Yes

3. Check continuity between BCM connector M80 terminal 108 and ground.

SHIFT LOCK SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

BCM		Ground	Continuity
Connector	Terminal		
M80	108		No

Is the inspection result normal?

- YES >> GO TO 4.
- NO >> Repair or replace harness or connector.

4.CHECK GROUND CIRCUIT (A/T SHIFT SELECTOR)

Check continuity between A/T shift selector connector M68 terminal 3 and ground.

A/T shift selector		Ground	Continuity
Connector	Terminal		
M68	3		Yes

Is the inspection result normal?

- YES >> Replace A/T shift selector. Refer to [TM-219, "Removal and Installation"](#).
- NO >> Repair or replace harness or connector.

Component Inspection (Shift Lock Solenoid)

INFOID:0000000014419243

1.CHECK SHIFT LOCK SOLENOID

Apply voltage to terminals of shift lock solenoid and park position switch (shift selector) connector and check that shift lock solenoid is activated.

CAUTION:

- Connect the fuse between the terminals when applying the voltage.
- Never cause shorting between terminals.

+	-	Condition	Status
Shift lock solenoid			
Terminals			
1	3	Apply 12 V between terminals 1 and 3 with the park position switch (shift selector) in the "P" (park) position.	Shift lock solenoid operates.

Is the inspection result normal?

- YES >> Inspection End.
- NO >> Replace A/T shift selector. Refer to [TM-220, "Inspection and Adjustment"](#).

Component Inspection (Park Position Switch)

INFOID:0000000014419244

1.CHECK PARK POSITION SWITCH (SHIFT SELECTOR)

Apply voltage to terminals of shift lock solenoid and park position switch (shift selector) connector and check that shift lock solenoid is activated.

CAUTION:

- Connect the fuse between the terminals when applying the voltage.
- Never cause shorting between terminals.

+	-	Condition	Status
Shift lock solenoid			
Terminals			
1	3	Apply 12 V between terminals 1 and 3 with the park position switch (shift selector) in the "P" (park) position.	Shift lock solenoid operates.

Is the inspection result normal?

SHIFT LOCK SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B]

- YES >> Inspection End.
NO >> Replace A/T shift selector. Refer to [TM-219, "Removal and Installation"](#).

Component Inspection (Stop Lamp Switch)

INFOID:0000000014419245

1. CHECK STOP LAMP SWITCH

Check the continuity between the stop lamp switch connector terminals.

Stop lamp switch		Condition	Continuity
Terminals			
1	2	Brake pedal depressed	Yes
		Brake pedal released	No

Is the inspection result normal?

- YES >> Inspection End.
NO >> Replace stop lamp switch. Refer to [BR-21, "Exploded View"](#).

Component Inspection (Stop Lamp Relay)

INFOID:0000000014419246

1. CHECK STOP LAMP RELAY

Check continuity between stop lamp relay terminals.

CAUTION:

Connect the fuse between the terminals when applying the voltage.

Stop lamp relay connector		Condition	Continuity
Terminal			
3	5	Apply 12 V direct current between terminals 1 and 2.	Yes
		OFF	No

Is the inspection result normal?

- YES >> Inspection End.
NO >> Replace shift lock relay.

SYSTEM SYMPTOM

< SYMPTOM DIAGNOSIS >

[7AT: RE7R01B]

SYMPTOM DIAGNOSIS

SYSTEM SYMPTOM

Symptom Table

INFOID:000000014419247

- 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

Symptom			Diagnostic item																								
			TM-363	TM-379	TM-419	TM-417	TM-381	TM-377	TM-374	TM-437	TM-372	TM-426	TM-444	TM-407	TM-403	TM-431	TM-414	TM-429	TM-410	TM-435	TM-433	TM-408	TM-370	TM-368			
Poor performance	Driving performance	Shift point is high in "D" position.		1	2	3																					
		Shift point is low in "D" position.		1	2																						
		Large shock	When shifting gears	→ "D" position	4	7	6	6	5	3	2											3	1				
				→ "R" position	4	7	6	6	5	3													2	1			
				1GR ⇔ 2GR	4	2	5	4	4														3	1			
				2GR ⇔ 3GR	4	2	5	4	4															3	1		
				3GR ⇔ 4GR	4	2	5	4	4								3		3						1		
				4GR ⇔ 5GR	4	2	5	4	4											3	3					1	
				5GR ⇔ 6GR	4	2	5	4	4												3	3					1
				6GR ⇔ 7GR	4	2	5	4	4										3				3		1		
	Downshift when accelerator pedal is depressed		3	2	4	3	3																1				
	Upshift when accelerator pedal is released		3	2	4	3	3																1				
	Lock-up		4	2	4	4	4								3								1				
	Judder		Lock-up		2	1	1	4							3												
	Strange noise	In "R" position		2	1																						
		In "N" position		2	1																						
In "D" position		2	1																								
Engine at idle		2	1																								

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SYSTEM SYMPTOM

< SYMPTOM DIAGNOSIS >

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Symptom				Diagnostic item																							
				IM-363	IM-379	IM-419	IM-417	IM-381	IM-377	IM-374	IM-437	IM-372	IM-426	IM-444	IM-407	IM-403	IM-431	IM-414	IM-429	IM-410	IM-435	IM-433	IM-408	IM-370	IM-368		
Function trouble	Poor shifting	Slip	When shifting gears	1GR ⇔ 2GR	3			3	3	4					2							2			1		
				2GR ⇔ 3GR	3			3	3	4					2						2					1	
				3GR ⇔ 4GR	3			3	3	4					2		2		2					2			1
				4GR ⇔ 5GR	3			3	3	4					2					2		2					1
				5GR ⇔ 6GR	3			3	3	4					2						2		2				1
				6GR ⇔ 7GR	3			3	3	4					2			2					2				1
		Engine brake does not work	"M" position	"D" position → "M" position			5			5	5	6		4	2	3		3	3							1	
				7GR → 6GR	5			5	5	6		4	2	3			3					3				1	
				6GR → 5GR	5			5	5	6		4	2	3							3	3				1	
				5GR → 4GR	5			5	5	6		4	2	3					3			3				1	
				4GR → 3GR	5			5	5	6		4	2	3		3		3						3		1	
				3GR → 2GR	5			5	5	6		4	2	3				3			3		3				1
					2GR → 1GR	5			5	5	6		4	2	3		3					3			1		

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SYSTEM SYMPTOM

< SYMPTOM DIAGNOSIS >

[7AT: RE7R01B]

			Symptom	Diagnostic item																						
				TM-363	TM-379	TM-419	TM-417	TM-381	TM-377	TM-374	TM-437	TM-372	TM-426	TM-444	TM-407	TM-403	TM-431	TM-414	TM-429	TM-410	TM-435	TM-433	TM-408	TM-370	TM-368	
Function trouble	Poor power transmission	Slip	With selector lever in "D" position, acceleration is extremely poor.	5	3			3	3	4						2		2						2	1	
			With selector lever in "R" position, 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 accelerating in 2GR, engine races.		3			3	3	4							2		2					2	2	1
			While accelerating in 3GR, engine races.		3			3	3	4							2		2				2	2		1
			While accelerating in 4GR, engine races.		3			3	3	4							2			2			2	2		1
			While accelerating in 5GR, engine races.		3			3	3	4							2			2	2		2	2		1
			While accelerating in 6GR, engine races.		3			3	3	4							2			2	2		2	2		1
			While accelerating in 7GR, engine 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	
			Extremely large creep.					1																		

SYSTEM SYMPTOM

< SYMPTOM DIAGNOSIS >

[7AT: RE7R01B]

Symptom			Diagnostic item																						
			Control cable	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	
Function trouble	Power transmission cannot be performed	Vehicle cannot run in all position.	3							2			1	1	1	1	1	1	1	1	1				
		Driving is not possible in "D" position.	3							2			1	1	1	1	1	1	1	1	1				
		Driving is not possible in "R" position.	3							2		1							1			1			
		Engine stall		4	5	5			6		3		2										1		
		Engine stalls when selector lever shifted "N" → "D" or "R".		4	5	5				3			2											1	
		Engine does not start in "N" or "P" position.		3					1	2														1	
	Poor operation	Vehicle does not enter parking condition.		1						2															
		Parking condition is not cancelled.		1						2															
		Vehicle runs with A/T in "P" position.		1						2															
		Vehicle moves forward with the "R" position.		1						2															
		Vehicle runs with A/T in "N" position.		1						2															
		Vehicle moves backward with the "D" position.		1						2															

SYMPTOM TABLE 2

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SYSTEM SYMPTOM

< SYMPTOM DIAGNOSIS >

[7AT: RE7R01B]

Symptom			Diagnostic item																	
			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				
Poor performance	Driving performance	Shift point is high in "D" position.																		
		Shift point is low in "D" position.																		
		Large shock	When shifting gears	→ "D" position	1	2												2		
				→ "R" position	1							1							2	
				1GR ⇔ 2GR								1							2	
				2GR ⇔ 3GR								1							2	
				3GR ⇔ 4GR			2	1											2	
				4GR ⇔ 5GR					1		1									2
				5GR ⇔ 6GR						1	1									2
				6GR ⇔ 7GR				1				1								2
		Downshift when accelerator pedal is depressed				2	1	1	1	1		1	1					2		
		Upshift when accelerator pedal is released				2	1	1	1	1		1	1					2		
		Lock-up				1												2		
		Judder		Lock-up		1												2		
	Strange noise	In "R" position		1	1						1					1	2			
		In "N" position		1	1											1	2			
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-272, "TRANSMISSION : Cross-Sectional View"](#).

SYSTEM SYMPTOM

< SYMPTOM DIAGNOSIS >

[7AT: RE7R01B]

Symptom			Diagnostic item														
			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	
Function trouble	Gear does no change	"D" position	Locks in 1GR				1		1		1						2
			Locks in 2GR														1
			Locks in 3GR														1
			Locks in 4GR														1
			Locks in 5GR														1
			Locks in 6GR														1
			Locks in 7GR														1
			1GR → 2GR				1		1		1						2
			2GR → 3GR							1							2
			3GR → 4GR			2	1	1	1								2
			4GR → 5GR							1	1						2
			5GR → 6GR							1							2
			6GR → 7GR			2	1	1	1								2
			5GR → 4GR						1								2
			4GR → 3GR			2		1									2
			3GR → 2GR							1				1			2
		2GR → 1GR							1	1		1				2	
		Does not lock-up		1	2	1	1	1	1	1		1	1			2	
		"M" position	1GR ⇔ 2GR			2	1	1	1	1	1		1	1			2
			2GR ⇔ 3GR			2	1	1	1	1	1		1	1			2
3GR ⇔ 4GR				2	1	1	1	1	1		1	1			2		
4GR ⇔ 5GR				2	1	1	1	1	1		1	1			2		
5GR ⇔ 6GR				2	1	1	1	1	1		1	1			2		
6GR ⇔ 7GR				2	1	1	1	1	1		1	1			2		

*: Parts behind drum support is impossible to perform inspection by disassembly. Refer to [TM-272. "TRANSMISSION : Cross-Sectional View"](#).

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SYSTEM SYMPTOM

< SYMPTOM DIAGNOSIS >

[7AT: RE7R01B]

Symptom				Diagnostic item															
				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		
Function trouble	Poor shifting	Slip	When shifting gears	1GR ⇔ 2GR	1							1		1			2		
			2GR ⇔ 3GR	1						1						2			
			3GR ⇔ 4GR	1		2		1								2			
			4GR ⇔ 5GR	1					1		1					2			
			5GR ⇔ 6GR	1						1	1					2			
			6GR ⇔ 7GR	1			1				1					2			
		Engine brake does not work	“M” position	“D” position → “M” position			1			1	1				1	1			2
				7GR → 6GR			1			1									2
				6GR → 5GR			1						1	1					2
				5GR → 4GR			1					1		1					2
				4GR → 3GR			1		2		1								2
				3GR → 2GR			1				1		1			1	1		2
	2GR → 1GR			1			1					1		1		2			

SYSTEM SYMPTOM

< SYMPTOM DIAGNOSIS >

[7AT: RE7R01B]

Symptom			Diagnostic item															
			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		
Function trouble	Poor power transmission	Slip	With selector lever in "D" position, acceleration is extremely poor.	1	1	2						1		1	2			
			With selector lever in "R" position, acceleration is extremely poor.	1	1							1	1	1	1	2		
			While starting off by accelerating in 1GR, engine races.	1	1	2							1	1	1	2		
			While accelerating in 2GR, engine races.	1		2					1			1	1	2		
			While accelerating in 3GR, engine races.	1		2				1	1				1	2		
			While accelerating in 4GR, engine races.	1				1		1	1				1	2		
			While accelerating in 5GR, engine races.	1				1	1	1					1	2		
			While accelerating in 6GR, engine races.	1				1	1		1				1	2		
			While accelerating in 7GR, engine races.	1			1	1	1							2		
			Lock-up	1	1											1	2	
			No creep at all.	1	1	2	1	1	1	1	1		1	1	1	2	1	
			Extremely large creep.		1													

*: Parts behind drum support is impossible to perform inspection by disassembly. Refer to [TM-272. "TRANSMISSION : Cross-Sectional View"](#).

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SYSTEM SYMPTOM

< SYMPTOM DIAGNOSIS >

[7AT: RE7R01B]

Symptom		Diagnostic item															
		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-576	TM-516	TM-516	TM-516	TM-598	TM-588	TM-600	TM-576	TM-516	TM-516	TM-593	TM-516	TM-464	TM-516		
Function trouble	Power transmission 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" position.	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" → "D" or "R".		1													
		Engine does not start in "N" or "P" position.		1													
	Poor operation	Vehicle does not enter parking condition.															1
		Parking condition is not cancelled.															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-272, "TRANSMISSION : Cross-Sectional View"](#).

PERIODIC MAINTENANCE

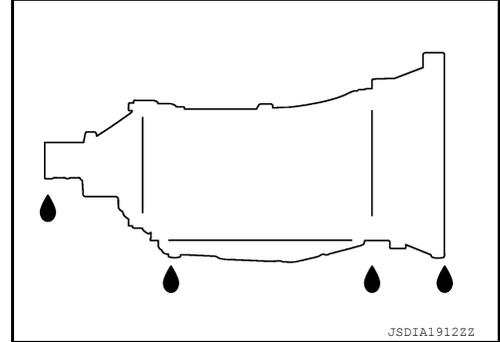
A/T FLUID

Inspection

INFOID:0000000014419248

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-457. "Adjustment"](#).



Changing

INFOID:0000000014419249

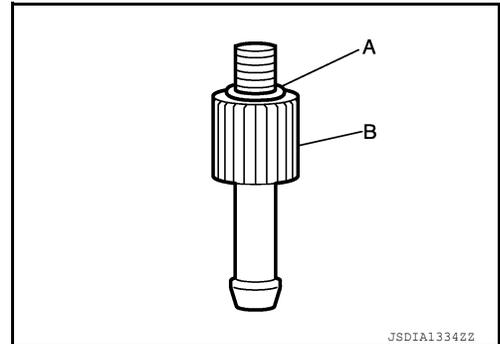
Recommended fluid and fluid capacity : Refer to [MA-13. "VK56VD Gasoline Engine : Fluids and Lubricants"](#).

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 INFINITI new vehicle limited warranty.
- When filling ATF, be careful not to scatter heat generating parts such as exhaust.

1. Step 1

- Install the O-ring (315268E000) (A) to the charging pipe (310811EA5A) (B).



2. Step 2

- Use CONSULT to check that the ATF temperature is 40°C (104°F) or less.
- Lift up the vehicle.
- Remove the drain plug from the oil pan, and then drain the ATF.
- When the ATF starts to drip, temporarily tighten the drain plug to the oil pan.

NOTE:

Never replace drain plug and drain plug gasket with new ones yet.

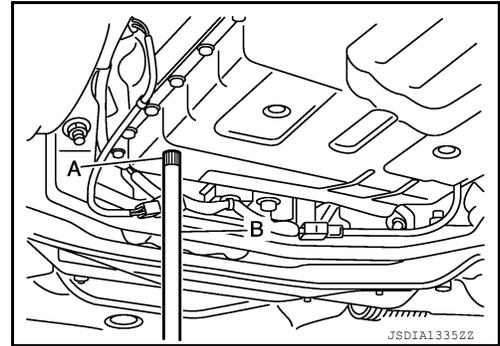
- Remove overflow plug from oil pan.

A/T FLUID

< PERIODIC MAINTENANCE >

[7AT: RE7R01B]

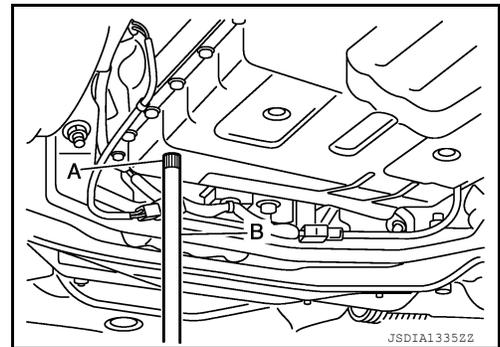
- f. Install the charging pipe (A) to the overflow plug hole.
CAUTION:
Tighten the charging pipe by hand.
- g. Install the bucket pump hose (B) to the charging pipe.
CAUTION:
Insert the bucket pump hose all the way to the end of the charging pipe.
- h. Fill approximately 3 liters (3-1/8 US qt, 2-5/8 Imp 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.
- l. 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 [TM-464](#), "[Exploded View](#)".

CAUTION:
Do not 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 Imp 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.
- l. 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 remove the overflow plug from the oil pan.
CAUTION:
Perform "Step 4-o" with the engine at idle.
- p. When the ATF starts to drip, tighten the overflow plug to the oil pan to the specified torque. Refer to [TM-464](#), "[Exploded View](#)".

CAUTION:

Do not reuse overflow plug.

Adjustment

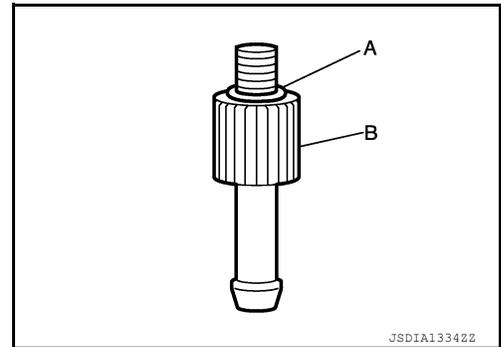
INFOID:000000014419250

Recommended fluid and fluid capacity : Refer to [MA-13. "VK56VD Gasoline Engine : Fluids and Lubricants"](#).

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 INFINITI new vehicle limited warranty.
- When filling ATF, be careful not to scatter heat generating parts such as exhaust.
- Always maintain the ATF temperature within between 35°C (95°F) and 45°C (113°F) while checking with CONSULT 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.
6. Lift up the vehicle.
7. Check the ATF leakage from transmission.
8. Remove overflow plug from oil pan.
9. Install the charging pipe (A) to the overflow plug hole.

CAUTION:

Tighten the charging pipe by hand.

10. Install the bucket pump hose (B) to the charging pipe.

CAUTION:

Insert the bucket pump hose all the way to the end of the charging pipe.

11. Fill approximately 0.5 liters (1/2 US qt, 1/2 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.

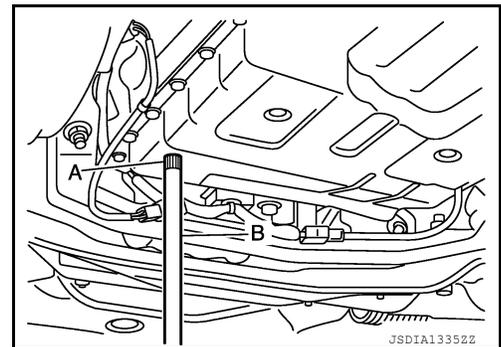
CAUTION:

Perform "Step 12" with the engine at idle.

13. When the ATF starts to drip, tighten the overflow plug to the oil pan to the specified torque. Refer to [TM-464. "Exploded View"](#).

CAUTION:

Do not reuse overflow plug.



A/T SHIFT SELECTOR

< REMOVAL AND INSTALLATION >

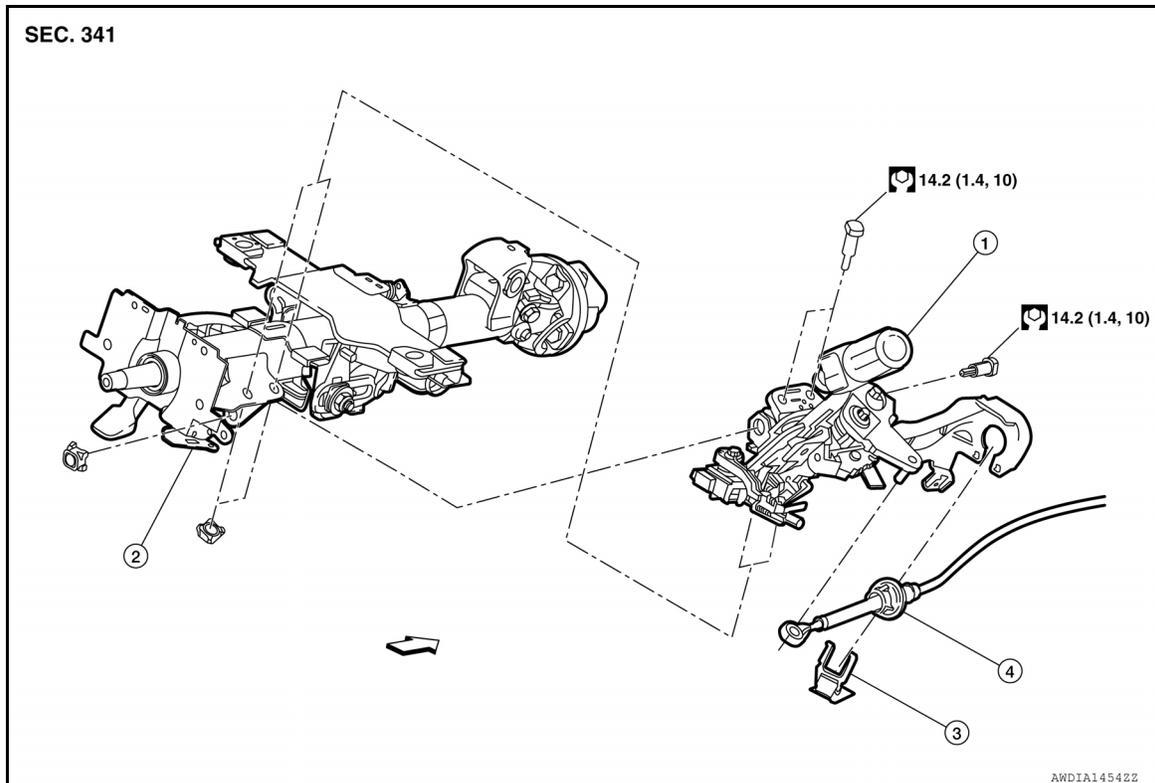
[7AT: RE7R01B]

REMOVAL AND INSTALLATION

A/T SHIFT SELECTOR

Exploded View

INFOID:000000014419251



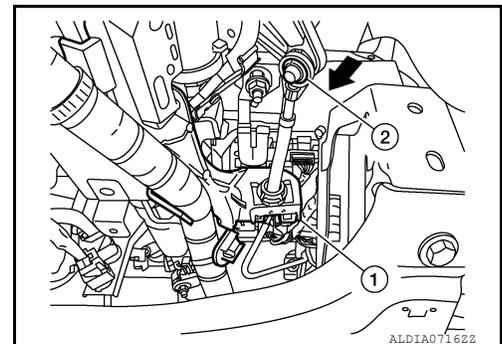
- | | | |
|-----------------------|--------------------|---------------|
| 1. A/T shift selector | 2. Steering column | 3. Lock plate |
| 4. Control cable | ← : Front | |

Removal and Installation

INFOID:000000014419252

REMOVAL

1. Remove steering column covers. Refer to [IP-18, "Removal and Installation"](#).
2. Remove lock plate (1) and pull control cable (2) in the direction shown (←) to disconnect A/T shift selector.



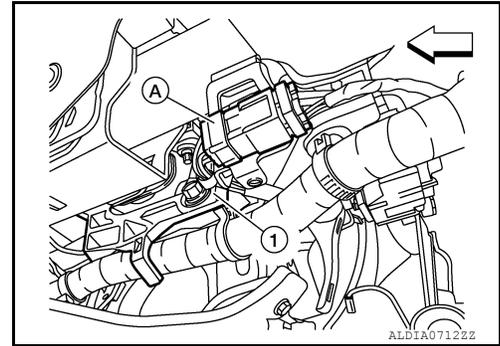
A/T SHIFT SELECTOR

< REMOVAL AND INSTALLATION >

[7AT: RE7R01B]

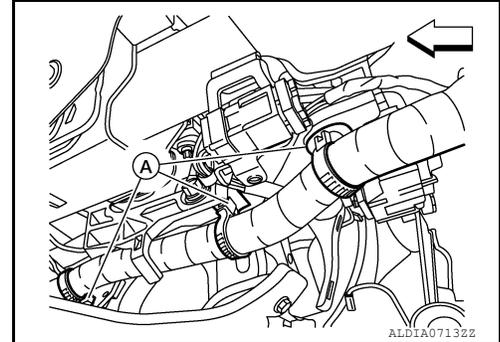
3. Disconnect harness connector (A) from A/T shift selector (1).

⇐ : Front



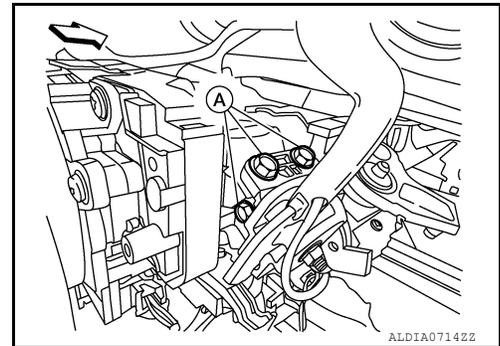
4. Release the harness clips (A) using a suitable tool.

⇐ : Front



5. Remove bolts (A) from A/T shift selector.

⇐ : Front



6. Remove A/T shift selector from steering column.

INSTALLATION

Installation is 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.
- Apply multi-purpose grease on the surface so that the shift lock unit plate slides vertically.

Inspection and Adjustment

INFOID:000000014419253

INSPECTION AFTER INSTALLATION

Check A/T positions after adjusting A/T positions. Refer to [TM-101, "Inspection and Adjustment"](#).

ADJUSTMENT AFTER INSTALLATION

Adjust A/T positions. Refer to [TM-101, "Inspection and Adjustment"](#).

CONTROL CABLE

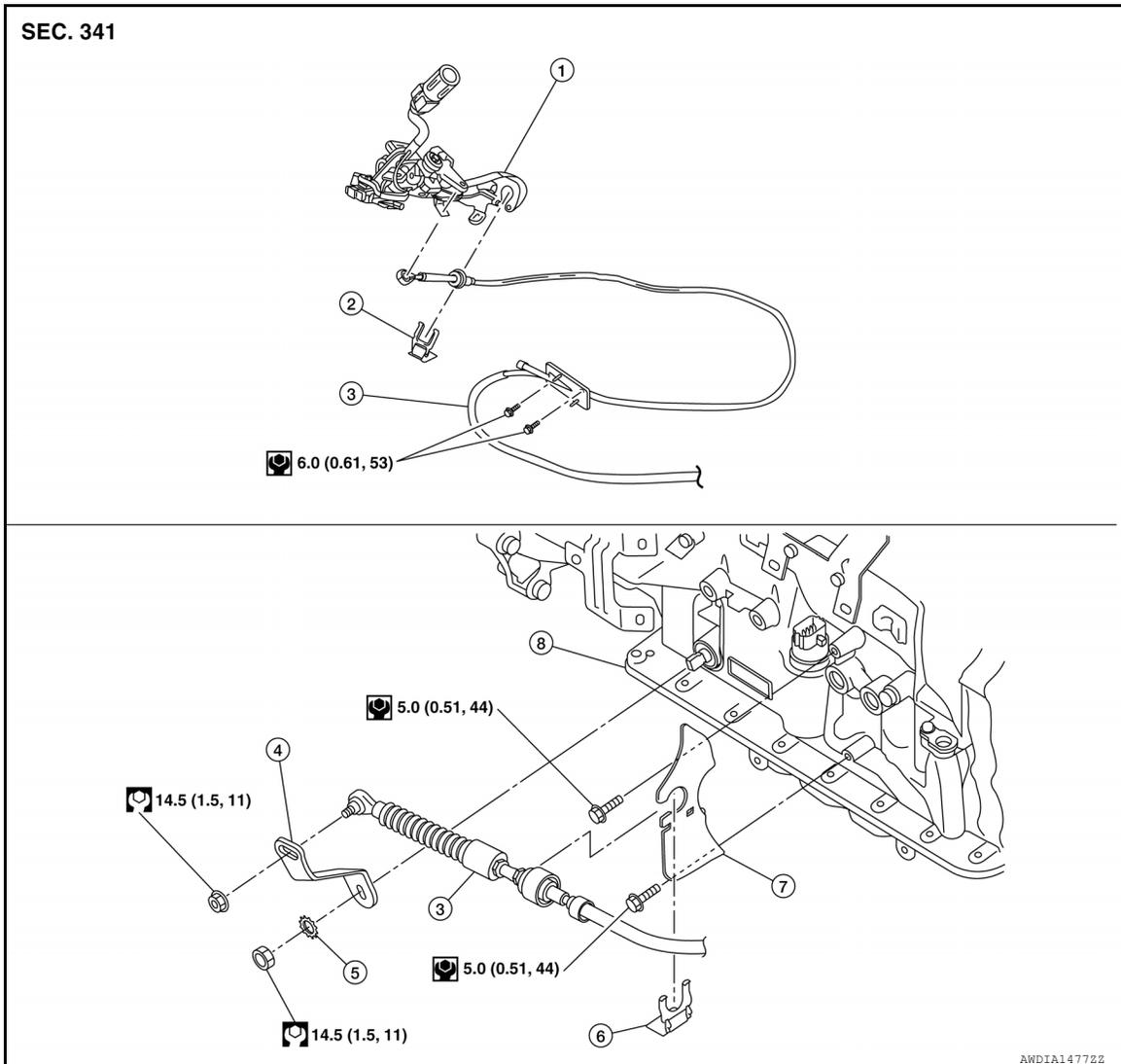
< REMOVAL AND INSTALLATION >

[7AT: RE7R01B]

CONTROL CABLE

Exploded View

INFOID:000000014419254



- | | | |
|-----------------------|-----------------|------------------|
| 1. A/T shift selector | 2. Lock plate | 3. Control cable |
| 4. Manual lever | 5. Washer | 6. Lock plate |
| 7. Bracket | 8. A/T assembly | |

Removal and Installation

INFOID:000000014419255

REMOVAL

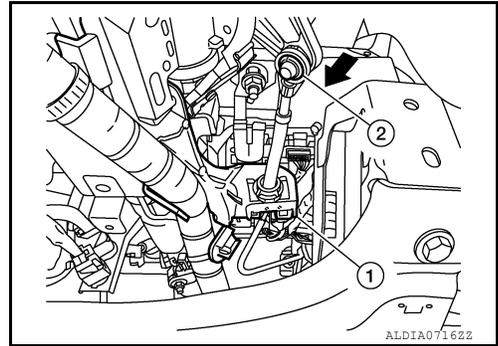
1. Remove heating and cooling unit and steering member from vehicle as an assembly. Refer to [HA-49. "HEATING AND COOLING UNIT ASSEMBLY : Removal and Installation"](#).

CONTROL CABLE

< REMOVAL AND INSTALLATION >

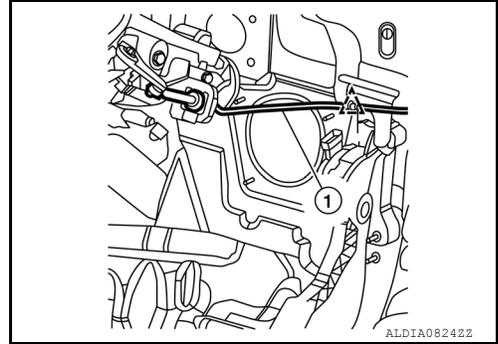
[7AT: RE7R01B]

2. Remove lock plate (1) and pull control cable (2) in the direction shown (←) to disconnect control cable from A/T shift selector.



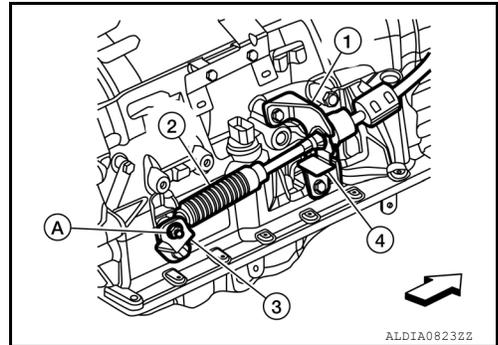
3. Release clip fastening control cable (1) to accelerator pedal.

 : Clip

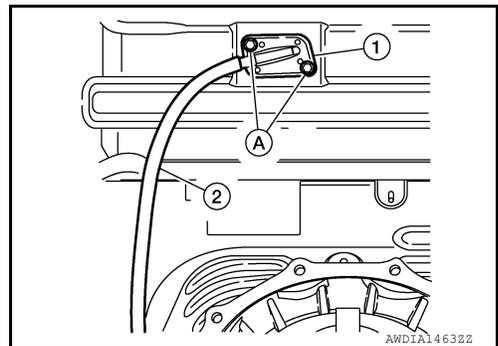


4. Remove nut (A) and remove control cable (2) from manual lever (3).
5. Remove lock plate (4) and disconnect control cable (2) from bracket (1).

 : Front



6. Remove bolts (A) from control cable grommet (1).
7. Remove control cable (2) from vehicle.



INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

Apply multi-purpose grease on the pin surface (that slides after installing collar) of the tip of the control rod.

Inspection and Adjustment

INFOID:000000014419256

INSPECTION AFTER INSTALLATION

Check A/T position after adjusting A/T position. Refer to [TM-363, "Inspection"](#).

ADJUSTMENT AFTER INSTALLATION

CONTROL CABLE

< REMOVAL AND INSTALLATION >

[7AT: RE7R01B]

Adjust A/T position. Refer to [TM-363. "Adjustment"](#).

TOW MODE SWITCH

< REMOVAL AND INSTALLATION >

[7AT: RE7R01B]

TOW MODE SWITCH

Removal and Installation

INFOID:000000014419257

NOTE:

Tow mode switch is integrated with the A/T shift selector. Refer to [TM-458, "Removal and Installation"](#).

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CONTROL VALVE & TCM

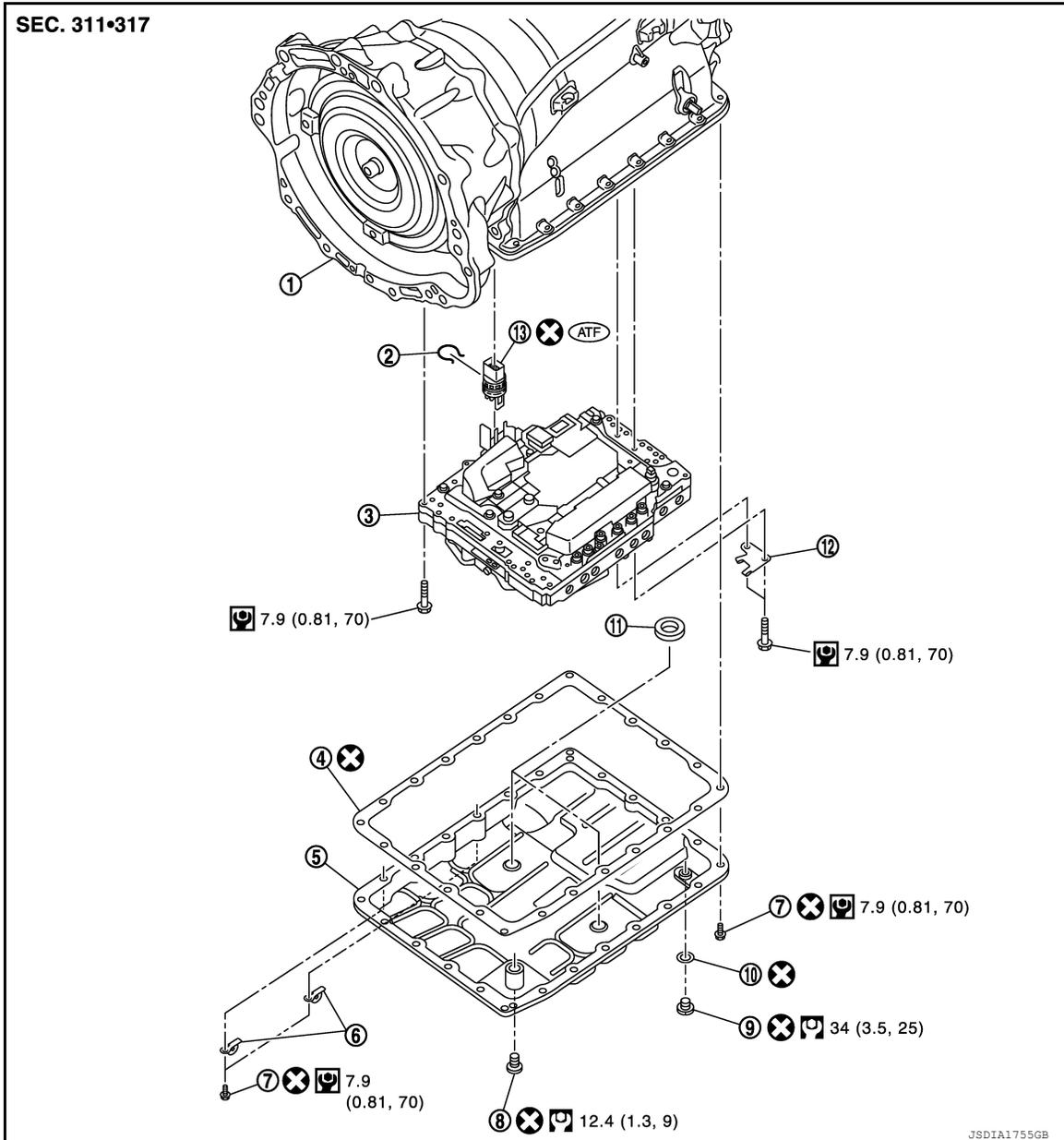
< REMOVAL AND INSTALLATION >

[7AT: RE7R01B]

CONTROL VALVE & TCM

Exploded View

INFOID:000000014419258



- | | | |
|--------------------------|------------------|------------------------|
| 1. A/T assembly | 2. Snap ring | 3. Control valve & TCM |
| 4. Oil pan gasket | 5. Oil pan | 6. Clip |
| 7. Oil pan mounting bolt | 8. Overflow plug | 9. Drain plug |
| 10. Drain plug gasket | 11. Magnet | 12. Clip |
| 13. Joint connector | | |

Removal and Installation

INFOID:000000014419259

REMOVAL

1. Remove floor under cover. Refer to [EXT-40, "FLOOR UNDER COVER : Removal and Installation"](#).

CONTROL VALVE & TCM

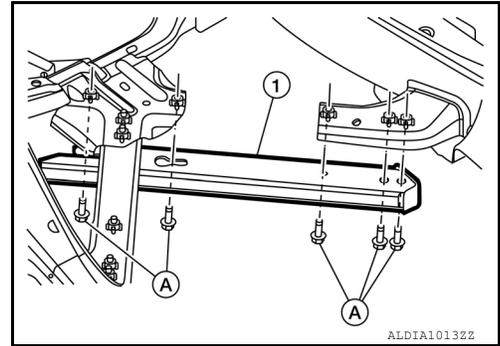
< REMOVAL AND INSTALLATION >

[7AT: RE7R01B]

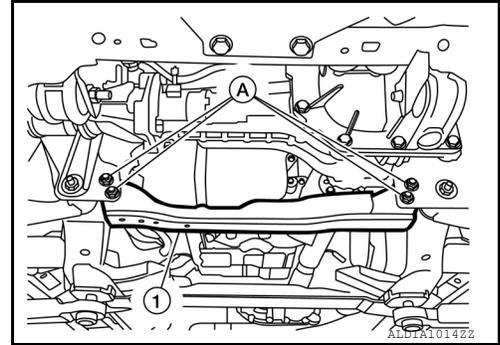
2. Remove bolts (A) and remove rear diagonal cross members (Non-XD Models).

NOTE:

RH shown LH similar.



3. Remove bolts and nuts (A) from front cross member (1), then remove front cross member.

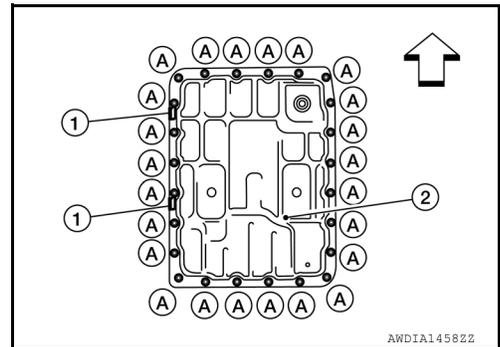


4. Drain ATF through drain plug. Refer to [TM-455. "Changing"](#).

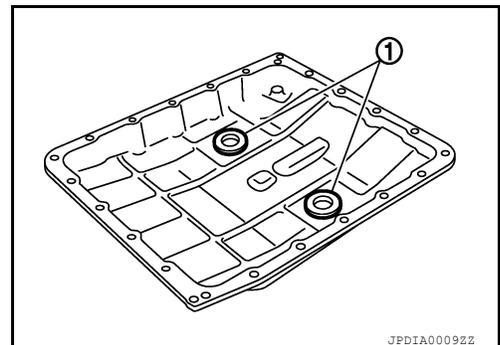
5. Remove oil pan bolts (A) and clips (1).

← : Front

6. Remove oil pan (2) and oil pan gasket.



7. Remove magnets (1) from oil pan.



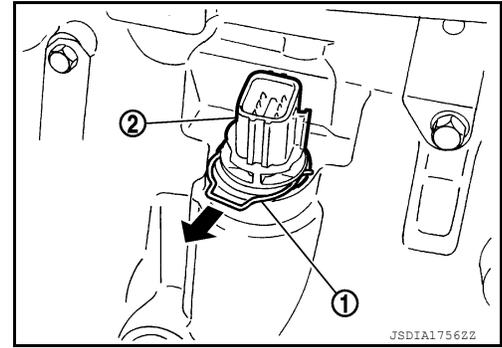
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CONTROL VALVE & TCM

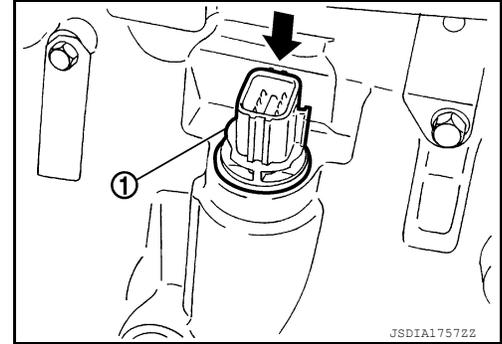
[7AT: RE7R01B]

< REMOVAL AND INSTALLATION >

8. Remove snap ring (1) from joint connector (2) in the direction shown (←).



9. Push joint connector (1) in the direction shown (←).

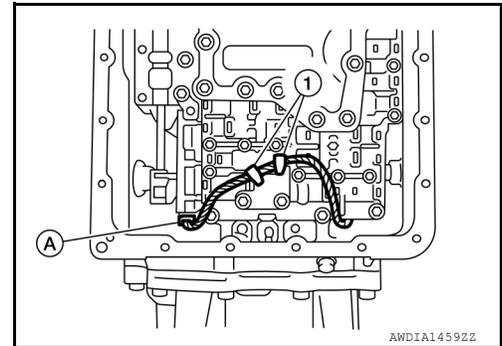


10. Disconnect output speed sensor connector (A).

CAUTION:

Be careful not to damage connector.

11. Disengage terminal clip (1).

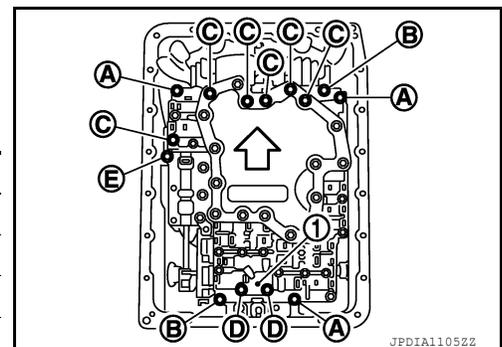


12. Remove bolts and clip (1) from the control valve & TCM.

← : Vehicle front

Bolt symbol	Length mm (in)	Number of bolts
A	43 (1.69)	3
B	40 (1.57)	2
C	54 (2.13)	6
D	50 (1.97)	2
E*	50 (1.97)	1

*: Reamer bolt



CONTROL VALVE & TCM

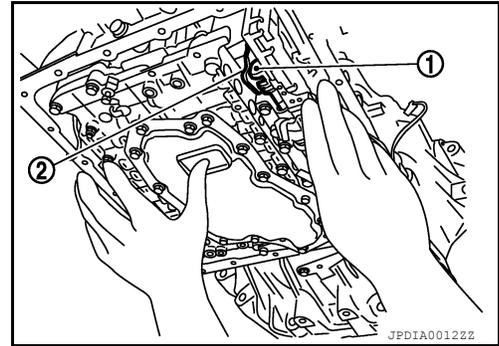
< REMOVAL AND INSTALLATION >

[7AT: RE7R01B]

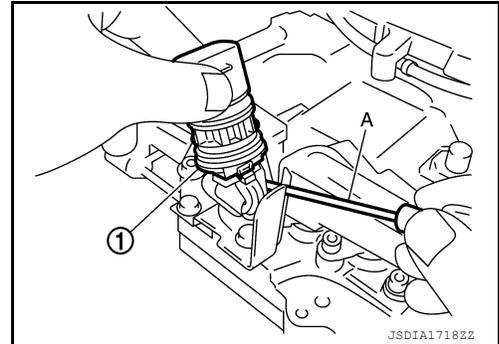
13. Remove the control valve & TCM from transmission case.

CAUTION:

When removing, be careful with the manual valve (1) notch and manual plate (2) height. Remove it vertically.



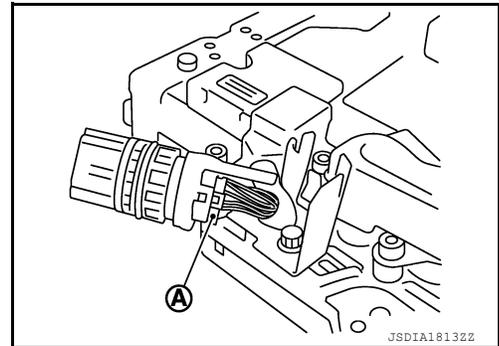
14. Remove joint connector (1) from the control valve & TCM using suitable tool (A).



15. Disconnect TCM connector (A).

CAUTION:

Be careful not to damage connector.



INSTALLATION

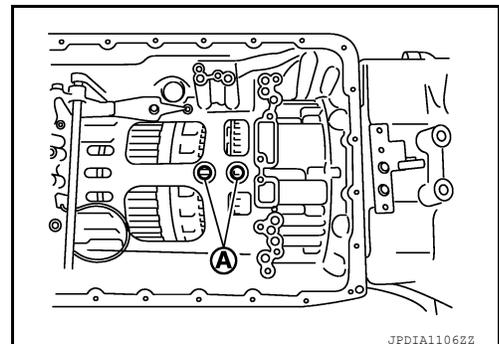
Installation is in the reverse order of removal.

CAUTION:

- Be careful not to damage connector when installing any connector.
- Do not reuse joint connector.
- Apply ATF to O-ring of joint connector.
- Do not 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.

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.



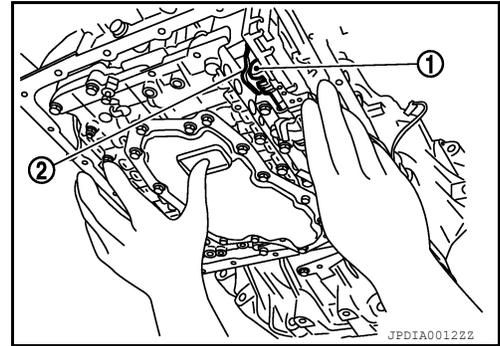
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CONTROL VALVE & TCM

< REMOVAL AND INSTALLATION >

[7AT: RE7R01B]

- 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.

⇐ : Front

Bolt symbol	Length mm (in)	Number of bolts
A	43 (1.69)	3
B	40 (1.57)	2
C	54 (2.13)	6
D	50 (1.97)	2
E*	50 (1.97)	1

*: Reamer bolt

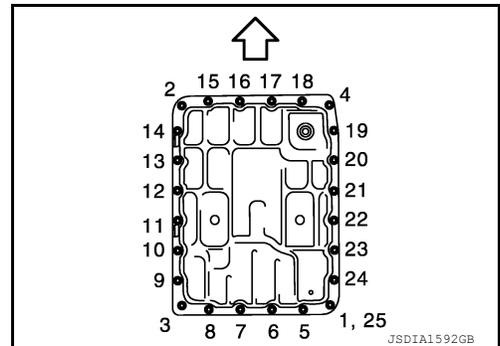
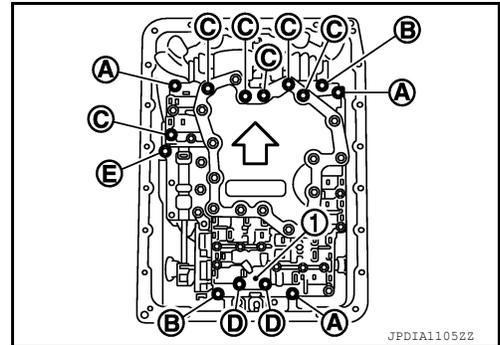
- Refer to the following when installing oil pan to transmission case.

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 surface of transmission case and oil pan.
- Do not reuse oil pan gasket and oil pan bolts.
- Install oil pan gasket in the direction to align hole position.
- Tighten the oil pan bolts to the specified torque in the sequence as shown after temporarily tightening them.

⇐ : Front

- Fill with ATF after installation. Refer to [TM-455, "Changing"](#).

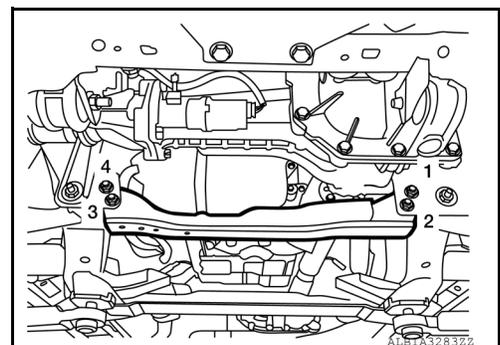


- Install front cross member (1) using bolts and nuts, then tighten nuts (A) to specification in sequence as shown.

CAUTION:

Do not reuse nuts.

Front cross member nuts Nm 180 (18 kg-m, 133 ft-lb)



CONTROL VALVE & TCM

< REMOVAL AND INSTALLATION >

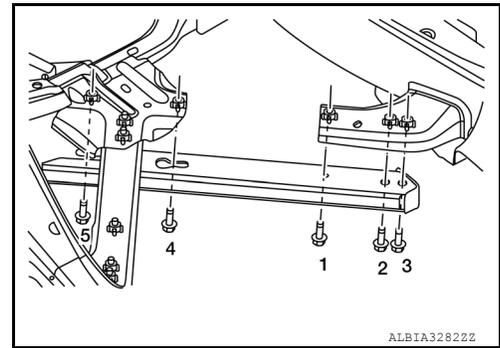
[7AT: RE7R01B]

- Install rear diagonal cross member bolts, then tighten bolts to specification in sequence as shown (Non-XD Models).

NOTE:

RH shown, LH similar.

Rear diagonal cross member bolts Nm 130 (13 kg-m, 96 ft-lb)

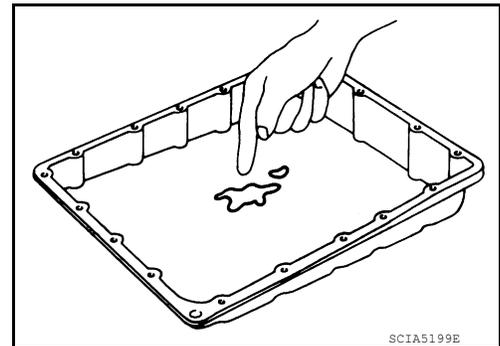


Inspection and Adjustment

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 [TM-359, "Cleaning"](#).



INSPECTION AFTER INSTALLATION

Start the engine and check visually that there is no leakage of ATF.

ADJUSTMENT AFTER INSTALLATION

When replaced the control valve & TCM, perform "ADDITIONAL SERVICE WHEN REPLACE CONTROL VALVE & TCM". Refer to [TM-357, "Description"](#).

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PARKING COMPONENTS

< REMOVAL AND INSTALLATION >

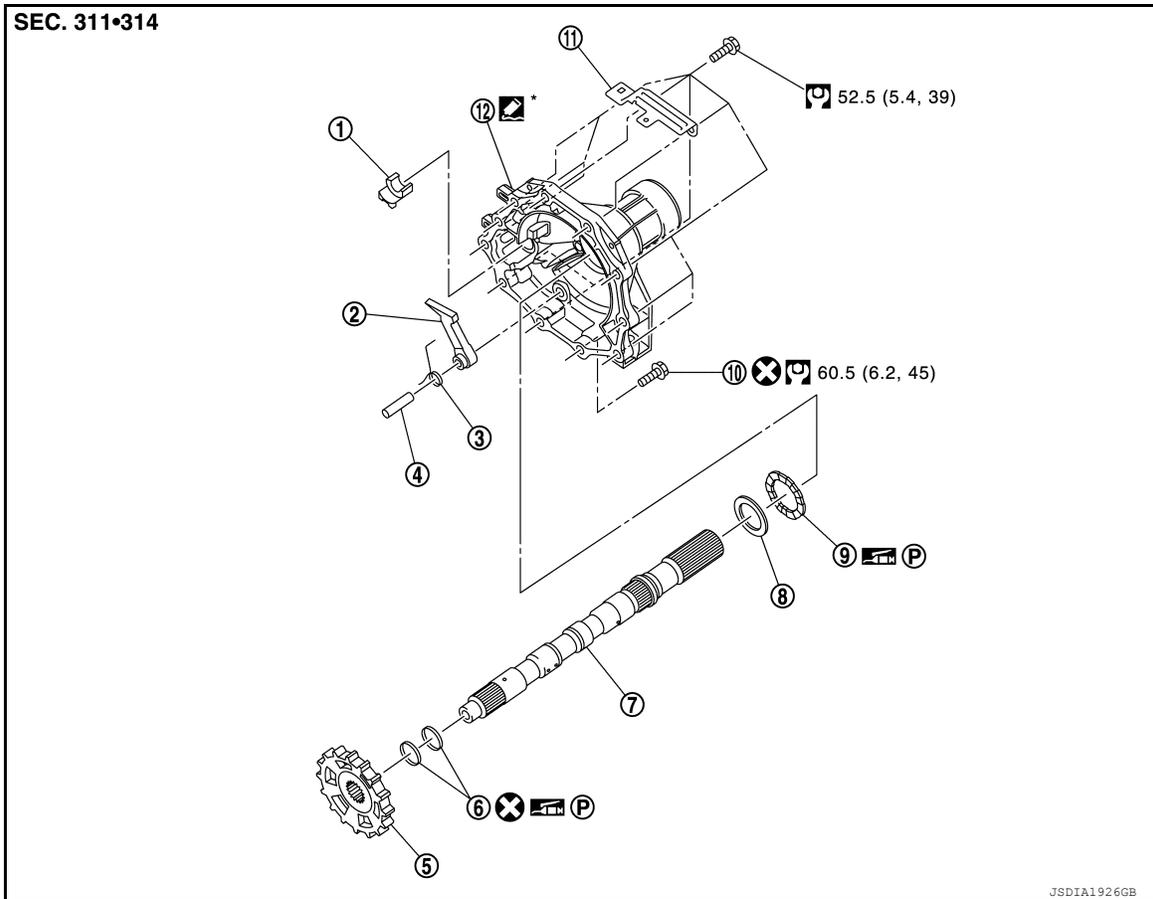
[7AT: RE7R01B]

PARKING COMPONENTS

2WD

2WD : Exploded View

INFOID:000000014419261



- | | | |
|-----------------------------|-----------------|--------------------|
| 1. Parking actuator support | 2. Parking pawl | 3. Return spring |
| 4. Pawl shaft | 5. Parking gear | 6. Seal ring |
| 7. Output shaft | 8. Bearing race | 9. Needle bearing |
| 10. Self-sealing bolt | 11. Bracket | 12. Rear extension |

2WD : Removal and Installation

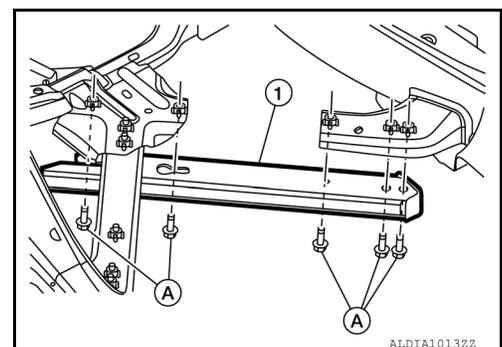
INFOID:000000014419262

REMOVAL

1. Disconnect the battery or batteries. Refer to [PG-185. "Battery Disconnect"](#).
2. Remove the floor under cover. Refer to [EXT-40. "FLOOR UNDER COVER : Removal and Installation"](#).
3. Remove bolts (A) and remove rear diagonal cross members (Non-XD Models).

NOTE:

RH shown, LH similar.

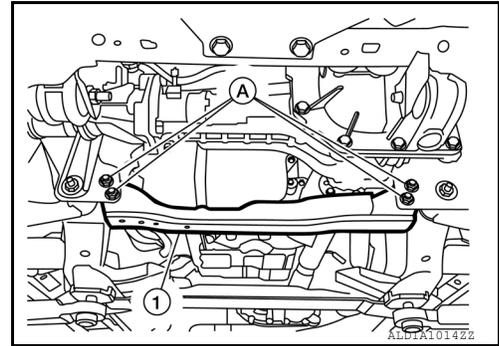


PARKING COMPONENTS

< REMOVAL AND INSTALLATION >

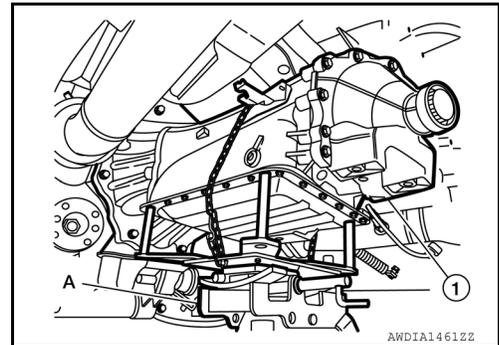
[7AT: RE7R01B]

4. Remove bolts and nuts (A) and remove front cross member (1).

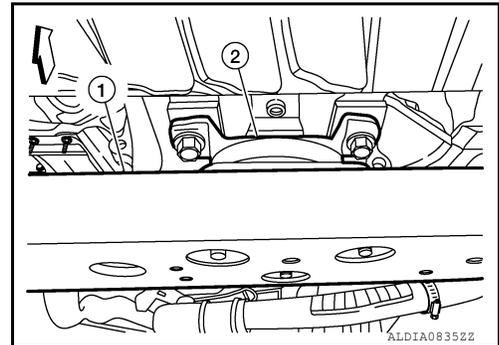


5. Drain ATF through drain plug. Refer to [TM-455, "Changing"](#).
 6. Remove propeller shaft assembly. Refer to [DLN-166, "Removal and Installation"](#).
 7. Support A/T assembly (1) with a transmission jack (A).

CAUTION:
 When setting transmission jack, be careful not to allow it to collide against the drain plug.

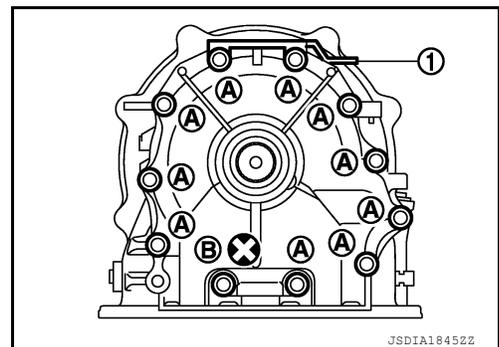


8. Remove rear engine mount cross member (1) and remove engine mount insulator (rear) (2).



9. Remove tightening bolts (A) and (B) for rear extension assembly and transmission case.

- (1) : Bracket
- (A) : Bolt
- (B) : Self-sealing bolt



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PARKING COMPONENTS

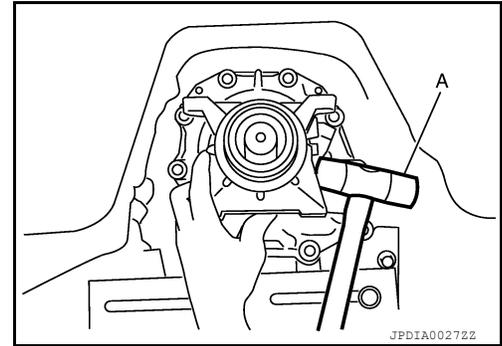
< REMOVAL AND INSTALLATION >

[7AT: RE7R01B]

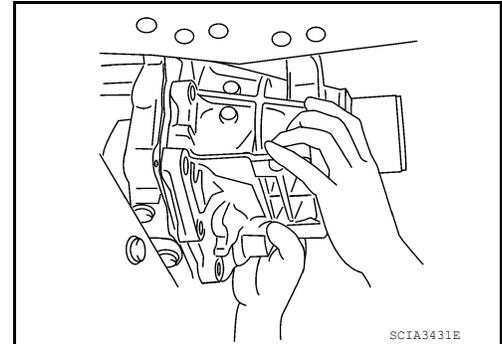
10. Tap rear extension assembly using suitable tool (A).

CAUTION:

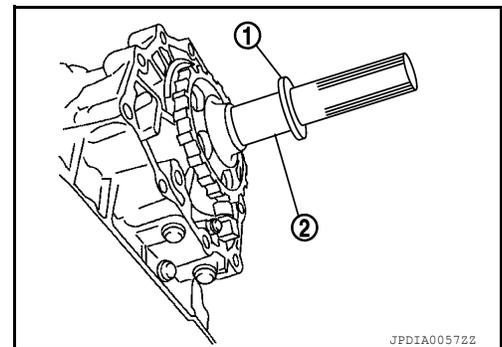
Be careful not to damage rear extension case.



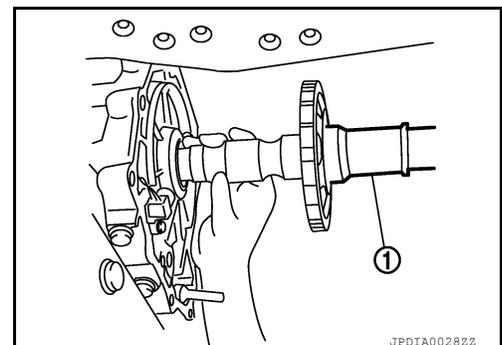
11. Remove rear extension assembly (with needle bearing) from transmission case.



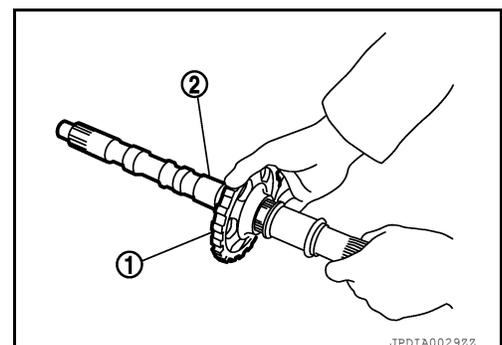
12. Remove bearing race (1) from output shaft (2).



13. Remove the output shaft (1) from A/T assembly by rotating left/right.



14. Remove parking gear (1) from output shaft (2).



PARKING COMPONENTS

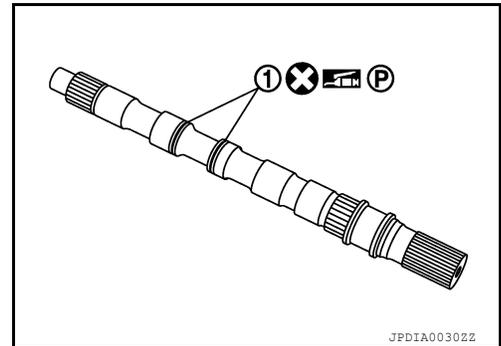
< REMOVAL AND INSTALLATION >

[7AT: RE7R01B]

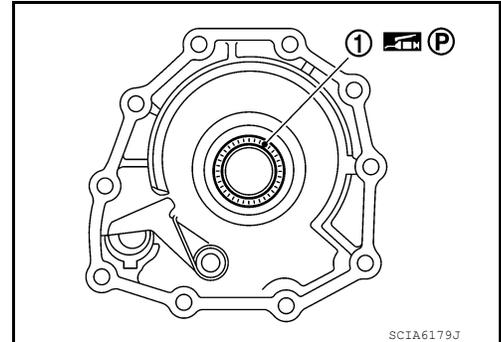
15. Remove seal rings (1) from output shaft.

CAUTION:

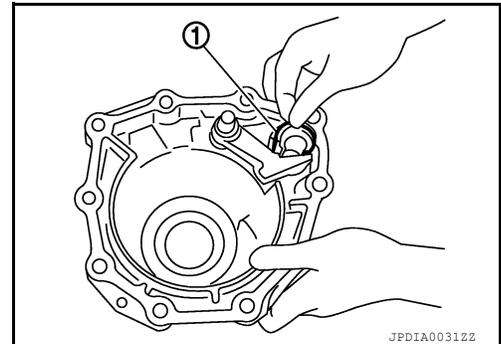
Do not reuse seal rings.



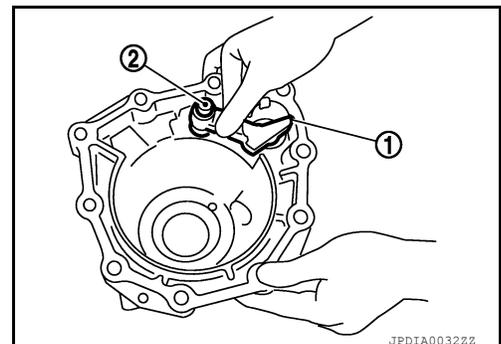
16. Remove needle bearing (1) from rear extension.



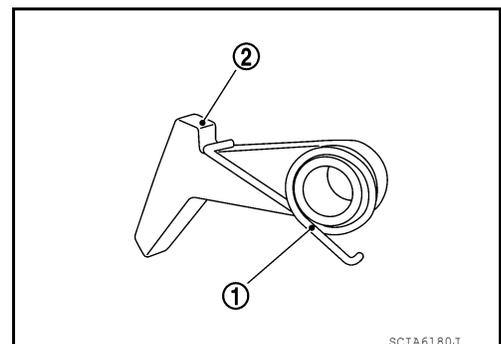
17. Remove parking actuator support (1) from rear extension.



18. Remove parking pawl (with return spring) (1) and pawl shaft (2) from rear extension.



19. Remove return spring (1) from parking pawl (2).



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PARKING COMPONENTS

< REMOVAL AND INSTALLATION >

[7AT: RE7R01B]

INSTALLATION

Installation in the reverse order of removal.

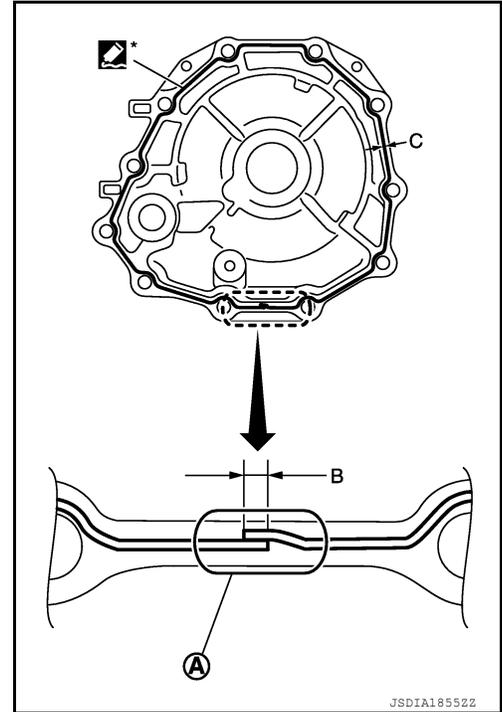
CAUTION:

- Do not 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 (Genuine Anaerobic Liquid Gasket or equivalent) to rear extension assembly as shown. Refer to [GI-22, "Recommended Chemical Products and Sealants"](#).

- | | |
|---|---|
| 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:

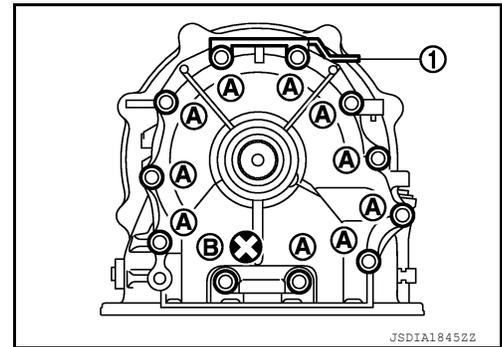
Completely remove all moisture, oil and old sealant, etc. from the transmission case and rear extension assembly mounting surfaces.



- Tighten rear extension assembly bolts (A) and (B) to the specified torque.

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|-----|---------------------|
| (1) | : Bracket |
| (A) | : Bolt |
| (B) | : Self-sealing bolt |

- Fill with ATF after installation. Refer to [TM-455, "Changing"](#).

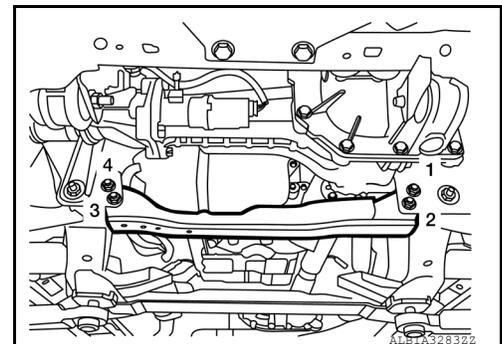


- Install front cross member assembly (1) using bolts and nuts, then tighten nuts (A) to specification in the sequence as shown.

CAUTION:

Do not reuse nuts.

Front cross member nuts 180 Nm (18 kg-m, 133 ft-lb)



PARKING COMPONENTS

< REMOVAL AND INSTALLATION >

[7AT: RE7R01B]

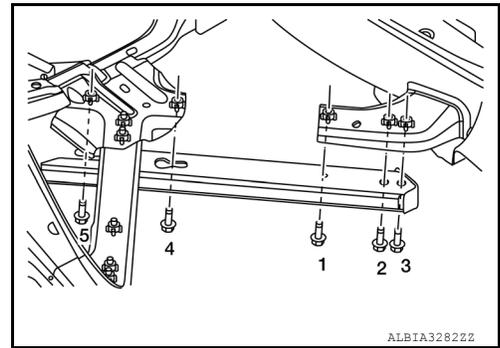
- Install rear diagonal cross member bolts, then tighten bolts to specification in sequence as shown (Non-DX Models).

NOTE:

RH shown, LH similar.

Rear diagonal cross member bolts

130 Nm (13 kg-m, 96 ft-lb)

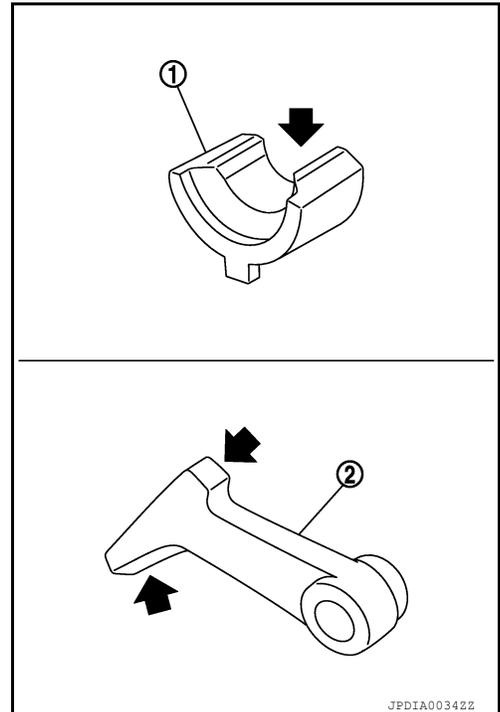


2WD : Inspection

INFOID:000000014419263

INSPECTION AFTER REMOVAL

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.



INSPECTION AFTER INSTALLATION

Start the engine and check visually that there is no leakage of ATF.

4WD

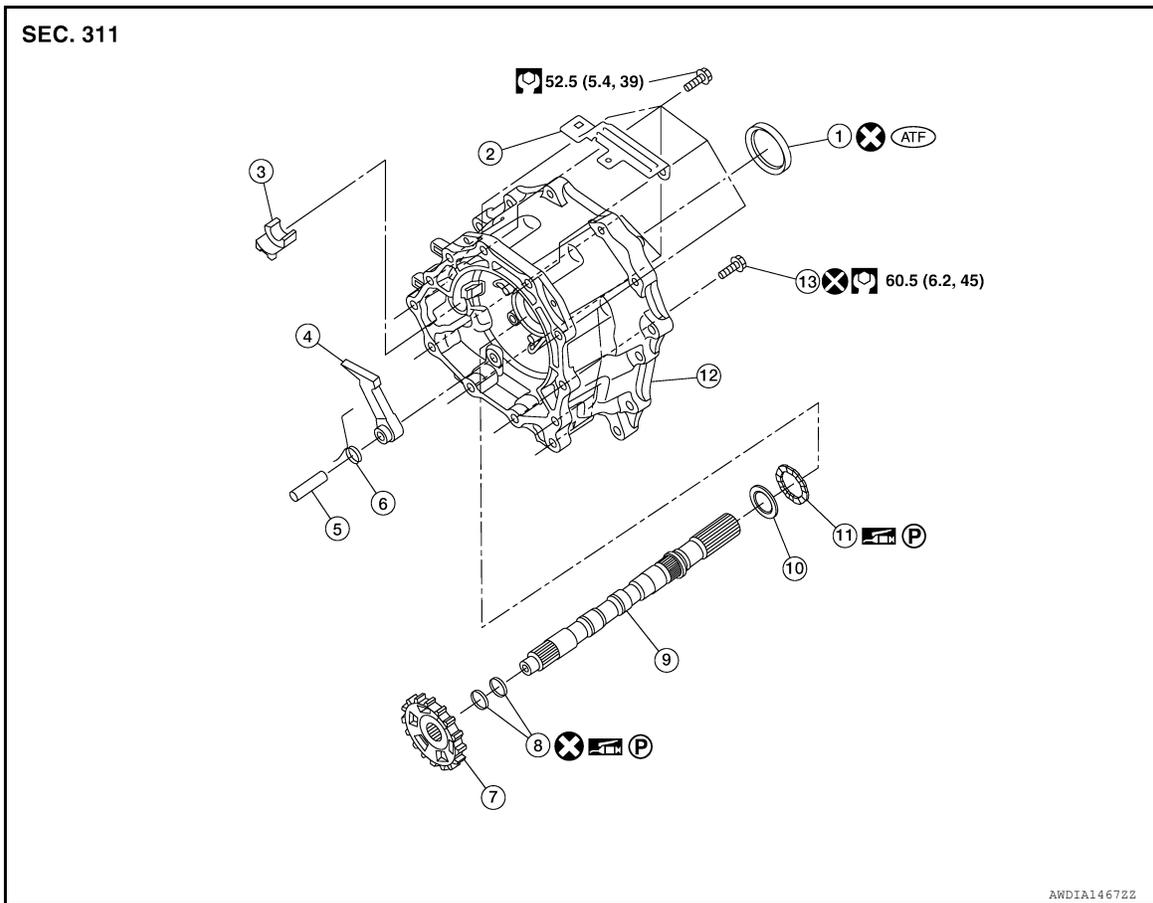
PARKING COMPONENTS

< REMOVAL AND INSTALLATION >

[7AT: RE7R01B]

4WD : Exploded View

INFOID:000000014419264



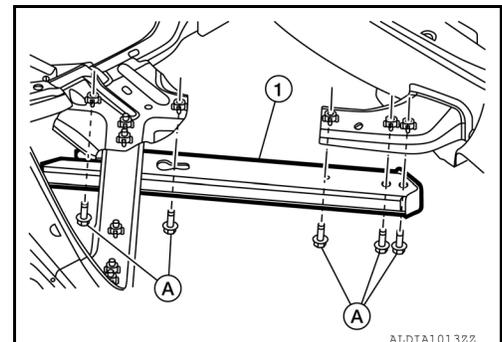
- | | | |
|-----------------------|--------------------|-----------------------------|
| 1. Rear oil seal | 2. Bracket | 3. Parking actuator support |
| 4. Parking pawl | 5. Pawl shaft | 6. Return spring |
| 7. Parking gear | 8. Seal ring | 9. Output shaft |
| 10. Bearing race | 11. Needle bearing | 12. Adapter case |
| 13. Self-sealing bolt | | |

4WD : Removal and Installation

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REMOVAL

1. Disconnect the battery or batteries. Refer to [PG-185, "Battery Disconnect"](#).
2. Drain ATF through drain plug. Refer to [TM-455, "Changing"](#).
3. Remove bolts (A) then remove rear diagonal cross member [(1) (LH/RH)] (Non-XD Models).

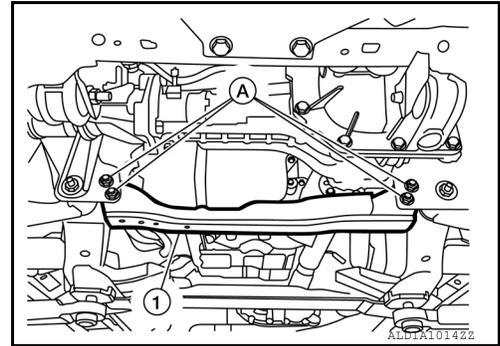


PARKING COMPONENTS

< REMOVAL AND INSTALLATION >

[7AT: RE7R01B]

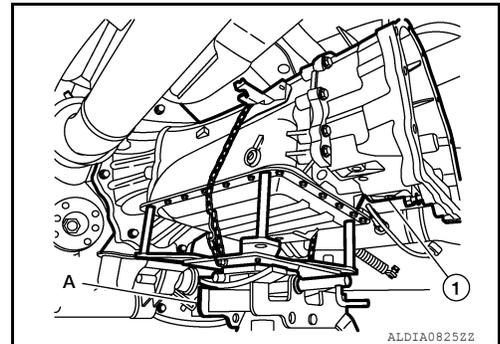
4. Remove bolts and nuts (A) from front cross member (1), then remove front cross member.



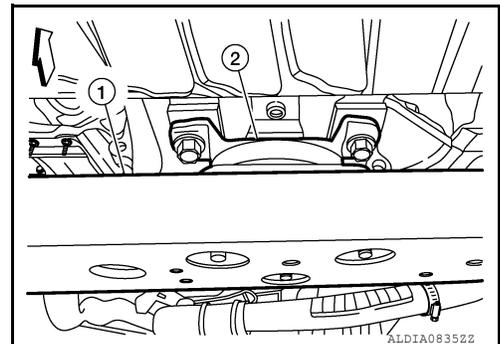
5. Remove transfer case. Refer to [DLN-140. "Removal and Installation"](#).
6. Support A/T assembly (1) with a transmission jack (A).

CAUTION:

When setting transmission jack, be careful not to allow it to collide against the drain plug.



7. Remove rear engine mount cross member (1) and remove engine mount insulator (rear) (2).



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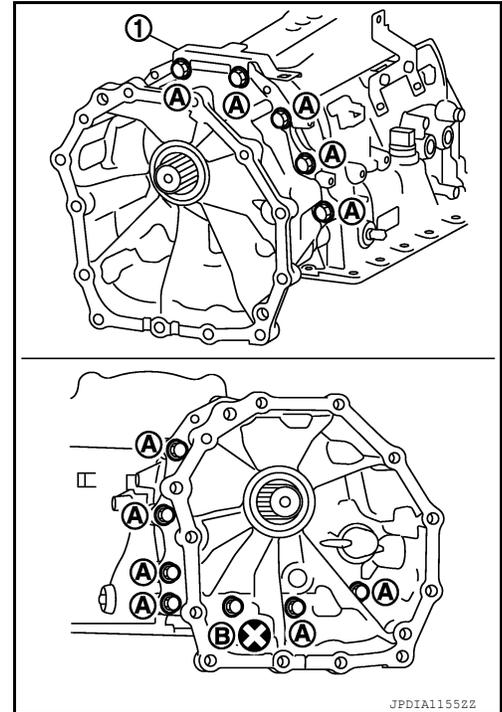
PARKING COMPONENTS

< REMOVAL AND INSTALLATION >

[7AT: RE7R01B]

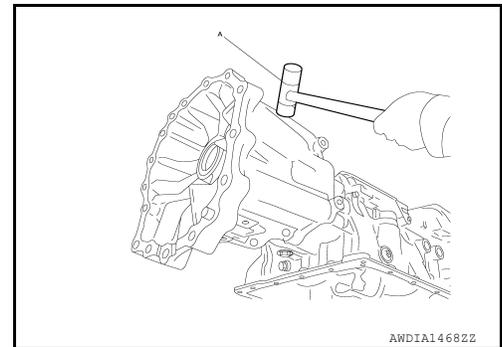
8. Remove tightening bolts (A) and (B) for adapter case and transmission case.

- (1) : Bracket
- (A) : Bolt
- (B) : Self-sealing bolt

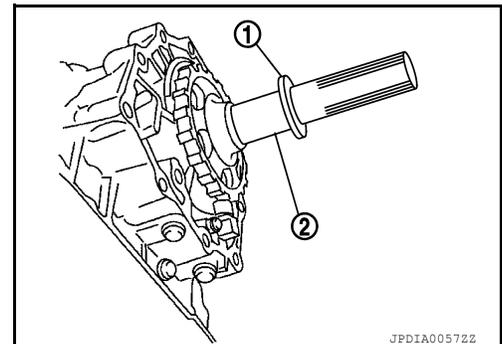


9. Tap adapter case using suitable tool (A).

CAUTION:
Be careful not to damage rear extension case.



10. Remove adapter case (with needle bearing) from transmission case.
11. Remove bearing race (1) from output shaft (2).

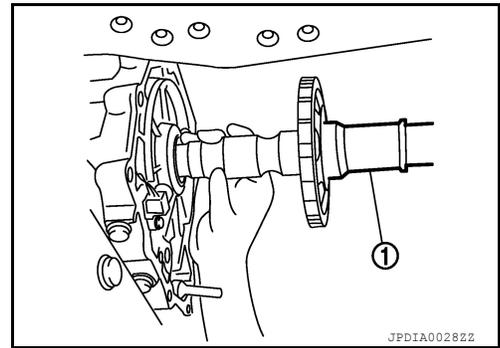


PARKING COMPONENTS

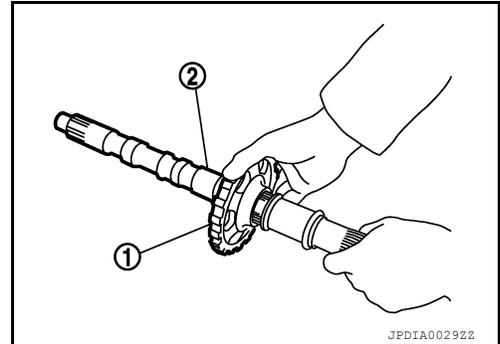
< REMOVAL AND INSTALLATION >

[7AT: RE7R01B]

12. Remove the output shaft (1) from A/T assembly by rotating left/right.



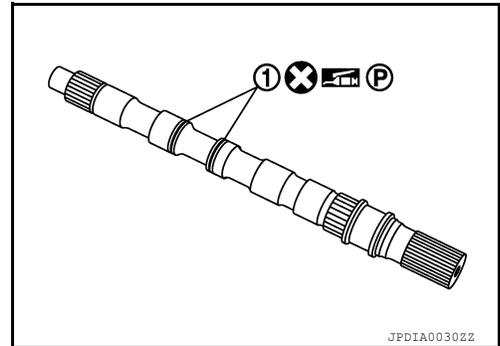
13. Remove parking gear (1) from output shaft (2).



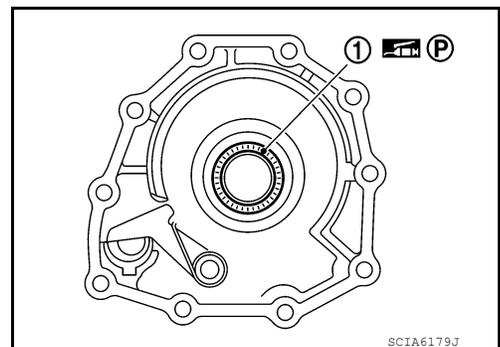
14. Remove seal rings (1) from output shaft.

CAUTION:

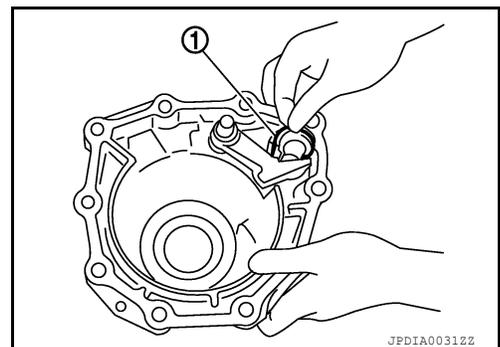
Do not reuse seal rings.



15. Remove needle bearing (1) from adapter case.



16. Remove parking actuator support (1) from adapter case.



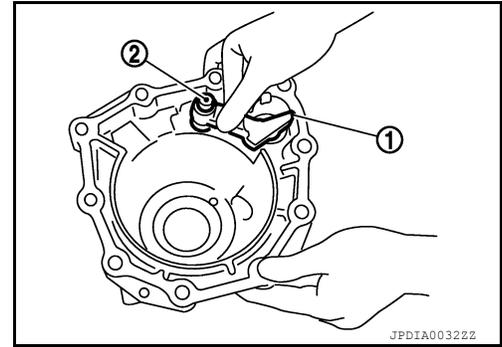
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PARKING COMPONENTS

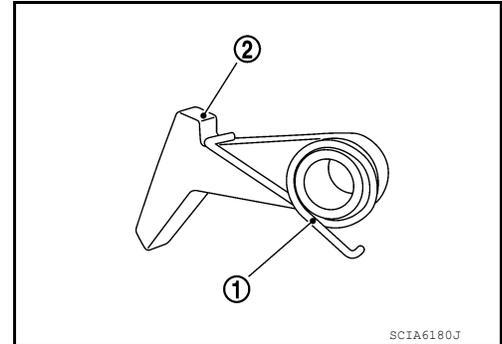
< REMOVAL AND INSTALLATION >

[7AT: RE7R01B]

17. Remove parking pawl (with return spring) (1) and pawl shaft (2) from adapter case.



18. Remove return spring (1) from parking pawl (2).



INSTALLATION

Installation in the reverse order of removal.

CAUTION:

- Do not 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 adapter case.
- Refer to the followings installing adapter case.
- Apply recommended sealant (Genuine Anaerobic Liquid Gasket or equivalent) to adapter case as shown. Refer to [GI-22. "Recommended Chemical Products and Sealants"](#).

Sealant starting point and end-point (A) : Start and finish point shall be in the center of two bolts.

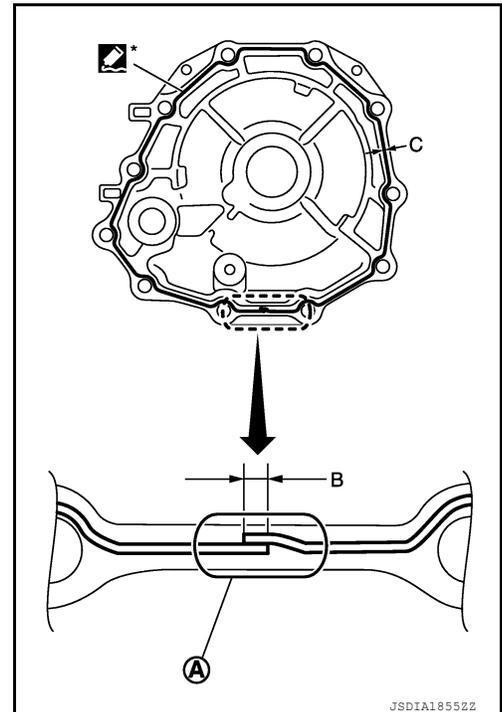
Overlap width of sealant starting point and end-point (B) : 3 – 5 mm (0.12 – 0.20 in)

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 adapter case mounting surfaces.



PARKING COMPONENTS

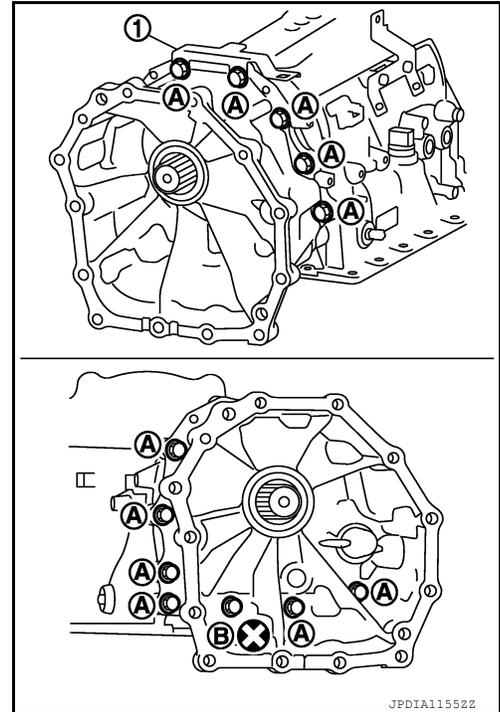
< REMOVAL AND INSTALLATION >

[7AT: RE7R01B]

- Tighten adapter case bolts (A) and (B) to the specified torque.

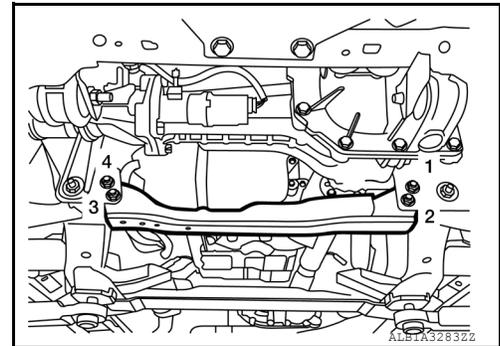
- (1) : Bracket
- (A) : Bolt
- (B) : Self-sealing bolt

• Fill with ATF after installation. Refer to [TM-455, "Changing"](#).



- Install front cross member bolts and nuts (A), then tighten nuts to specification in the sequence as shown.

Front cross member nuts 180 (18 kg-m, 133 lb-ft)

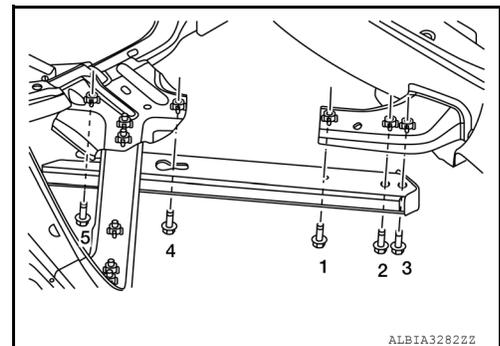


- Install rear diagonal cross member (LH/RH) bolts, then tighten to specification in the sequence as shown (Non-XD Models).

NOTE:

RH shown, LH similar.

Front cross member nuts 130 (13 kg-m, 96 lb-ft)



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4WD : Inspection

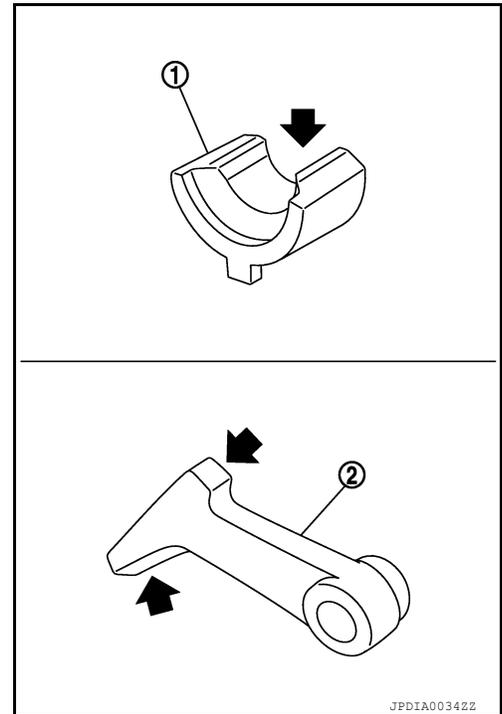
INSPECTION AFTER REMOVAL

PARKING COMPONENTS

< REMOVAL AND INSTALLATION >

[7AT: RE7R01B]

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.



INSPECTION AFTER INSTALLATION

Start the engine and check visually that there is no leakage of ATF.

REAR OIL SEAL

< REMOVAL AND INSTALLATION >

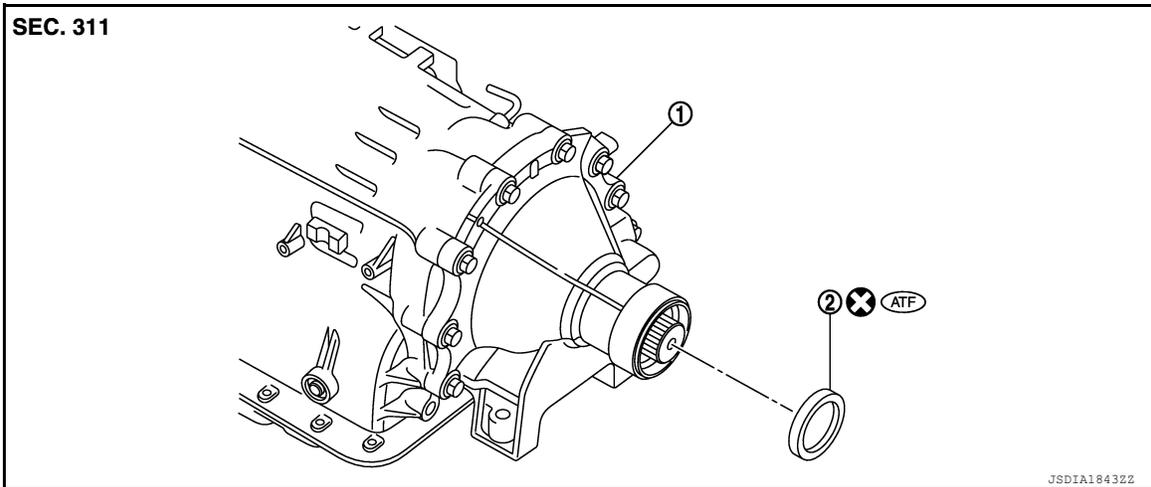
[7AT: RE7R01B]

REAR OIL SEAL

2WD

2WD : Exploded View

INFOID:000000014419267



1. A/T assembly

2. Rear oil seal

2WD : Removal and Installation

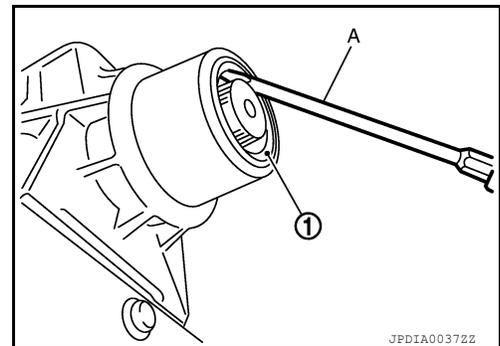
INFOID:000000014419268

REMOVAL

1. Remove propeller shaft assembly. Refer to [DLN-166, "Removal and Installation"](#).
2. Remove rear oil seal (1) using suitable tool (A).

CAUTION:

Be careful not to scratch rear extension assembly.



INSTALLATION

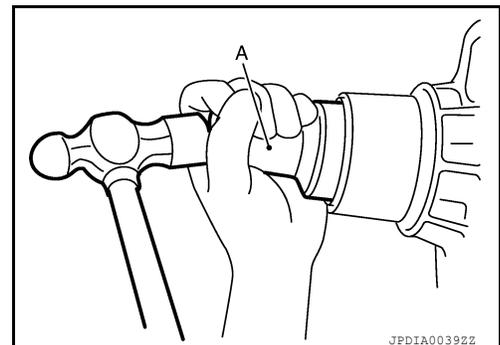
Installation in the reverse order of removal.

- Drive rear oil seal into rear extension assembly using Tool (A) to until it is flush as shown.

Tool : ST33400001 (—)

CAUTION:

- Do not reuse rear oil seal.
- Apply ATF to rear oil seal.



2WD : Inspection

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INSPECTION AFTER INSTALLATION

REAR OIL SEAL

< REMOVAL AND INSTALLATION >

[7AT: RE7R01B]

Drive the vehicle and check visually that there is no leakage of ATF.

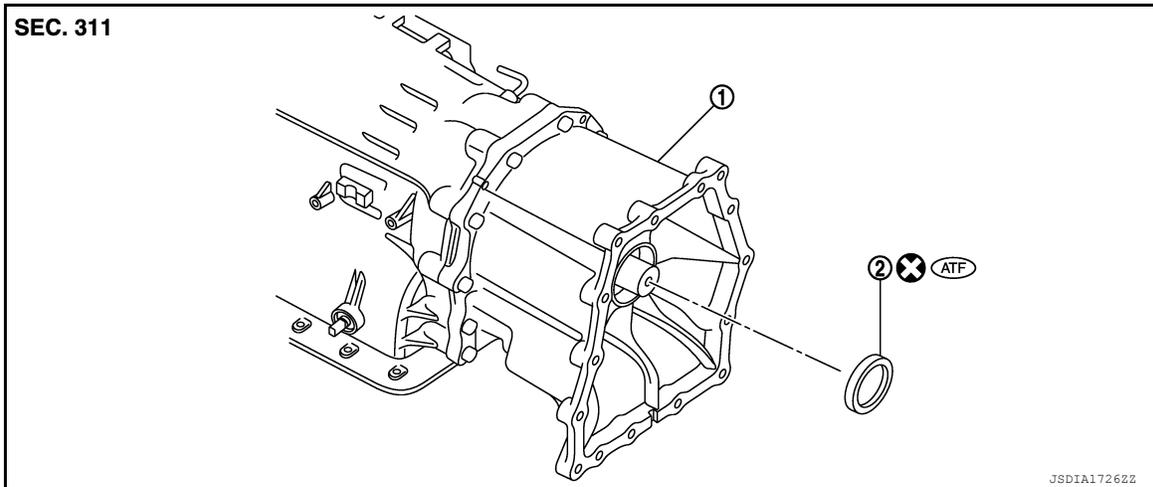
ADJUSTMENT AFTER INSTALLATION

Adjust A/T fluid level. Refer to [TM-457, "Adjustment"](#).

4WD

4WD : Exploded View

INFOID:000000014419270



1. A/T assembly

2. Rear oil seal

4WD : Removal and Installation

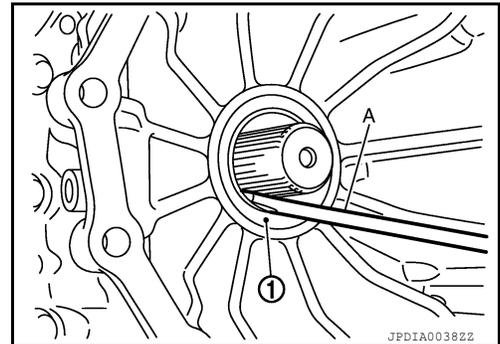
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REMOVAL

1. Remove transfer assembly from A/T assembly. Refer to [DLN-140, "Removal and Installation"](#).
2. Remove rear oil seal (1) using suitable tool (A).

CAUTION:

Do not scratch adapter case assembly.



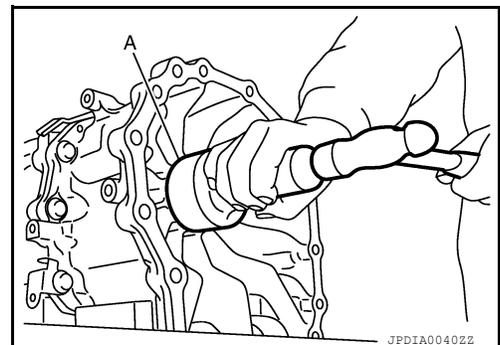
INSTALLATION

Installation in the reverse order of removal.

- Drive rear oil seal into adapter case assembly until it is flush using suitable tool (A) to as shown.

CAUTION:

- Do not reuse rear oil seal.
- Apply ATF to rear oil seal.



REAR OIL SEAL

< REMOVAL AND INSTALLATION >

[7AT: RE7R01B]

4WD : Inspection and Adjustment

INFOID:000000014419272

INSPECTION AFTER INSTALLATION

Drive the vehicle and check visually that there is no leakage of ATF.

ADJUSTMENT AFTER INSTALLATION

Adjust A/T fluid level. Refer to [TM-457, "Adjustment"](#).

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OUTPUT SPEED SENSOR

< REMOVAL AND INSTALLATION >

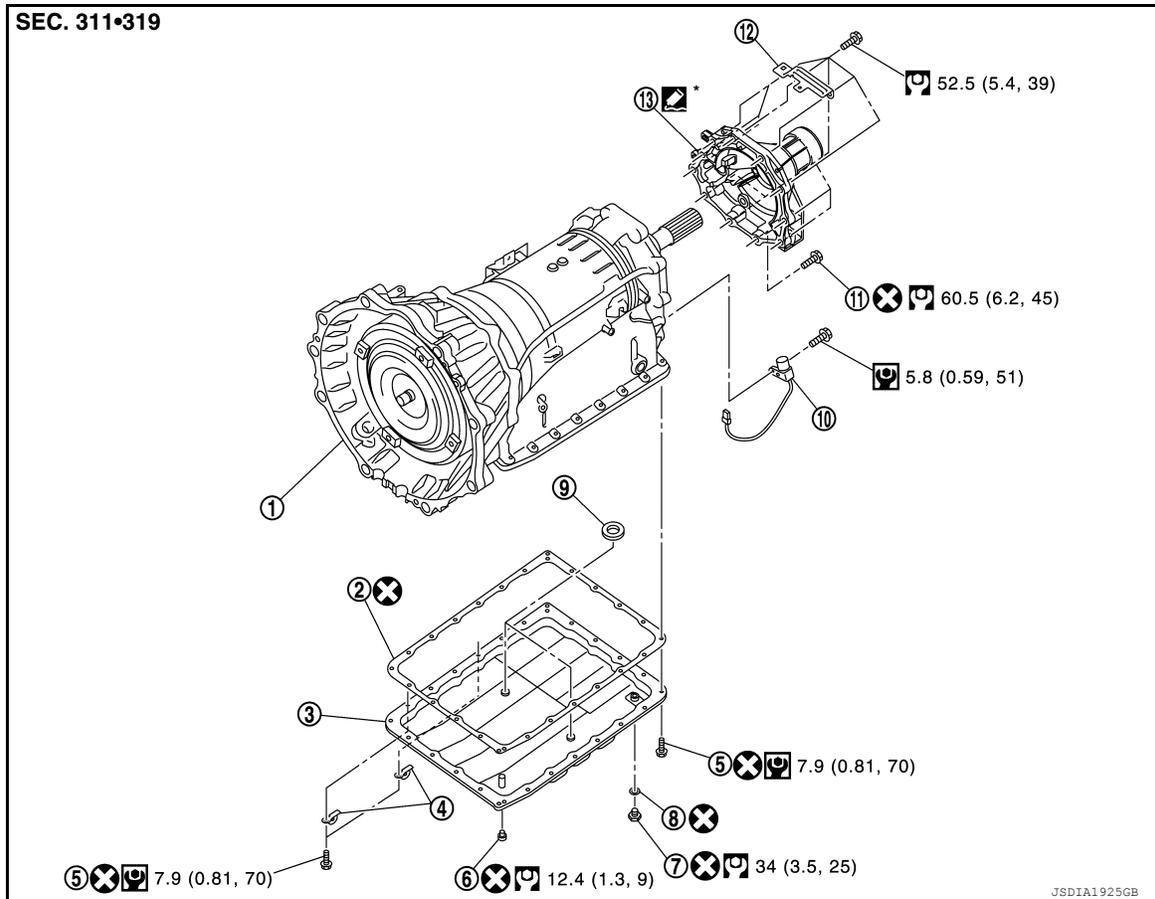
[7AT: RE7R01B]

OUTPUT SPEED SENSOR

2WD

2WD : Exploded View

INFOID:000000014419273



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|-------------------------|--------------------------|------------------|
| 1. A/T assembly | 2. Oil pan gasket | 3. Oil pan |
| 4. Clip | 5. Oil pan mounting bolt | 6. Overflow plug |
| 7. Drain plug | 8. Drain plug gasket | 9. Magnet |
| 10. Output speed sensor | 11. Self-sealing bolt | 12. Bracket |
| 13. Rear extension | | |

2WD : Removal and Installation

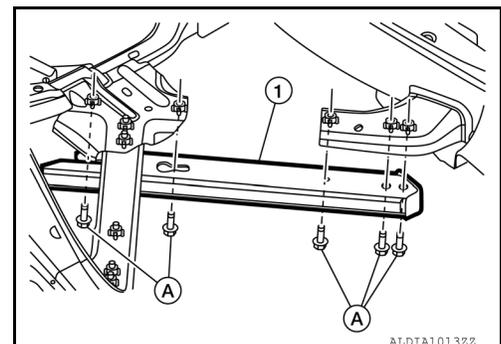
INFOID:000000014419274

REMOVAL

1. Disconnect the battery or batteries. Refer to [PG-185. "Battery Disconnect"](#).
2. Remove floor undercover. Refer to [EXT-40. "FLOOR UNDER COVER : Removal and Installation"](#).
3. Remove bolts (A) and remove rear diagonal cross member (1).

NOTE:

RH shown, LH similar.

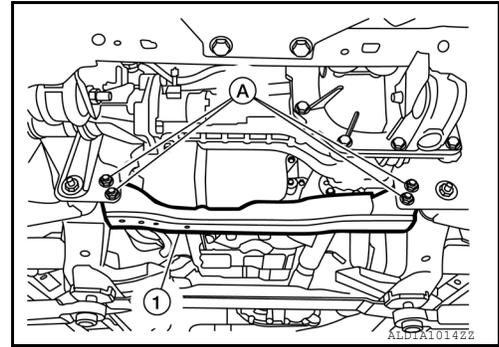


OUTPUT SPEED SENSOR

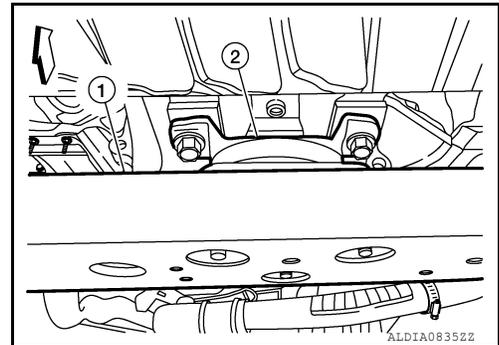
< REMOVAL AND INSTALLATION >

[7AT: RE7R01B]

- Remove bolts and nuts (A) from front cross member (1), then remove front cross member.



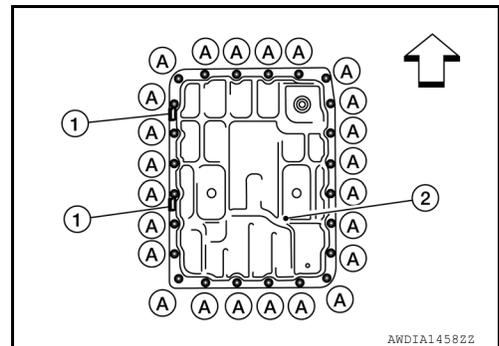
- Remove propeller shaft assembly. Refer to [DLN-166. "Removal and Installation"](#).
- Remove rear engine mount cross member (1) and rear engine mount insulator (2).



- Drain ATF through drain plug. Refer to [TM-455. "Changing"](#).

- Remove clips (1).
- Remove oil pan bolts (A), oil pan (2) and oil pan gasket.

↔ : Front
(A) : Oil pan bolt



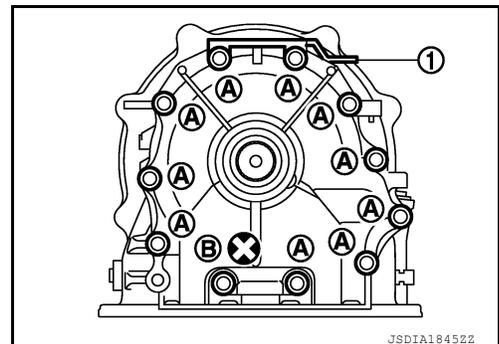
- Support A/T assembly with a suitable jack.

CAUTION:

When setting suitable jack, be careful to prevent damage to control valve & TCM and A/T assembly.

- Remove tightening bolts (A) and (B) for adapter case and A/T assembly.

(1) : Bracket
(A) : Bolt
(B) : Self-sealing bolt



OUTPUT SPEED SENSOR

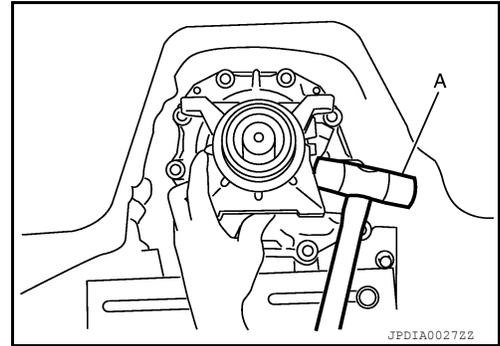
< REMOVAL AND INSTALLATION >

[7AT: RE7R01B]

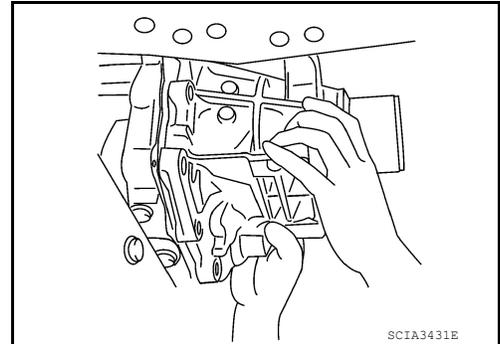
12. Tap adapter case using suitable tool (A).

CAUTION:

Be careful not to damage adapter case.



13. Remove adapter case (with needle bearing) from A/T assembly.

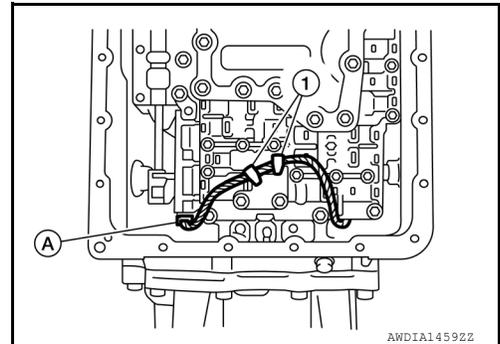


14. Disconnect the harness connector (A) from the output speed sensor.

CAUTION:

Be careful not to damage connector

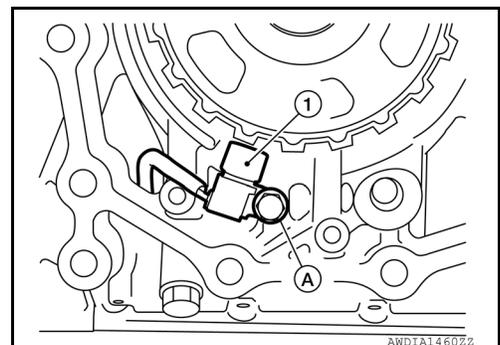
15. Disengage terminal clips (1).



16. Remove bolt (A) output speed sensor (1) from A/T assembly.

CAUTION:

- Do not subject it to impact by dropping or hitting it.
- Do not disassemble.
- Do not allow metal filings, etc. to get on the sensor's front edge magnetic area.
- Do not place in an area affected by magnetism.



INSTALLATION

Installation is in the reverse order removal.

CAUTION:

- Insert the tip of parking rod between the parking pole and the parking actuator support when assembling the adapter case.
- Do not reuse drain plug gasket.
- Refer to the followings when installing output speed sensor.

CAUTION:

- Do not subject it to impact by dropping or hitting it.
- Do not disassemble.
- Do not allow metal filings, etc. to get on the sensor's front edge magnetic area.
- Do not place in an area affected by magnetism.

OUTPUT SPEED SENSOR

< REMOVAL AND INSTALLATION >

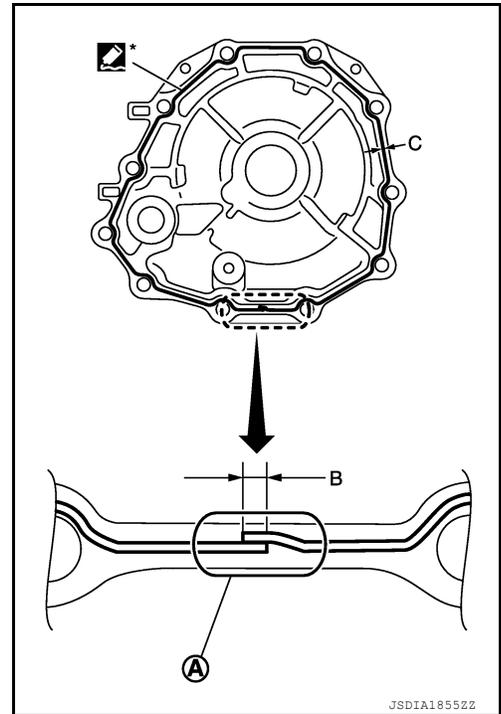
[7AT: RE7R01B]

- Refer to the followings when installing adapter case.
- Apply recommended sealant (Genuine Anaerobic Liquid Gasket or equivalent) to adapter case as shown. Refer to [GI-22. "Recommended Chemical Products and Sealants"](#).

- 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)

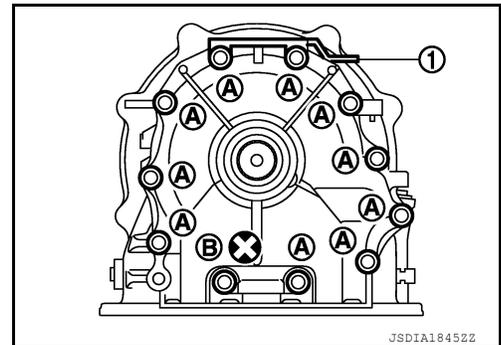
CAUTION:

Completely remove all moisture, oil and old sealant, etc. from A/T assembly and rear extension assembly mounting surfaces.



- Tighten adapter case bolts (A) and (B) to the specified torque.

- (1) : Bracket
- (A) : Bolt
- (B) : Self-sealing bolt

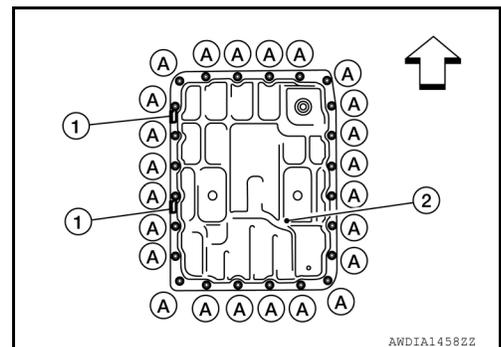


- Refer to the following when installing oil pan (2) (with oil pan gasket) and clips (1) to A/T assembly.

- ⇐ : Front
- (A) : Oil pan bolt

CAUTION:

- Do not 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.



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OUTPUT SPEED SENSOR

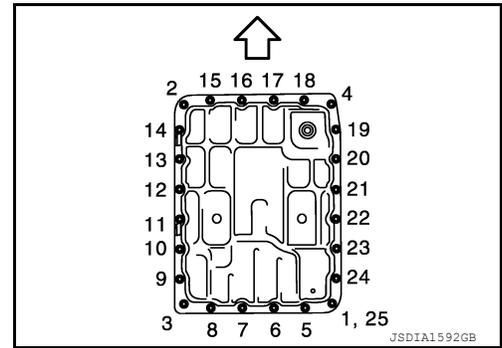
[7AT: RE7R01B]

< REMOVAL AND INSTALLATION >

- Tighten oil pan mounting bolts to the specified torque in sequence shown after temporarily tightening them. Tighten necessary oil pan mounting bolts with specified torque.

← : Front

- Fill with ATF after installation. Refer to [TM-455, "Changing"](#).

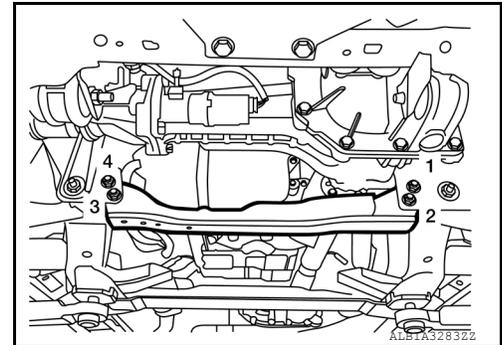


- Install front cross member (1) using bolts and nuts then tighten nuts (A) to specification in the sequence shown.

CAUTION:

Do not reuse nuts.

Front cross member nuts Nm 180 (18 kg-m, 133 ft-lb)

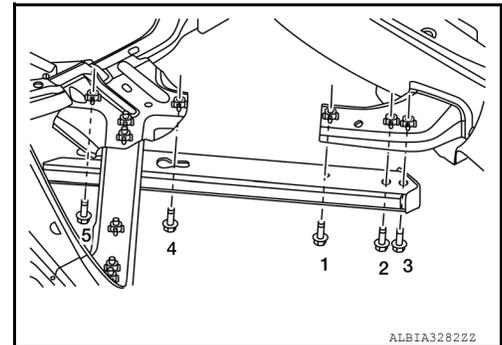


Install rear diagonal member bolts, then tighten to specification in sequence as shown (Non-XD Models).

NOTE:

RH shown, LH similar.

Front cross member nuts Nm 130 (13 kg-m, 96 ft-lb)



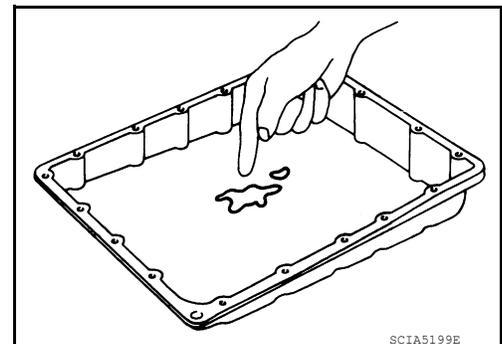
2WD : Inspection and Adjustment

INFOID:000000014419275

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 [TM-359, "Cleaning"](#).



INSPECTION AFTER INSTALLATION

Start the engine and check visually that there is no leakage of ATF.

4WD

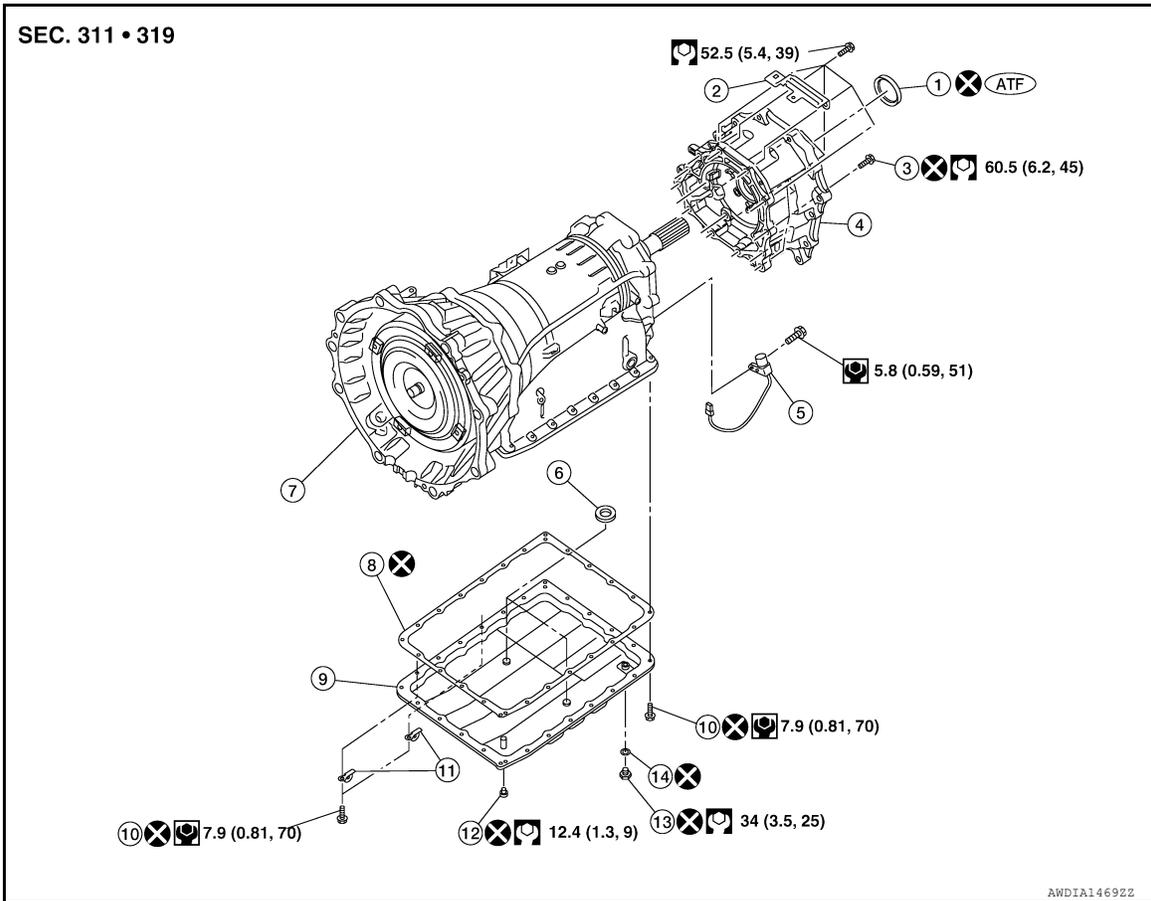
OUTPUT SPEED SENSOR

< REMOVAL AND INSTALLATION >

[7AT: RE7R01B]

4WD : Exploded View

INFOID:000000014419276



- | | | |
|---------------------------|------------------------|----------------------|
| 1. Rear oil seal | 2. Bracket | 3. Self-sealing bolt |
| 4. Adapter case | 5. Output speed sensor | 6. Magnet |
| 7. A/T assembly | 8. Oil pan gasket | 9. Oil pan |
| 10. Oil pan mounting bolt | 11. Clip | 12. Overflow plug |
| 13. Drain plug | 14. Drain plug gasket | |

4WD : Removal and Installation

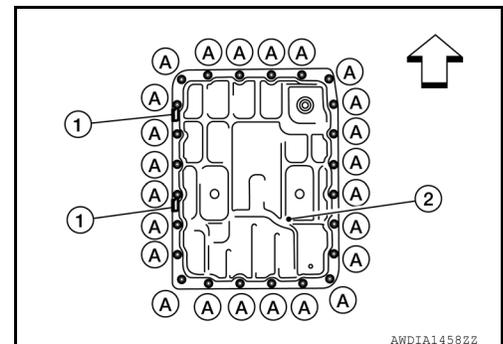
INFOID:000000014419277

REMOVAL

1. Disconnect the battery or batteries. Refer to [PG-185, "Battery Disconnect"](#).
2. Drain ATF through drain plug. Refer to [TM-455, "Changing"](#).
3. Remove transfer case. Refer to [DLN-140, "Removal and Installation"](#).
4. Remove clips (1).
5. Remove oil pan bolts (A), oil pan (2) and oil pan gasket.

← : Front

(A) : Oil pan bolt



6. Support A/T assembly with a suitable jack.

OUTPUT SPEED SENSOR

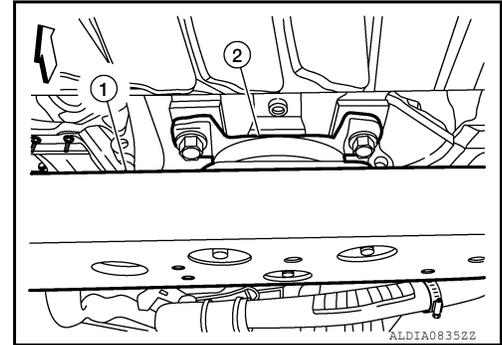
< REMOVAL AND INSTALLATION >

[7AT: RE7R01B]

CAUTION:

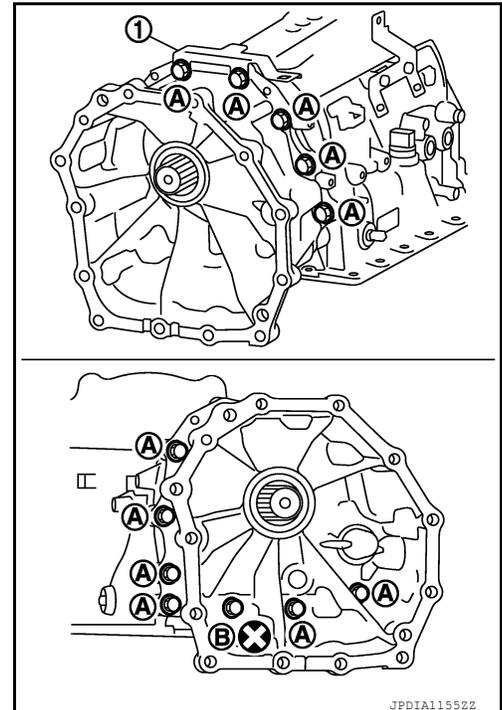
When setting suitable jack, be careful to prevent damage to control valve & TCM and A/T assembly.

7. Remove rear engine mount cross member (1) and rear engine mount insulator (2).



8. Remove tightening bolts (A) and (B) for adapter case and A/T assembly.

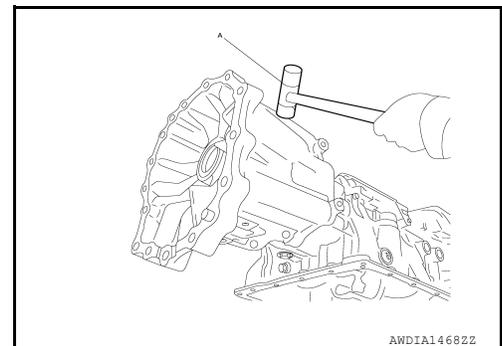
- (1) : Bracket
- (A) : Bolt
- (B) : Self-sealing bolt



9. Tap adapter case using suitable tool (A).

CAUTION:

Be careful not to damage rear extension case.



10. Remove adapter case (with needle bearing) from A/T assembly.

OUTPUT SPEED SENSOR

< REMOVAL AND INSTALLATION >

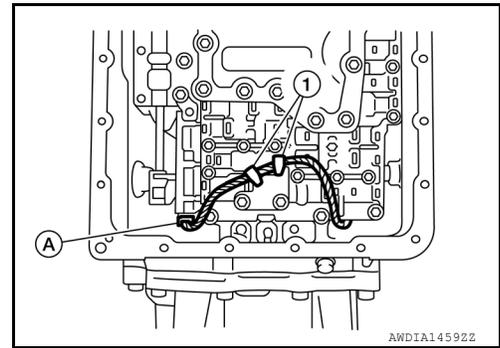
[7AT: RE7R01B]

11. Disconnect the harness connector from the output speed sensor.

CAUTION:

Be careful not to damage connector

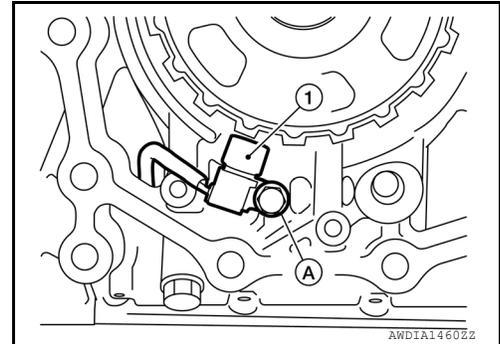
12. Disengage terminal clips (1).



13. Remove bolt (A) output speed sensor (1) from A/T assembly.

CAUTION:

- Do not subject it to impact by dropping or hitting it.
- Do not disassemble.
- Do not allow metal filings, etc. to get on the sensor's front edge magnetic area.
- Do not place in an area affected by magnetism.



INSTALLATION

Installation is in the reverse order removal.

CAUTION:

- Insert the tip of parking rod between the parking pole and the parking actuator support when assembling the adapter case.
- Do not reuse drain plug gasket.
- Refer to the followings when installing output speed sensor.

CAUTION:

- Do not subject it to impact by dropping or hitting it.
- Do not disassemble.
- Do not allow metal filings, etc. to get on the sensor's front edge magnetic area.
- Do not place in an area affected by magnetism.
- Refer to the followings when installing adapter case.
- Apply recommended sealant (Genuine Anaerobic Liquid Gasket or equivalent) to adapter case as shown. Refer to [GI-22, "Recommended Chemical Products and Sealants"](#).

Sealant starting point and end-point (A) : Start and finish point shall be in the center of two bolts.

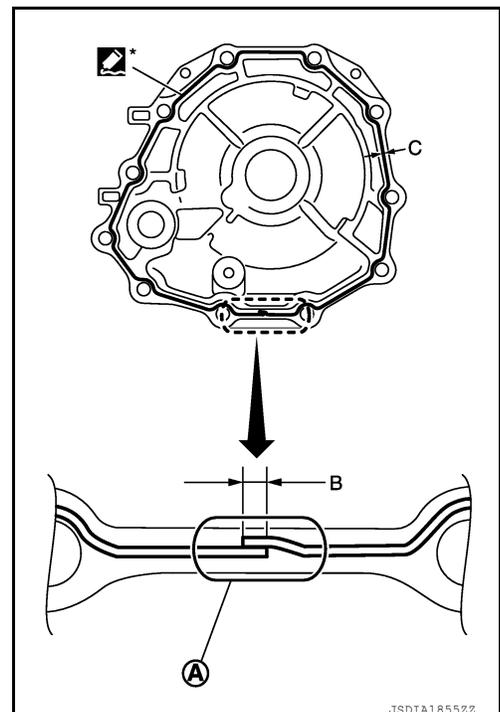
Overlap width of sealant starting point and end-point (B) : 3 – 5 mm (0.12 – 0.20 in)

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 adapter case mounting surfaces.



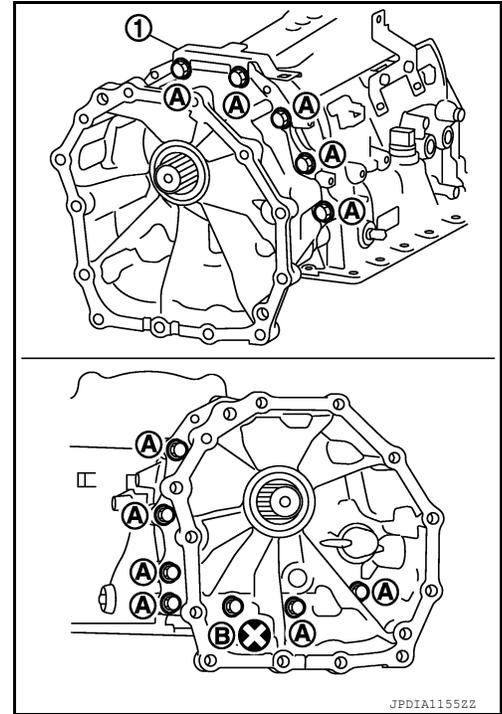
OUTPUT SPEED SENSOR

< REMOVAL AND INSTALLATION >

[7AT: RE7R01B]

- Tighten adapter case bolts to the specified torque.

- (1) : Bracket
- (A) : Bolt
- (B) : Self-sealing bolt



• Refer to the followings when installing oil pan (2) (with oil pan gasket) and clips (1) to transmission case.

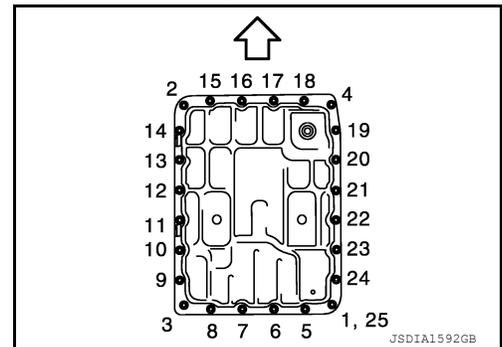
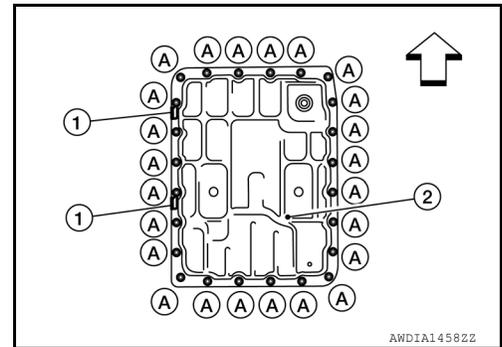
- ⇐ : Front
- (A) : Oil pan bolt

CAUTION:

- Do not 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.
- 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.

- ⇐ : Front

• Fill with ATF after installation. Refer to [TM-455, "Changing"](#).



4WD : Inspection and Adjustment

INSPECTION AFTER REMOVAL

INFOID:000000014419278

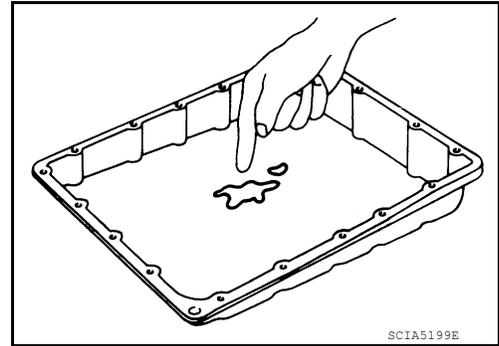
OUTPUT SPEED SENSOR

< REMOVAL AND INSTALLATION >

[7AT: RE7R01B]

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-359, "Cleaning"](#).



INSPECTION AFTER INSTALLATION

Start the engine and check visually that there is no leakage of ATF.

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AIR BREATHER HOSE

< REMOVAL AND INSTALLATION >

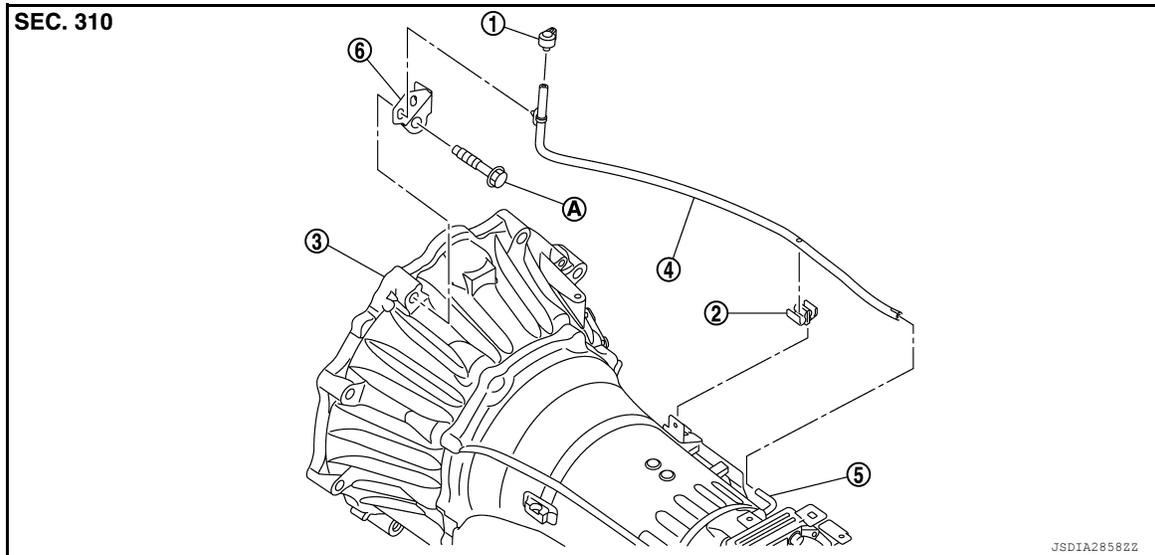
[7AT: RE7R01B]

AIR BREATHER HOSE

2WD

2WD : Exploded View

INFOID:000000014419279



- | | | |
|---------------------------|----------------------|-----------------|
| 1. Air breather cap | 2. Clip | 3. A/T assembly |
| 4. A/T air breather hose | 5. Air breather tube | 6. Bracket |
| A. Refer to INSTALLATION. | | |

2WD : Removal and Installation

INFOID:000000014419280

REMOVAL

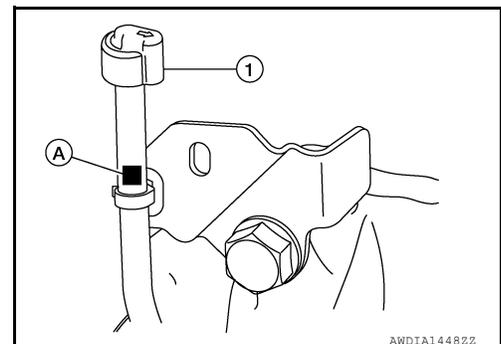
1. Remove A/T air breather hose assembly from bracket and clip.
2. Pull out A/T air breather hose assembly from air breather tube.
3. Remove air breather cap from A/T air breather hose.

INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

- Do not bend the A/T air breather hose to prevent damage to the hose.
- Insert A/T air breather hose to air breather tube all the way to the curve of the tube.
- To install air breather cap (1), face paint mark (A) toward the rear of the vehicle as shown.

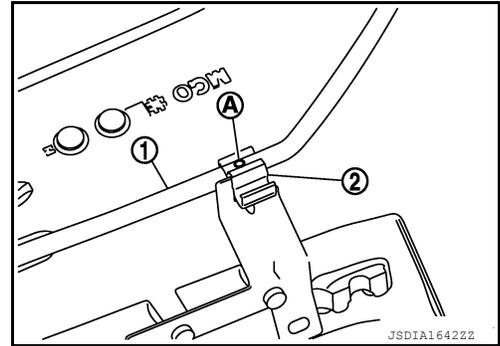


AIR BREATHER HOSE

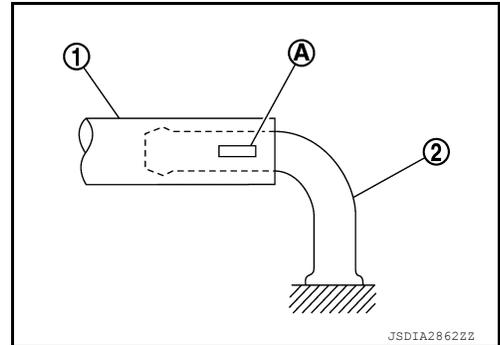
< REMOVAL AND INSTALLATION >

[7AT: RE7R01B]

- To fix A/T air breather hose (1) to the clip (2), face the A/T air breather hose paint mark (A) upward and observe the installation position shown.



- Insert A/T air breather hose (1) to air breather tube (2) so that the paint mark (A) is facing upward.



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FLUID COOLER SYSTEM

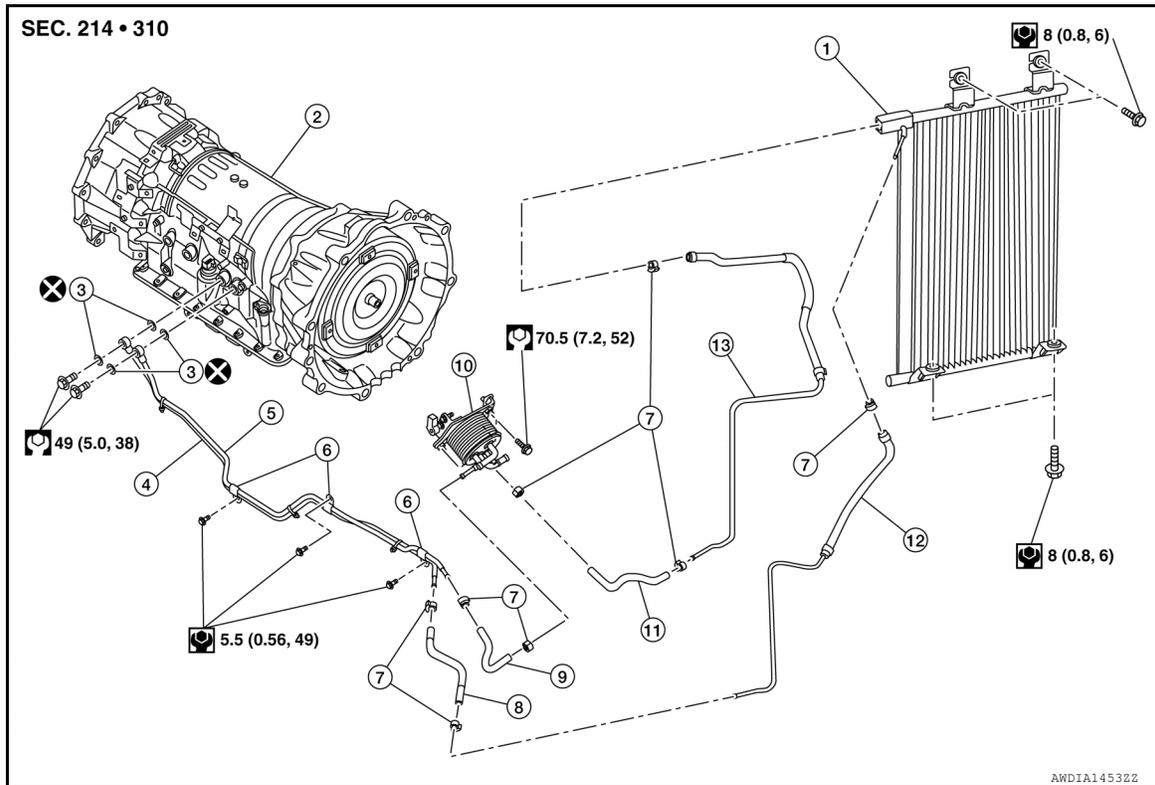
< REMOVAL AND INSTALLATION >

[7AT: RE7R01B]

FLUID COOLER SYSTEM

Exploded View - XD Models

INFOID:000000014724412



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|-----------------------------|-----------------------------|-----------------------------|
| 1. A/T fluid cooler | 2. A/T assembly | 3. Copper washer |
| 4. A/T fluid cooler tube D | 5. A/T fluid cooler tube A | 6. Clip |
| 7. Hose clamp | 8. A/T fluid cooler hose E | 9. A/T fluid cooler hose A |
| 10. A/T fluid warmer | 11. A/T fluid cooler hose B | 12. A/T fluid cooler hose D |
| 13. A/T fluid cooler hose C | | |

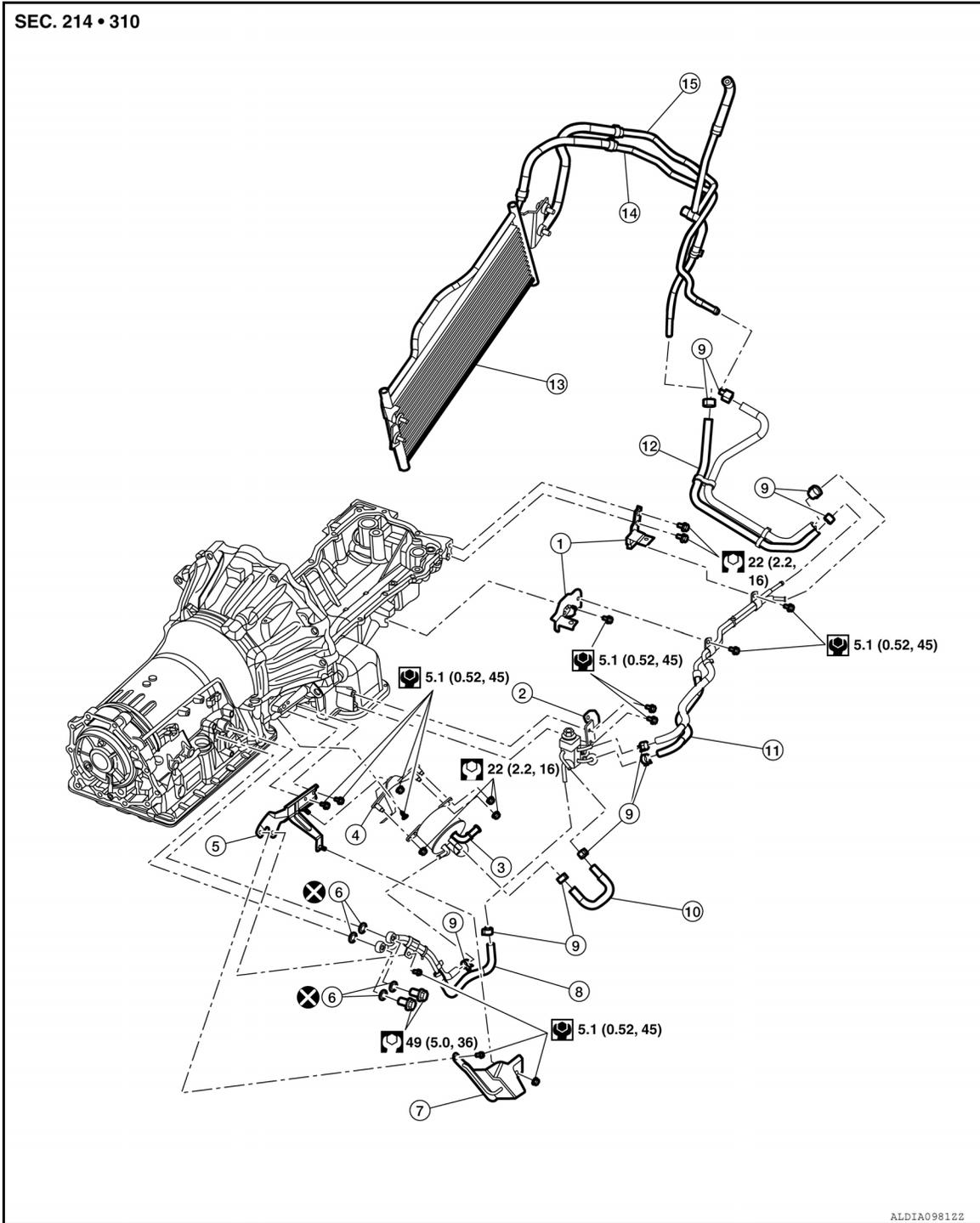
FLUID COOLER SYSTEM

< REMOVAL AND INSTALLATION >

[7AT: RE7R01B]

Exploded View - Non-XD Models

INFOID:000000014419281



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|-----------------------------|-----------------------------|-----------------------------|
| 1. Tube bracket | 2. Bypass valve | 3. A/T fluid warmer |
| 4. Heater bracket | 5. Bracket | 6. Gasket |
| 7. Heat shield | 8. A/T fluid cooler hose A | 9. Hose clamp |
| 10. A/T fluid cooler hose B | 11. A/T fluid cooler hose C | 12. A/T fluid cooler hose D |
| 13. A/T fluid cooler | 14. A/T fluid cooler hose E | 15. A/T fluid cooler hose F |

Removal and Installation - XD Models

INFOID:000000014724413

REMOVAL

Revision: August 2016

TM-499

2017 Titan NAM

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FLUID COOLER SYSTEM

< REMOVAL AND INSTALLATION >

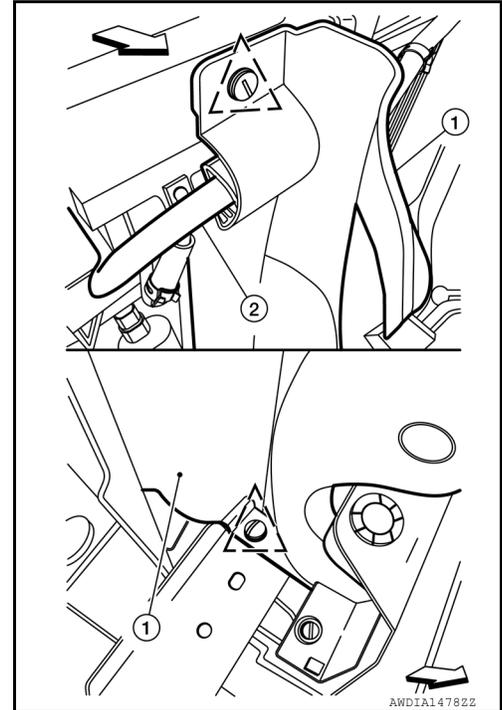
[7AT: RE7R01B]

1. Drain A/T fluid through drain plug. Refer to [TM-455, "Changing"](#).
2. Remove front under cover. Refer to [EXT-37, "FRONT UNDER COVER : Removal and Installation"](#).
3. Remove front grille. Refer to [EXT-32, "Removal and Installation"](#).
4. Remove horn (low). Refer to [HRN-7, "Removal and Installation"](#).
5. Remove A/T fluid cooler hose D from front air guide [RH (1)].
6. Release clips securing front air guide [RH (1)] to radiator core support.

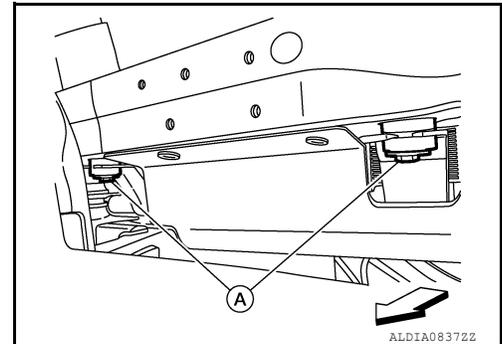
(2) : Fluid cooler hose D

△ : Clip

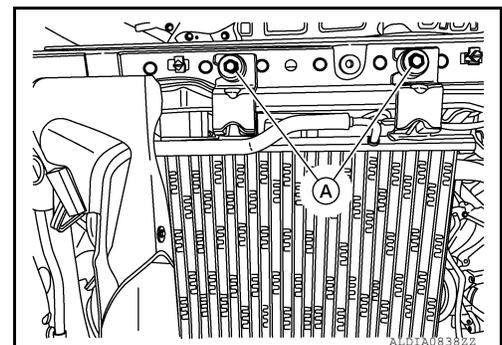
← : Front



7. Remove A/T fluid cooler hose C and D from A/T fluid cooler.
8. Remove bolts (A) fastening bottom of A/T fluid cooler to lower radiator core support



9. Remove bolts (A) fastening Top of A/T fluid cooler to upper radiator core support



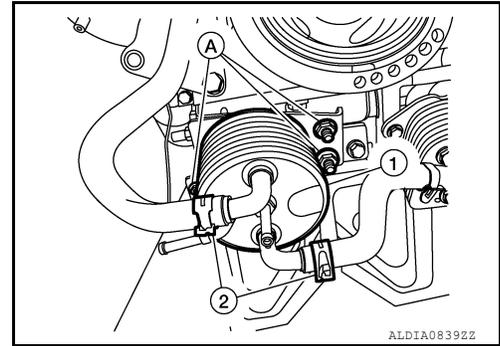
10. Remove A/T fluid cooler from vehicle with front air guide (RH).
CAUTION:
Be careful not to damage A/T fluid cooler core.
11. Remove front air guide (RH) from A/T fluid cooler.

FLUID COOLER SYSTEM

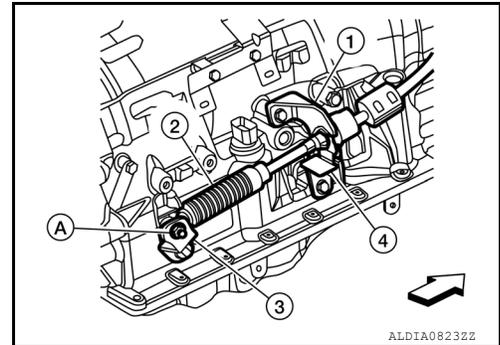
< REMOVAL AND INSTALLATION >

[7AT: RE7R01B]

12. Remove water hoses (2) from A/T fluid warmer (1).
13. Remove bolts (A) and remove A/T fluid warmer (1) from vehicle.



14. Remove nut (A) and remove control cable (2) from manual lever (3)
15. Remove lock plate (4) and disconnect control cable (2) from bracket (1)
16. Remove bracket (1).



17. Remove A/T fluid cooler hoses and A/T fluid cooler tubes.

CAUTION:

Be careful not to bend A/T fluid cooler tubes.

NOTE:

Cap or plug openings to prevent fluid from spilling.

INSTALLATION

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

CAUTION:

- Do not reuse copper washers.
- Be careful not to damage A/T fluid cooler core.
- Be careful not to damage condenser core, condenser pipe and liquid tank.
- Refer to the following when installing A/T fluid cooler hoses.

Hose name	Hose end	Paint mark	Position of hose clamp*
A/T fluid cooler hose A	A/T fluid cooler tube A side	Facing upward	A
	A/T fluid warmer side	Facing upward	C
A/T fluid cooler hose B	A/T fluid warmer side	Facing leftward	E
	A/T fluid cooler tube B side	Facing downward	B
A/T fluid cooler hose C	A/T fluid cooler tube B side	Facing rightward	E
	A/T fluid cooler side	Facing upward	F
A/T fluid cooler hose D	A/T fluid cooler side	—	C
	A/T fluid cooler tube C side	—	G
A/T fluid cooler hose E	A/T fluid cooler tube C side	Facing downward	B
	A/T fluid cooler tube D side	Facing rightward	D

*: Refer to the illustrations for the specific position each hose clamp tab.

FLUID COOLER SYSTEM

< REMOVAL AND INSTALLATION >

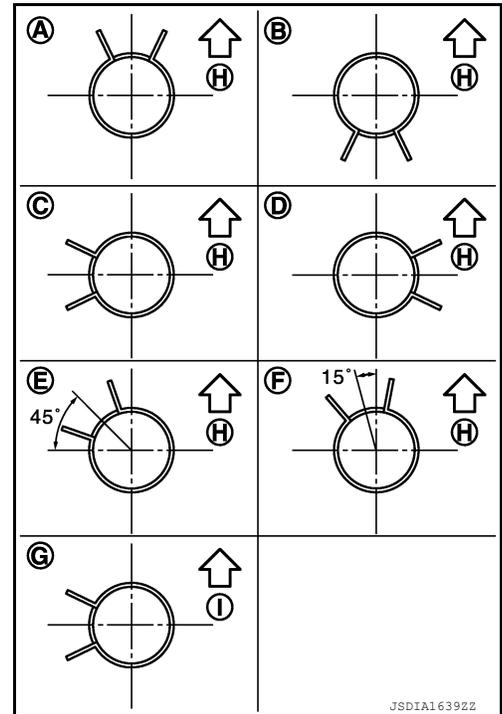
[7AT: RE7R01B]

- The illustrations indicate the view from the hose ends.

⇐ H : Vehicle upper

⇐ I : Vehicle front

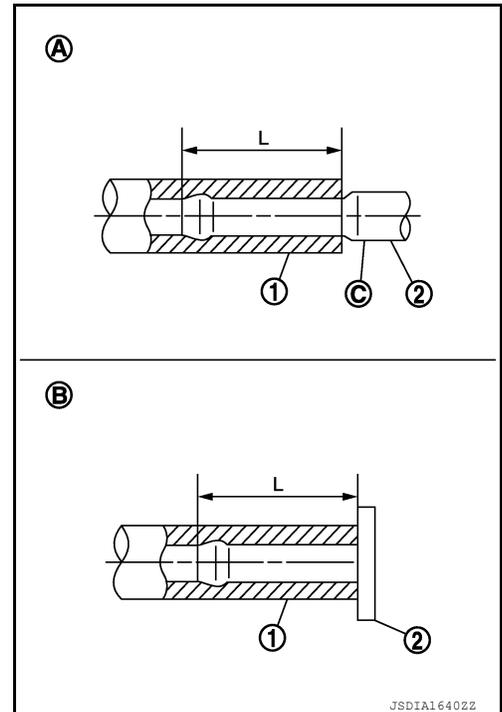
- When installing hose clamps center line of each hose clamp tab should be positioned as shown in the figure.



JSDIA16392Z

- Insert A/T fluid cooler hoses according to dimension "L" described below.

A/T fluid cooler hose (1)	Insertion side tube (2)	Tube type	Dimension "L"
A/T fluid cooler hose A	A/T fluid cooler tube A	A	30-33 mm (1.18 in) [End reaches the 2-stage bulge (C).]
	A/T fluid warmer tube		
A/T fluid cooler hose B	A/T fluid warmer tube	B	Insert the hose until the hose touches the A/T fluid warmer.
	A/T fluid cooler tube B	A	30-33 mm (1.18 in) [End reaches the 2-stage bulge (C).]
A/T fluid cooler hose C	A/T fluid cooler tube B		
	A/T fluid cooler tube		
A/T fluid cooler hose D	A/T fluid cooler tube		
	A/T fluid cooler tube C		
A/T fluid cooler hose E	A/T fluid cooler tube C		
	A/T fluid cooler tube D		



JSDIA1640Z2

FLUID COOLER SYSTEM

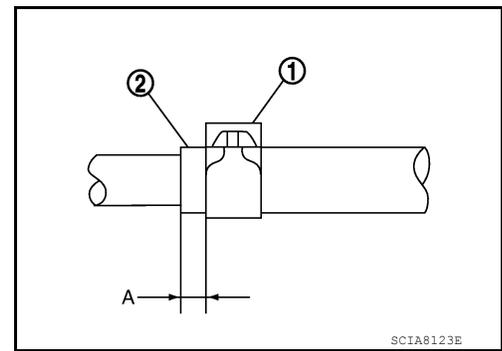
< REMOVAL AND INSTALLATION >

[7AT: RE7R01B]

- Set 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)

- Hose clamp should not interfere with the bulge of fluid cooler tube.



Removal and Installation - Non-XD Models

INFOID:000000014419282

A/T COOLER SYSTEM REMOVAL

1. Remove active grille shutter if removing A/T fluid cooler. Refer to [EXT-34. "Removal and Installation"](#).
2. Remove hose clamps and remove A/T fluid coolant hose E and F from A/T fluid cooler.
NOTE:
Plug cooler hoses.
3. Remove screws and remove at A/T fluid cooler.
4. Remove hose clamps and disconnect A/T fluid coolant hose E and F from A/T fluid coolant hose D.
5. Remove A/T fluid coolant hose E and F from radiator shroud. (if necessary).
6. Remove front under cover. Refer to [EXT-37. "FRONT UNDER COVER : Removal and Installation"](#).
7. Remove engine under cover. Refer to [EXT-39. "ENGINE UNDER COVER : Removal and Installation"](#).
8. Remove floor under cover. Refer to [EXT-40. "FLOOR UNDER COVER : Removal and Installation"](#).
9. Drain A/T fluid through drain plug. Refer to [TM-455. "Changing"](#).
10. Remove nut, screw and heat shield.
11. Remove screw holding AT fluid coolant hose A to bracket.
12. Remove bolts, gaskets, and hose clamps and remove A/T fluid coolant hose A.
CAUTION:
 - Do not reuse gaskets.
 - Be careful not to bend ends of tubes that attach to the transmission.
13. Remove hose clamps and A/T fluid coolant hose B.
14. Remove hose clamps and disconnect A/T fluid coolant hose C from A/T fluid coolant hose D.
15. Remove screws holding A/T fluid coolant hose C to tube brackets.
16. Remove hose clamps and A/T fluid coolant hose C.
17. Remove hose clamps and disconnect A/T fluid coolant hose D from A/T fluid coolant hose E and F.
18. Remove coolant hoses from A/T fluid warmer. Refer to [LU-12. "Exploded View"](#) and [CO-27. "Exploded View"](#).
19. Remove nuts and remove A/T fluid warmer.
20. Remove screws and remove bypass valve.
21. Remove screw and nut and remove warmer bracket (if necessary).
22. Remove screws and remove bracket (if necessary).
23. Remove screws and remove tube brackets from engine (if necessary).

A/T COOLER INSTALLATION

Installation in the reverse order of removal.

CAUTION:

- Do not reuse gaskets.

Refer to the following when installing hoses.

Hose name	Hose end	Paint mark	Position of hose clamp hook
A/T fluid coolant hose A	To bypass valve	Align hose to valve tube	A
	To A/T fluid warmer	Align hose to warmer tube	Align with hose paint marks

FLUID COOLER SYSTEM

< REMOVAL AND INSTALLATION >

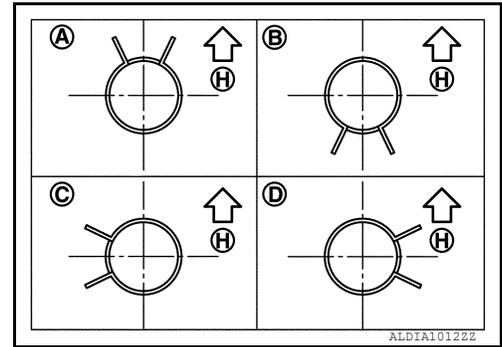
[7AT: RE7R01B]

Hose name	Hose end	Paint mark	Position of hose clamp hook
A/T fluid coolant hose C	To bypass valve, upper tube	Align hose to valve tube	C
	To bypass valve, lower tube	Align hose to valve tube	B
	A/T fluid cooler hose D, outside	Align tube to hose	B
	A/T fluid cooler hose D, inside	Align tube to hose	B
A/T fluid coolant hose B	To bypass valve	Align hose to valve tube	A
	To A/T fluid warmer	Align hose to warmer tube	Align with hose paint marks
A/T fluid coolant hose D	A/T fluid cooler hose E, inside	Align hose to tube	B
	A/T fluid cooler hose F, outside	Align hose to tube	C
	A/T fluid cooler hose C, inside	Align hose to tube	D
	A/T fluid cooler hose C, outside	Align hose to tube	D

- The illustration indicates the view from the hose ends.

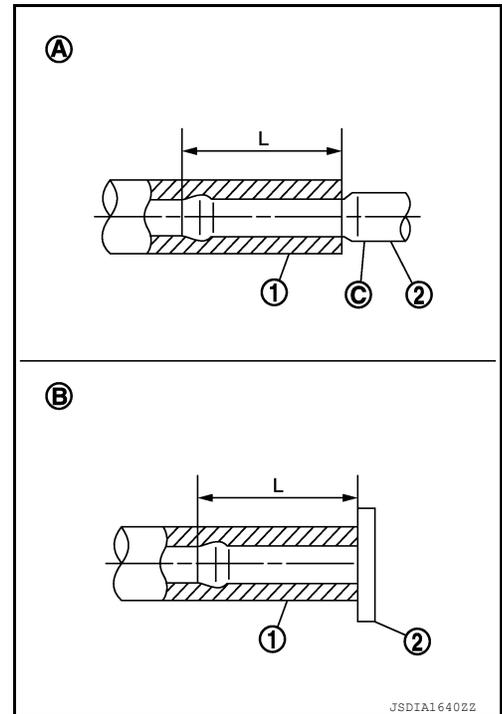
⇨ H: Vehicle front

- When installing hose clamps, center line of each hose clamp tab should be positioned as shown.



- Insert tubes into hoses as described.

View	Dimension (L)	Hose (1)	Tube (2)
View (A)	30-33 mm (1.18 in) End reaches 2-stage bulge (C)		
View (B)	Dimension (L)	Hose (1)	A/T fluid warmer (2)
	30-33 mm (1.18 in) End reaches 2-stage bulge (C)		



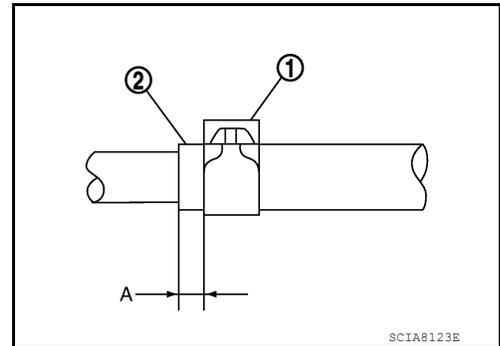
FLUID COOLER SYSTEM

< REMOVAL AND INSTALLATION >

[7AT: RE7R01B]

- Position hose clamps (1) at both ends of fluid cooler hoses (2) at dimension (A) from the hose edge.

Dimension (A) : 5 – 9 mm (0.20 – 0.35 in)



Inspection and Adjustment

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-457, "Adjustment"](#).

INFOID:000000014724414

A
B
C
TM
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TRANSMISSION ASSEMBLY

< UNIT REMOVAL AND INSTALLATION >

[7AT: RE7R01B]

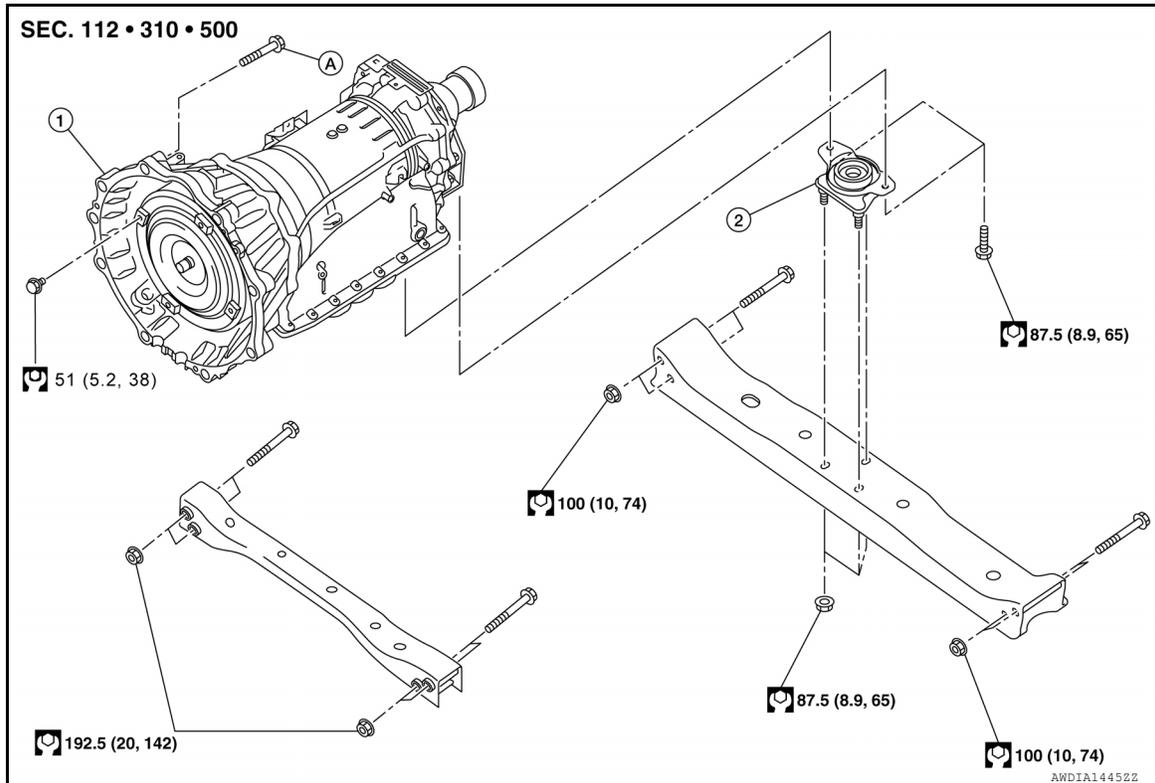
UNIT REMOVAL AND INSTALLATION

TRANSMISSION ASSEMBLY

2WD

2WD : Exploded View

INFOID:0000000014419284



1. A/T assembly
 2. Engine mounting insulator (rear)
- A. Refer to INSTALLATION.

2WD : Removal and Installation

INFOID:0000000014419285

REMOVAL

CAUTION:

- When removing the A/T assembly from engine, first remove the crankshaft position sensor (POS) from the A/T assembly.
- Be careful not to damage sensor edge.
- When replacing transmission assembly, Perform "ADDITIONAL SERVICE WHEN REPLACING TRANSMISSION ASSEMBLY". Refer to [TM-356, "Description"](#).

1. Shift the selector lever to "P" position, and release the parking brake.
2. Disconnect the battery or batteries. Refer to [PG-185, "Battery Disconnect"](#).
3. Remove floor under cover. Refer to [EXT-40, "FLOOR UNDER COVER : Removal and Installation"](#).
4. Drain ATF through drain plug. Refer to [TM-455, "Changing"](#).

TRANSMISSION ASSEMBLY

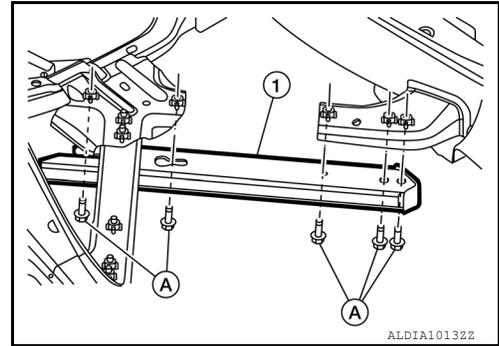
< UNIT REMOVAL AND INSTALLATION >

[7AT: RE7R01B]

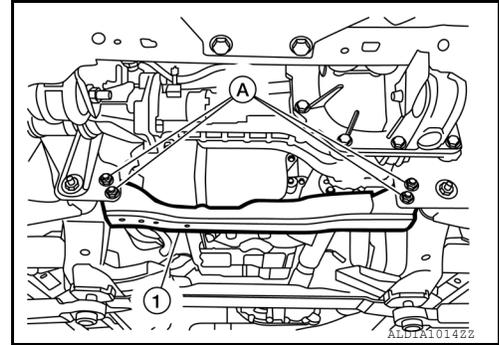
5. Remove bolts (A) and remove rear diagonal cross members [(1) (LH/RH)] (Non-XD Models).

NOTE:

RH shown, LH similar.



6. Remove bolts and nuts (A) from front cross member (1), then remove front cross member.

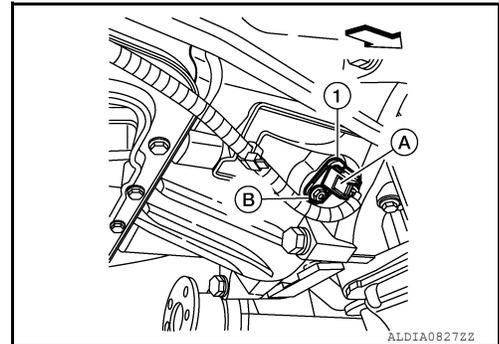


7. Remove rear propeller shaft. Refer to [DLN-166, "Removal and Installation"](#).
8. Disconnect the harness connector (A) from crankshaft position sensor (1).
9. Remove screw (B) and remove crankshaft position sensor (1) from A/T assembly.

⇐ : Front

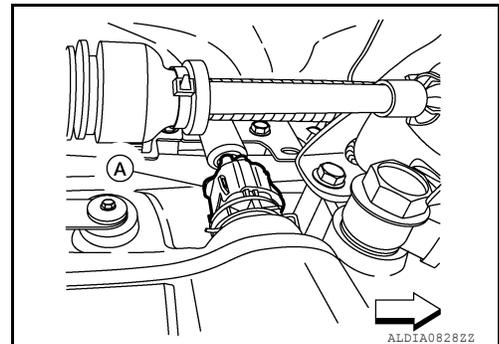
CAUTION:

- Do not subject it to impact by dropping or hitting it.
- Do not disassemble.
- Do not allow metal filings, etc. to get on the sensor's front edge magnetic area.
- Do not place in an area affected by magnetism.



10. Disconnect the harness connectors from heated oxygen sensors (bank 1 and bank 2). Refer to [TM-506, "2WD : Exploded View"](#) for 2WD and [TM-511, "4WD : Exploded View"](#) for 4WD.
11. Disconnect the harness connector (A) from the joint connector.

⇐ : Front



12. Remove control cable and control cable bracket from A/T assembly. Refer to [TM-460, "Removal and Installation"](#).
13. Disconnect harness connectors from A/T assembly.
14. Remove harness and brackets from A/T assembly.

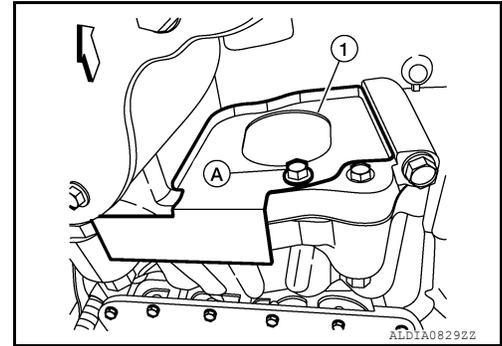
TRANSMISSION ASSEMBLY

< UNIT REMOVAL AND INSTALLATION >

[7AT: RE7R01B]

15. Remove bolt (A) and remove rear plate cover (1).

↶ : Front

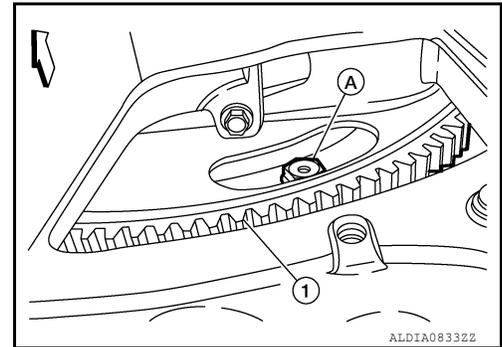


16. Remove front under cover. Refer to [EXT-37, "FRONT UNDER COVER : Removal and Installation"](#).
17. Remove bottom fan shroud (lower). Refer to [CO-14, "Removal and Installation - XD Models"](#) or [CO-17, "Removal and Installation - Non-XD Models"](#).
18. Turn crankshaft, and remove the four tightening bolts (A) for drive plate (1) and torque converter.

↶ : Front

CAUTION:

When turning the crankshaft, turn it clockwise as viewed from the front of the engine.



19. Remove A/T fluid cooler tube A and D for XD Models. Refer to [TM-498, "Exploded View - XD Models"](#). Remove A/T fluid cooler tubes A and C for Non-XD Models. Refer to [TM-499, "Exploded View - Non-XD Models"](#).

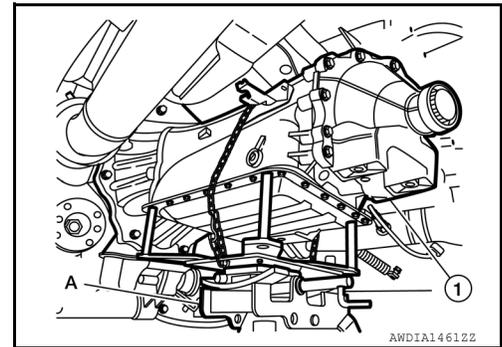
NOTE:

Cap or plug openings to prevent fluid from spilling.

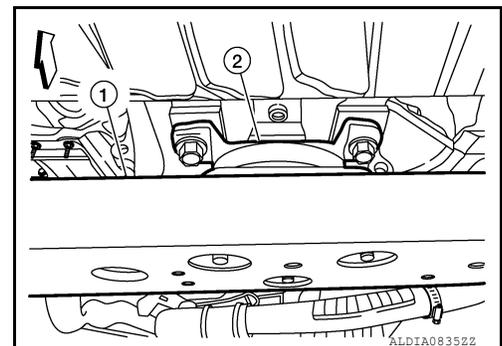
20. Support A/T assembly (1) with a transmission jack (A).

CAUTION:

When setting the transmission jack, be careful not to allow it to collide against the drain plug and overflow plug.



21. Remove rear engine mount cross member (1) and engine mount insulator (rear) (2).



22. Remove bolts from A/T assembly to engine.
23. Remove A/T assembly from the vehicle.

CAUTION:

TRANSMISSION ASSEMBLY

< UNIT REMOVAL AND INSTALLATION >

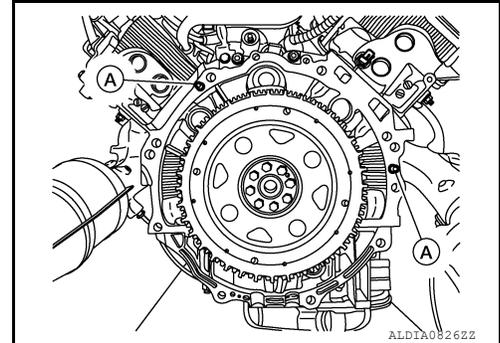
[7AT: RE7R01B]

- Secure torque converter to prevent it from dropping.
- Secure A/T assembly to a transmission jack.

INSTALLATION

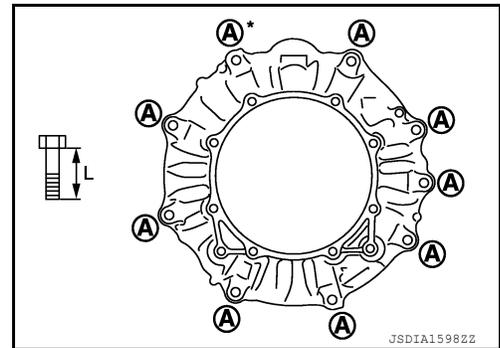
Note the following, and Install in the reverse order of removal.

- Perform inspection before installing A/T assembly. Refer to [TM-510, "2WD : Inspection and Adjustment"](#) for 2WD or [TM-515, "4WD : Inspection and Adjustment"](#) for 4WD.
- Check fitting of dowel pin (A).



- Install the bolts of A/T assembly and engine according to the following standard.

Bolt symbol	A
Insertion direction	A/T assembly to engine
Number of bolts	9
Bolt length "L" mm (in)	70 (2.76)
Tightening torque N·m (kg-m, ft-lb)	113 (12, 83)



*: Tightening the bolt with bracket (and washer). Refer to [TM-496, "2WD : Exploded View"](#).

- Align the positions of tightening bolts for drive plate with those of the torque converter, and temporarily tighten the bolts. Then, tighten the bolts with the specified torque.

CAUTION:

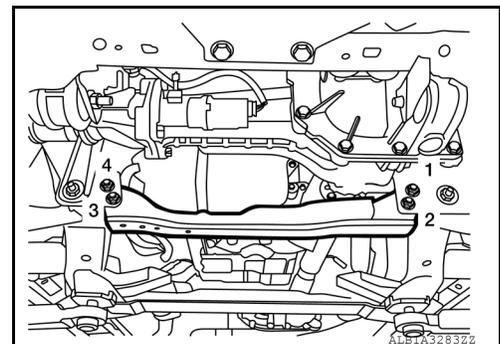
- When turning crankshaft, turn it clockwise as viewed from the front of the engine.
- When tightening the tightening bolts for the torque converter after fixing the crankshaft pulley bolts, be sure to confirm the tightening torque of the crankshaft pulley mounting bolts. Refer to [EM-120, "Removal and Installation"](#).
- Rotate crankshaft several turns and check to be sure that A/T rotates freely without binding after converter is installed to drive plate.

- Install front cross member (1) using bolts and nuts, then tighten nuts to specification in sequence as shown.

CAUTION:

Do not reuse nuts.

Front cross member nuts Nm 180 (18 kg-m, 133 ft-lb)



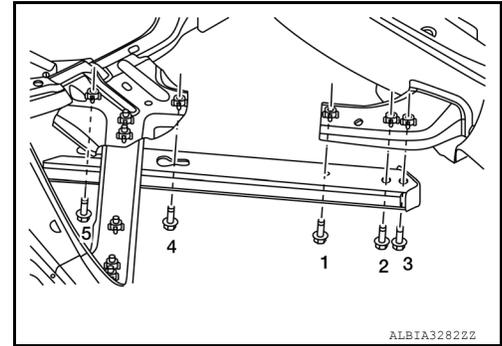
TRANSMISSION ASSEMBLY

< UNIT REMOVAL AND INSTALLATION >

[7AT: RE7R01B]

- Install rear diagonal cross member bolts, then tighten bolts to specification in sequence as shown (Non-XD models).

Rear diagonal cross member bolts Nm 130 (13 kg-m, 96 ft-lb)



- Installation of the remaining components is in the reverse order of removal.

2WD : Inspection and Adjustment

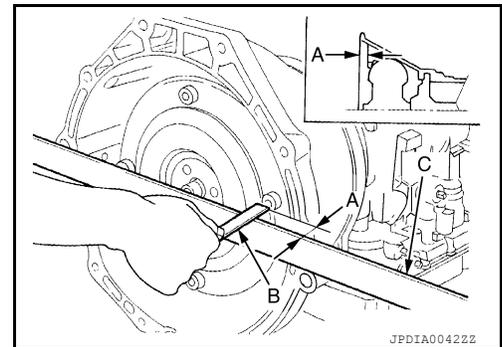
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INSPECTION BEFORE INSTALLATION

Check dimension (A) between converter housing and torque converter.

- B : Scale
- C : Straightedge

Dimension (A) : Refer to [TM-603, "Torque Converter"](#).



INSPECTION AFTER INSTALLATION

- Start the engine and check visually that there is no leakage of ATF.
- Check A/T position after adjusting A/T position. Refer to [TM-363, "Inspection"](#).

ADJUSTMENT AFTER INSTALLATION

- Adjust A/T fluid level. Refer to [TM-457, "Adjustment"](#).
- Adjust A/T position. Refer to [TM-363, "Adjustment"](#).
- Perform "ADDITIONAL SERVICE WHEN REPLACING TRANSMISSION ASSEMBLY". Refer to [TM-356, "Description"](#).

4WD

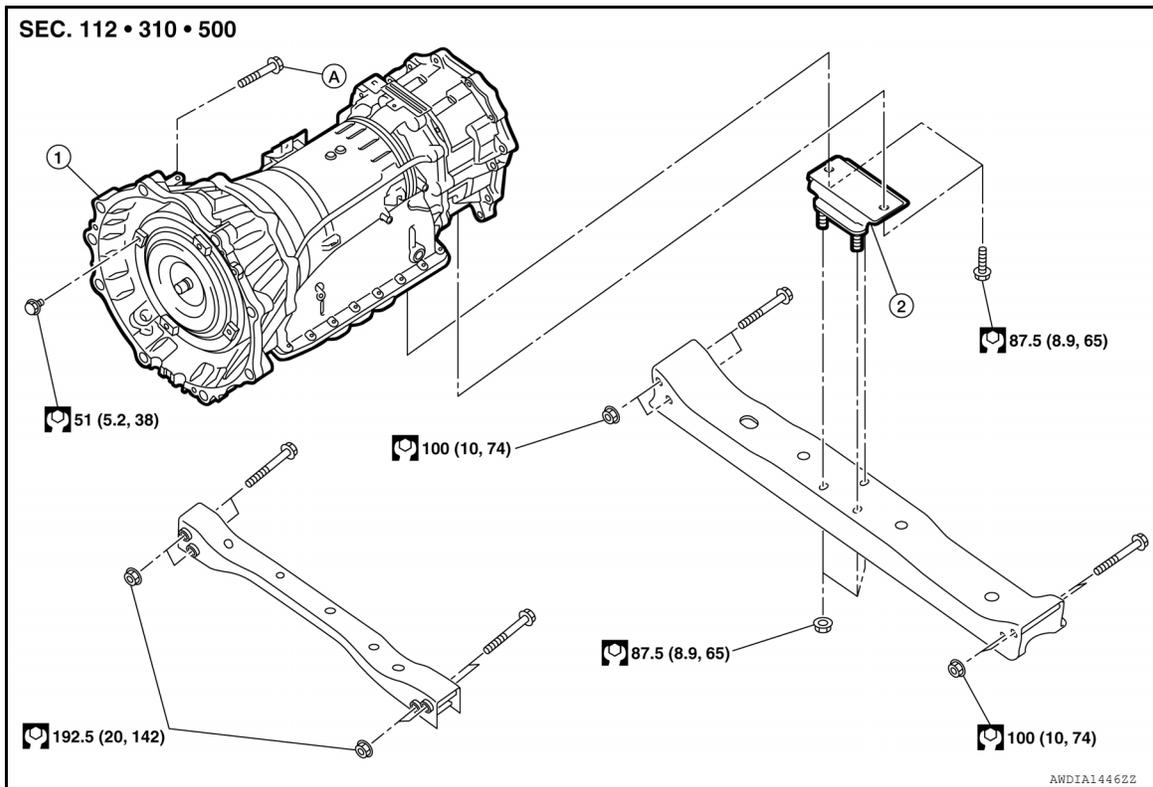
TRANSMISSION ASSEMBLY

< UNIT REMOVAL AND INSTALLATION >

[7AT: RE7R01B]

4WD : Exploded View

INFOID:000000014419287



1. A/T assembly
 2. Engine mounting insulator (rear)
- A. Refer to INSTALLATION.

4WD : Removal and Installation

INFOID:000000014419288

REMOVAL

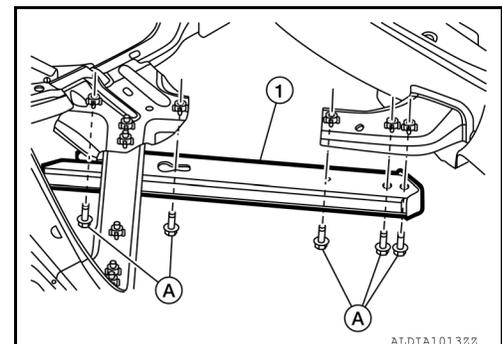
CAUTION:

- When removing the A/T assembly from engine, first remove the crankshaft position sensor (POS) from the A/T assembly.
- Be careful not to damage sensor edge.

1. Shift the selector lever to "P" position, and release the parking brake.
2. Disconnect the battery or batteries. Refer to [PG-185, "Battery Disconnect"](#).
3. Remove floor under cover. Refer to [EXT-40, "FLOOR UNDER COVER : Removal and Installation"](#).
4. Drain ATF through drain plug. Refer to [TM-455, "Changing"](#).
5. Remove bolts (A) from rear diagonal cross member [1 (LH/RH)], then remove front cross member.

NOTE:

RH shown, LH similar.

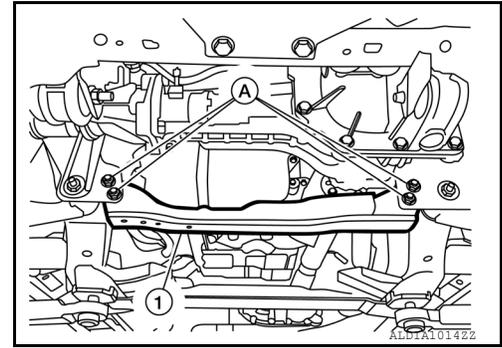


TRANSMISSION ASSEMBLY

< UNIT REMOVAL AND INSTALLATION >

[7AT: RE7R01B]

6. Remove bolts and nuts (A) and remove front cross member (1).

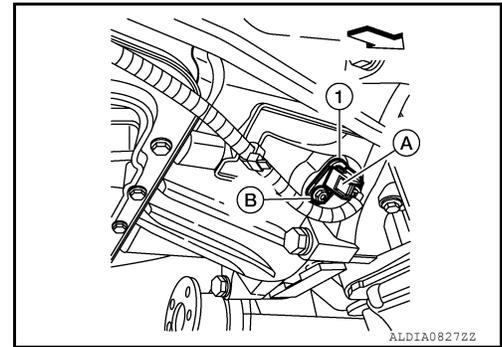


7. Remove transfer assembly from A/T assembly. Refer to [DLN-140, "Removal and Installation"](#).
8. Disconnect harness connector (A) from crankshaft position sensor (1).
9. Remove screw (B) and remove crankshaft position sensor (1) from A/T assembly.

⇐ : Front

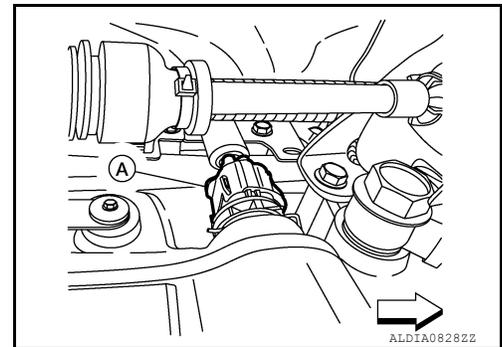
CAUTION:

- Do not subject it to impact by dropping or hitting it.
- Do not disassemble.
- Do not allow metal filings, etc. to get on the sensor's front edge magnetic area.
- Do not place in an area affected by magnetism.



10. Disconnect heated oxygen sensor 2 connectors (bank 1 and bank 2). Refer to [DLN-139, "Exploded View"](#).
11. Disconnect the harness connector (A) from the joint connector.

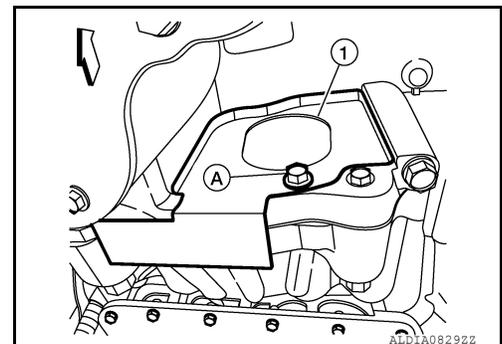
⇐ : Front



12. Remove control cable and bracket from A/T assembly. Refer to [TM-460, "Removal and Installation"](#).
13. Disconnect harness connectors from the A/T assembly.
14. Remove harness and brackets from A/T assembly and transfer assembly.
15. Remove engine under cover. Refer to [EXT-39, "ENGINE UNDER COVER : Removal and Installation"](#).

16. Remove bolt (A) and remove rear cover plate (1).

⇐ : Front



TRANSMISSION ASSEMBLY

< UNIT REMOVAL AND INSTALLATION >

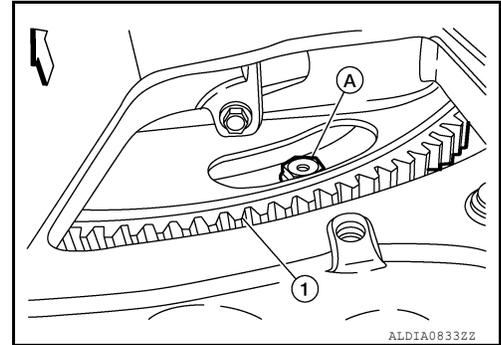
[7AT: RE7R01B]

17. Remove front undercover. Refer to [EXT-37, "FRONT UNDER COVER : Removal and Installation"](#).
18. Remove fan shroud (lower). Refer to [CO-22, "Exploded View"](#).
19. Turn crankshaft, and remove the four tightening bolts (A) for drive plate (1) and torque converter.

⇐ : Front

CAUTION:

When turning the crankshaft, turn it clockwise as viewed from the front of the engine.



20. Remove A/T fluid cooler tube A and D for XD Models. Refer to [TM-498, "Exploded View - XD Models"](#). Remove A/T fluid cooler tube A and C for Non-XD Models. [TM-499, "Exploded View - Non-XD Models"](#).

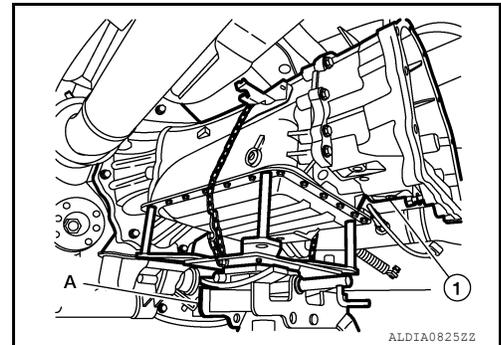
NOTE:

Cap or plug openings to prevent fluid from spilling.

21. Support A/T assembly (1) with a transmission jack (A).

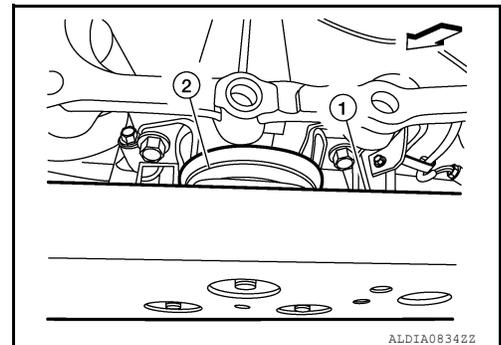
CAUTION:

When setting the transmission jack, be careful not to allow it to collide against the drain plug and overflow plug.



22. Remove rear engine mount cross member (1) and engine mount insulator (rear) (2).

⇐ : Front



23. Remove bolts from A/T assembly to engine.

24. Remove A/T assembly from the vehicle.

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.

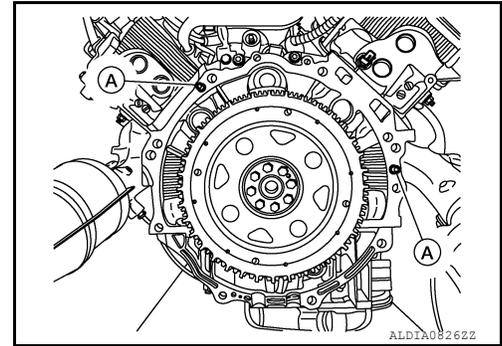
- Perform inspection before installing A/T assembly. Refer to [TM-515, "4WD : Inspection and Adjustment"](#).

TRANSMISSION ASSEMBLY

< UNIT REMOVAL AND INSTALLATION >

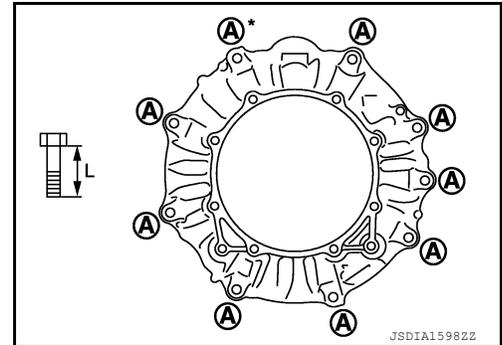
[7AT: RE7R01B]

- Check fitting of dowel pin (A).



- Install the bolts of A/T assembly and engine according to the following standard.

Bolt symbol	A
Insertion direction	A/T assembly to engine
Number of bolts	9
Bolt length "L" mm (in)	70 (2.76)
Tightening torque N·m (kg·m, ft·lb)	113 (12, 83)



*: Tightening the bolt with bracket (and washer). Refer to [TM-511, "4WD : Exploded View"](#).

- Align the positions of tightening bolts for drive plate with those of the torque converter, and temporarily tighten the bolts. Then, tighten the bolts with the specified torque.

CAUTION:

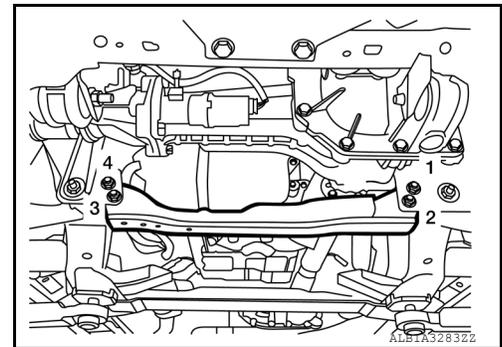
- When turning crankshaft, turn it clockwise as viewed from the front of the engine.
- When tightening the tightening bolts for the torque converter after fixing the crankshaft pulley bolts, be sure to confirm the tightening torque of the crankshaft pulley mounting bolts. Refer to [EM-120, "Exploded View"](#).
- Rotate crankshaft several turns and check to be sure that A/T rotates freely without binding after converter is installed to drive plate.

- Install front cross member (1) using bolts and nuts, then tighten nuts (A) to specification in the sequence show.

CAUTION:

Do not reuse nuts.

Front cross member nuts Nm 180 (18 kg-m, 133 ft-lb)

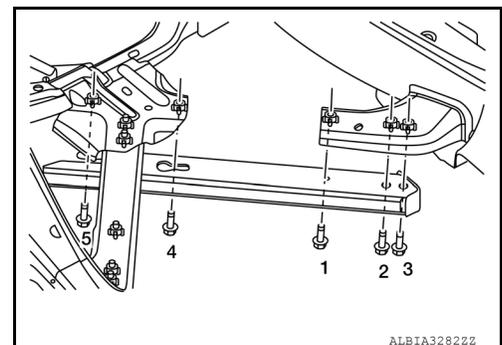


- Install rear diagonal member (1) using bolts, then tighten bolts to specification in sequence as shown (Non-XD Models).

NOTE:

RH shown, LH similar.

Rear diagonal cross member bolts Nm 130 (13 kg-m, 96 ft-lb)



TRANSMISSION ASSEMBLY

< UNIT REMOVAL AND INSTALLATION >

[7AT: RE7R01B]

- Installation of the remaining components is in the reverse order of removal.

4WD : Inspection and Adjustment

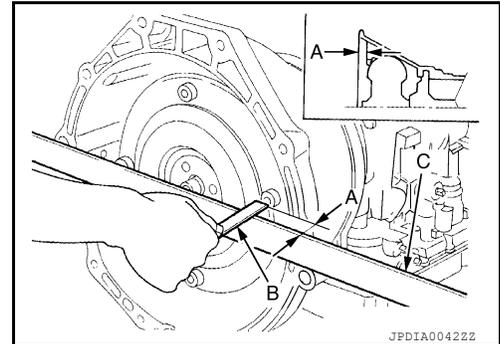
INFOID:000000014419289

INSPECTION BEFORE INSTALLATION

Check dimension (A) between converter housing and torque converter.

- B : Scale
- C : Straightedge

Dimension (A) : Refer to [TM-603, "Torque Converter"](#).



INSPECTION AFTER INSTALLATION

- Start the engine and check visually that there is no leakage of ATF.
- Check A/T position after adjusting A/T position. Refer to [TM-363, "Inspection"](#).

ADJUSTMENT AFTER INSTALLATION

- Adjust A/T fluid level. Refer to [TM-457, "Adjustment"](#).
- Adjust A/T position. Refer to [TM-363, "Inspection"](#).

TRANSMISSION ASSEMBLY

< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01B]

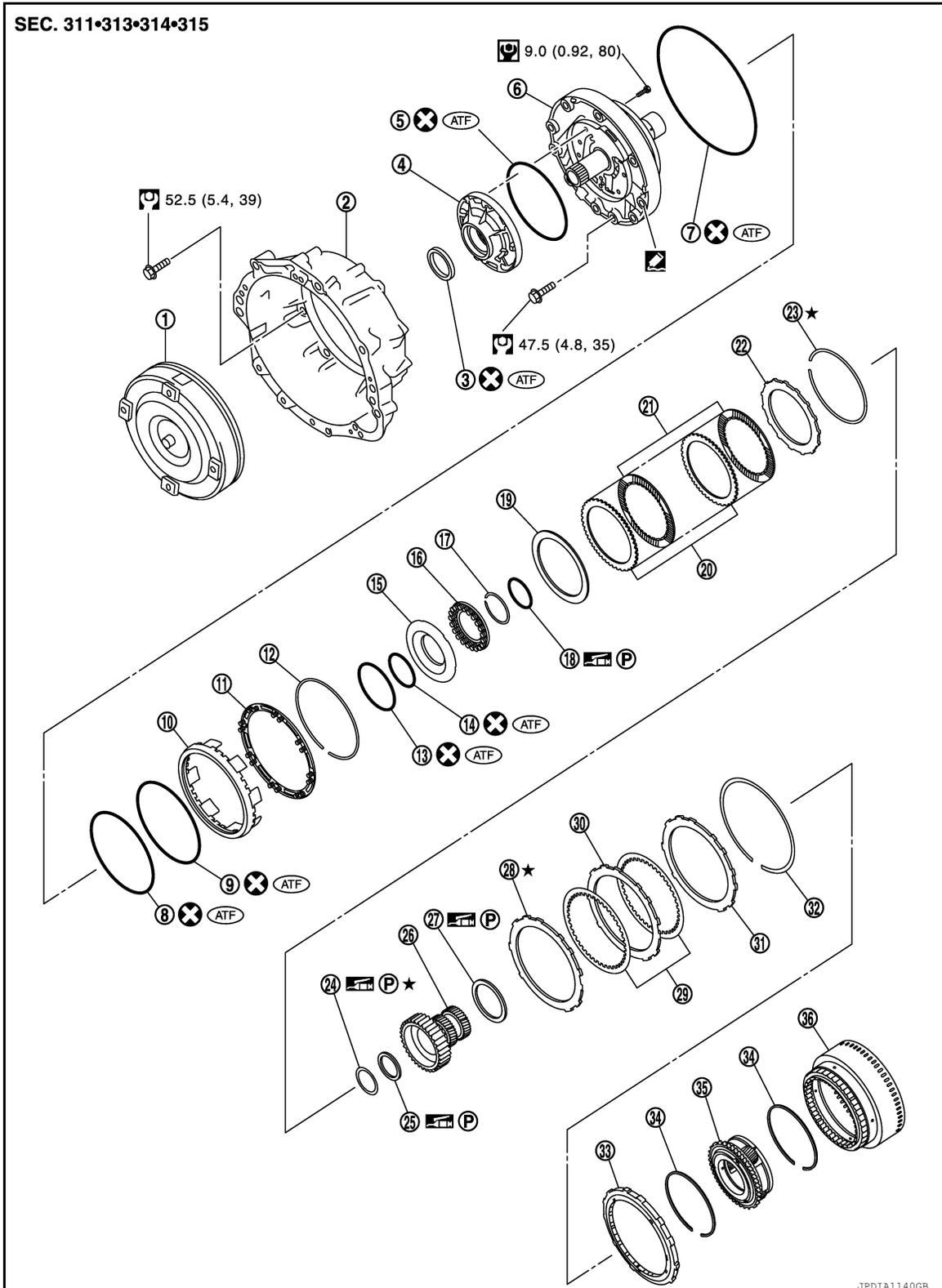
UNIT DISASSEMBLY AND ASSEMBLY

TRANSMISSION ASSEMBLY

Exploded View

INFOID:000000014419290

2WD MODELS



TRANSMISSION ASSEMBLY

< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01B]

- | | | | |
|-------------------------------|--------------------------------|-----------------------------|----|
| ① Torque converter | ② Converter housing | ③ Oil pump housing oil seal | A |
| ④ Oil pump housing | ⑤ O-ring | ⑥ Oil pump cover | |
| ⑦ O-ring | ⑧ D-ring | ⑨ D-ring | B |
| ⑩ Front brake piston | ⑪ Front brake spring retainer | ⑫ Snap ring | |
| ⑬ D-ring | ⑭ D-ring | ⑮ 2346 brake piston | |
| ⑯ 2346 brake spring retainer | ⑰ Snap ring | ⑱ Seal ring | C |
| ⑲ 2346 brake dish plate | ⑳ 2346 brake driven plate | ㉑ 2346 brake drive plate | |
| ㉒ 2346 brake retaining plate | ㉓ Snap ring | ㉔ Bearing race | |
| ㉕ Needle bearing | ㉖ Under drive sun gear | ㉗ Needle bearing | TM |
| ㉘ Front brake retaining plate | ㉙ Front brake drive plate | ㉚ Front brake driven plate | |
| ㉛ Front brake retaining plate | ㉜ Snap ring | ㉝ 1st one-way clutch | E |
| ㉞ Snap ring | ㉟ Under drive carrier assembly | ㊱ Front brake hub assembly | |

 : Always replace after every disassembly.

 : N·m (kg-m, in-lb)

 : N·m (kg-m, ft-lb)

 : Apply Genuine RTV silicone sealant or equivalent. Refer to [GI-22, "Recommended Chemical Products and Sealants"](#).

 : Apply ATF

 : Apply petroleum jelly

★ : Select with proper thickness.

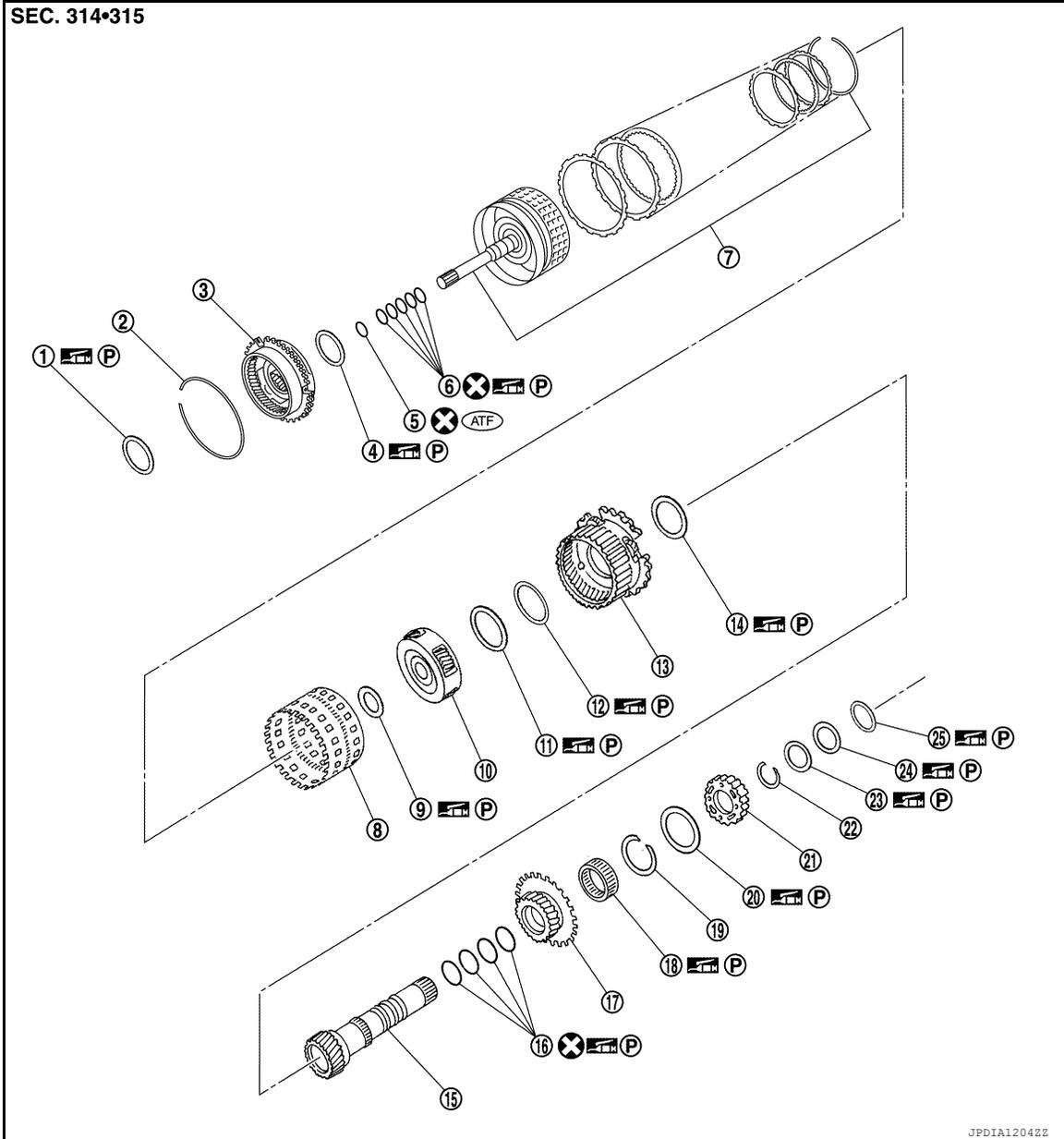
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TRANSMISSION ASSEMBLY

< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01B]

SEC. 314•315



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- | | | |
|-------------------------|----------------------|-----------------------------------|
| ① Needle bearing | ② Snap ring | ③ Front carrier assembly |
| ④ Needle bearing | ⑤ O-ring | ⑥ Seal ring |
| ⑦ Input clutch assembly | ⑧ Rear internal gear | ⑨ Needle bearing |
| ⑩ Mid carrier assembly | ⑪ Needle bearing | ⑫ Bearing race |
| ⑬ Rear carrier assembly | ⑭ Needle bearing | ⑮ Mid sun gear |
| ⑯ Seal ring | ⑰ Rear sun gear | ⑱ 2nd one-way clutch |
| ⑲ Snap ring | ⑳ Needle bearing | ㉑ High and low reverse clutch hub |
| ㉒ Snap ring | ㉓ Bearing race | ㉔ Bearing race |
| ㉕ Needle bearing | | |

⊗ : Always replace after every disassembly.

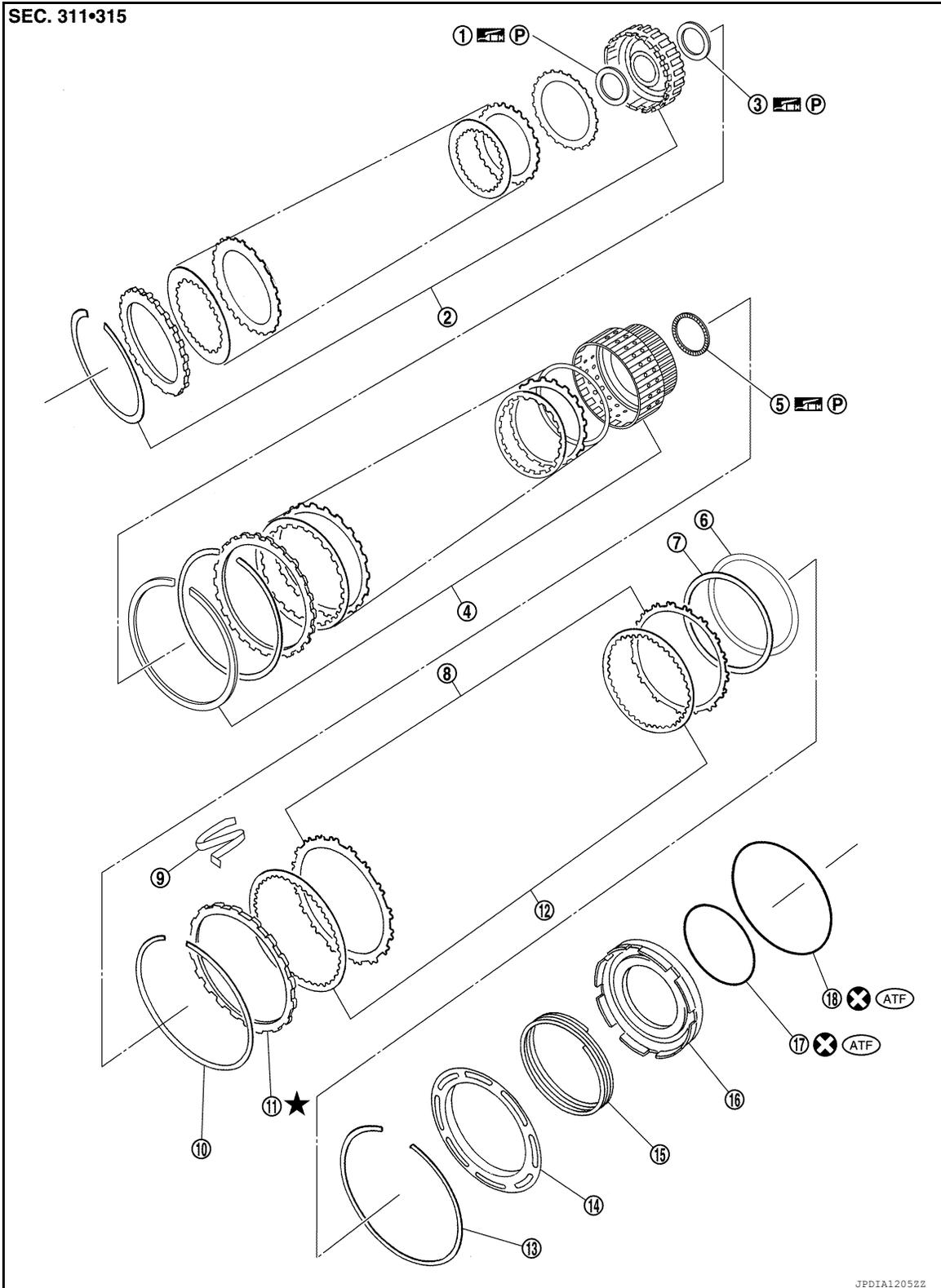
Ⓜ : Apply ATF

ⓂⓅ : Apply petroleum jelly

TRANSMISSION ASSEMBLY

< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01B]



- | | | |
|----------------------------|--|-------------------------------|
| ① Bearing race | ② High and low reverse clutch assembly | ③ Needle bearing |
| ④ Direct clutch assembly | ⑤ Needle bearing | ⑥ Reverse brake dish plate |
| ⑦ Reverse brake dish plate | ⑧ Reverse brake driven plate | ⑨ N-spring |
| ⑩ Snap ring | ⑪ Reverse brake retaining plate | ⑫ Reverse brake drive plate |
| ⑬ Snap ring | ⑭ Reverse brake spring retainer | ⑮ Reverse brake return spring |

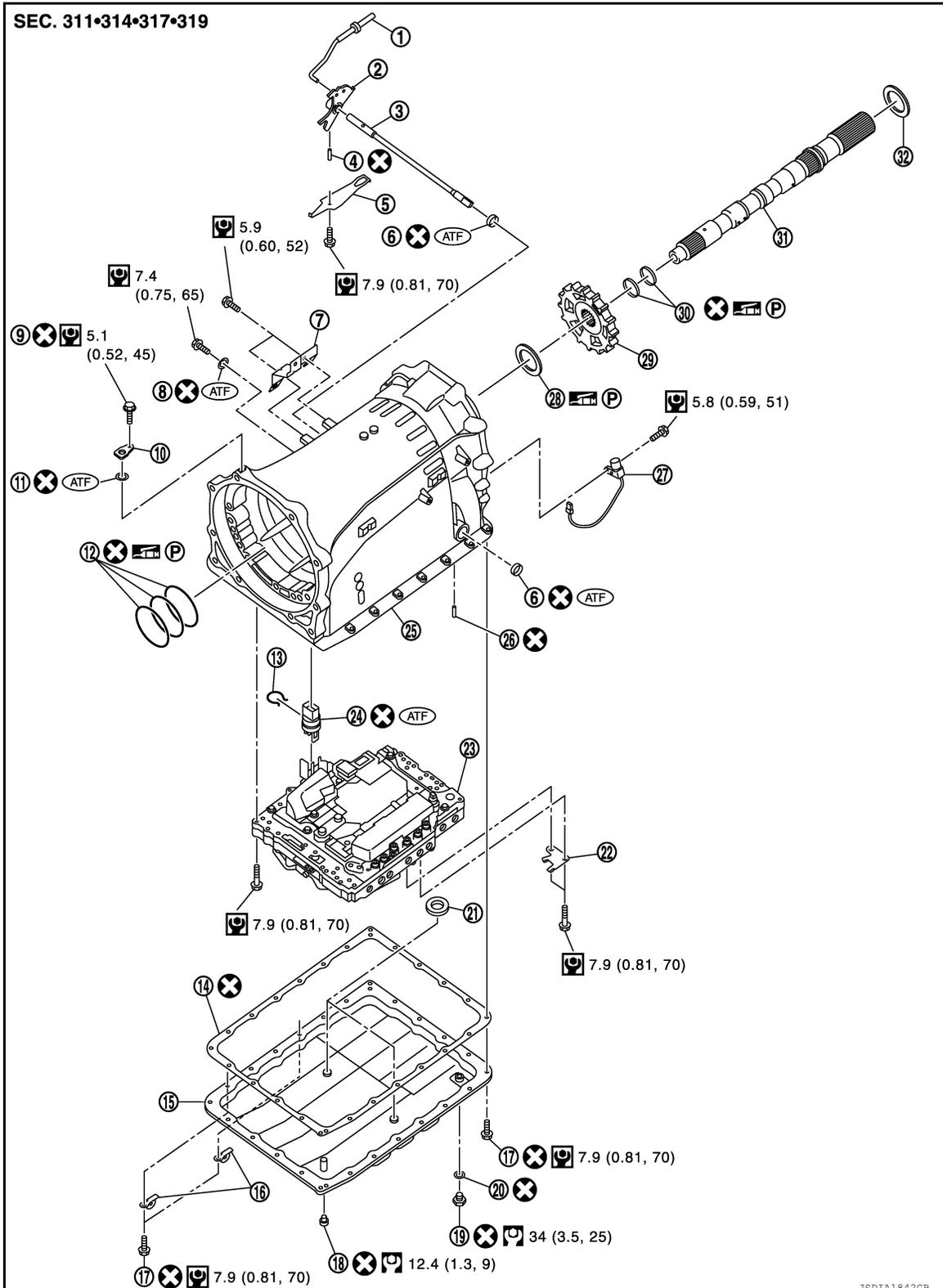
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TRANSMISSION ASSEMBLY

< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01B]

- ⑬ Reverse brake piston
- ⑭ D-ring
- ⑮ D-ring
- ⊗ : Always replace after every disassembly.
- Ⓜ : Apply ATF
- ⓂⓅ : Apply petroleum jelly
- ★ : Select with proper thickness.



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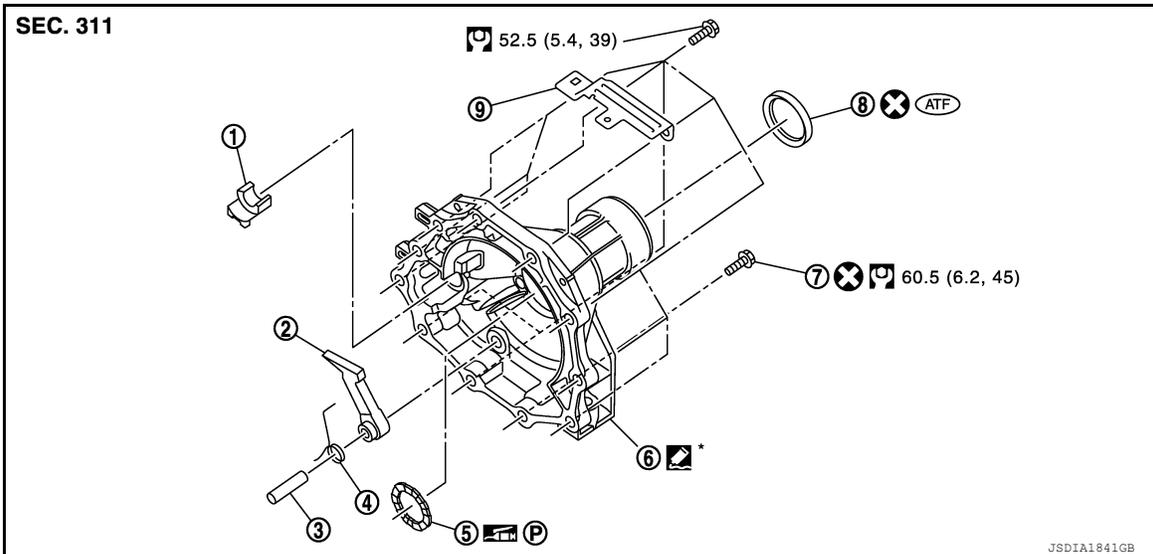
TRANSMISSION ASSEMBLY

< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01B]

- | | | |
|---------------------|-------------------------|-----------------------|
| ① Parking rod | ② Manual plate | ③ Manual shaft |
| ④ Retaining pin | ⑤ Detent spring | ⑥ Oil seal |
| ⑦ Bracket | ⑧ O-ring | ⑨ Self-sealing bolt |
| ⑩ Baffle plate | ⑪ O-ring | ⑫ Seal ring |
| ⑬ Snap ring | ⑭ Oil pan gasket | ⑮ Oil pan |
| ⑯ Clip | ⑰ Oil pan mounting bolt | ⑱ Overflow plug |
| ⑲ Drain plug | ⑳ Drain plug gasket | ㉑ Magnet |
| ㉒ Clip | ㉓ Control valve & TCM | ㉔ Joint connector |
| ㉕ Transmission case | ㉖ Retaining pin | ㉗ Output speed sensor |
| ㉘ Needle bearing | ㉙ Parking gear | ㉚ Seal ring |
| ㉛ Output shaft | ㉜ Bearing race | |

- : Always replace after every disassembly.
- : N·m (kg-m, in-lb)
- : N·m (kg-m, ft-lb)
- : Apply ATF
- : Apply petroleum jelly



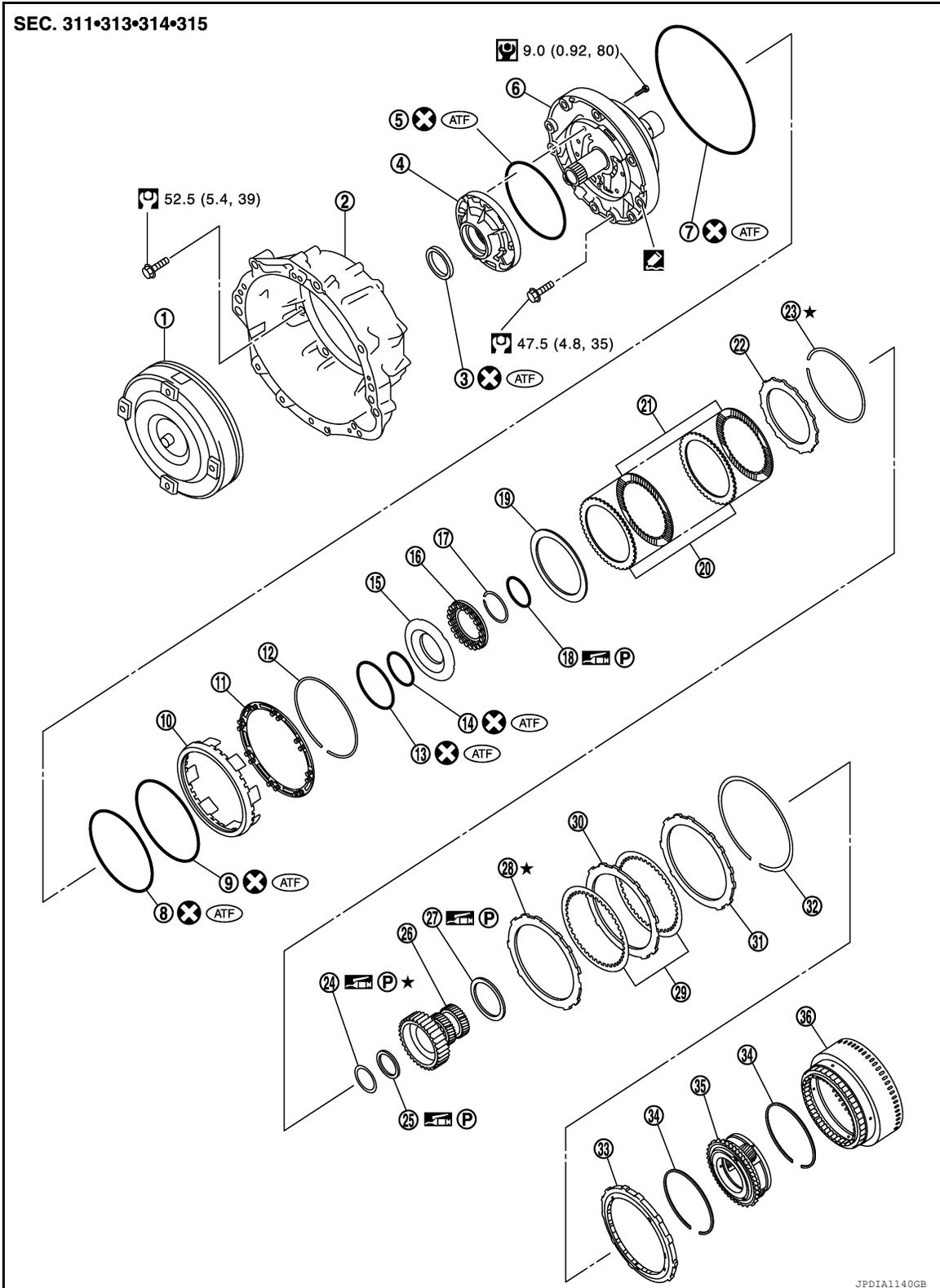
- | | | |
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| ① Parking actuator support | ② Parking pawl | ③ Pawl shaft |
| ④ Return spring | ⑤ Needle bearing | ⑥ Rear extension |
| ⑦ Self-sealing bolt | ⑧ Rear oil seal | ⑨ Bracket |
- : Always replace after every disassembly.
 - : N·m (kg-m, ft-lb)
 - : Apply petroleum jelly
 - : Apply Genuine RTV silicone sealant or equivalent. Refer to [GI-22. "Recommended Chemical Products and Sealants"](#).

4WD MODELS

TRANSMISSION ASSEMBLY

< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01B]



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|----------------------|-------------------------------|-----------------------------|
| ① Torque converter | ② Converter housing | ③ Oil pump housing oil seal |
| ④ Oil pump housing | ⑤ O-ring | ⑥ Oil pump cover |
| ⑦ O-ring | ⑧ D-ring | ⑨ D-ring |
| ⑩ Front brake piston | ⑪ Front brake spring retainer | ⑫ Snap ring |
| ⑬ D-ring | ⑭ D-ring | ⑮ 2346 brake piston |

TRANSMISSION ASSEMBLY

< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01B]

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|-------------------------------|--------------------------------|----------------------------|---|
| ⑩ 2346 brake spring retainer | ⑰ Snap ring | ⑱ Seal ring | |
| ⑪ 2346 brake dish plate | ⑲ 2346 brake driven plate | ⑳ 2346 brake drive plate | A |
| ⑫ 2346 brake retaining plate | ⑳ Snap ring | ㉑ Bearing race | |
| ⑬ Needle bearing | ㉒ Under drive sun gear | ㉒ Needle bearing | B |
| ⑭ Front brake retaining plate | ㉓ Front brake drive plate | ㉓ Front brake driven plate | |
| ⑮ Front brake retaining plate | ㉔ Snap ring | ㉔ 1st one-way clutch | C |
| ⑯ Snap ring | ㉕ Under drive carrier assembly | ㉕ Front brake hub assembly | |

 : Always replace after every disassembly.

 : N·m (kg-m, in-lb)

 : N·m (kg-m, ft-lb)

 : Apply ATF

 : Apply Genuine RTV silicone sealant or equivalent. Refer to [GI-22. "Recommended Chemical Products and Sealants"](#).

 : Apply petroleum jelly

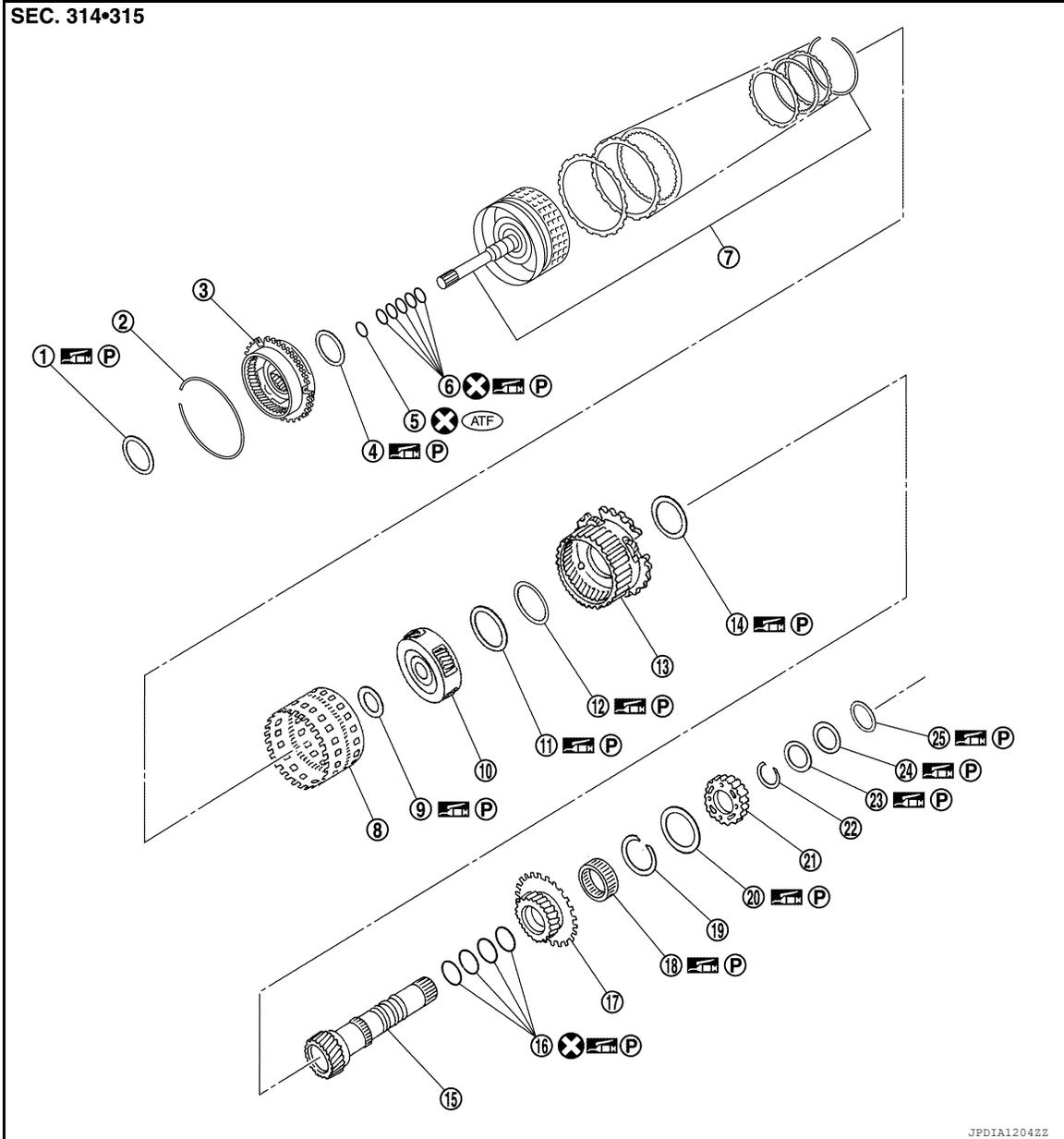
★ : Select with proper thickness.

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TRANSMISSION ASSEMBLY

< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01B]



- | | | |
|-------------------------|----------------------|-----------------------------------|
| ① Needle bearing | ② Snap ring | ③ Front carrier assembly |
| ④ Needle bearing | ⑤ O-ring | ⑥ Seal ring |
| ⑦ Input clutch assembly | ⑧ Rear internal gear | ⑨ Needle bearing |
| ⑩ Mid carrier assembly | ⑪ Needle bearing | ⑫ Bearing race |
| ⑬ Rear carrier assembly | ⑭ Needle bearing | ⑮ Mid sun gear |
| ⑯ Seal ring | ⑰ Rear sun gear | ⑱ 2nd one-way clutch |
| ⑲ Snap ring | ⑳ Needle bearing | ㉑ High and low reverse clutch hub |
| ㉒ Snap ring | ㉓ Bearing race | ㉔ Bearing race |
| ㉕ Needle bearing | | |

⊗ : Always replace after every disassembly.

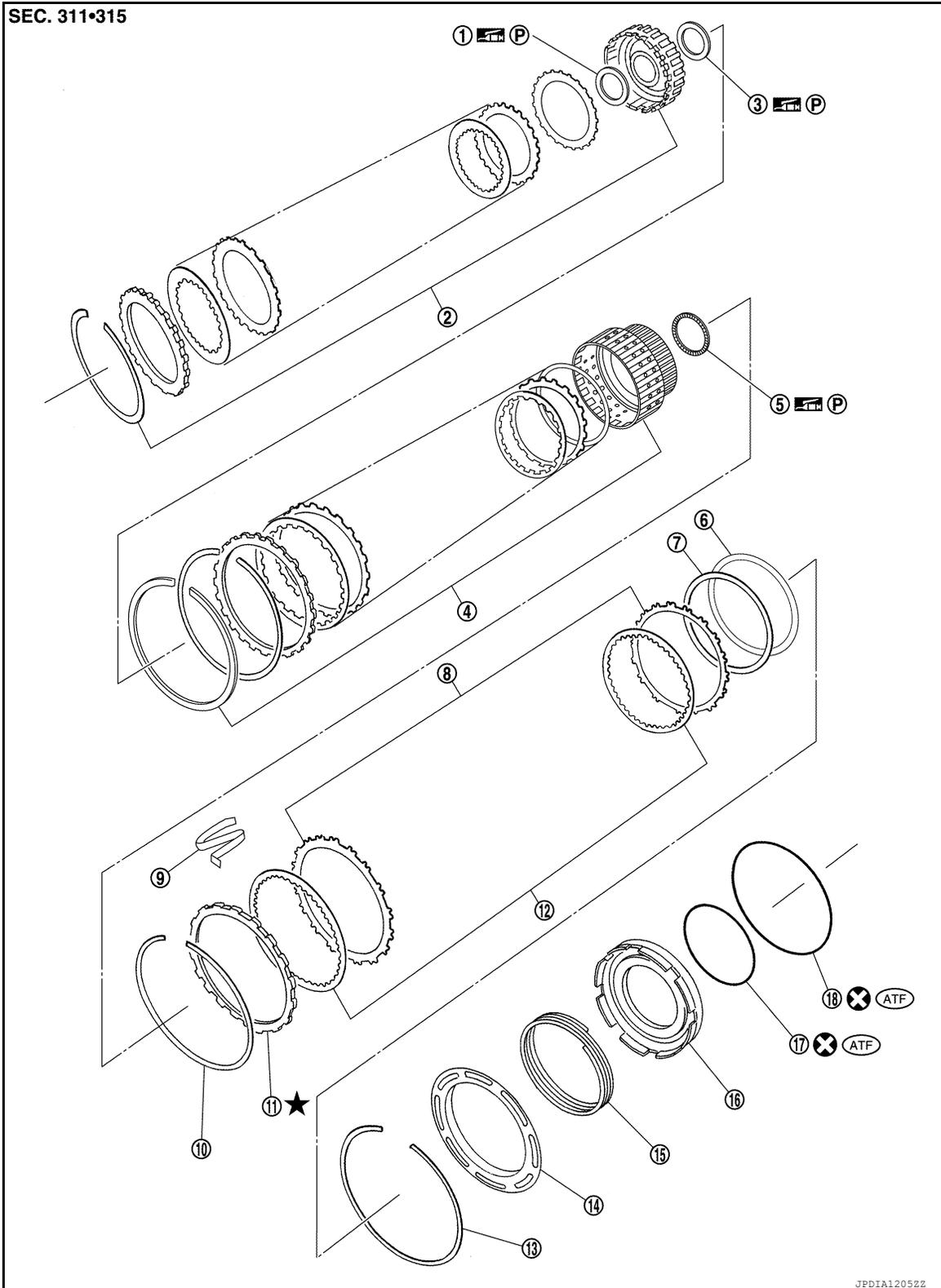
ⓐ : Apply ATF

ⓐ : Apply petroleum jelly

TRANSMISSION ASSEMBLY

< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01B]



- | | | |
|----------------------------|--|-------------------------------|
| ① Bearing race | ② High and low reverse clutch assembly | ③ Needle bearing |
| ④ Direct clutch assembly | ⑤ Needle bearing | ⑥ Reverse brake dish plate |
| ⑦ Reverse brake dish plate | ⑧ Reverse brake driven plate | ⑨ N-spring |
| ⑩ Snap ring | ⑪ Reverse brake retaining plate | ⑫ Reverse brake drive plate |
| ⑬ Snap ring | ⑭ Reverse brake spring retainer | ⑮ Reverse brake return spring |

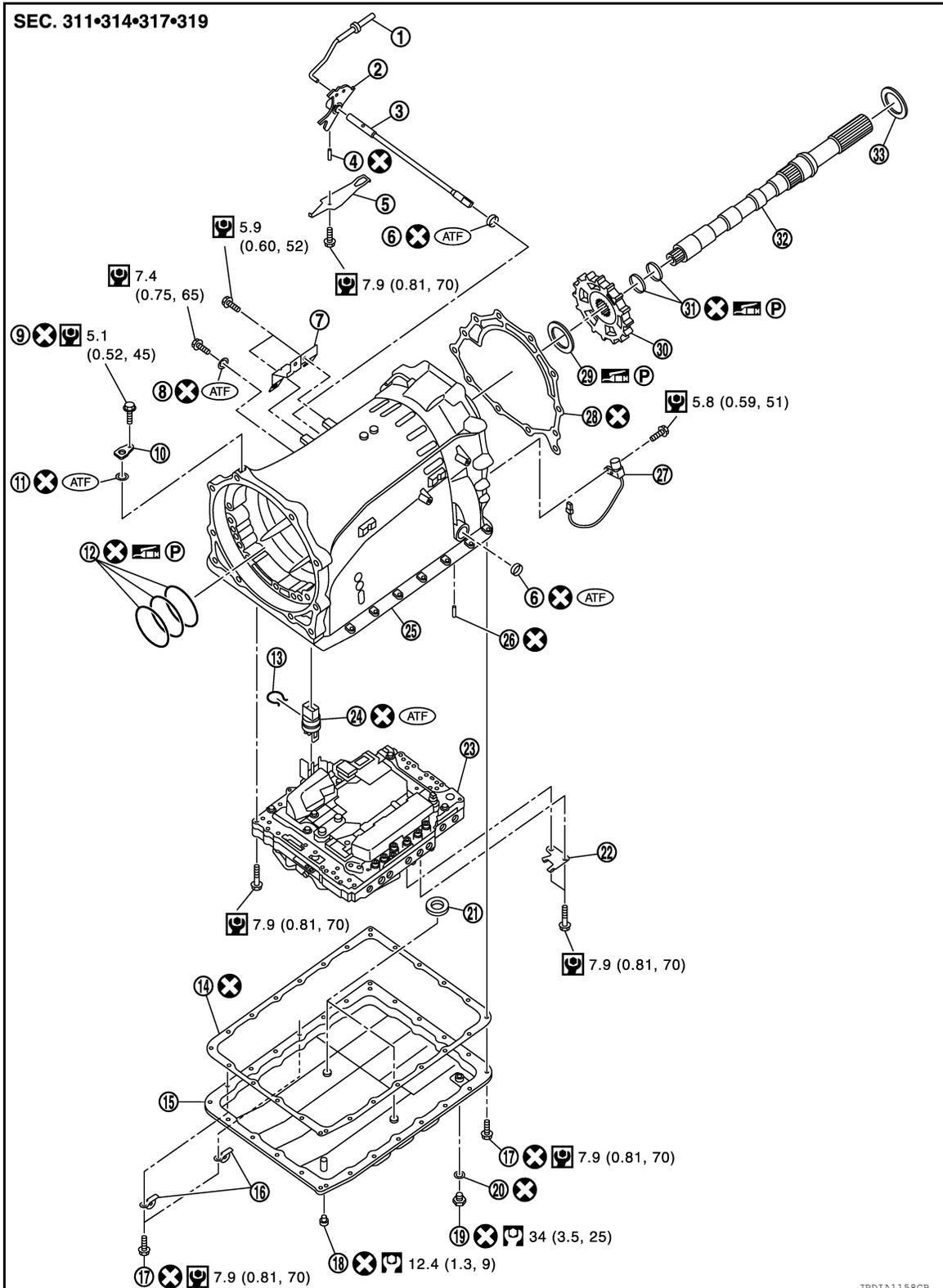
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TRANSMISSION ASSEMBLY

< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01B]

- ⑬ Reverse brake piston
- ⑭ D-ring
- ⑮ D-ring
- ⊗ : Always replace after every disassembly.
- Ⓜ : Apply ATF
- ⓂⓅ : Apply petroleum jelly
- ★ : Select with proper thickness.



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TRANSMISSION ASSEMBLY

< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01B]

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|---------------------|-------------------------|-----------------------|
| ① Parking rod | ② Manual plate | ③ Manual shaft |
| ④ Retaining pin | ⑤ Detent spring | ⑥ Oil seal |
| ⑦ Bracket | ⑧ O-ring | ⑨ Self-sealing bolt |
| ⑩ Baffle plate | ⑪ O-ring | ⑫ Seal ring |
| ⑬ Snap ring | ⑭ Oil pan gasket | ⑮ Oil pan |
| ⑯ Clip | ⑰ Oil pan mounting bolt | ⑱ Overflow plug |
| ⑲ Drain plug | ⑳ Drain plug gasket | ㉑ Magnet |
| ㉒ Clip | ㉓ Control valve & TCM | ㉔ Joint connector |
| ㉕ Transmission case | ㉖ Retaining pin | ㉗ Output speed sensor |
| ㉘ Gasket | ㉙ Needle bearing | ㉚ Parking gear |
| ㉛ Seal ring | ㉜ Output shaft | ㉝ Bearing race |

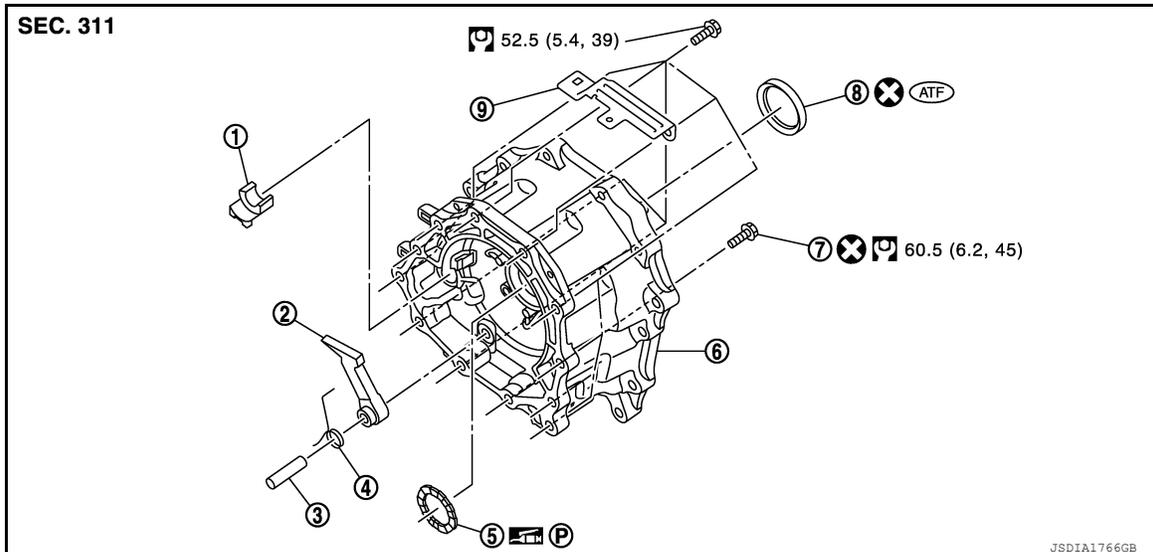
⊗ : Always replace after every disassembly.

⊞ : N·m (kg-m, in-lb)

⊞ : N·m (kg-m, ft-lb)

⊞ : Apply ATF

⊞ : Apply petroleum jelly



- | | | |
|----------------------------|------------------|----------------|
| ① Parking actuator support | ② Parking pawl | ③ Pawl shaft |
| ④ Return spring | ⑤ Needle bearing | ⑥ Adapter case |
| ⑦ Self-sealing bolt | ⑧ Rear oil seal | ⑨ Bracket |

⊗ : Always replace after every disassembly.

⊞ : N·m (kg-m, ft-lb)

⊞ : Apply ATF

⊞ : Apply petroleum jelly

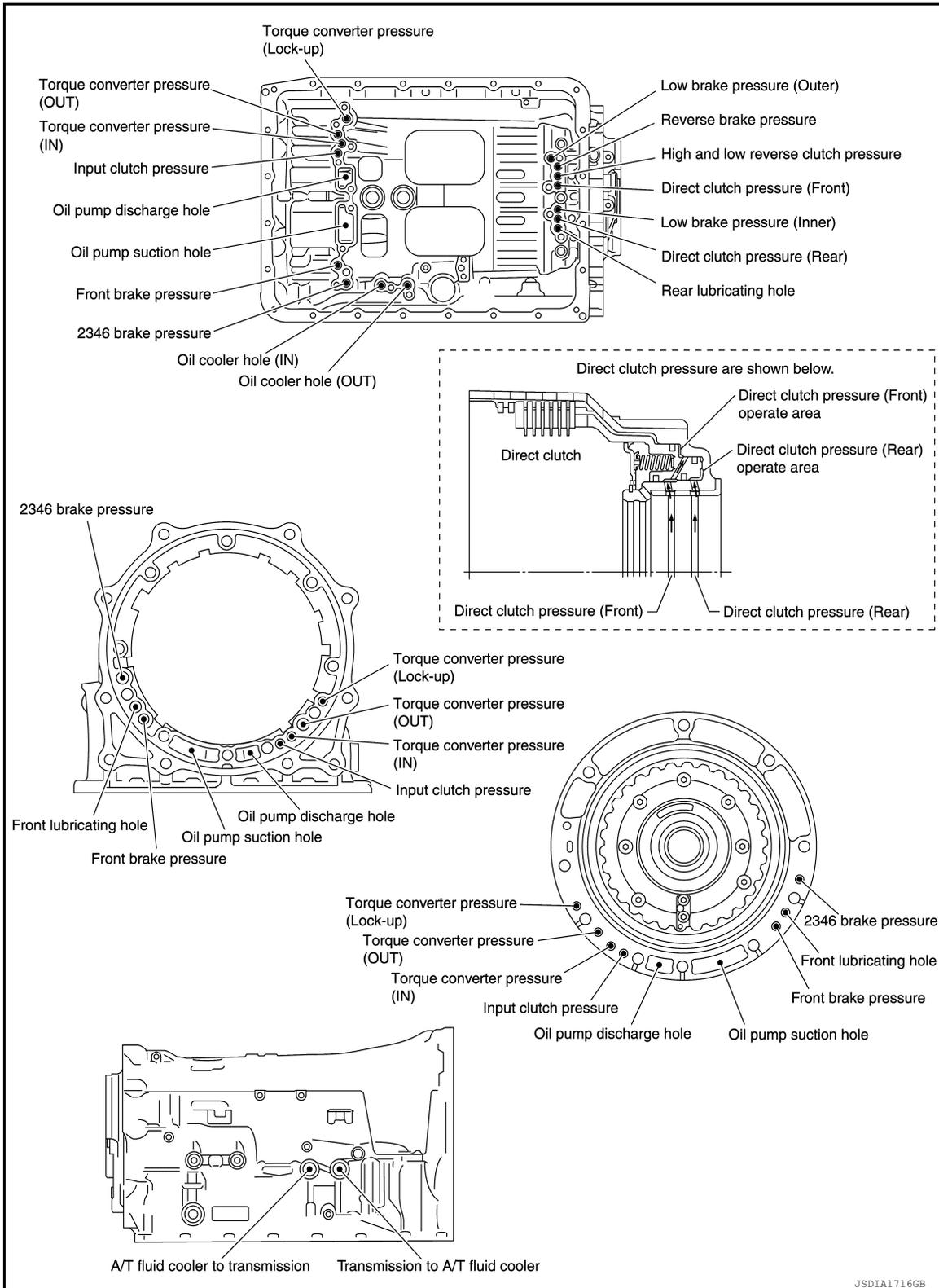
TRANSMISSION ASSEMBLY

< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01B]

Oil Channel

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Location of Needle Bearings and Bearing Races

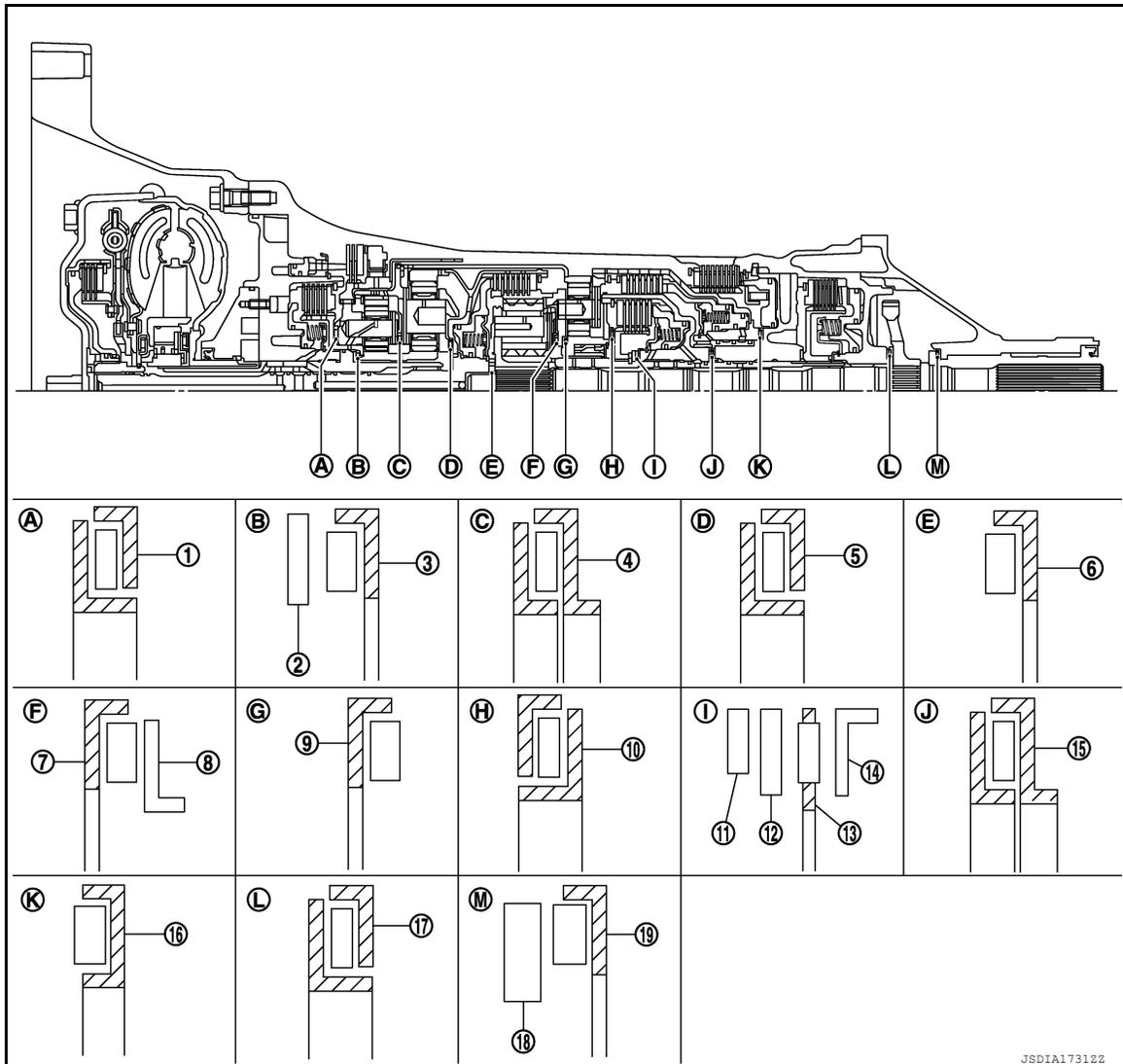
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2WD MODELS

TRANSMISSION ASSEMBLY

< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01B]



Location	Item	Outer diameter mm (in)
A	① Needle bearing	94 (3.701)
	② Bearing race	58.6 (2.307)
B	③ Needle bearing	60 (2.362)
	④ Needle bearing	84.6 (3.331)
D	⑤ Needle bearing	77 (3.031)
E	⑥ Needle bearing	47 (1.850)
F	⑦ Needle bearing	84 (3.307)
	⑧ Bearing race	82 (3.228)
G	⑨ Needle bearing	80 (3.150)
H	⑩ Needle bearing	92 (3.622)
I	⑪ Bearing race	60 (2.362)
	⑫ Bearing race	61.1 (2.406)
	⑬ Needle bearing	60 (2.362)
	⑭ Bearing race	61.9 (2.437)
K	⑮ Needle bearing	
L	⑯ Needle bearing	
M	⑰ Needle bearing	

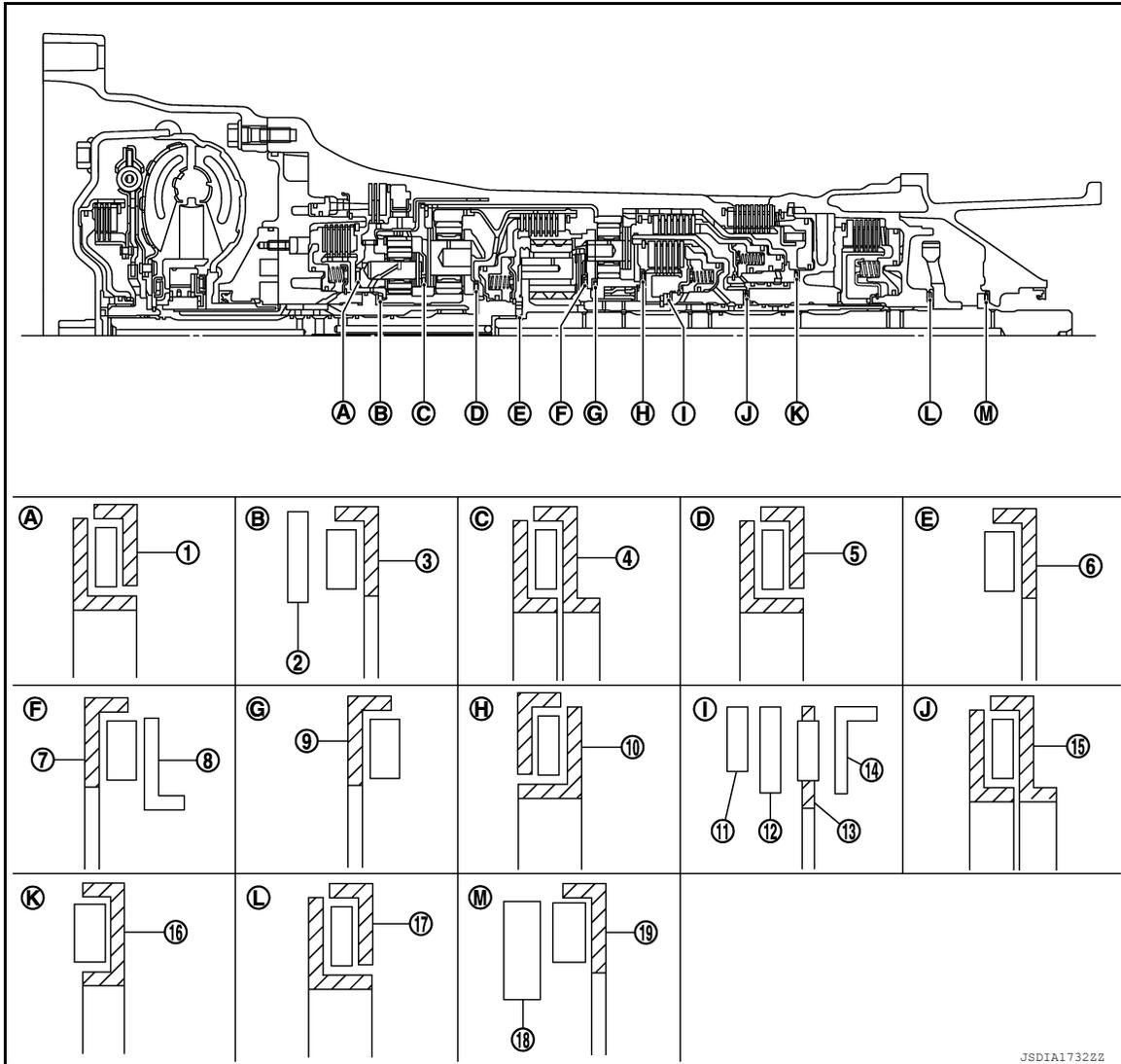
TRANSMISSION ASSEMBLY

< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01B]

Location	Item	Outer diameter mm (in)
ⓐ	⑮ Needle bearing	62.8 (2.472)
ⓑ	⑯ Needle bearing	92 (3.622)
ⓒ	⑰ Needle bearing	65 (2.559)
ⓓ	⑱ Bearing race	58 (2.362)
	⑲ Needle bearing	60 (2.362)

4WD MODELS



Location	Item	Outer diameter mm (in)
ⓐ	① Needle bearing	94 (3.701)
ⓑ	② Bearing race	58.6 (2.307)
	③ Needle bearing	60 (2.362)
ⓒ	④ Needle bearing	84.6 (3.331)
ⓓ	⑤ Needle bearing	77 (3.031)
ⓔ	⑥ Needle bearing	47 (1.850)

TRANSMISSION ASSEMBLY

< UNIT DISASSEMBLY AND ASSEMBLY >

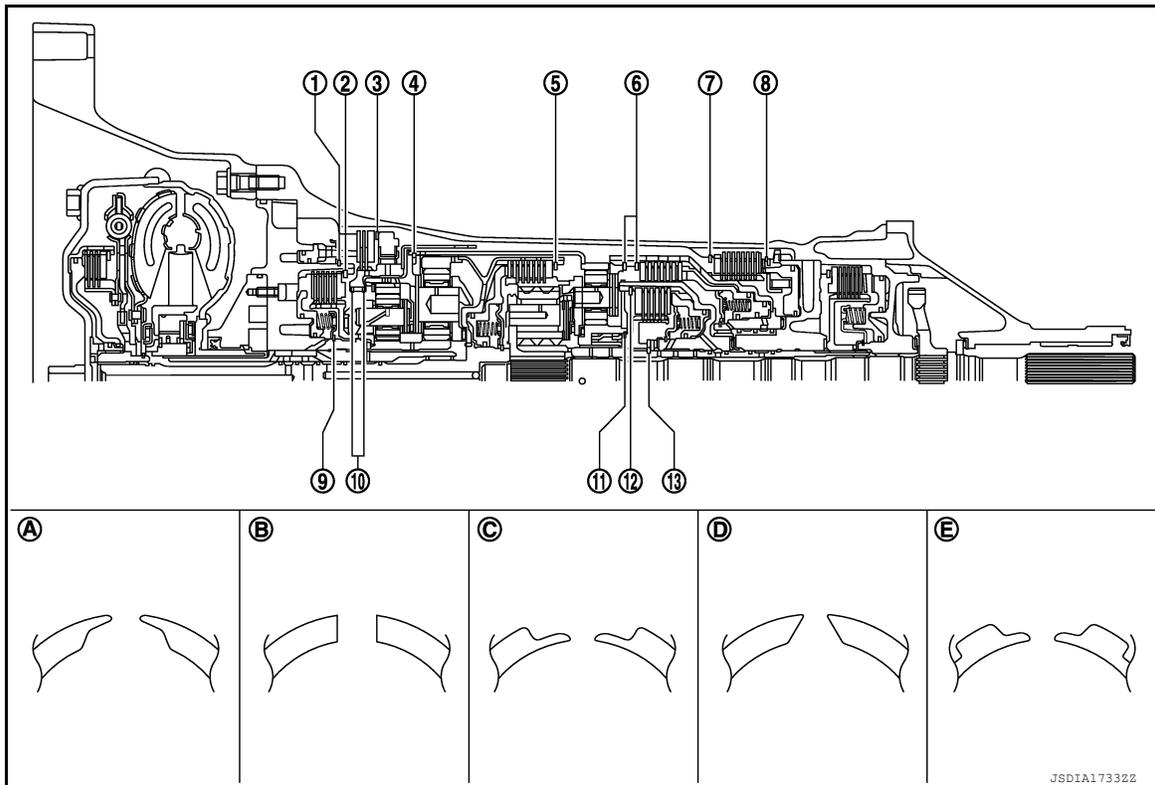
[7AT: RE7R01B]

Location	Item	Outer diameter mm (in)
Ⓕ	⑦ Needle bearing	84 (3.307)
	⑧ Bearing race	82 (3.228)
Ⓖ	⑨ Needle bearing	80 (3.150)
Ⓗ	⑩ Needle bearing	92 (3.622)
Ⓘ	⑪ Bearing race	60 (2.362)
	⑫ Bearing race	61.1 (2.406)
	⑬ Needle bearing	60 (2.362)
	⑭ Bearing race	61.9 (2.437)
Ⓙ	⑮ Needle bearing	62.8 (2.472)
Ⓚ	⑯ Needle bearing	92 (3.622)
Ⓛ	⑰ Needle bearing	65 (2.559)
Ⓜ	⑱ Bearing race	58 (2.362)
	⑲ Needle bearing	60 (2.362)

Location of Snap Rings

INFOID:000000014419293

2WD MODELS



Location	Shape of snap ring	Outer diameter mm (in)
①	Ⓐ	159.9 (6.295)
②	Ⓑ	159 (6.260)
③	Ⓑ	216 (8.504)
④	Ⓑ	180.4 (7.102)

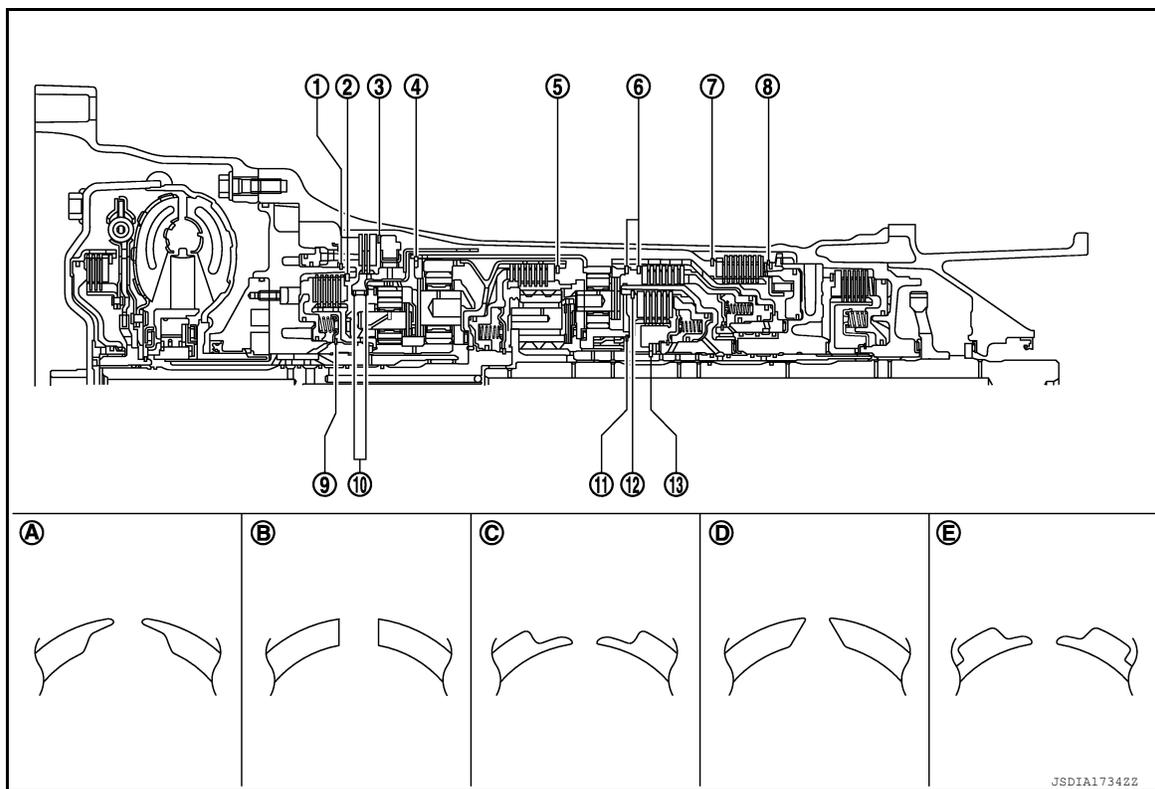
TRANSMISSION ASSEMBLY

< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01B]

Location	Shape of snap ring	Outer diameter mm (in)
⑤	Ⓒ	171.5 (6.752)
⑥	Ⓑ	169 (6.654)
⑦	Ⓑ	180.5 (7.106)
⑧	Ⓑ	181.0 (7.126)
⑨	Ⓓ	64.6 (2.543)
⑩	Ⓑ	136 (5.354)
⑪	Ⓔ	70.5 (2.776)
⑫	Ⓑ	135 (5.315)
⑬	Ⓐ	48.4 (1.906)

4WD MODELS



Location	Shape of snap ring	Outer diameter mm (in)
①	Ⓐ	159.9 (6.295)
②	Ⓑ	159 (6.260)
③	Ⓑ	216 (8.504)
④	Ⓑ	180.4 (7.102)
⑤	Ⓒ	171.5 (6.752)
⑥	Ⓑ	169 (6.654)
⑦	Ⓑ	180.5 (7.106)
⑧	Ⓑ	181.0 (7.126)
⑨	Ⓓ	64.6 (2.543)
⑩	Ⓑ	136 (5.354)

TRANSMISSION ASSEMBLY

< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01B]

Location	Shape of snap ring	Outer diameter mm (in)
⑪	Ⓔ	70.5 (2.776)
⑫	Ⓑ	135 (5.315)
⑬	Ⓐ	48.4 (1.906)

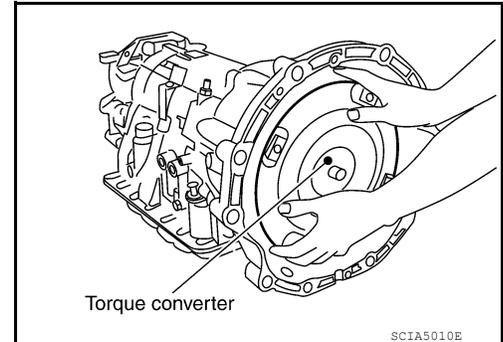
Disassembly

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CAUTION:

Never disassemble parts behind drum support. Refer to [TM-272, "TRANSMISSION : Cross-Sectional View"](#).

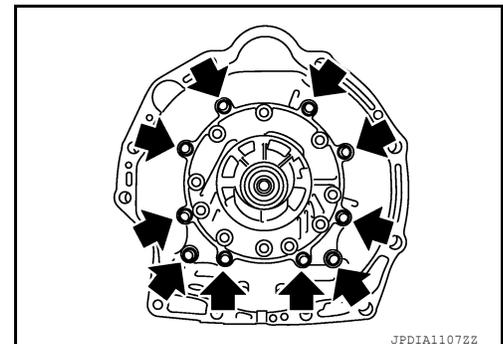
1. Drain ATF through drain plug.
2. Remove torque converter by holding it firmly and turning while pulling straight out.



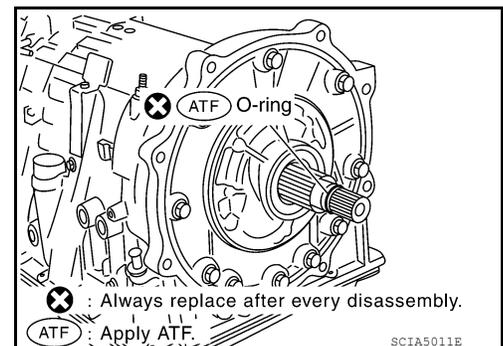
3. Remove tightening bolts (←) for converter housing and transmission case.
4. Remove converter housing from transmission case.

CAUTION:

Be careful not to scratch converter housing.



5. Remove O-ring from input clutch assembly.

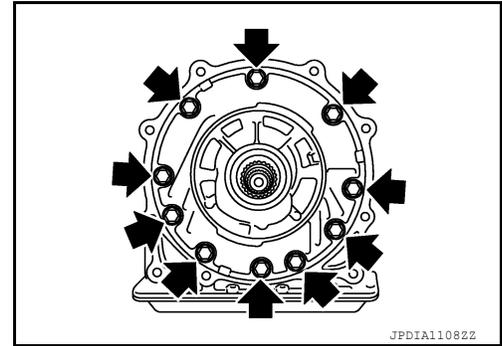


TRANSMISSION ASSEMBLY

< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01B]

6. Remove tightening bolts (←) for oil pump assembly and transmission case.

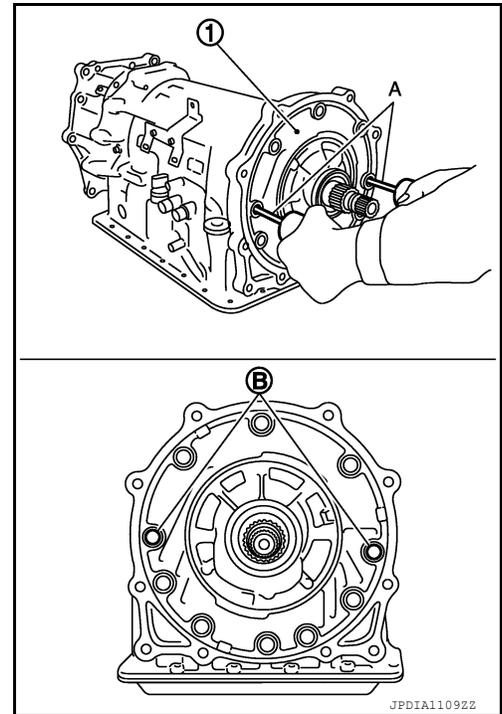


7. Attach the sliding hammers [SST: ST25850000 (J-25721-A)] (A) to oil pump assembly ① and extract it evenly from transmission case.

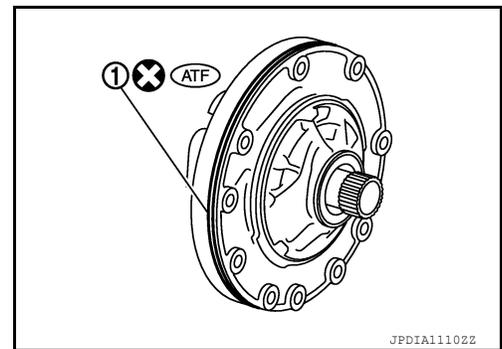
Ⓑ : Sliding hammer attachment position

CAUTION:

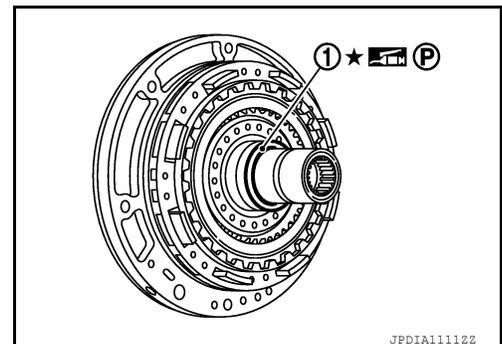
- Fully tighten the sliding hammer screws.
- Make sure that bearing race is installed to the oil pump assembly edge surface.



8. Remove O-ring ① from oil pump assembly.



9. Remove bearing race ① from oil pump assembly.

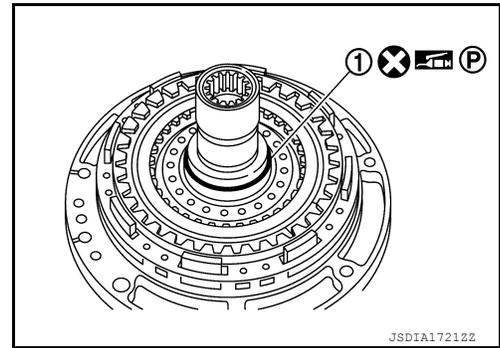


TRANSMISSION ASSEMBLY

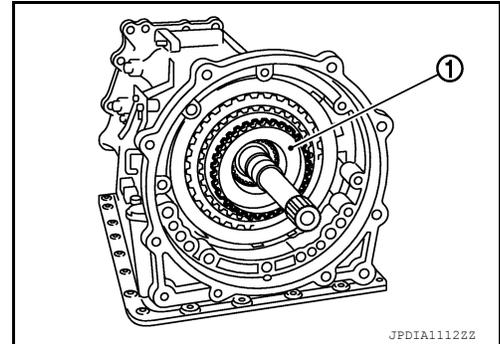
< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01B]

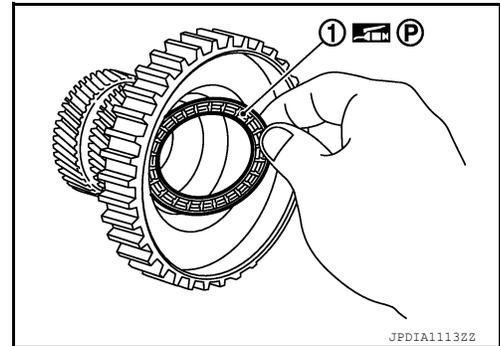
10. Remove seal ring ① from oil pump assembly.



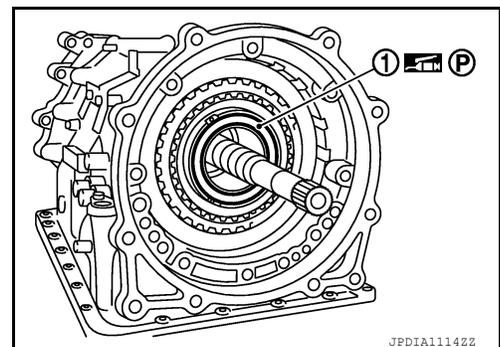
11. Remove under drive sun gear ① from under drive carrier assembly.



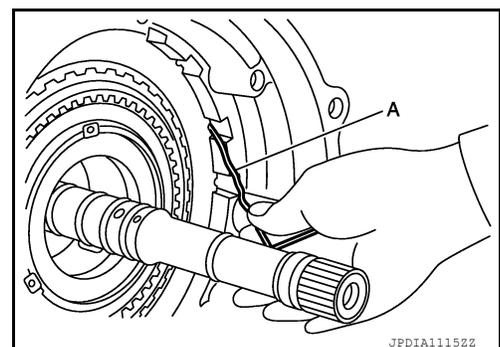
12. Remove needle bearing ① from under drive sun gear.



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.



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TRANSMISSION ASSEMBLY

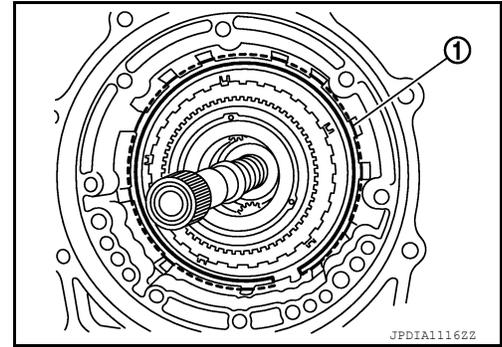
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[7AT: RE7R01B]

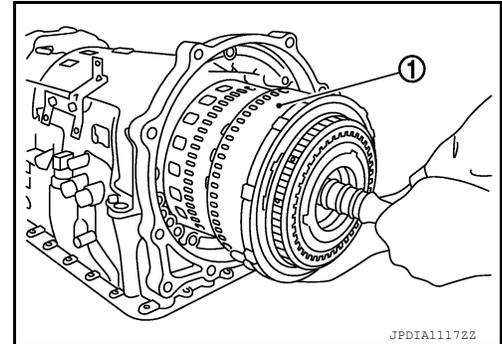
15. Remove snap ring ① from transmission case using a flat-bladed screwdriver.

CAUTION:

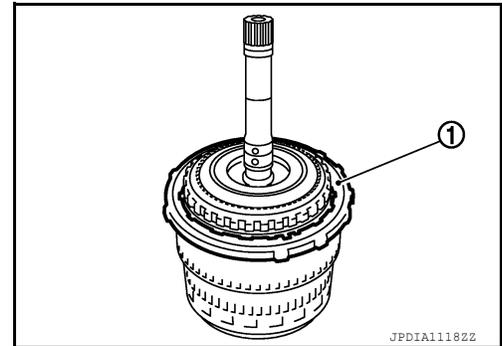
- Be careful not to scratch transmission case and 1st one-way clutch.
- Be careful not to damage snap ring.



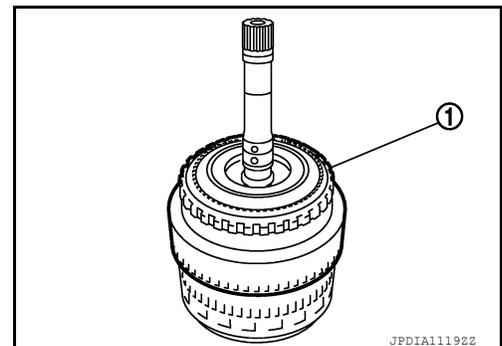
16. Remove input clutch assembly (with 1st one-way clutch, under drive carrier assembly, front brake hub, front carrier assembly, and rear internal gear) ① from transmission case.



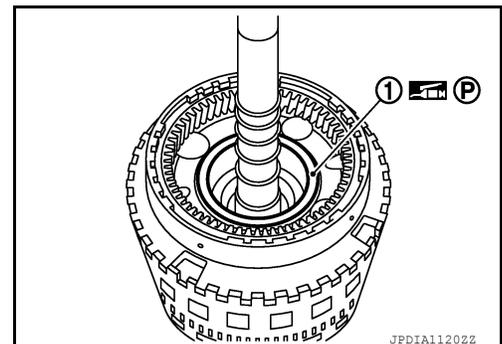
17. Remove 1st one-way clutch ① from front brake hub.



18. Remove under drive carrier assembly (with front brake hub) ① from front carrier assembly.



19. Remove needle bearing ① from front carrier assembly.

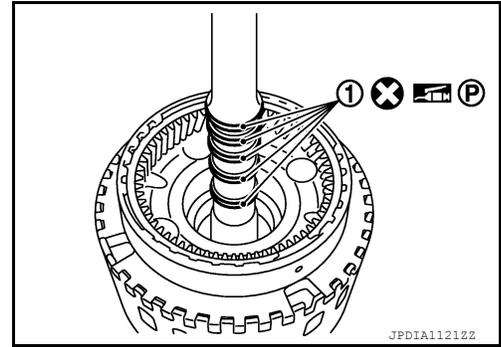


TRANSMISSION ASSEMBLY

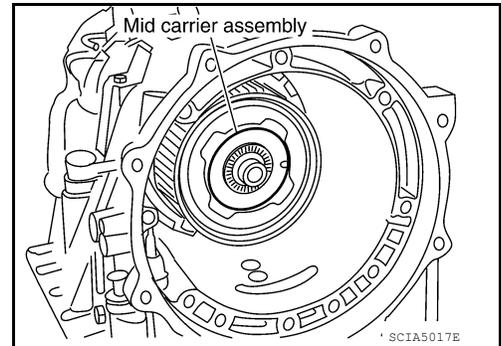
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[7AT: RE7R01B]

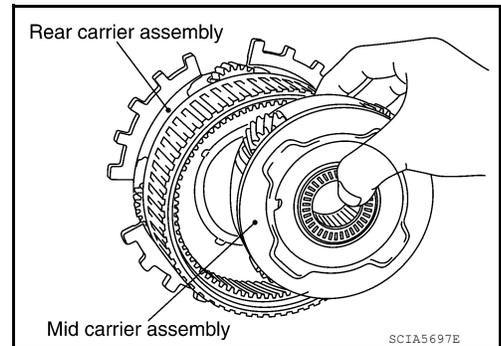
20. Remove seal rings ① from input clutch assembly.



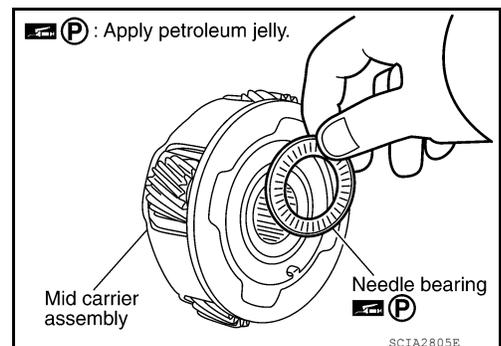
21. Remove mid carrier assembly and rear carrier assembly as a unit.



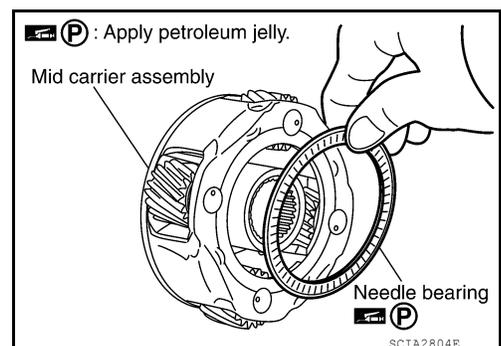
22. Remove mid carrier assembly from rear carrier assembly.



23. Remove needle bearing (front side) from mid carrier assembly.



24. Remove needle bearing (rear side) from mid carrier assembly.



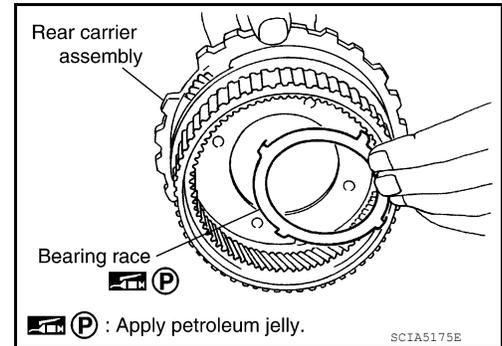
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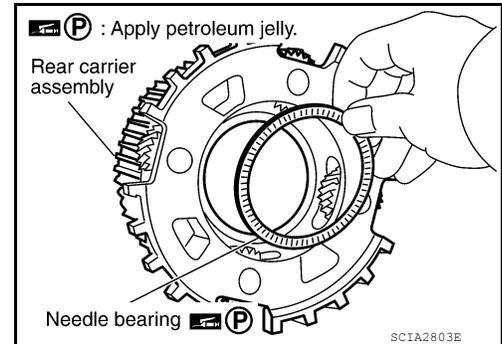
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[7AT: RE7R01B]

25. Remove bearing race from rear carrier assembly.



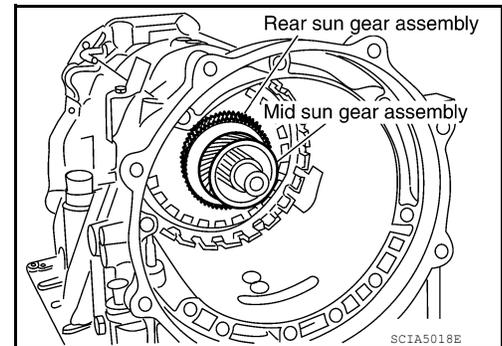
26. Remove needle bearing from rear carrier assembly.



27. Remove mid sun gear assembly, rear sun gear assembly, and high and low reverse clutch hub as a unit.

CAUTION:

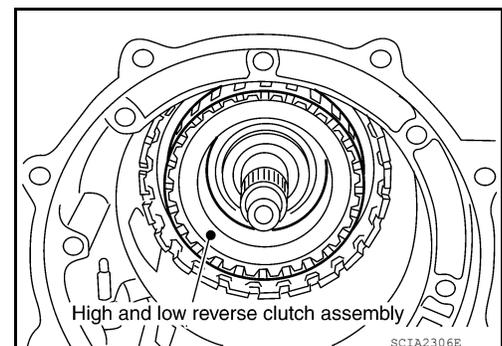
Be careful to remove them with bearing race and needle bearing.



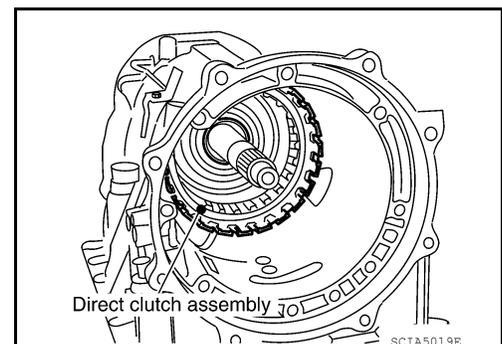
28. Remove high and low reverse clutch assembly from direct clutch assembly.

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.

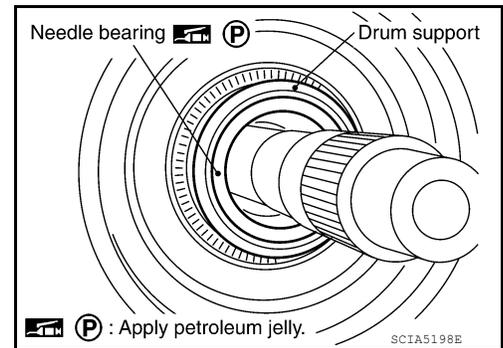


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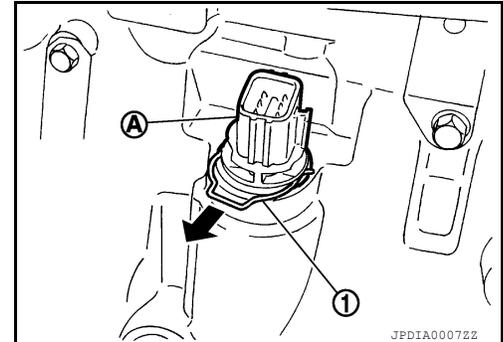
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[7AT: RE7R01B]

30. Remove needle bearing from drum support.

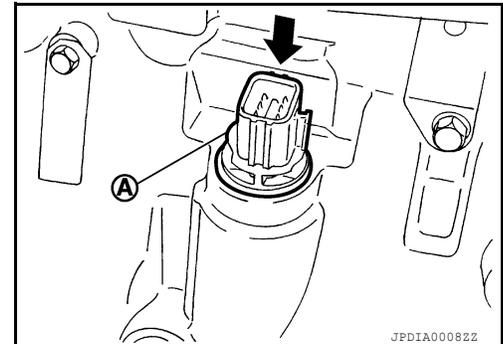


31. Remove snap ring ① from joint connector ④.



32. Push joint connector ④.

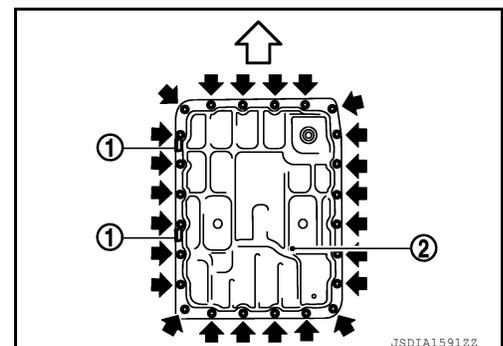
CAUTION:
Be careful not to damage connector.



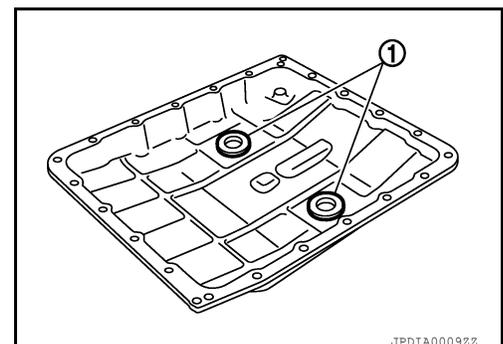
33. Remove oil pan mounting bolts (←).

① : Clip
← : Front

34. Remove oil pan ② and oil pan gasket.



35. Remove magnets ① from oil pan.



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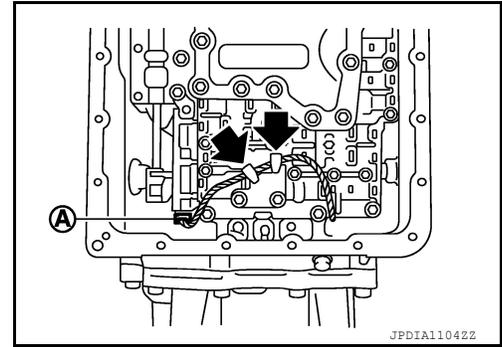
[7AT: RE7R01B]

36. Disconnect output speed sensor connector (A).

CAUTION:

Be careful not to damage connector.

37. Disengage terminal clips (←).

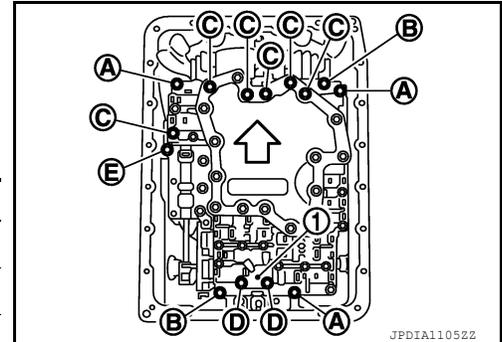


38. Remove control valve & TCM mounting bolts and clip (1) from the control valve & TCM.

↔ : Front

Bolt symbol	Length mm (in)	Number of bolts
(A)	43 (1.69)	3
(B)	40 (1.57)	2
(C)	54 (2.13)	6
(D)	50 (1.97)	2
(E)*	50 (1.97)	1

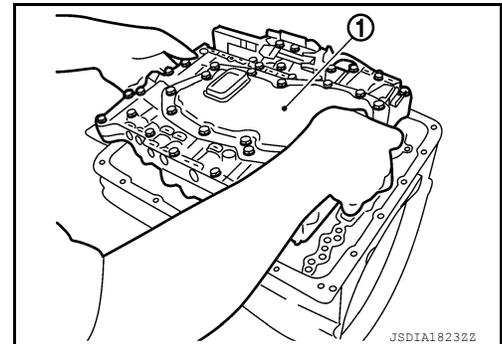
*: Reamer bolt



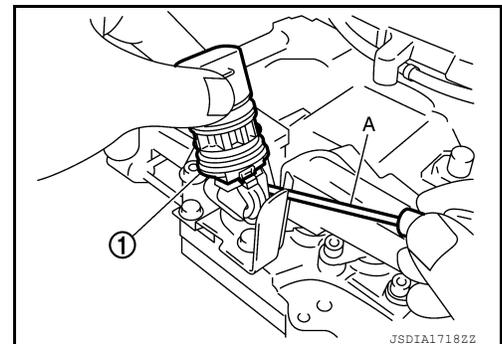
39. Remove the control valve & TCM (1) from transmission case.

CAUTION:

When removing, never with the manual valve notch and manual plate height. Remove it vertically.



40. Remove joint connector (1) from the control valve & TCM using a flat-bladed screwdriver (A).



TRANSMISSION ASSEMBLY

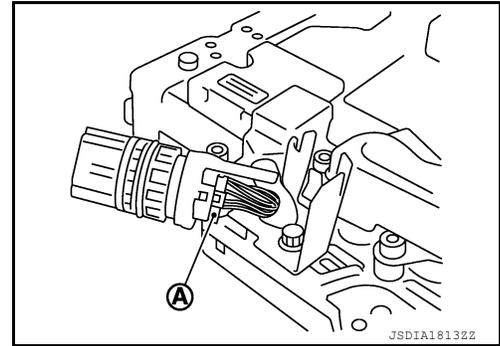
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[7AT: RE7R01B]

41. Disconnect TCM connector (A).

CAUTION:

Be careful not to damage connector.



42. Remove rear extension assembly (2WD) or adapter case assembly (4WD) according to the following procedures.

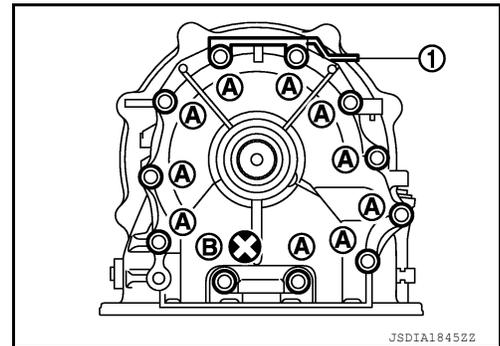
a. **2WD**

i. Remove tightening bolts for rear extension assembly and transmission case.

① : Bracket

(A) : Bolt

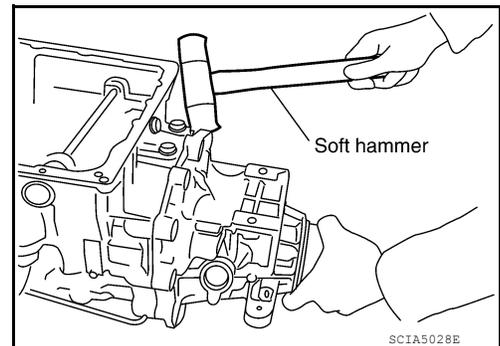
(B) : Self-sealing bolt



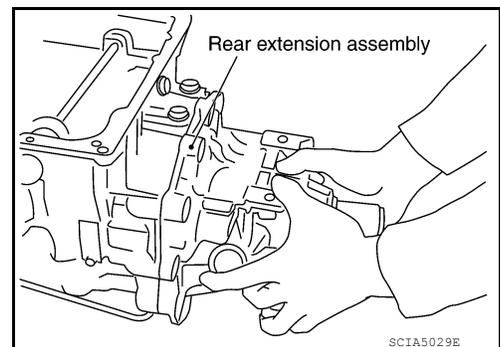
ii. Tap rear extension assembly using a soft hammer.

CAUTION:

Be careful not to damage rear extension assembly.



iii. Remove rear extension assembly from transmission case. (With needle bearing.)



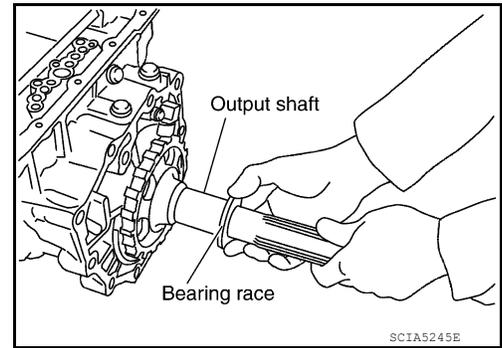
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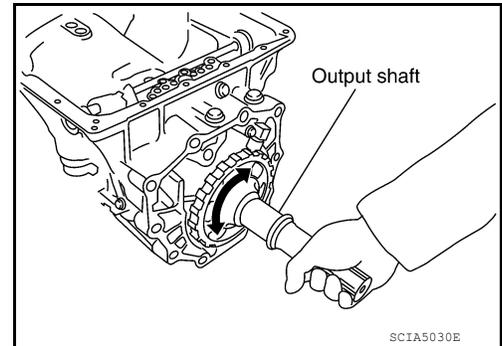
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[7AT: RE7R01B]

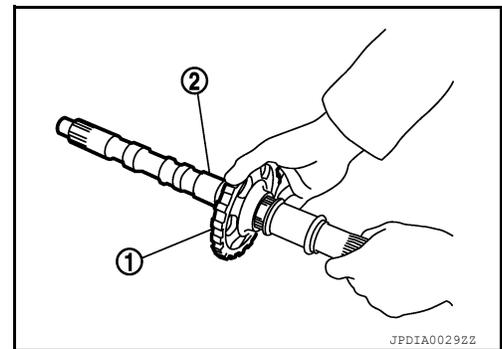
iv. Remove bearing race from output shaft.



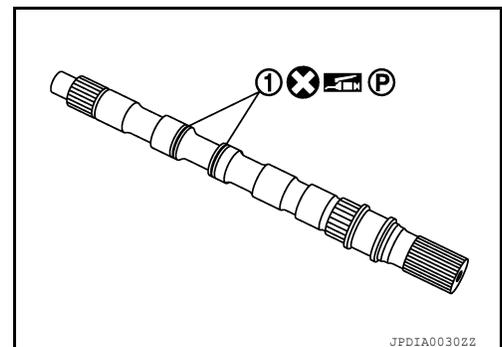
v. Remove output shaft from transmission case by rotating left/right.



vi. Remove parking gear ① from output shaft ②.



vii. Remove seal rings ① from output shaft.



b. 4WD

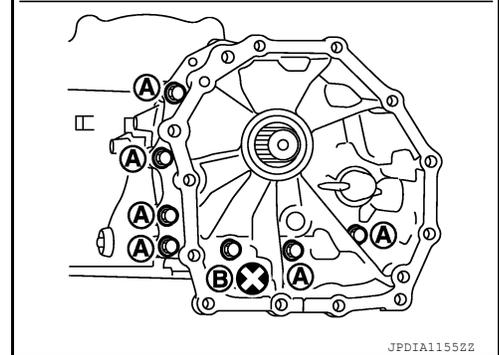
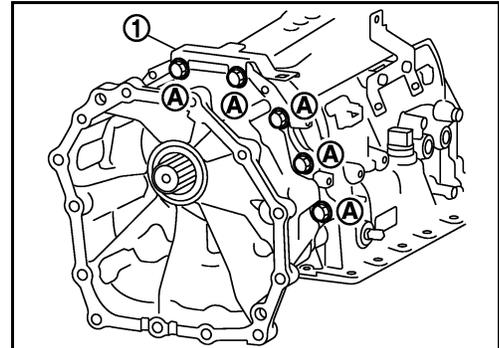
TRANSMISSION ASSEMBLY

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[7AT: RE7R01B]

- i. Remove tightening bolts for adapter case assembly and transmission case.

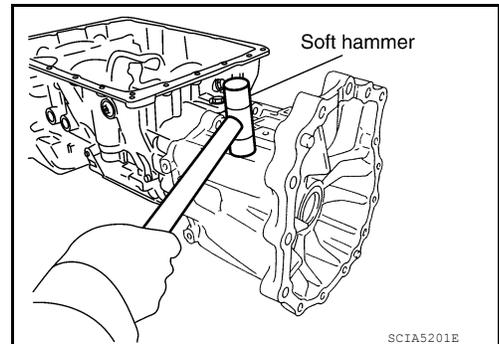
- ① : Bracket
- (A) : Bolt
- (B) : Self-sealing bolt



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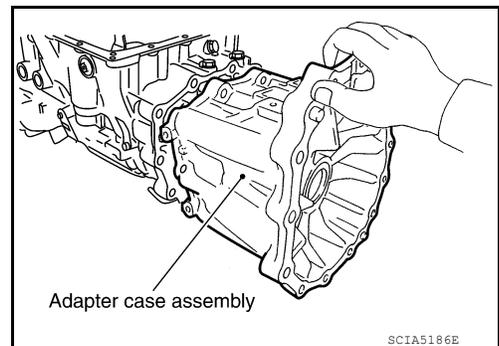
- ii. Tap adapter case assembly using a soft hammer.

CAUTION:
Be careful not to damage adapter case.



SCIA5201E

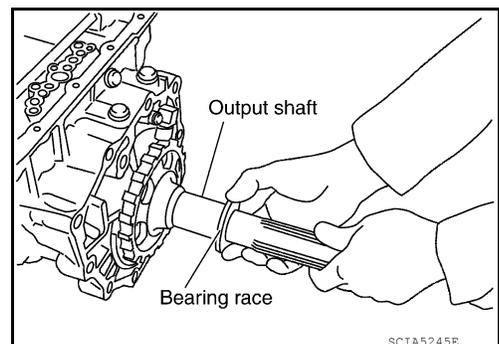
- iii. Remove adapter case assembly from transmission case. (With needle bearing)



Adapter case assembly

SCIA5186E

- iv. Remove bearing race from output shaft.



Output shaft

Bearing race

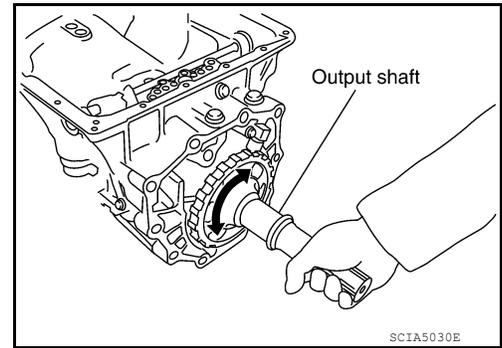
SCIA5245E

TRANSMISSION ASSEMBLY

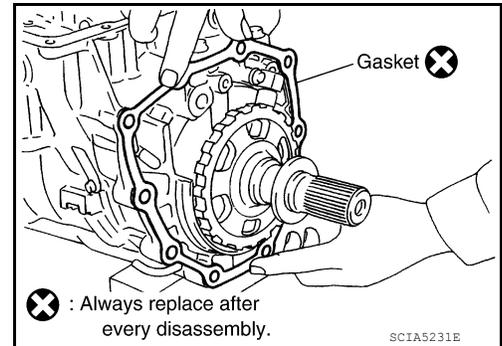
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[7AT: RE7R01B]

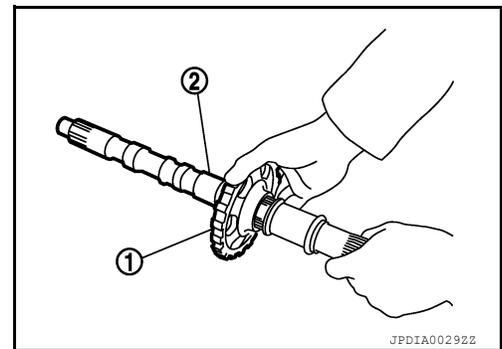
- v. Remove output shaft from transmission case by rotating left/right.



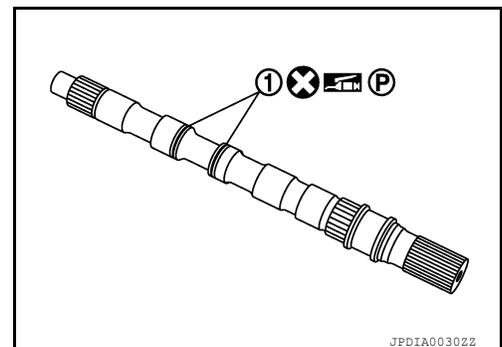
- vi. Remove gasket from transmission case.



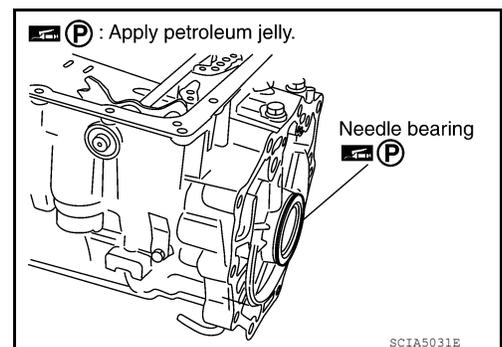
- vii. Remove parking gear ① from output shaft ②.



- viii. Remove seal rings ① from output shaft.



- 43. Remove needle bearing from transmission case.



TRANSMISSION ASSEMBLY

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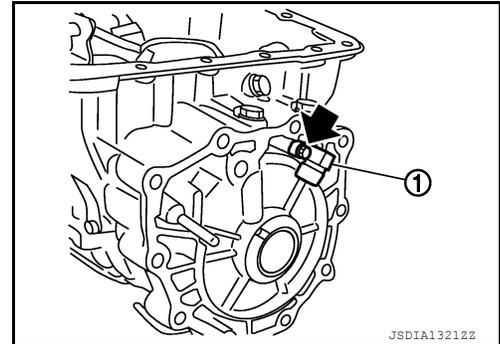
[7AT: RE7R01B]

44. 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.



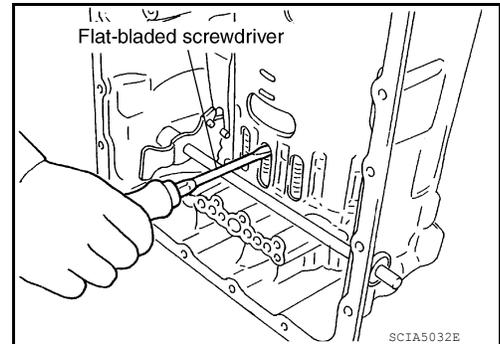
45. Remove reverse brake snap ring (fixing plate) with 2 flat-bladed screwdrivers.

CAUTION:

- Be careful not to scratch transmission case and reverse brake retaining plate.
- Be careful not to damage snap ring.

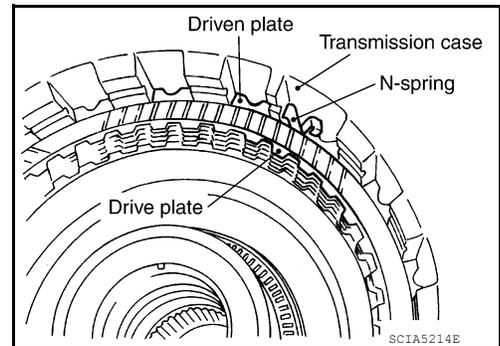
NOTE:

Press out snap ring from the transmission case oil pan side gap with a flat-bladed screwdriver, and remove it using a another screwdriver.

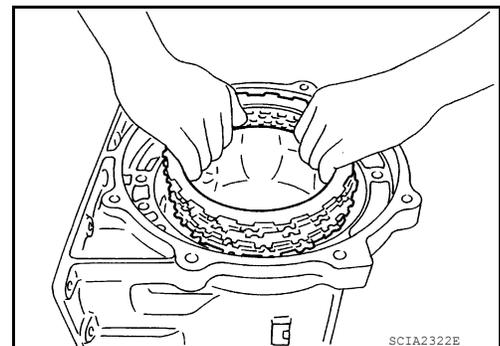


46. Remove reverse brake retaining plate from transmission case.

47. Remove N-spring from transmission case.



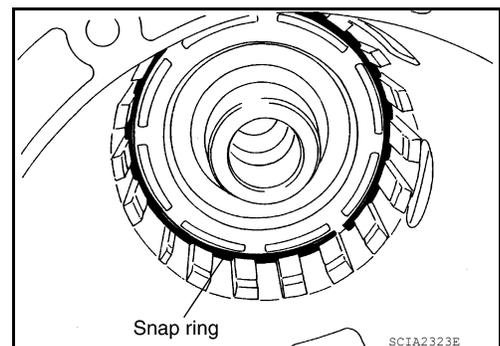
48. Remove reverse brake component part (drive plates, driven plates, and dish plates) from transmission case.



49. 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.



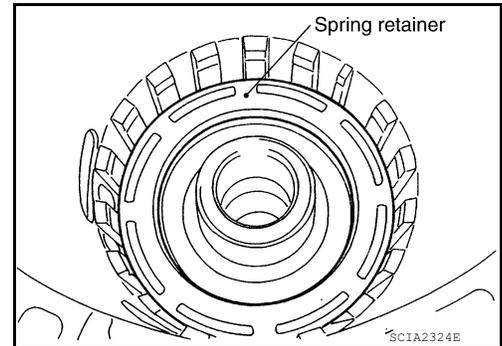
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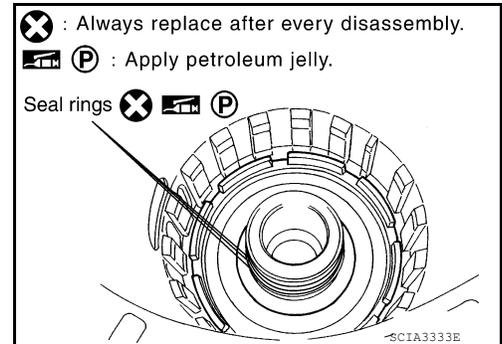
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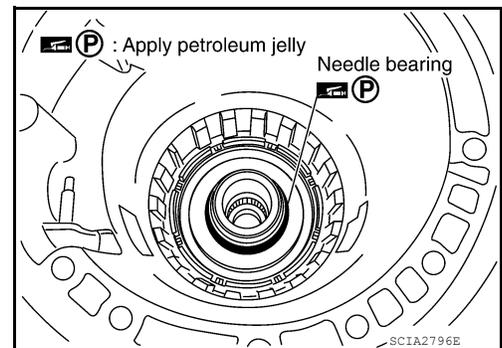
50. Remove reverse brake spring retainer and reverse brake return spring from transmission case.



51. Remove seal rings from drum support.



52. Remove needle bearing from drum support edge surface.

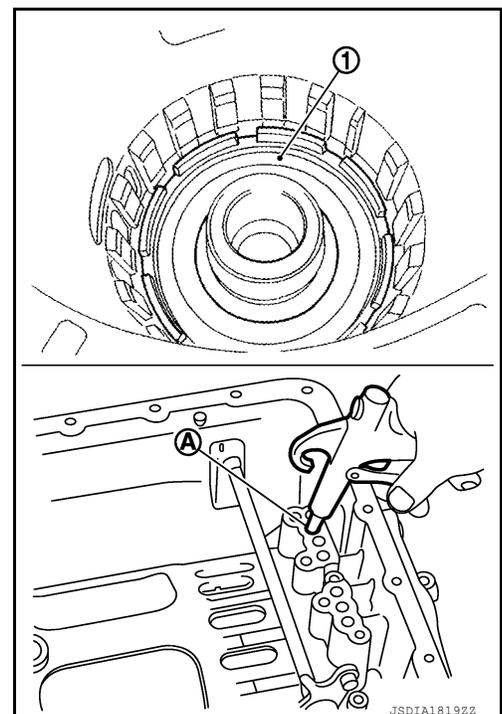


53. Remove reverse brake piston ① from transmission case with compressed air. Refer to [TM-528, "Oil Channel"](#).

Ⓐ : 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.

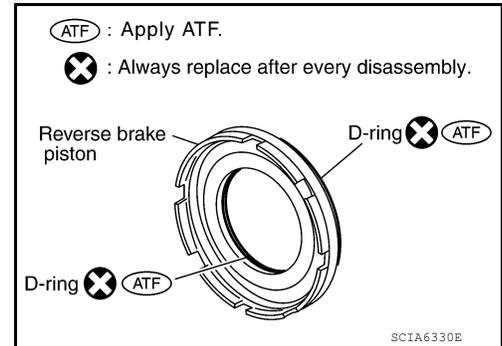


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[7AT: RE7R01B]

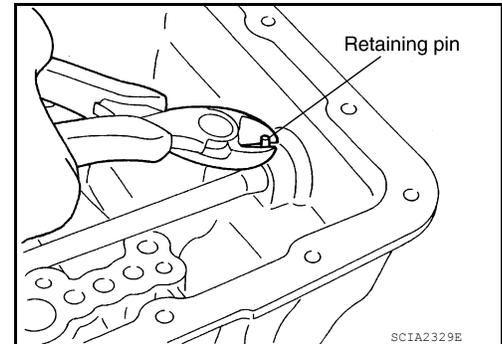
54. Remove D-rings from reverse brake piston.



55. Remove retaining pin with pair of nippers.

CAUTION:

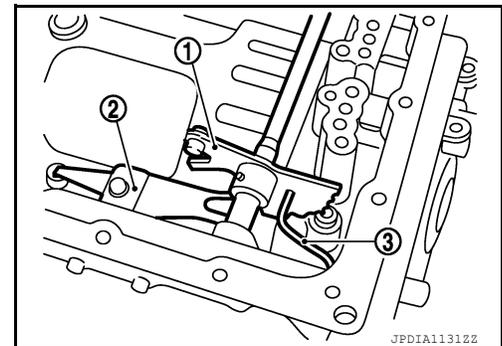
Be careful not to cut retaining pin.



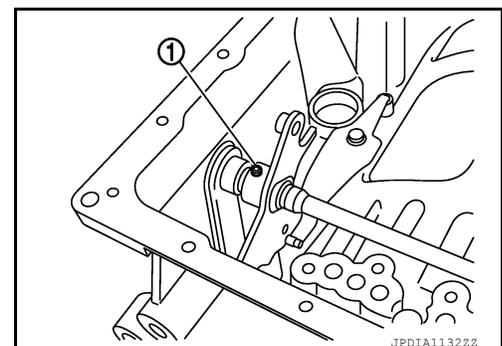
56. Remove manual plate ① from detent spring ②.

57. Remove parking rod ③ from manual plate.

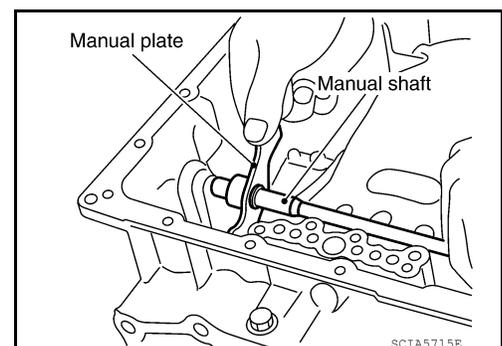
58. Install manual plate to detent spring.



59. Use a pin punch [4 mm (0.16 in) dia. commercial service tool] to knock out retaining pin ①.



60. Remove manual plate from manual shaft.



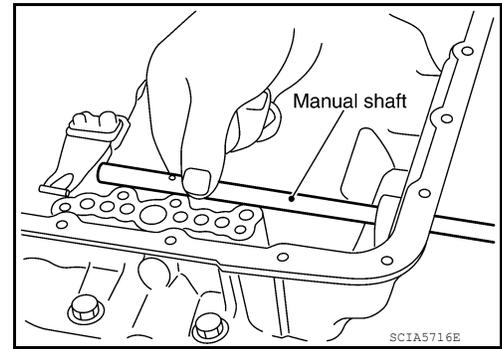
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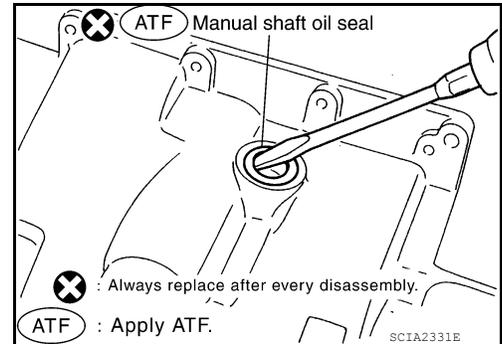
61. Remove manual shaft from transmission case.



62. Remove manual shaft oil seals using a flat-bladed screwdriver.

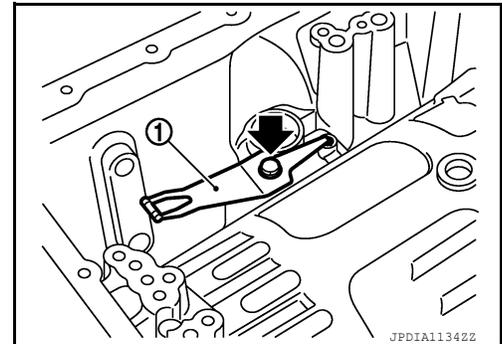
CAUTION:

Be careful not to scratch transmission case.

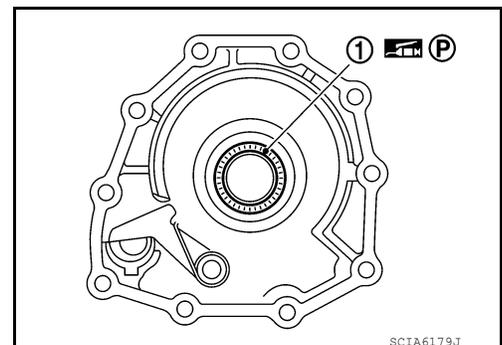


63. Remove detent spring ① from transmission case.

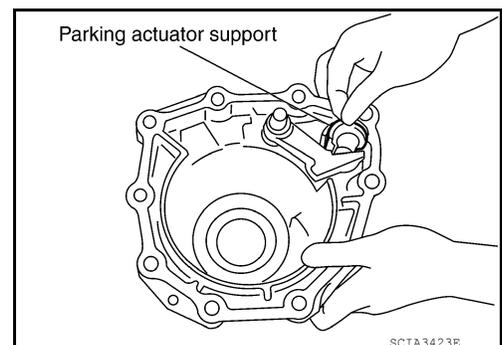
← : Bolt



64. Remove needle bearing ① from rear extension (2WD) or adapter case (4WD).



65. Remove parking actuator support from rear extension (2WD) or adapter case (4WD).

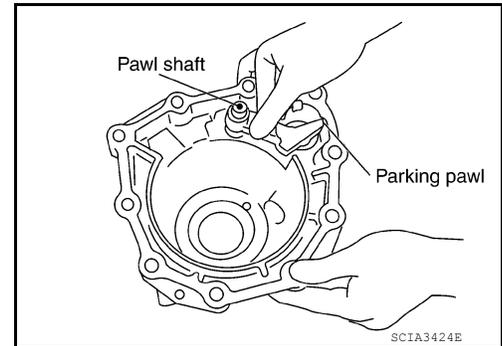


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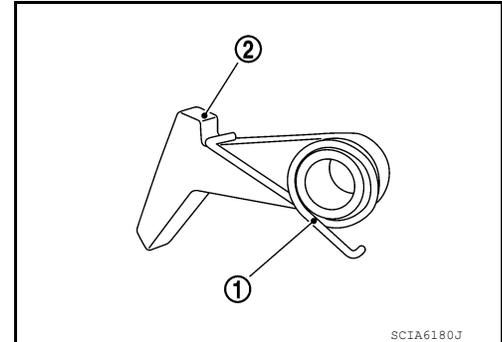
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[7AT: RE7R01B]

66. Remove parking pawl (with return spring) and pawl shaft from rear extension (2WD) or adapter case (4WD).



67. Remove return spring ① from parking pawl ②.



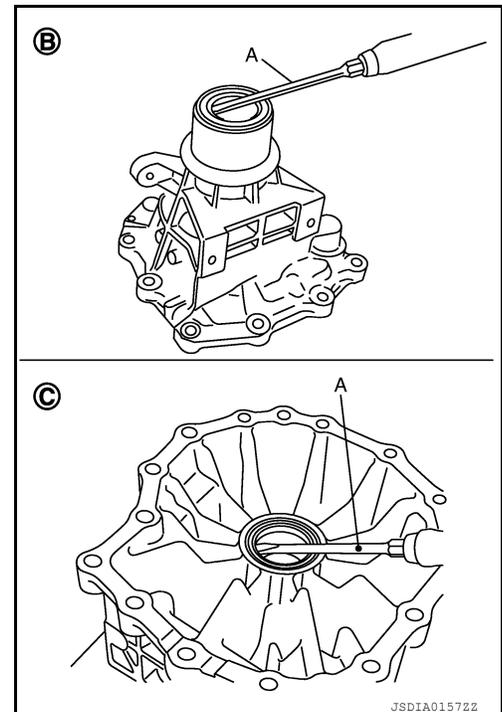
68. Remove rear oil seal from rear extension ② or adapter case ③ using a flat-bladed screwdriver (A).

② : 2WD

③ : 4WD

CAUTION:

Be careful not to scratch rear extension (2WD) or adapter case (4WD).



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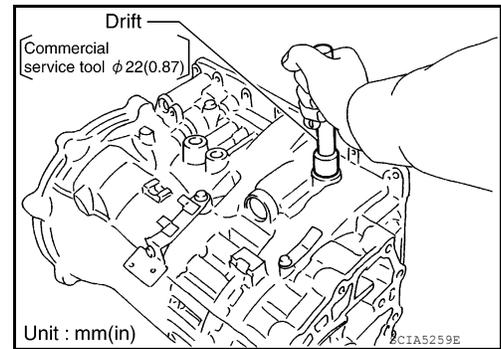
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Assembly

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.

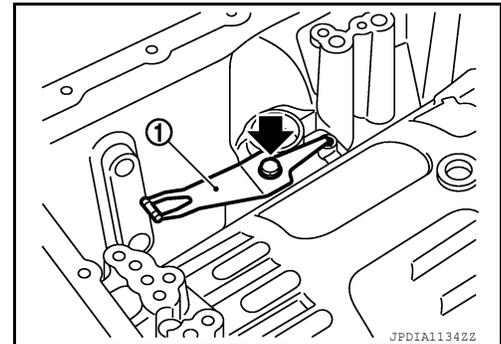
CAUTION:

- Never reuse manual shaft oil seals.
- Apply ATF to manual shaft oil seals.

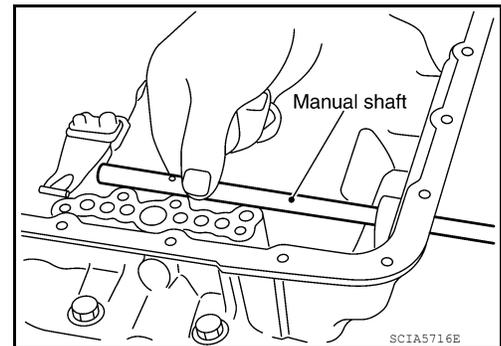


2. Install detent spring ① to transmission case. Tighten detent spring bolt to the specified torque.

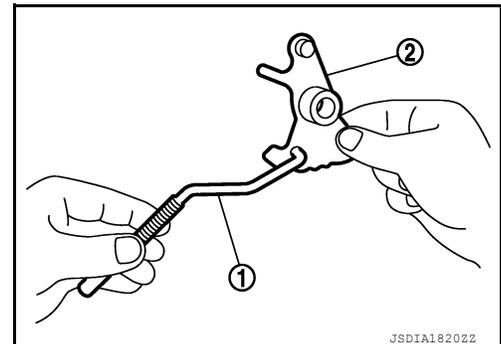
← : Bolt



3. Install manual shaft to transmission case.



4. Install parking rod ① to manual plate ②.

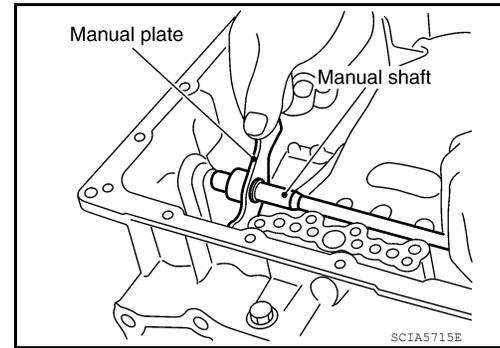


TRANSMISSION ASSEMBLY

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[7AT: RE7R01B]

5. Install manual plate (with parking rod) to manual shaft.

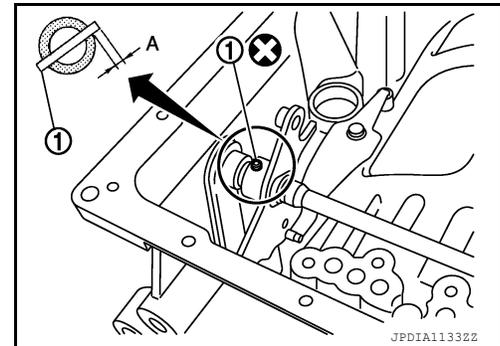


6. Install retaining pin ① into the manual plate and manual shaft.
- Fit pinhole of the manual plate to pinhole of the manual shaft with a pin punch.
 - Use a hammer to tap the retaining pin into the manual plate.

(A) : Approx. 2 mm (0.08 in)

CAUTION:

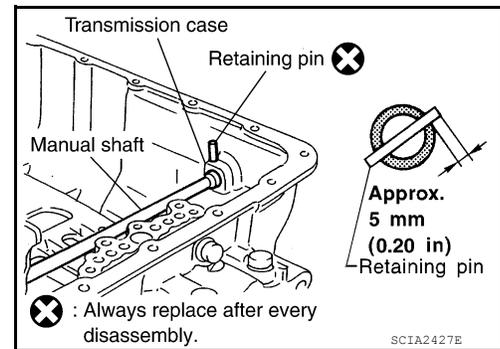
Drive retaining pin to 2 ± 0.5 mm (0.08 ± 0.020 in) over the manual plate.



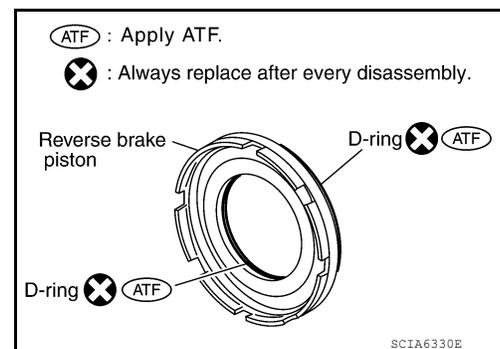
7. Install retaining pin into the transmission case and manual shaft.
- Fit pinhole of the transmission case to pinhole of the manual shaft with a pin punch.
 - Use a hammer to tap the retaining pin into the transmission case.

CAUTION:

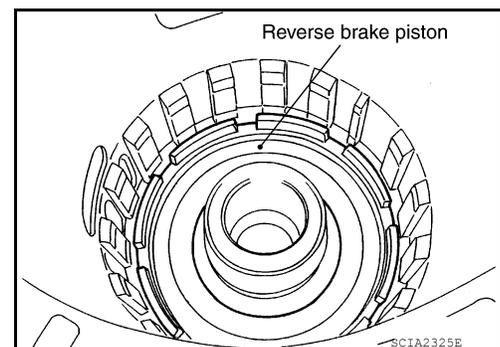
Drive retaining pin to 5 ± 1 mm (0.20 ± 0.04 in) over the transmission case.



8. Install D-rings to reverse brake piston.



9. Install reverse brake piston to transmission case.



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TRANSMISSION ASSEMBLY

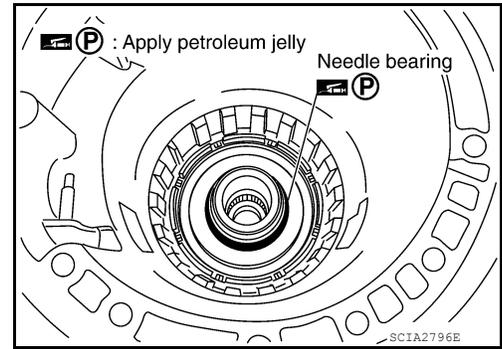
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[7AT: RE7R01B]

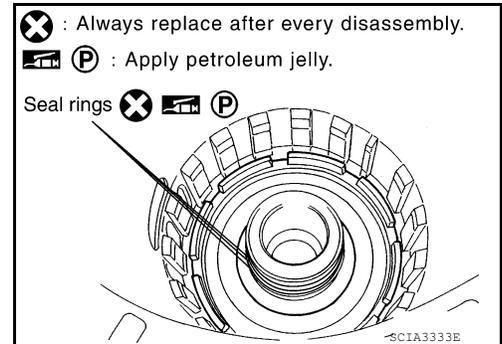
10. Install needle bearing to drum support edge surface.

CAUTION:

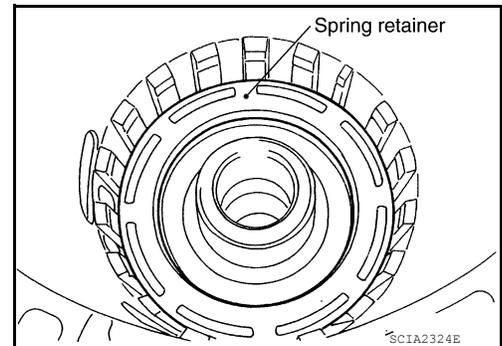
Check the direction of needle bearing. Refer to [TM-528](#), "[Location of Needle Bearings and Bearing Races](#)".



11. Install seal rings to drum support.



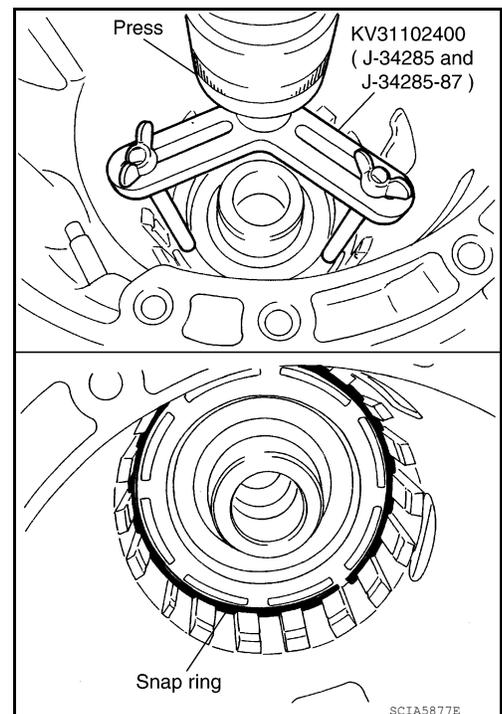
12. Install reverse brake spring retainer and reverse brake return spring in transmission case.



13. Set the clutch spring compressor on reverse brake spring retainer and install snap ring (fixing spring retainer) 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.



TRANSMISSION ASSEMBLY

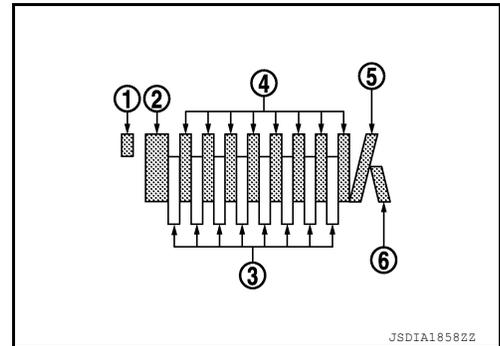
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[7AT: RE7R01B]

14. Install reverse brake component part (dish plates, driven plates, and drive plates) to transmission case.

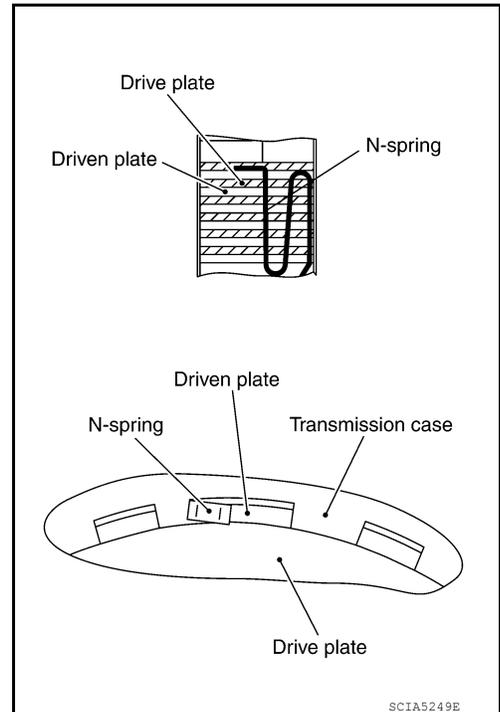
- ① : Snap ring
- ② : Retaining plate
- ③ : Drive plate (eight pieces)
- ④ : Driven plate (eight pieces)
- ⑤ : Dish plate
- ⑥ : Dish plate

CAUTION:
Check order of plates.



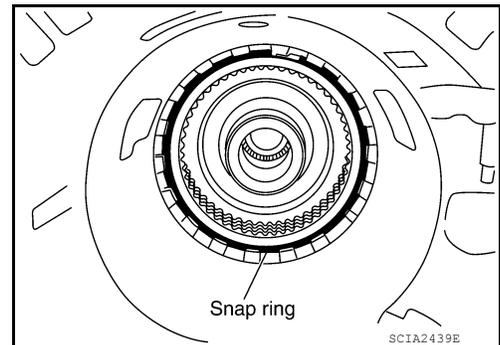
15. Assemble N-spring.

16. Install reverse brake retaining plate to transmission case.



17. Install snap ring to transmission case.

CAUTION:
Be careful not to damage snap ring.



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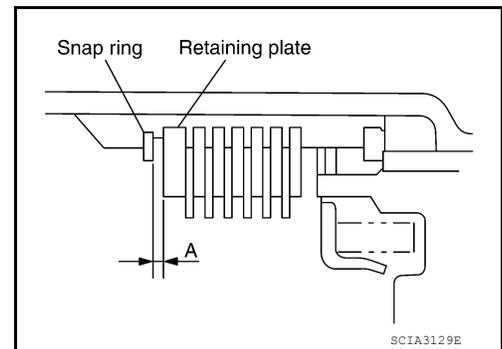
[7AT: RE7R01B]

18. Measure clearance between retaining plate and snap ring. If not within specified clearance, select proper retaining plate.

Specified clearance (A)

Standard: [TM-604, "Reverse Brake Clearance"](#).

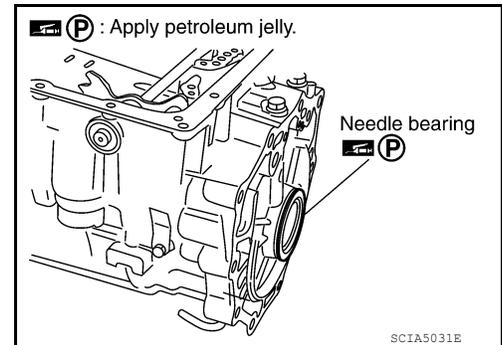
Retaining plate: Refer to [TM-604, "Reverse Brake Clearance"](#)



19. Install needle bearing to transmission case.

CAUTION:

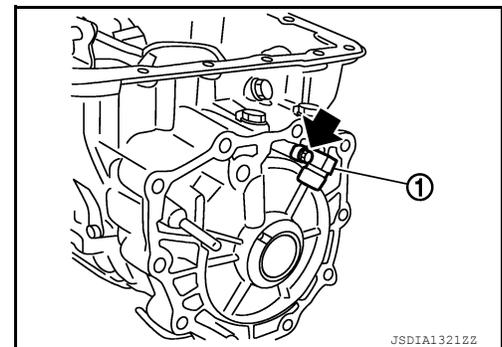
Check the direction of needle bearing. Refer to [TM-528, "Location of Needle Bearings and Bearing Races"](#).



20. Install output speed sensor ① to transmission case and tighten output speed sensor mounting bolt (←) to the specified torque.

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.



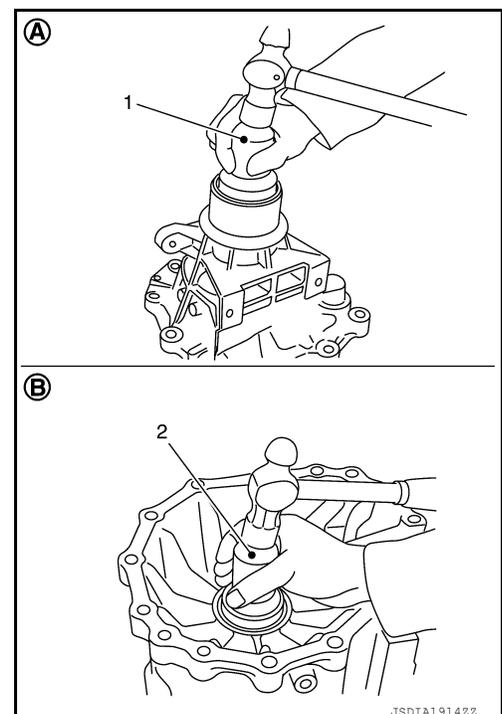
21. As shown in the figure, use the drift to drive rear oil seal into the rear extension (2WD) (A) or adapter case (4WD) (B) until it is flush.

(1) : Drift [SST: 33400001 (J-26082)]

(2) : Drift [Commercial service tool Ø64 mm (2.52 in)]

CAUTION:

- Never reuse rear oil seal.
- Apply ATF to rear oil seal.
- Never incline to rear oil seal.

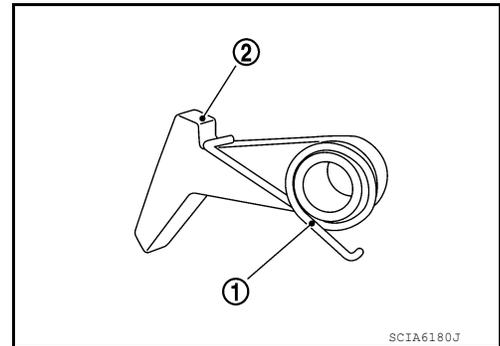


TRANSMISSION ASSEMBLY

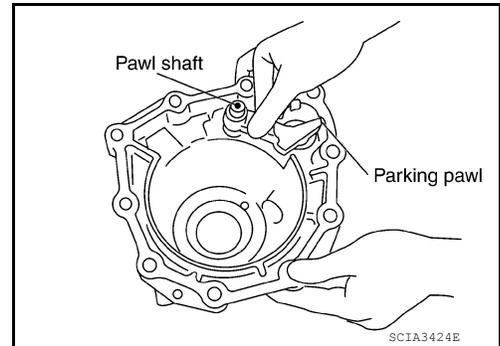
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[7AT: RE7R01B]

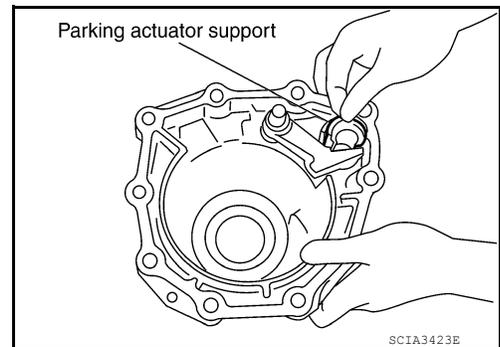
22. Install return spring ① to parking pawl ②.



23. Install parking pawl (with return spring) and pawl shaft to rear extension (2WD) or adapter case (4WD).



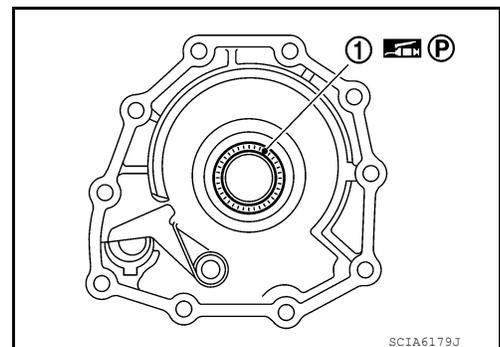
24. Install parking actuator support to rear extension (2WD) or adapter case (4WD).



25. Install needle bearing ① to rear extension (2WD) or adapter case (4WD).

CAUTION:

Check the direction of needle bearing. Refer to [TM-528](#), "[Location of Needle Bearings and Bearing Races](#)".



26. Install rear extension assembly (2WD) or adapter case assembly (4WD) according to the following procedures.

a. **2WD**

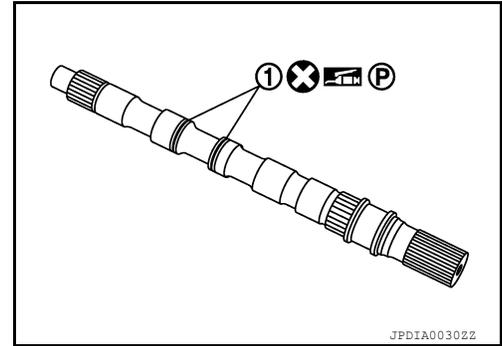
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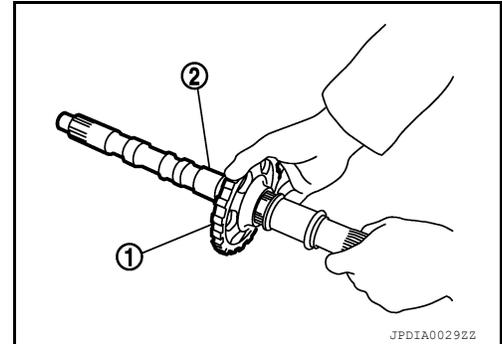
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[7AT: RE7R01B]

- i. Install seal rings ① to output shaft.



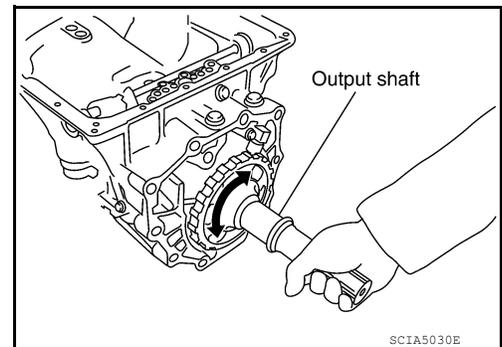
- ii. Install parking gear ① to output shaft ②.



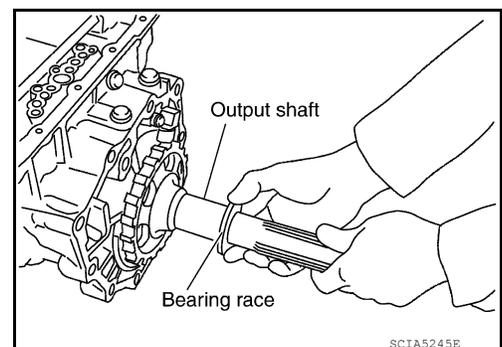
- iii. Install output shaft in transmission case.

CAUTION:

Be careful not to mistake front for rear because both sides looks similar. (Thinner end is front side.)



- iv. Install bearing race to output shaft.



TRANSMISSION ASSEMBLY

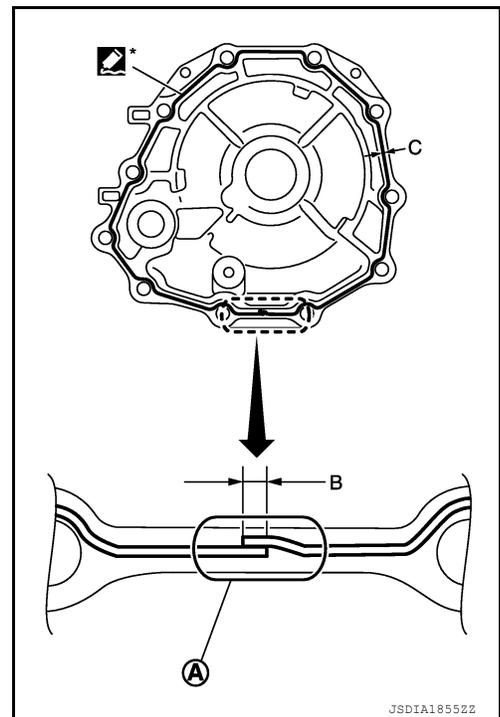
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[7AT: RE7R01B]

- v. Apply recommended sealant (Genuine Anaerobic Liquid Gasket or equivalent. Refer to [GI-22, "Recommended Chemical Products and Sealants"](#).) to rear extension assembly as shown in the figure.

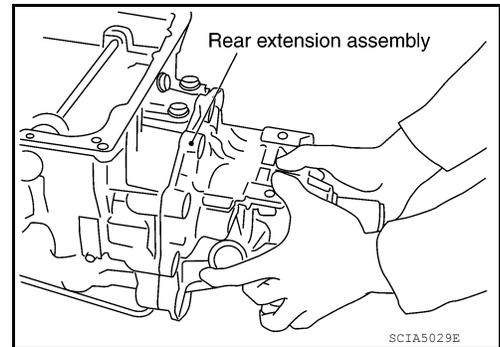
- Sealant starting point and end-point (A) :** Start and finish point shall be in the center of two bolts.
- Overlap width of sealant starting point and end-point (B) :** 3 – 5 mm (0.12 – 0.20 in)
- Sealant width (C) :** 1.0 – 2.0 mm (0.04 – 0.08 in)
- Sealant height (C) :** 0.4 – 1.0 mm (0.016 – 0.04 in)

CAUTION:
Completely remove all moisture, oil and old sealant, etc. from the transmission case and rear extension assembly mounting surfaces.



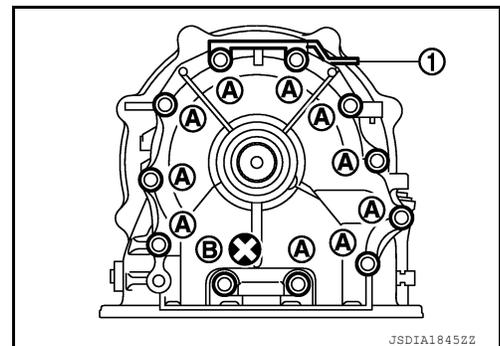
- vi. Install rear extension assembly to transmission case.

CAUTION:
Insert the tip of parking rod between the parking pawl and the parking actuator support when assembling the rear extension assembly.



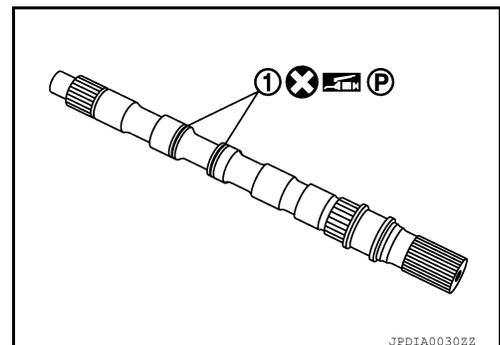
- vii. Tighten rear extension assembly bolts to the specified torque.

- ① : Bracket
- (A) : Bolt
- (B) : Self-sealing bolt



- b. **4WD**

- i. Install seal rings ① to output shaft.



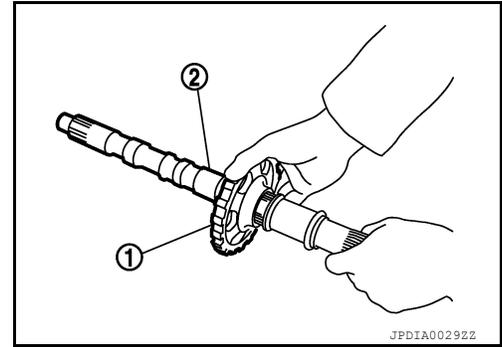
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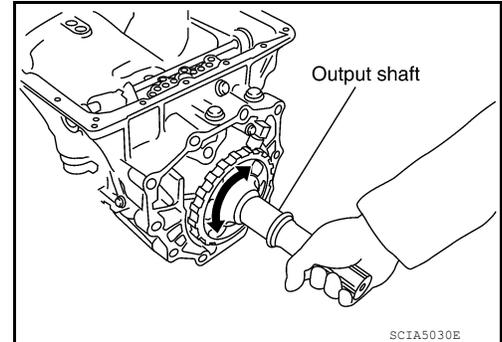
- ii. Install parking gear ① to output shaft ②.



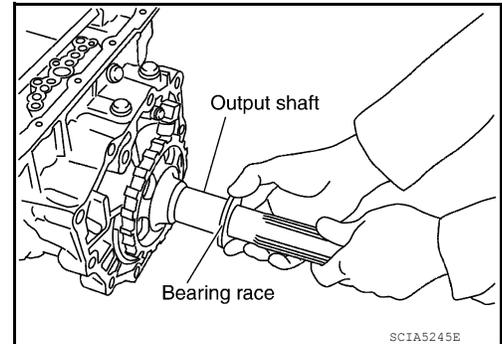
- iii. Install output shaft in transmission case.

CAUTION:

Be careful not to mistake front for rear because both sides looks similar. (Thinner end is front side.)



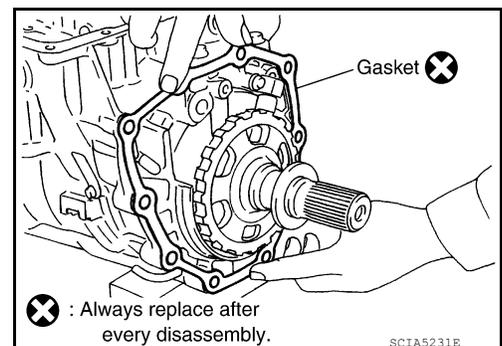
- iv. Install bearing race to output shaft.



- v. Install gasket onto transmission case.

CAUTION:

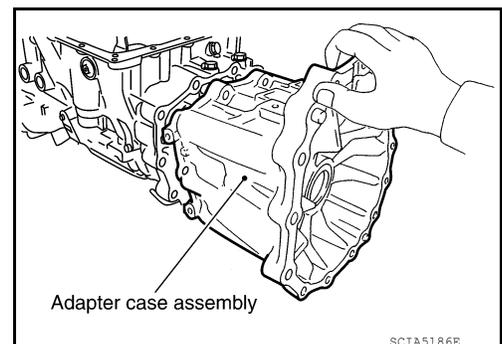
Completely remove all moisture, oil and old gasket, etc. from the transmission case and adapter case assembly mounting surfaces.



- vi. Install adapter case assembly to transmission case.

CAUTION:

Insert the tip of parking rod between the parking pawl and the parking actuator support when assembling the adapter case assembly.



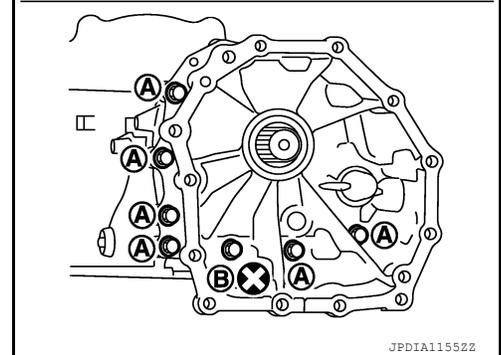
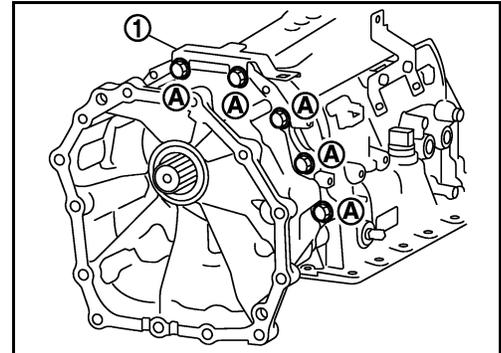
TRANSMISSION ASSEMBLY

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[7AT: RE7R01B]

vii. Tighten adapter case assembly bolts to the specified torque.

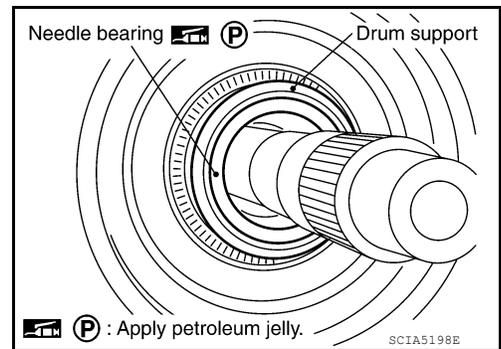
- ① : Bracket
- Ⓐ : Bolt
- Ⓑ : Self-sealing bolt



27. Install needle bearing to drum support.

CAUTION:

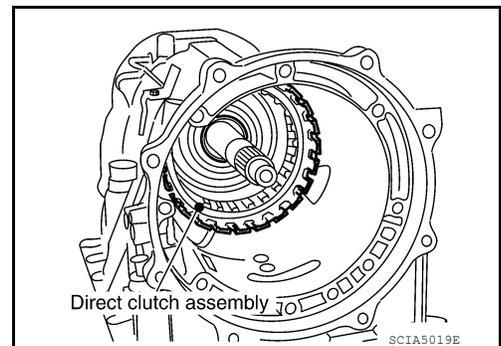
Check the direction of needle bearing. Refer to [TM-528](#), "[Location of Needle Bearings and Bearing Races](#)".



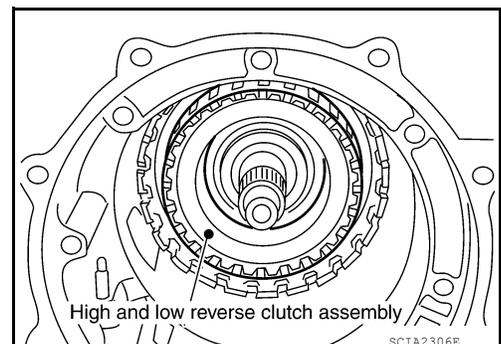
28. Install direct clutch assembly to reverse brake.

CAUTION:

Make sure that drum support edge surface and direct clutch inner boss edge surface come to almost same place.



29. Install high and low reverse clutch assembly to direct clutch.



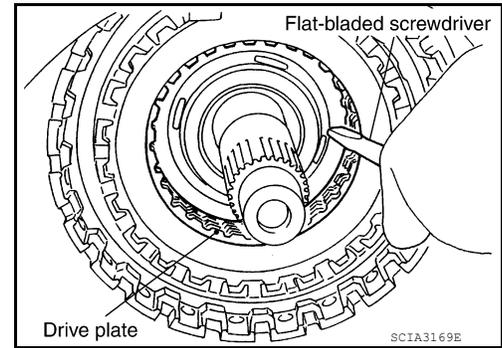
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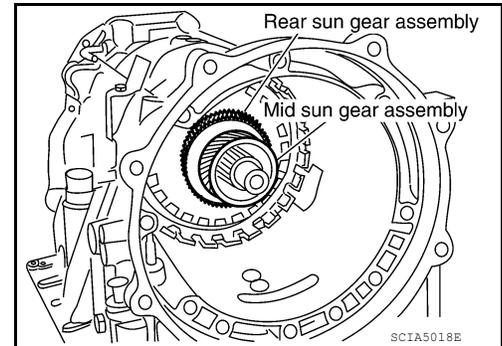
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30. Align the drive plate using a flat-bladed screwdriver.

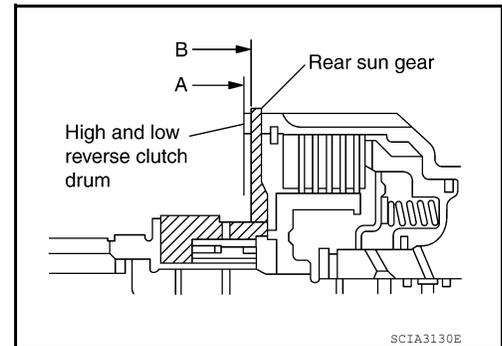


31. Install high and low reverse clutch hub, mid sun gear assembly, and rear sun gear assembly as a unit.



CAUTION:

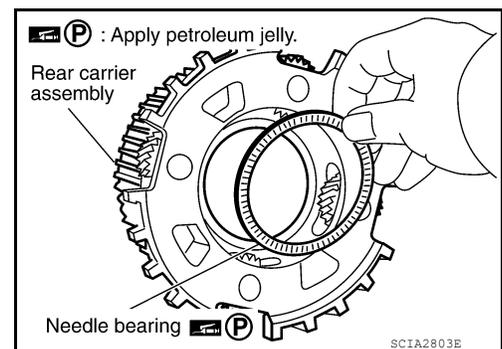
Make sure that portion "A" of high and low reverse clutch drum protrudes approximately 2 mm (0.08 in) beyond portion "B" of rear sun gear.



32. Install needle bearing to rear carrier assembly.

CAUTION:

Check the direction of needle bearing. Refer to [TM-528](#), "[Location of Needle Bearings and Bearing Races](#)".



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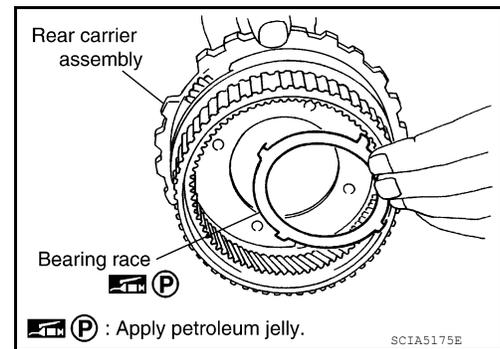
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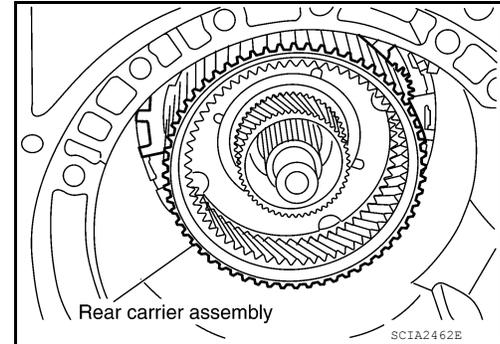
33. Install bearing race to rear carrier assembly.

CAUTION:

Check the direction of bearing race. Refer to [TM-528](#), "[Location of Needle Bearings and Bearing Races](#)".



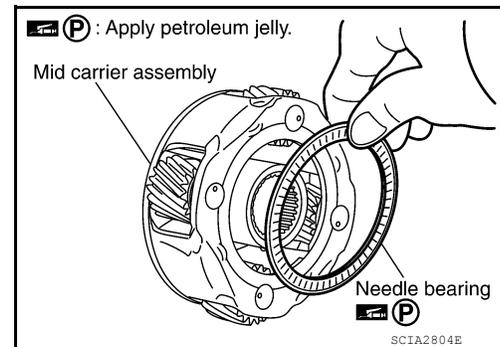
34. Install rear carrier assembly to direct clutch drum.



35. Install needle bearing (rear side) to mid carrier assembly.

CAUTION:

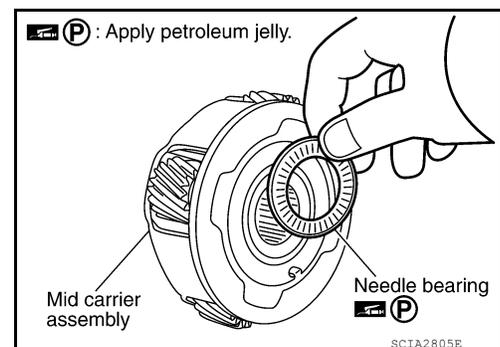
Check the direction of needle bearing. Refer to [TM-528](#), "[Location of Needle Bearings and Bearing Races](#)".



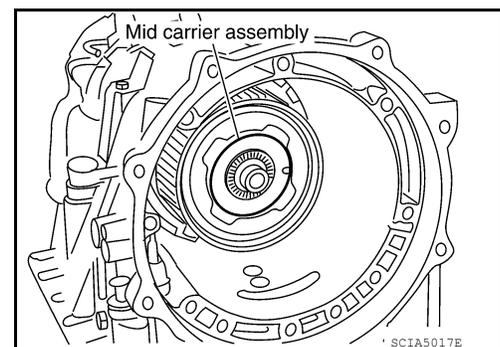
36. Install needle bearing (front side) to mid carrier assembly.

CAUTION:

Check the direction of needle bearing. Refer to [TM-528](#), "[Location of Needle Bearings and Bearing Races](#)".



37. Install mid carrier assembly to rear carrier assembly.



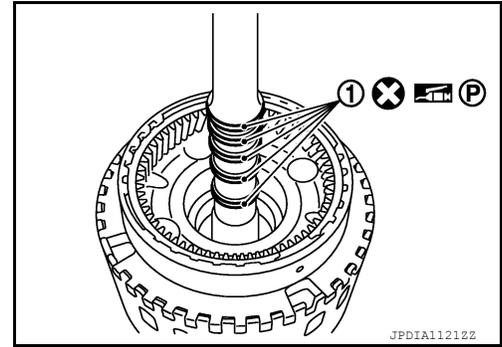
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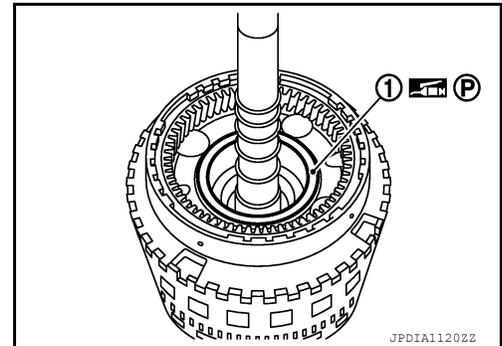
38. Install seal rings ① to input clutch assembly.



39. Install needle bearing ① to front carrier assembly.

CAUTION:

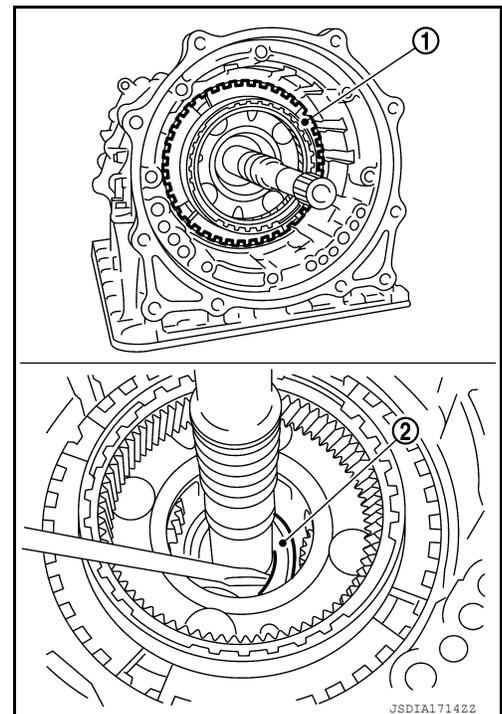
Check the direction of needle bearing. Refer to [TM-528](#), "[Location of Needle Bearings and Bearing Races](#)".



40. 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.



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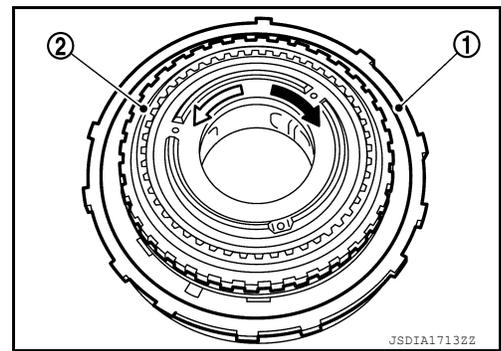
41. Install 1st one-way clutch ① to front brake hub (with under drive carrier) ②.
42. Check operation of 1st one-way clutch.
 - a. Hold 1st one-way clutch.
 - b. Check front brake hub for correct locking and unlocking directions.

◀ : Unlocked

↶ : Locked

CAUTION:

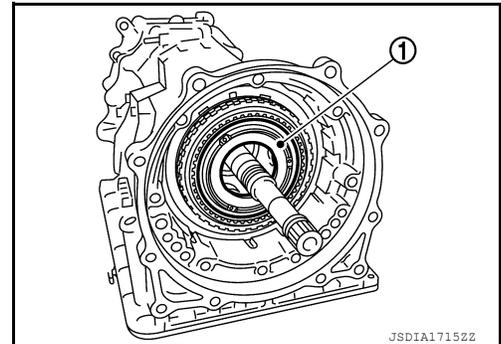
If not shown in figure, check installation direction of 1st one-way clutch.



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43. Install under drive carrier (with 1st one-way clutch) ① to transmission case.

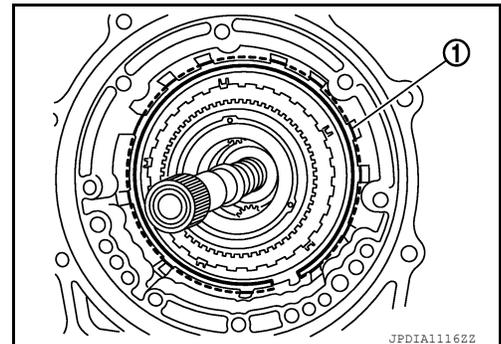


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44. Install snap ring ① to transmission case.

CAUTION:

Be careful not to damage snap ring.



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45. Install front brake component part (retaining plates, drive plates, and driven plate) to transmission case.

① : Retaining plate (thin)

② : Drive plate

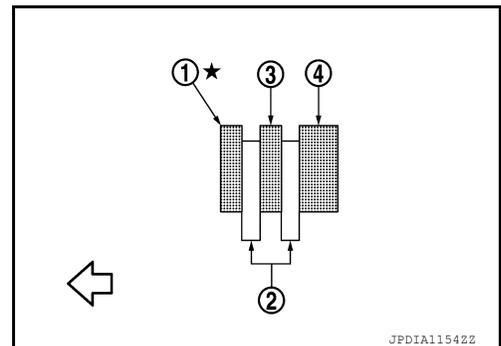
③ : Driven plate

④ : Retaining plate (thick)

↶ : Front

CAUTION:

Check order of plates.



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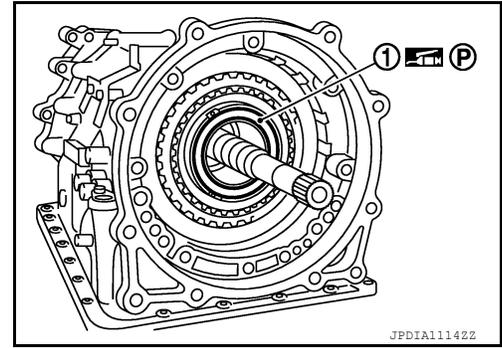
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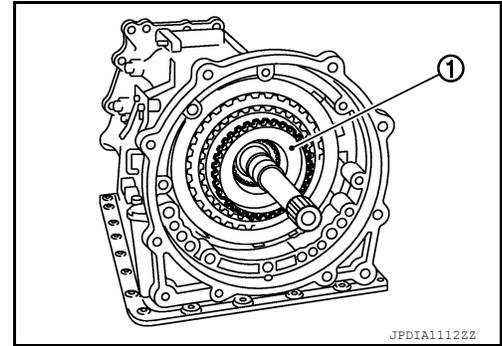
46. Install needle bearing ① to under drive carrier assembly.

CAUTION:

Check the direction of needle bearing. Refer to [TM-528](#), "[Location of Needle Bearings and Bearing Races](#)".

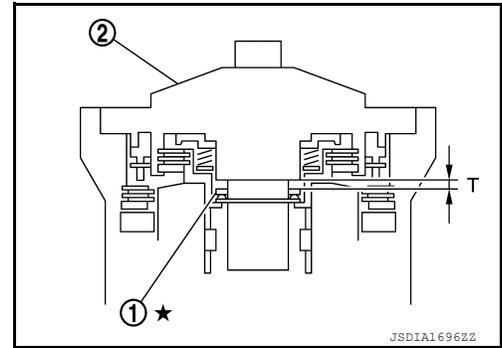


47. Install under drive sun gear ① to under drive carrier assembly.



48. 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.

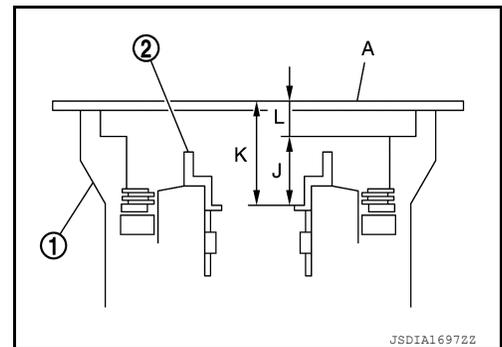


a. Measure dimensions "K" and "L", and calculate dimension "J".

- 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.

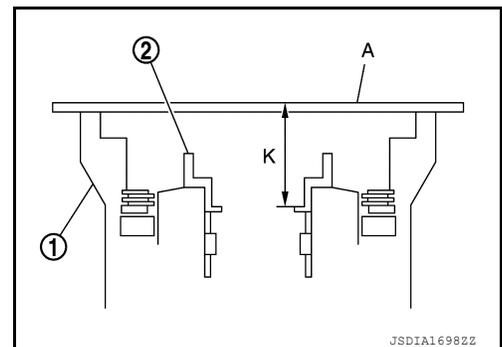
$$J = K - L$$



i. 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.



TRANSMISSION ASSEMBLY

< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01B]

- ii. Measure dimension “L” between the converter housing fitting surface of transmission case and the oil pump fitting surface of transmission case.

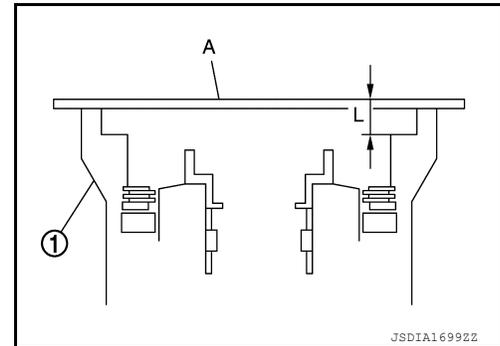
- ① : Transmission case
- (A) : Straightedge

CAUTION:

Measure dimension “L” in at least three places, and take the average.

- iii. Calculate dimension “J”.

$$J = K - L$$

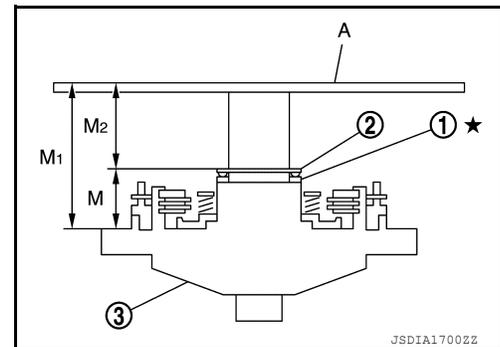


- b. Measure dimensions “M1” and “M2”, and calculate dimension “M”.

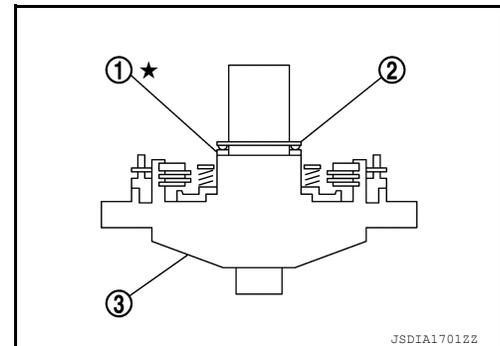
- ① : Bearing race
- ② : Needle bearing
- ③ : Oil pump assembly
- (A) : Straightedge

“M” : Distance between the transmission case fitting surface of oil pump and the needle bearing on oil pump.

$$M = M1 - M2$$



- i. Place bearing race ① and needle bearing ② on oil pump assembly ③.

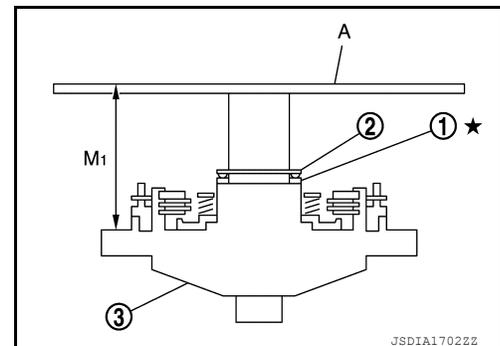


- ii. Measure dimension “M1” between the transmission case fitting surface of oil pump and the end of oil pump.

- ① : Bearing race
- ② : Needle bearing
- ③ : Oil pump assembly
- (A) : Straightedge

CAUTION:

Measure dimension “M1” in at least three places, and take the average.



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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".

$$M = M_1 - M_2$$

c. Adjust total end play "T".

- ① : Bearing race
- ② : Oil pump assembly

$$T = J - M$$

Total end play "T" : Refer to [TM-603, "Total End Play"](#).

- Select proper thickness of bearing race so that total end play is within specifications.

Bearing races : Refer to [TM-603, "Total End Play"](#).

49. Adjustment of front brake clearance "C".

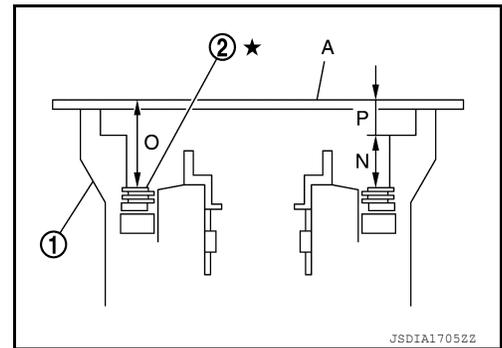
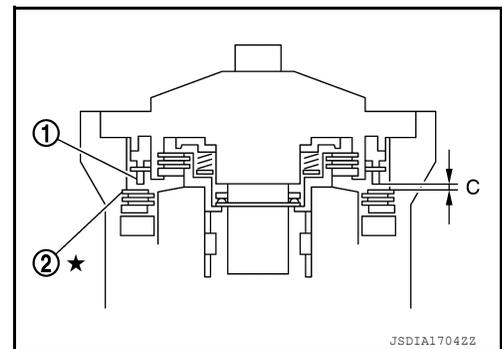
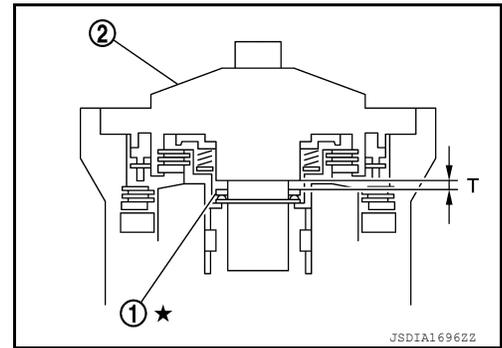
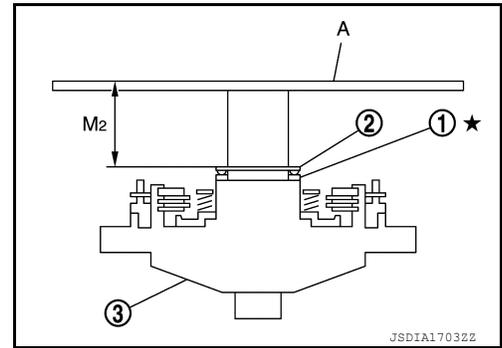
- Measure clearance between front brake piston ① and front brake retaining plate ②.
- Select proper thickness of front brake retaining plate so that clearance is within specifications.

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.

$$N = O - P$$



TRANSMISSION ASSEMBLY

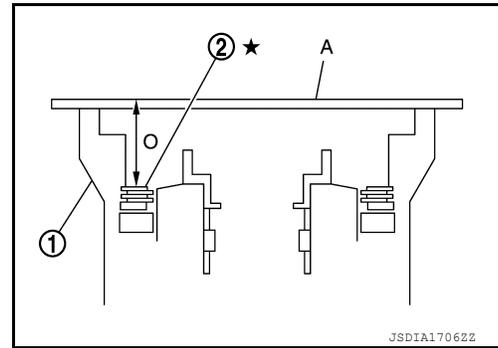
< UNIT DISASSEMBLY AND ASSEMBLY >

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- i. 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.

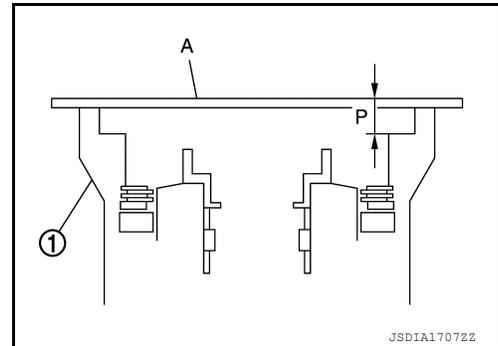


- ii. Measure dimension “P” between the converter housing fitting surface of transmission case and the oil pump fitting surface of transmission case.

- ① : Transmission case
 (A) : Straightedge

CAUTION:

Measure dimension “P” in at least three places, and take the average.



- iii. Calculate dimension “N”.

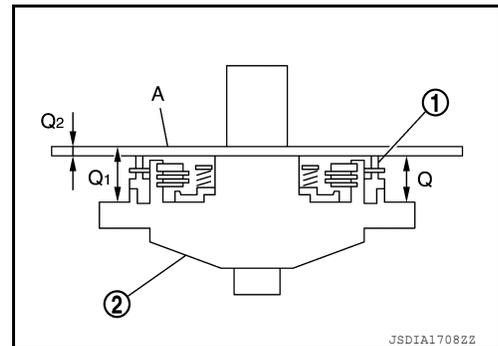
$$N = O - P$$

- 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.

$$Q = Q_1 - Q_2$$

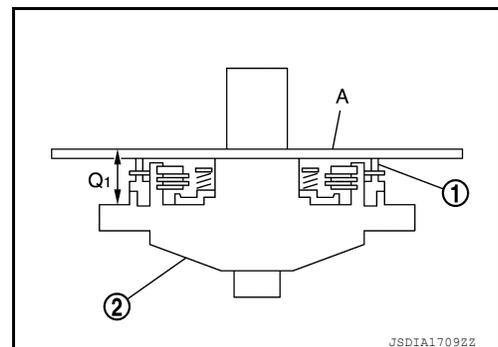


- i. Measure dimension “Q1” between the transmission case fitting surface of oil pump and the straightedge on front brake piston.

- ① : Front brake piston
 ② : Oil pump assembly
 (A) : Straightedge

CAUTION:

Measure dimension “Q1” in at least three places, and take the average.



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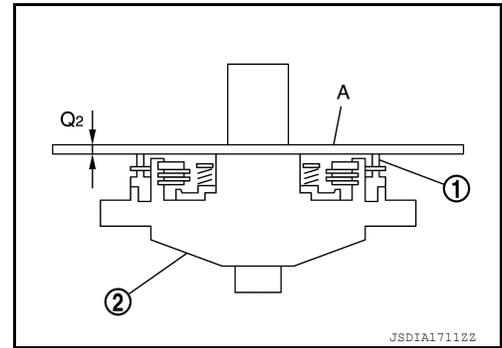
[7AT: RE7R01B]

ii. Measure dimension "Q2" of the straightedge.

- ① : Front brake piston
- ② : Oil pump assembly
- (A) : Straightedge

iii. Calculate dimension "Q".

$$Q = Q_1 - Q_2$$



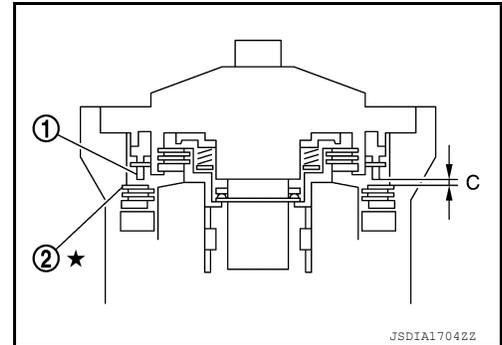
c. Adjust front brake clearance "C".

- ① : Front brake piston
- ② : Front brake retaining plate

$$C = N - Q$$

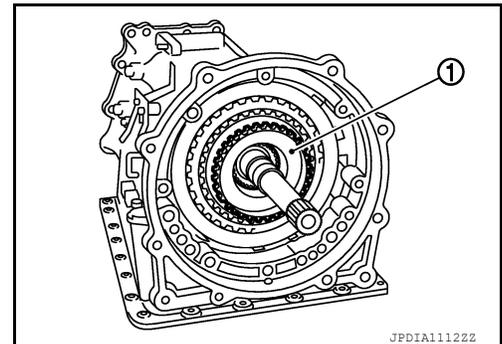
Front brake clearance "C" : Refer to [TM-604, "Front Brake Clearance"](#).

- Select proper thickness of retaining plate so that front brake clearance is within specifications.



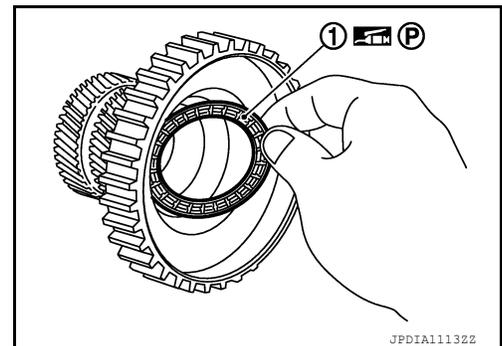
Retaining plate : Refer to [TM-604, "Front Brake Clearance"](#).

50. Remove under drive sun gear ① from under drive carrier assembly.



51. Install needle bearing ① to under drive sun gear.

CAUTION:
Check the direction of needle bearing. Refer to [TM-528, "Location of Needle Bearings and Bearing Races"](#).

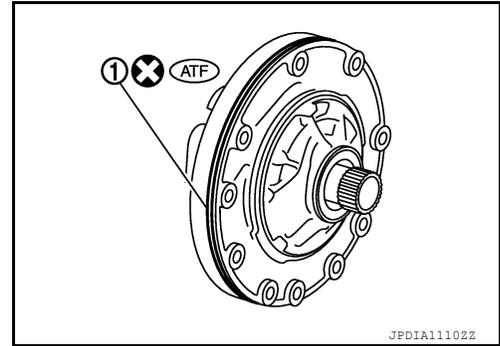


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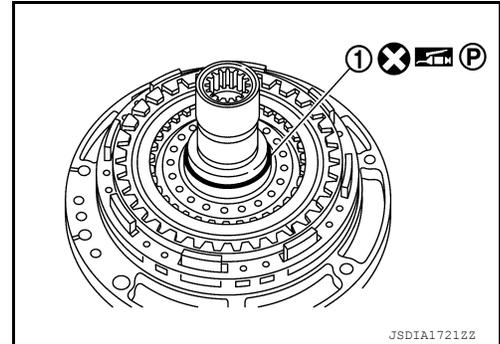
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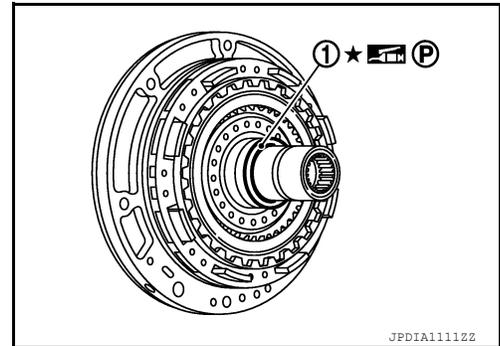
52. Install O-ring ① to oil pump assembly.



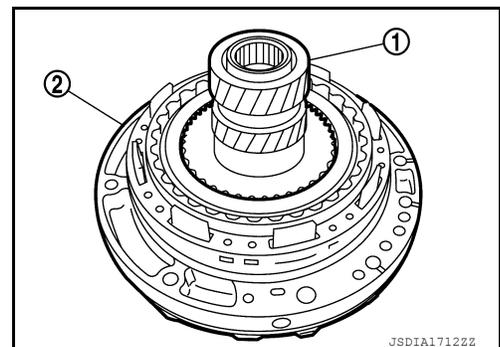
53. Install seal ring ① to oil pump assembly.



54. Install bearing race ① to oil pump assembly.



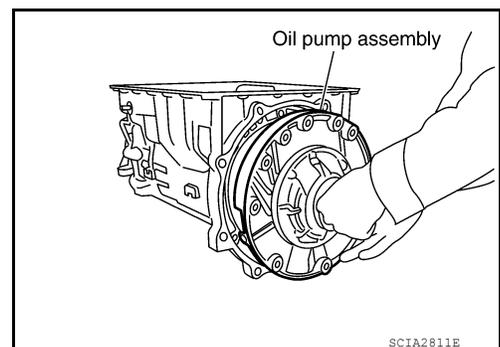
55. Install under drive sun gear (with needle bearing) ① to oil pump assembly ②.



56. Install oil pump assembly (with under drive sun gear) to transmission case.

CAUTION:

Apply ATF to oil pump bearing.



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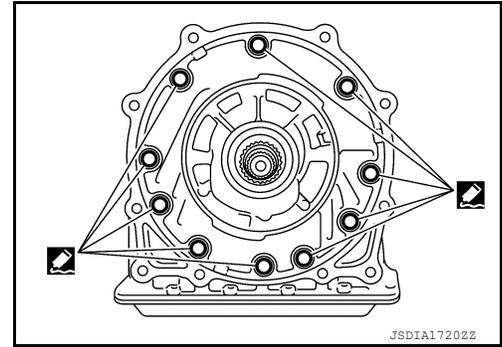
< UNIT DISASSEMBLY AND ASSEMBLY >

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57. Apply recommended sealant to oil pump assembly as shown in the figure.

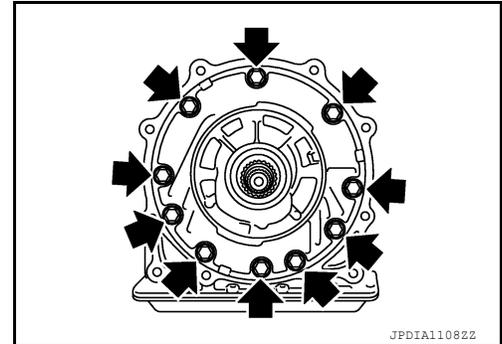
 : Apply Genuine RTV silicone sealant or equivalent. Refer to [GI-22, "Recommended Chemical Products and Sealants"](#).

CAUTION:
Completely remove all moisture, oil and old sealant, etc. from the oil pump mounting bolts and oil pump mounting bolt mounting surfaces.

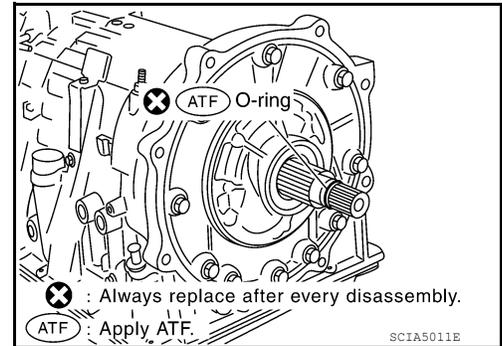


58. Tighten oil pump bolts (←) to the specified torque.

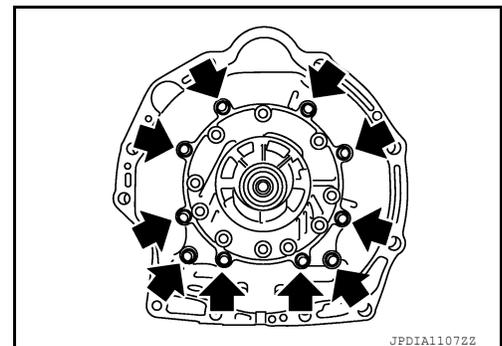
CAUTION:
Apply ATF to oil pump bushing.



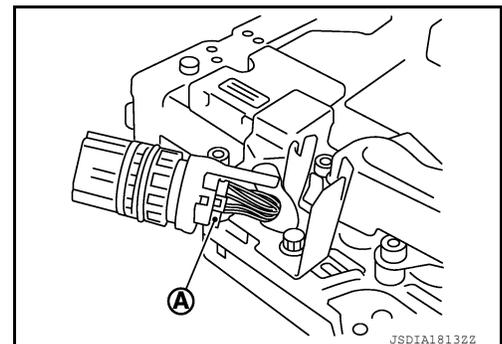
59. Install O-ring to input clutch assembly.



60. Install converter housing to transmission case, and tighten converter housing bolts (←) to the specified torque.



61. Connect TCM connector (A).



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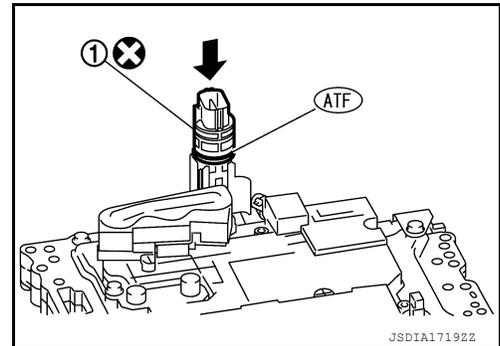
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[7AT: RE7R01B]

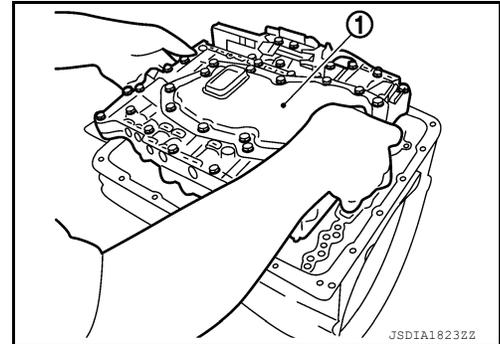
62. Install joint connector ① to the control valve & TCM.

CAUTION:

Apply ATF to O-ring of joint connector.

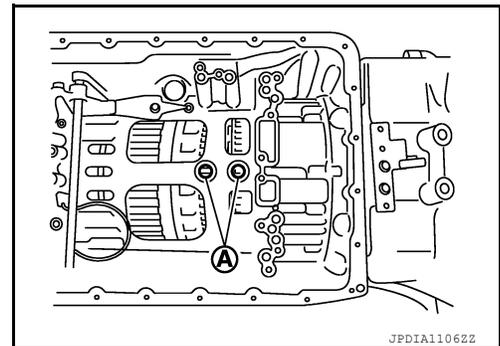


63. Install the control valve & TCM ① to transmission case.

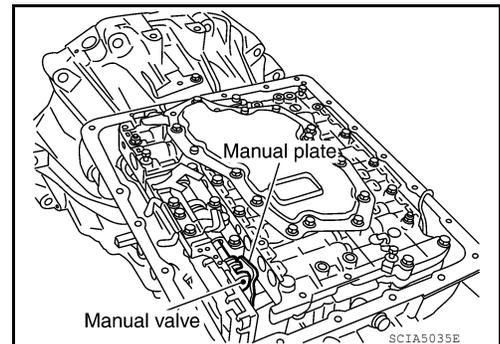


CAUTION:

- 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 cutout is engaged with manual plate projection.



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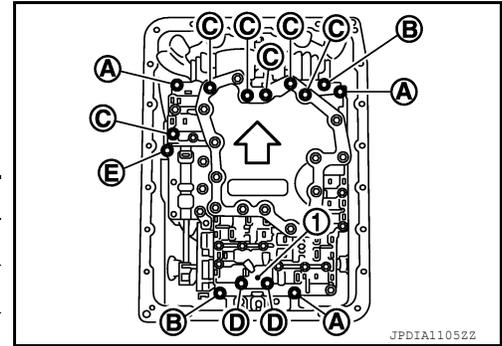
[7AT: RE7R01B]

64. Install bolts and clip (1) to the control valve & TCM. Tighten bolt (E) to the specified torque before tightening the other than bolts.

← : Front

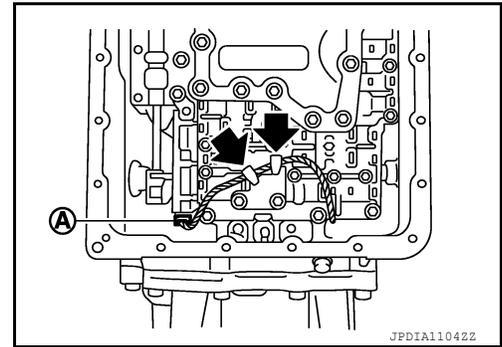
Bolt symbol	Length mm (in)	Number of bolts
Ⓐ	43 (1.69)	3
Ⓑ	40 (1.57)	2
Ⓒ	54 (2.13)	6
Ⓓ	50 (1.97)	2
Ⓔ*	50 (1.97)	1

*: Reamer bolt



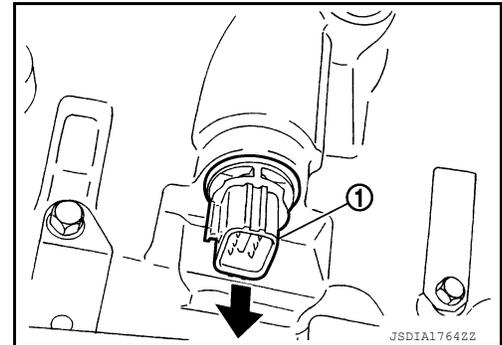
65. Connect output speed sensor connector Ⓐ.

66. Engage output speed sensor harness with terminal clips (←).

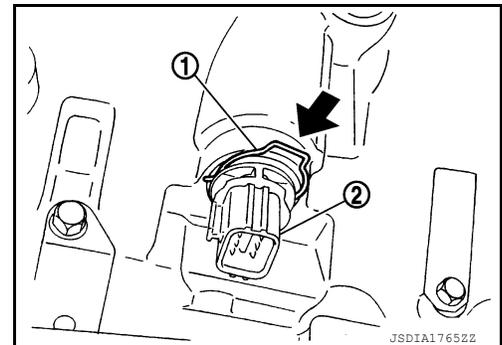


67. Pull down joint connector ①.

CAUTION:
Be careful not to damage connector.



68. Install snap ring ① to joint connector ②.



TRANSMISSION ASSEMBLY

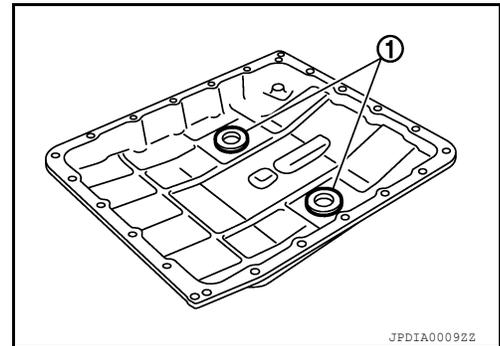
< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01B]

- 69. Install magnets ① in oil pan.
- 70. 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.



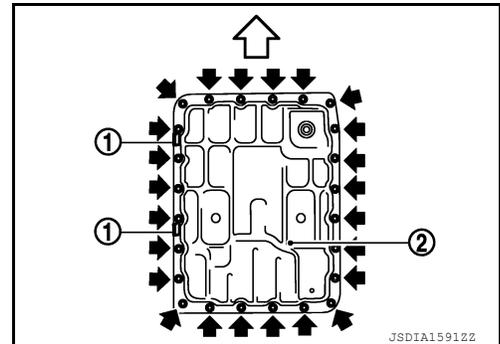
- 71. Install oil pan ② and clips ① to transmission case.

↔ : 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.



- 72. 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

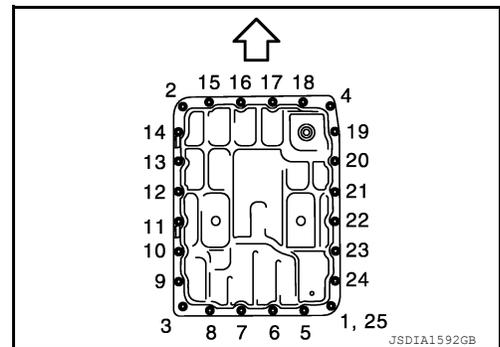
CAUTION:

Never reuse oil pan mounting bolts.

- 73. Install drain plug and drain plug gasket to oil pan. Tighten drain plug to the specified torque.

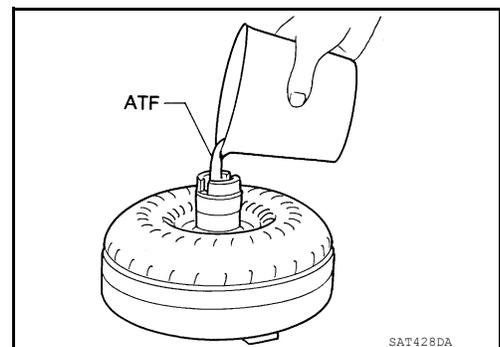
CAUTION:

Never reuse drain plug and drain plug gasket.



- 74. Pour ATF into torque converter.

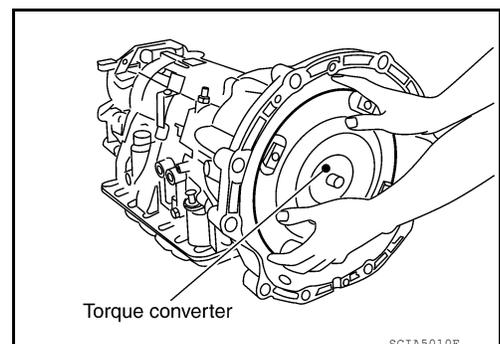
- Approximately 2 liter (2-1/8 US qt, 1-3/4 Imp qt) of ATF is required for a new torque converter.
- When reusing old torque converter, add the same amount of ATF as was drained.



- 75. Install torque converter while aligning notches of torque converter with notches of oil pump.

CAUTION:

Install torque converter while rotating it.



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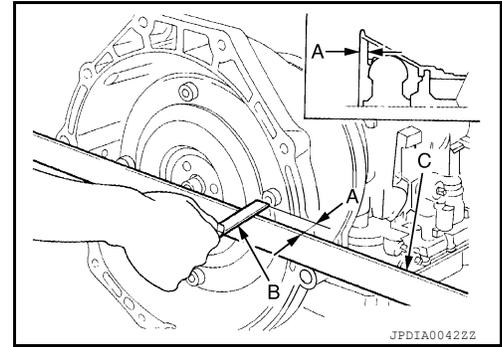
< UNIT DISASSEMBLY AND ASSEMBLY >

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76. Measure dimension "A" to make sure that torque converter is in proper position.

- (B) : Scale
- (C) : Straightedge

Dimension (A) : Refer to [TM-603, "Torque Converter"](#).



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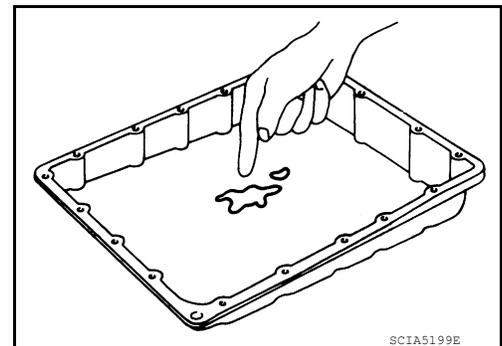
Inspection

INSPECTION AFTER DISASSEMBLY

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.

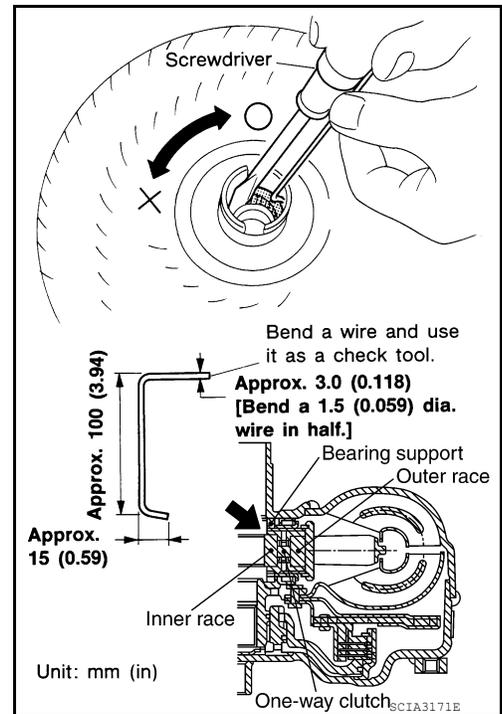
- If frictional material is detected, perform A/T fluid cooler cleaning. Refer to [TM-359, "Cleaning"](#).



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.
2. When fixing bearing support with a check tool, rotate one-way clutch spline using a screwdriver.
3. Make sure that inner race rotates clockwise only. If not, replace torque converter assembly.



1st One-way Clutch

TRANSMISSION ASSEMBLY

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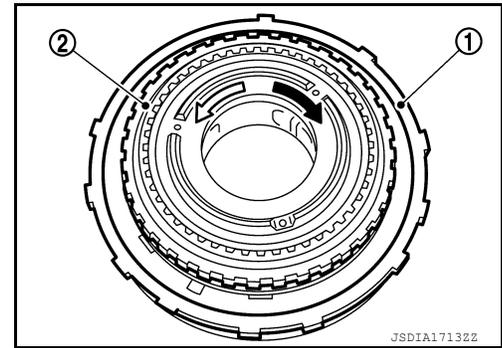
[7AT: RE7R01B]

Check operation of 1st one-way clutch.

1. Install 1st one-way clutch ① to front brake hub (with under drive carrier) ②.
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

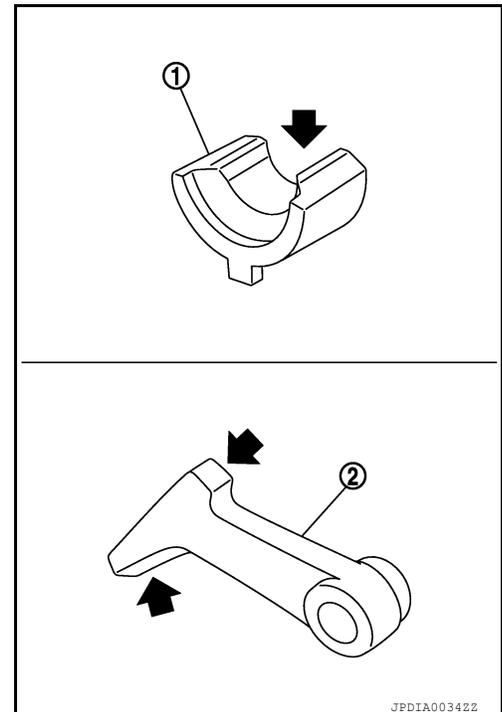
Check facing for burns, cracks or damage. If necessary, replace the damaged plate.

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 and parking pawl ② has excessive wear, abrasion, bend or any other damage, replace the components.



OIL PUMP, 2346 BRAKE, FRONT BRAKE PISTON

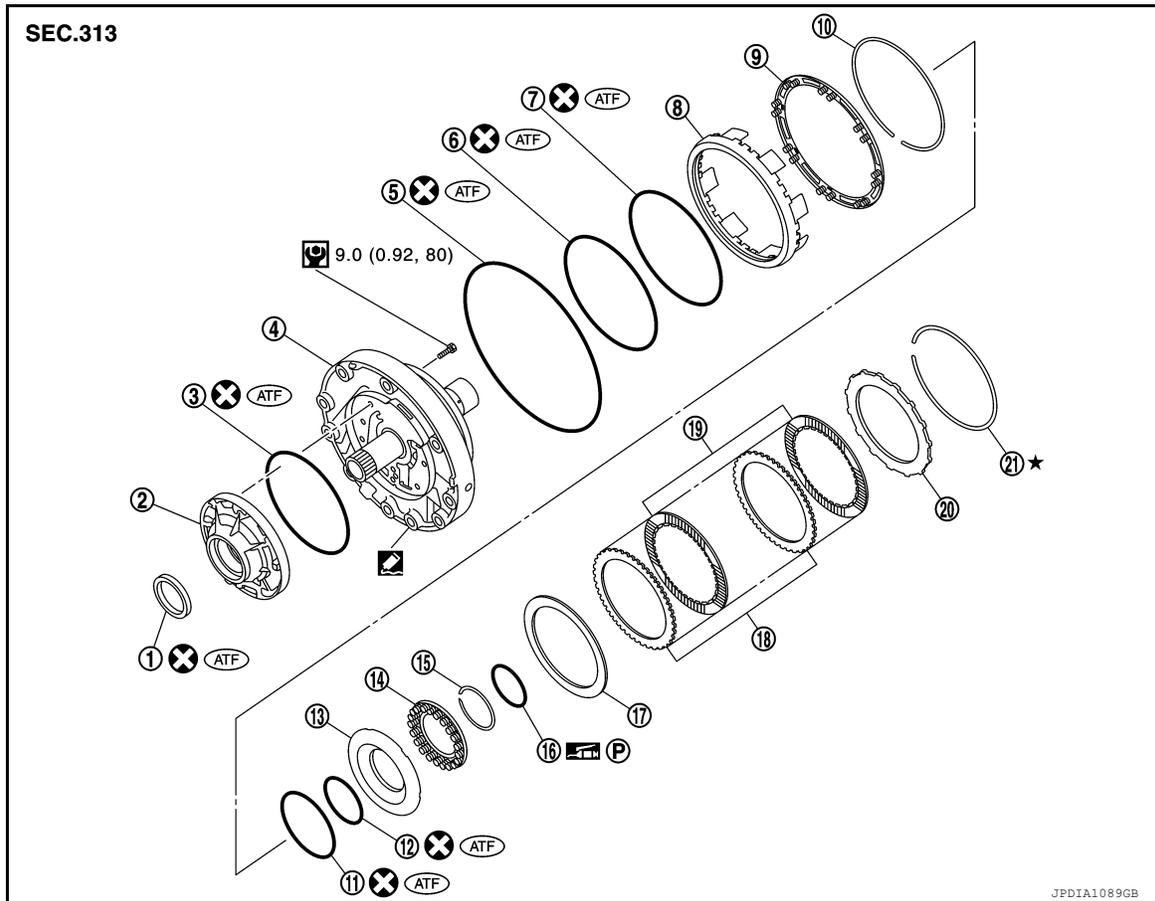
< UNIT DISASSEMBLY AND ASSEMBLY >

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OIL PUMP, 2346 BRAKE, FRONT BRAKE PISTON

Exploded View

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- | | | |
|-----------------------------|------------------------------|-------------------------------|
| ① Oil pump housing oil seal | ② Oil pump housing | ③ O-ring |
| ④ Oil pump cover | ⑤ O-ring | ⑥ D-ring |
| ⑦ D-ring | ⑧ Front brake piston | ⑨ Front brake spring retainer |
| ⑩ Snap ring | ⑪ D-ring | ⑫ D-ring |
| ⑬ 2346 brake piston | ⑭ 2346 brake spring retainer | ⑮ Snap ring |
| ⑯ Seal ring | ⑰ 2346 brake dish plate | ⑱ 2346 brake driven plate |
| ⑲ 2346 brake drive plate | ⑳ 2346 brake retaining plate | ㉑ Snap ring |

⊗ : Always replace after every disassembly.

🔧 : N·m (kg·m, in·lb)

ATF : Apply ATF

🔧 : Apply Genuine RTV silicone sealant or equivalent.

🔧@ : Apply petroleum jelly

★ : Select with proper thickness.

OIL PUMP, 2346 BRAKE, FRONT BRAKE PISTON

< UNIT DISASSEMBLY AND ASSEMBLY >

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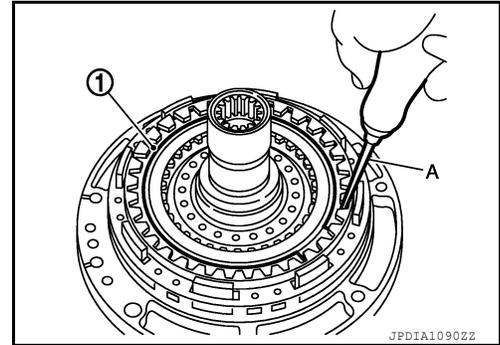
Disassembly

INFOID:000000014419298

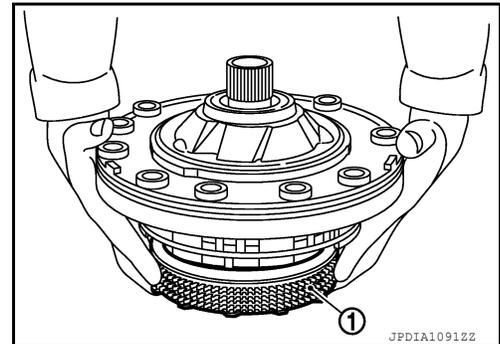
1. Remove snap ring ① from oil pump assembly using a flat-bladed screwdriver (A).

CAUTION:

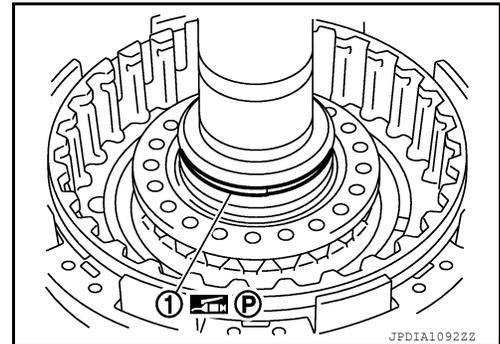
- Be careful not to scratch oil pump cover and 2346 brake retaining plate.
- Be careful not to damage snap ring.



2. Remove 2346 brake component part (retaining plate, drive plates, driven plates, and dish plate) ① from oil pump assembly.



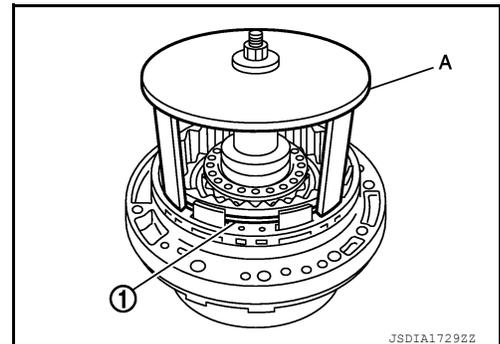
3. Remove seal ring ① from oil pump assembly.



4. Set the clutch spring compressor (SST: KV31103800) (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.



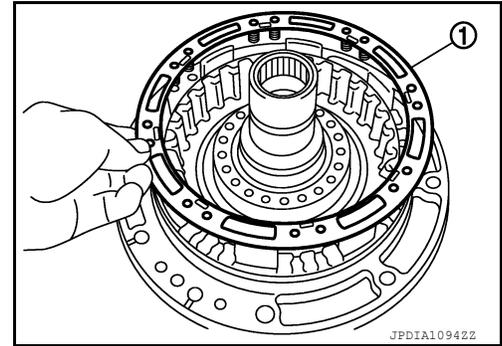
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OIL PUMP, 2346 BRAKE, FRONT BRAKE PISTON

< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01B]

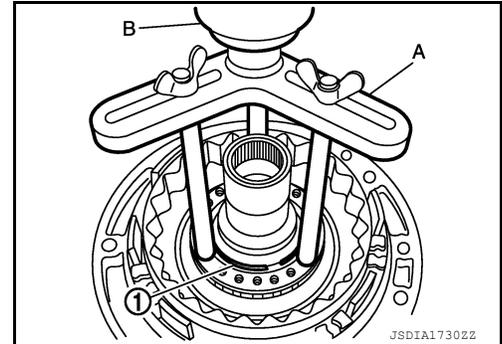
5. Remove front brake spring retainer ① from oil pump assembly.



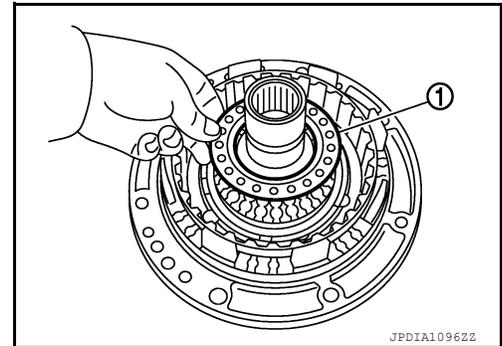
6. Set the clutch spring compressor [SST: KV31102400 (J-34285 and J-34285-87)] (A) on 2346 brake spring retainer and remove snap ring (fixing 2346 brake spring retainer) ① from oil pump assembly while compressing return spring.

(B) : Press

CAUTION:
Be careful not to expand snap ring excessively.



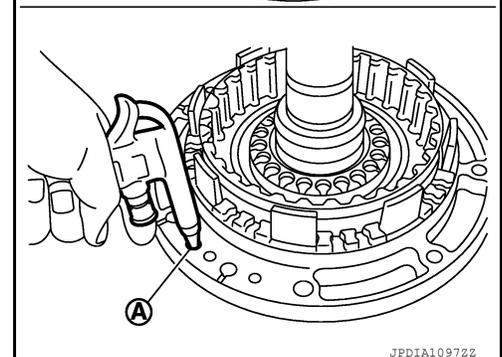
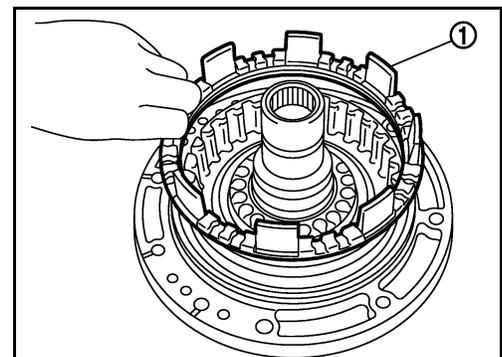
7. Remove 2346 brake spring retainer ① from oil pump assembly.



8. Remove front brake piston ① from oil pump assembly with compressed air. Refer to [TM-528, "Oil Channel"](#).

(A) : Front 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.

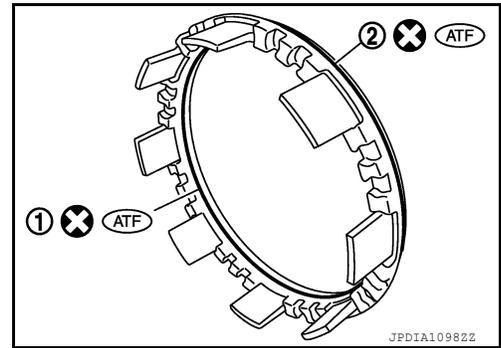


OIL PUMP, 2346 BRAKE, FRONT BRAKE PISTON

< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01B]

9. Remove D-ring (inner) ① and D-ring (outer) ② from front brake piston.

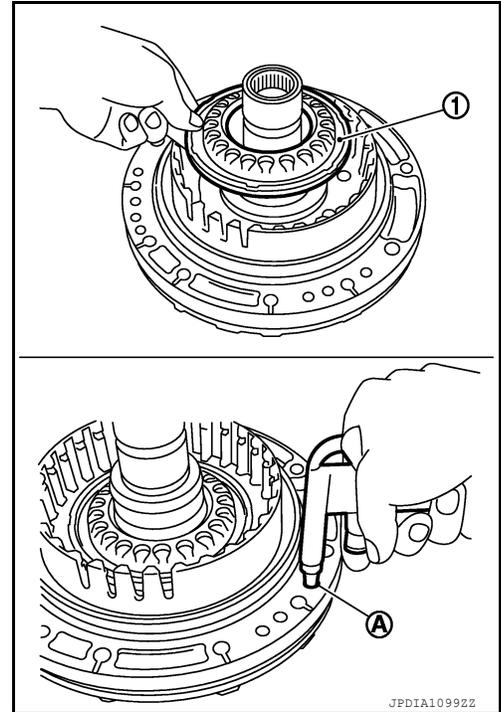


10. Remove 2346 brake piston ① from oil pump assembly with compressed air. Refer to [TM-528. "Oil Channel"](#).

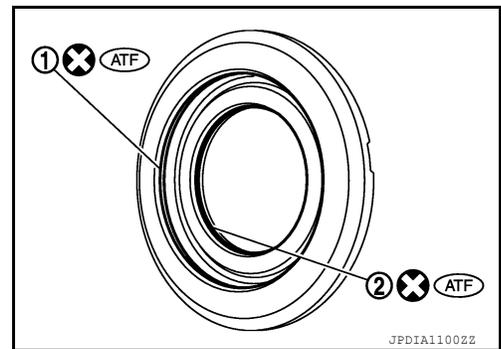
Ⓐ : 2346 brake pressure hole

CAUTION:

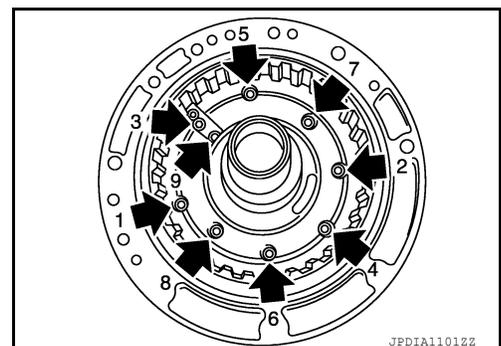
Care should be taken not to abruptly blow air. It makes piston incline, as the result, it becomes hard to disassemble the piston.



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.



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OIL PUMP, 2346 BRAKE, FRONT BRAKE PISTON

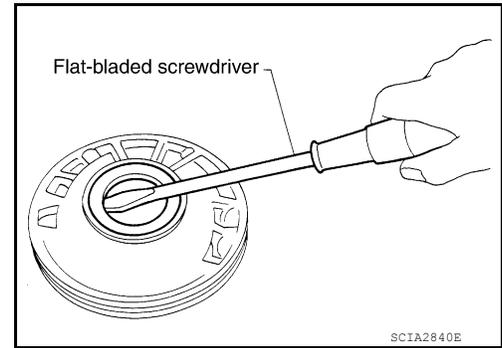
< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01B]

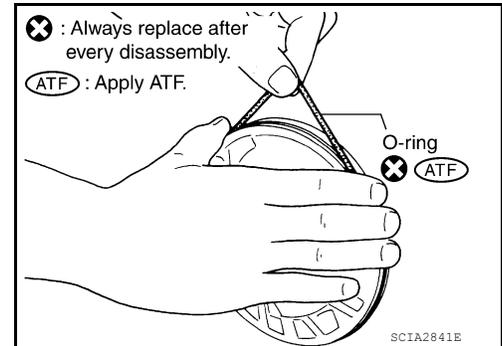
13. Remove oil pump housing oil seal using a flat-bladed screwdriver.

CAUTION:

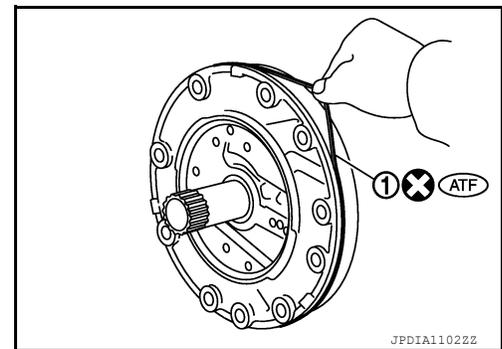
Be careful not to scratch oil pump housing.



14. Remove O-ring from oil pump housing.



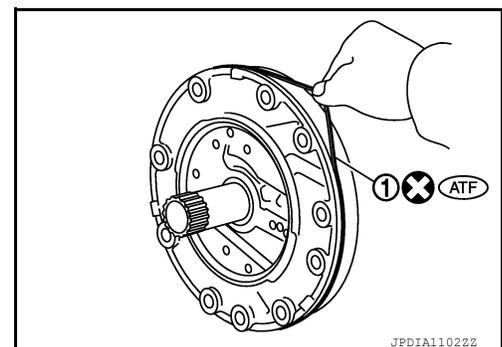
15. Remove O-ring ① from oil pump cover.



Assembly

INFOID:000000014419299

1. Install O-ring ① to oil pump cover.

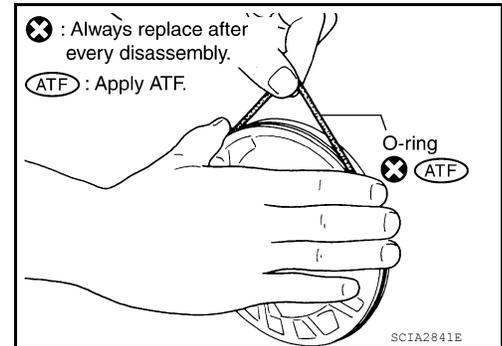


OIL PUMP, 2346 BRAKE, FRONT BRAKE PISTON

< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01B]

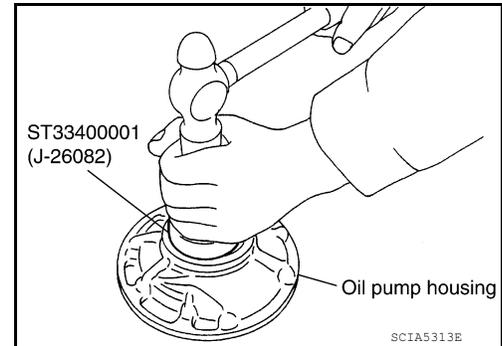
2. Install O-ring to oil pump housing.



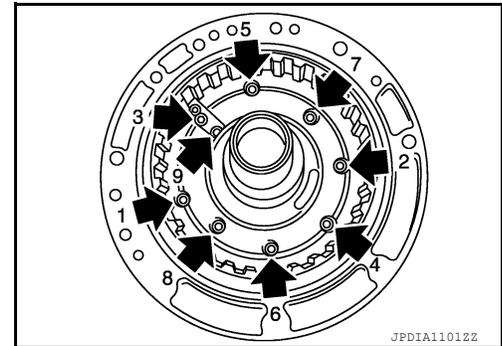
3. Using the drift, install oil pump housing oil seal to the oil pump housing until it is flush.

CAUTION:

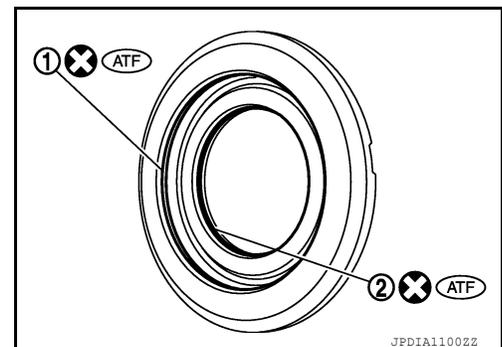
- Never reuse oil seal.
- Apply ATF to oil seal.



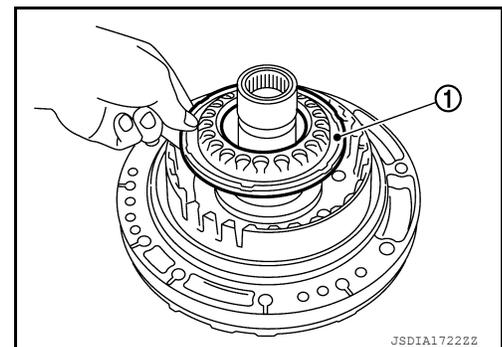
4. Install oil pump housing to oil pump cover and tighten bolts (←) to the specified torque in numerical order shown in the figure after temporarily tightening them.



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.



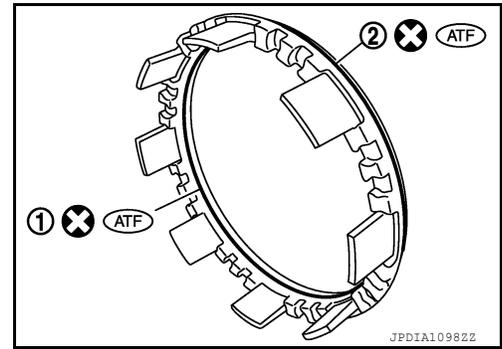
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OIL PUMP, 2346 BRAKE, FRONT BRAKE PISTON

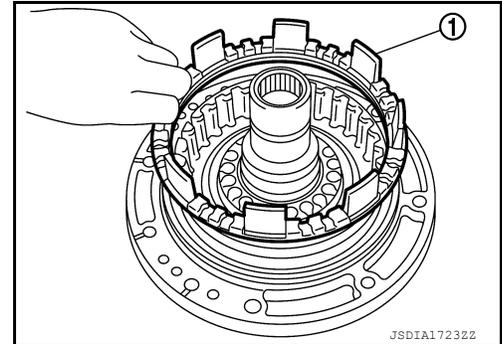
< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01B]

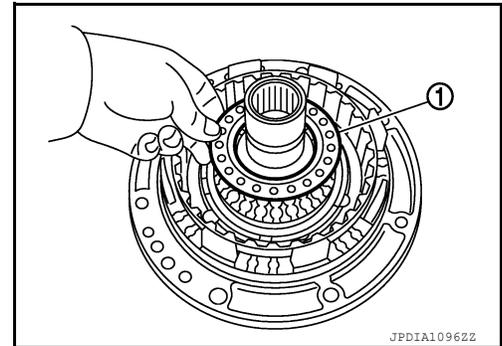
7. Install D-ring (inner) ① and D-ring (outer) ② to front brake piston.



8. Install front brake piston ① to oil pump assembly.



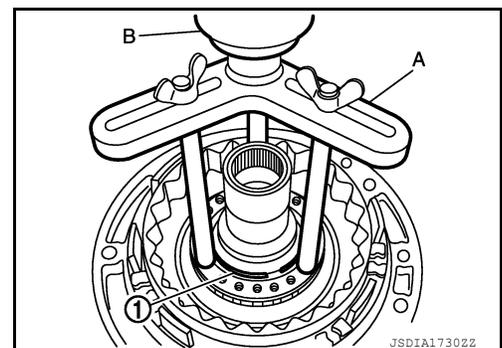
9. Install 2346 brake spring retainer ① to oil pump assembly.



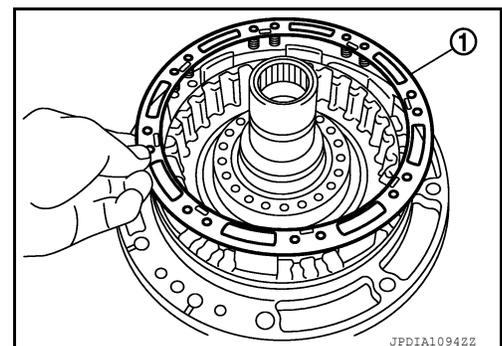
10. Set the clutch spring compressor [SST: KV31102400 (J-34285 and J-34285-87)] (A) on 2346 brake spring retainer and install snap ring (fixing 2346 brake spring retainer) ① to oil pump assembly while compressing return spring.

(B) : Press

CAUTION:
Be careful not to expand snap ring excessively.



11. Install front brake spring retainer ① to oil pump assembly.



OIL PUMP, 2346 BRAKE, FRONT BRAKE PISTON

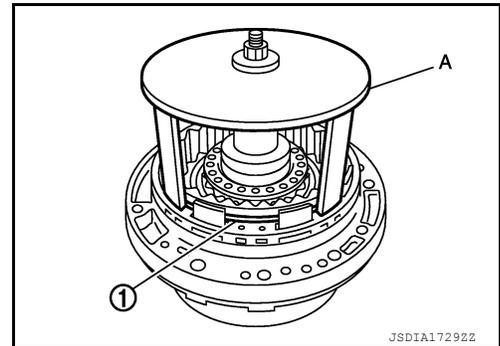
< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01B]

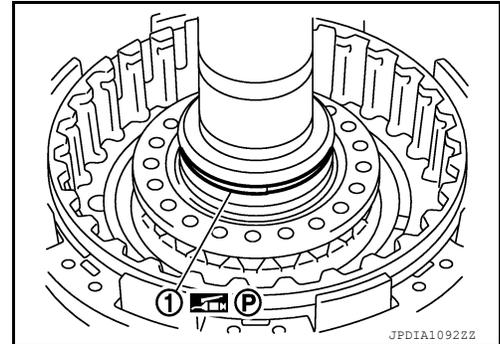
12. Set the clutch spring compressor (SST: KV31103800) (A) on front brake spring retainer and install snap ring (fixing front brake spring retainer) ① to oil pump assembly while compressing return spring.

CAUTION:

Be careful not to expand snap ring excessively.



13. Install seal ring ① to oil pump assembly.

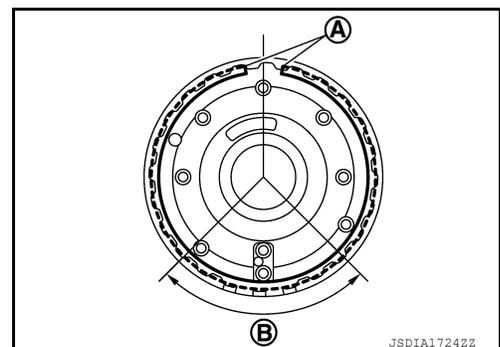
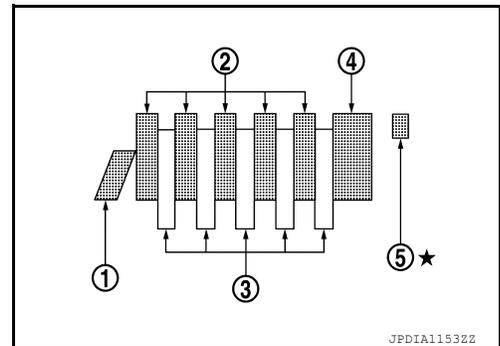


14. Install 2346 brake component part (retaining plate, drive plates, driven plates, dish plate, and snap ring) to oil pump assembly.

- ① : Dish plate
- ② : Driven plate (five pieces)
- ③ : Drive plate (five 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

INFOID:000000014419300

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.

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OIL PUMP, 2346 BRAKE, FRONT BRAKE PISTON

< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01B]

ADJUSTMENT AFTER ASSEMBLY

2346 Brake Clearance

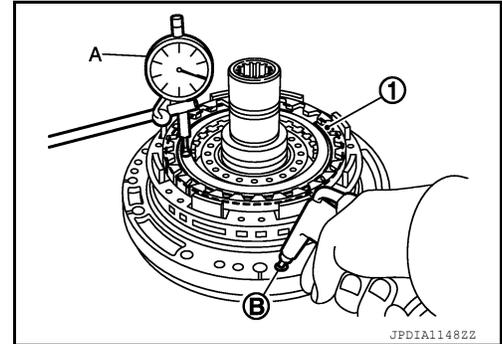
Set a dial indicator (A) as shown in the figure. Blow air into 2346 brake oil pressure hole (B), and measure 2346 brake clearance. If clearance is outside the specified value, adjust clearance by selecting an appropriate snap ring (1). Refer to [TM-528. "Oil Channel"](#).

Air pressure : 300 kPa (3.06 kg/cm², 43.5 psi)

2346 brake clearance : Refer to [TM-604. "2346 Brake Clearance"](#).

CAUTION:

Never exceed the specified air pressure value.



UNDER DRIVE CARRIER, FRONT BRAKE HUB

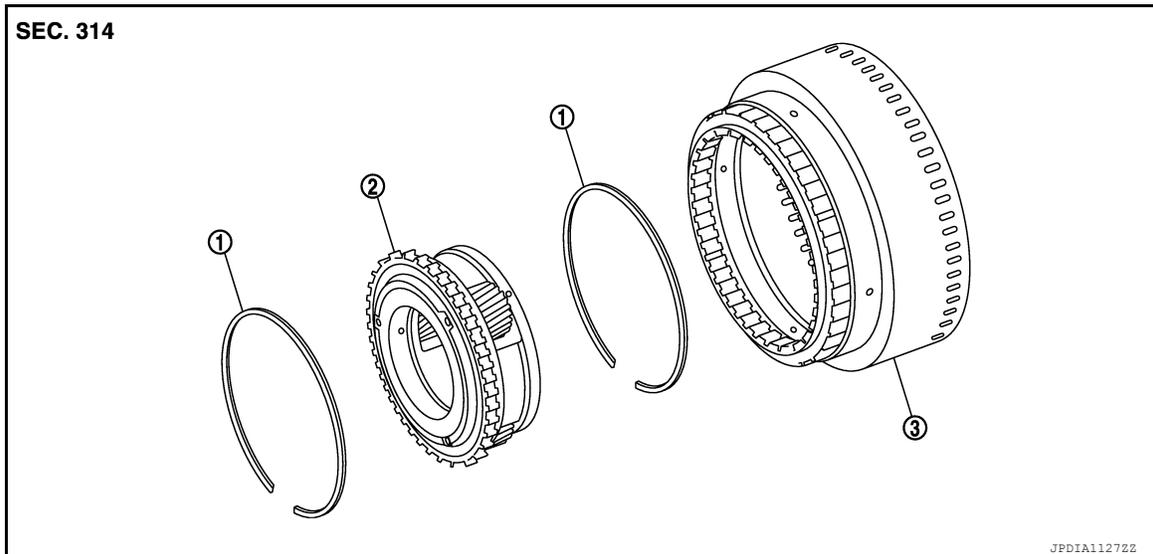
< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01B]

UNDER DRIVE CARRIER, FRONT BRAKE HUB

Exploded View

INFOID:000000014419301



① Snap ring

② Under drive carrier assembly

③ Front brake hub

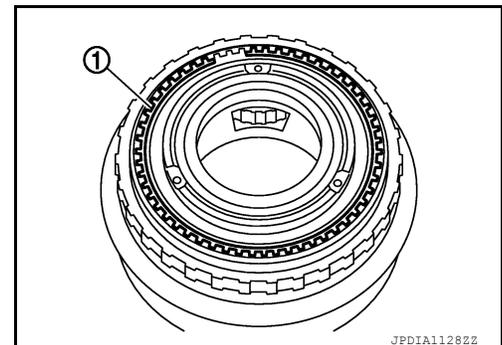
Disassembly

INFOID:000000014419302

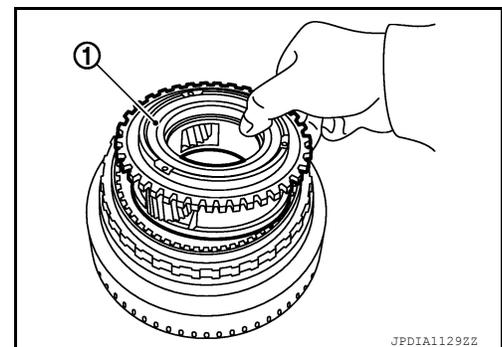
1. Remove snap ring ① from front brake hub using a flat-bladed screwdriver.

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.



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UNDER DRIVE CARRIER, FRONT BRAKE HUB

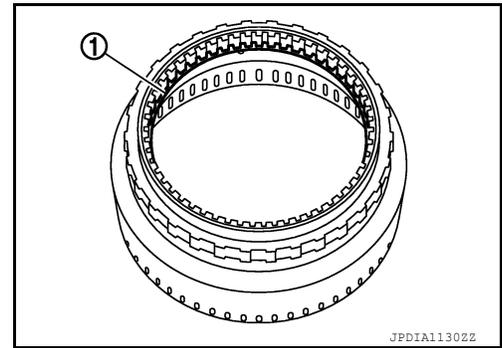
< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01B]

3. 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.



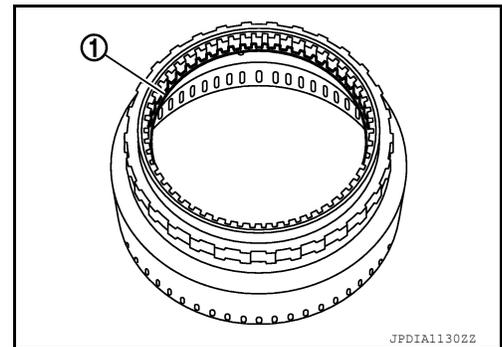
Assembly

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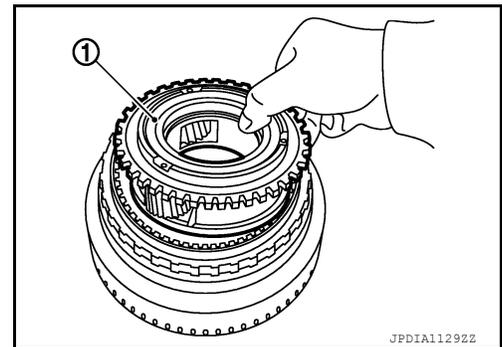
1. Install snap ring ① to front brake hub.

CAUTION:

- Be careful not to damage snap ring.



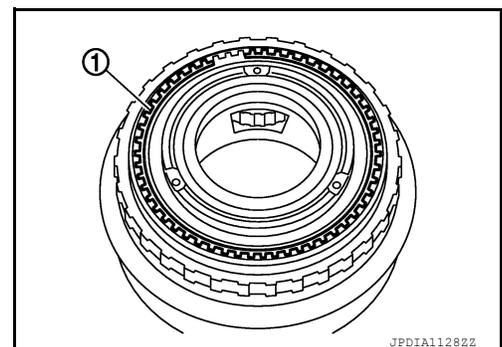
2. Install under drive carrier assembly ① to front brake hub.



3. 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:000000014419304

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

UNDER DRIVE CARRIER, FRONT BRAKE HUB

< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01B]

Check for deformation, fatigue or damage. If necessary, replace front brake hub.

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FRONT CARRIER, INPUT CLUTCH, REAR INTERNAL GEAR

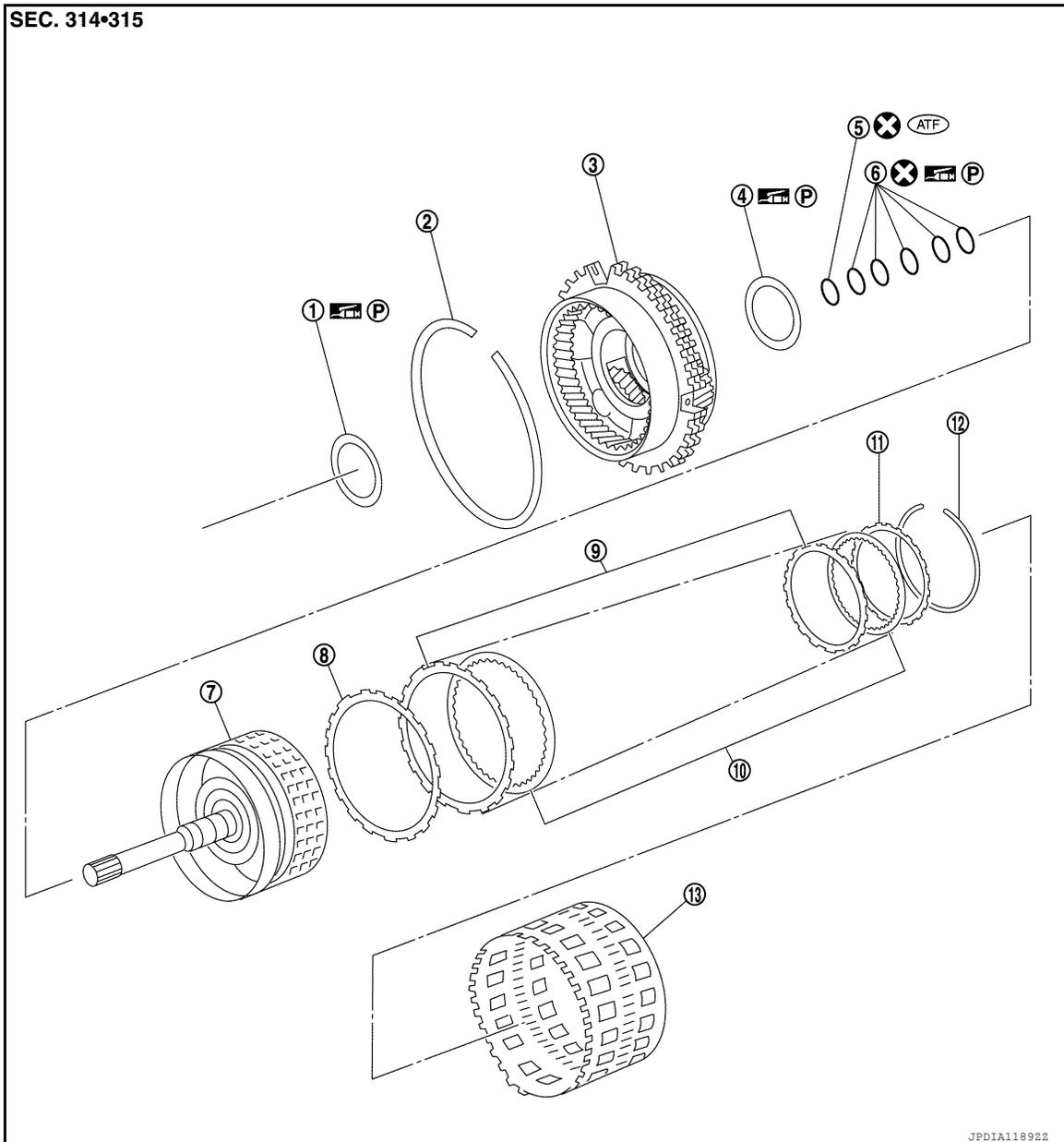
< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01B]

FRONT CARRIER, INPUT CLUTCH, REAR INTERNAL GEAR

Exploded View

INFOID:000000014419305



- | | | |
|----------------------------|--------------------------------|-----------------------------|
| ① Needle bearing | ② Snap ring | ③ Front carrier assembly |
| ④ Needle bearing | ⑤ O-ring | ⑥ Seal ring |
| ⑦ Input clutch drum | ⑧ Input clutch dish plate | ⑨ Input clutch driven plate |
| ⑩ Input clutch drive plate | ⑪ Input clutch retaining plate | ⑫ Snap ring |
| ⑬ Rear internal gear | | |

⊗ : Always replace after every disassembly.

ATF : Apply ATF.

⊗P : Apply petroleum jelly.

FRONT CARRIER, INPUT CLUTCH, REAR INTERNAL GEAR

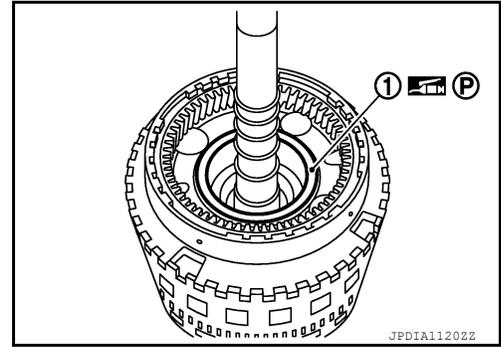
< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01B]

Disassembly

INFOID:000000014419306

1. Remove needle bearing ① from front carrier assembly.

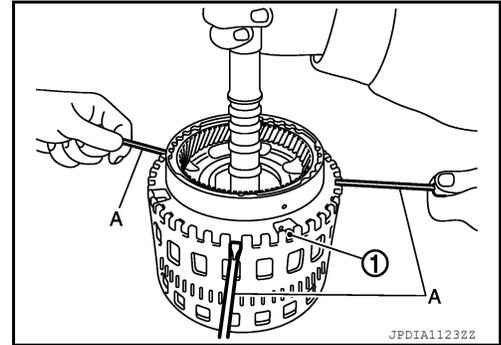


2. Compress snap ring ① using flat-bladed screwdrivers (A).

CAUTION:

- Be careful not to scratch rear internal gear.
- Be careful not to damage snap ring.

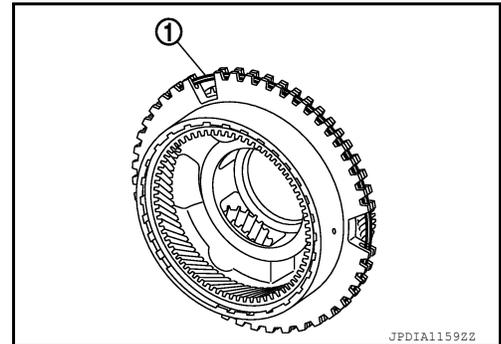
3. Remove front carrier assembly and input clutch assembly from rear internal gear.
4. Remove front carrier assembly from input clutch assembly.



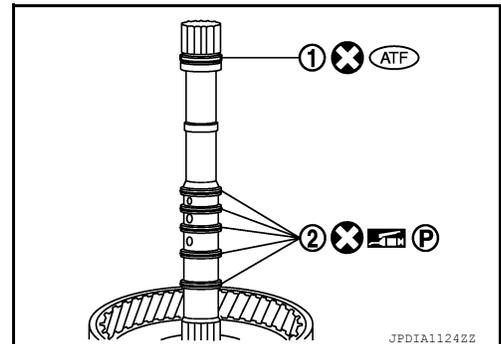
5. Remove snap ring ① from front carrier assembly.

CAUTION:

- Be careful not to expand snap ring excessively.



6. Remove O-ring ① and seal rings ② from input clutch assembly.



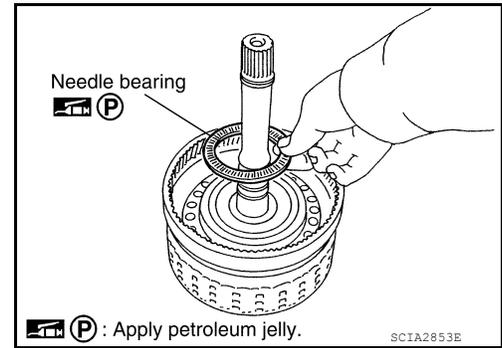
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FRONT CARRIER, INPUT CLUTCH, REAR INTERNAL GEAR

< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01B]

7. Remove needle bearing from input clutch assembly.

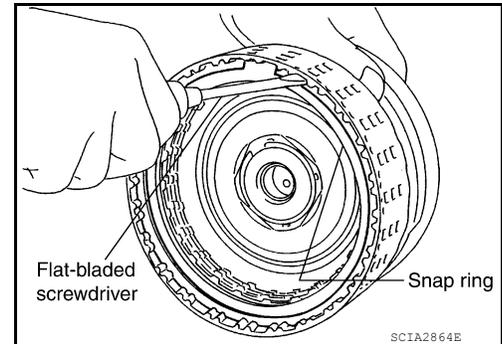


8. Remove snap ring from input clutch drum using a flat-bladed screwdriver.

CAUTION:

- Be careful not to scratch input clutch drum and input clutch retaining plate.
- Be careful not to damage snap ring.

9. Remove input clutch component part (drive plates, driven plates, retaining plate, and dish plate) from input clutch drum.



Assembly

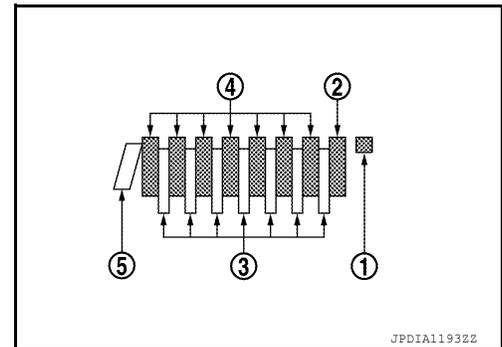
INFOID:000000014419307

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 (seven pieces)
- ④ : Driven plate (seven pieces)
- ⑤ : Dish plate

CAUTION:

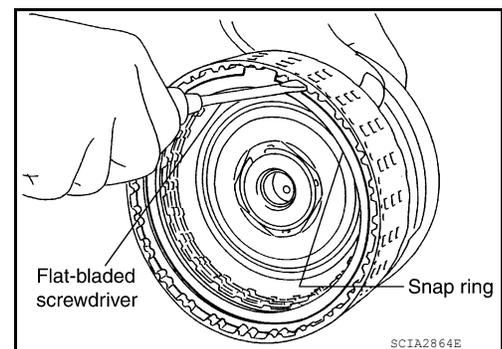
Check order of plates.



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.



FRONT CARRIER, INPUT CLUTCH, REAR INTERNAL GEAR

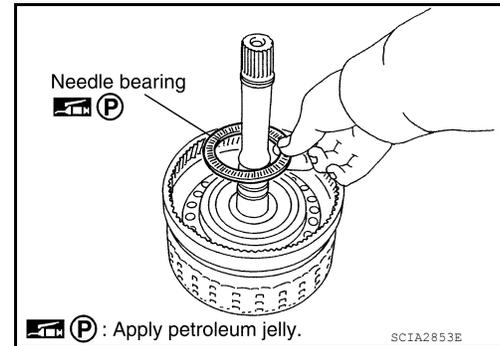
< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01B]

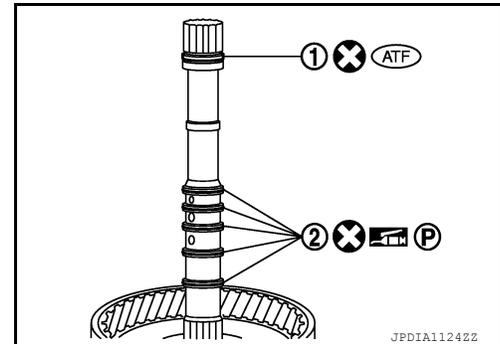
3. Install needle bearing to input clutch assembly.

CAUTION:

Check the direction of needle bearing. Refer to [TM-528](#), "[Location of Needle Bearings and Bearing Races](#)".



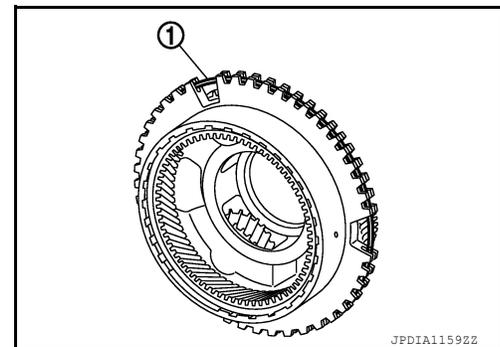
4. Install O-ring ① and seal rings ② to input clutch assembly.



5. Install snap ring ① to front carrier assembly.

CAUTION:

Be careful not to expand snap ring excessively.

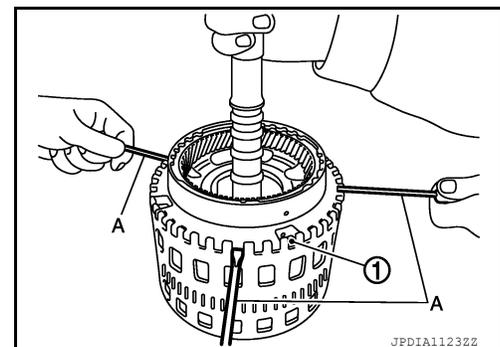


6. Compress snap ring ① using flat-bladed screwdrivers (A).

CAUTION:

- Be careful not to scratch rear internal gear.
- Be careful not to damage snap ring.

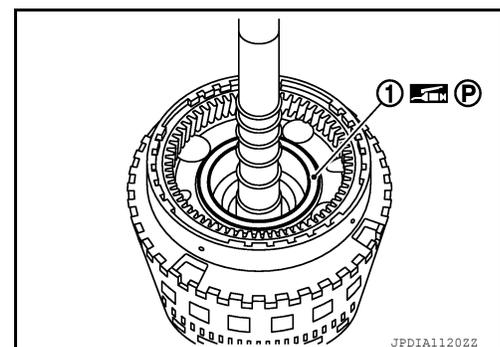
7. Install front carrier assembly and input clutch assembly to rear internal gear.



8. Install needle bearing ① to front carrier assembly.

CAUTION:

Check the direction of needle bearing. Refer to [TM-528](#), "[Location of Needle Bearings and Bearing Races](#)".



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FRONT CARRIER, INPUT CLUTCH, REAR INTERNAL GEAR

< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01B]

Inspection

INFOID:000000014419308

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 assembly.

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

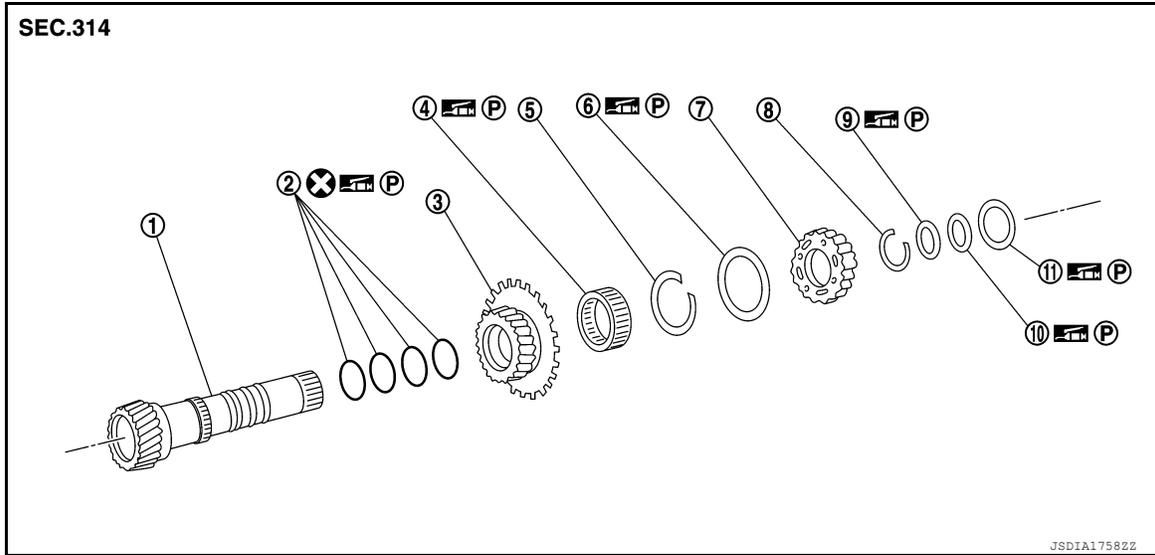
Check for deformation, fatigue or damage. If necessary, replace rear internal gear.

MID SUN GEAR, REAR SUN GEAR, HIGH AND LOW REVERSE CLUTCH HUB
 < UNIT DISASSEMBLY AND ASSEMBLY > [7AT: RE7R01B]

MID SUN GEAR, REAR SUN GEAR, HIGH AND LOW REVERSE CLUTCH HUB

Exploded View

INFOID:000000014419309



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|-----------------------------------|------------------|------------------|
| ① Mid sun gear | ② Seal ring | ③ Rear sun gear |
| ④ 2nd one-way clutch | ⑤ Snap ring | ⑥ Needle bearing |
| ⑦ High and low reverse clutch hub | ⑧ Snap ring | ⑨ Bearing race |
| ⑩ Bearing race | ⑪ Needle bearing | |

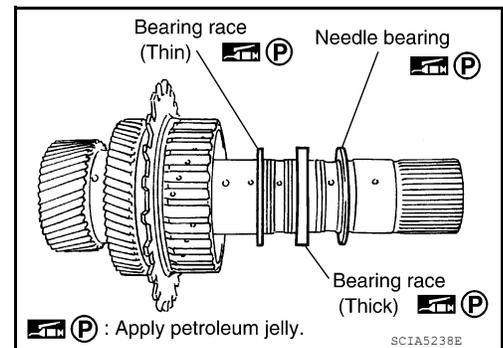
⊗ : Always replace after every disassembly.

☰Ⓟ : Apply petroleum jelly

Disassembly

INFOID:000000014419310

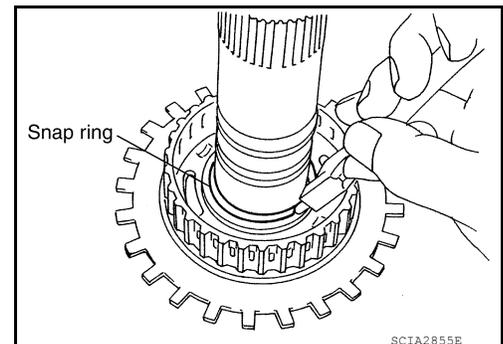
1. Remove needle bearing and bearing races from high and low reverse clutch hub.



2. Remove snap ring from mid sun gear assembly using pair of snap ring pliers.

CAUTION:

Be careful not to expand snap ring excessively.



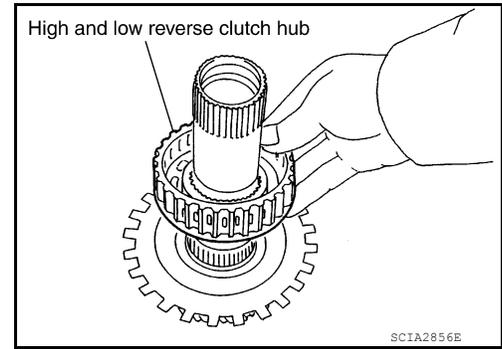
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MID SUN GEAR, REAR SUN GEAR, HIGH AND LOW REVERSE CLUTCH HUB

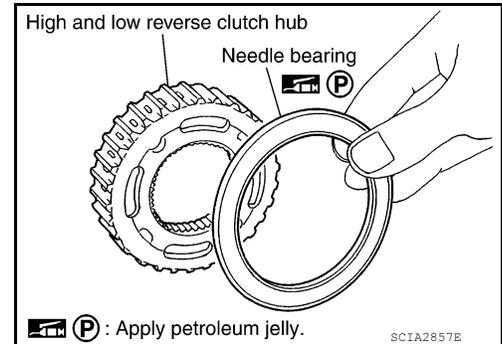
< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01B]

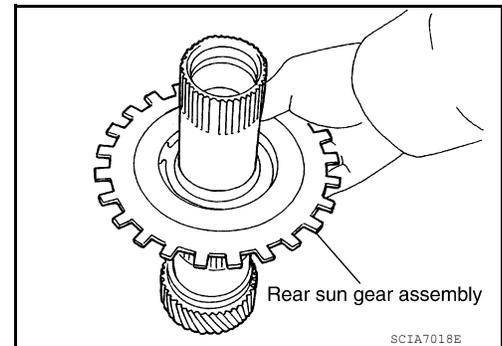
3. Remove high and low reverse clutch hub from mid sun gear assembly.



4. Remove needle bearing from high and low reverse clutch hub.



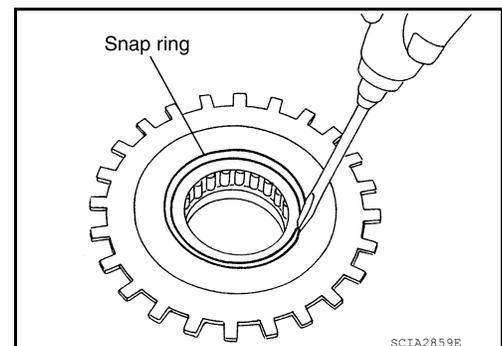
5. Remove rear sun gear assembly from mid sun gear assembly.



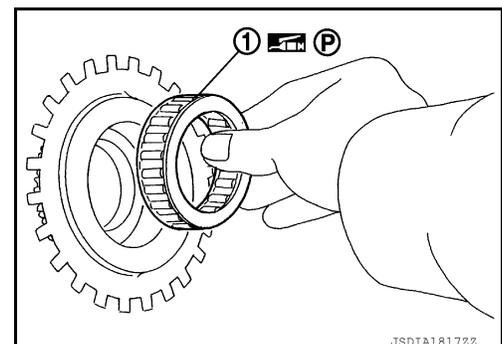
6. Remove snap ring from rear sun gear using a flat-bladed screwdriver.

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 ① from rear sun gear.

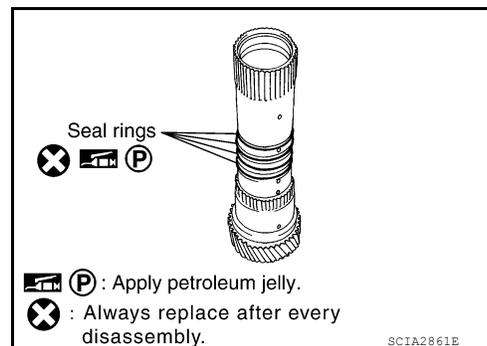


MID SUN GEAR, REAR SUN GEAR, HIGH AND LOW REVERSE CLUTCH HUB

< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01B]

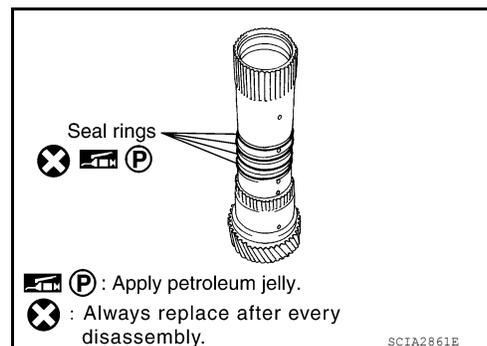
8. Remove seal rings from mid sun gear.



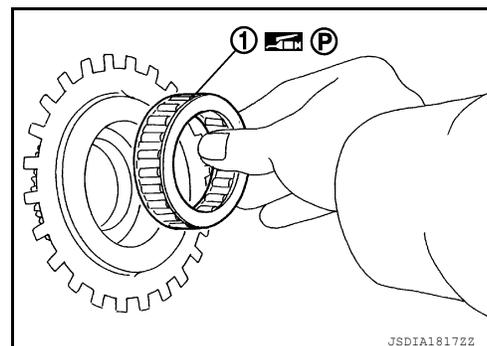
Assembly

INFOID:000000014419311

1. Install seal rings to mid sun gear.



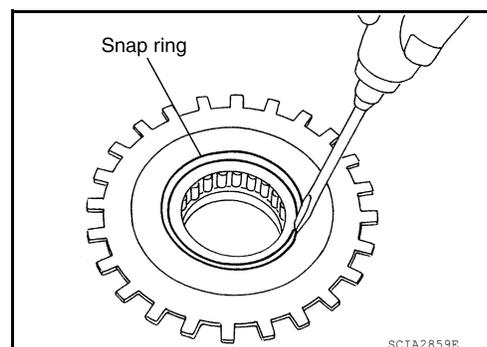
2. Install 2nd one-way clutch ① to rear sun gear.



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.



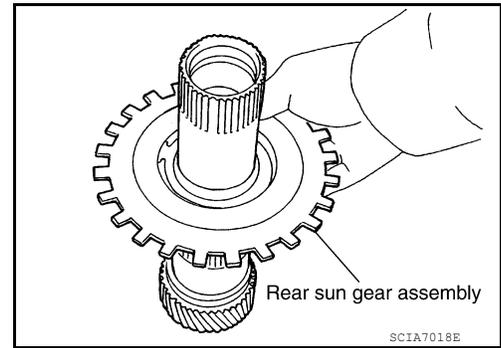
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MID SUN GEAR, REAR SUN GEAR, HIGH AND LOW REVERSE CLUTCH HUB

< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01B]

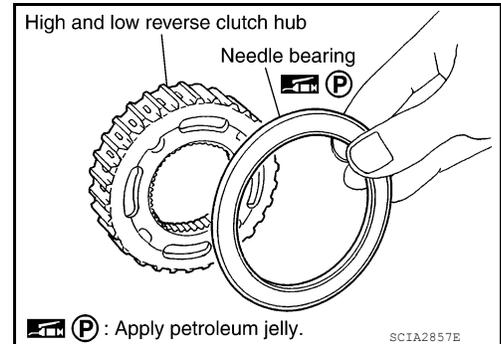
4. Install rear sun gear assembly to mid sun gear assembly.



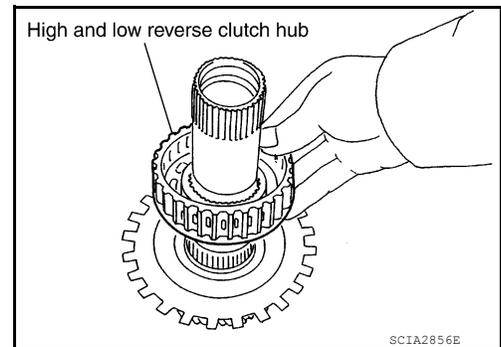
5. Install needle bearing to high and low reverse clutch hub.

CAUTION:

Check the direction of needle bearing. Refer to [TM-528](#), "[Location of Needle Bearings and Bearing Races](#)".



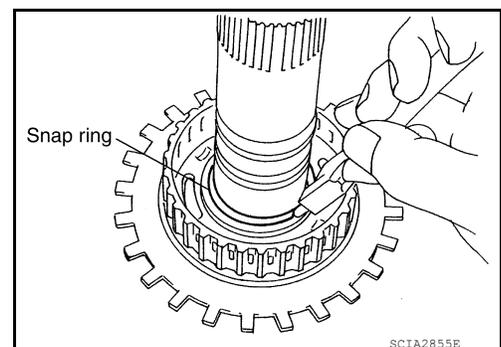
6. Install high and low reverse clutch hub to mid sun gear assembly.



7. Install snap ring to mid sun gear assembly using pair of snap ring pliers.

CAUTION:

Be careful not to expand snap ring excessively.



8. Check operation of 2nd one-way clutch.

MID SUN GEAR, REAR SUN GEAR, HIGH AND LOW REVERSE CLUTCH HUB

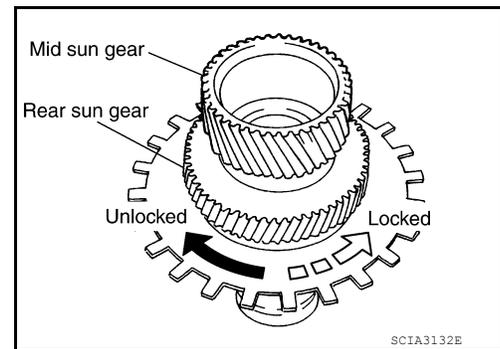
< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01B]

- Hold mid sun gear and turn rear sun gear.
- Check 2nd one-way clutch for correct locking and unlocking directions.

CAUTION:

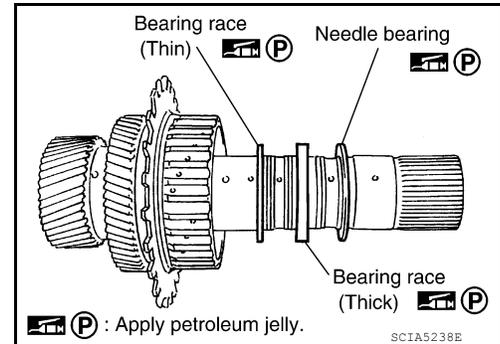
If not as shown in the figure, check installation direction of 2nd one-way clutch.



- Install needle bearing and bearing races to high and low reverse clutch hub.

CAUTION:

Check the direction of needle bearing and bearing races. Refer to [TM-528, "Location of Needle Bearings and Bearing Races"](#).



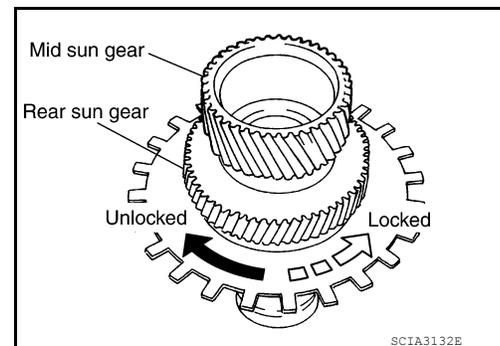
Inspection

INFOID:000000014419312

INSPECTION AFTER DISASSEMBLY

2nd One-way Clutch

- Hold mid sun gear and turn rear sun gear.
- Check 2nd one-way clutch for correct locking and unlocking 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.

HIGH AND LOW REVERSE CLUTCH

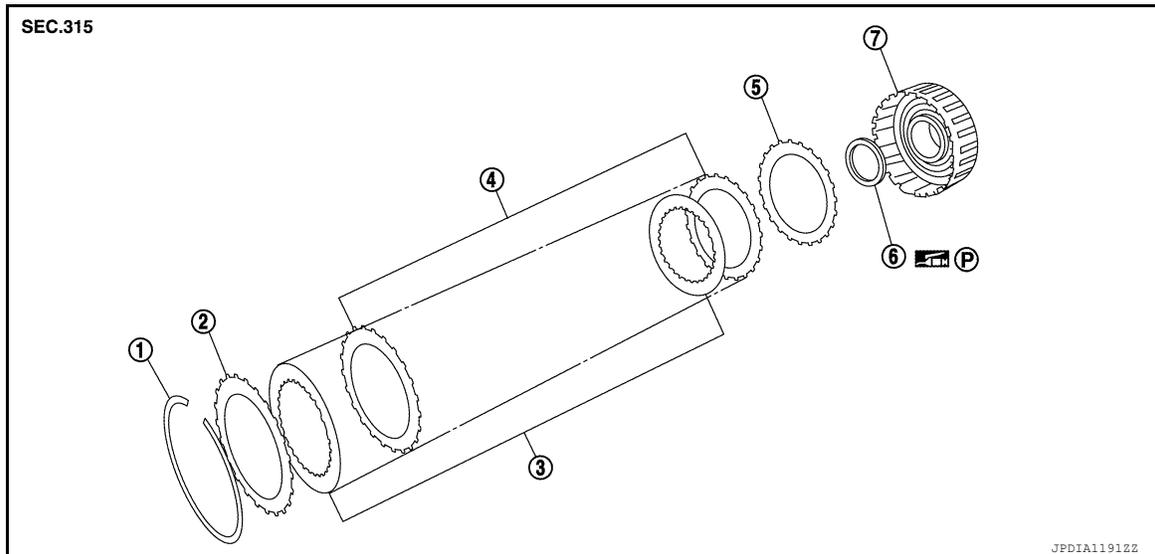
< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01B]

HIGH AND LOW REVERSE CLUTCH

Exploded View

INFOID:000000014419313

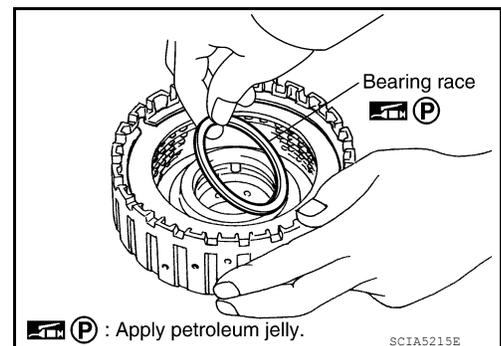


- | | | |
|---|--|--|
| 1. Snap ring | 2. High and low reverse clutch retaining plate | 3. High and low reverse clutch drive plate |
| 4. High and low reverse clutch driven plate | 5. High and low reverse clutch dish plate | 6. Bearing race |
| 7. High and low reverse clutch drum | | |
- ☞Ⓟ : Apply petroleum jelly

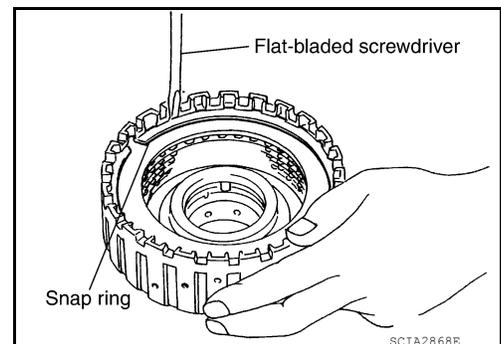
Disassembly

INFOID:000000014419314

1. Remove bearing race from high and low reverse clutch drum.



2. Remove snap ring from high and low reverse clutch drum using a flat-bladed screwdriver.
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.



HIGH AND LOW REVERSE CLUTCH

< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01B]

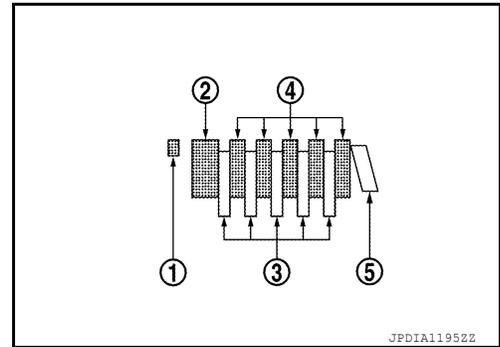
Assembly

INFOID:000000014419315

1. Install high and low reverse clutch component part (dish plate, drive plates, driven plates, and retaining plate) to high and low reverse clutch drum.

- ① : Snap ring
- ② : Retaining plate
- ③ : Drive plate (five pieces)
- ④ : Driven plate (five pieces)
- ⑤ : Dish plate

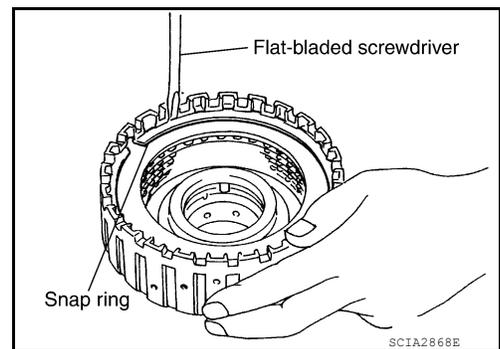
CAUTION:
Check the order of plates.



2. Install snap ring to high and low reverse clutch drum using a flat-bladed screwdriver.

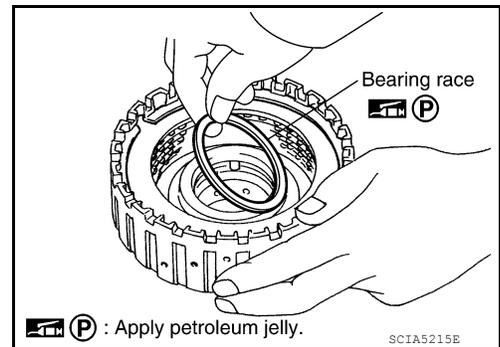
CAUTION:

- Be careful not to scratch high and low reverse clutch drum.
- Be careful not to damage snap ring.



3. Install bearing race to high and low reverse clutch drum.

CAUTION:
Check the direction of bearing race. Refer to [TM-528, "Location of Needle Bearings and Bearing Races"](#).



Inspection

INFOID:000000014419316

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

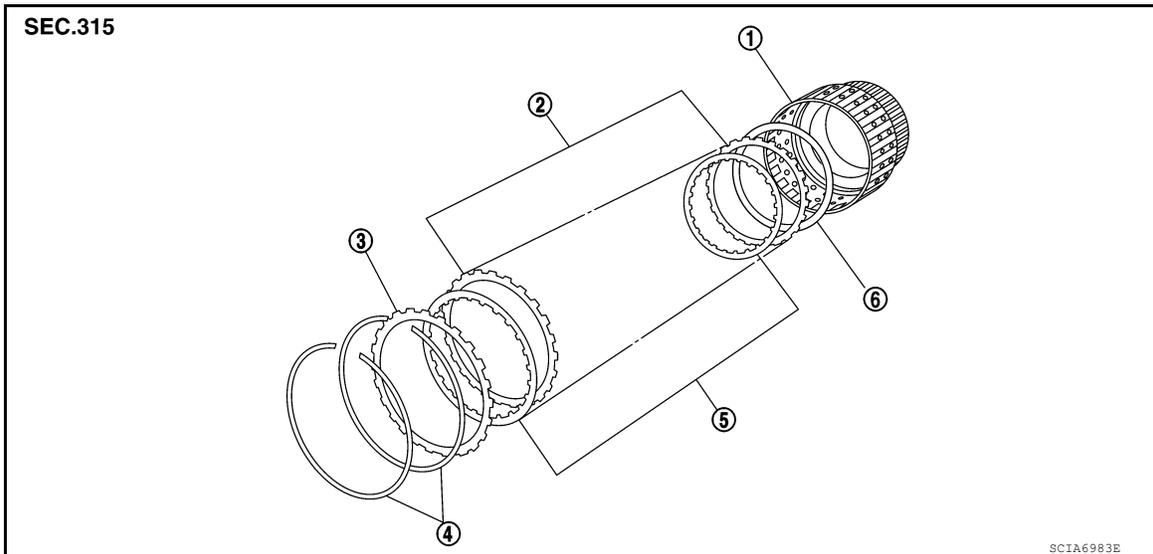
< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01B]

DIRECT CLUTCH

Exploded View

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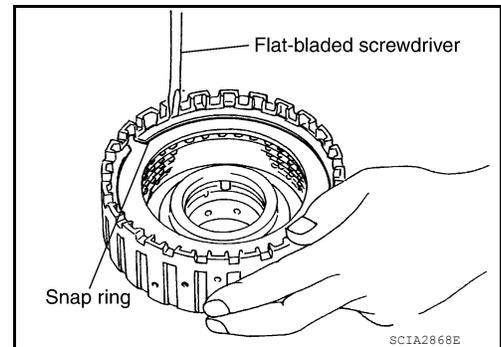


- | | | |
|----------------------|------------------------------|---------------------------------|
| ① Direct clutch drum | ② Direct clutch driven plate | ③ Direct clutch retaining plate |
| ④ Snap ring | ⑤ Direct clutch drive plate | ⑥ Direct clutch dish plate |

Disassembly

INFOID:000000014419318

1. Remove snap rings from 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.
2. Remove direct clutch component part (drive plates, driven plates, retaining plate, and dish plate) from direct clutch drum.



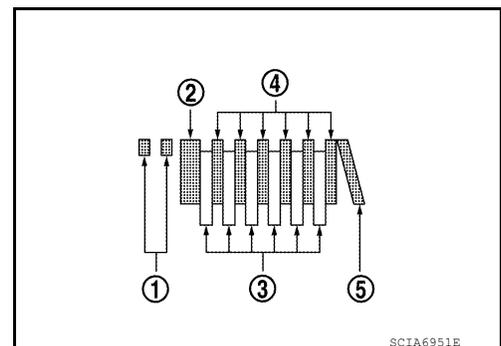
Assembly

INFOID:000000014419319

1. Install direct clutch component part (drive plates, driven plates, retaining plate, and dish plate) to direct clutch drum.

- | | |
|---|-----------------------------|
| ① | : Snap ring |
| ② | : Retaining plate |
| ③ | : Drive plate (six pieces) |
| ④ | : Driven plate (six pieces) |
| ⑤ | : Dish plate |

CAUTION:
Check the order of plates.



DIRECT CLUTCH

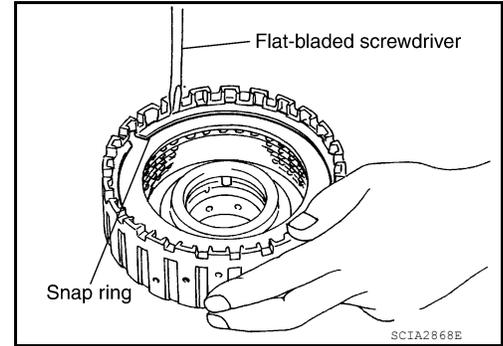
< UNIT DISASSEMBLY AND ASSEMBLY >

[7AT: RE7R01B]

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.



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 Plates

Check facing for burns, cracks or damage.

Direct Clutch Drum

Check for deformation, fatigue or damage or burns.

INFOID:000000014419320

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SERVICE DATA AND SPECIFICATIONS (SDS)

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[7AT: RE7R01B]

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

General Specification

INFOID:000000014419321

Applied model	Engine	VK56VD
	Axle	2WD/4WD
Transmission model		RE7R01B
Stall torque ratio		1.94 : 1
Transmission gear ratio	1st	4.887
	2nd	3.170
	3rd	2.027
	4th	1.412
	5th	1.000
	6th	0.864
	7th	0.775
	Reverse	4.041
Recommended fluid and fluid capacity	Refer to MA-13. "VK56VD Gasoline Engine : Fluids and Lubricants" .	

Vehicle Speed at Which Gear Shifting Occurs

INFOID:000000014419322

NORMAL MODE

Unit: km/h (MPH)

Gear position	Throttle position	
	Full throttle	Half throttle
D1 → D2	56 – 60 (35 – 37)	42 – 46 (26 – 29)
D2 → D3	89 – 97 (55 – 60)	73 – 81 (45 – 50)
D3 → D4	141 – 151 (88 – 94)	112 – 122 (70 – 76)
D4 → D5	205 – 215 (127 – 134)	134 – 144 (83 – 89)
D5 → D6	250 – 260 (155 – 162)	173 – 183 (108 – 114)
D6 → D7	250 – 260 (155 – 162)	206 – 216 (128 – 134)
D7 → D6	240 – 250 (149 – 155)	161 – 171 (100 – 106)
D6 → D5	240 – 250 (149 – 155)	130 – 140 (81 – 87)
D5 → D4	180 – 190 (112 – 118)	84 – 94 (52 – 58)
D4 → D3	126 – 136 (78 – 85)	58 – 68 (36 – 42)
D3 → D2	66 – 74 (41 – 46)	30 – 38 (19 – 24)
D2 → D1	23 – 27 (14 – 17)	10 – 14 (6 – 9)

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

TOW MODE

Unit: km/h (MPH)

Gear position	Throttle position	
	Full throttle	Half throttle
D1 → D2	57 – 61 (35 – 38)	50 – 54 (31 – 34)
D2 → D3	89 – 97 (55 – 60)	76 – 84 (47 – 52)
D3 → D4	141 – 151 (88 – 94)	116 – 126 (72 – 78)

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

[7AT: RE7R01B]

D4 → D5	205 – 215 (127 – 134)	159 – 169 (99 – 105)
D5 → D6	251 – 261 (156 – 162)	189 – 199 (117 – 124)
D6 → D7	251 – 261 (156 – 162)	215 – 225 (134 – 140)
D7 → D6	240 – 250 (149 – 155)	161 – 171 (100 – 106)
D6 → D5	240 – 250 (149 – 155)	130 – 140 (81 – 87)
D5 → D4	180 – 190 (112 – 118)	84 – 94 (52 – 58)
D4 → D3	126 – 136 (78 – 85)	58 – 68 (36 – 42)
D3 → D2	77 – 85 (48 – 53)	30 – 38 (19 – 24)
D2 → D1	24 – 28 (15 – 17)	10 – 14 (6 – 9)

- At half throttle, the accelerator opening is 4/8 of the full opening.
- The vehicle speed included in the above table is a speed with the tow mode ON and a heavy load towed.

Vehicle Speed at Which Lock-up Occurs/Releases

INFOID:0000000014419323

Throttle position	Vehicle speed km/h (MPH)	
	Lock-up ON	Lock-up OFF
Closed throttle	48 – 56 (30 – 35)	50 – 58 (31 – 36)
Half throttle	163 – 171 (101 – 106)	163 – 171 (101 – 106)

- Vehicle speed with D5 position.
- At closed throttle, the accelerator opening is less than 1/8 condition. (Closed throttle position signal OFF)
- At half throttle, the accelerator opening is 4/8 of the full opening.

Stall Speed

INFOID:0000000014419324

2WD MODELS

Stall speed	2,052 – 2,352 rpm
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4WD MODELS

4WD shift switch*	4H	4L
Stall speed	2,052 – 2,352 rpm	1,781 – 2,081 rpm

*: Refer to [DLN-25. "4WD SYSTEM : System Description"](#).

Torque Converter

INFOID:0000000014419325

Dimension between end of converter housing and torque converter	24.0 mm (0.94 in)
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Total End Play

INFOID:0000000014419326

		Unit: mm (in)
Total end play	Standard	0.25 – 0.55 (0.0098 – 0.0217)
Thickness of bearing race for adjusting total end play		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)

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

[7AT: RE7R01B]

Reverse Brake Clearance

INFOID:000000014419327

Unit: mm (in)

Reverse brake clearance	Standard	0.8 – 1.2 (0.031 – 0.047)
Thickness of retaining plate for adjusting 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) 6.0 (0.236)

Front Brake Clearance

INFOID:000000014419328

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:000000014419329

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)