

TM

SECTION

TRANSAXLE & TRANSMISSION

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BASIC INSPECTION

DIAGNOSIS AND REPAIR WORK FLOW

Diagnosis Flow

INFOID:000000003902792

1.OBTAIN INFORMATION ABOUT SYMPTOM

1. Refer to [TM-9, "Question sheet"](#) and interview the customer to obtain the malfunction information (conditions and environment when the malfunction occurred) as much as possible when the customer brings in the vehicle.
2. Check the following:
 - Service history
 - Harnesses and connectors malfunction. Refer to [GI-35, "Intermittent Incident"](#).

>> GO TO 2.

2.CHECK DTC

1. Before checking the malfunction, check whether any DTC exists.
2. If DTC exists, perform the following operations.
 - Record the DTC and freeze frame data. (Print out the data using CONSULT-III and affix 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-168, "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-162, "Fail-Safe"](#).When a malfunction symptom is reproduced, the question sheet is effective. Refer to [TM-9, "Question 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-162, "Fail-Safe"](#).When a malfunction symptom is reproduced, the question sheet is effective. Refer to [TM-9, "Question 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-166, "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-35, "Intermittent Incident"](#).

DIAGNOSIS AND REPAIR WORK FLOW

< BASIC INSPECTION >

[7AT: RE7R01A (VQ35HR)]

6.IDENTIFY MALFUNCTIONING SYSTEM WITH “DIAGNOSIS CHART BY SYMPTOM”

Use [TM-168. "Symptom Table"](#) from the symptom inspection result in step 4. Then identify where to start performing the diagnosis based on possible causes and symptoms.

>> GO TO 8.

7.REPAIR OR REPLACE THE MALFUNCTIONING PARTS

Repair or replace the detected malfunctioning parts.

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

>> GO TO 8.

8.FINAL CHECK

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

Is DTC or malfunction symptom reproduced?

YES-1 >> DTC is reproduced: GO TO 5.

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

NO >> Before delivering the vehicle to the customer, make sure that DTC is erased.

Question sheet

INFOID:0000000003902793

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: RE7R01A (VQ35HR)]

Question Sheet	
Symptoms	<input type="checkbox"/> Vehicle does not move (<input type="checkbox"/> Any position <input type="checkbox"/> Particular position)
	<input type="checkbox"/> No up-shift (<input type="checkbox"/> 1st → 2nd <input type="checkbox"/> 2nd → 3rd <input type="checkbox"/> 3rd → 4th <input type="checkbox"/> 4th → 5th <input type="checkbox"/> 5th → 6th <input type="checkbox"/> 6th → 7th)
	<input type="checkbox"/> No down-shift (<input type="checkbox"/> 7th → 6th <input type="checkbox"/> 6th → 5th <input type="checkbox"/> 5th → 4th <input type="checkbox"/> 4th → 3rd <input type="checkbox"/> 3rd → 2nd <input type="checkbox"/> 2nd → 1st)
	<input type="checkbox"/> Lock-up malfunction
	<input type="checkbox"/> Shift point too high or too low
	<input type="checkbox"/> Shift shock or slip
	<input type="checkbox"/> 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	

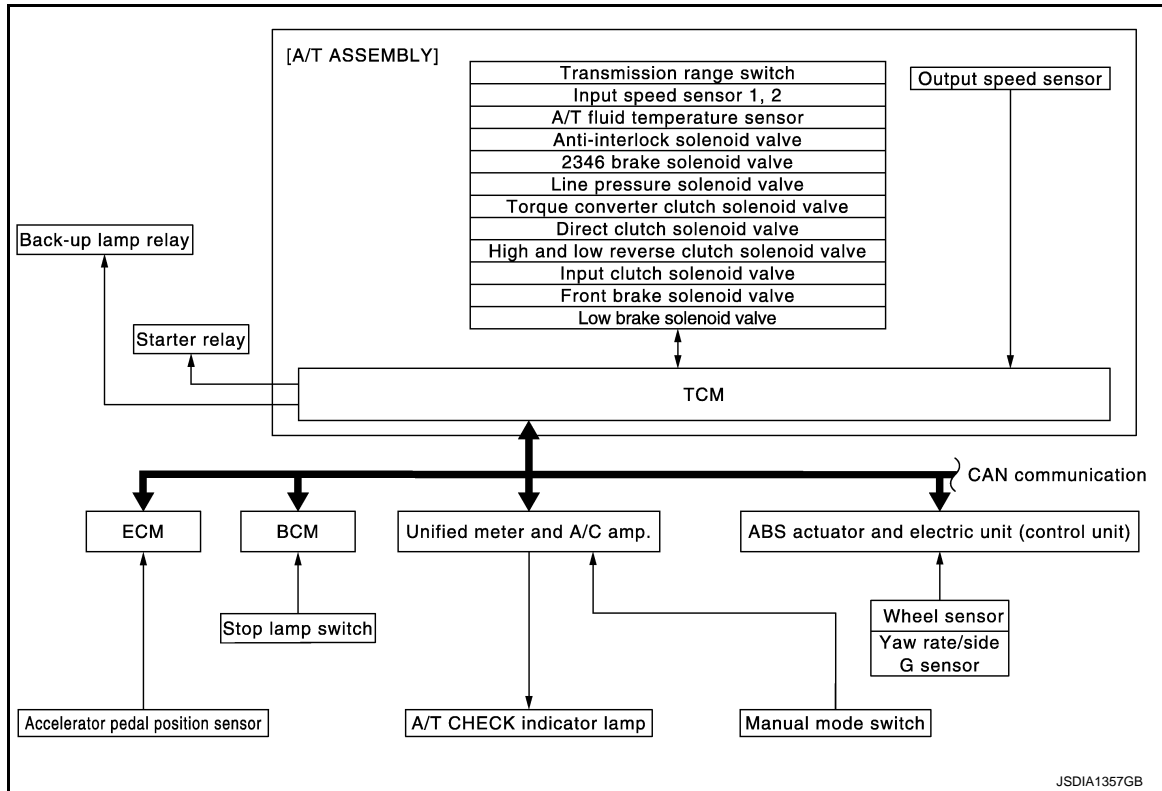
SYSTEM DESCRIPTION

A/T CONTROL SYSTEM

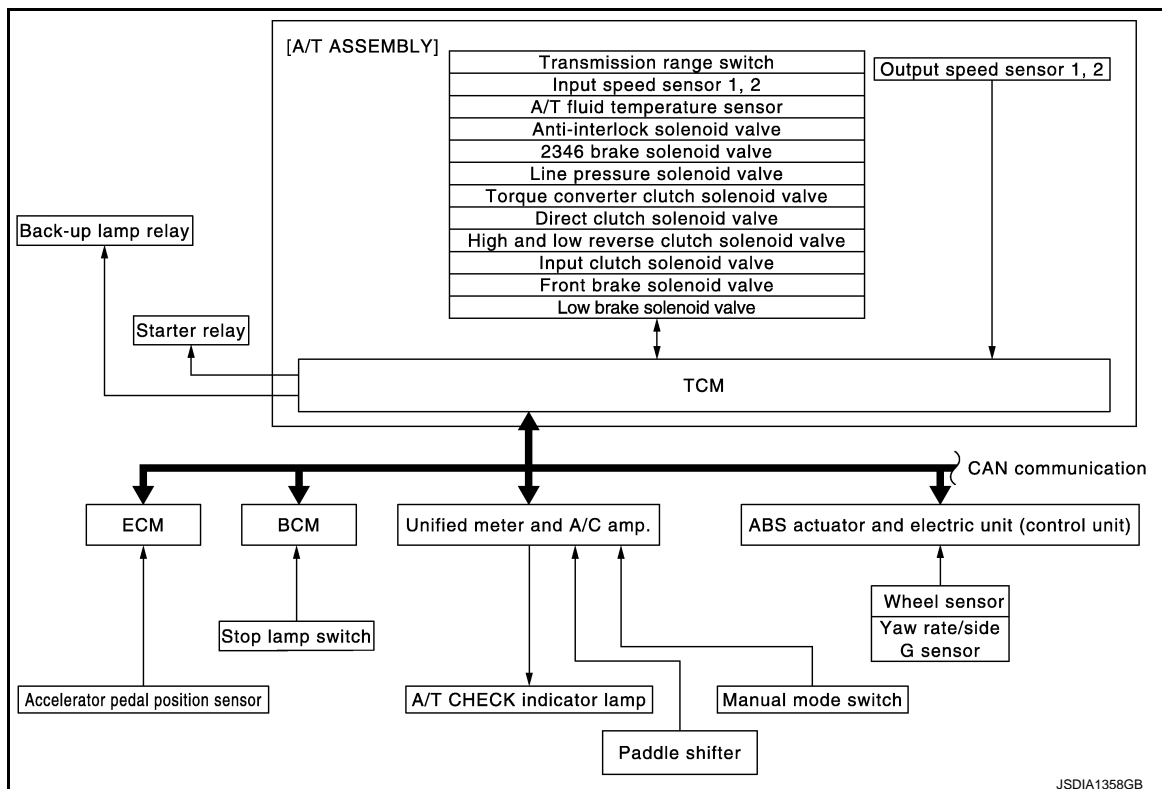
System Diagram

INFOID:000000003838834

Without Paddle Shifter



With Paddle Shifter



System Description

INFOID:000000003838835

INPUT/OUTPUT SIGNAL CHART

Switch, Sensor or Signal		TCM function		Actuator
<ul style="list-style-type: none"> • Transmission range switch • Accelerator pedal position signal • Closed throttle position signal • Wide open throttle position signal • Engine speed signal • A/T fluid temperature sensor • Output speed sensor • Vehicle speed signal • Manual mode switch signal • Stop lamp switch signal • Side G sensor signal • Input speed sensor 1, 2 	⇒	<ul style="list-style-type: none"> • Line pressure control (TM-17) • Shift change control (TM-23) • Shift pattern control <ul style="list-style-type: none"> - Shift pattern (TM-29) - Manual mode (TM-34) • Lock-up control (TM-38) • Fail-safe control (TM-162) • Self-diagnosis (TM-75) • CONSULT-III communication line (TM-75) • CAN communication line (TM-81) 	⇒	<ul style="list-style-type: none"> • Input clutch solenoid valve • Direct clutch solenoid valve • Front brake solenoid valve • High and low reverse clutch solenoid valve • Low brake solenoid valve • Torque converter clutch solenoid valve • Line pressure solenoid valve • Anti-interlock solenoid valve • 2346 brake solenoid valve • A/T CHECK indicator lamp • Back-up lamp relay • Starter relay

SYSTEM DESCRIPTION

- The A/T senses vehicle operating conditions through various sensors or signals. It always controls the optimum shift position and reduces shifting and lock-up shocks.
- Receive input signals transmitted from various switches and sensors.
- Determine required line pressure, shifting point, lock-up operation, etc.
- Transmit required output signals to the respective solenoids.

A/T CONTROL SYSTEM

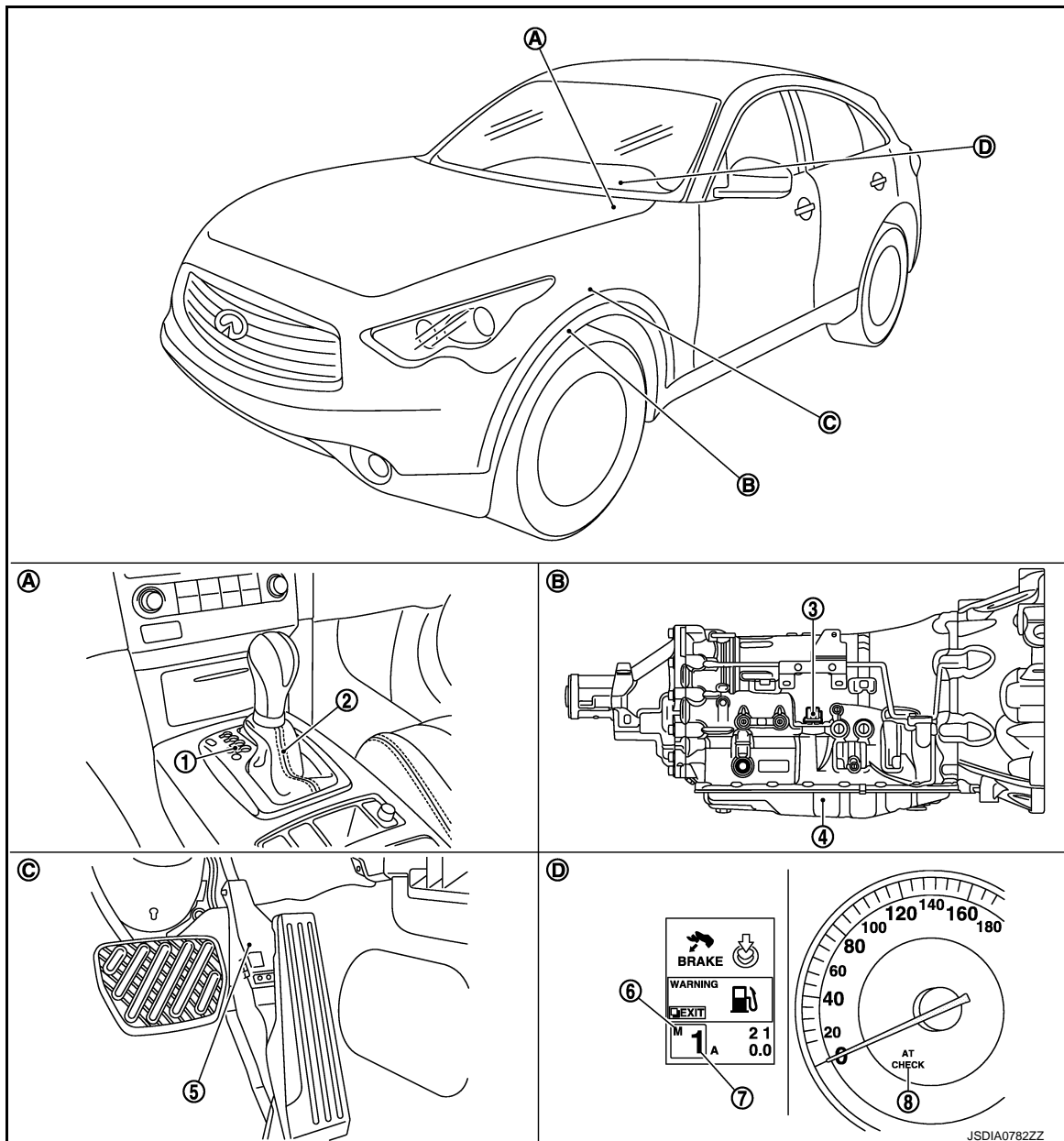
< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]

Component Parts Location

INFOID:000000003838836

Without Paddle Shifter



- | | | |
|--------------------------------------|--------------------------------------|---------------------------|
| 1. Selector lever position indicator | 2. A/T shift selector assembly | 3. A/T assembly connector |
| 4. Control valve with TCM* | 5. Accelerator pedal position sensor | 6. Manual mode indicator |
| 7. Shift position indicator | 8. A/T CHECK indicator lamp | |
| A. Center console | B. A/T assembly | C. Accelerator pedal |
| D. Combination meter | | |

NOTE:

- The following components are included in A/T shift selector assembly.
 - Manual mode select switch
 - Manual mode position select switch
 - Shift position switch
- The following components are included in control valve with TCM.
 - TCM
 - Input speed sensor 1, 2
 - Output speed sensor

A/T CONTROL SYSTEM

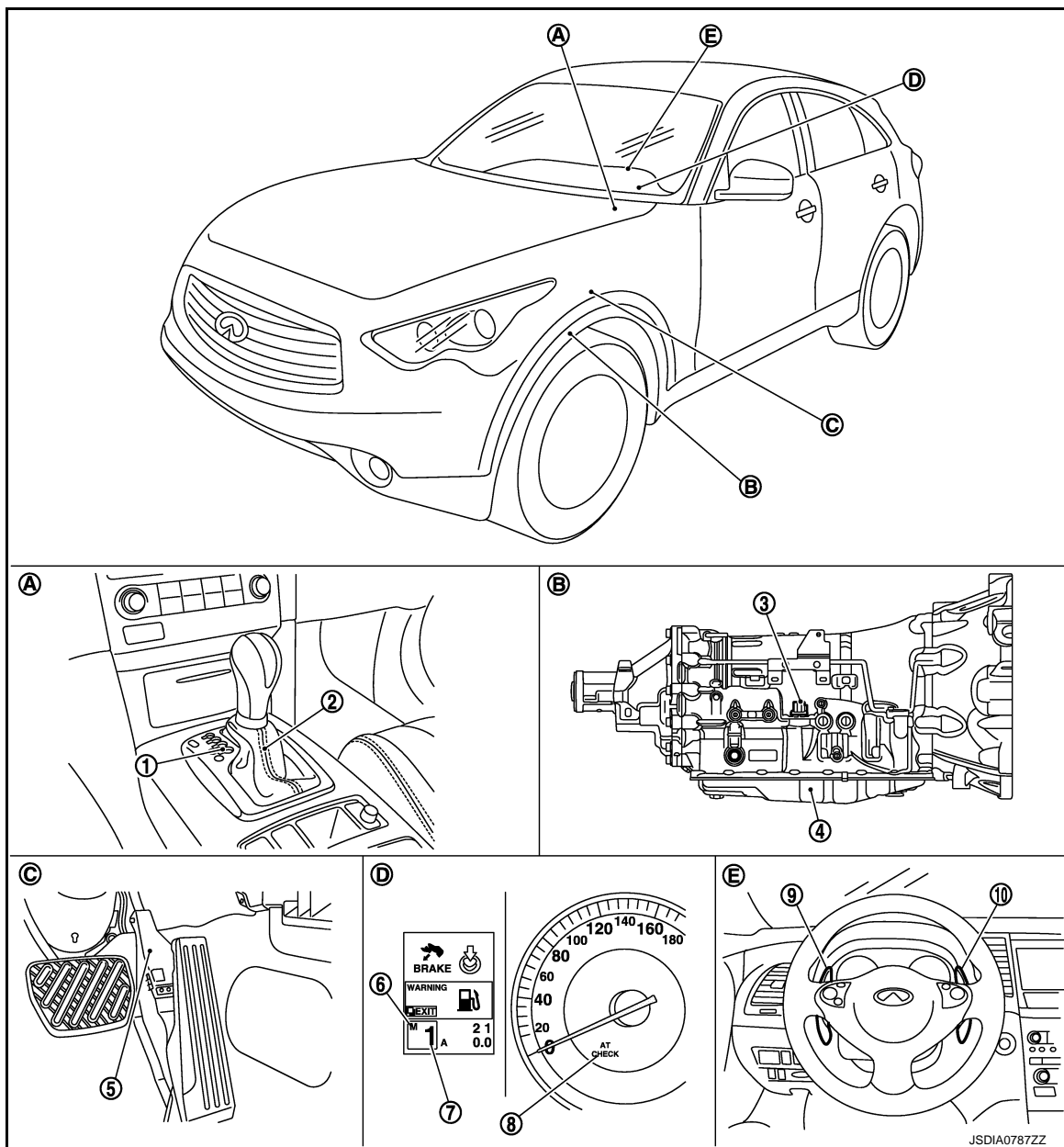
[7AT: RE7R01A (VQ35HR)]

< SYSTEM DESCRIPTION >

- A/T fluid temperature sensor
- Transmission range switch
- Direct clutch solenoid valve
- High and low reverse clutch solenoid valve
- Input clutch solenoid valve
- Front brake solenoid valve
- Low brake solenoid valve
- Anti-interlock solenoid valve
- 2346 brake solenoid valve
- Line pressure solenoid valve
- Torque converter clutch solenoid valve

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

With Paddle Shifter



- | | | |
|--------------------------------------|--------------------------------------|--------------------------------|
| 1. Selector lever position indicator | 2. A/T shift selector assembly | 3. A/T assembly connector |
| 4. Control valve with TCM* | 5. Accelerator pedal position sensor | 6. Manual mode indicator |
| 7. Shift position indicator | 8. A/T CHECK indicator lamp | 9. Paddle shifter (shift-down) |
| 10. Paddle shifter (shift-up) | | |

A/T CONTROL SYSTEM

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]

- | | | |
|----------------------|-------------------|----------------------|
| A. Center console | B. A/T assembly | C. Accelerator pedal |
| D. Combination meter | E. Steering wheel | |

NOTE:

- The following components are included in A/T shift selector assembly.
 - Manual mode select switch
 - Manual mode position select switch
 - Shift position switch
- The following components are included in control valve with TCM.
 - TCM
 - Input speed sensor 1, 2
 - Output speed sensor
 - A/T fluid temperature sensor
 - Transmission range switch
 - Direct clutch solenoid valve
 - High and low reverse clutch solenoid valve
 - Input clutch solenoid valve
 - Front brake solenoid valve
 - Low brake solenoid valve
 - Anti-interlock solenoid valve
 - 2346 brake solenoid valve
 - Line pressure solenoid valve
 - Torque converter clutch solenoid valve

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

Component Description

INFOID:000000003838837

Name	Function
TCM	The TCM consists of a microcomputer and connectors for signal input and output and for power supply. The TCM controls the A/T.
Transmission range switch	TM-84, "Description"
Output speed sensor	TM-89, "Description"
Input speed sensor 1	TM-87, "Description"
Input speed sensor 2	
A/T fluid temperature sensor	TM-85, "Description"
Input clutch solenoid valve	TM-112, "Description"
Front brake solenoid valve	TM-114, "Description"
Direct clutch solenoid valve	TM-133, "Description"
High and low reverse clutch solenoid valve	TM-130, "Description"
Low brake solenoid valve	TM-131, "Description"
Anti-interlock solenoid valve	TM-110, "Description"
2346 brake solenoid valve	TM-132, "Description"
Line pressure solenoid valve	TM-109, "Description"
Torque converter clutch solenoid valve	TM-106, "Description"
Accelerator pedal position sensor	TM-115, "Description"
Manual mode switch	TM-123, "Description"
Paddle shifter	TM-123, "Description"
Starter relay	TM-82, "Description"
A/T CHECK indicator lamp	When the ignition switch is pushed to the ON position, the light comes on for 2 seconds.
Stop lamp switch	TM-138, "Description"

A/T CONTROL SYSTEM

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]

Name	Function
ECM	EC-30, "System Description"
BCM	BCS-6, "System Description"
Unified meter and A/C amp.	MWI-6, "METER SYSTEM : System Description"
ABS actuator and electric unit (control unit)	BRC-29, "System Description"
Wheel sensor	BRC-53, "Description"
Yaw rate/side G sensor	BRC-79, "Description"

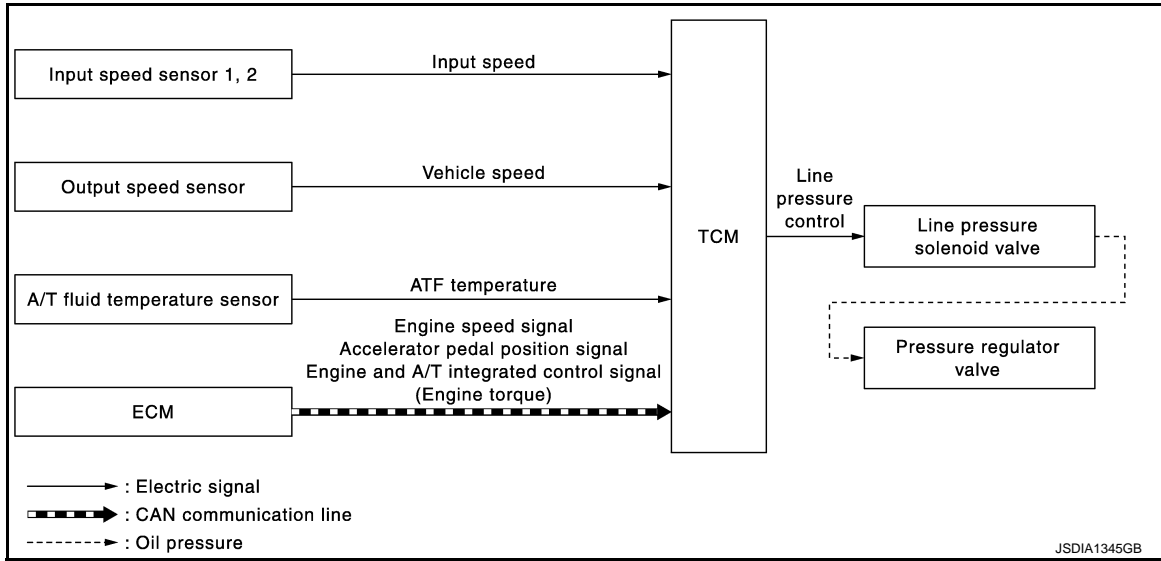
LINE PRESSURE CONTROL

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]

LINE PRESSURE CONTROL

System Diagram



System Description

INFOID:000000003940505

INPUT/OUTPUT SIGNAL CHART

Sensor	Input signal to TCM	TCM function	Actuator
Input speed sensor 1, 2	Input speed	Line pressure control	Line pressure solenoid valve ↓ Pressure regulator valve
Output speed sensor	Vehicle speed		
A/T fluid temperature sensor	ATF temperature		
ECM	Engine speed signal*		
	Accelerator pedal position signal*		
	Engine and A/T integrated control signal (Engine torque)*		

*: This signal is transmitted via CAN communication line.

SYSTEM DESCRIPTION

- When an engine and A/T integrated control signal (engine torque) equivalent to the engine drive force is transmitted from the ECM to the TCM, the TCM controls the line pressure solenoid valve. This line pressure solenoid controls the pressure regulator valve as the signal pressure and adjusts the 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.

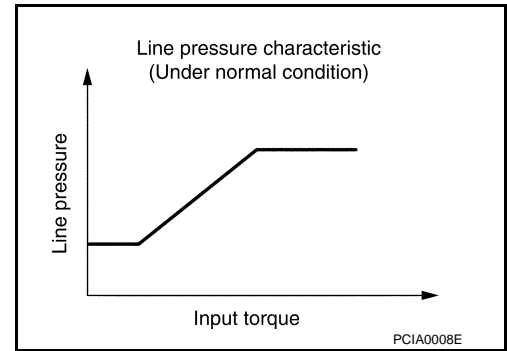
Normal Control

LINE PRESSURE CONTROL

< SYSTEM DESCRIPTION >

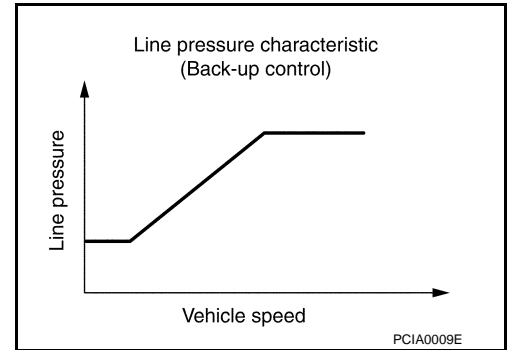
[7AT: RE7R01A (VQ35HR)]

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



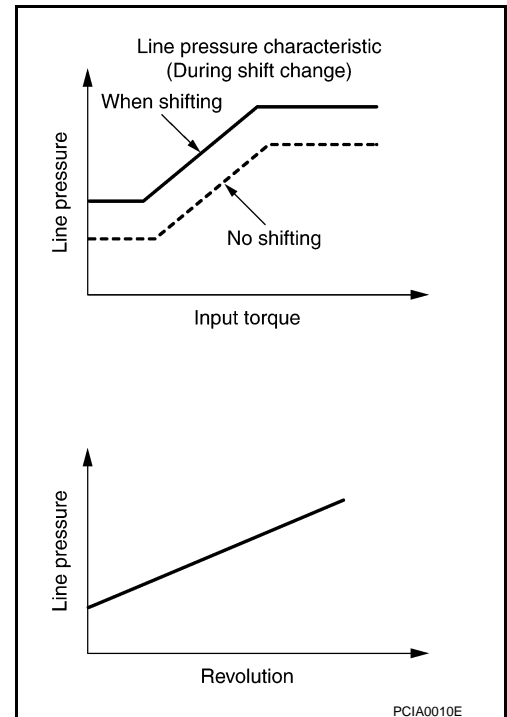
Back-up Control (Engine Brake)

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



During Shift Change

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



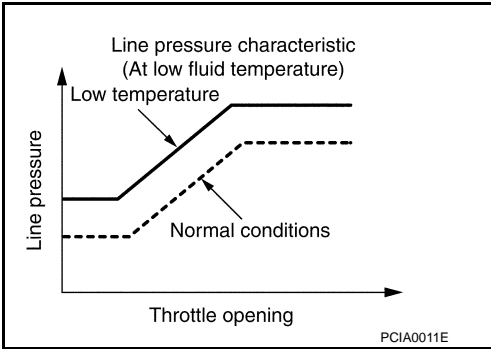
At Low Fluid Temperature

LINE PRESSURE CONTROL

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]

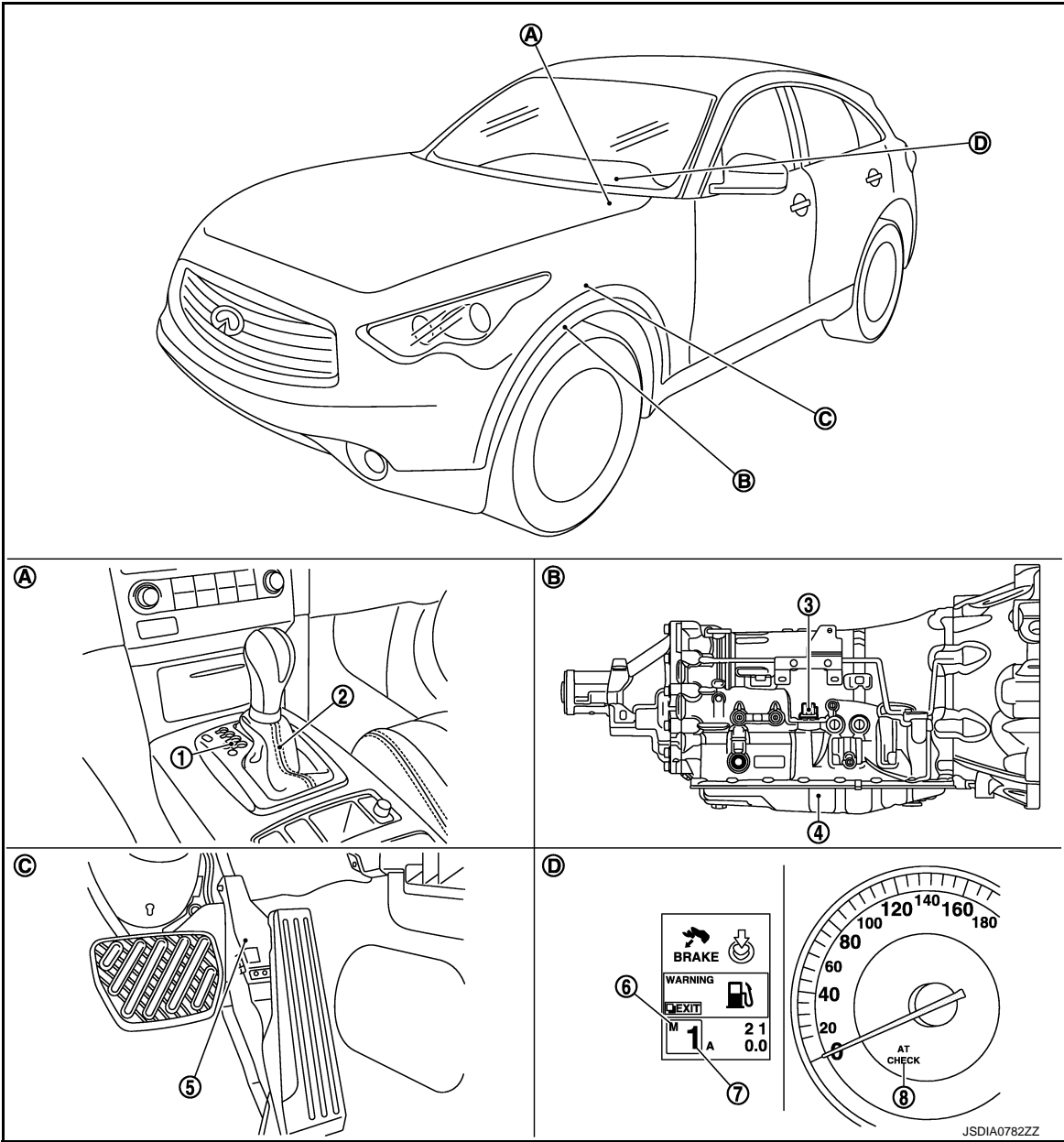
When the A/T fluid temperature drops below the prescribed temperature, in order to speed up the action of each friction element, the line pressure is set higher than the normal line pressure characteristic.



Component Parts Location

INFOID:000000004109687

Without Paddle Shifter



- | | | |
|--------------------------------------|--------------------------------------|---------------------------|
| 1. Selector lever position indicator | 2. A/T shift selector assembly | 3. A/T assembly connector |
| 4. Control valve with TCM* | 5. Accelerator pedal position sensor | 6. Manual mode indicator |
| 7. Shift position indicator | 8. A/T CHECK indicator lamp | |

LINE PRESSURE CONTROL

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]

- | | | |
|----------------------|-----------------|----------------------|
| A. Center console | B. A/T assembly | C. Accelerator pedal |
| D. Combination meter | | |

NOTE:

- The following components are included in A/T shift selector assembly.
 - Manual mode select switch
 - Manual mode position select switch
 - Shift position switch
- The following components are included in control valve with TCM.
 - TCM
 - Input speed sensor 1, 2
 - Output speed sensor
 - A/T fluid temperature sensor
 - Transmission range switch
 - Direct clutch solenoid valve
 - High and low reverse clutch solenoid valve
 - Input clutch solenoid valve
 - Front brake solenoid valve
 - Low brake solenoid valve
 - Anti-interlock solenoid valve
 - 2346 brake solenoid valve
 - Line pressure solenoid valve
 - Torque converter clutch solenoid valve

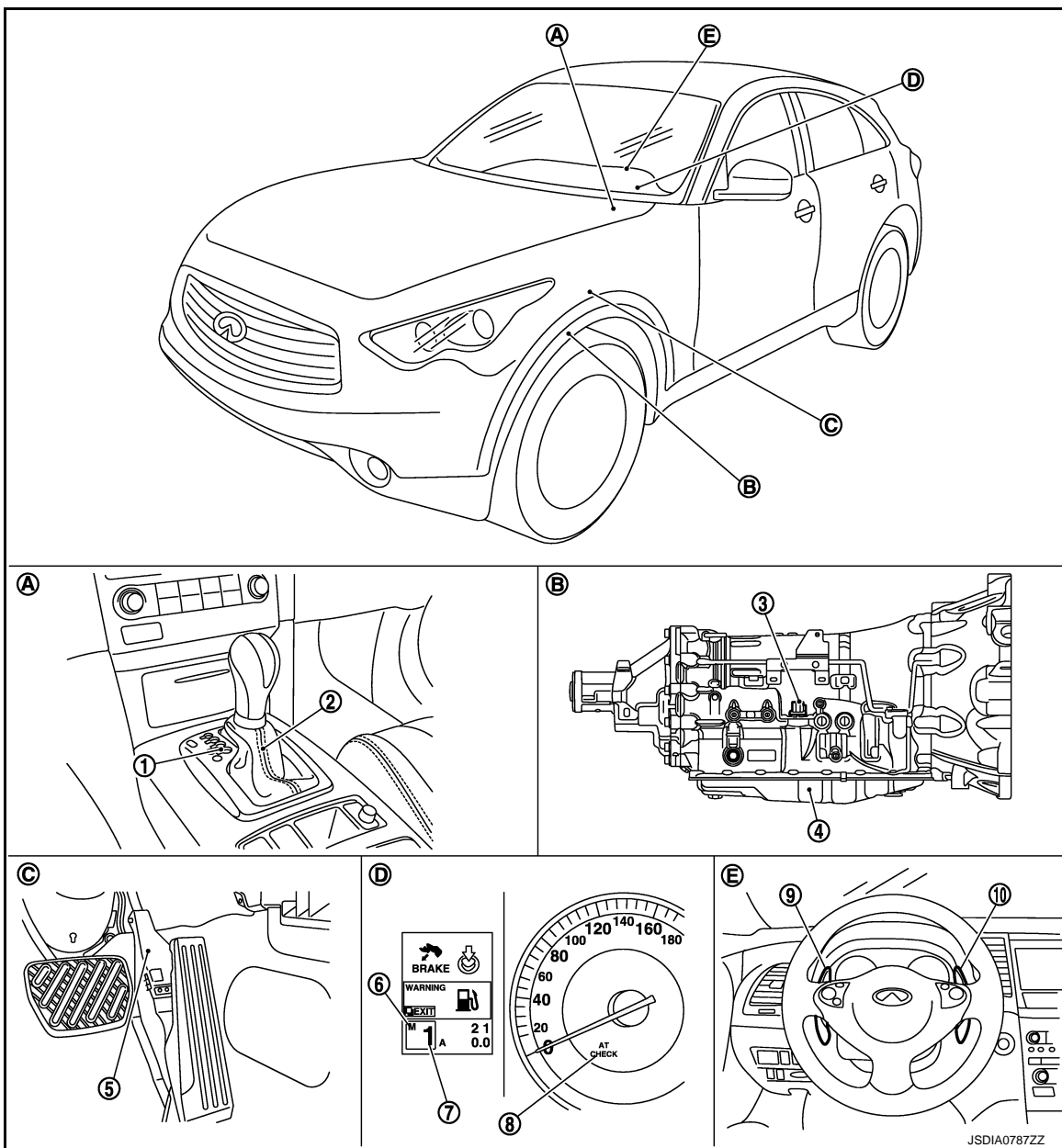
*: Control valve with TCM is included in A/T assembly.

LINE PRESSURE CONTROL

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]

With Paddle Shifter



- | | | |
|--------------------------------------|--------------------------------------|--------------------------------|
| 1. Selector lever position indicator | 2. A/T shift selector assembly | 3. A/T assembly connector |
| 4. Control valve with TCM* | 5. Accelerator pedal position sensor | 6. Manual mode indicator |
| 7. Shift position indicator | 8. A/T CHECK indicator lamp | 9. Paddle shifter (shift-down) |
| 10. Paddle shifter (shift-up) | | |
| A. Center console | B. A/T assembly | C. Accelerator pedal |
| D. Combination meter | E. Steering wheel | |

NOTE:

- The following components are included in A/T shift selector assembly.
 - Manual mode select switch
 - Manual mode position select switch
 - Shift position switch
- The following components are included in control valve with TCM.
 - TCM
 - Input speed sensor 1, 2
 - Output speed sensor
 - A/T fluid temperature sensor

LINE PRESSURE CONTROL

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]

- Transmission range switch
- Direct clutch solenoid valve
- High and low reverse clutch solenoid valve
- Input clutch solenoid valve
- Front brake solenoid valve
- Low brake solenoid valve
- Anti-interlock solenoid valve
- 2346 brake solenoid valve
- Line pressure solenoid valve
- Torque converter clutch solenoid valve

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

Component Description

INFOID:000000003940588

Name	Function
TCM	The TCM consists of a microcomputer and connectors for signal input and output and for power supply. The TCM controls the A/T.
Output speed sensor	TM-89, "Description"
Input speed sensor 1	TM-87, "Description"
Input speed sensor 2	
A/T fluid temperature sensor	TM-85, "Description"
Line pressure solenoid valve	TM-109, "Description"
Pressure regulator valve	Adjusts the oil discharged from the oil pump to the optimum pressure (line pressure) for the driving state.
ECM	EC-30, "System Description"

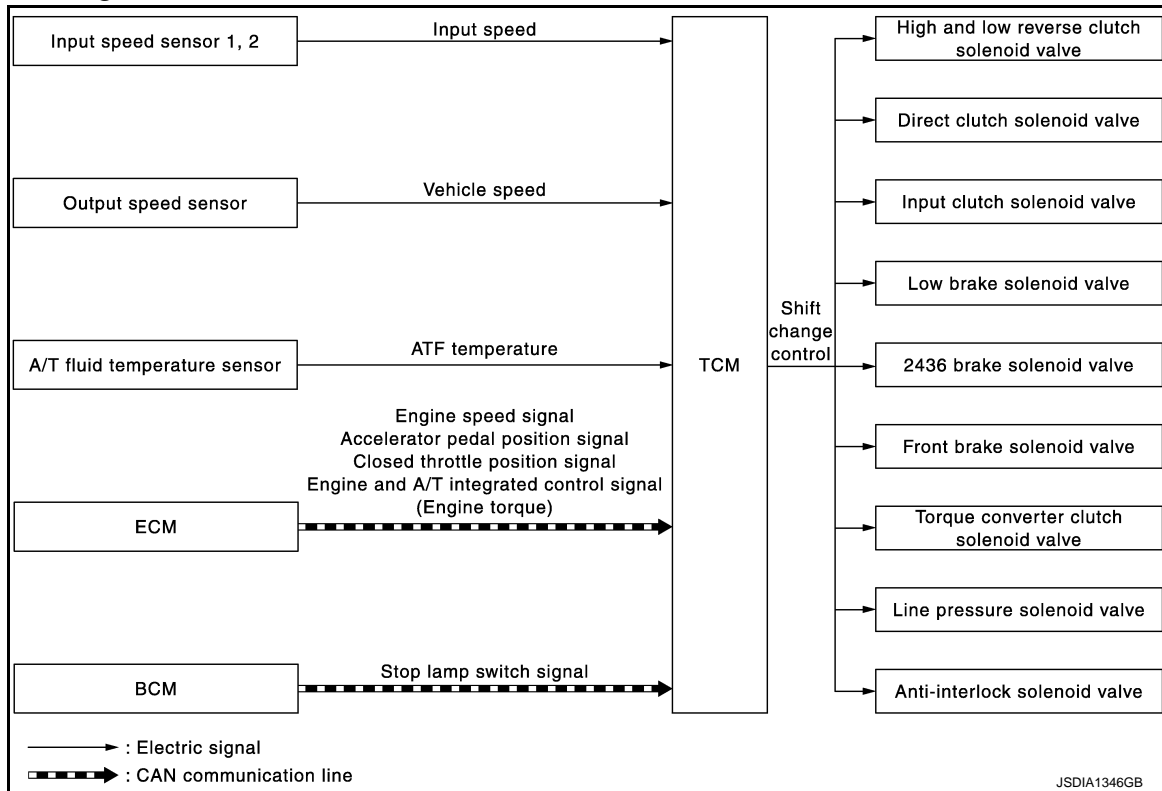
SHIFT CHANGE CONTROL

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]

SHIFT CHANGE CONTROL

System Diagram



System Description

INFOID:000000003940604

INPUT/OUTPUT SIGNAL CHART

Sensor	Input signal to TCM	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 valveDirect clutch solenoid valveInput clutch solenoid valveLow brake solenoid valve2346 brake solenoid valveFront brake solenoid valveTorque converter clutch solenoid valveLine pressure solenoid valveAnti-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*		

*: This signal is transmitted via CAN communication line.

SYSTEM DESCRIPTION

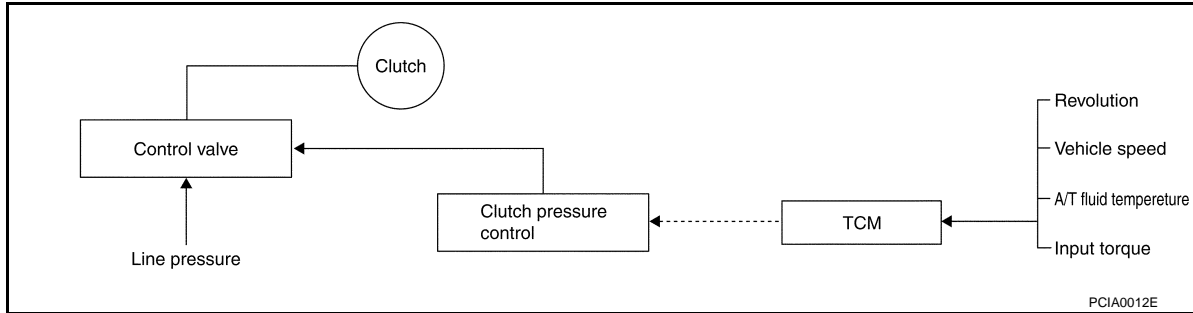
The clutch pressure control solenoid is controlled by the signals from the switches and sensors. Thus, the clutch pressure is adjusted to be appropriate to the engine load state and vehicle driving state. It becomes

SHIFT CHANGE CONTROL

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]

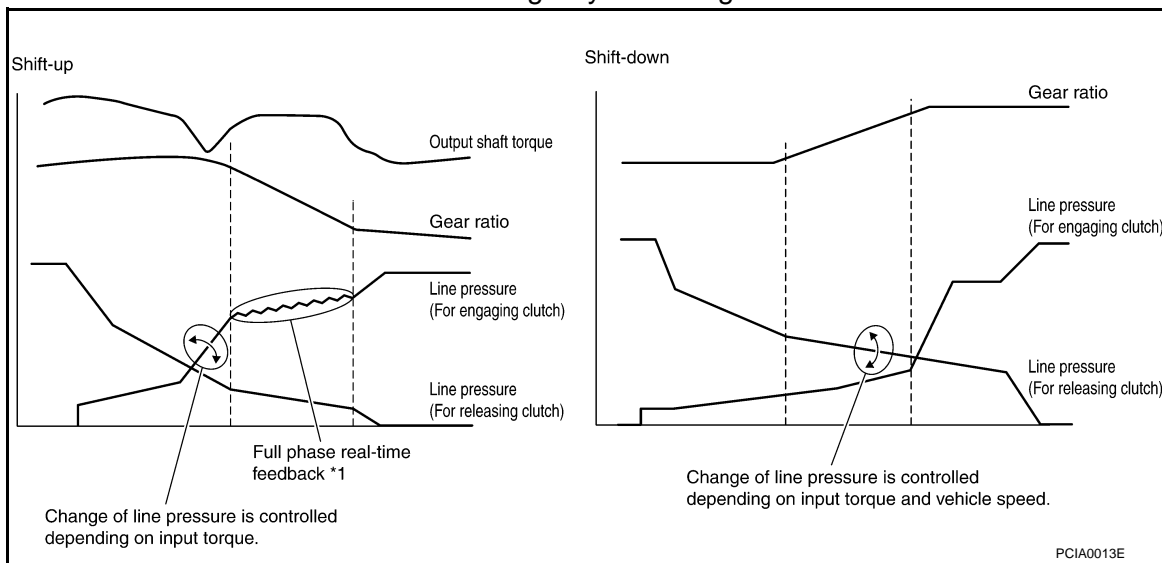
possible to finely control the clutch hydraulic pressure with high precision and a smoother shift change characteristic is attained.



Shift Change

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

Shift Change System Diagram

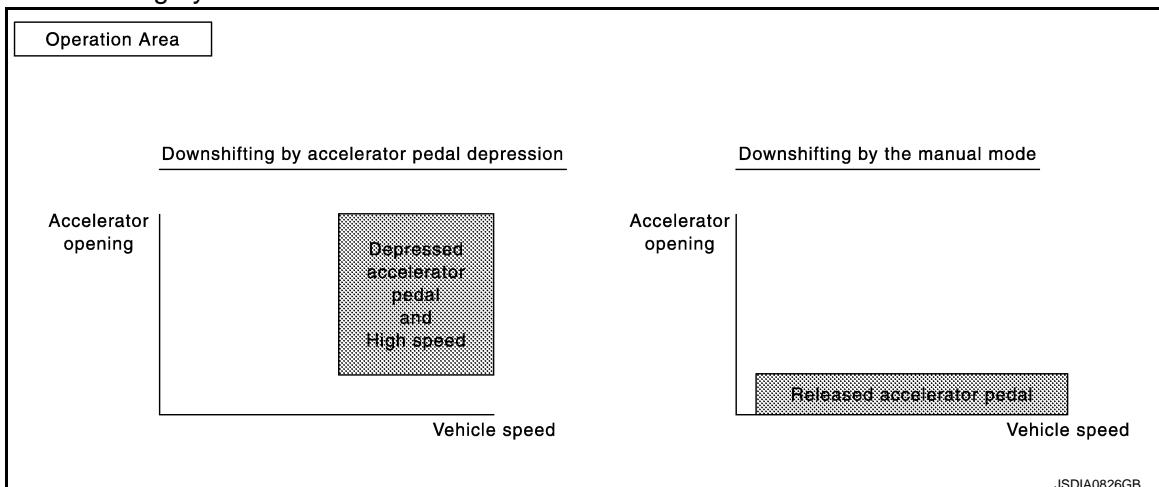


*1: Full phase real-time feedback control monitors movement of gear ratio at gear change, and controls oil pressure in real-time to achieve the best gear ratio.

Blipping Control

This system makes transmission clutch engage readily by controlling (synchronizing) engine revolution according to the (calculation of) engine revolution after shifting down.

- "BLIPPING CONTROL" functions.
- When downshifting by accelerator pedal depression.
- When downshifting by the manual mode.



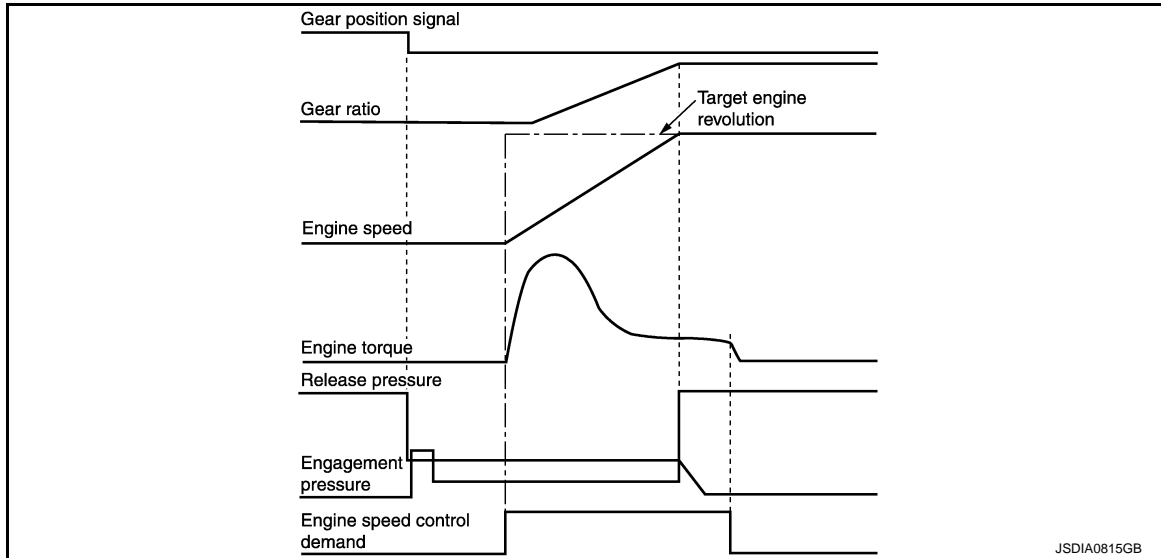
SHIFT CHANGE CONTROL

< SYSTEM DESCRIPTION >

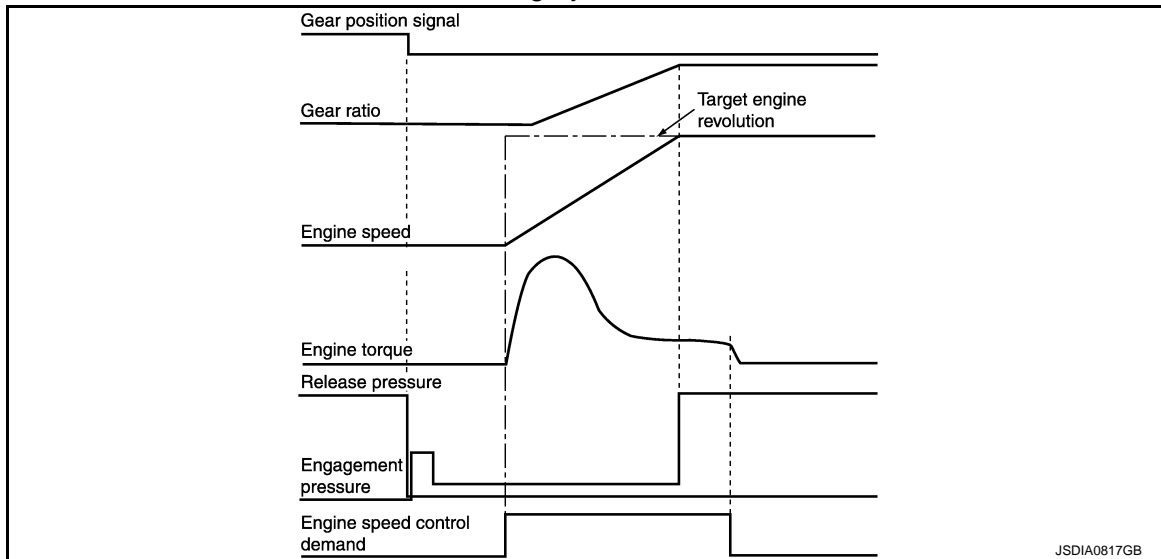
[7AT: RE7R01A (VQ35HR)]

- 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



A
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SHIFT CHANGE CONTROL

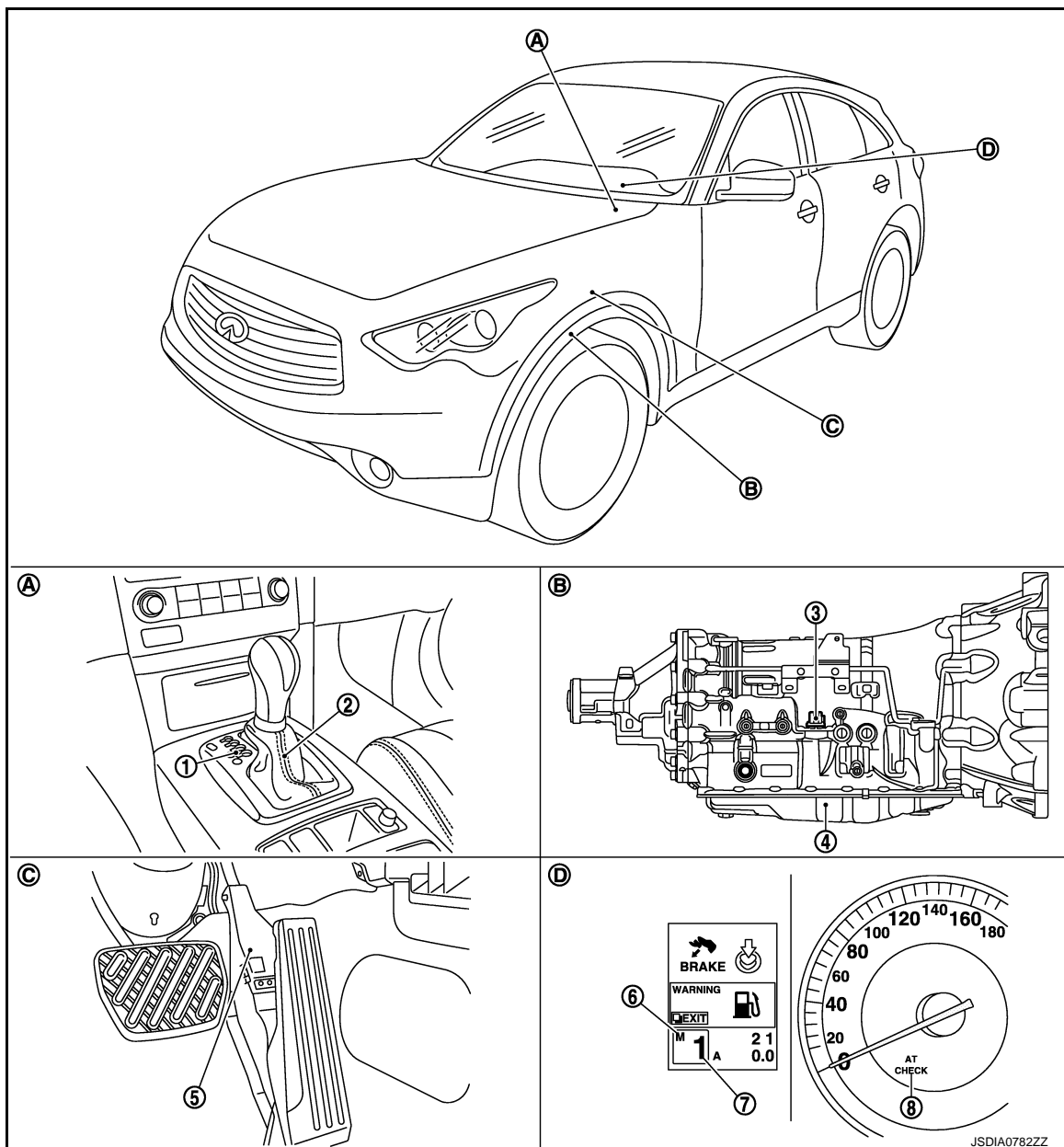
< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]

Component Parts Location

INFOID:000000004109691

Without Paddle Shifter



- | | | |
|--------------------------------------|--------------------------------------|---------------------------|
| 1. Selector lever position indicator | 2. A/T shift selector assembly | 3. A/T assembly connector |
| 4. Control valve with TCM* | 5. Accelerator pedal position sensor | 6. Manual mode indicator |
| 7. Shift position indicator | 8. A/T CHECK indicator lamp | |
| A. Center console | B. A/T assembly | C. Accelerator pedal |
| D. Combination meter | | |

NOTE:

- The following components are included in A/T shift selector assembly.
 - Manual mode select switch
 - Manual mode position select switch
 - Shift position switch
- The following components are included in control valve with TCM.
 - TCM
 - Input speed sensor 1, 2
 - Output speed sensor

SHIFT CHANGE CONTROL

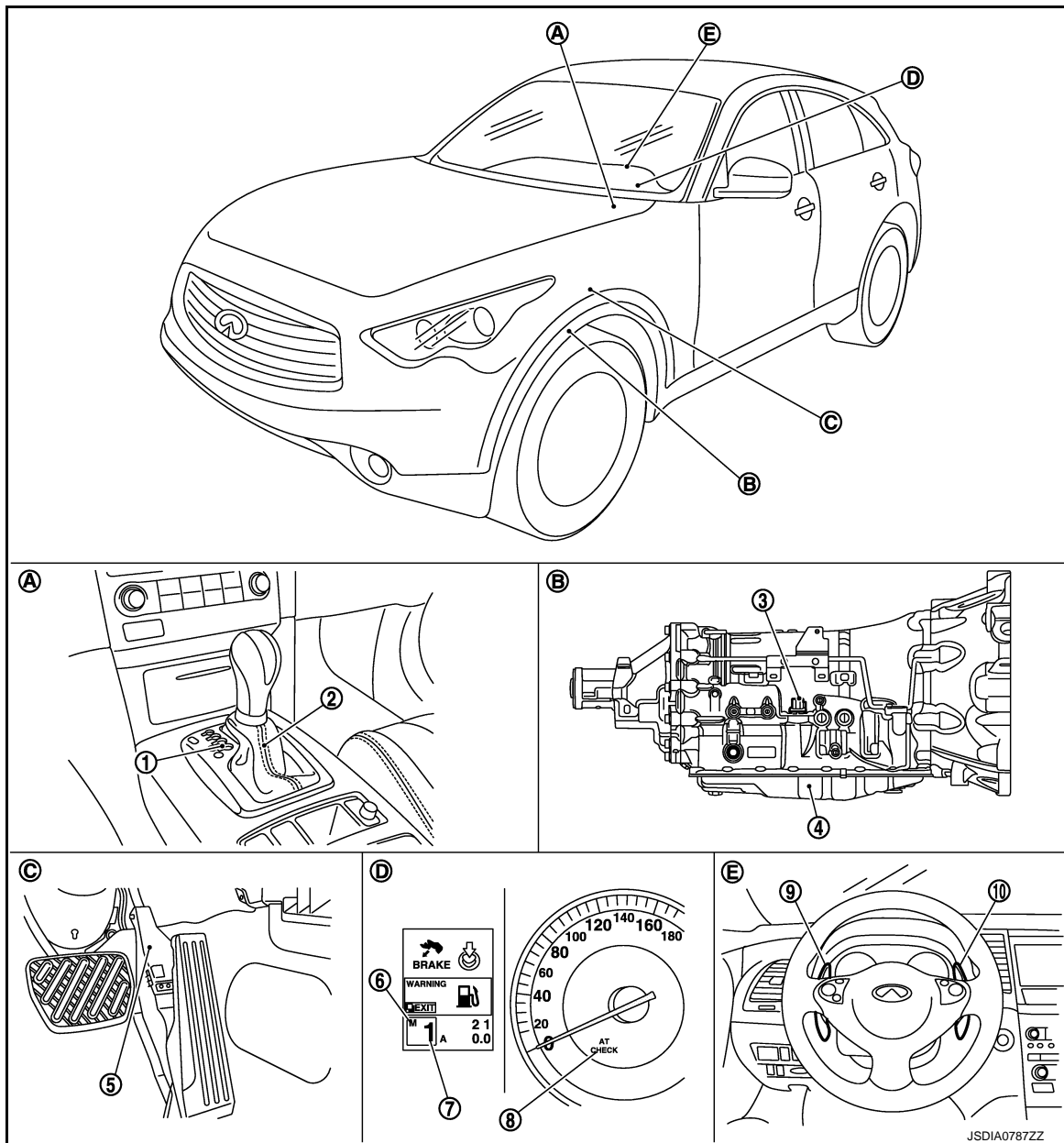
< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]

- A/T fluid temperature sensor
- Transmission range switch
- Direct clutch solenoid valve
- High and low reverse clutch solenoid valve
- Input clutch solenoid valve
- Front brake solenoid valve
- Low brake solenoid valve
- Anti-interlock solenoid valve
- 2346 brake solenoid valve
- Line pressure solenoid valve
- Torque converter clutch solenoid valve

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

With Paddle Shifter



- | | | |
|--------------------------------------|--------------------------------------|--------------------------------|
| 1. Selector lever position indicator | 2. A/T shift selector assembly | 3. A/T assembly connector |
| 4. Control valve with TCM* | 5. Accelerator pedal position sensor | 6. Manual mode indicator |
| 7. Shift position indicator | 8. A/T CHECK indicator lamp | 9. Paddle shifter (shift-down) |
| 10. Paddle shifter (shift-up) | | |

SHIFT CHANGE CONTROL

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]

- | | | |
|----------------------|-------------------|----------------------|
| A. Center console | B. A/T assembly | C. Accelerator pedal |
| D. Combination meter | E. Steering wheel | |

NOTE:

- The following components are included in A/T shift selector assembly.
 - Manual mode select switch
 - Manual mode position select switch
 - Shift position switch
- The following components are included in control valve with TCM.
 - TCM
 - Input speed sensor 1, 2
 - Output speed sensor
 - A/T fluid temperature sensor
 - Transmission range switch
 - Direct clutch solenoid valve
 - High and low reverse clutch solenoid valve
 - Input clutch solenoid valve
 - Front brake solenoid valve
 - Low brake solenoid valve
 - Anti-interlock solenoid valve
 - 2346 brake solenoid valve
 - Line pressure solenoid valve
 - Torque converter clutch solenoid valve

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

Component Description

INFOID:000000003940678

Name	Function
TCM	The TCM consists of a microcomputer and connectors for signal input and output and for power supply. The TCM controls the A/T.
Output speed sensor	TM-89, "Description"
Input speed sensor 1	TM-87, "Description"
Input speed sensor 2	
A/T fluid temperature sensor	TM-85, "Description"
Input clutch solenoid valve	TM-112, "Description"
Front brake solenoid valve	TM-114, "Description"
Direct clutch solenoid valve	TM-133, "Description"
High and low reverse clutch solenoid valve	TM-130, "Description"
Low brake solenoid valve	TM-131, "Description"
Anti-interlock solenoid valve	TM-110, "Description"
2346 brake solenoid valve	TM-132, "Description"
Line pressure solenoid valve	TM-109, "Description"
Torque converter clutch solenoid valve	TM-106, "Description"
ECM	EC-30, "System Description"
BCM	BCS-6, "System Description"

SHIFT PATTERN CONTROL

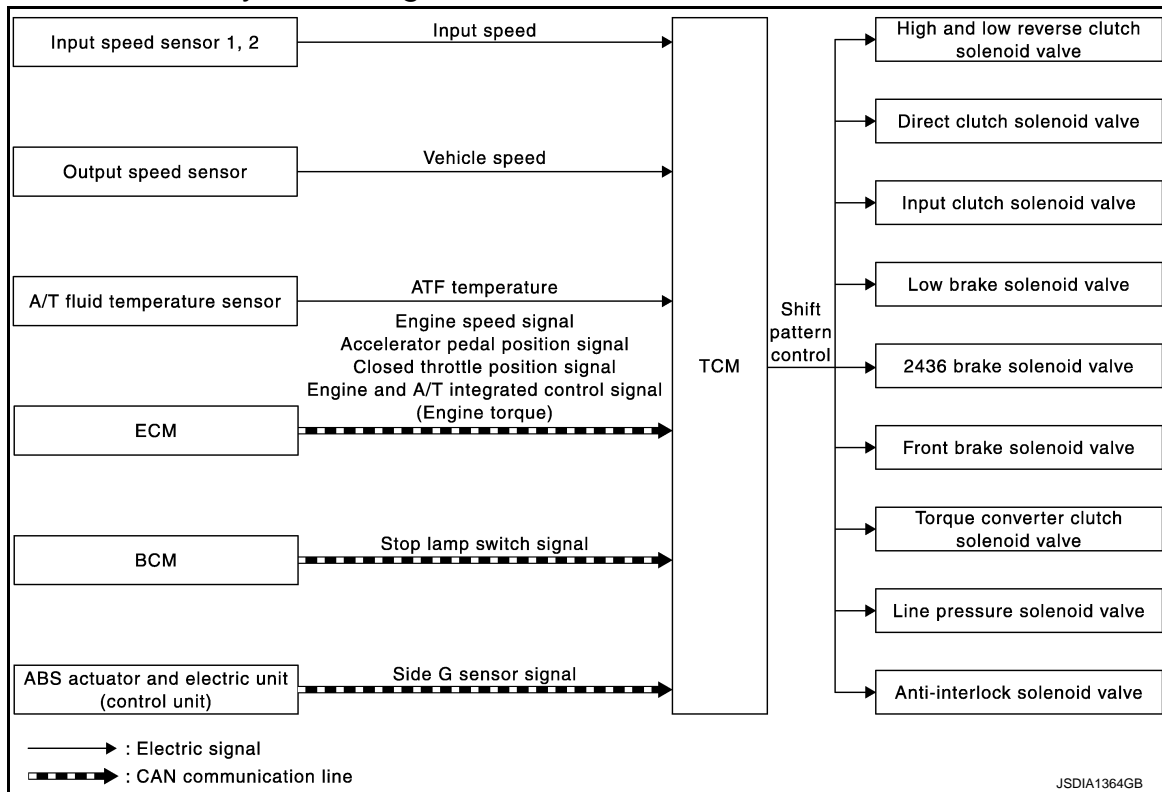
< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]

SHIFT PATTERN CONTROL

SHIFT PATTERN

SHIFT PATTERN : System Diagram



SHIFT PATTERN : System Description

INFOID:000000003941716

INPUT/OUTPUT SIGNAL CHART

Sensor	Input signal to TCM	TCM function	Actuator
Input speed sensor 1, 2	Input speed	Shift pattern 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*		

*: This signal is transmitted via CAN communication line.

SYSTEM DESCRIPTION

ASC (Adaptive Shift Control)

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.

For example.....

- When driving on an up/down slope

SHIFT PATTERN CONTROL

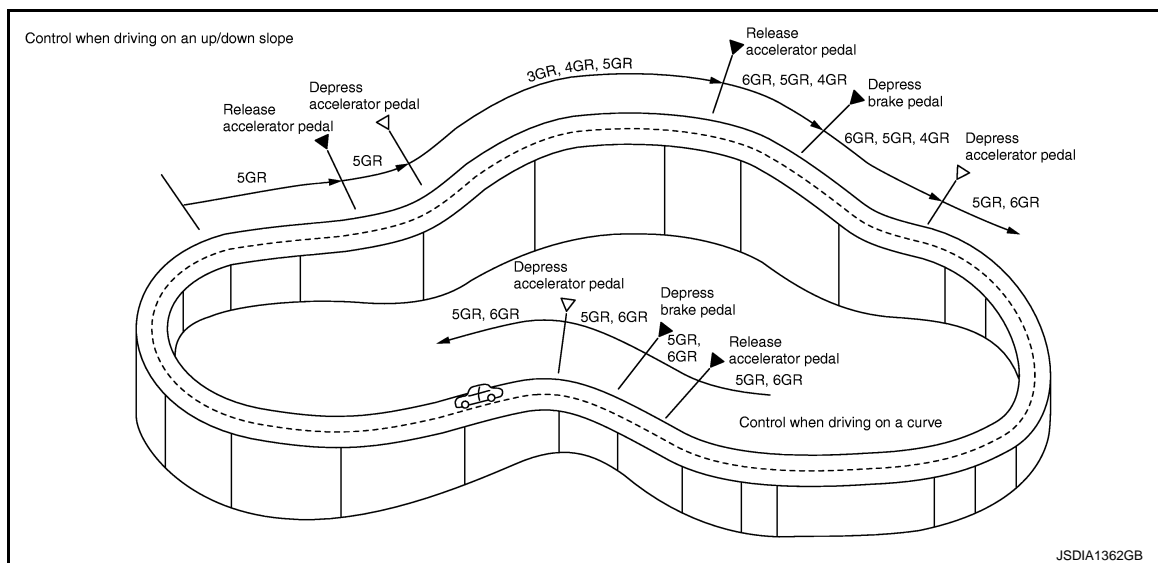
< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]

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.



DS Mode

- Changes to the shift schedule that mainly utilizes the high engine speed zone when ASC is active.
- DS mode can be switched according to the following method.
 - When the selector lever is in the "D" position, shifting the selector lever to manual shift gate enables switching to DS mode.
 - When in DS mode, shifting the selector lever to the main gate enables to cancel DS mode.
 - After switching to manual mode with paddle shifter, switching to DS mode can not be enabled even when the selector lever is shifted to the manual gate. (With paddle shifter)

SHIFT PATTERN CONTROL

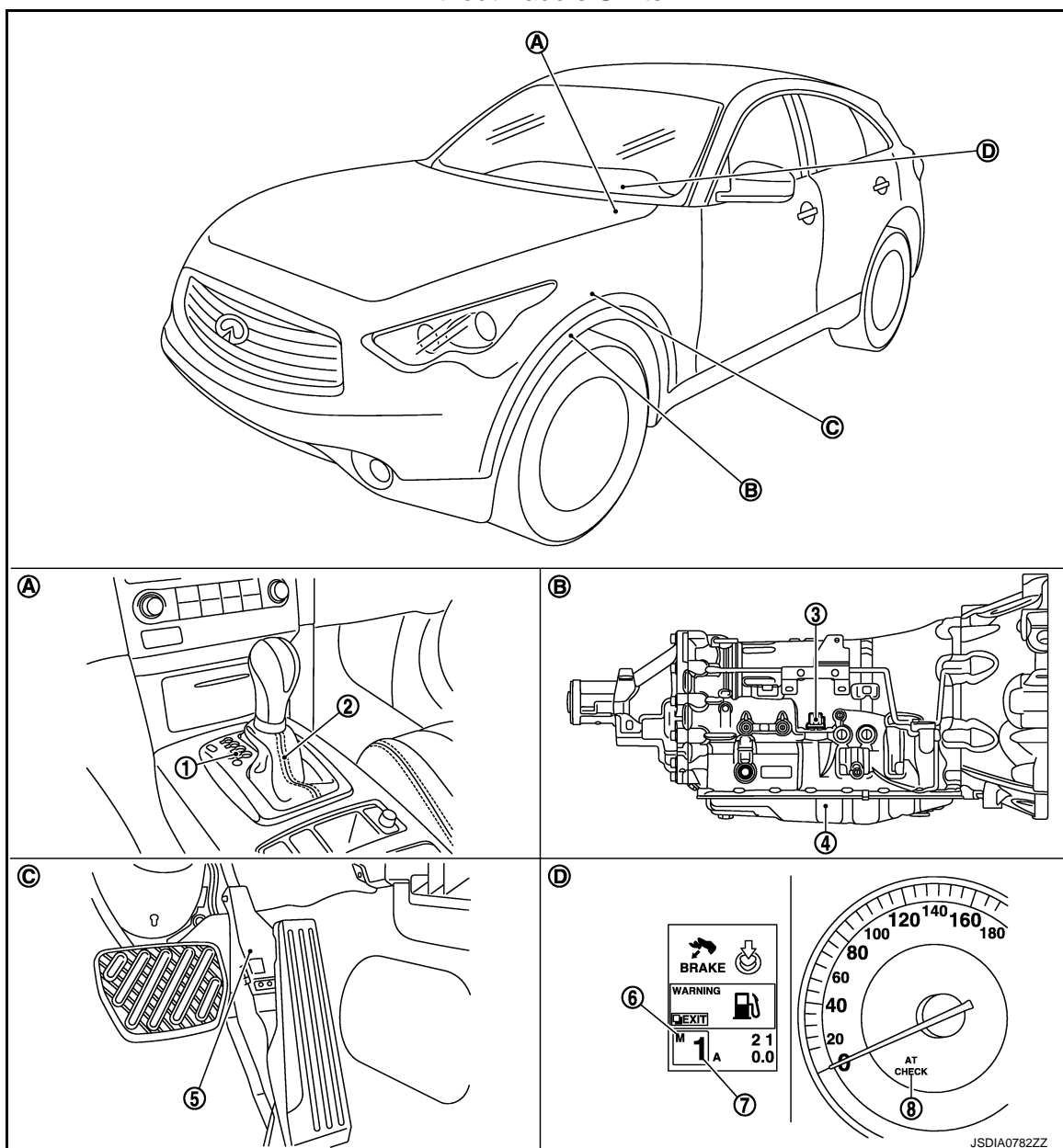
< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]

SHIFT PATTERN : Component Parts Location

INFOID:000000004109692

Without Paddle Shifter



- | | | |
|--------------------------------------|--------------------------------------|---------------------------|
| 1. Selector lever position indicator | 2. A/T shift selector assembly | 3. A/T assembly connector |
| 4. Control valve with TCM* | 5. Accelerator pedal position sensor | 6. Manual mode indicator |
| 7. Shift position indicator | 8. A/T CHECK indicator lamp | |
| A. Center console | B. A/T assembly | C. Accelerator pedal |
| D. Combination meter | | |

NOTE:

- The following components are included in A/T shift selector assembly.
 - Manual mode select switch
 - Manual mode position select switch
 - Shift position switch
- The following components are included in control valve with TCM.
 - TCM
 - Input speed sensor 1, 2
 - Output speed sensor

SHIFT PATTERN CONTROL

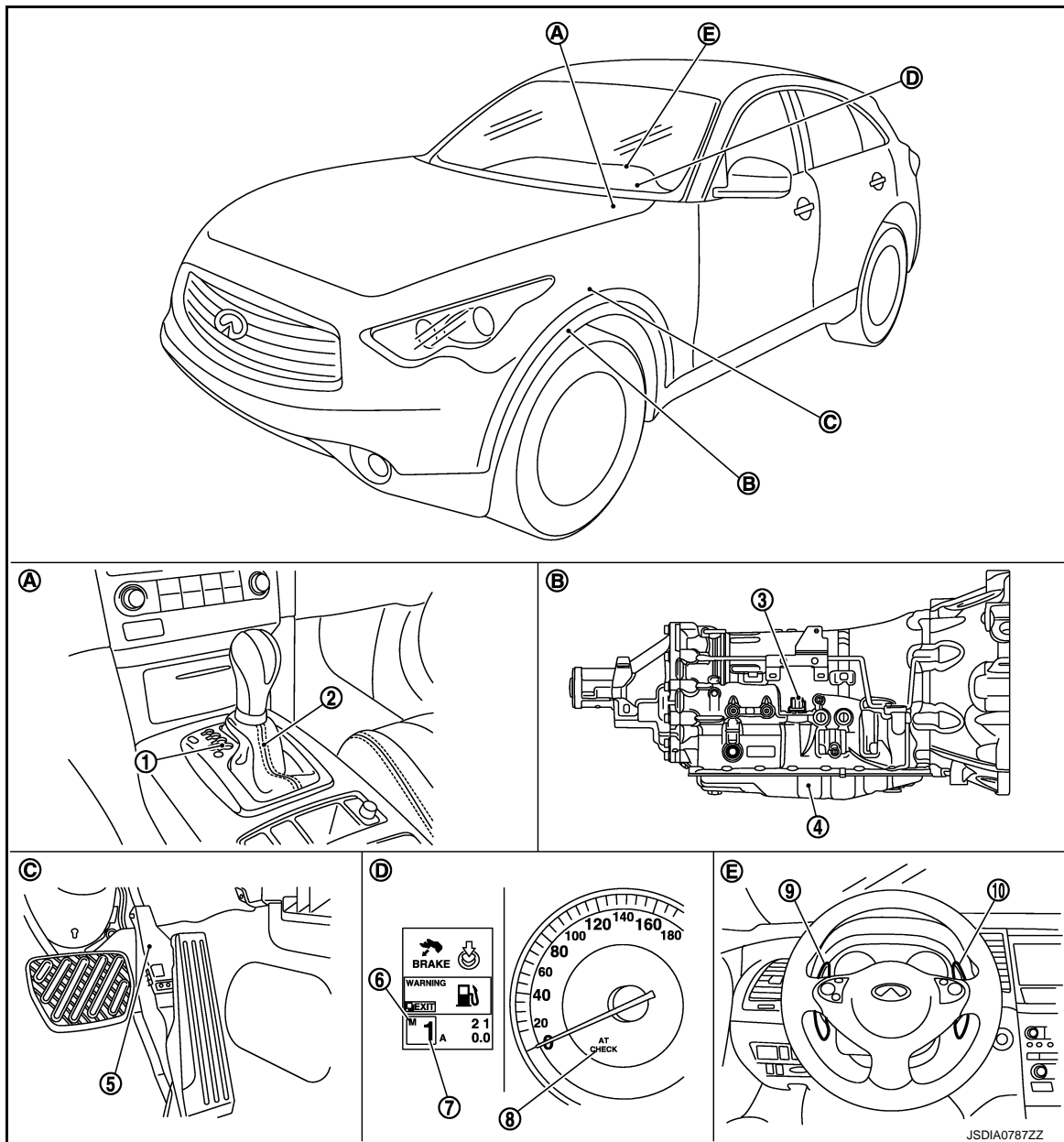
[7AT: RE7R01A (VQ35HR)]

< SYSTEM DESCRIPTION >

- A/T fluid temperature sensor
- Transmission range switch
- Direct clutch solenoid valve
- High and low reverse clutch solenoid valve
- Input clutch solenoid valve
- Front brake solenoid valve
- Low brake solenoid valve
- Anti-interlock solenoid valve
- 2346 brake solenoid valve
- Line pressure solenoid valve
- Torque converter clutch solenoid valve

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

With Paddle Shifter



- | | | |
|--------------------------------------|--------------------------------------|--------------------------------|
| 1. Selector lever position indicator | 2. A/T shift selector assembly | 3. A/T assembly connector |
| 4. Control valve with TCM* | 5. Accelerator pedal position sensor | 6. Manual mode indicator |
| 7. Shift position indicator | 8. A/T CHECK indicator lamp | 9. Paddle shifter (shift-down) |
| 10. Paddle shifter (shift-up) | | |

SHIFT PATTERN CONTROL

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]

- | | | |
|----------------------|-------------------|----------------------|
| A. Center console | B. A/T assembly | C. Accelerator pedal |
| D. Combination meter | E. Steering wheel | |

NOTE:

- The following components are included in A/T shift selector assembly.
 - Manual mode select switch
 - Manual mode position select switch
 - Shift position switch
- The following components are included in control valve with TCM.
 - TCM
 - Input speed sensor 1, 2
 - Output speed sensor
 - A/T fluid temperature sensor
 - Transmission range switch
 - Direct clutch solenoid valve
 - High and low reverse clutch solenoid valve
 - Input clutch solenoid valve
 - Front brake solenoid valve
 - Low brake solenoid valve
 - Anti-interlock solenoid valve
 - 2346 brake solenoid valve
 - Line pressure solenoid valve
 - Torque converter clutch solenoid valve

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

SHIFT PATTERN : Component Description

INFOID:000000003941718

Name	Function
TCM	The TCM consists of a microcomputer and connectors for signal input and output and for power supply. The TCM controls the A/T.
Output speed sensor	TM-89, "Description"
Input speed sensor 1	TM-87, "Description"
Input speed sensor 2	
A/T fluid temperature sensor	TM-85, "Description"
Input clutch solenoid valve	TM-112, "Description"
Front brake solenoid valve	TM-114, "Description"
Direct clutch solenoid valve	TM-133, "Description"
High and low reverse clutch solenoid valve	TM-130, "Description"
Low brake solenoid valve	TM-131, "Description"
Anti-interlock solenoid valve	TM-110, "Description"
2346 brake solenoid valve	TM-132, "Description"
Line pressure solenoid valve	TM-109, "Description"
Torque converter clutch solenoid valve	TM-106, "Description"
ECM	EC-30, "System Description"
BCM	BCS-6, "System Description"
ABS actuator and electric unit (control unit)	BRC-29, "System Description"

MANUAL MODE

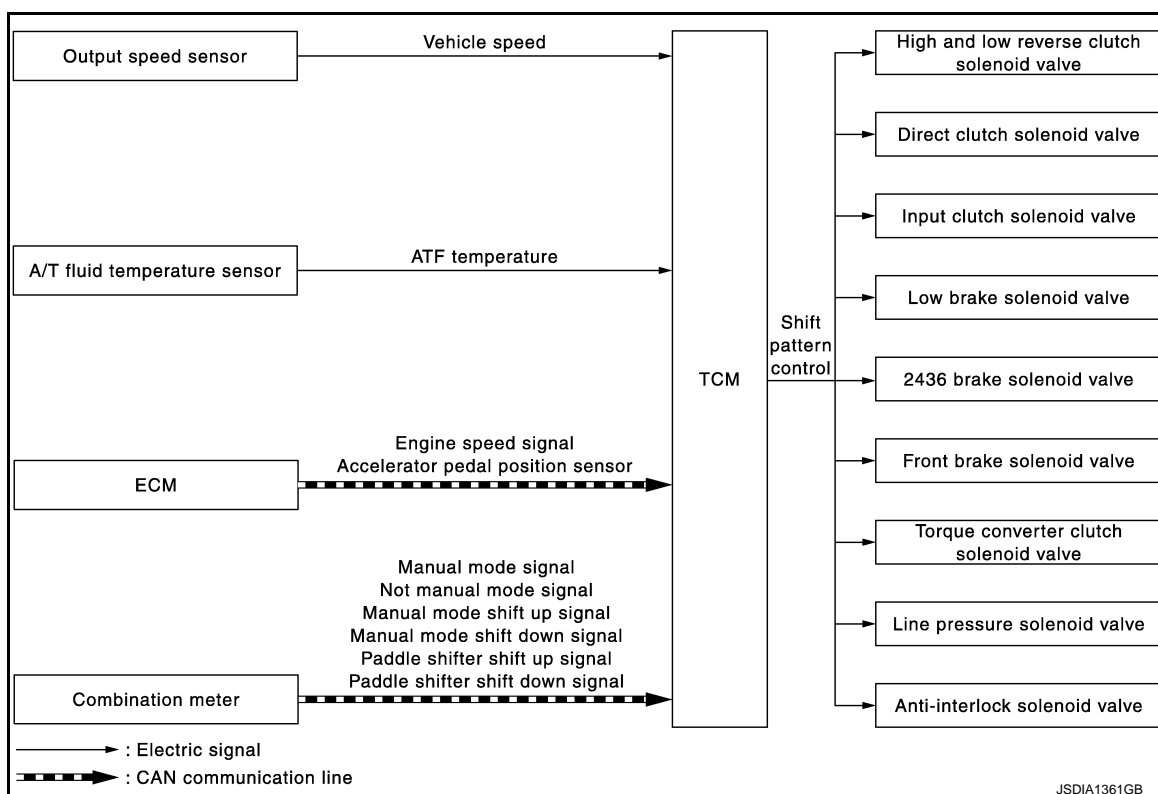
SHIFT PATTERN CONTROL

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]

MANUAL MODE : System Diagram

INFOID:000000005150142



MANUAL MODE : System Description

INFOID:000000005150143

INPUT/OUTPUT SIGNAL CHART

Sensor	Input signal to TCM	TCM function	Actuator
Output speed sensor	Vehicle speed	Shift pattern 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 2436 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 ^{*1}		
	Accelerator pedal position signal ^{*1}		
Combination meter	Manual mode signal ^{*1}		
	Not manual mode signal ^{*1}		
	Manual mode shift up signal ^{*1}		
	Manual mode shift down signal ^{*1}		
	Paddle shifter shift up signal ^{*1, *2}		
	Paddle shifter shift down signal ^{*1, *2}		

*1: This signal is transmitted via CAN communication line.

*2: With paddle shifter

SYSTEM DESCRIPTION

Manual Mode

- The TCM receives the manual mode signal, not manual mode signal, manual mode shift up signal, manual mode shift down signal, paddle shifter shift up signal and paddle shifter shift down signal from combination meter via CAN communication line. The TCM shifts shift pattern control to the manual mode based on these signals, and then shifts the A/T by operating each solenoid valve according to the shift operation of the driver.

SHIFT PATTERN CONTROL

< SYSTEM DESCRIPTION >

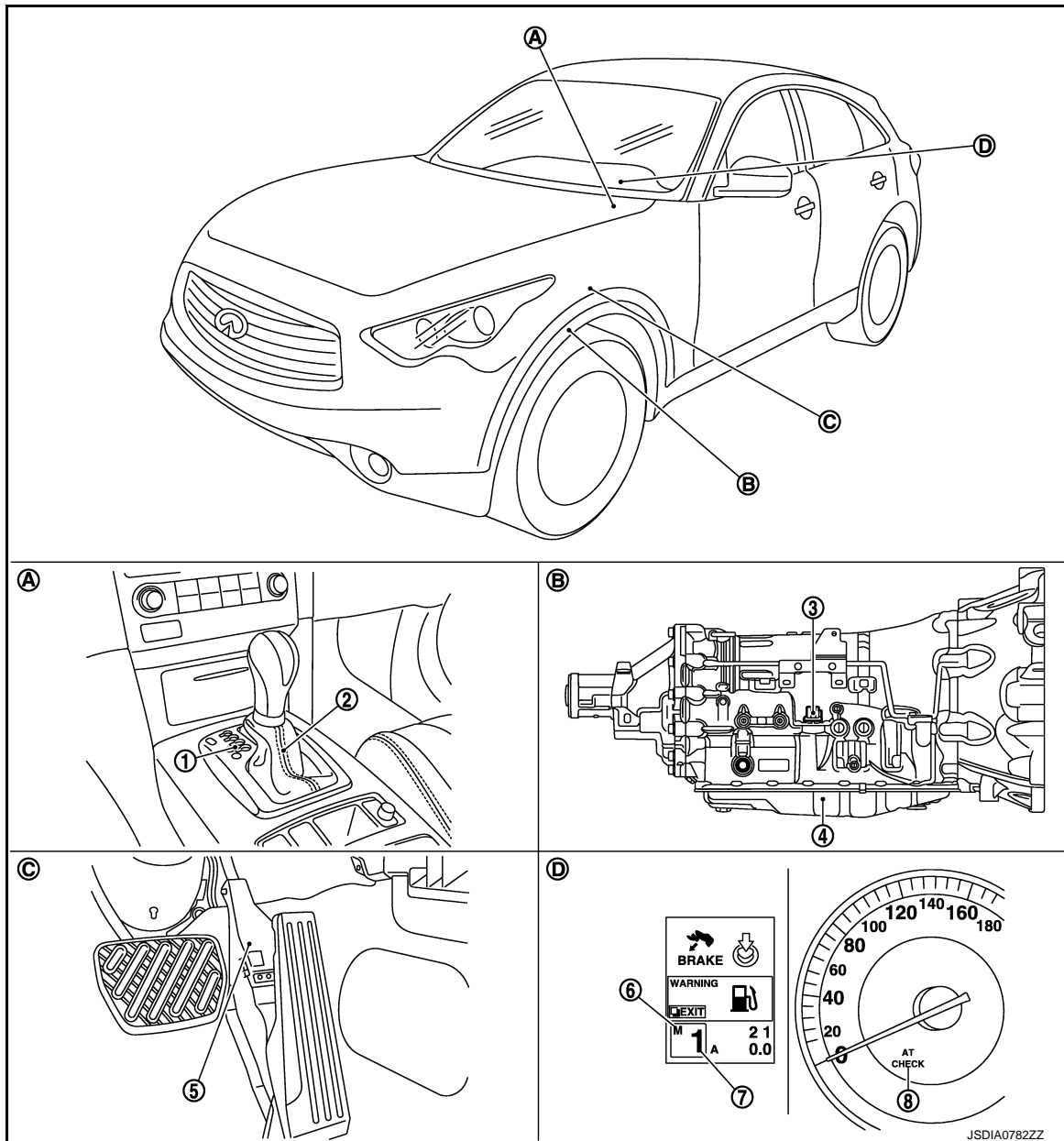
[7AT: RE7R01A (VQ35HR)]

- The TCM prohibits the manual mode while being in fail-safe mode due to an A/T malfunction, etc. Refer to [TM-162, "Fail-Safe"](#).

MANUAL MODE : Component Parts Location

INFOID:000000005150146

Without Paddle Shifter



- | | | |
|--------------------------------------|--------------------------------------|---------------------------|
| 1. Selector lever position indicator | 2. A/T shift selector assembly | 3. A/T assembly connector |
| 4. Control valve with TCM* | 5. Accelerator pedal position sensor | 6. Manual mode indicator |
| 7. Shift position indicator | 8. A/T CHECK indicator lamp | |
| A. Center console | B. A/T assembly | C. Accelerator pedal |
| D. Combination meter | | |

NOTE:

- The following components are included in A/T shift selector assembly.
 - Manual mode select switch
 - Manual mode position select switch
 - Shift position switch
- The following components are included in control valve with TCM.
 - TCM

SHIFT PATTERN CONTROL

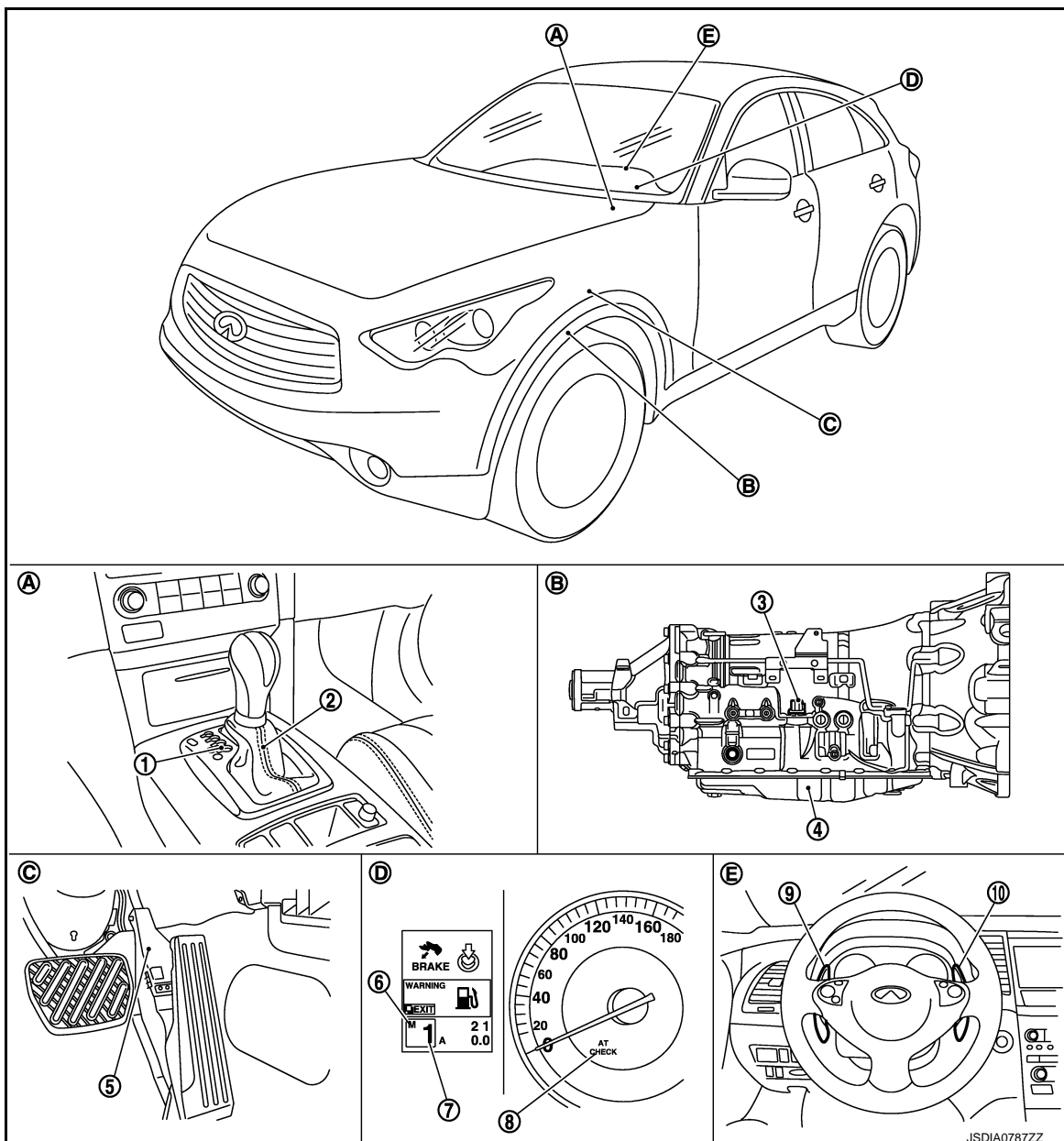
< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]

- Input speed sensor 1, 2
- Output speed sensor
- A/T fluid temperature sensor
- Transmission range switch
- Direct clutch solenoid valve
- High and low reverse clutch solenoid valve
- Input clutch solenoid valve
- Front brake solenoid valve
- Low brake solenoid valve
- Anti-interlock solenoid valve
- 2346 brake solenoid valve
- Line pressure solenoid valve
- Torque converter clutch solenoid valve

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

With Paddle Shifter



- | | | |
|--------------------------------------|--------------------------------------|---------------------------|
| 1. Selector lever position indicator | 2. A/T shift selector assembly | 3. A/T assembly connector |
| 4. Control valve with TCM* | 5. Accelerator pedal position sensor | 6. Manual mode indicator |

SHIFT PATTERN CONTROL

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]

- | | | |
|-------------------------------|-----------------------------|--------------------------------|
| 7. Shift position indicator | 8. A/T CHECK indicator lamp | 9. Paddle shifter (shift-down) |
| 10. Paddle shifter (shift-up) | | |
| A. Center console | B. A/T assembly | C. Accelerator pedal |
| D. Combination meter | E. Steering wheel | |

NOTE:

- The following components are included in A/T shift selector assembly.
 - Manual mode select switch
 - Manual mode position select switch
 - Shift position switch
- The following components are included in control valve with TCM.
 - TCM
 - Input speed sensor 1, 2
 - Output speed sensor
 - A/T fluid temperature sensor
 - Transmission range switch
 - Direct clutch solenoid valve
 - High and low reverse clutch solenoid valve
 - Input clutch solenoid valve
 - Front brake solenoid valve
 - Low brake solenoid valve
 - Anti-interlock solenoid valve
 - 2346 brake solenoid valve
 - Line pressure solenoid valve
 - Torque converter clutch solenoid valve

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

MANUAL MODE : Component Description

INFOID:000000005150145

Name	Function
TCM	The TCM consists of a microcomputer and connectors for signal input and output and for power supply. The TCM controls the A/T.
Output speed sensor	TM-89, "Description"
A/T fluid temperature sensor	TM-85, "Description"
Input clutch solenoid valve	TM-112, "Description"
Front brake solenoid valve	TM-114, "Description"
Direct clutch solenoid valve	TM-133, "Description"
High and low reverse clutch solenoid valve	TM-130, "Description"
Low brake solenoid valve	TM-131, "Description"
Anti-interlock solenoid valve	TM-110, "Description"
2346 brake solenoid valve	TM-132, "Description"
Line pressure solenoid valve	TM-109, "Description"
Torque converter clutch solenoid valve	TM-106, "Description"
ECM	EC-30, "System Description"
Combination meter	MWI-6, "METER SYSTEM : System Description"

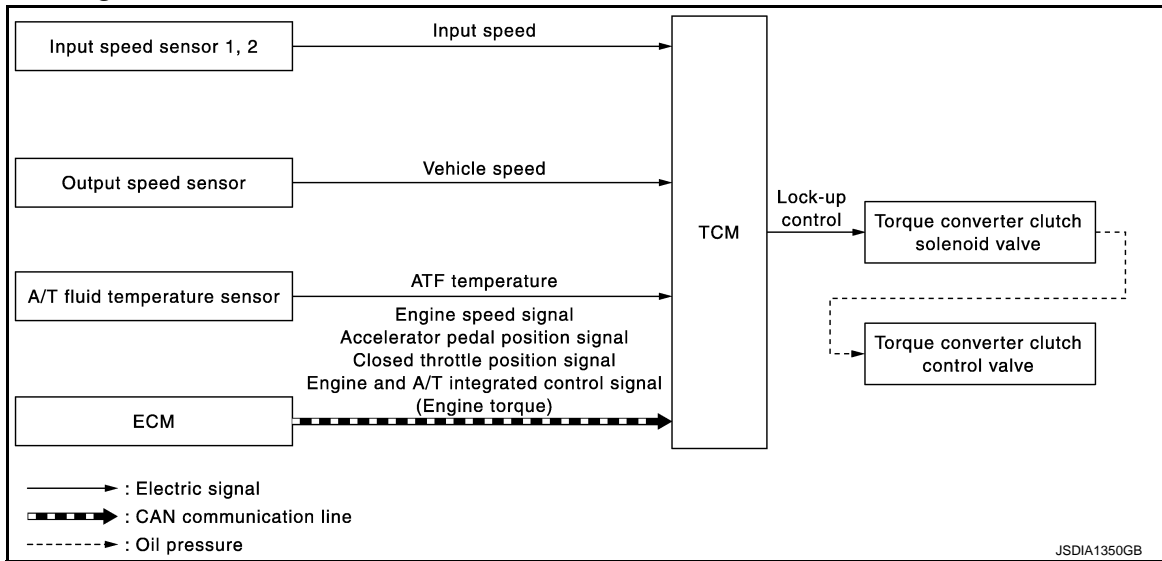
LOCK-UP CONTROL

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]

LOCK-UP CONTROL

System Diagram



System Description

INFOID:000000003940600

INPUT/OUTPUT SIGNAL CHART

Sensor	Input signal to TCM	TCM function	Actuator
Input speed sensor 1, 2	Input speed	Lock-up control	Torque converter clutch solenoid valve ↓ Torque converter clutch control 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)*		

*: This signal is transmitted via CAN communication line.

SYSTEM DESCRIPTION

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

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

Lock-up operation condition table

Selector lever	"D" position						"M" position					
Gear position	7	6	5	4	3	2	7	6	5	4	3	2
Lock-up	×	—	—	—	—	—	×	×	×	×	×	×
Slip lock-up	×	×	×	×	×	×	×	×	×	×	×	×

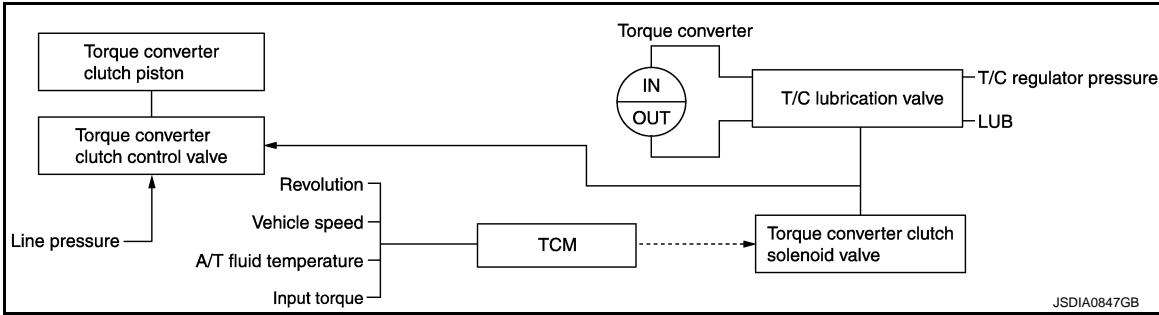
Torque Converter Clutch Control Valve Control

Lock-up control system diagram

LOCK-UP CONTROL

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]



Lock-up released

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

Lock-up Applied

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

Smooth Lock-up Control

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

Half-clutched State

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

Slip Lock-up Control

- In the slip region, the torque converter clutch solenoid current is controlled with the TCM to put it into the half-clutched state. This absorbs the engine torque fluctuation and lock-up operates from low speed. This raises the fuel efficiency for 2GR, 3GR, 4GR, 5GR, 6GR and 7GR.

LOCK-UP CONTROL

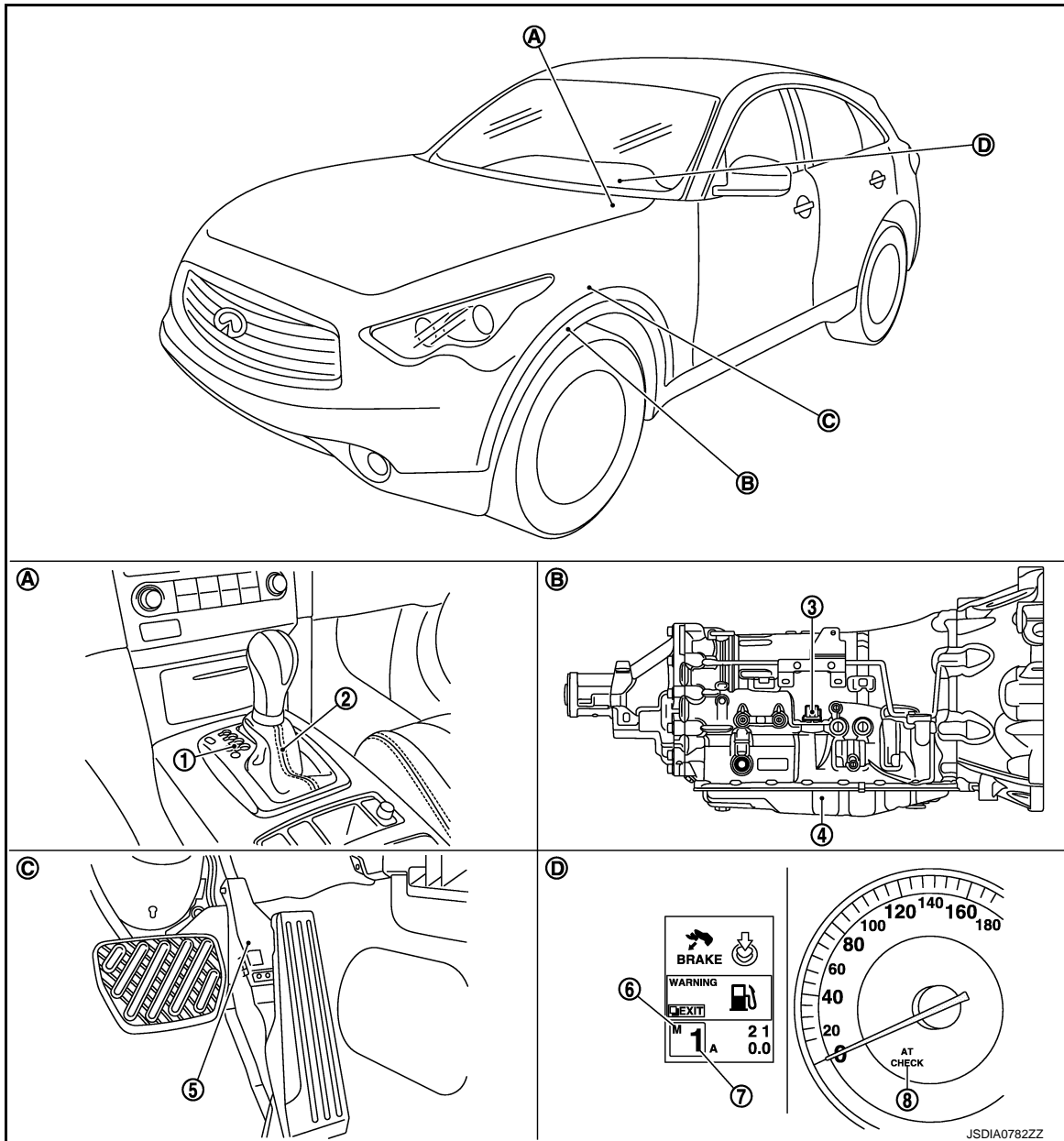
< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]

Component Parts Location

INFOID:000000004109693

Without Paddle Shifter



- | | | |
|--------------------------------------|--------------------------------------|---------------------------|
| 1. Selector lever position indicator | 2. A/T shift selector assembly | 3. A/T assembly connector |
| 4. Control valve with TCM* | 5. Accelerator pedal position sensor | 6. Manual mode indicator |
| 7. Shift position indicator | 8. A/T CHECK indicator lamp | |
| A. Center console | B. A/T assembly | C. Accelerator pedal |
| D. Combination meter | | |

NOTE:

- The following components are included in A/T shift selector assembly.
 - Manual mode select switch
 - Manual mode position select switch
 - Shift position switch
- The following components are included in control valve with TCM.
 - TCM
 - Input speed sensor 1, 2
 - Output speed sensor

LOCK-UP CONTROL

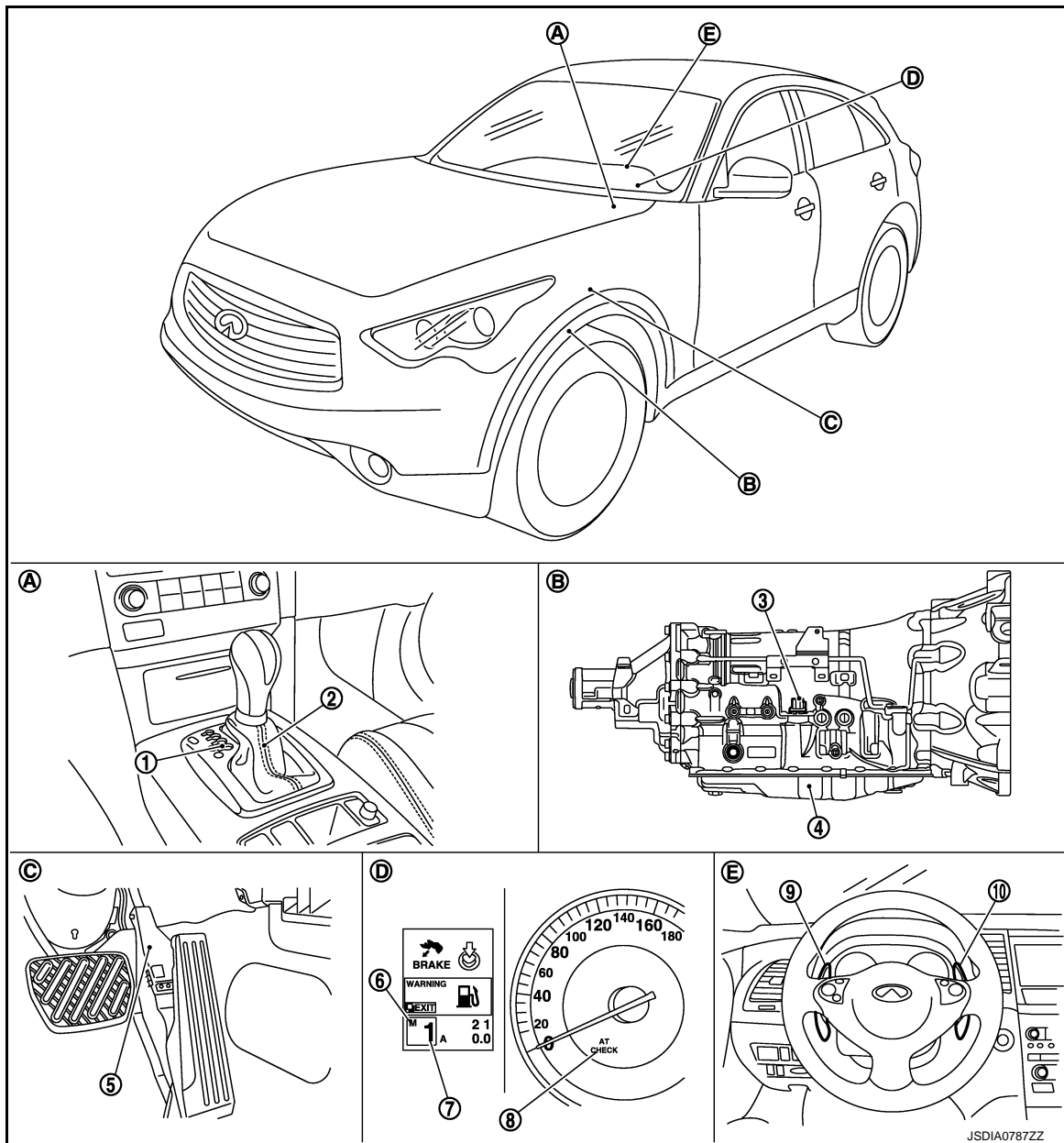
[7AT: RE7R01A (VQ35HR)]

< SYSTEM DESCRIPTION >

- A/T fluid temperature sensor
- Transmission range switch
- Direct clutch solenoid valve
- High and low reverse clutch solenoid valve
- Input clutch solenoid valve
- Front brake solenoid valve
- Low brake solenoid valve
- Anti-interlock solenoid valve
- 2346 brake solenoid valve
- Line pressure solenoid valve
- Torque converter clutch solenoid valve

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

With Paddle Shifter



- | | | |
|--------------------------------------|--------------------------------------|--------------------------------|
| 1. Selector lever position indicator | 2. A/T shift selector assembly | 3. A/T assembly connector |
| 4. Control valve with TCM* | 5. Accelerator pedal position sensor | 6. Manual mode indicator |
| 7. Shift position indicator | 8. A/T CHECK indicator lamp | 9. Paddle shifter (shift-down) |
| 10. Paddle shifter (shift-up) | | |

LOCK-UP CONTROL

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]

- | | | |
|----------------------|-------------------|----------------------|
| A. Center console | B. A/T assembly | C. Accelerator pedal |
| D. Combination meter | E. Steering wheel | |

NOTE:

- The following components are included in A/T shift selector assembly.
 - Manual mode select switch
 - Manual mode position select switch
 - Shift position switch
- The following components are included in control valve with TCM.
 - TCM
 - Input speed sensor 1, 2
 - Output speed sensor
 - A/T fluid temperature sensor
 - Transmission range switch
 - Direct clutch solenoid valve
 - High and low reverse clutch solenoid valve
 - Input clutch solenoid valve
 - Front brake solenoid valve
 - Low brake solenoid valve
 - Anti-interlock solenoid valve
 - 2346 brake solenoid valve
 - Line pressure solenoid valve
 - Torque converter clutch solenoid valve

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

Component Description

INFOID:000000003940676

Name	Function
TCM	The TCM consists of a microcomputer and connectors for signal input and output and for power supply. The TCM controls the A/T.
Output speed sensor	TM-89, "Description"
Input speed sensor 1	TM-87, "Description"
Input speed sensor 2	
A/T fluid temperature sensor	TM-85, "Description"
Torque converter clutch solenoid valve	TM-106, "Description"
Torque converter clutch control valve	Switches the lock-up to operating or released. Also, by performing the lock-up operation transiently, lock-up smoothly.
ECM	EC-30, "System Description"

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

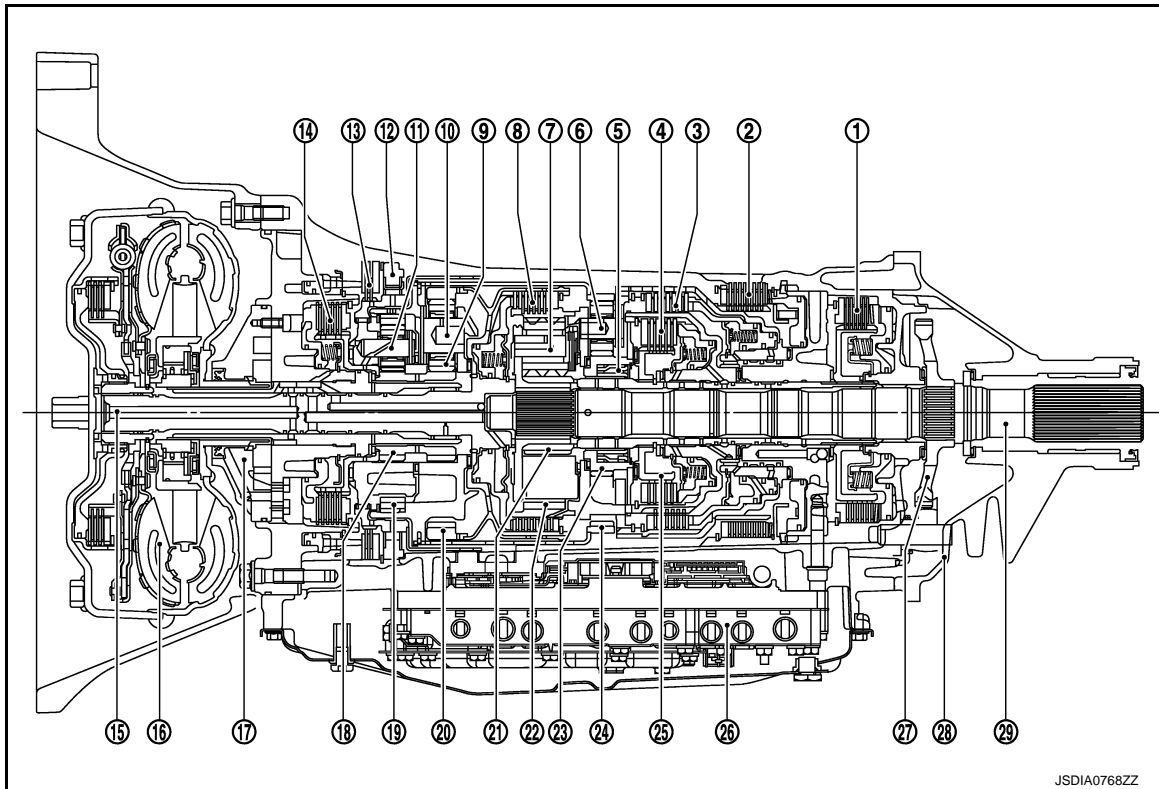
[7AT: RE7R01A (VQ35HR)]

SHIFT MECHANISM

Cross-Sectional View

INFOID:000000003838838

2WD MODELS



- | | | |
|-------------------------------------|----------------------------|----------------------------|
| 1. Low brake | 2. Reverse brake | 3. Direct clutch |
| 4. High and low reverse clutch | 5. 2nd one-way clutch | 6.*1 Rear carrier |
| 7. Mid carrier | 8. Input clutch | 9.*2 Front sun gear |
| 10.*3 Front carrier | 11. Under drive carrier | 12. 1st one-way clutch |
| 13. Front brake | 14. 2346 brake | 15.*4 Input shaft |
| 16. Torque converter | 17. Oil pump | 18.*2 Under drive sun gear |
| 19.*3 Under drive internal gear | 20.*4 Front internal gear | 21. Mid sun gear |
| 22.*1 Mid internal gear | 23. Rear sun gear | 24. Rear internal gear |
| 25. High and low reverse clutch hub | 26. Control valve with TCM | 27. Parking gear |
| 28. Rear extension | 29. Output shaft | |

*1: 6 and 22 are one unit.

*2: 9 and 18 are one unit.

*3: 10 and 19 are one unit.

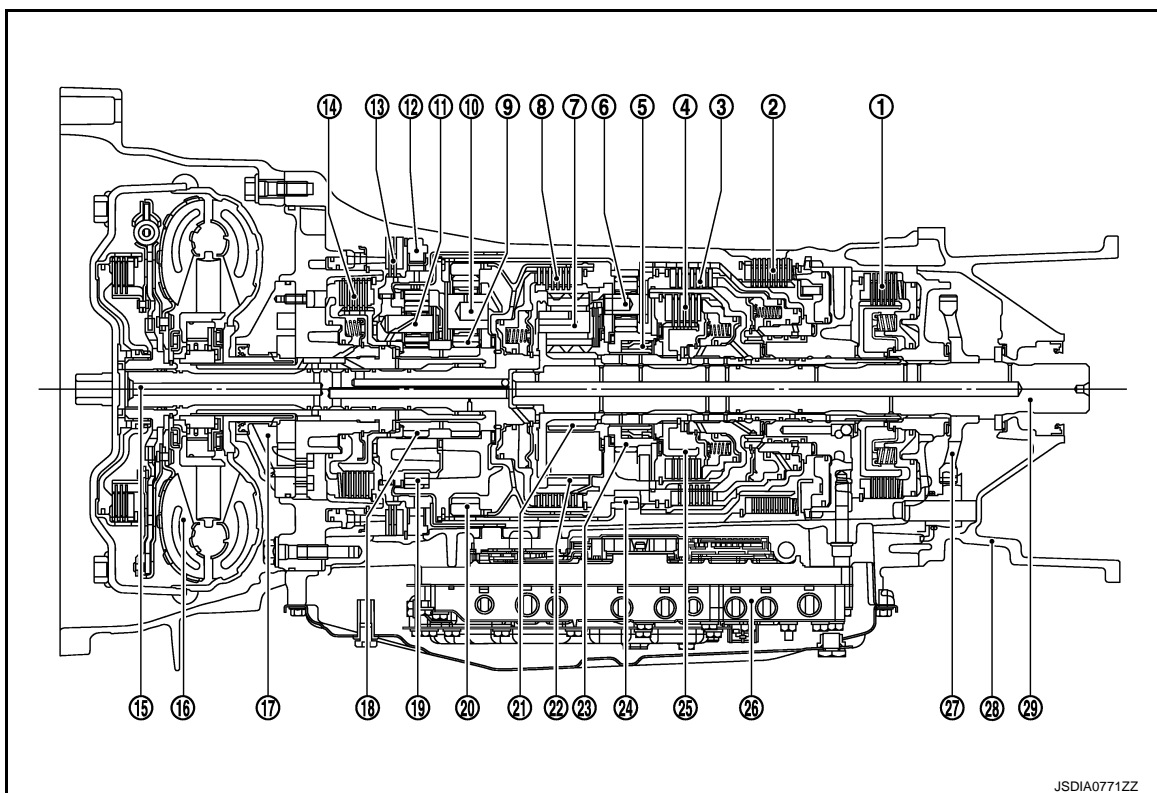
*4: 15 and 20 are one unit.

AWD MODELS

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]



- | | | |
|-------------------------------------|----------------------------|----------------------------|
| 1. Low brake | 2. Reverse brake | 3. Direct clutch |
| 4. High and low reverse clutch | 5. 2nd one-way clutch | 6.*1 Rear carrier |
| 7. Mid carrier | 8. Input clutch | 9.*2 Front sun gear |
| 10.*3 Front carrier | 11. Under drive carrier | 12. 1st one-way clutch |
| 13. Front brake | 14. 2346 brake | 15.*4 Input shaft |
| 16. Torque converter | 17. Oil pump | 18.*2 Under drive sun gear |
| 19.*3 Under drive internal gear | 20.*4 Front internal gear | 21. Mid sun gear |
| 22.*1 Mid internal gear | 23. Rear sun gear | 24. Rear internal gear |
| 25. High and low reverse clutch hub | 26. Control valve with TCM | 27. Parking gear |
| 28. Adapter case | 29. Output shaft | |

*1: 6 and 22 are one unit.

*2: 9 and 18 are one unit.

*3: 10 and 19 are one unit.

*4: 15 and 20 are one unit.

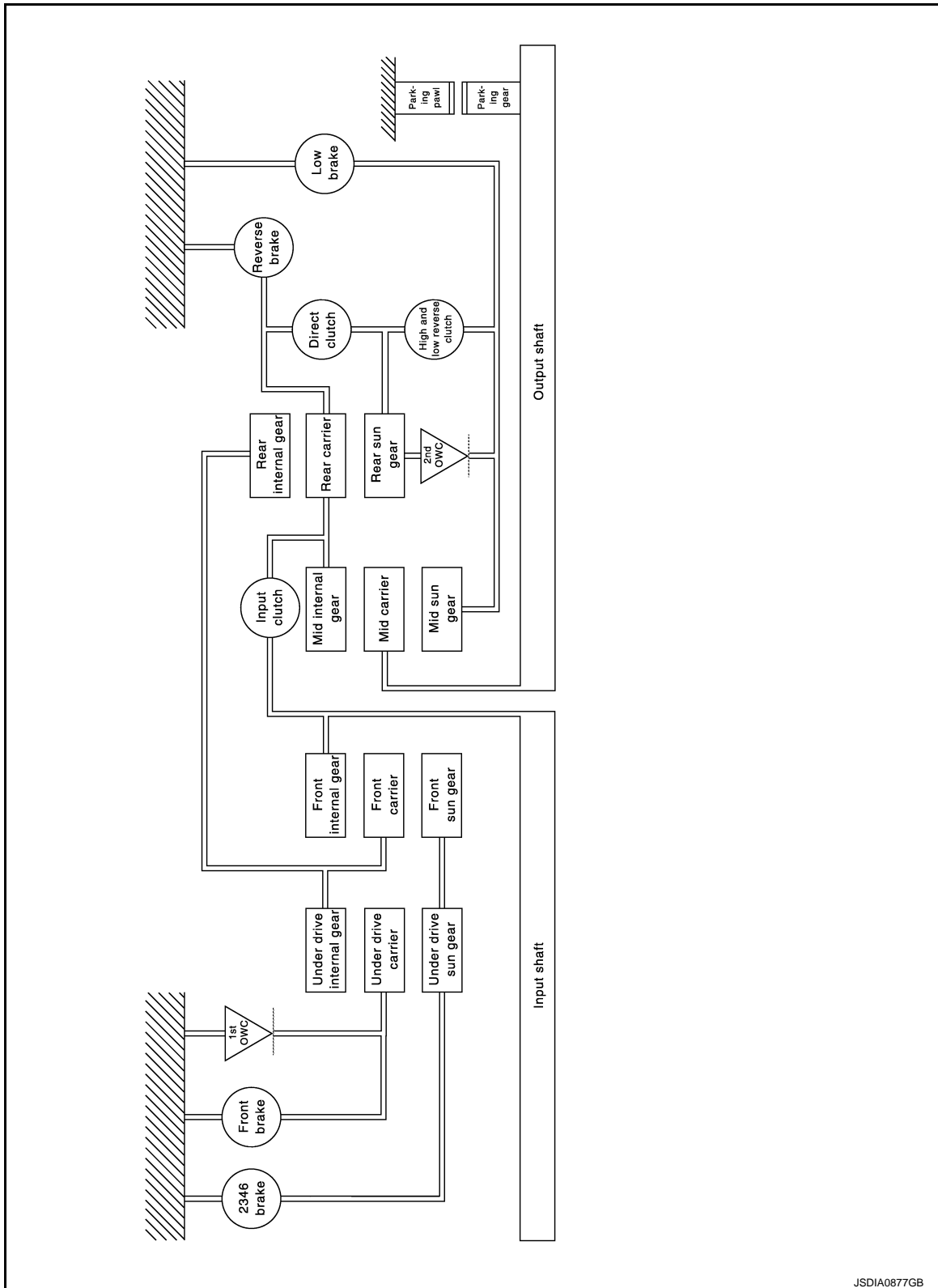
SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]

System Diagram

INFOID:000000003838839



JSDIA0877GB

System Description

INFOID:000000003838840

DESCRIPTION

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]

With the use of 4 sets of planetary gears, A/T enables 7-speed transmission for forward and 1-speed transmission for backward, depending on the combination of 3 sets of multiple-disc clutches, 4 sets of multiple-disc brakes and 2 sets of one-way clutches.

CLUTCH AND BAND CHART

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, DS	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.

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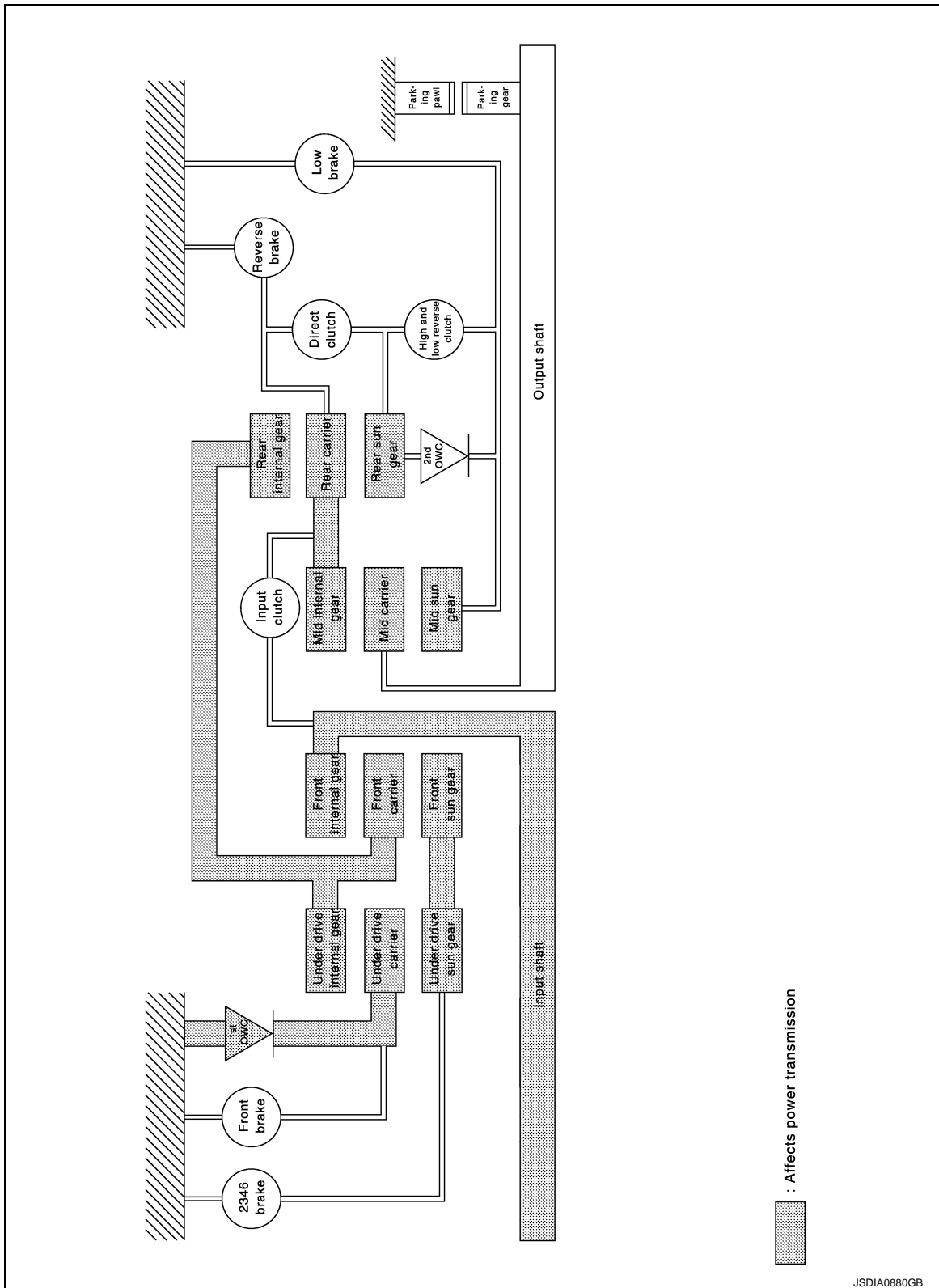
POWER TRANSMISSION

"N" Position

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]



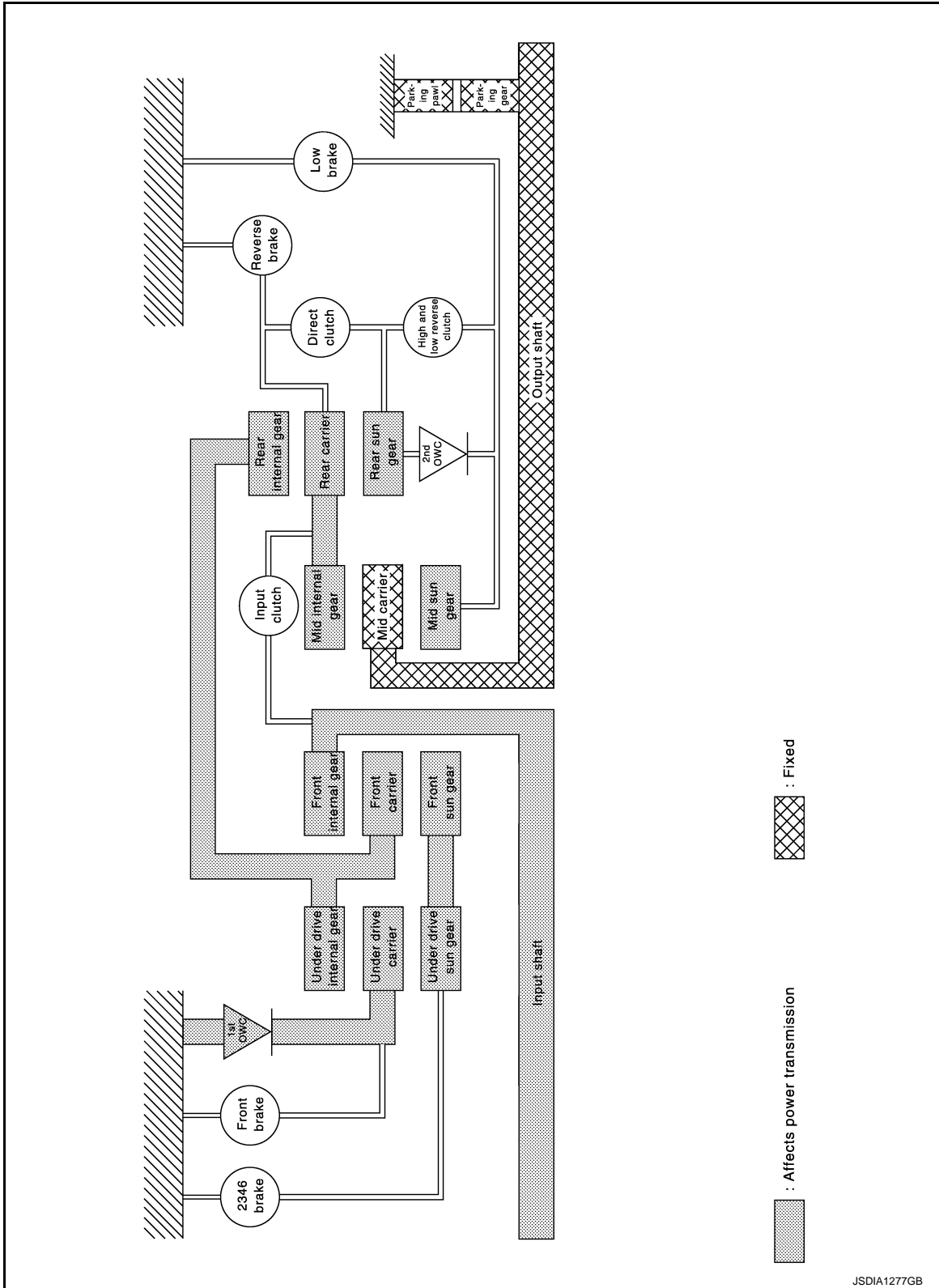
Since the low brake is released, torque from the input shaft drive is not transmitted to the output shaft.

"P" Position

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]



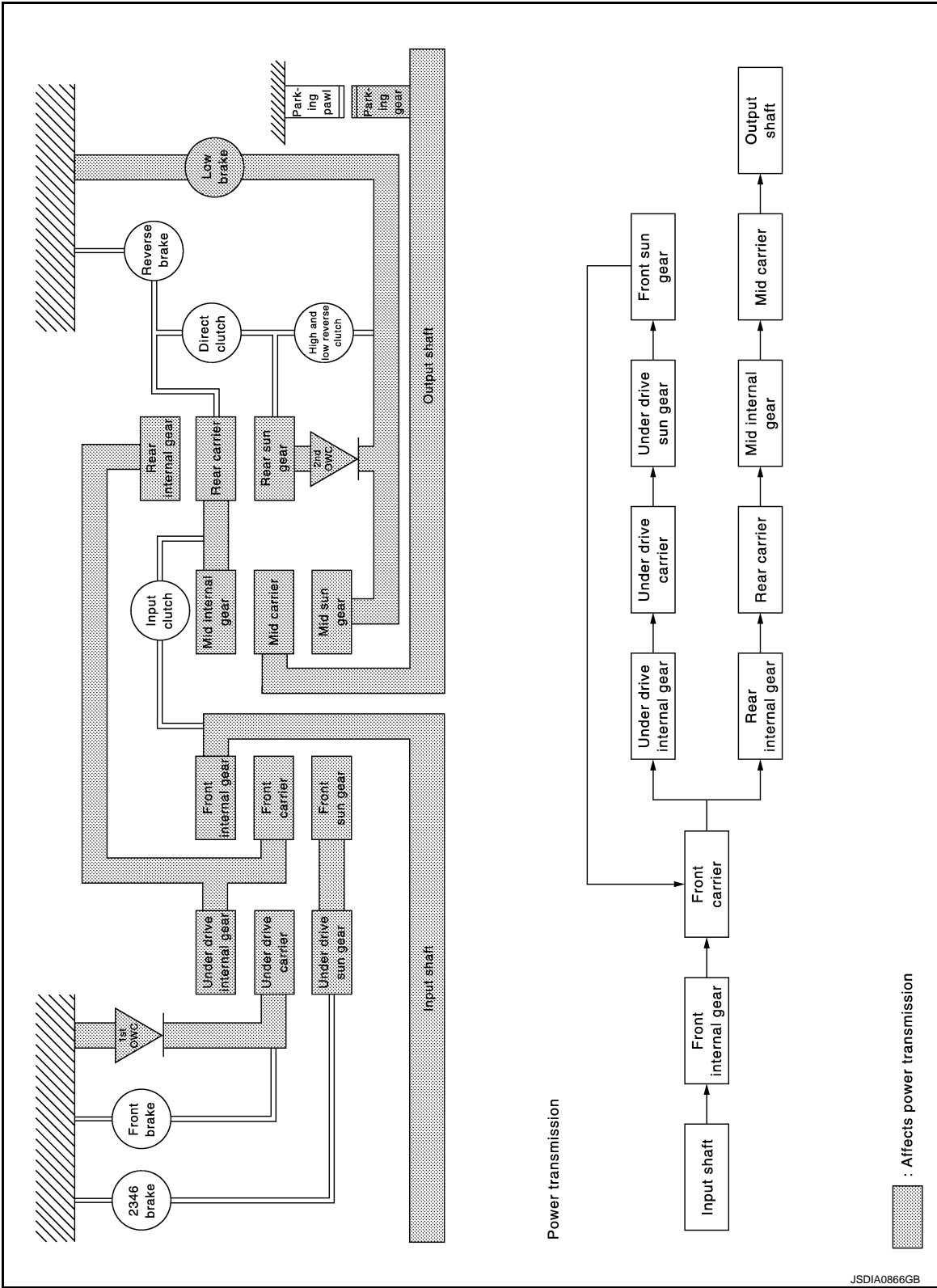
- The same as for the “N” position, since the low brake is released, so torque from the input shaft drive is not transmitted to the output shaft.
- The parking pawl linked with the selector lever meshes with the parking gear and fastens the output shaft mechanically.

“D1” and “DS1” Positions

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]



- 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.

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]

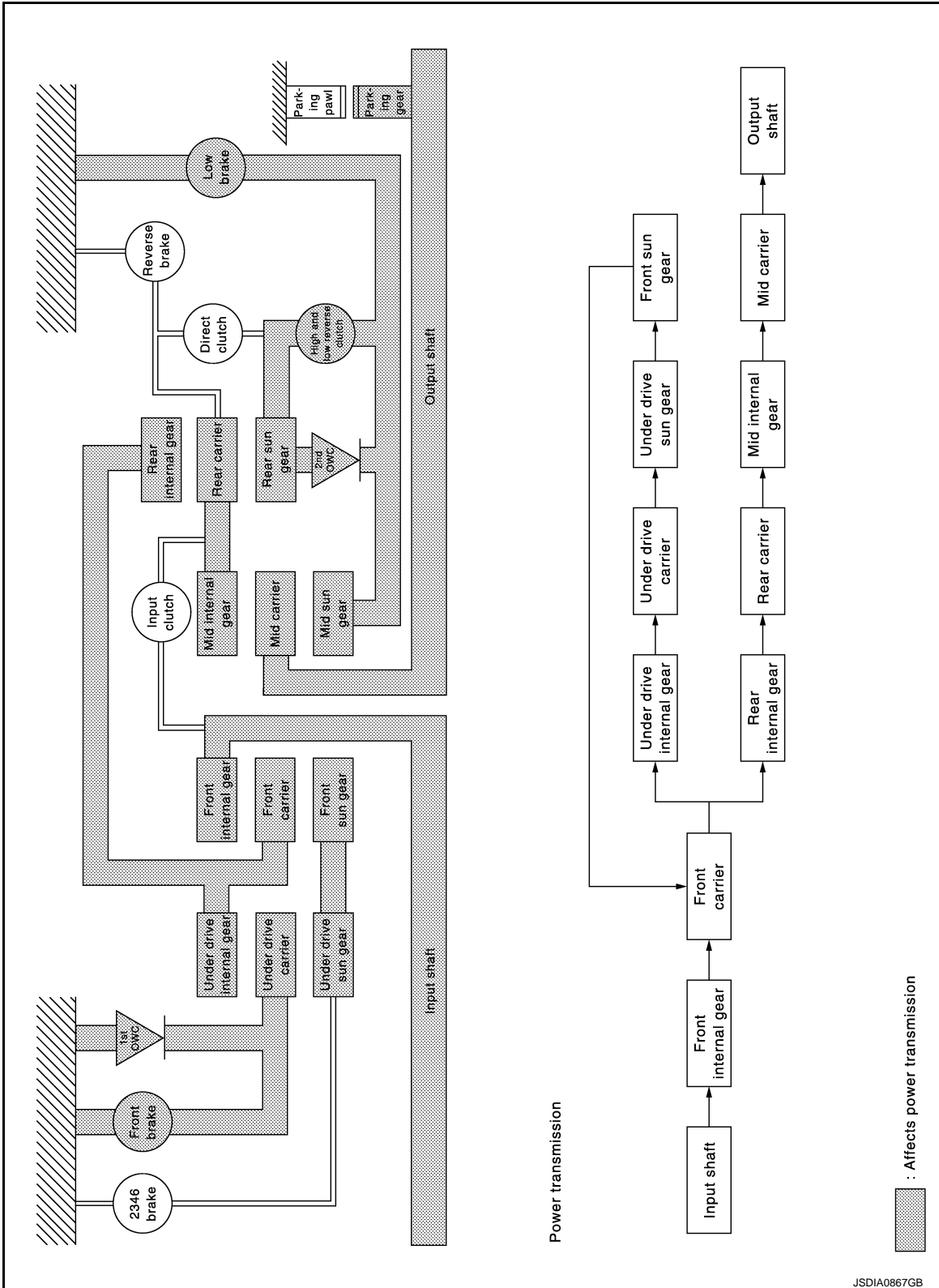
Front planetary gear			
Name	Front sun gear	Front carrier	Front internal gear
Condition	—	Output	Input
Direction of rotation	Counterclockwise revolution	Clockwise revolution	Clockwise revolution
Number of revolutions	Deceleration from front internal gear	Deceleration from front internal gear	Same number 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

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]



- The 1st one-way clutch and the front brake regulates 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 reverses clutch regulate counterclockwise rotation of the rear sun gear.
NOTE:
The high and low reverse clutch operates only while coasting.
- The mid sun gear is fixed by the low brake.

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]

- 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

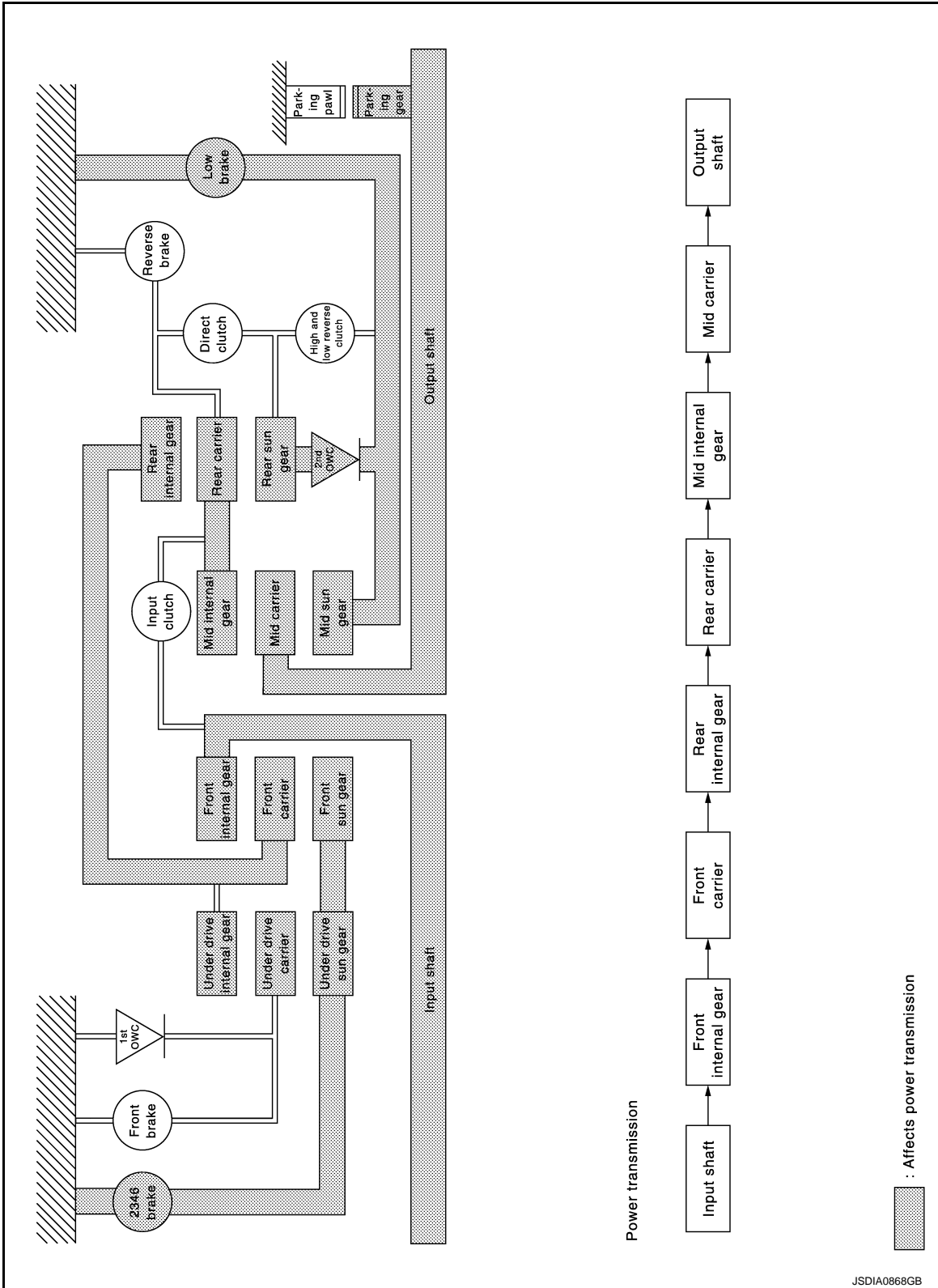
Name	Mid sun gear	Mid carrier	Mid internal gear
Condition	Fixed	Output	Input
Direction of rotation	—	Clockwise revolution	Clockwise revolution
Number of revolutions	—	Deceleration from mid internal gear	Same number of revolution as the rear carrier

“D2” and “DS2” Positions

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]



- 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.

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

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]

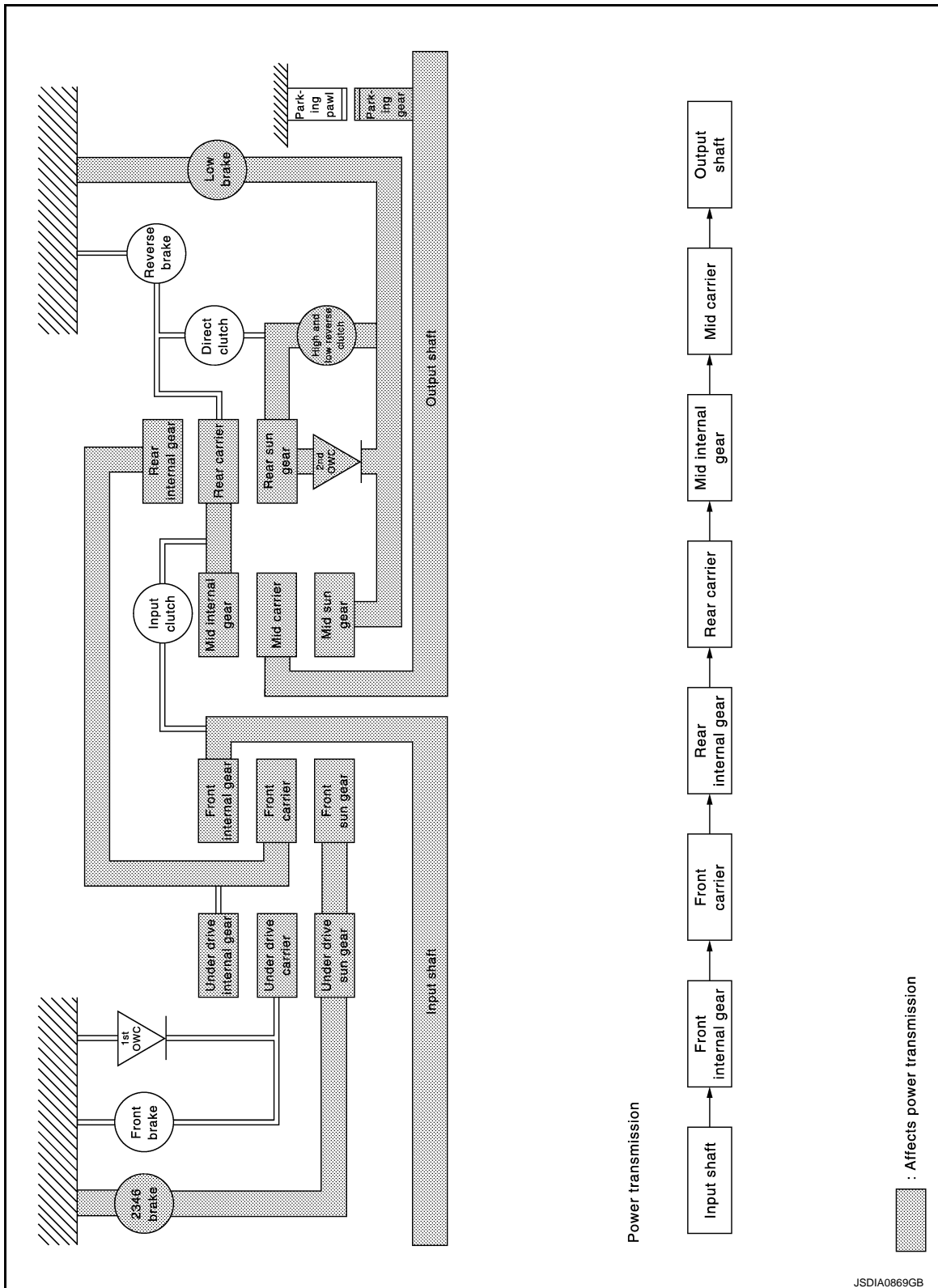
Front planetary gear			
Name	Front sun gear	Front carrier	Front internal gear
Condition	Fixed	Output	Input
Direction of rotation	—	Clockwise revolution	Clockwise revolution
Number of revolutions	—	Deceleration from front internal gear	Same number of revolution as the input shaft
Under drive planetary 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

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]



- The front sun gear and the under drive sun gear are fixed by the 2346 brake.
- The 2nd one-way clutch and the high and low reverse clutch regulates counterclockwise rotation of the rear sun gear.

NOTE:

The high and low reverse clutch operates only while coasting.

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

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

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]

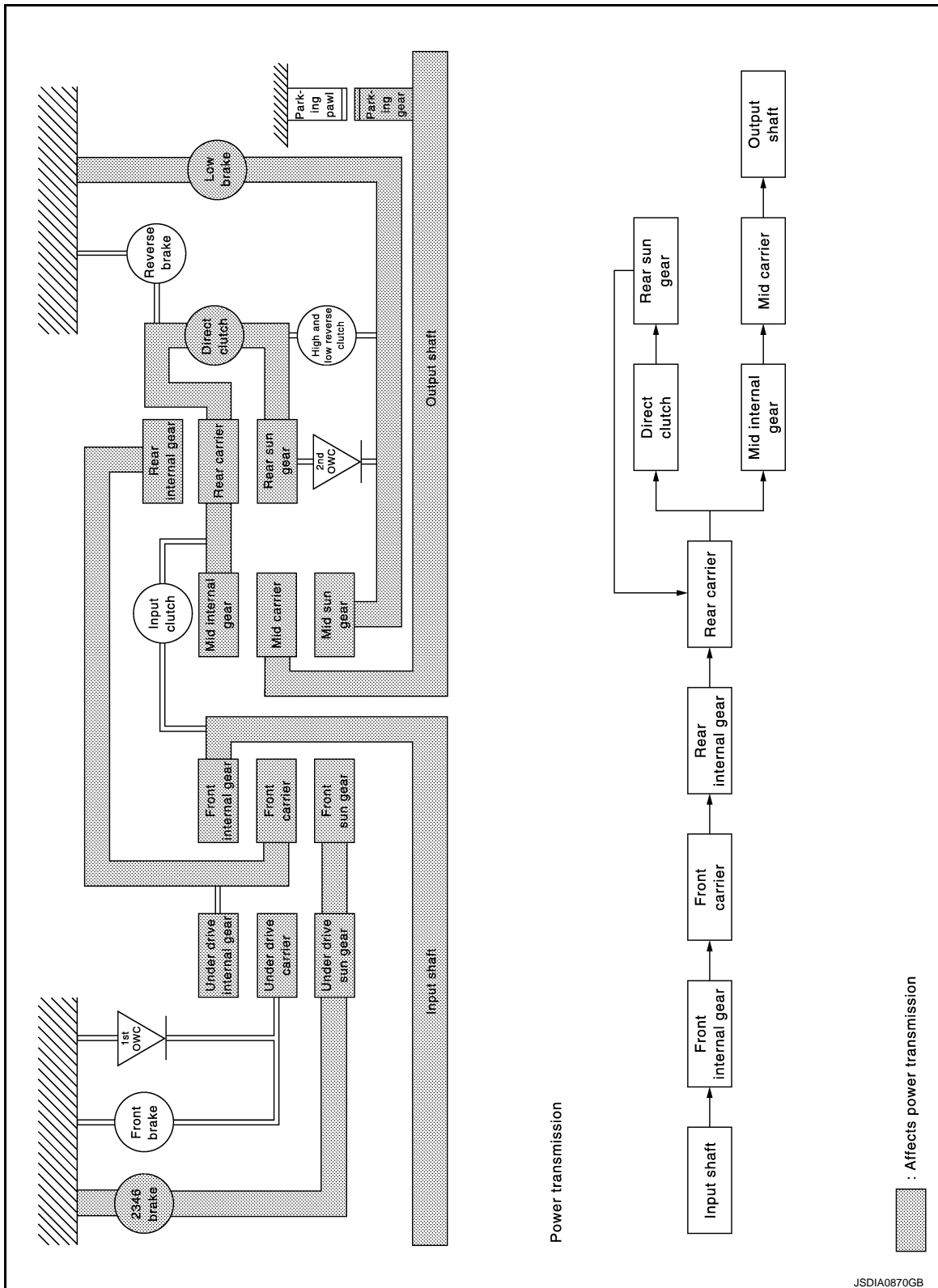
Front planetary gear			
Name	Front sun gear	Front carrier	Front internal gear
Condition	Fixed	Output	Input
Direction of rotation	—	Clockwise revolution	Clockwise revolution
Number of revolutions	—	Deceleration from front internal gear	Same number of revolution as the input shaft
Under drive planetary 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”, “DS3” and “M3” Positions

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]



- The front sun gear and the under drive sun gear are fixed by the 2346 brake.
- The direct clutch gets engaged and connects the rear sun gear with the rear carrier.
- The mid sun gear is fixed by the low brake.
- Each planetary gear enters the state described below.

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

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]

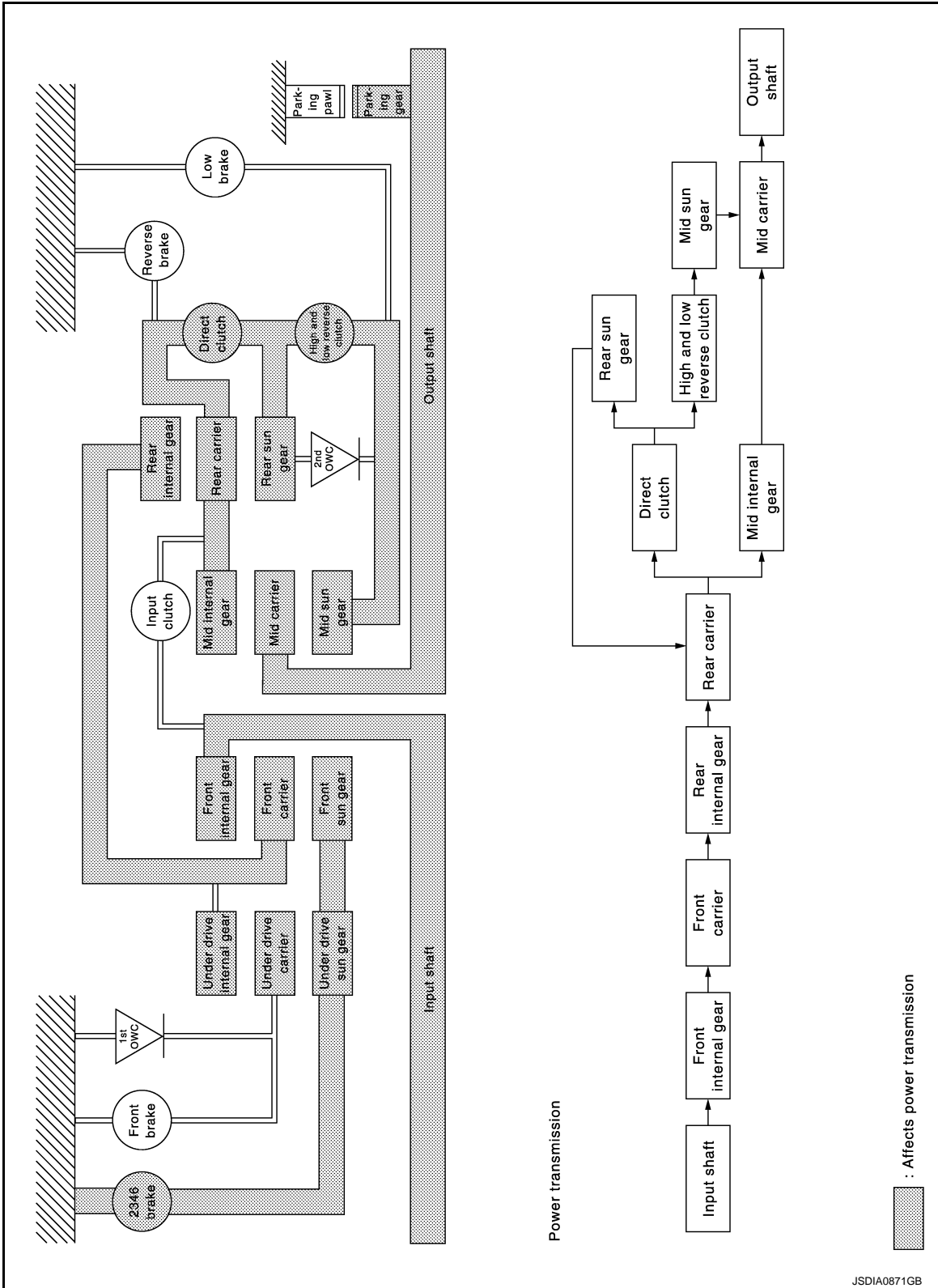
Front planetary gear			
Name	Front sun gear	Front carrier	Front internal gear
Condition	Fixed	Output	Input
Direction of rotation	—	Clockwise revolution	Clockwise revolution
Number of revolutions	—	Deceleration from front internal gear	Same number of revolution as the input shaft
Under drive planetary 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”, “DS4” and “M4” Positions

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]



- 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.

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

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]

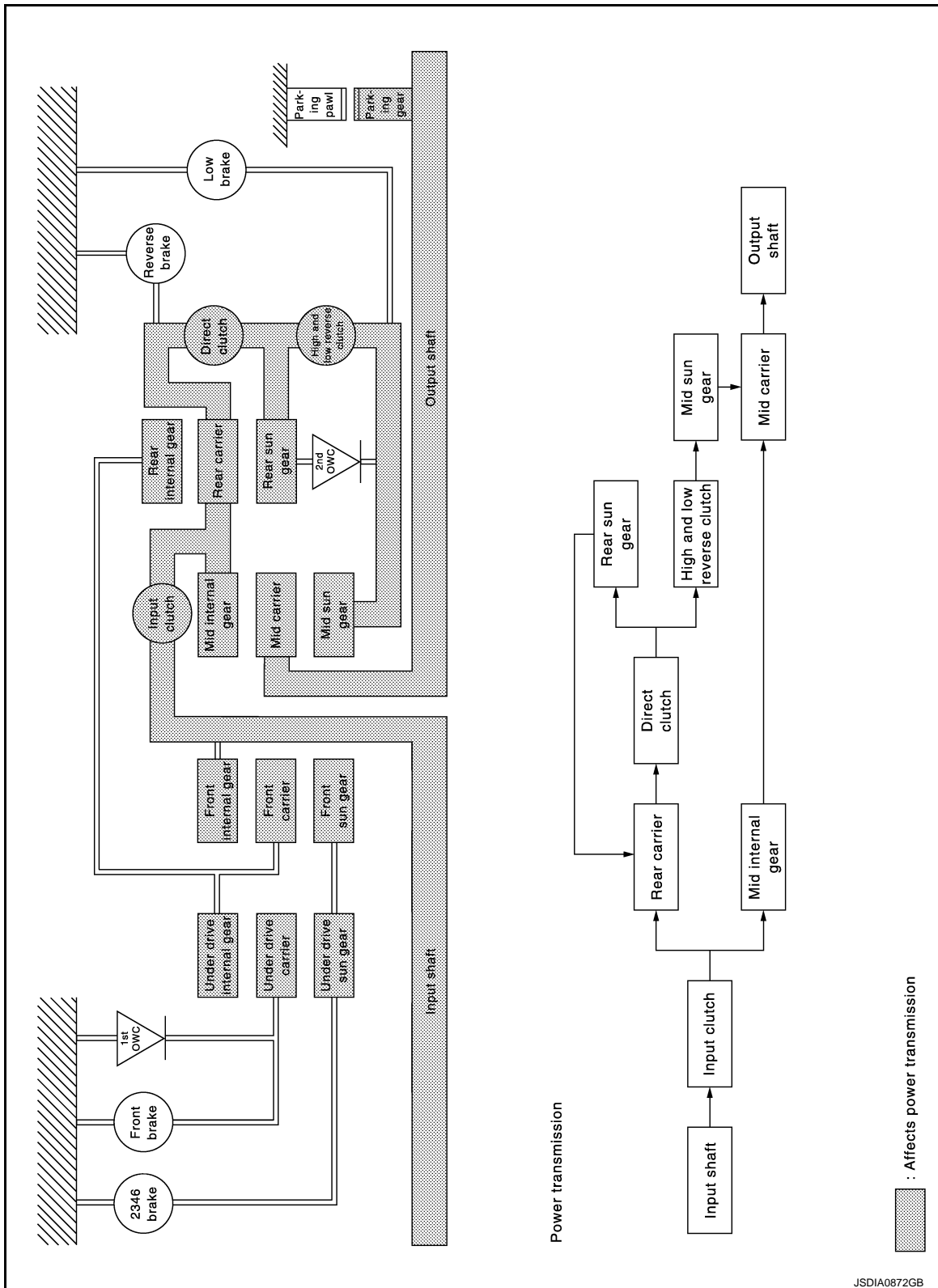
Front planetary gear			
Name	Front sun gear	Front carrier	Front internal gear
Condition	Fixed	Output	Input
Direction of rotation	—	Clockwise revolution	Clockwise revolution
Number of revolutions	—	Deceleration from front internal gear	Same number of revolution as the input shaft
Under drive planetary 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”, “DS5” and “M5” Positions

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]



- 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.

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]

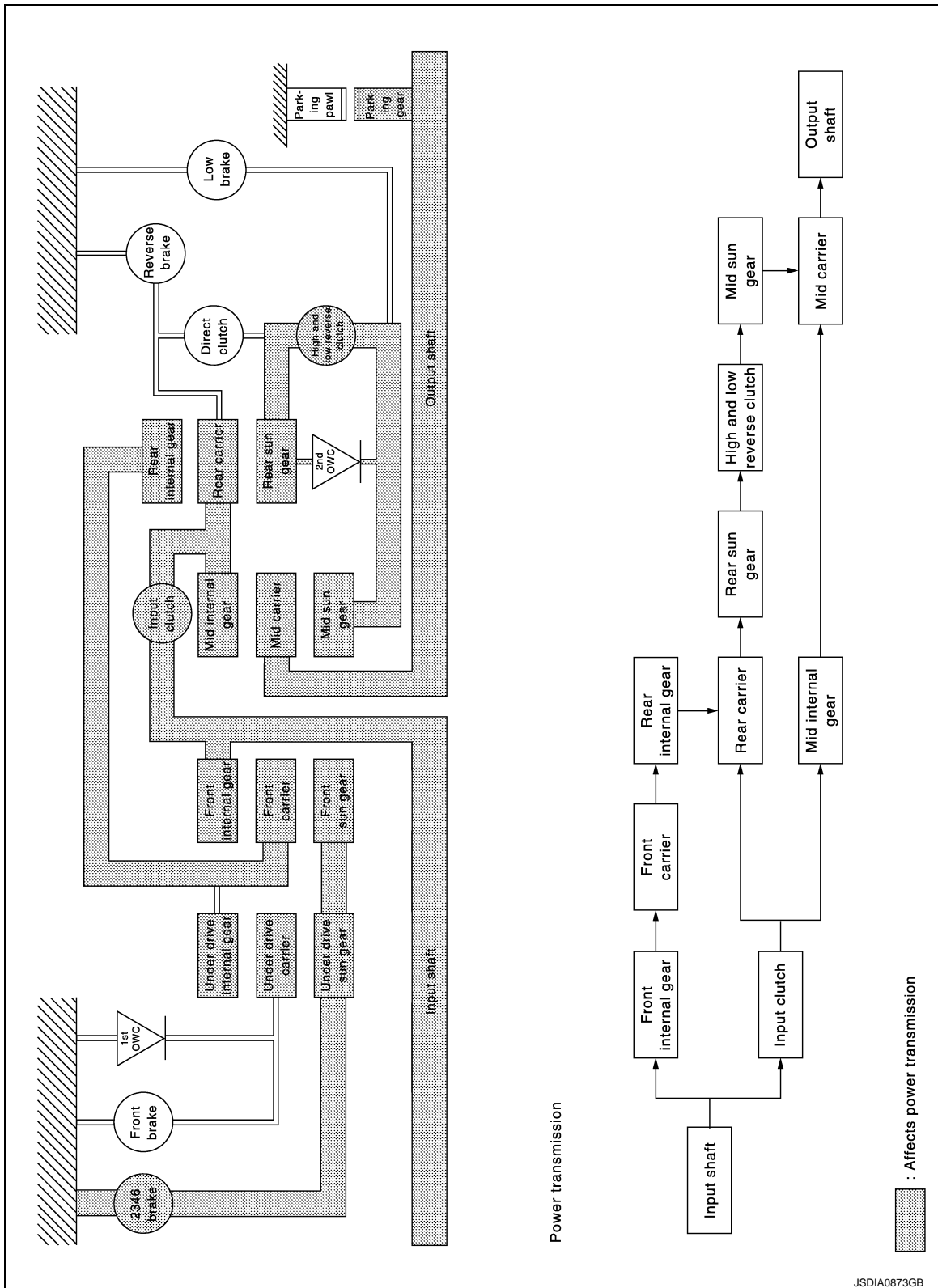
Rear planetary gear			
Name	Rear sun gear	Rear carrier	Rear internal gear
Condition	—	input/Output	—
Direction of rotation	Clockwise revolution	Clockwise revolution	Clockwise revolution
Number of revolutions	Same number of revolution as the rear carrier	Same number of revolution as the input shaft	Same 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”, “DS6” and “M6” Positions

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]



- 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.

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]

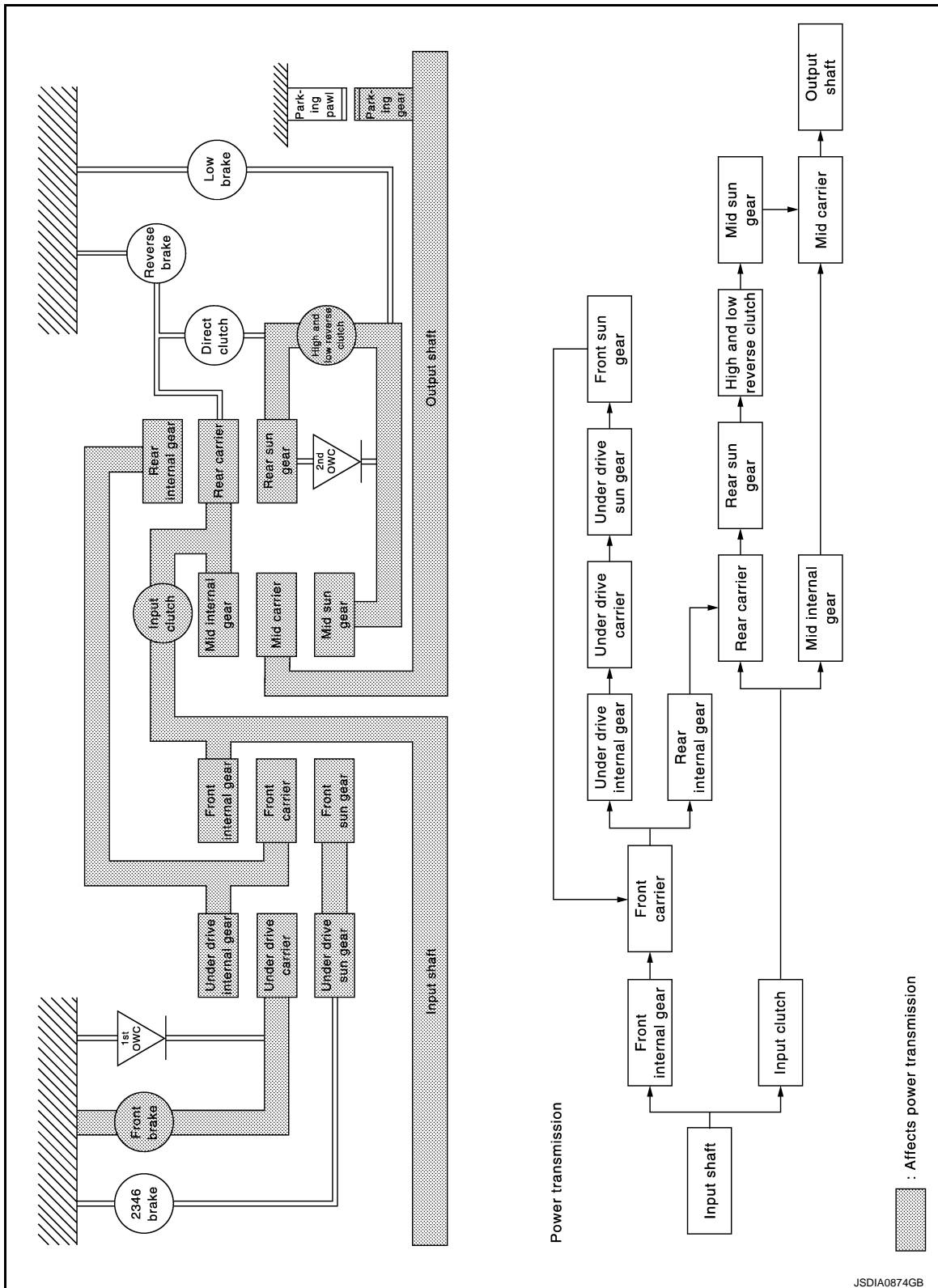
Front planetary gear			
Name	Front sun gear	Front carrier	Front internal gear
Condition	Fixed	Output	Input
Direction of rotation	—	Clockwise revolution	Clockwise revolution
Number of revolutions	—	Deceleration from front internal gear	Same number of revolution as the input shaft
Rear planetary gear			
Name	Rear sun gear	Rear carrier	Rear internal gear
Condition	—	Input/Output	Input
Direction of rotation	Clockwise revolution	Clockwise revolution	Clockwise revolution
Number of revolutions	Acceleration from rear carrier	Same number of revolution as the input shaft	Same number of revolution as the front carrier
Mid planetary gear			
Name	Mid sun gear	Mid carrier	Mid internal gear
Condition	—	Output	Input
Direction of rotation	Clockwise revolution	Clockwise revolution	Clockwise revolution
Number of revolutions	Acceleration from mid internal gear	Acceleration from mid internal gear	Same number of revolution as the input shaft

“D7”, “DS7” and “M7” Positions

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]



- The under drive carrier is fixed by the front brake.
- The input clutch gets engaged and connects the mid internal gear with the rear carrier.
- The high and low reverse clutch gets engaged and connects the rear sun gear with the mid sun gear.
- Each planetary gear enters state described below.

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]

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

[7AT: RE7R01A (VQ35HR)]



- JSDIA0875GB

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]

- 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	—

SHIFT MECHANISM

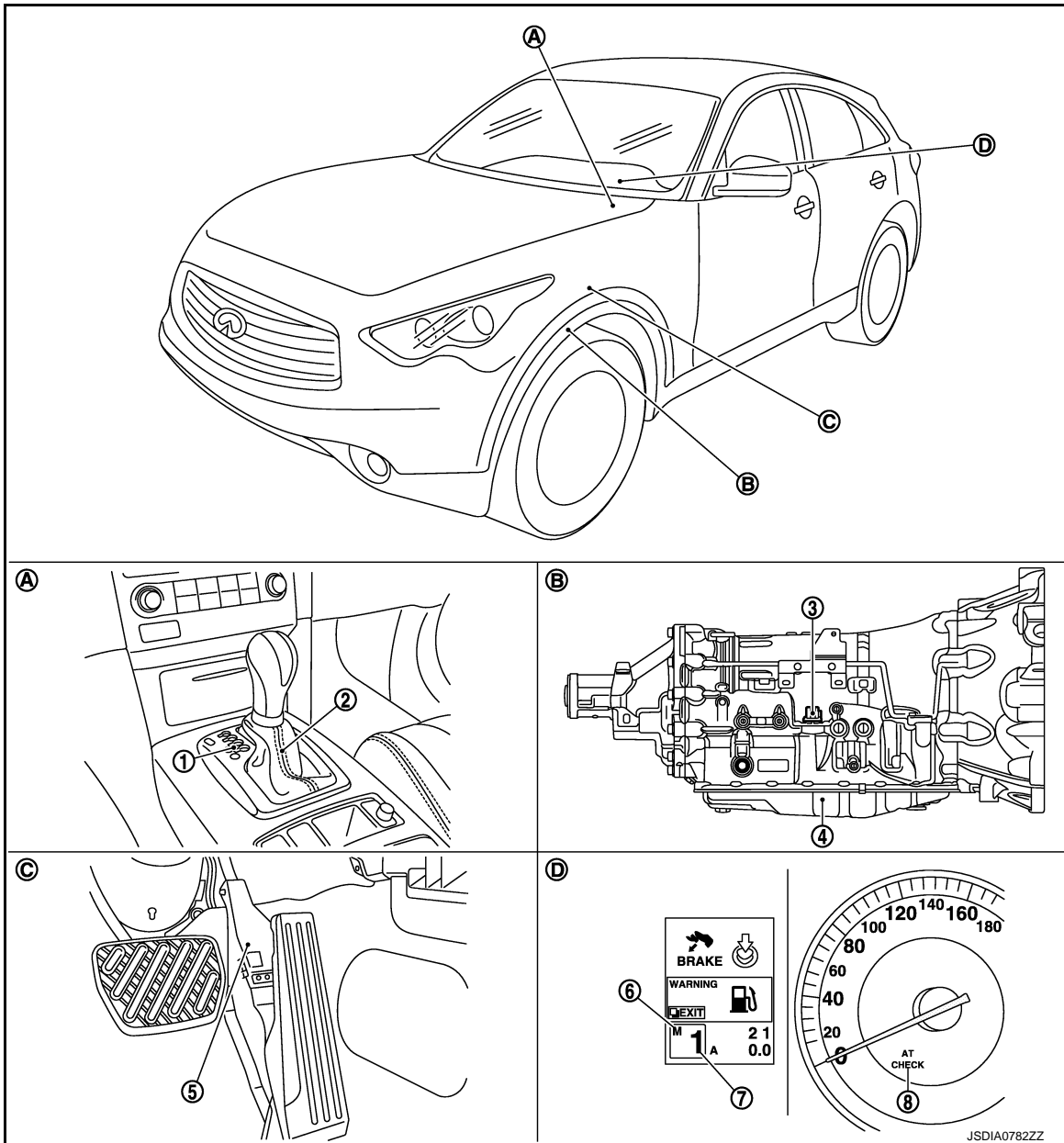
< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]

Component Parts Location

INFOID:000000004109696

Without Paddle Shifter



- | | | |
|--------------------------------------|--------------------------------------|---------------------------|
| 1. Selector lever position indicator | 2. A/T shift selector assembly | 3. A/T assembly connector |
| 4. Control valve with TCM* | 5. Accelerator pedal position sensor | 6. Manual mode indicator |
| 7. Shift position indicator | 8. A/T CHECK indicator lamp | |
| A. Center console | B. A/T assembly | C. Accelerator pedal |
| D. Combination meter | | |

NOTE:

- The following components are included in A/T shift selector assembly.
 - Manual mode select switch
 - Manual mode position select switch
 - Shift position switch
- The following components are included in control valve with TCM.
 - TCM
 - Input speed sensor 1, 2
 - Output speed sensor

SHIFT MECHANISM

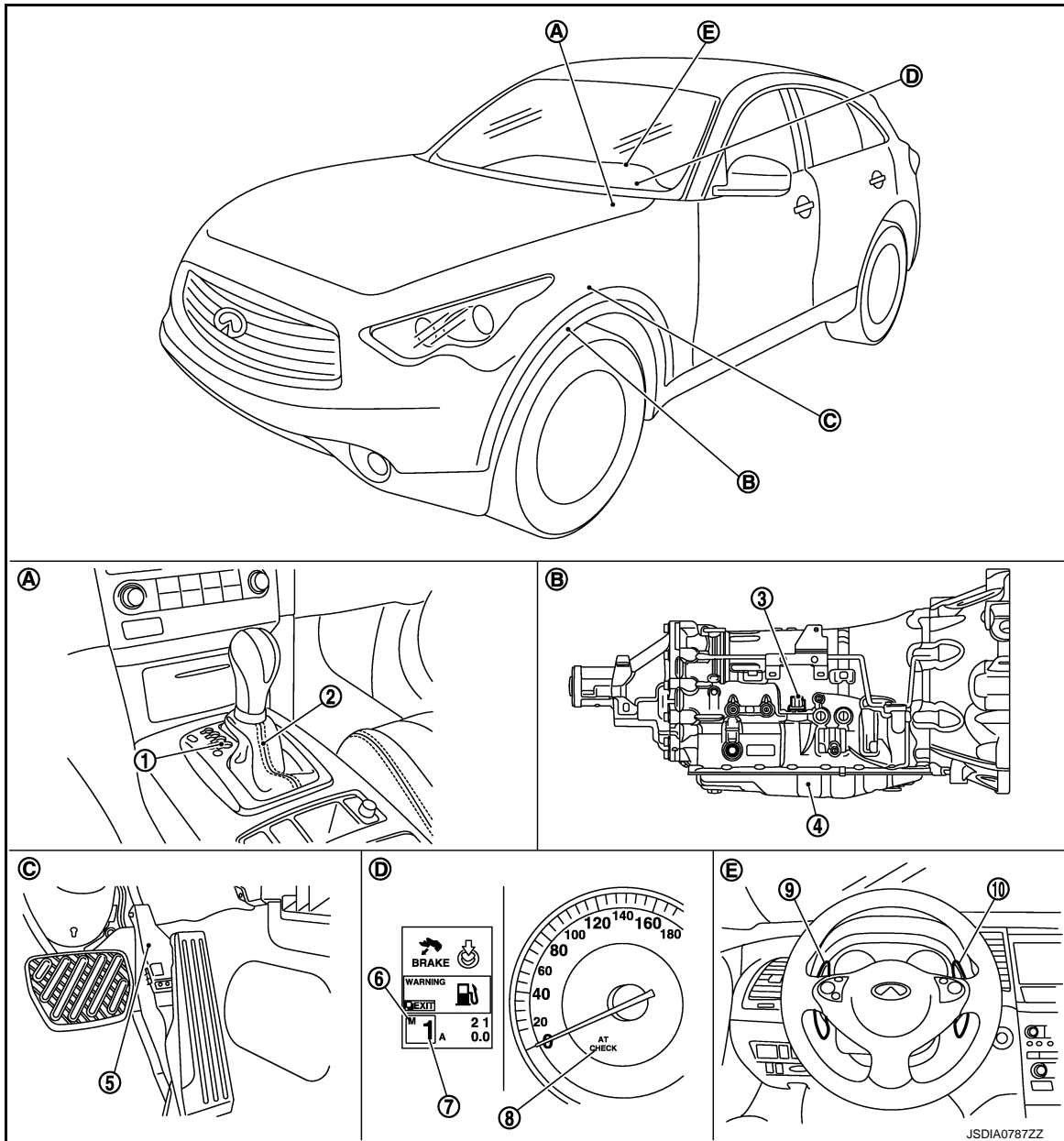
< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]

- A/T fluid temperature sensor
- Transmission range switch
- Direct clutch solenoid valve
- High and low reverse clutch solenoid valve
- Input clutch solenoid valve
- Front brake solenoid valve
- Low brake solenoid valve
- Anti-interlock solenoid valve
- 2346 brake solenoid valve
- Line pressure solenoid valve
- Torque converter clutch solenoid valve

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

With Paddle Shifter



- | | | |
|--------------------------------------|--------------------------------------|--------------------------------|
| 1. Selector lever position indicator | 2. A/T shift selector assembly | 3. A/T assembly connector |
| 4. Control valve with TCM* | 5. Accelerator pedal position sensor | 6. Manual mode indicator |
| 7. Shift position indicator | 8. A/T CHECK indicator lamp | 9. Paddle shifter (shift-down) |
| 10. Paddle shifter (shift-up) | | |

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]

- A. Center console B. A/T assembly C. Accelerator pedal
D. Combination meter E. Steering wheel

NOTE:

- The following components are included in A/T shift selector assembly.
 - Manual mode select switch
 - Manual mode position select switch
 - Shift position switch
- The following components are included in control valve with TCM.
 - TCM
 - Input speed sensor 1, 2
 - Output speed sensor
 - A/T fluid temperature sensor
 - Transmission range switch
 - Direct clutch solenoid valve
 - High and low reverse clutch solenoid valve
 - Input clutch solenoid valve
 - Front brake solenoid valve
 - Low brake solenoid valve
 - Anti-interlock solenoid valve
 - 2346 brake solenoid valve
 - Line pressure solenoid valve
 - Torque converter clutch solenoid valve

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

Component Description

INFOID:0000000003838842

Name of the Part (Abbreviation)	Function
Front brake (FR/B)	Fastens the under drive carrier.
Input clutch (I/C)	Connects the mid internal gear and the rear carrier.
Direct clutch (D/C)	Connects the rear carrier and the rear sun gear.
High and low reverse clutch (HLR/C)	Connects the rear sun gear and the mid sun gear.
Reverse brake (R/B)	Fastens the rear carrier.
Low brake (L/B)	Fastens the mid sun gear.
2346 brake (2346/B)	Fastens the under drive sun gear.
1st one-way clutch (1st OWC)	Allows the under drive carrier to turn freely in the forward direction but fastens it for reverse rotation.
2nd one-way clutch (2nd OWC)	Allows the rear sun gear to turn freely in the forward direction but fastens it for reverse rotation.
Torque converter	Amplifies driving force the engine, and transmits it to transmission input shaft.
Oil pump	Driven by the engine, oil pump supplies oil to torque converter, control valve assembly, and each lubricating system.

SHIFT LOCK SYSTEM

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]

SHIFT LOCK SYSTEM

System Description

INFOID:000000003838843

The selector lever cannot be shifted from the “P” position unless the brake pedal is depressed while the ignition switch is ON.

The shift lock is unlocked by the shift lock unit that is activated when the ignition switch is ON and the stop lamp switch is turned ON (brake pedal is depressed).

Therefore, the shift lock unit receives no ON signal and the shift lock remains locked if the above conditions are not fulfilled. (However, a shift operation is allowed if the shift lock release button is pressed.)

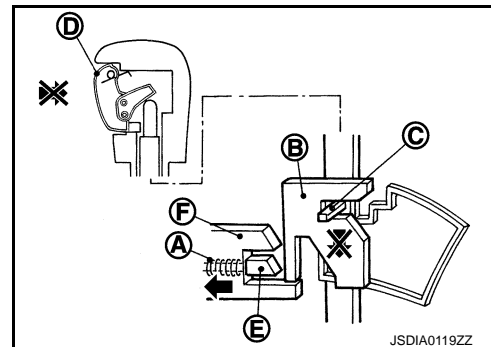
SHIFT LOCK OPERATION AT “P” POSITION

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

The shift lock solenoid (A) inside the shift lock unit is not energized if the brake pedal is not depressed while the ignition switch is ON.

The lock plate (B) lowers according to the downward movement of the position pin (C) when the selector button (D) is pressed, and presses only slider B (E) into the shift lock unit. Slider A (F) located below the lock plate prevents the downward movement of the lock plate with the spring force. The selector lever cannot be shifted from the “P” position for this reason.

However, slider A is forcibly pressed into the shift lock unit, allowing the selector lever to shift if the shift lock release button is pressed.

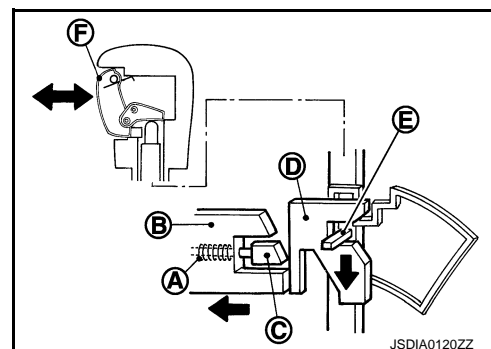


When Brake Pedal Is Depressed (Shift Operation Allowed)

The shift lock solenoid (A) inside the shift lock unit is energized and the relative positions of sliders A (B) and B (C) are maintained when the brake pedal is depressed while the ignition switch is ON.

The lock plate (D) lowers according to the downward movement of the position pin (E), thrusting away sliders A and B, when the selector button (F) is pressed.

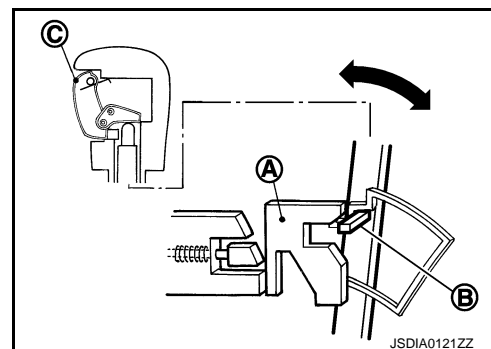
The position pin lowers to the position that allows shift operation for this reason. As a result, the selector lever can be shifted out of the P position.



OPERATION AT OTHER THAN “P” POSITION

The shift lock function will not operate at any position other than “P” because the lock plate (A) is only set for the “P” position. Accordingly, the selector lever can be shifted to any position regardless of the brake operation.

The position pin (B) enters the “P” position thrusting away the lock plate when the selector lever is shifted to the “P” position. Then, the shift mechanism is locked when the selector button (C) is released.



“P” POSITION RETAINING MECHANISM (IGNITION SWITCH LOCK)

When ignition switch is not in the ON position, power is not applied to the shift lock solenoid in the shift lock unit. This causes shift lock state, and then “P” position is retained.

When an actuating system in the shift lock unit has a malfunction, selector lever is unable to operate from the “P” position even when pressing the brake pedal with the ignition switch ON. However, when pressing the shift lock release button, slider A is forcibly pressed into the shift lock unit. This allows shift lock to be released and selector lever enables the select operation from the “P” position.

CAUTION:

Never use the shift lock release button except when the select lever is inoperative even when pressing the brake pedal with the ignition switch ON.

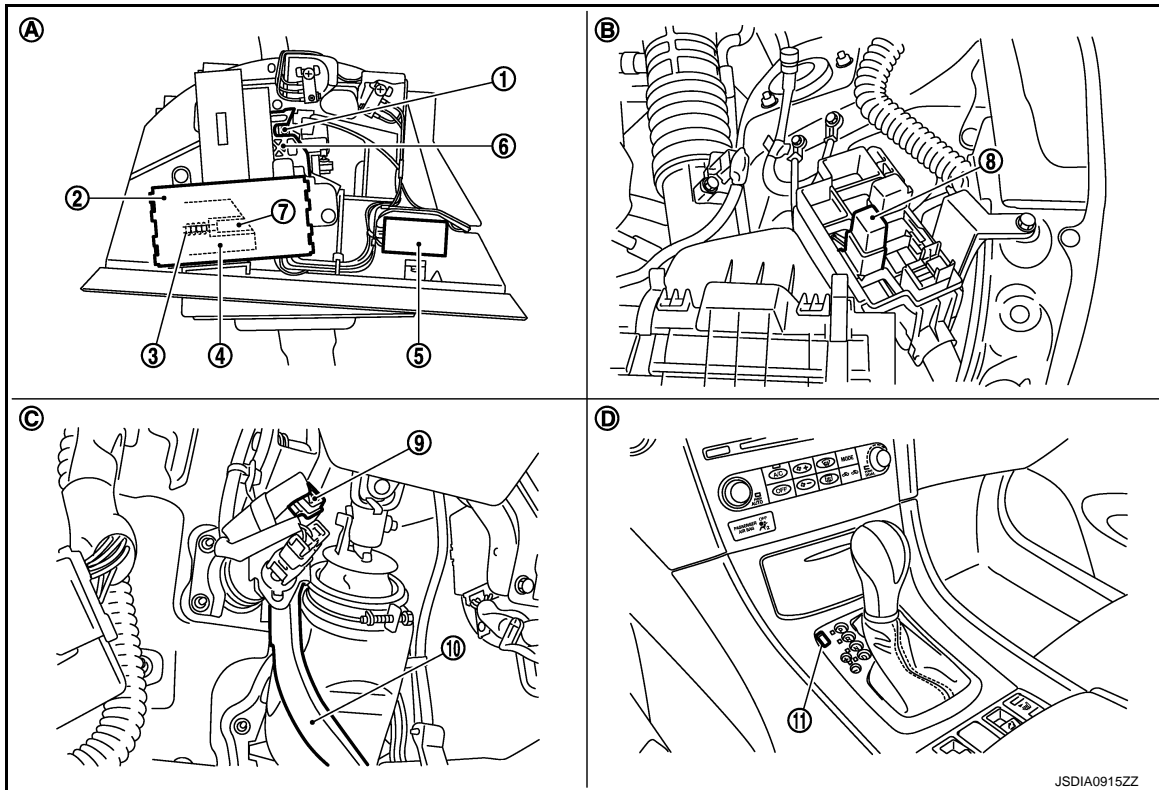
SHIFT LOCK SYSTEM

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]

Component Parts Location

INFOID:000000003838844



- | | | |
|--------------------------------|---------------------------------|------------------------|
| 1. Position pin | 2. Shift lock unit | 3. Shift lock solenoid |
| 4. Slider A | 5. A/T shift selector connector | 6. Lock plate |
| 7. Slider B | 8. Shift lock relay | 9. Stop lamp switch |
| 10. Brake pedal | 11. Shift lock cover * | |
| A. A/T shift selector assembly | B. Engine room | C. Brake pedal, upper |
| D. Center console | | |

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

Component Description

INFOID:000000003838845

Component			Function
A/T shift selector assembly	Shift lock unit	Shift lock solenoid	TM-138. "Description"
		Lock plate	The lock plate restricts the position pin stroke by selector button operation according to the shift lock unit status.
		Shift lock release button	Pressing the shift lock release button cancels the shift lock forcibly.
	Position pin		The position pin, linking with the selector button, restricts the selector lever movement.
Shift lock relay			TM-138. "Description"
Stop lamp switch			

ON BOARD DIAGNOSTIC (OBD) SYSTEM

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]

ON BOARD DIAGNOSTIC (OBD) SYSTEM

Diagnosis Description

INFOID:000000003838846

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 [EC-542. "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-111. "Diagnosis Description"](#).

DIAGNOSIS SYSTEM (TCM)

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]

DIAGNOSIS SYSTEM (TCM)

CONSULT-III Function (TRANSMISSION)

INFOID:000000003838848

CONSULT-III 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 starts of CAN communication.
DTC & SRT confirmation	The status of system monitoring tests and the self-diagnosis status/result can be confirmed.
ECU Identification	Display the ECU identification number (part number etc.) of the selected system.

SELF-DIAGNOSTIC RESULTS

Display Items List

Refer to [TM-166, "DTC Index"](#).

DATA MONITOR

Display Items List

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

Monitored item (Unit)	Monitor Item Selection			Remarks
	ECU IN-PUT SIG-NALS	MAIN SIGNALS	SELEC-TION 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 shaft revolution calculated from the pulse signal of revolution sensor.
INPUT SPEED (rpm)	X	X	▼	Displays the input shaft revolution calculated from front sun gear revolution and front carrier revolution.
F SUN GR REV (rpm)	—	—	▼	Displays the front sun gear revolution calculated from the pulse signal of input speed sensor 1.
F CARR GR REV (rpm)	—	—	▼	Displays the front carrier gear revolution 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.

DIAGNOSIS SYSTEM (TCM)

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]

Monitored item (Unit)	Monitor Item Selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM ITEM	
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.
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 revolution and output revolution.
ENGINE TORQUE (Nm)	—	—	▼	Displays the engine torque estimated value received via CAN communication.

DIAGNOSIS SYSTEM (TCM)

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]

Monitored item (Unit)	Monitor Item Selection			Remarks
	ECU IN-PUT SIG- NALS	MAIN SIGNALS	SELEC- TION FROM ITEM	
ENG TORQUE D (Nm)	—	—	▼	Displays the engine torque estimated value reflected the requested torque of each control unit received via CAN communication.
INPUT TRQ S (Nm)	—	—	▼	Displays the input torque using for the oil pressure calculation process of shift change control.
INPUT TRQ L/P (Nm)	—	—	▼	Displays the input torque using for the oil pressure calculation process of line pressure control.
TRGT PRES L/P (kPa, kg/cm ² or psi)	—	—	▼	Displays the target oil pressure value of torque converter clutch solenoid valve calculated by the oil pressure calculation process of lock-up control.
TRGT PRES TCC (kPa, kg/cm ² or psi)	—	—	▼	Displays the target oil pressure value of torque converter clutch solenoid valve calculated by the oil pressure calculation process of shift change control.
TRGT PRES L/B (kPa, kg/cm ² or psi)	—	—	▼	Displays the target oil pressure value of low brake solenoid valve calculated by the oil pressure calculation process of shift change control.
TRGT PRE FR/B (kPa, kg/cm ² or psi)	—	—	▼	Displays the target oil pressure value of front brake solenoid valve calculated by the oil pressure calculation process of shift change control.
TRG PRE HLR/C (kPa, kg/cm ² or psi)	—	—	▼	Displays the target oil pressure value of high and low reverse clutch solenoid valve calculated by the oil pressure calculation process of shift change control.
TRGT PRES I/C (kPa, kg/cm ² or psi)	—	—	▼	Displays the target oil pressure value of input clutch solenoid valve calculated by the oil pressure calculation process of shift change control.
TRGT PRES D/C (kPa, kg/cm ² or psi)	—	—	▼	Displays the target oil pressure value of direct clutch solenoid valve calculated by the oil pressure calculation process of shift change control.
TRG PRE 2346/B (kPa, kg/cm ² or psi)	—	—	▼	Displays the target oil pressure value of 2346 brake solenoid valve calculated by the oil pressure calculation process of shift change control.
SHIFT PATTERN	—	—	▼	Displays the gear change data using the shift pattern control.
VEHICLE SPEED (km/h or mph)	—	—	▼	Displays the vehicle speed for control using the control of TCM.
RANGE SW 4 (ON/OFF)	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	—	▼	Displays the operation status of paddle shifter (down switch).
SFT UP ST SW (ON/OFF)	X	—	▼	Displays the operation status of paddle shifter (up switch).
DOWN SW LEVER (ON/OFF)	X	—	▼	Displays the operation status of selector lever (down switch).

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DIAGNOSIS SYSTEM (TCM)

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]

Monitored item (Unit)	Monitor Item Selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM ITEM	
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.
DS RANGE (ON/OFF)	—	—	▼	Displays whether it is the DS mode.
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.
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)	—	—	▼	In "Final fail-safe" mode, displays whether the identified malfunction point judged by TCM is the related parts of low brake.
HC/IC/FRB PARTS (FAIL/NOTFAIL)	—	—	▼	In "Final fail-safe" mode, 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)	—	—	▼	In "Final fail-safe" mode, displays whether the identified malfunction point judged by TCM is the related parts of input clutch or front brake.
HLR/C PARTS (FAIL/NOTFAIL)	—	—	▼	In "Final fail-safe" mode, 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.

DIAGNOSIS SYSTEM (TCM)

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]

Monitored item (Unit)	Monitor Item Selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM ITEM	
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)	—	—	▼	<ul style="list-style-type: none"> Displays the transmission status of ATF temperature signal transmitted via CAN communication. Not mounted but displayed.
MANU MODE IND (ON/OFF)	—	—	▼	Displays the transmission status of manual mode signal transmitted via CAN communication.
ON OFF SOL MON (ON/OFF)	—	—	▼	Monitors the command value from TCM to the anti-interlock solenoid, and displays the monitor status.
START RLY MON (ON/OFF)	—	—	▼	Monitors the command value from TCM to the starter relay, and displays the monitor status.
ON OFF SOL (ON/OFF)	—	—	▼	Displays the command status from TCM to anti-interlock solenoid.
SLCT LVR POSI	—	X	▼	Displays the shift positions recognized by TCM.
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)	—	—	▼	In “Final fail-safe” mode, displays whether the identified malfunction point judged by TCM is the related parts of direct clutch.
FR/B PARTS (FAIL/NOTFAIL)	—	—	▼	In “Final fail-safe” mode, displays whether the identified malfunction point judged by TCM is the related parts of front brake.
2346/B PARTS (FAIL/NOTFAIL)	—	—	▼	In “Final fail-safe” mode, displays whether the identified malfunction point judged by TCM is the related parts of 2346 brake.
2346B/DC PARTS (FAIL/NOTFAIL)	—	—	▼	In “Final fail-safe” mode, displays whether the identified malfunction point judged by TCM is the related parts of 2346 brake or direct clutch.

DTC & SRT CONFIRMATION

DTC Work Support

DIAGNOSIS SYSTEM (TCM)

< SYSTEM DESCRIPTION >

[7AT: RE7R01A (VQ35HR)]

Item	Description	Check item
1ST GR FNCTN P0731	Following items for "1GR function 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 • Output speed sensor • Input speed sensor 1, 2 • Each clutch and brake • Hydraulic control circuit
2ND GR FNCTN P0732	Following items for "2GR function 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 function 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 function 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 function 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 function 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 function ratio" can be confirmed. • Self-diagnosis status (whether the diagnosis is being performed or not) • Self-diagnostic results (OK or NG)	
TCC SOL FNCTN 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

DTC/CIRCUIT DIAGNOSIS

U1000 CAN COMM CIRCUIT

Description

INFOID:000000003838849

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

DTC Logic

INFOID:000000003838850

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
U1000	CAN Communication Line	TCM is not transmitting or receiving CAN communication signal for 2 seconds or more.	<ul style="list-style-type: none"> Harness or connectors (CAN communication line is open or shorted.) TCM

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

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

>> GO TO 2.

2. CHECK DTC DETECTION

With CONSULT-III

1. Start the engine.
2. Run engine for at least 2 consecutive seconds at idle speed.
3. Perform "Self Diagnostic Results" mode for "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III"

Is "U1000" detected?

- YES >> Go to [TM-81, "Diagnosis Procedure"](#).
 NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000003838851

Go to [LAN-22, "Trouble Diagnosis Flow Chart"](#).

P0615 STARTER RELAY

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

P0615 STARTER RELAY

Description

INFOID:000000003838852

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

DTC Logic

INFOID:000000003838853

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P0615	Starter Relay Circuit	Set DTC if the starter monitor value is OFF when the ignition switch is ON at the "P" and "N" positions.	<ul style="list-style-type: none">• Harness or connectors (Starter relay and TCM circuit is open or shorted.)• Starter relay circuit

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-III

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" mode for "TRANSMISSION".

Is "P0615" detected?

- YES >> Go to [TM-82, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000003838854

1. CHECK STARTER RELAY SIGNAL

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

IPDM E/R connector			Condition	Voltage (Approx.)
Connector	Terminal			
E5	30	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-10, "Wiring Diagram - STARTING SYSTEM -"](#).
NO >> GO TO 2.

2. CHECK HARNESS BETWEEN A/T ASSEMBLY AND IPDM E/R (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 vehicle side harness connector terminal and IPDM E/R vehicle side harness connector terminal.

P0615 STARTER RELAY

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

A/T assembly vehicle side harness connector		IPDM E/R vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F51	9	E5	30	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace damaged parts.

3.CHECK HARNESS BETWEEN A/T ASSEMBLY AND IPDM E/R (PART 2)

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

A/T assembly vehicle side harness connector		Ground	Continuity
Connector	Terminal		
F51	9		Not existed

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace damaged parts.

4.CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to [TM-199, "2WD : Exploded View"](#) (2WD) or [TM-202, "AWD : Exploded View"](#) (AWD).

NO >> Repair or replace damaged parts.

P0705 TRANSMISSION RANGE SWITCH A

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

P0705 TRANSMISSION RANGE SWITCH A

Description

INFOID:000000003838855

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

DTC Logic

INFOID:000000003838856

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P0705	Transmission Range Sensor A Circuit (PRNDL Input)	Transmission range switch signals input with impossible pattern.	<ul style="list-style-type: none">• Harness or connectors (Transmission range switches 1, 2, 3, 4 and TCM circuit is open or shorted.)• Transmission range switches 1, 2, 3 and 4

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" 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-III

1. Start the engine.
2. Select "ACCELE POSI" and "VHCL/S SE-A/T" with "Data Monitor".
3. Shift the selector lever throughout the entire shift position from "P" to "D". (Hold the selector lever at each position for 2 seconds or more)
4. Drive vehicle and maintain the following conditions for 2 seconds or more.

ACCELE POSI : More than 1.0/8

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

5. Perform "Self Diagnostic Results" mode for "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P0705" detected?

YES >> Go to [TM-84, "Diagnosis Procedure"](#).

NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000003838857

1. CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to [TM-199, "2WD : Exploded View"](#) (2WD) or [TM-202, "AWD : Exploded View"](#) (AWD).

NO >> Repair or replace damaged parts.

P0710 TRANSMISSION FLUID TEMPERATURE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

P0710 TRANSMISSION FLUID TEMPERATURE SENSOR A

Description

INFOID:000000003838858

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

DTC Logic

INFOID:000000003838859

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...		Possible cause
P0710	Transmission Fluid Temperature Sensor A Circuit	Set DTC when the A/T fluid temperature sensor is -40°C (-40°F) or less for 5 seconds while driving the vehicle at the vehicle speed 10 km/h (7 MPH) or more.		<ul style="list-style-type: none">• Harness or connectors (Sensor circuit is open.)• A/T fluid temperature sensor
		Set DTC when the A/T fluid temperature sensor is 180°C (356°F) or more for 5 seconds.		<ul style="list-style-type: none">• Harness or connectors (Sensor circuit is short.)• A/T fluid temperature sensor
		Set DTC when the A/T fluid temperature sensor is in the following conditions while driving the vehicle at the vehicle speed 10 km/h (7 MPH) or more.		<ul style="list-style-type: none">• Harness or connectors (Sensor circuit is stuck.)• A/T fluid temperature sensor
		For 4 minutes	: $15^{\circ}\text{C} - 20^{\circ}\text{C}$ ($59^{\circ}\text{F} - 68^{\circ}\text{F}$)	
			: $10^{\circ}\text{C} - 15^{\circ}\text{C}$ ($50^{\circ}\text{F} - 59^{\circ}\text{F}$)	
			: $5^{\circ}\text{C} - 10^{\circ}\text{C}$ ($41^{\circ}\text{F} - 50^{\circ}\text{F}$)	
			: $0^{\circ}\text{C} - 5^{\circ}\text{C}$ ($32^{\circ}\text{F} - 41^{\circ}\text{F}$)	
		For 7 minutes	: $-5^{\circ}\text{C} - 0^{\circ}\text{C}$ ($23^{\circ}\text{F} - 32^{\circ}\text{F}$)	
			: $-10^{\circ}\text{C} - -5^{\circ}\text{C}$ ($14^{\circ}\text{F} - 23^{\circ}\text{F}$)	
			: $-15^{\circ}\text{C} - -10^{\circ}\text{C}$ ($5^{\circ}\text{F} - 14^{\circ}\text{F}$)	
			: $-20^{\circ}\text{C} - -15^{\circ}\text{C}$ ($-4^{\circ}\text{F} - 5^{\circ}\text{F}$)	
		For 14 minutes	: $-40^{\circ}\text{C} - -20^{\circ}\text{C}$ ($-40^{\circ}\text{F} - -4^{\circ}\text{F}$)	

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

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-III

1. Start the engine.
2. Select "SLCT LVR POSI" and "VHCL/S SE-A/T" with "Data Monitor".
3. Drive vehicle and maintain the following conditions for 14 minutes or more.

SLCT LVR POSI : D

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

4. Perform "Self Diagnostic Results" mode for "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P0710" detected?

YES >> Go to [TM-86, "Diagnosis Procedure"](#).

P0710 TRANSMISSION FLUID TEMPERATURE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000003838860

1. CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to [TM-199, "2WD : Exploded View"](#) (2WD) or [TM-202, "AWD : Exploded View"](#) (AWD).

NO >> Repair or replace damaged parts.

P0717 INPUT SPEED SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

P0717 INPUT SPEED SENSOR A

Description

INFOID:000000003838861

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

DTC Logic

INFOID:000000003838862

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P0717	Input/Turbine Speed Sensor A Circuit No Signal	Set DTC when the revolution of input speed sensor 1 and/or 2 is 270 rpm or less.	<ul style="list-style-type: none">• Harness or connectors (Sensor circuit is open.)• Input speed sensor 1 and/or 2

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

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-III

1. Start the engine.
2. Select "SLCT LVR POSI", "GEAR", "VHCL/S SE-A/T", "W/O THL POS" and "ENGINE SPEED" with "Data Monitor".
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.

SLCT LVR POSI	: D
GEAR	: 2nd, 3rd, 4th, 5th or 6th
VHCL/S SE-A/T	: More than 40 km/h (25 MPH)
CLSD THL POS	: OFF
ENGINE SPEED	: More than 1,500 rpm

4. Perform "Self Diagnostic Results" mode for "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P0717" detected?

- YES >> Go to [TM-87, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000003838863

1. CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

P0717 INPUT SPEED SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

-
- YES >> Replace A/T assembly. Refer to [TM-199. "2WD : Exploded View"](#) (2WD) or [TM-202. "AWD : Exploded View"](#) (AWD).
- NO >> Repair or replace damaged parts.

P0720 OUTPUT SPEED SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

P0720 OUTPUT SPEED SENSOR

Description

INFOID:000000003838864

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

DTC Logic

INFOID:000000003838865

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P0720	Output Speed Sensor Circuit	<ul style="list-style-type: none">• Set DTC when the output speed sensor recognizes that the vehicle speed is 5 km/h (3 MPH) or less even if the vehicle speed signal recognizes that the vehicle speed is 20 km/h (12 MPH) or more. (Only when starts after the ignition switch is turned ON.)• Set DTC if the vehicle speed recognized by the output speed sensor decelerates 36 km/h (23 MPH) or more during 60 msec when the output speed sensor recognizes that the vehicle speed is 36 km/h (23 MPH) or more and the vehicle speed signal recognizes that the vehicle speed is 24 km/h (15 MPH) or more.• Set DTC if the vehicle speed of output speed sensor decelerates 36 km/h (23 MPH) or more even if the vehicle speed of vehicle speed signal accelerates or decelerates 24 km/h (15 MPH) or less during 60 msec when the output speed sensor recognizes that the vehicle speed is 36 km/h (23 MPH) or more.	<ul style="list-style-type: none">• Harness or connectors (Sensor circuit is open.)• Output speed sensor

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" 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-III

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.

P0720 OUTPUT SPEED SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

ESTM VSP SIG : 40 km/h (25 MPH) or more

4. Perform "Self Diagnostic Results" mode for "TRANSMISSION".



With GST

Follow the procedure "With CONSULT-III".

Is "P0720" detected?

YES >> Go to [TM-90, "Diagnosis Procedure"](#).

NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000003838866

1.CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to [TM-199, "2WD : Exploded View"](#) (2WD) or [TM-202, "AWD : Exploded View"](#) (AWD).

NO >> Repair or replace damaged parts.

P0725 ENGINE SPEED

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

P0725 ENGINE SPEED

Description

INFOID:000000003838867

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

DTC Logic

INFOID:000000003838868

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P0725	Engine Speed Input Circuit	<ul style="list-style-type: none">TCM does not receive the CAN communication signal from the ECM.Set DTC when the engine speed is more less 150 rpm even if the vehicle speed is more than 10 km/h (7 MPH).	Harness or connectors (ECM to TCM circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

1. PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" 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-III

- Start the engine.
- Select "SLCT LVR POSI" and "VHCL/S SE-A/T" with "Data Monitor".
- Drive vehicle and maintain the following conditions for 5 seconds or more.

SLCT LVR POSI : D

VHCL/S SE-A/T : More than 10km/h (7 MPH)

- Perform "Self Diagnostic Results" mode for "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P0725" detected?

YES >> Go to [TM-91, "Diagnosis Procedure"](#).

NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000003838869

1. CHECK DTC OF ECM

With CONSULT-III

- Turn ignition switch ON.
- Perform "Self Diagnostic Results" mode for "ENGINE".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Check DTC detected item. Refer to [EC-124, "CONSULT-III Function"](#).

2. CHECK DTC OF TCM

With CONSULT-III

Perform "Self Diagnostic Results" mode for "TRANSMISSION".

P0725 ENGINE SPEED

[7AT: RE7R01A (VQ35HR)]

< DTC/CIRCUIT DIAGNOSIS >

Is any DTC other than "P0725" detected?

YES >> GO TO 3.

NO >> Check DTC detected item. Refer to [TM-75. "CONSULT-III Function \(TRANSMISSION\)"](#).

3.CHECK INTERMITTENT INCIDENT

Refer to [GI-35. "Intermittent Incident"](#).

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to [TM-199. "2WD : Exploded View"](#) (2WD) or [TM-202. "AWD : Exploded View"](#) (AWD).

NO >> Repair or replace damaged parts.

P0729 6GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

P0729 6GR INCORRECT RATIO

Description

INFOID:000000003838870

This malfunction is detected when the A/T does not shift into 6GR position as instructed by TCM. This is not only caused by electrical malfunction (circuits open or shorted) but by mechanical malfunction such as control valve sticking, improper solenoid valve operation, etc.

DTC Logic

INFOID:000000003838871

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P0729	Gear 6 Incorrect Ratio	Set DTC when the gear ratio is; • 0.914 or more • 0.813 or less	<ul style="list-style-type: none">• Input clutch solenoid valve• Direct clutch solenoid valve• High and low reverse clutch solenoid valve• Front brake solenoid valve• Low brake solenoid valve• 2346 brake solenoid valve• Anti-interlock solenoid valve• Each clutch and brake• Output speed sensor• Input speed sensor 1, 2• Hydraulic control circuit

DTC CONFIRMATION PROCEDURE

CAUTION:

- **"TM-94, "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" 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 ATF TEMPERATURE

With CONSULT-III

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

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

With GST

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

Is ATF temperature within specified range?

YES >> GO TO 3.

NO >> Drive vehicle to warm ATF or stop engine to cool ATF.

3.CHECK SYMPTOM (PART 1)

With CONSULT-III

1. Select "6TH GR FNCTN P0729" of "DTC & SRT confirmation".
2. Drive vehicle with manual mode and maintain the following conditions.

P0729 6GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

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-III screen changes from "OUT OF CONDITION" to "TESTING".

CAUTION:

When "TESTING" is not detected on CONSULT-III for a long time, check "Self Diagnostic Results" in "TRANSMISSION". When a DTC other than "P0729" is detected, check the DTC. Refer to [TM-166, "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 4.

YES-3 >> "COMPLETED RESULT NG": Go to [TM-94, "Diagnosis Procedure"](#).

YES-4 >> "P0729" is detected: Go to [TM-94, "Diagnosis Procedure"](#).

NO >> GO TO 4.

4.CHECK SYMPTOM (PART 2)

1. Stop vehicle.
2. Drive vehicle in "D" position allowing it to shift from 1GR to 7GR and check shift timing and shift shock.

>> INSPECTION END

Diagnosis Procedure

INFOID:000000003838872

1.CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to [TM-199, "2WD : Exploded View"](#) (2WD) or [TM-202, "AWD : Exploded View"](#) (AWD).

NO >> Repair or replace damaged parts.

P0730 INCORRECT GEAR RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

P0730 INCORRECT GEAR RATIO

Description

INFOID:000000003838946

- TCM detects a high-rpm state of the under drive sun gear.
- The number of revolutions of the under drive sun gear is calculated with the input speed sensor 1 and 2.

DTC Logic

INFOID:000000003838947

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P0730	Incorrect Gear Ratio	Set DTC when the revolution of under drive sun gear is 8,000 rpm or more.	<ul style="list-style-type: none">• 2346 brake solenoid valve• Front brake solenoid valve• Input speed sensor 1, 2

DTC CONFIRMATION PROCEDURE

CAUTION:

- **"[TM-95. "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" 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-III

1. Start the engine.
2. Select "Self Diagnostic Results" mode for "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-III".

Is "P0730" detected?

- YES >> Go to [TM-95. "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000003838948

1. CHECK INTERMITTENT INCIDENT

Refer to [GI-35. "Intermittent Incident"](#).

Is the inspection result normal?

- YES >> Replace A/T assembly. Refer to [TM-199. "2WD : Exploded View"](#) (2WD) or [TM-202. "AWD : Exploded View"](#) (AWD).
NO >> Repair or replace damaged parts.

P0731 1GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

P0731 1GR INCORRECT RATIO

Description

INFOID:000000003838873

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

DTC Logic

INFOID:000000003838874

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P0731	Gear 1 Incorrect Ratio	Set DTC when the gear ratio is; <ul style="list-style-type: none">• 5.219 or more• 4.645 or less	<ul style="list-style-type: none">• Input clutch solenoid valve• Direct clutch solenoid valve• High and low reverse clutch solenoid valve• Front brake solenoid valve• Low brake solenoid valve• 2346 brake solenoid valve• Anti-interlock solenoid valve• Each clutch and brake• Output speed sensor• Input speed sensor 1, 2• Hydraulic control circuit

DTC CONFIRMATION PROCEDURE

CAUTION:

- **“TM-97, "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” 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 ATF TEMPERATURE

With CONSULT-III

1. Start the engine.
2. Select “ATF TEMP 1” with “Data Monitor”.
3. Check ATF temperature is in the following range.

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

With GST

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

Is ATF temperature within specified range?

YES >> GO TO 3.

NO >> Drive vehicle to warm ATF or stop engine to cool ATF.

3. CHECK SYMPTOM (PART 1)

With CONSULT-III

1. Select “1ST GR FNCTN P0731” of “DTC & SRT confirmation”.
2. Drive vehicle with manual mode and maintain the following conditions.

P0731 1GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

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-III screen changes from "OUT OF CONDITION" to "TESTING".

CAUTION:

When "TESTING" is not detected on CONSULT-III for a long time, check "Self Diagnostic Results" in "TRANSMISSION". When a DTC other than "P0731" is detected, check the DTC. Refer to [TM-166, "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 4.

YES-3 >> "COMPLETED RESULT NG": Go to [TM-97, "Diagnosis Procedure"](#).

YES-4 >> "P0731" is detected: Go to [TM-97, "Diagnosis Procedure"](#).

NO >> GO TO 4.

4.CHECK SYMPTOM (PART 2)

1. Stop vehicle.
2. Drive vehicle in "D" position allowing it to shift from 1GR to 7GR and check shift timing and shift shock.

>> INSPECTION END

Diagnosis Procedure

INFOID:000000003838875

1.CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to [TM-199, "2WD : Exploded View"](#) (2WD) or [TM-202, "AWD : Exploded View"](#) (AWD).

NO >> Repair or replace damaged parts.

P0732 2GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

P0732 2GR INCORRECT RATIO

Description

INFOID:000000003838876

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

DTC Logic

INFOID:000000003838877

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P0732	Gear 2 Incorrect Ratio	Set DTC when the gear ratio is; <ul style="list-style-type: none">• 3.386 or more• 3.013 or less	<ul style="list-style-type: none">• Input clutch solenoid valve• Direct clutch solenoid valve• High and low reverse clutch solenoid valve• Front brake solenoid valve• Low brake solenoid valve• 2346 brake solenoid valve• Anti-interlock solenoid valve• Each clutch and brake• Output speed sensor• Input speed sensor 1, 2• Hydraulic control circuit

DTC CONFIRMATION PROCEDURE

CAUTION:

- **“TM-99, "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” 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 ATF TEMPERATURE

With CONSULT-III

1. Start the engine.
2. Select “ATF TEMP 1” with “Data Monitor”.
3. Check ATF temperature is in the following range.

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

With GST

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

Is ATF temperature within specified range?

YES >> GO TO 3.

NO >> Drive vehicle to warm ATF or stop engine to cool ATF.

3. CHECK SYMPTOM (PART 1)

With CONSULT-III

1. Select “2ND GR FNCTN P0732” of “DTC & SRT confirmation”.
2. Drive vehicle with manual mode and maintain the following conditions.

P0732 2GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

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-III screen changes from "OUT OF CONDITION" to "TESTING".

CAUTION:

When "TESTING" is not detected on CONSULT-III for a long time, check "Self Diagnostic Results" in "TRANSMISSION". When a DTC other than "P0732" is detected, check the DTC. Refer to [TM-166, "DTC Index"](#).



With GST

1. Drive vehicle and maintain the following conditions for 2 seconds or more.

Selector lever : "M" position
Gear position : 2nd
Accelerator pedal opening : 0.7/8 or more
Vehicle speed : 10 km/h (7 MPH) or more

2. Check DTC.

Is "OUT OF CONDITION", "STOP VEHICLE" or "COMPLETED RESULT NG" displayed? / Is "P0732" detected?

YES-1 >> "OUT OF CONDITION": Perform "Step 3" again.

YES-2 >> "STOP VEHICLE": GO TO 4.

YES-3 >> "COMPLETED RESULT NG": Go to [TM-99, "Diagnosis Procedure"](#).

YES-4 >> "P0732" is detected: Go to [TM-99, "Diagnosis Procedure"](#).

NO >> GO TO 4.

4.CHECK SYMPTOM (PART 2)

1. Stop vehicle.
2. Drive vehicle in "D" position allowing it to shift from 1GR to 7GR and check shift timing and shift shock.

>> INSPECTION END

Diagnosis Procedure

INFOID:000000003838878

1.CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to [TM-199, "2WD : Exploded View"](#) (2WD) or [TM-202, "AWD : Exploded View"](#) (AWD).

NO >> Repair or replace damaged parts.

P0733 3GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

P0733 3GR INCORRECT RATIO

Description

INFOID:000000003838879

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

DTC Logic

INFOID:000000003838880

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P0733	Gear 3 Incorrect Ratio	Set DTC when the gear ratio is; • 2.166 or more • 1.927 or less	<ul style="list-style-type: none">• Input clutch solenoid valve• Direct clutch solenoid valve• High and low reverse clutch solenoid valve• Front brake solenoid valve• Low brake solenoid valve• 2346 brake solenoid valve• Anti-interlock solenoid valve• Each clutch and brake• Output speed sensor• Input speed sensor 1, 2• Hydraulic control circuit

DTC CONFIRMATION PROCEDURE

CAUTION:

- **"TM-101, "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" 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 ATF TEMPERATURE

With CONSULT-III

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

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

With GST

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

Is ATF temperature within specified range?

YES >> GO TO 3.

NO >> Drive vehicle to warm ATF or stop engine to cool ATF.

3. CHECK SYMPTOM (PART 1)

With CONSULT-III

1. Select "3RD GR FNCTN P0733" of "DTC & SRT confirmation".
2. Drive vehicle with manual mode and maintain the following conditions.

P0733 3GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

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-III screen changes from "OUT OF CONDITION" to "TESTING".

CAUTION:

When "TESTING" is not detected on CONSULT-III for a long time, check "Self Diagnostic Results" in "TRANSMISSION". When a DTC other than "P0733" is detected, check the DTC. Refer to [TM-166, "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 4.

YES-3 >> "COMPLETED RESULT NG": Go to [TM-101, "Diagnosis Procedure"](#).

YES-4 >> "P0733" is detected: Go to [TM-101, "Diagnosis Procedure"](#).

NO >> GO TO 4.

4.CHECK SYMPTOM (PART 2)

1. Stop vehicle.
2. Drive vehicle in "D" position allowing it to shift from 1GR to 7GR and check shift timing and shift shock.

>> INSPECTION END

Diagnosis Procedure

INFOID:000000003838881

1.CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to [TM-199, "2WD : Exploded View"](#) (2WD) or [TM-202, "AWD : Exploded View"](#) (AWD).

NO >> Repair or replace damaged parts.

P0734 4GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

P0734 4GR INCORRECT RATIO

Description

INFOID:000000003838882

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

DTC Logic

INFOID:000000003838883

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P0734	Gear 4 Incorrect Ratio	Set DTC when the gear ratio is; <ul style="list-style-type: none">• 1.497 or more• 1.332 or less	<ul style="list-style-type: none">• Input clutch solenoid valve• Direct clutch solenoid valve• High and low reverse clutch solenoid valve• Front brake solenoid valve• Low brake solenoid valve• 2346 brake solenoid valve• Anti-interlock solenoid valve• Each clutch and brake• Output speed sensor• Input speed sensor 1, 2• Hydraulic control circuit

DTC CONFIRMATION PROCEDURE

CAUTION:

- **“TM-103, "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” 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 ATF TEMPERATURE

With CONSULT-III

1. Start the engine.
2. Select “ATF TEMP 1” with “Data Monitor”.
3. Check ATF temperature is in the following range.

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

With GST

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

Is ATF temperature within specified range?

YES >> GO TO 3.

NO >> Drive vehicle to warm ATF or stop engine to cool ATF.

3. CHECK SYMPTOM (PART 1)

With CONSULT-III

1. Select “4TH GR FNCTN P0734” of “DTC & SRT confirmation”.
2. Drive vehicle with manual mode and maintain the following conditions.

P0734 4GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

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-III screen changes from "OUT OF CONDITION" to "TESTING".

CAUTION:

When "TESTING" is not detected on CONSULT-III for a long time, check "Self Diagnostic Results" in "TRANSMISSION". When a DTC other than "P0734" is detected, check the DTC. Refer to [TM-166, "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 4.

YES-3 >> "COMPLETED RESULT NG": Go to [TM-103, "Diagnosis Procedure"](#).

YES-4 >> "P0734" is detected: Go to [TM-103, "Diagnosis Procedure"](#).

NO >> GO TO 4.

4.CHECK SYMPTOM (PART 2)

1. Stop vehicle.
2. Drive vehicle in "D" position allowing it to shift from 1GR to 7GR and check shift timing and shift shock.

>> INSPECTION END

Diagnosis Procedure

INFOID:000000003838884

1.CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to [TM-199, "2WD : Exploded View"](#) (2WD) or [TM-202, "AWD : Exploded View"](#) (AWD).

NO >> Repair or replace damaged parts.

P0735 5GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

P0735 5GR INCORRECT RATIO

Description

INFOID:000000003838885

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

DTC Logic

INFOID:000000003838886

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P0735	Gear 5 Incorrect Ratio	Set DTC when the gear ratio is; <ul style="list-style-type: none">• 1.060 or more• 0.943 or less	<ul style="list-style-type: none">• Input clutch solenoid valve• Direct clutch solenoid valve• High and low reverse clutch solenoid valve• Front brake solenoid valve• Low brake solenoid valve• 2346 brake solenoid valve• Anti-interlock solenoid valve• Each clutch and brake• Output speed sensor• Input speed sensor 1, 2• Hydraulic control circuit

DTC CONFIRMATION PROCEDURE

CAUTION:

- **"TM-105, "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" 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 ATF TEMPERATURE

With CONSULT-III

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

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

With GST

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

Is ATF temperature within specified range?

YES >> GO TO 3.

NO >> Drive vehicle to warm ATF or stop engine to cool ATF.

3. CHECK SYMPTOM (PART 1)

With CONSULT-III

1. Select "5TH GR FNCTN P0735" of "DTC & SRT confirmation".
2. Drive vehicle with manual mode and maintain the following conditions.

P0735 5GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

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-III screen changes from "OUT OF CONDITION" to "TESTING".

CAUTION:

When "TESTING" is not detected on CONSULT-III for a long time, check "Self Diagnostic Results" in "TRANSMISSION". When a DTC other than "P0735" is detected, check the DTC. Refer to [TM-166, "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 4.

YES-3 >> "COMPLETED RESULT NG": Go to [TM-105, "Diagnosis Procedure"](#).

YES-4 >> "P0735" is detected: Go to [TM-105, "Diagnosis Procedure"](#).

NO >> GO TO 4.

4.CHECK SYMPTOM (PART 2)

1. Stop vehicle.
2. Drive vehicle in "D" position allowing it to shift from 1GR to 7GR and check shift timing and shift shock.

>> INSPECTION END

Diagnosis Procedure

INFOID:000000003838887

1.CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to [TM-199, "2WD : Exploded View"](#) (2WD) or [TM-202, "AWD : Exploded View"](#) (AWD).

NO >> Repair or replace damaged parts.

P0740 TORQUE CONVERTER

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

P0740 TORQUE CONVERTER

Description

INFOID:000000003838888

- 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 vehicle speed sensor and accelerator pedal position sensor (throttle position sensor). Torque converter clutch piston operation will then be controlled.
- Lock-up operation, however, is prohibited when A/T fluid temperature is too low.
- When the accelerator pedal is depressed (less than 1.0/8) in lock-up condition, the engine speed should not change abruptly. If there is a big jump in engine speed, there is no lock-up.

DTC Logic

INFOID:000000003838889

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P0740	Torque Converter Clutch Circuit/Open	A DTC is set if the torque converter clutch solenoid valve monitor value is 0.4 A or less when the torque converter clutch solenoid valve command value is more than 0.75 A.	<ul style="list-style-type: none">• Harness or connectors (Solenoid valve circuit is open or shorted.)• Torque converter clutch solenoid valve

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

1. PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" 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-III

1. Start the engine.
2. Select "MANU MODE SW", "GEAR" and "VEHICLE SPEED" with "Data Monitor".
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" mode for "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P0740" detected?

YES >> Go to [TM-106, "Diagnosis Procedure"](#).

NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000003838890

1. CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

P0740 TORQUE CONVERTER

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

Is the inspection result normal?

- YES >> Replace A/T assembly. Refer to [TM-199, "2WD : Exploded View"](#) (2WD) or [TM-202, "AWD : Exploded View"](#) (AWD).
- NO >> Repair or replace damaged parts.

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P0744 TORQUE CONVERTER

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

P0744 TORQUE CONVERTER

Description

INFOID:000000003838891

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

DTC Logic

INFOID:000000003838892

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P0744	Torque Converter Clutch Circuit Intermittent	Set DTC when the lock-up is not performed in spite of within the lock-up area.	<ul style="list-style-type: none">• Harness or connectors• Torque converter clutch solenoid valve• Torque converter• Input speed sensor 1, 2• Hydraulic control circuit

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

1. PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" 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-III

1. Start the engine.
2. Select "MANU MODE SW", "GEAR" and "VEHICLE SPEED" with "Data Monitor".
3. Drive vehicle and maintain the following conditions for 10 seconds or more.

NOTE:

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

MANU MODE SW : ON

GEAR : 2nd

VEHICLE SPEED : 40 km/h (25 MPH) or more

4. Perform "Self Diagnostic Results" mode for "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P0744" detected?

YES >> Go to [TM-108, "Diagnosis Procedure"](#).

NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000003838893

1. CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to [TM-199, "2WD : Exploded View"](#) (2WD) or [TM-202, "AWD : Exploded View"](#) (AWD).

NO >> Repair or replace damaged parts.

P0745 PRESSURE CONTROL SOLENOID A

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

P0745 PRESSURE CONTROL SOLENOID A

Description

INFOID:000000003838894

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

DTC Logic

INFOID:000000003838895

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P0745	Pressure Control Solenoid A	A DTC is set if the line pressure solenoid valve monitor value is 0.4 A or less when the line pressure solenoid valve command value is more than 0.75 A.	<ul style="list-style-type: none">• Harness or connectors (Solenoid valve circuit is open or shorted.)• Line pressure solenoid valve

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-III

1. Start the engine.
2. Wait for 5 seconds or more at idle speed in "N" position.
3. Perform "Self Diagnostic Results" mode for "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P0745" detected?

- YES >> Go to [TM-109, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000003838896

1.CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

- YES >> Replace A/T assembly. Refer to [TM-199, "2WD : Exploded View"](#) (2WD) or [TM-202, "AWD : Exploded View"](#) (AWD).
NO >> Repair or replace damaged parts.

P0750 SHIFT SOLENOID A

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

P0750 SHIFT SOLENOID A

Description

INFOID:000000003838934

- Anti-interlock solenoid valve prevents the simultaneous activation of the input clutch and the low brake.
- The anti-interlock solenoid valve is an ON/OFF type solenoid valve.

DTC Logic

INFOID:000000003838935

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P0750	Shift Solenoid A	<ul style="list-style-type: none">• A DTC is set if the anti-interlock solenoid valve monitor value is ON when the anti-interlock solenoid valve command value is OFF.• A DTC is set if the anti-interlock solenoid valve monitor value is OFF when the anti-interlock solenoid valve command value is ON.	<ul style="list-style-type: none">• Harness or connectors (Solenoid valve circuit is open or shorted.)• Anti-interlock solenoid valve

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

1. PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" 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-III

1. Start the engine.
2. Select "BATTERY VOLT", "MANU MODE SW", "GEAR" and "VHCL/S SE-A/T" with "Data Monitor".
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" mode for "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P0750" detected?

YES >> Go to [TM-110, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000003838936

1. CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to [TM-199, "2WD : Exploded View"](#) (2WD) or [TM-202, "AWD : Exploded View"](#) (AWD).

P0750 SHIFT SOLENOID A

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

NO >> Repair or replace damaged parts.

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

P0775 PRESSURE CONTROL SOLENOID B

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

P0775 PRESSURE CONTROL SOLENOID B

Description

INFOID:000000003838928

- The Input clutch solenoid valve is controlled by the TCM in response to signals transmitted from the transmission range switch, output speed sensor and accelerator pedal position sensor. Gears will then be shifted to the optimum position.
- The Input clutch solenoid valve controls the input clutch control valve in response to a signal transmitted from the TCM.

DTC Logic

INFOID:000000003838929

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P0775	Pressure Control Solenoid B	A DTC is set if the input clutch solenoid valve monitor value is 0.4 A or less when the input clutch solenoid valve command value is more than 0.75 A.	<ul style="list-style-type: none">• Harness or connectors (Solenoid valve circuit is open or shorted.)• Input clutch solenoid valve

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

1. PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" 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-III

1. Start the engine.
2. Select "BATTERY VOLT", "MANU MODE SW", "GEAR" and "VHCL/S SE-A/T" with "Data Monitor".
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" mode for "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P0775" detected?

YES >> Go to [TM-112. "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000003838930

1. CHECK INTERMITTENT INCIDENT

Refer to [GI-35. "Intermittent Incident"](#).

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to [TM-199. "2WD : Exploded View"](#) (2WD) or [TM-202. "AWD : Exploded View"](#) (AWD).
NO >> Repair or replace damaged parts.

P0780 SHIFT

Description

INFOID:000000003838949

The TCM detects the malfunction of low brake solenoid valve. This is not only caused by electrical malfunction (circuits open or shorted) but also by mechanical malfunction such as control valve sticking, improper solenoid valve operation, etc.

DTC Logic

INFOID:000000003838950

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P0780	Shift Error	<ul style="list-style-type: none"> Shifting from 3rg to 4th with the selector level in "D" position, the gear ratio does not shift to 1.412 (gear ratio of 4th). Shifting from 5th to 6th or 6th to 7th, the engine speed exceeds the prescribed speed. 	<ul style="list-style-type: none"> Anti-interlock solenoid valve Low brake solenoid valve Hydraulic control circuit

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

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-III

- Start the engine.
- Select "SLCT LVR POSI", "ACCELE POSI" and "GEAR" with "Data Monitor".
- Drive vehicle and maintain the following conditions.

SLCT LVR POSI : D
ACCELE POSI : More than 1.0/8
GEAR : 3rd → 4th

- Perform "Self Diagnostic Results" mode for "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P0780" detected?

- YES >> Go to [TM-113, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000003838951

1.CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

- YES >> Replace A/T assembly. Refer to [TM-199, "2WD : Exploded View"](#) (2WD) or [TM-202, "AWD : Exploded View"](#) (AWD).
NO >> Repair or replace damaged parts.

P0795 PRESSURE CONTROL SOLENOID C

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

P0795 PRESSURE CONTROL SOLENOID C

Description

INFOID:000000003838931

- The front brake solenoid valve is controlled by the TCM in response to signals transmitted from the transmission range switch, output speed sensor and accelerator pedal position sensor. Gears will then be shifted to the optimum position.
- The front brake solenoid valve controls the front brake control valve in response to a signal transmitted from the TCM.

DTC Logic

INFOID:000000003838932

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P0795	Pressure Control Solenoid C	A DTC is set if the front brake solenoid valve monitor value is 0.4 A or less when the front brake solenoid valve command value is more than 0.75 A.	<ul style="list-style-type: none">• Harness or connectors (Solenoid valve circuit is open or shorted.)• Front brake solenoid valve

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

1. PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" 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-III

1. Start the engine.
2. Select "BATTERY VOLT", "MANU MODE SW", "GEAR" and "VHCL/S SE-A/T" with "Data Monitor".
3. Drive vehicle and maintain the following conditions for 5 seconds or more.

BATTERY VOLT : 9 V or more
MANU MODE SW : ON
GEAR : 7th
VHCL/S SE-A/T : 10 km/h (7 MPH) or more

4. Perform "Self Diagnostic Results" mode for "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P0795" detected?

YES >> Go to [TM-114, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000003838933

1. CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to [TM-199, "2WD : Exploded View"](#) (2WD) or [TM-202, "AWD : Exploded View"](#) (AWD).
NO >> Repair or replace damaged parts.

P1705 TP SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

P1705 TP SENSOR

Description

INFOID:000000003838897

- The accelerator pedal position sensor is installed on the upper end of the accelerator pedal assembly.
- The accelerator pedal position sensor detects the accelerator position.
- The accelerator pedal position sensor transform the accelerator pedal position into output voltage, and emit the voltage signal to the ECM.
- The TCM receives accelerator pedal position signal from the ECM via CAN communication.

DTC Logic

INFOID:000000003838898

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P1705	Accelerator Pedal Position Sensor Signal	TCM detects the difference between two accelerator pedal position signals received from ECM via CAN communication.	Harness or connectors (Sensor circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" 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-III

1. Start the engine.
2. Select "SLCT LVR POSI" and "VHCL/S SE-A/T" with "Data Monitor".
3. 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

4. Perform "Self Diagnostic Results" mode for "TRANSMISSION".

Is "P1705" detected?

YES >> Go to [TM-115, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000003838899

1.CHECK DTC OF ECM

With CONSULT-III

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

Is any DTC detected?

YES >> Check DTC detected item. Refer to [EC-542, "DTC Index"](#).
NO >> GO TO 2.

2.CHECK DTC OF TCM

With CONSULT-III

Perform "Self Diagnostic Results" mode for "TRANSMISSION".

Is any DTC other than "P1705" detected?

YES >> Check DTC detected item. Refer to [TM-166, "DTC Index"](#).

P1705 TP SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

NO >> GO TO 3.

3.CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to [TM-199, "2WD : Exploded View"](#) (2WD) or [TM-202, "AWD : Exploded View"](#) (AWD).

NO >> Repair or replace damaged parts.

P1721 VEHICLE SPEED SIGNAL

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

P1721 VEHICLE SPEED SIGNAL

Description

INFOID:000000003840068

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

DTC Logic

INFOID:000000003840069

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P1721	Vehicle Speed Signal	<ul style="list-style-type: none">• Set DTC when the vehicle speed signal recognizes that the vehicle speed is 5 km/h (3 MPH) or less even if the output speed sensor recognizes that the vehicle speed is 20 km/h (12 MPH) or more. (Only when starts after the ignition switch is turned ON.)• Set DTC if the vehicle speed recognized by the vehicle speed signal decelerates 36 km/h (23 MPH) or more during 60 msec when the vehicle speed signal recognizes that the vehicle speed is 36 km/h (23 MPH) or more and the output speed sensor recognizes that the vehicle speed is 24 km/h (15 MPH) or more.• Set DTC if the vehicle speed of vehicle speed signal decelerates 36 km/h (23 MPH) or more even if the vehicle speed of output speed sensor accelerates or decelerates 24 km/h (15 MPH) or less during 60 msec when the vehicle speed sensor recognizes that the vehicle speed is 36 km/h (23 MPH) or more.	Harness or connectors (Sensor circuit is open or shorted.)

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" 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-III

1. Start the engine.
2. Shift the selector lever to manual shift gate side.
3. Start up in M1, and then upshift to M2.
4. Accelerate to approximately 40 km/h (25 MPH) in M2.

P1721 VEHICLE SPEED SIGNAL

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

5. Perform "Self Diagnostic Results" mode for "TRANSMISSION".

Is "P1721" detected?

- YES >> Go to [TM-118, "Diagnosis Procedure"](#).
- NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000003840070

1. CHECK DTC OF ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT).

With CONSULT-III

Perform "Self Diagnostic Results" mode for "ABS".

Is any DTC detected?

- YES >> Check DTC detected item. Refer to [BRC-121, "DTC Index"](#).
- NO >> GO TO 2.

2. CHECK DTC OF UNIFIED METER AND A/C AMP.

With CONSULT-III

Perform "Self Diagnostic Results" mode for "METER/M&A".

Is any DTC detected?

- YES >> Check DTC detected item. Refer to [MWI-112, "DTC Index"](#).
- NO >> GO TO 3.

3. CHECK DTC OF TCM

With CONSULT-III

Perform "Self Diagnostic Results" mode for "TRANSMISSION".

Is any DTC other than "P1721" detected?

- YES >> Check DTC detected item. Refer to [TM-166, "DTC Index"](#).
- NO >> GO TO 4.

4. CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

- YES >> Replace A/T assembly. Refer to [TM-199, "2WD : Exploded View"](#) (2WD) or [TM-202, "AWD : Exploded View"](#) (AWD).
- NO >> Repair or replace damaged parts.

P1730 INTERLOCK

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

P1730 INTERLOCK

Description

INFOID:000000003838900

Fail-safe function to detect interlock conditions.

DTC Logic

INFOID:000000003838901

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P1730	Interlock	Set DTC when the output speed sensor detects the deceleration of 12 km/h (7 MPH) or more for 1 second.	<ul style="list-style-type: none">• Harness or connectors (Solenoid valve circuit is open or shorted.)• Input clutch solenoid valve• Direct clutch solenoid valve• High and low reverse clutch solenoid valve• Front brake solenoid valve• Low brake solenoid valve• 2346 brake solenoid valve• Anti-interlock solenoid valve• Each clutch and brake• Hydraulic control circuit

NOTE:

When the vehicle is driven fixed in second gear, a input speed sensor malfunction is displayed, but this is not a input speed sensor malfunction.

DTC CONFIRMATION PROCEDURE

CAUTION:

- “[TM-120, "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” 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-III

1. Start the engine.
2. Select “SLCT LVR POSI” and “GEAR” with “Data Monitor”.
3. Drive vehicle the following condition.

SLCT LVR POSI : D

GEAR : 1st through 7th

4. Perform “Self Diagnostic Results” mode for “TRANSMISSION”.

With GST

Follow the procedure “With CONSULT-III”.

Is “P1730” detected?

- YES >> Go to [TM-120, "Diagnosis Procedure"](#).
- NO >> INSPECTION END

P1730 INTERLOCK

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

Judgment of A/T Interlock

INFOID:000000003838902

Refer to [TM-162, "Fail-Safe"](#).

Diagnosis Procedure

INFOID:000000003838903

1.CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to [TM-199, "2WD : Exploded View"](#) (2WD) or [TM-202, "AWD : Exploded View"](#) (AWD).

NO >> Repair or replace damaged parts.

P1734 7GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

P1734 7GR INCORRECT RATIO

Description

INFOID:000000003840673

This malfunction is detected when the A/T does not shift into 7GR position as instructed by TCM. This is not only caused by electrical malfunction (circuits open or shorted) but by mechanical malfunction such as control valve sticking, improper solenoid valve operation, etc.

DTC Logic

INFOID:000000003840674

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P1734	Gear 7 Incorrect Ratio	Set DTC when the gear ratio is; • 0.818 or more • 0.728 or less	<ul style="list-style-type: none">• Input clutch solenoid valve• Direct clutch solenoid valve• High and low reverse clutch solenoid valve• Front brake solenoid valve• Low brake solenoid valve• 2346 brake solenoid valve• Anti-interlock solenoid valve• Each clutch and brake• Output speed sensor• Input speed sensor 1, 2• Hydraulic control circuit

DTC CONFIRMATION PROCEDURE

CAUTION:

- **"[TM-122, "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" 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 ATF TEMPERATURE

With CONSULT-III

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

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

With GST

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

Is ATF temperature within specified range?

YES >> GO TO 3.

NO >> Drive vehicle to warm ATF or stop engine to cool ATF.

3.CHECK SYMPTOM (PART 1)

With CONSULT-III

1. Select "7TH GR FNCTN P1734" of "DTC & SRT confirmation".
2. Drive vehicle with manual mode and maintain the following conditions.

P1734 7GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

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-III screen changes from "OUT OF CONDITION" to "TESTING".

CAUTION:

When "TESTING" is not detected on CONSULT-III for a long time, check "Self Diagnostic Results" in "TRANSMISSION". When a DTC other than "P1734" is detected, check the DTC. Refer to [TM-166, "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 4.

YES-3 >> "COMPLETED RESULT NG": Go to [TM-122, "Diagnosis Procedure"](#).

YES-4 >> "P1734" is detected: Go to [TM-122, "Diagnosis Procedure"](#).

NO >> GO TO 4.

4.CHECK SYMPTOM (PART 2)

1. Stop vehicle.
2. Drive vehicle in "D" position allowing it to shift from 1GR to 7GR and check shift timing and shift shock.

>> INSPECTION END

Diagnosis Procedure

INFOID:000000003840675

1.CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to [TM-199, "2WD : Exploded View"](#) (2WD) or [TM-202, "AWD : Exploded View"](#) (AWD).

NO >> Repair or replace damaged parts.

P1815 M-MODE SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

P1815 M-MODE SWITCH

Description

INFOID:000000003838907

- The manual mode switch, manual mode shift-up switch and manual mode shift-down switch are installed in the A/T shift selector assembly. It transmits manual mode switch, shift up and shift down switch signals to unified meter and A/C amp. Then unified meter and A/C amp. transmits signals to TCM via CAN communication.
- Manual mode switch transmits manual mode switch signal or not manual mode switch signal to unified meter and A/C amp. Then TCM receives signals from unified meter and A/C amp. via CAN communication.
- The manual mode shift-up switch transmits manual mode shift up signal to the unified meter and A/C amp. Then TCM receives signal from the unified meter and A/C amp. via CAN communication.
- The manual mode shift-down switch transmits manual mode shift down signal to the unified meter and A/C amp. Then TCM receives signal from the unified meter and A/C amp. via CAN communication.
- The paddle shifter transmits shift up and shift down switch signals to unified meter and A/C amp. Then TCM receives signals from the unified meter and A/C amp. via CAN communication. (With paddle shifter)
- The TCM transmits manual mode indicator signal to the unified meter and A/C amp. via CAN communication line.

DTC Logic

INFOID:000000003838908

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P1815	Manual Mode Switch Circuit	<ul style="list-style-type: none">• TCM monitors manual mode, non manual mode, up or down switch signal, and detects as irregular when impossible input pattern occurs 2 second or more.• When shift up/down signal of paddle shifter continuously remains ON for 60 seconds.*	<ul style="list-style-type: none">• Harness or connectors (These switches circuit is open or shorted.)• Manual mode select switch (Into A/T shift selector)• Manual mode position select switch (Into A/T shift selector)• Paddle shifter*

*: With paddle shifter

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-III

1. Turn ignition switch ON.
2. Select "SLCT LVR POSI" and "MANU MODE SW" with "Data Monitor".
3. Maintain the following each conditions more than 60 seconds.

SLCT LVR POSI : D

MANU MODE SW : ON

4. Perform "Self Diagnostic Results" mode for "TRANSMISSION".

Is "P1815" detected?

- YES >> Go to [TM-124, "Diagnosis Procedure"](#).
NO >> INSPECTION END

P1815 M-MODE SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

Diagnosis Procedure

INFOID:000000003838909

1. CHECK MANUAL MODE SWITCH CIRCUIT

With CONSULT-III

1. Turn ignition switch ON.
2. Select "MANU MODE SW", "NON M MODE SW", "UP SW LEVER", "DOWN SW LEVER", "SFT UP ST SW"* and "SFT DWN ST SW"* with "Data Monitor".
3. Check the ON/OFF operations of each monitor item.

Item	Monitor Item	Condition	Status
Manual mode switch	MANU MODE SW	Manual shift gate side (neutral)	ON
		Other than the above	OFF
	NON M-MODE SW	Manual shift gate side	OFF
		Other than the above	ON
	UP SW LEVER	Selector lever: UP (+ side)	ON
		Other than the above	OFF
	DOWN SW LEVER	Selector lever: DOWN (– side)	ON
		Other than the above	OFF
Paddle shifter*	SFT UP ST SW	Paddle shifter: UP (+ side)	ON
		Other than the above	OFF
	SFT DWN ST SW	Paddle shifter: DOWN (– side)	ON
		Other than the above	OFF

*: With paddle shifter

Without CONSULT-III

Drive the vehicle in the manual mode, and then check that the indication of the shift position indicator matches with the actual gear position.

1. Shift the selector lever to UP side, and then accelerate from 1GR to 7GR.
2. Shift the selector lever to DOWN side, and then decelerate from 7GR to 1GR.
3. *Shift the paddle shifter to UP side, and then accelerate from 1GR to 7GR.
4. *Shift the paddle shifter to DOWN side, and then decelerate from 7GR to 1GR.

*: With paddle shifter

Which item is abnormal?

Manual mode switch>>GO TO 2.

Paddle shifter>>GO TO 9.

2. CHECK MANUAL MODE SWITCH CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect A/T shift selector connector.
3. Turn ignition switch ON.
4. Check voltage between A/T shift selector vehicle side harness connector terminals.

A/T shift selector vehicle side harness connector			Voltage (Approx.)
Connector	Terminal		
M137	1	4	Battery voltage
	2		
	3		
	5		

Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 5.

P1815 M-MODE SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

3.CHECK MANUAL MODE SWITCH

Check manual mode switch. Refer to [TM-128. "Component Inspection \(Manual Mode Switch\)"](#).

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace damaged parts.

4.CHECK MALFUNCTIONING ITEM

Check the following.

- Check terminals of A/T shift selector harness connector and harness cladding for damage.
- Check connector for loose connection.

Is the inspection result normal?

YES >> GO TO 17.

NO >> Repair or replace damaged parts.

5.CHECK GROUND CIRCUIT

Check continuity between A/T shift selector vehicle side harness connector terminal and ground.

A/T shift selector vehicle side harness connector		Ground	Continuity
Connector	Terminal		Existed
M137	4		

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace damaged parts.

6.CHECK POWER SOURCE CIRCUIT

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

A/T shift selector vehicle side harness connector		Ground	Voltage (Approx.)
Connector	Terminal		Battery voltage
M137	1		
	2		
	3		
	5		

Is the inspection result normal?

YES >> GO TO 16.

NO >> GO TO 7.

7.CHECK HARNESS BETWEEN A/T SHIFT SELECTOR AND UNIFIED METER AND A/C AMP. (STEP 1)

1. Turn ignition switch OFF.
2. Disconnect unified meter and A/C amp. connector.
3. Check continuity between A/T shift selector vehicle side harness connector terminals and unified meter and A/C amp. vehicle side harness connector terminals.

A/T shift selector vehicle side harness connector		Unified meter and A/C amp. vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
M137	1	M66	10	Existed
	2		25	
	3		5	
	5		11	

Is the inspection result normal?

YES >> GO TO 8.

NO >> Repair or replace damaged parts.

P1815 M-MODE SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

8.CHECK HARNESS BETWEEN A/T SHIFT SELECTOR AND UNIFIED METER AND A/C AMP. (STEP 2)

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

A/T shift selector vehicle side harness connector		Ground	Continuity
Connector	Terminal		
M137	1		Not existed
	2		
	3		
	5		

Is the inspection result normal?

YES >> GO TO 16.

NO >> Repair or replace damaged parts.

9.CHECK PADDLE SHIFTER CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect paddle shifter connectors.
3. Turn ignition switch ON.
4. Check voltage between paddle shifter vehicle side harness connector terminals.

Paddle shifter vehicle side harness connector			Voltage (Approx.)
Connector	Terminal		
M38	3	1	Battery voltage
M39	3	1	

Is the inspection result normal?

YES >> GO TO 10.

NO >> GO TO 12.

10.CHECK PADDLE SHIFTER

Check paddle shifter. Refer to [TM-128, "Component Inspection \[Paddle Shifter \(Shift-up\)\]"](#), [TM-128, "Component Inspection \[Paddle Shifter \(Shift-down\)\]"](#).

Is the inspection result normal?

YES >> GO TO 11.

NO >> Repair or replace damaged parts.

11.CHECK MALFUNCTIONING ITEM

Check the following.

- Check terminals of paddle shifter connector for damage.
- Check connector for loose connection.

Is the inspection result normal?

YES >> GO TO 17.

NO >> Repair or replace damaged parts.

12.CHECK GROUND CIRCUIT

Check continuity between paddle shifter vehicle side harness connector terminals and ground.

Paddle shifter vehicle side harness connector		Ground	Continuity
Connector	Terminal		
M38	1		Existed
M39	1		

Is the inspection result normal?

YES >> GO TO 13.

NO >> Repair or replace damaged parts.

P1815 M-MODE SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

13.CHECK POWER SOURCE CIRCUIT

Check voltage between paddle shifter vehicle side harness connector terminals and ground.

Paddle shifter vehicle side harness connector		Ground	Voltage (Approx.)
Connector	Terminal		
M38	3		
M39	3		Battery voltage

Is the inspection result normal?

YES >> GO TO 16.

NO >> GO TO 14.

14.CHECK HARNESS BETWEEN PADDLE SHIFTER AND UNIFIED METER AND A/C AMP. (PART 1)

1. Turn ignition switch OFF.
2. Disconnect unified meter and A/C amp. connector.
3. Check continuity between paddle shifter vehicle side harness connector terminals and unified meter and A/C amp. vehicle side harness connector terminals.

Paddle shifter vehicle side harness connector		Unified meter and A/C amp. vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
M38	3	M66	6	Existed
M39	3		26	

Is the inspection result normal?

YES >> GO TO 15.

NO >> Repair or replace damaged parts.

15.CHECK HARNESS BETWEEN PADDLE SHIFTER AND UNIFIED METER AND A/C AMP. (PART 2)

Check continuity between paddle shifter vehicle side harness connector terminals and ground.

Paddle shifter vehicle side harness connector		Ground	Continuity
Connector	Terminal		
M38	3		
M39	3		Not existed

Is the inspection result normal?

YES >> GO TO 16.

NO >> Repair or replace damaged parts.

16.CHECK MALFUNCTIONING ITEM

Check the following.

- Check terminals of unified meter and A/C amp. connector for damage.
- Check connector for loose connection.

Is the inspection result normal?

YES >> GO TO 17.

NO >> Repair or replace damaged parts.

17.CHECK UNIFIED METER AND A/C AMP.

1. Reconnect all the connectors.
2. Turn ignition switch ON.
3. Select "M RANGE SW", "NM RANGE SW", "AT SFT UP SW", "AT SFT DWN SW", "ST SFT UP SW"* and "ST SFT DWN SW"* on "Data Monitor" mode for "METER/M&A", and check the On/Off operations of each monitor item. Refer to [MWI-93, "Reference Value"](#).

*: With paddle shifter

Is the inspection result normal?

YES >> GO TO 18.

P1815 M-MODE SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

NO >> Replace unified meter and A/C amp. Refer to [MWI-175, "Exploded View"](#).

18.CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to [TM-199, "2WD : Exploded View"](#) (2WD) or [TM-202, "AWD : Exploded View"](#) (AWD).

NO >> Repair or replace damaged parts.

Component Inspection (Manual Mode Switch)

INFOID:000000003838910

1.CHECK MANUAL MODE SWITCH

Check continuity between A/T shift selector connector terminals.

A/T shift selector harness connector			Condition	Continuity
Connector	Terminal			
M137	1	4	Selector lever: Manual (Neutral)	Existed
			Other than the above	Not existed
	2		Selector lever: DOWN (– side)	Existed
			Other than the above	Not existed
	3		Selector lever: UP (+ side)	Existed
			Other than the above	Not existed
	5		Selector lever: “D” position (Auto)	Existed
			Other than the above	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair or replace damaged parts. Refer to [TM-184, "Exploded View"](#).

Component Inspection [Paddle Shifter (Shift-up)]

INFOID:000000003838911

1.CHECK PADDLE SHIFTER

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

Paddle shifter (shift-up) connector			Condition	Continuity
Connector	Terminal			
M38	1	3	Paddle shifter (shift-up) is pulled.	Existed
			Other than the above	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace damaged parts. Refer to [TM-188, "Exploded View"](#).

Component Inspection [Paddle Shifter (Shift-down)]

INFOID:000000005151176

1.CHECK PADDLE SHIFTER (SHIFT-DOWN)

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

Paddle shifter (shift-down) connector			Condition	Continuity
Connector	Terminal			
M39	1	3	Paddle shifter (shift-down) is pulled.	Existed
			Other than the above	Not existed

P1815 M-MODE SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

Is the inspection result normal?

- YES >> INSPECTION END
- NO >> Replace paddle shifter (shift-down). Refer to [TM-188, "Exploded View"](#).

A
B
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P2713 PRESSURE CONTROL SOLENOID D

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

P2713 PRESSURE CONTROL SOLENOID D

Description

INFOID:000000003838937

- The high and low reverse clutch solenoid valve is controlled by the TCM in response to signals transmitted from the transmission range switch, output speed sensor and accelerator pedal position sensor. Gears will then be shifted to the optimum position.
- The high and low reverse clutch solenoid valve controls the high and low reverse clutch control valve in response to a signal transmitted from the TCM.

DTC Logic

INFOID:000000003838938

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P2713	Pressure Control Solenoid D	A DTC is set if the high and low reverse clutch solenoid valve monitor value is 0.4 A or less when the high and low reverse clutch solenoid valve command value is more than 0.75 A.	<ul style="list-style-type: none">• Harness or connectors (Solenoid valve circuit is open or shorted.)• High and low reverse clutch solenoid valve

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

1. PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" 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-III

1. Start the engine.
2. Select "BATTERY VOLT", "MANU MODE SW", "GEAR" and "VHCL/S SE-A/T" with "Data Monitor".
3. Drive the vehicle and maintain the following conditions for 5 seconds or more.

BATTERY VOLT : 9 V or more

MANU MODE SW : ON

GEAR : 3rd

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

4. Perform "Self Diagnostic Results" mode for "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P2713" detected?

YES >> Go to [TM-130. "Diagnosis Procedure"](#).

NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000003838939

1. CHECK INTERMITTENT INCIDENT

Refer to [GI-35. "Intermittent Incident"](#).

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to [TM-199. "2WD : Exploded View"](#) (2WD) or [TM-202. "AWD : Exploded View"](#) (AWD).

NO >> Repair or replace damaged parts.

P2722 PRESSURE CONTROL SOLENOID E

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

P2722 PRESSURE CONTROL SOLENOID E

Description

INFOID:000000003838940

- The low brake solenoid valve is controlled by the TCM in response to signals transmitted from the transmission range switch, output speed sensor and accelerator pedal position sensor. Gears will then be shifted to the optimum position.
- The low brake solenoid valve controls the low brake control valve in response to a signal transmitted from the TCM.

DTC Logic

INFOID:000000003838941

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P2722	Pressure Control Solenoid E	A DTC is set if the low brake solenoid valve monitor value is 0.4 A or less when the low brake solenoid valve command value is more than 0.75 A.	<ul style="list-style-type: none">• Harness or connectors (Solenoid valve circuit is open or shorted.)• Low brake solenoid valve

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

1. PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" 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-III

1. Start the engine.
2. Select "BATTERY VOLT", "MANU MODE SW", "GEAR" and "VHCL/S SE-A/T" with "Data Monitor".
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" mode for "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P2722" detected?

YES >> Go to [TM-131, "Diagnosis Procedure"](#).

NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000003838942

1. CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to [TM-199, "2WD : Exploded View"](#) (2WD) or [TM-202, "AWD : Exploded View"](#) (AWD).

NO >> Repair or replace damaged parts.

P2731 PRESSURE CONTROL SOLENOID F

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

P2731 PRESSURE CONTROL SOLENOID F

Description

INFOID:000000003838943

- The 2346 brake solenoid valve is controlled by the TCM in response to signals transmitted from the transmission range switch, output speed sensor and accelerator pedal position sensor. Gears will then be shifted to the optimum position.
- The 2346 brake solenoid valve controls the 2346 brake control valve in response to a signal transmitted from the TCM.

DTC Logic

INFOID:000000003838944

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P2731	Pressure Control Solenoid F	A DTC is set if the 2346 brake solenoid valve monitor value is 0.4 A or less when the 2346 brake solenoid valve command value is more than 0.75 A.	<ul style="list-style-type: none">• Harness or connectors (Solenoid valve circuit is open or shorted.)• 2346 brake solenoid valve

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

1. PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" 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-III

1. Start the engine.
2. Select "BATTERY VOLT", "MANU MODE SW", "GEAR" and "VHCL/S SE-A/T" with "Data Monitor".
3. Drive vehicle and maintain the following conditions for 5 seconds or more.

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" mode for "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P2731" detected?

- YES >> Go to [TM-132, "Diagnosis Procedure"](#).
NO >> Check intermittent incident. Refer to [GI-35, "Intermittent Incident"](#).

Diagnosis Procedure

INFOID:000000003838945

1. CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

- YES >> Replace A/T assembly. Refer to [TM-199, "2WD : Exploded View"](#) (2WD) or [TM-202, "AWD : Exploded View"](#) (AWD).
NO >> Repair or replace damaged parts.

P2807 PRESSURE CONTROL SOLENOID G

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

P2807 PRESSURE CONTROL SOLENOID G

Description

INFOID:000000003838904

- The direct clutch solenoid valve is controlled by the TCM in response to signals transmitted from the transmission range switch, output speed sensor and accelerator pedal position sensor. Gears will then be shifted to the optimum position.
- The direct clutch solenoid valve controls the direct clutch control valve in response to a signal transmitted from the TCM.

DTC Logic

INFOID:000000003838905

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P2807	Pressure Control Solenoid G	A DTC is set if the direct clutch solenoid valve monitor value is 0.4 A or less when the direct clutch solenoid valve command value is more than 0.75 A.	<ul style="list-style-type: none">• Harness or connectors (Solenoid valve circuit is open or shorted.)• Direct clutch solenoid valve

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

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

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-III

1. Start the engine.
2. Select "BATTERY VOLT", "MANU MODE SW", "GEAR" and "VHCL/S SE-A/T" with "Data Monitor".
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" mode for "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P2807" detected?

YES >> Go to [TM-133, "Diagnosis Procedure"](#).

NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000003838906

1. CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

P2807 PRESSURE CONTROL SOLENOID G

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

-
- YES >> Replace A/T assembly. Refer to [TM-199. "2WD : Exploded View"](#) (2WD) or [TM-202. "AWD : Exploded View"](#) (AWD).
- NO >> Repair or replace damaged parts.

MAIN POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

MAIN POWER SUPPLY AND GROUND CIRCUIT

Description

INFOID:000000003838912

Supply power to TCM.

Diagnosis Procedure

INFOID:000000003838913

1.CHECK TCM POWER SOURCE

1. Turn ignition switch OFF.
2. Disconnect A/T assembly harness connector.
3. Turn ignition switch ON.
4. Check voltage between A/T assembly vehicle side harness connector terminals.

A/T assembly vehicle side harness connector			Voltage (Approx.)
Connector	Terminal		
F51	1	5	Battery voltage
		10	
	2	5	
		10	
	6	5	
		10	

Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 2.

2.CHECK TCM GROUND CIRCUIT

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

A/T assembly vehicle side harness connector		Ground	Continuity
Connector	Terminal		
F51	5		Existed
	10		

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace damaged parts.

3.CHECK TCM POWER SOURCE CIRCUIT

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

A/T assembly vehicle side harness connector		Ground	Voltage (Approx.)
Connector	Terminal		
F51	1		Battery voltage
	2		
	6		

Is the inspection result normal?

YES >> GO TO 4.

NO >> Check the following. If NG, repair or replace damaged parts.

- Harness for short or open between battery and A/T assembly vehicle side harness connector terminal 2.
- Harness for short or open between push-button ignition switch and A/T assembly vehicle side harness connector terminals 1 and 6.
- 10A fuse (No. 36, located in the fuse, fusible link and relay box)

MAIN POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

- 10A fuse (No. 43, located in the IPDM E/R)
- Push-button ignition switch. Refer to [PG-61, "Wiring Diagram - IGNITION POWER SUPPLY -"](#).

4. DETECT MALFUNCTIONING ITEM

Check the following.

- Check terminals of A/T assembly connector for damage.
- Check connector for loose connection.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair or replace damaged parts.

SHIFT POSITION INDICATOR CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

SHIFT POSITION INDICATOR CIRCUIT

Description

INFOID:000000003838914

TCM transmit the switch signals to unified meter and A/C amp. by CAN communication line. Then manual mode switch position is indicated on the shift position indicator.

Component Function Check

INFOID:000000003838915

1. CHECK A/T INDICATOR

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 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-137, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000003838916

1. CHECK INPUT SIGNALS

With CONSULT-III

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-151, "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-151, "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-128, "Component Inspection \(Manual Mode Switch\)"](#).

- Check A/T main system (Fail-safe function actuated).
- Perform "Self Diagnostic Results" mode for "TRANSMISSION". Refer to [TM-75, "CONSULT-III Function \(TRANSMISSION\)"](#).

NO-2 (The actual gear position changes, but the shift position indicator is not indicated.)>>•Perform "Self Diagnostic Results" mode for "TRANSMISSION". Refer to [TM-75, "CONSULT-III Function \(TRANSMISSION\)"](#).

NO-3 (The actual gear position and the indication on the shift position indicator do not coincide.)>>•Perform "Self Diagnostic Results" mode for "TRANSMISSION". Refer to [TM-75, "CONSULT-III Function \(TRANSMISSION\)"](#).

NO-4 (Only a specific position or positions is/are not indicated on the shift position indicator.)>>•Check the unified meter and A/C amp. Refer to [MWI-4, "Work flow"](#).

SHIFT LOCK SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

SHIFT LOCK SYSTEM

Description

INFOID:000000003838917

Shift lock system circuit consists of the following part.

Component	Function
Shift lock solenoid	Activated by the push-button ignition switch and stop lamp signals, it holds the relative positions of sliders A and B.
Shift lock relay	Current flow to stop lamp switch allows shift lock relay contact ON, and then power is applied to shift lock solenoid.
Stop lamp switch	Depressing the brake pedal turns ON the stop lamp switch and energizes the shift lock relay.

SHIFT LOCK SYSTEM

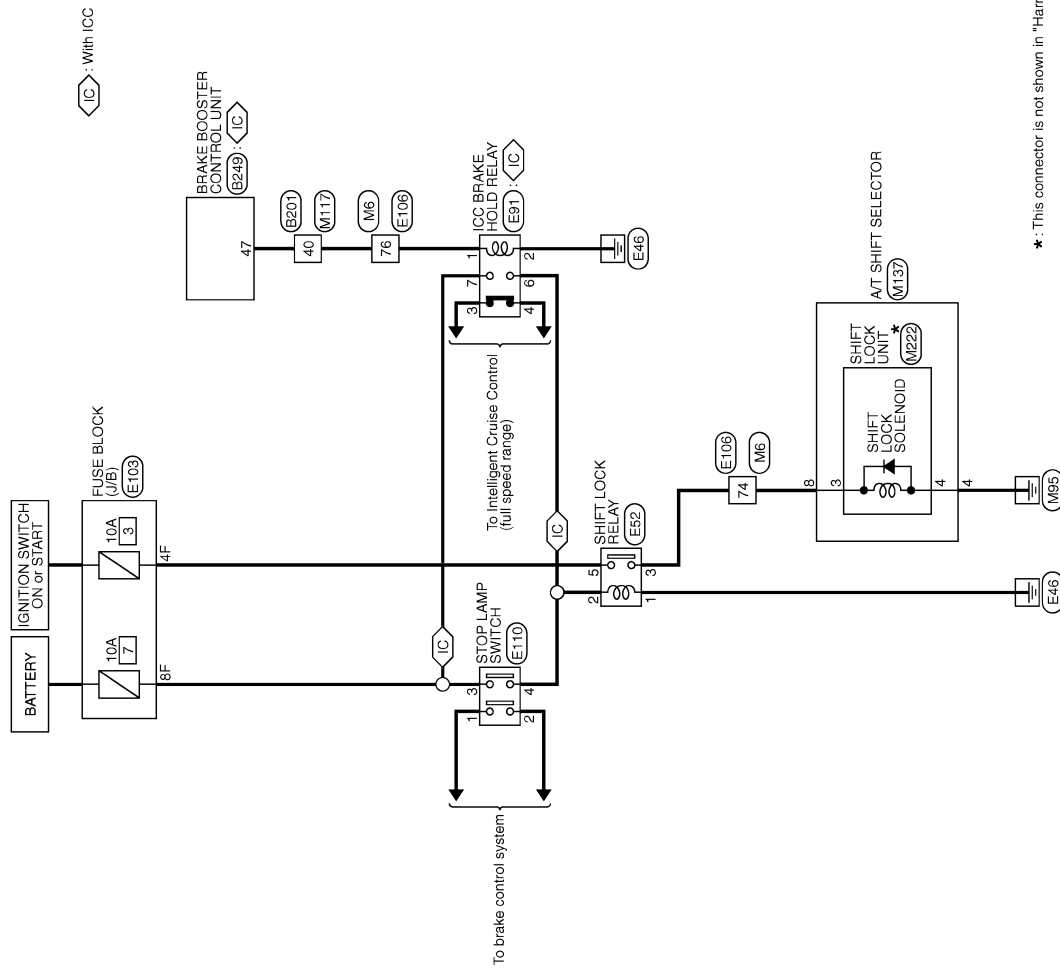
< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

Wiring Diagram - A/T SHIFT LOCK SYSTEM -

INFOID:0000000003838918

A/T SHIFT LOCK SYSTEM



★: This connector is not shown in "Harness Layout".

2008/03/04

JCDWM0313GB

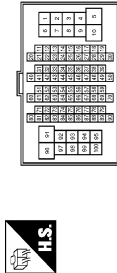
SHIFT LOCK SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

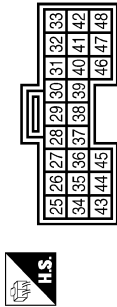
A/T SHIFT LOCK SYSTEM

Connector No.	B201
Connector Name	WIRE TO WIRE
Connector Type	TH80FW-CS16-TM4



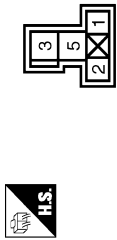
Terminal No.	Color of Wire	Signal Name [Specification]
40	LG	- [With ICG]

Connector No.	B249
Connector Name	BRAKE BOOSTER CONTROL UNIT
Connector Type	TK24FGY



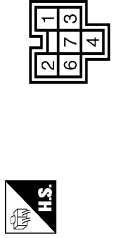
Terminal No.	Color of Wire	Signal Name [Specification]
47	LG	BRAKE HOLD RLY DRIVE SIGNAL

Connector No.	E32
Connector Name	SHIFT LOCK RELAY
Connector Type	MS12FL-M2-LC



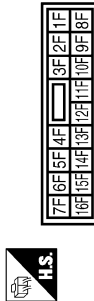
Terminal No.	Color of Wire	Signal Name [Specification]
1	B	-
2	W	-
3	SB	-
5	G	-

Connector No.	E91
Connector Name	ICC BRAKE HOLD RELAY
Connector Type	M06FGY-R-US



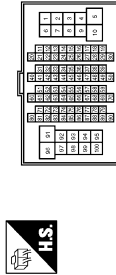
Terminal No.	Color	Signal Name [Specification]
1	L	-
2	B	-
3	G	-
4	G	-
6	W	-
7	L	-

Connector No.	E103
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS10FW-CS



Terminal No.	Color of Wire	Signal Name [Specification]
4F	G	-
8F	L	-

Connector No.	E106
Connector Name	WIRE TO WIRE
Connector Type	TH80FW-CS16-TM4



Terminal No.	Color of Wire	Signal Name [Specification]
76	SB	-
74	L	-

Connector No.	E110
Connector Name	STOP LAMP SWITCH
Connector Type	M04FW-LC



Terminal No.	Color of Wire	Signal Name [Specification]
1	L	-
2	SB	-
3	L	-
4	W	-

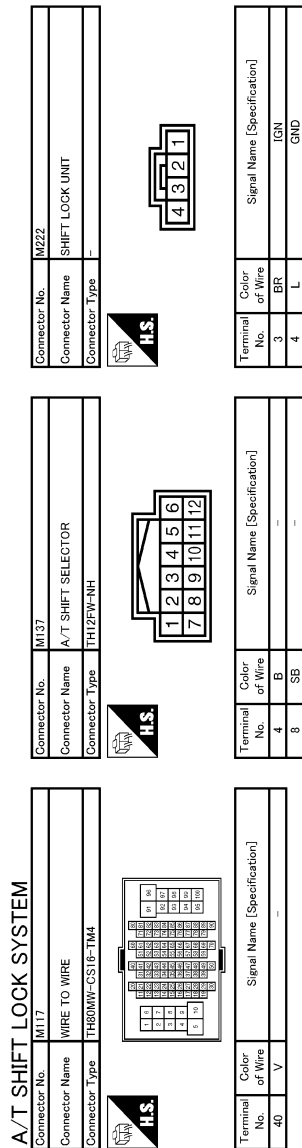
Connector No.	M6
Connector Name	WIRE TO WIRE
Connector Type	TH80MW-CS16-TM4



Terminal No.	Color of Wire	Signal Name [Specification]
74	SB	-
78	V	-

JCDWM0314GB

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Component Function Check

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

1. Turn ignition switch ON.
2. Shift the selector lever to "P" position.
3. Attempt to shift the selector lever to any other position with the brake pedal released.

Can the selector lever be shifted to any other position?

JCDWM0315GB

INFOID:0000000003838919

SHIFT LOCK SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

- YES >> Go to [TM-142, "Diagnosis Procedure"](#).
NO >> GO TO 2.

2.CHECK A/T SHIFT LOCK OPERATION (PART 2)

Attempt to shift the selector lever to any other position with the brake pedal depressed.

Can the selector lever be shifted to any other position?

- YES >> INSPECTION END
NO >> Go to [TM-142, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000003838920

1.CHECK SELECTOR LEVER POSITION

Check the selector lever position for damage. Refer to [TM-183, "Inspection and Adjustment"](#).

Is the inspection result normal?

- YES >> GO TO 2.
NO >> Adjust control linkage. Refer to [TM-183, "Inspection and Adjustment"](#).

2.CHECK POWER SOURCE

1. Turn ignition switch OFF.
2. Disconnect shift lock relay.
3. Check voltage between shift lock relay harness connector terminal and ground.

Shift lock relay harness connector		Ground	Condition	Voltage (Approx.)
Connector	Terminal			
E52	2		Depressed brake pedal.	Battery voltage
			Released brake pedal.	0 V

Is the inspection result normal?

- YES >> GO TO 7.
NO-1 >> When pressing the brake pedal, the voltage is 0 V: GO TO 3.
NO-2 >> When releasing the brake pedal, the voltage is battery voltage: GO TO 5.

3.CHECK POWER SOURCE

1. Disconnect stop lamp switch connector.
2. Check voltage between stop lamp switch vehicle side harness connector terminal and ground.

Stop lamp switch vehicle side harness connector		Ground	Voltage (Approx.)
Connector	Terminal		
E110	3		Battery voltage

Is the inspection result normal?

- YES >> GO TO 4.
NO >> Check the following. If NG, repair or replace damaged parts.
- 10 A fuse [No. 7, located in the fuse block (J/B)]
 - Harness for short to ground or open between fuse block (J/B) vehicle side harness connector terminal 8F and stop lamp switch vehicle side harness connector terminal 3.
 - Harness for short to ground or open between battery and fuse block (J/B).
 - Harness for short to ground between battery and ICC brake hold relay vehicle side harness connector terminal 7. [With ICC (Full Speed Range) System]

4.CHECK STOP LAMP SWITCH

Check stop lamp switch. Refer to [TM-145, "Component Inspection \(Stop lamp switch\)"](#).

Is the inspection result normal?

- YES >> Check the following. If NG, repair or replace damaged parts.
- Harness for short to ground or open between stop lamp switch vehicle side harness connector terminal 4 and shift lock relay vehicle side harness connector terminal 2.

SHIFT LOCK SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

- Harness for short to ground between ICC brake hold relay vehicle side harness connector terminal 6 and shift lock relay vehicle side harness connector terminal 2. [With ICC (Full Speed Range) System]

NO >> Repair or replace damaged parts.

5.CHECK STOP LAMP SWITCH

Check stop lamp switch. Refer to [TM-145, "Component Inspection \(Stop lamp switch\)"](#).

Is the inspection result normal?

YES-1 >> Without ICC (Full Speed Range) System: Repair or replace harness between stop lamp switch and shift lock relay.

YES-2 >> With ICC (Full Speed Range) System: GO TO 6.

NO >> Repair or replace damaged parts.

6.CHECK DTC WITH ICC (FULL SPEED RANGE) SYSTEM

With CONSULT-III

Perform "Self Diagnostic Results" mode for "ICC".

Is any malfunction detected?

YES >> Check the DTC detected item. Refer to [CCS-158, "DTC Index"](#).

NO >> Repair or replace harness between stop lamp switch and shift lock relay.

7.CHECK GROUND CIRCUIT

Check continuity between shift lock relay vehicle side harness connector terminal and ground.

Shift lock relay vehicle side harness connector		Ground	Continuity
Connector	Terminal		
E52	1		Existed

Is the inspection result normal?

YES >> GO TO 8.

NO >> Repair or replace damaged parts.

8.CHECK SHIFT LOCK RELAY

Check shift lock relay. Refer to [TM-144, "Component Inspection \(Shift lock relay\)"](#).

Is the inspection result normal?

YES >> GO TO 9.

NO >> Repair or replace damaged parts.

9.CHECK POWER SOURCE

1. Turn ignition switch ON.
2. Check voltage between shift lock relay vehicle side harness connector terminal and ground.

Shift lock relay vehicle side harness connector		Ground	Voltage (Approx.)
Connector	Terminal		
E52	5		Battery voltage

Is the inspection result normal?

YES >> GO TO 10.

NO >> Check the following. If NG, repair or replace damaged parts.

- 10 A fuse [No. 3, located in the fuse block (J/B)]
- Harness for short to ground or open between push-button ignition switch and fuse block (J/B).
- Harness for short to ground or open between fuse block (J/B) vehicle side harness connector terminal 4F and shift lock relay vehicle side harness connector terminal 5.

10.CHECK GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect A/T shift selector connector.
3. Check continuity between A/T shift selector vehicle side harness connector terminal and ground.

SHIFT LOCK SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

A/T shift selector vehicle side harness connector		Ground	Continuity
Connector	Terminal		
M137	4		Existed

Is the inspection result normal?

YES >> GO TO 11.

NO >> Repair or replace damaged parts.

11.CHECK SHIFT LOCK SOLENOID

Check shift lock solenoid. Refer to [TM-144, "Component Inspection \(Shift lock solenoid\)"](#).

Is the inspection result normal?

YES >> Check the following. If NG, repair or replace damaged parts.

- Harness for short to ground, short to power or open between shift lock relay vehicle side harness connector terminal 3 and A/T shift selector vehicle side harness connector terminal 8.
- Harness for short to ground, short to power or open between A/T shift selector harness conductor terminal 8 and shift lock unit harness connector terminal 3.
- Harness for open between A/T shift selector harness conductor terminal 4 and shift lock unit harness connector terminal 4.

NO >> Repair or replace damaged parts.

Component Inspection (Shift lock solenoid)

INFOID:000000003838921

1.CHECK SHIFT LOCK SOLENOID

1. Remove shift lock unit. Refer to [TM-184, "Exploded View"](#).
2. Apply voltage to terminals 3 and 4 of shift lock unit connector, and then check that shift lock solenoid is activated.

CAUTION:

Connect the fuse between the terminals when applying the voltage.

(+ (fuse))		(–)		Condition	Status
Shift lock unit connector					
Connector	Terminal	Connector	Terminal		
M222	3	M222	4	Apply 12 V direct current between terminals 3 and 4.	Shift lock solenoid operates

Can the lock plate be moved up and down?

YES >> INSPECTION END

NO >> Replace shift lock unit. Refer to [TM-184, "Exploded View"](#).

Component Inspection (Shift lock relay)

INFOID:000000003838922

1.CHECK SHIFT LOCK RELAY

Check continuity between shift lock relay terminals.

CAUTION:

Connect the fuse between the terminals when applying the voltage.

Shift lock relay connector			Condition	Continuity
Connector	Terminal			
E52	3	5	Apply 12 V direct current between terminals 1 and 2.	Existed
			OFF	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace shift lock relay.

SHIFT LOCK SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

Component Inspection (Stop lamp switch)

INFOID:0000000003838923

1.CHECK STOP LAMP SWITCH

Check continuity between stop lamp switch connector terminals.

Stop lamp switch connector			Condition	Continuity
Connector	Terminal			
E110	3	4	Depressed brake pedal.	Existed
			Released brake pedal.	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace stop lamp switch. Refer to [BR-18. "Exploded View"](#).

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SELECTOR LEVER POSITION INDICATOR

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

SELECTOR LEVER POSITION INDICATOR

Description

INFOID:000000003838924

Indicates selector lever position.

Component Function Check

INFOID:000000003838925

1.CHECK SELECTOR LEVER POSITION INDICATOR (PART 1)

1. Turn ignition switch ON.
2. Check that each position indicator lamp of the selector lever position indicator turns on when shifting the selector lever from "P" to "M" position.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Go to [TM-146. "Diagnosis Procedure"](#).

2.CHECK SELECTOR LEVER POSITION INDICATOR (PART 2)

Check that the night illumination of the selector lever position indicator turns on when setting the lighting switch in 1st position.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to [TM-146. "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000003838926

1.CHECK MALFUNCTIONING ITEM

Which item is abnormal?

Position indicator lamp>> GO TO 2.

Illumination lamp>> GO TO 10.

2.CHECK POWER SOURCE

1. Turn ignition switch OFF.
2. Disconnect A/T shift selector connector.
3. Turn ignition switch ON.
4. Check voltage between A/T shift selector vehicle side harness connector terminals.

A/T shift selector vehicle side harness connector			Voltage (Approx.)
Connector	Terminal		
	(+)	(-)	
M137	10	4	Battery voltage

Is the inspection result normal?

YES >> GO TO 6.

NO >> GO TO 3.

3.CHECK GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between A/T shift selector vehicle side harness connector terminal and ground.

A/T shift selector vehicle side harness connector		Ground	Continuity
Connector	Terminal		
M137	4		Existed

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace damaged parts.

SELECTOR LEVER POSITION INDICATOR

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

4.CHECK HARNESS BETWEEN A/T SHIFT SELECTOR AND BCM (PART 1)

1. Disconnect BCM connector.
2. Check continuity between A/T shift selector vehicle side harness connector terminal and BCM vehicle side harness connector terminal.

A/T shift selector vehicle side harness connector		BCM vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
M137	10	M122	96	Existed

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace damaged parts.

5.CHECK HARNESS BETWEEN A/T SHIFT SELECTOR AND BCM (PART 2)

Check continuity between A/T shift selector vehicle side harness connector terminal and ground.

A/T shift selector vehicle side harness connector		Ground	Continuity
Connector	Terminal		
M137	10		Not existed

Is the inspection result normal?

YES >> Check BCM input/output signal. Refer to [BCS-44, "Reference Value"](#).

NO >> Repair or replace damaged parts.

6.CHECK SHIFT POSITION SWITCH

1. Disconnect shift position switch connector.
2. Check continuity between A/T shift selector harness connector terminals and shift position switch connector terminals.

A/T shift selector harness connector		Shift position switch connector		Condition	Continuity
Connector	Terminal	Connector	Terminal		
M137	4	M221	7	Selector lever in “D” position.	Existed
			2, 3, 4, 5, 6, 9, 10, 11		Not existed
			9	Selector lever in “M” position.	Existed
			2, 3, 4, 5, 6, 7, 10, 11		Not existed
	10		2, 6	Selector lever in “N” and “M” position.	Existed
			3, 4, 5, 7, 9, 10, 11		Not existed
			3, 6	Selector lever in “D” position.	Existed
			2, 4, 5, 7, 9, 10, 11		Not existed
			4, 6	Selector lever in “R” position.	Existed
			2, 3, 5, 7, 9, 10, 11		Not existed
			5, 6	Selector lever in “P” position.	Existed
			2, 3, 4, 7, 9, 10, 11		Not existed

Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair or replace damaged parts. Refer to [TM-184, "Exploded View"](#).

7.CHECK HARNESS BETWEEN SHIFT POSITION SWITCH AND SELECTOR LEVER POSITION INDICATOR (PART 1)

1. Disconnect selector lever position indicator connector.
2. Check continuity between shift position switch harness connector terminals and selector lever position indicator connector terminals.

SELECTOR LEVER POSITION INDICATOR

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

Shift position switch harness connector		Selector lever position indicator harness connector		Continuity
Connector	Terminal	Connector	Terminal	
M221	2	M223	3	Existed
	3		4	
	4		5	
	5		7	
	6		6	
	7		8	
	9		2	

Is the inspection result normal?

YES >> GO TO 8.

NO >> Repair or replace damaged parts. Refer to [TM-184, "Exploded View"](#).

8.CHECK HARNESS BETWEEN SHIFT POSITION SWITCH AND SELECTOR LEVER POSITION INDICATOR (PART 2)

Check harness cladding between shift position switch connector and selector lever position indicator connector for damage.

Is the inspection result normal?

YES >> GO TO 9.

NO >> Repair or replace damaged parts. Refer to [TM-184, "Exploded View"](#).

9.CHECK SELECTOR LEVER POSITION INDICATOR

Check selector lever position indicator. Refer to [TM-149, "Component Inspection"](#).

Is the inspection result normal?

YES >> Check the following.

- Check terminals of A/T shift selector connector, shift position switch connector and selector lever position indicator connector for damage.
- Check connector for loose connection.

NO >> Repair or replace damaged parts. Refer to [TM-184, "Exploded View"](#).

10.CHECK POWER SOURCE

1. Turn ignition switch OFF.
2. Disconnect A/T shift selector connector.
3. Turn ignition switch ON.
4. Check voltage between A/T shift selector vehicle side harness connector terminals.

A/T shift selector vehicle side harness connector			Condition	Voltage (Approx.)
Connector	Terminal			
	(+)	(-)		
M137	7	9	Lighting switch 1ST	Battery voltage

Is the inspection result normal?

YES >> GO TO 11.

NO >> Check illumination circuit. Refer to [INL-85, "Wiring Diagram - ILLUMINATION -"](#).

11.CHECK SHIFT POSITION SWITCH

1. Disconnect shift position switch connector.
2. Check continuity between A/T shift selector harness connector terminals and shift position switch connector terminals.

SELECTOR LEVER POSITION INDICATOR

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

A/T shift selector harness connector		Shift position switch connector		Continuity
Connector	Terminal	Connector	Terminal	
M137	7	M221	10	Existed
			2, 3, 4, 5, 6, 7, 9, 11	Not existed
	9		11	Existed
			2, 3, 4, 5, 6, 7, 9, 10	Not existed

Is the inspection result normal?

YES >> GO TO 12.

NO >> Repair or replace damaged parts. Refer to [TM-184. "Exploded View"](#).

12.CHECK HARNESS BETWEEN SHIFT POSITION SWITCH AND SELECTOR LEVER POSITION INDICATOR (PART 1)

1. Disconnect selector lever position indicator connector.
2. Check continuity between shift position switch harness connector terminals and selector lever position indicator connector terminals.

Shift position switch harness connector		Selector lever position indicator harness connector		Continuity
Connector	Terminal	Connector	Terminal	
M221	10	M223	1	Existed
	11		9	

Is the inspection result normal?

YES >> GO TO 13.

NO >> Repair or replace damaged parts. Refer to [TM-184. "Exploded View"](#).

13.CHECK HARNESS BETWEEN SHIFT POSITION SWITCH AND SELECTOR LEVER POSITION INDICATOR (PART 2)

Check harness cladding between shift position switch connector and selector lever position indicator connector for damage.

Is the inspection result normal?

YES >> GO TO 9.

NO >> Repair or replace damaged parts. Refer to [TM-184. "Exploded View"](#).

Component Inspection

INFOID:000000003838927

1.CHECK SELECTOR LEVER POSITION INDICATOR

Check that selector lever position indicator lamps turn on.

CAUTION:

Connect the fuse between the terminals when applying the voltage.

SELECTOR LEVER POSITION INDICATOR

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

Selector lever position indicator connector			Condition	Status
Connector	Terminal			
	(+) (fuse)	(−)		
M223	1	9	Apply 12 V direct current between terminals 1 and 9.	Illumination lamp turns on.
	3	8	Apply 12 V direct current between terminals 3 and 8.	“N” position indicator lamp turns on.
	4		Apply 12 V direct current between terminals 4 and 8.	“D” position indicator lamp turns on.
	5		Apply 12 V direct current between terminals 5 and 8.	“R” position indicator lamp turns on.
	7		Apply 12 V direct current between terminals 7 and 8.	“P” position indicator lamp turns on.
	6	2	Apply 12 V direct current between terminals 6 and 2.	“M” mode indicator lamp turns on.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace the selector lever position indicator. Refer to [TM-184, "Exploded View"](#).

ECU DIAGNOSIS INFORMATION

TCM

Reference Value

INFOID:000000003838952

VALUES ON DIAGNOSIS TOOL

NOTE:

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

CONSULT-III MONITOR ITEM

Item name	Condition	Value / Status (Approx.)
VHCL/S SE-A/T	During driving	Approximately matches the speedometer reading.
ESTM VSP SIG	During driving	Approximately matches the speedometer reading.
OUTPUT REV	During driving (lock-up ON)	Tachometer/Gear ratio
INPUT SPEED	During driving (lock-up ON)	Approximately matches 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 matches the tachometer reading.
TC SLIP SPEED	During driving	Engine speed – Input speed
ACCELE POSI	Released accelerator pedal	0.0/8
	Fully depressed accelerator pedal	8.0/8
THROTTLE POSI	Released accelerator pedal	0.0/8
	Fully depressed accelerator pedal	8.0/8
ATF TEMP 1	Ignition switch ON	Temperature of ATF in the oil pan is indicated.
ATF TEMP 2	Ignition switch ON	Temperature of ATF at the exit of torque converter.
ATF TEMP SE 1	0°C (32° F) – 20°C (68°F) – 80°C (176°F)	3.3 – 2.7 – 0.9 V
BATTERY VOLT	Ignition switch ON	Battery voltage (11 V – 14 V)
LINE PRES SOL	During driving	0.2 – 0.6 A
TCC SOLENOID	Slip lock-up is active	0.2 – 0.8 A
	Lock-up is active	0.8 A
	Other than the above	0 A
L/B SOLENOID	Low brake engaged	0.6 – 0.8 A
	Low brake disengaged	0 – 0.05 A

TCM

< ECU DIAGNOSIS INFORMATION >

[7AT: RE7R01A (VQ35HR)]

Item name	Condition	Value / Status (Approx.)
FR/B SOLENOID	Front brake engaged	0.6 – 0.8 A
	Front brake disengaged	0 – 0.05 A
HLR/C SOL	High and low reverse clutch disengaged	0.6 – 0.8 A
	High and low reverse clutch engaged	0 – 0.05 A
I/C SOLENOID	Input clutch disengaged	0.6 – 0.8 A
	Input clutch engaged	0 – 0.05 A
D/C SOLENOID	Direct clutch disengaged	0.6 – 0.8 A
	Direct clutch engaged	0 – 0.05 A
2346/B SOL	2346 brake engaged	0.6 – 0.8 A
	2346 brake disengaged	0 – 0.05 A
L/P SOL MON	During driving	0.2 – 0.6 A
TCC SOL MON	Slip lock-up is active	0.2 – 0.8 A
	Lock-up is active	0.8 A
	Other than the above	0 A
L/B SOL MON	Low brake engaged	0.6 – 0.8 A
	Low brake disengaged	0 – 0.05 A
FR/B SOL MON	Front brake engaged	0.6 – 0.8 A
	Front brake disengaged	0 – 0.05 A
HLR/C SOL MON	High and low reverse clutch disengaged	0.6 – 0.8 A
	High and low reverse clutch engaged	0 – 0.05 A
I/C SOL MON	Input clutch disengaged	0.6 – 0.8 A
	Input clutch engaged	0 – 0.05 A
D/C SOL MON	Direct clutch disengaged	0.6 – 0.8 A
	Direct clutch engaged	0 – 0.05 A
2346/B SOL MON	2346 brake engaged	0.6 – 0.8 A
	2346 brake disengaged	0 – 0.05 A
GEAR RATIO	Driving with 1GR	4.924
	Driving with 2GR	3.194
	Driving with 3GR	2.043
	Driving with 4GR	1.412
	Driving with 5GR	1.000
	Driving with 6GR	0.862
	Driving with 7GR	0.772
ENGINE TORQUE	During driving	Changes the value according to the acceleration or deceleration.
ENG TORQUE D	During driving	Changes the value according to the acceleration or deceleration.
INPUT TRQ S	During driving	Changes the value according to the acceleration or deceleration.
INPUT TRQ L/P	During driving	Changes the value according to the acceleration or deceleration.
TRGT PRES L/P	Selector lever in "P" and "N" positions	490 kPa
	Other than the above	490 – 1370 kPa
TRGT PRES TCC	Slip lock-up is active	0 – 600 kPa
	Lock-up is active	600 kPa
	Other than the above	0 kPa

TCM

< ECU DIAGNOSIS INFORMATION >

[7AT: RE7R01A (VQ35HR)]

Item name	Condition	Value / Status (Approx.)
TRGT PRES L/B	Low brake engaged	1370 kPa
	Low brake disengaged	0 kPa
TRGT PRES FR/B	Front brake engaged	1370 kPa
	Front brake disengaged	0 kPa
TRG PRE HLR/C	High and low reverse clutch disengaged	1370 kPa
	High and low reverse clutch engaged	0 kPa
TRGT PRES I/C	Input clutch disengaged	1370 kPa
	Input clutch engaged	0 kPa
TRGT PRES D/C	Direct clutch disengaged	1370 kPa
	Direct clutch engaged	0 kPa
TRG PRE 2346/B	2346 brake engaged	1370 kPa
	2346 brake disengaged	0 kPa
SHIFT PATTERN	During normal driving (without shift changes)	FF
VEHICLE SPEED	During driving	Approximately matches the speedometer reading.
RANGE SW 4	Selector lever in "P" and "N" positions	ON
	Other than the above	OFF
RANGE SW 3	Selector lever in "P", "R" and "N" positions	ON
	Other than the above	OFF
RANGE SW 2	Selector lever in "P" and "R" positions	ON
	Other than the above	OFF
RANGE SW 1	Selector lever in "P" position	ON
	Other than the above	OFF
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: DOWN (– side)	ON
	Other than the above	OFF
UP SW LEVER	Selector lever: UP (+ side)	ON
	Other than the above	OFF
NON M-MODE SW	Manual shift gate side	OFF
	Other than the above	ON
MANU MODE SW	Manual shift gate side (neutral)	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	Depressed brake pedal	ON
	Released brake pedal	OFF
POWERSHIFT SW	Power mode	ON
	Other than the above	OFF

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< ECU DIAGNOSIS INFORMATION >

[7AT: RE7R01A (VQ35HR)]

Item name	Condition	Value / Status (Approx.)
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
TCS SIGNAL 2	When the reception value of A/T shift schedule change demand signal is "cold"	ON
	Other than the above	OFF
TCS SIGNAL 1	When the reception value of A/T shift schedule change demand signal is "warm"	ON
	Other than the above	OFF
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
	Other than the above	NOTFAIL
IC/FRB PARTS	At 4GR - 5GR - 6GR shift control	FAIL
	Other than the above	NOTFAIL
HLR/C PARTS	At 4GR - 5GR - 6GR shift control	FAIL
	Other than the above	NOTFAIL
W/O THL POS	Fully depressed accelerator pedal	ON
	Released accelerator pedal	OFF
CLSD THL POS	Released accelerator pedal	ON
	Fully depressed accelerator pedal	OFF
DRV CST JUDGE	Depressed accelerator pedal	DRIVE
	Released accelerator pedal	COAST

TCM

< ECU DIAGNOSIS INFORMATION >

[7AT: RE7R01A (VQ35HR)]

Item name	Condition	Value / Status (Approx.)
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
	Selector lever in "N" position	N
	Selector lever in "D" position	D
	Selector lever in "D" position: 7GR	
	Selector lever in "D" position: 6GR	6
	Selector lever in "D" position: 5GR	5
	Selector lever in "D" position: 4GR	4
	Selector lever in "D" position: 3GR	3
	Selector lever in "D" position: 2GR	2
	Selector lever in "D" position: 1GR	1
	Selector lever in "M" position: 1GR	M1
	Selector lever in "M" position: 2GR	M2
	Selector lever in "M" position: 3GR	M3
	Selector lever in "M" position: 4GR	M4
	Selector lever in "M" position: 5GR	M5
	Selector lever in "M" position: 6GR	M6
	Selector lever in "M" position: 7GR	M7
	Driving with DS mode	DS
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
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

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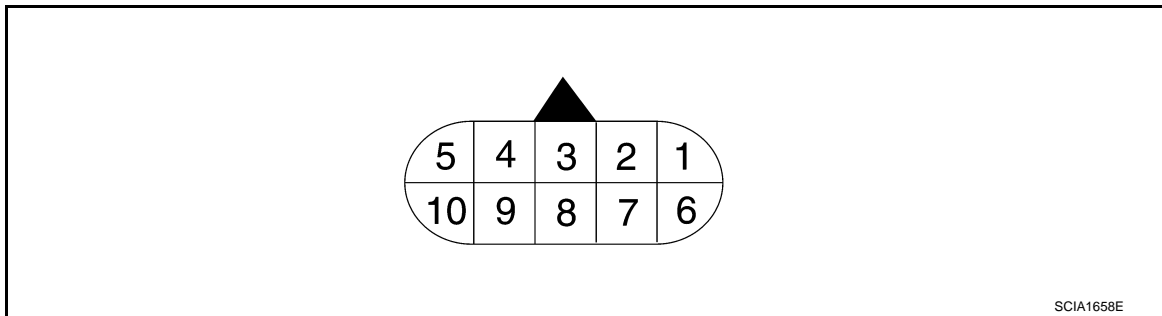
TCM

< ECU DIAGNOSIS INFORMATION >

[7AT: RE7R01A (VQ35HR)]

Item name	Condition	Value / Status (Approx.)
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

TERMINAL LAYOUT



PHYSICAL VALUES

Terminal (Wire color)		Description		Condition	Value (Approx.)
+	—	Signal name	Input/ Output		
1 (Y)	Ground	Power supply	Input	Ignition switch ON	Battery voltage
				Ignition switch OFF	0 V
2 (BR)	Ground	Power supply (Memory back-up)	Input	Always	Battery voltage
3 (L)	—	CAN-H	Input/ Output	—	—
4 (V)	—	K-line	Input/ Output	—	—

TCM

< ECU DIAGNOSIS INFORMATION >

[7AT: RE7R01A (VQ35HR)]

Terminal (Wire color)		Description		Condition		Value (Approx.)
+	—	Signal name	Input/ Output			
5 (B)	Ground	Ground	Output	Always		0 V
6 (Y)	Ground	Power supply	Input	Ignition switch ON		Battery voltage
				Ignition switch OFF		0 V
7 (R)	Ground	Back-up lamp relay	Input	Ignition switch ON	Selector lever in "R" position.	0 V
					Selector lever in other positions.	Battery voltage
8 (P)	—	CAN-L	Input/ Output	—		—
9 (GR)	Ground	Starter relay	Output	Ignition switch ON	Selector lever in "N" and "P" positions.	Battery voltage
					Selector lever in other positions.	0 V
10 (B)	Ground	Ground	Output	Always		0 V

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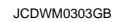
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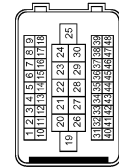
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A/T CONTROL SYSTEM (VQ35HR)

Connector No.	E3
Connector Name	WIRE TO WIRE
Connector Type	SAA38MB-RS10-SJ22



Terminal No.	Color of Wire	Signal Name [Specification]
20	GR	-
26	R	-

Connector No.	E5
Connector Name	BPM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	TH20FW-CS12-IM-1V



Terminal No.	Color of Wire	Signal Name [Specification]
30	GR	-

Connector No.	E6
Connector Name	BPM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	TH08FW-NH



Terminal No.	Color of Wire	Signal Name [Specification]
46	BR	-

Connector No.	E7
Connector Name	BPM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	TH20FW-CS12-M8



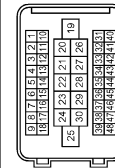
Terminal No.	Color of Wire	Signal Name [Specification]
58	Y	-

Connector No.	E106
Connector Name	WIRE TO WIRE
Connector Type	TH80FW-CS10-TM4



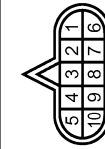
Terminal No.	Color of Wire	Signal Name [Specification]
37	Y	-
96	W	-

Connector No.	F1
Connector Name	WIRE TO WIRE
Connector Type	SAA38FE-RS10-SJ22



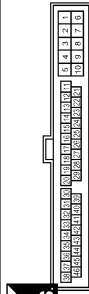
Terminal No.	Color of Wire	Signal Name [Specification]
20	GR	-
26	BR	-

Connector No.	F51
Connector Name	A/T ASSEMBLY
Connector Type	RK10FG-DGY



Terminal No.	Color of Wire	Signal Name [Specification]
1	Y	-
2	BR	- [With VQ engine]
3	L	-
4	V	-
5	B	-
6	Y	-
7	R	-
8	P	-
9	GR	- [With VQ engine]
10	B	-

Connector No.	F103
Connector Name	WIRE TO WIRE
Connector Type	TK38FW-MS10

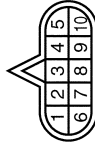


Terminal No.	Color of Wire	Signal Name [Specification]
31	R	-
38	Y	-
43	P	-
44	L	-
45	Y	-
46	V	-

JCDWM0304GB

A/T CONTROL SYSTEM (VQ35HR)

Connector No.	FT51
Connector Name	TCM (TRANSMISSION CONTROL MODULE)
Connector Type	SPI0FG



Terminal No.	Color of Wire	Signal Name [Specification]
1	W	VIGN
2	B	BATT
3	R	CAN-H
4	O	K LINE
5	G	GND
6	GR	VIGN
7	L	REV LAMP RLY
8	BR	CAN-L
9	Y	START RLY
10	W/B	GND

Connector No.	M6
Connector Name	WIRE TO WIRE
Connector Type	TH80MW-CS18-TM4



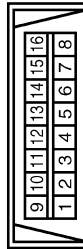
Terminal No.	Color of Wire	Signal Name [Specification]
37	G	-
56	W	-

Connector No.	M1
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS06FW-M2



Terminal No.	Color of Wire	Signal Name [Specification]
2A	G	-
5A	V	-
7A	R	-

Connector No.	M24
Connector Name	DATA LINK CONNECTOR
Connector Type	BD16FW



Terminal No.	Color of Wire	Signal Name [Specification]
6	L	-
7	GR	-
14	P	-

Connector No.	M2
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS10FW-CS



Terminal No.	Color of Wire	Signal Name [Specification]
6B	Y	-

Connector No.	M38
Connector Name	PADDLE SHIFTER(SHIFT-UP)
Connector Type	A04FW



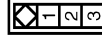
Terminal No.	Color of Wire	Signal Name [Specification]
3	O	-
1	B	-
3	G	-

Connector No.	M3
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS12FW-CS



Terminal No.	Color of Wire	Signal Name [Specification]
12C	R	-

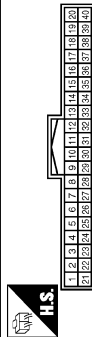
Connector No.	M39
Connector Name	PADDLE SHIFTER(SHIFT-DOWN)
Connector Type	A03FW



Terminal No.	Color of Wire	Signal Name [Specification]
1	B	-
3	G	-

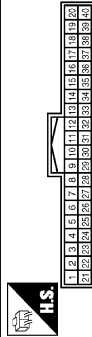
A/T CONTROL SYSTEM (VQ35HR)

Connector No.	M63
Connector Name	COMBINATION METER
Connector Type	TH40FW-NH



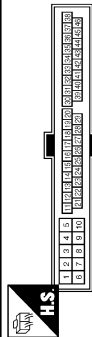
Terminal No.	Color of Wire	Signal Name [Specification]
2	LG	COMM (METER->AMP)
3	GR	COMM (AMP->METER)
24	BR	COMM (LCD->AMP)
25	Y	COMM (AMP->LCD)

Connector No.	M66
Connector Name	UNIFIED METER AND A/C AMP.
Connector Type	TH40FW-NH



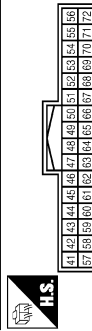
Terminal No.	Color of Wire	Signal Name [Specification]
5	L	SHIFT UP
6	O	PADLE UP
7	GR	COMM (AMP->METER)
10	W	MANUAL MODE
11	G	NOT MANUAL MODE
14	BR	COMM (LCD->AMP)
25	V	SHIFT DOWN
26	G	PADLE DOWN
27	LG	COMM (METER->AMP)
34	Y	COMM (AMP->LCD)

Connector No.	M116
Connector Name	WIRE TO WIRE
Connector Type	TK30MW-HS10



Terminal No.	Color of Wire	Signal Name [Specification]
31	W	-
38	O	-
43	P	-
44	L	-
45	G	-
46	Y	-

Connector No.	M67
Connector Name	UNIFIED METER AND A/C AMP.
Connector Type	TH40FW-NH



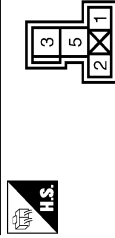
Terminal No.	Color of Wire	Signal Name [Specification]
41	V	ACC
53	G	IGN
54	Y	BAT
55	B	GND
56	L	CAN-H
71	B	GND
72	P	CAN-L

Connector No.	M119
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	NS10FW-CS



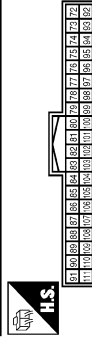
Terminal No.	Color of Wire	Signal Name [Specification]
11	R	BAT (FUSE)
13	B	GND

Connector No.	M69
Connector Name	BACK-UP LAMP RELAY
Connector Type	MS2FL-M2-LC



Terminal No.	Color of Wire	Signal Name [Specification]
1	R	-
2	W	-
3	R	-
5	O	-

Connector No.	M122
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	TH40FB-NH



Terminal No.	Color of Wire	Signal Name [Specification]
99	GR	A/T SHIFT SELECTOR POWER SUPPLY

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Fail-Safe

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-8. "Diagnosis 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 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) • 30 km/h (19MPH) or less • Lock-up is prohibited • The shifting between the gears of 3 - 4 - 5 - 6 - 7 can be performed • Manual mode is prohibited • Shift position indicator is switched OFF • Starter relay is switched OFF (starter is disabled) • Back-up lamp is OFF • Large shift shock 	—	<ul style="list-style-type: none"> • Fixed in the "D" position (The shifting can be performed) • 30 km/h (19MPH) or less • Lock-up is prohibited • The shifting between the gears of 3 - 4 - 5 - 6 - 7 can be performed • Manual mode is prohibited • Shift position indicator is switched OFF • Starter relay is switched OFF (starter is disabled) • Back-up lamp is OFF • Large shift shock
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 • Treat the vehicle speed that the vehicle speed signal receives as positive 	—	<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 • Treat the vehicle speed that the vehicle speed signal receives as positive 	—	

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	Neutral malfunction between the gears of 1 - 2 - 3 and 7	<ul style="list-style-type: none"> Locks in 4GR Manual mode is prohibited Neutral 	—	<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"> Driving with the gear ratio between 1GR and 2GR Driving with the gear ratio between 2GR and 3GR Locks in 3GR Locks in 4GR Fix the gear while driving Manual mode is prohibited Neutral 	<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"> Manual mode is prohibited Neutral 	<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
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"> Manual mode is prohibited Neutral 	—	<ul style="list-style-type: none"> The shifting between the gears of 1 - 2 - 3 can be performed Manual mode is prohibited
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"> Neutral Driving with the gear ratio between 2GR and 3GR 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 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

TCM

< ECU DIAGNOSIS INFORMATION >

[7AT: RE7R01A (VQ35HR)]

DTC	Vehicle condition	Vehicle behavior for 1st fail-safe	Vehicle behavior for 2nd fail-safe	Vehicle behavior for final fail-safe
P1815	Paddle switch malfunction	Only the paddle switch is prohibited	—	Only the paddle switch is prohibited
	Gate switch malfunction	Only the gate switch is prohibited	—	Only the gate switch is prohibited
	Malfunction of both switches	Manual mode is prohibited	—	Manual mode is prohibited
U1000	Between the gears of 1 - 2 - 3	<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

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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 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 or 1GR.

Malfunction detection condition	<ul style="list-style-type: none"> Select lever and gear: Except for “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 malfunction detection condition
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

TCM

< ECU DIAGNOSIS INFORMATION >

[7AT: RE7R01A (VQ35HR)]

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:0000000003838955

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

Priority	Detected items (DTC)
1	<ul style="list-style-type: none"> • U1000 CAN COMM CIRCUIT
2	<ul style="list-style-type: none"> • P0615 STATER RELAY • P0705 T/M RANGE SWITCH A • P0710 FLUID TEMP SENSOR A • P0717 INPUT SPEED SENSOR A • P0720 OUTPUT SPEED SENSOR • P0740 TORQUE CONVERTER • P0745 PC SOLENOID A • P0750 SHIFT SOLENOID A • P0775 PC SOLENOID B • P0795 PC SOLENOID C • P2713 PC SOLENOID D • P2722 PC SOLENOID E • P2731 PC SOLENOID F • P2807 PC SOLENOID G
3	<ul style="list-style-type: none"> • 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 • P0744 TORQUE CONVERTER • P0780 SHIFT • P1730 INTERLOCK • P1734 7GR INCORRECT RATIO
4	<ul style="list-style-type: none"> • P0725 ENGINE SPEED • P1705 TP SENSOR • P1721 VEHICLE SPEED SIGNAL • P1815 M-MODE SWITCH

DTC Index

INFOID:0000000003838956

NOTE:

If DTC “U1000” is displayed with other DTC, first perform the trouble diagnosis for “U1000 CAN COMM CIRCUIT”. Refer to [TM-81, "Description"](#).

Items (CONSULT-III screen terms)	DTC*2		Reference
	MIL*1, “ENGINE” with CONSULT-III or GST	CONSULT-III only “TRANSMISSION”	
STARTER RELAY	—	P0615	TM-82
T/M RANGE SWITCH A	P0705	P0705	TM-84
FLUID TEMP SENSOR A	P0710	P0710	TM-85
INPUT SPEED SENSOR A	P0717	P0717	TM-87
OUTPUT SPEED SENSOR	P0720	P0720	TM-89
ENGINE SPEED	—	P0725	TM-91
6GR INCORRECT RATIO	P0729	P0729	TM-93

Items (CONSULT-III screen terms)	DTC*2		Reference
	MIL*1, "ENGINE" with CONSULT-III or GST	CONSULT-III only "TRANSMISSION"	
INCORRECT GR RATIO	P0730	P0730	TM-95
1GR INCORRECT RATIO	P0731	P0731	TM-96
2GR INCORRECT RATIO	P0732	P0732	TM-98
3GR INCORRECT RATIO	P0733	P0733	TM-100
4GR INCORRECT RATIO	P0734	P0734	TM-102
5GR INCORRECT RATIO	P0735	P0735	TM-104
TORQUE CONVERTER	P0740	P0740	TM-106
TORQUE CONVERTER	P0744	P0744	TM-108
PC SOLENOID A	P0745	P0745	TM-109
SHIFT SOLENOID A	P0750	P0750	TM-110
PC SOLENOID B	P0775	P0775	TM-112
SHIFT	P0780	P0780	TM-113
PC SOLENOID C	P0795	P0795	TM-114
TP SENSOR	—	P1705	TM-115
VEHICLE SPEED SIGNAL	—	P1721	TM-117
INTERLOCK	P1730	P1730	TM-119
7GR INCORRECT RATIO	P1734	P1734	TM-121
M-MODE SWITCH	—	P1815	TM-123
PC SOLENOID D	P2713	P2713	TM-130
PC SOLENOID E	P2722	P2722	TM-131
PC SOLENOID F	P2731	P2731	TM-132
PC SOLENOID G	P2807	P2807	TM-133
CAN COMM CIRCUIT	U1000	U1000	TM-81

*1: Refer to [TM-74, "Diagnosis Description"](#).

*2: These numbers are prescribed by SAE J2012.

IGN COUNTER

IGN counter indicates the number of items that ignition switch is turned ON after DTC is detected.

- CAN malfunction
 - The number is 0 when a malfunction is detected now.
 - The number increases like 1 → 2 → 3...38 → 39 after returning to the normal condition whenever ignition switch OFF → ON.
 - The number is fixed to 39 until self-diagnosis results are erased if it is over 39.
- Except for 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 self-diagnosis results are erased if it is over 255.

SYSTEM SYMPTOM

< SYMPTOM DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

SYMPTOM DIAGNOSIS

SYSTEM SYMPTOM

Symptom Table

INFOID:000000003838961

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

CAUTION:

If any malfunction occurs in the RE7R01A transmission, replace the A/T assembly.

Symptom					Diagnostic item																
					Control linkage	Output speed sensor	Vehicle speed signal	Accelerator pedal position sensor	Engine speed signal	Input speed sensor	A/T fluid temperature sensor	Transmission range switch	Line pressure solenoid valve	Torque converter solenoid valve	Low brake solenoid valve	Front brake solenoid valve	High and low reverse clutch solenoid valve	Input clutch solenoid valve	Direct clutch solenoid valve	2346 brake solenoid valve	Anti-interlock solenoid valve
Poor performance	Driving performance	Large shock	When shifting gears	Shift point is high in “D” position.		1	2			3											
				Shift point is low in “D” position.		1	2														
				→ “D” position	3		6	5		5	4	2		1					2	5	
				→ “R” position	3		6	5		5	4	2					1			5	
				1GR ⇔ 2GR		3	1	5	3	3									2		4
				2GR ⇔ 3GR		3	1	5	3	3							2				4
				3GR ⇔ 4GR		3	1	5	3	3				2		2					4
				4GR ⇔ 5GR		3	1	5	3	3							2		2		4
				5GR ⇔ 6GR		3	1	5	3	3								2	2		4
				6GR ⇔ 7GR		3	1	5	3	3					2				2		4
				Downshift when accelerator pedal is depressed		2	1	4	2	2											3
				Upshift when accelerator pedal is released		2	1	4	2	2											3
				Lock-up		3	1	3	3	3			2								4
		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													

SYSTEM SYMPTOM

< SYMPTOM DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

Symptom				Diagnostic item																		
				TM-89 Output speed sensor	TM-91 Engine speed signal	TM-87 Input speed sensor	TM-85 A/T fluid temperature sensor	TM-135 Battery voltage	TM-84 transmission range switch	TM-123 Manual mode switch	TM-145 Stop lamp switch	TM-109 Line pressure solenoid valve	TM-106 Torque converter solenoid valve	TM-131 Low brake solenoid valve	TM-114 Front brake solenoid valve	TM-130 High and low reverse clutch solenoid valve	TM-112 Input clutch solenoid valve	TM-133 Direct clutch solenoid valve	TM-132 2346 brake solenoid valve	TM-110 Anti-interlock solenoid valve	TM-81 CAN communication	
Func- tion trou- ble	Gear does no change	“D” posi- tion	Locks in 1GR	1									1		1		1					
			Locks in 5GR					1														
			1GR → 2GR	1										1		1		1				
			2GR → 3GR														1					
			3GR → 4GR	1		1	1						1	1	1	1				1		
			4GR → 5GR														1	1				
			5GR → 6GR														1					
			6GR → 7GR										1	1	1	1			1			
			5GR → 4GR													1						
			4GR → 3GR										1		1				1			
			3GR → 2GR						1								1					
			2GR → 1GR						1								1	1				
			Does not lock-up	1	1	1	1	3	4		2	1	1	1	1	1	1	1	1	1		
		“M” posi- tion	1GR ⇔ 2GR	2		2	2		2	1		2	2	2	2	2	2	2	2	2		
			2GR ⇔ 3GR	2		2	2		2	1		2	2	2	2	2	2	2	2	2		
			3GR ⇔ 4GR	2		2	2		2	1		2	2	2	2	2	2	2	2	2		
			4GR ⇔ 5GR	2		2	2		2	1		2	2	2	2	2	2	2	2	2		
			5GR ⇔ 6GR	2		2	2		2	1		2	2	2	2	2	2	2	2	2		
			6GR ⇔ 7GR	2		2	2		2	1		2	2	2	2	2	2	2	2	2		

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SYSTEM SYMPTOM

< SYMPTOM DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

Symptom					Diagnostic item																
					Control linkage	Output speed sensor	Engine speed signal	Input speed sensor	A/T fluid temperature sensor	Transmission range switch	Manual mode switch	Line pressure solenoid valve	Torque converter clutch solenoid valve	Low brake solenoid valve	Front brake solenoid valve	High and low reverse clutch solenoid valve	Input clutch solenoid valve	Direct clutch solenoid valve	2346 brake solenoid valve	Anti-interlock solenoid valve	CAN communication
Function trouble	Poor shifting	Slip	When shifting gears	1GR ⇔ 2GR	TM-183	3	3	3	4			1							1		2
				2GR ⇔ 3GR	TM-89	3	3	3	4			1					1				2
				3GR ⇔ 4GR	TM-91	3	3	3	4			1		1		1				1	2
				4GR ⇔ 5GR	TM-87	3	3	3	4			1					1		1		2
				5GR ⇔ 6GR	TM-85	3	3	3	4			1						1	1		2
				6GR ⇔ 7GR	TM-84	3	3	3	4			1			1				1		2
		Engine brake does not work	"D" position → "M" position		TM-123	4	4	4	5	3	1	2									3
			"M" position	7GR → 6GR	TM-109	4	4	4	5	3	1	2			2				2		3
				6GR → 5GR	TM-106	4	4	4	5	3	1	2						2	2		3
				5GR → 4GR	TM-131	4	4	4	5	3	1	2					2		2		3
				4GR → 3GR	TM-114	4	4	4	5	3	1	2		2		2				2	3
				3GR → 2GR	TM-130	4	4	4	5	3	1	2						2			3
				2GR → 1GR	TM-112	4	4	4	5	3	1	2							2		3

SYSTEM SYMPTOM

< SYMPTOM DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

				Diagnostic item																	
				Control linkage	Output speed sensor	Engine speed signal	Input speed sensor	A/T fluid temperature sensor	Transmission range switch	Manual mode switch	Line pressure solenoid valve	Torque converter clutch solenoid valve	Low brake solenoid valve	Front brake solenoid valve	High and low reverse clutch solenoid valve	Input clutch solenoid valve	Direct clutch solenoid valve	2346 brake solenoid valve	Anti-interlock solenoid valve	CAN communication	
Symptom				TM-183	TM-89	TM-91	TM-87	TM-85	TM-84	TM-123	TM-109	TM-106	TM-131	TM-114	TM-130	TM-112	TM-133	TM-132	TM-110	TM-81	
Function trouble	Poor power transmission	Slip	With selector lever in “D” position, acceleration is extremely poor.	5	3	3	3	4			1		1						1	2	
			With selector lever in “R” position, acceleration is extremely poor.	5	3	3	3	4			1						1		1	2	
			While starting off by accelerating in 1st, engine races.		3	3	3	4			1		1							1	2
			While accelerating in 2GR, engine races.		3	3	3	4			1		1						1	1	2
			While accelerating in 3GR, engine races.		3	3	3	4			1		1				1	1			2
			While accelerating in 4GR, engine races.		3	3	3	4			1				1		1	1	1		2
			While accelerating in 5GR, engine races.		3	3	3	4			1				1	1	1		1	2	
	Poor power transmission	Slip	While accelerating in 6GR, engine races.		3	3	3	4			1				1	1			1	1	2
			While accelerating in 7GR, engine races.		3	3	3	4			1			1	1	1				1	2
			Lock-up		3	3	3	4			1	1									2
			No creep at all.								1	1	1	1	1	1	1	1	1		
			Extremely large creep.			1															

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SYSTEM SYMPTOM

< SYMPTOM DIAGNOSIS >

[7AT: RE7R01A (VQ35HR)]

Symptom			Diagnostic item																																
			TM-183	Control linkage	TM-89	Output speed sensor	TM-115	Accelerator pedal position sensor	TM-91	Engine speed signal	TM-135	Battery voltage	TM-84	Transmission range switch	TM-145	Stop lamp switch	TM-109	Line pressure solenoid valve	TM-106	Torque converter clutch solenoid valve	TM-131	Low brake solenoid valve	TM-114	Front brake solenoid valve	TM-130	High and low reverse clutch solenoid valve	TM-112	Input clutch solenoid valve	TM-133	Direct clutch solenoid valve	TM-132	2346 brake solenoid valve	TM-110	Anti-interlock solenoid valve	TM-82
Function trouble	Power transmission cannot be performed	Vehicle cannot run in all position.	3						2		1	1	1	1	1	1	1	1	1	1	1	1	1	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	1	1	1	1	1	1	1	1	1	1	1	1	1			
		Driving is not possible in “R” position.	3						2		1																	1				1			
		Engine stall		3	4	4	5		2			1																							
		Engine stalls when selector lever shifted “N” → “D” or “R”.		3	4	4		2					1																						
		Engine does not start in “N” or “P” position.	3					1	2																									1	
		Engine starts in position other than “N” or “P”.	3						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 “P” position.	1						2																										
		Vehicle moves backward with the “D” position.	1						2																										

PRECAUTION

PRECAUTIONS

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

INFOID:000000004040632

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

WARNING:

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

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

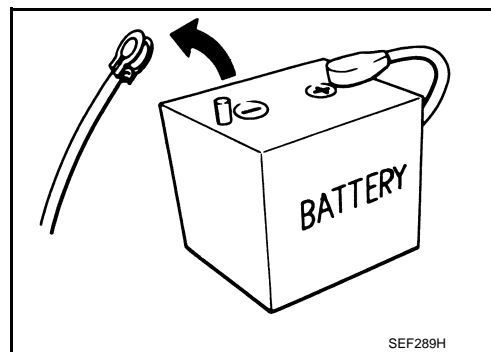
WARNING:

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

General Precautions

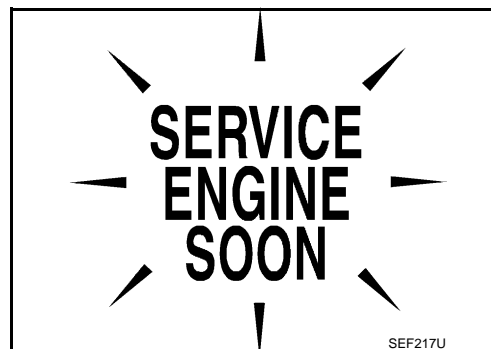
INFOID:0000000003838964

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



SEF289H

- Perform "DTC (Diagnostic Trouble Code) CONFIRMATION PROCEDURE" after performing each TROUBLE DIAGNOSIS. If the repair is completed DTC should not be displayed in the "DTC CONFIRMATION PROCEDURE".
- Always use the specified brand of ATF. Refer to [MA-12. "Fluids and Lubricants"](#).
- Use lint-free paper not cloth rags during work.
- Dispose of the waste oil using the methods prescribed by law, ordinance, etc. after replacing the ATF.
- Before proceeding with disassembly, thoroughly clean the outside of the transmission. It is important to prevent the internal parts from becoming contaminated by dirt or other foreign matter.



SEF217U

PRECAUTIONS

< PRECAUTION >

[7AT: RE7R01A (VQ35HR)]

- Disassembly should be done in a clean work area.
- Use lint-free paper or towels for wiping parts clean. Common shop rags can leave fibers that could interfere with the operation of the transmission.
- Place disassembled parts in order for easier and proper assembly.
- All parts should be carefully cleaned with a general purpose, non-flammable solvent before inspection or reassembly.
- Gaskets, seals and O-rings should be replaced any time the A/T is disassembled.
- It is very important to perform functional tests whenever they are indicated.
- The valve body contains precision parts and requires extreme care when parts are removed and serviced. Place disassembled valve body parts in order for easier and proper assembly. Care will also prevent springs and small parts from becoming scattered or lost.
- Properly installed valves, sleeves, plugs, etc. will slide along bores in valve body under their own weight.
- Before assembly, apply a coat of recommended ATF to all parts. Apply petroleum jelly to protect O-rings and seals, or hold bearings and washers in place during assembly. Never use grease.
- Extreme care should be taken to avoid damage to O-rings, seals and gaskets when assembling.
- Clean or replace ATF cooler if excessive foreign material is found in oil pan or clogging strainer. Refer to [TM-174, "Service Notice or Precaution"](#).
- When the A/T drain plug is removed, only some of the ATF is drained. Old ATF will remain in torque converter and ATF cooling system.
Always follow the procedures under "Changing" when changing ATF. Refer to [TM-176, "Changing"](#).
- Occasionally, the parking gear may be locked with the torque insufficiently released, when stopping the vehicle by shifting the selector lever from "D" or "R" to "P" position with the brake pedal depressed.
In this case, the shock with a thud caused by the abrupt release of torque may occur when shifting the selector lever from "P" position to other positions.
However, this symptom is not a malfunction resulting the damage of parts.

Service Notice or Precaution

INFOID:000000003838965

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-179, "Cleaning"](#). For radiator replacement, refer to [CO-14, "Exploded View"](#).

PREPARATION

< PREPARATION >

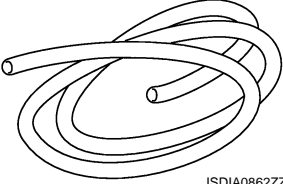
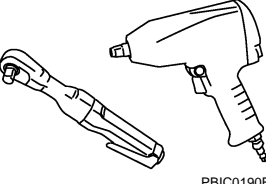
[7AT: RE7R01A (VQ35HR)]

PREPARATION

PREPARATION

Commercial Service Tool

INFOID:000000003838967

Tool number Tool name	Description
<p>B2318N3301*</p> <p>Vacuum hose</p> <p>Inside dia.: 3.5 mm (0.14 in)</p> <p>Outside dia.: 7.5 mm (0.30 in)</p> <p>Length: 5.0 m (16.4 ft)</p>  <p>JSDIA0862ZZ</p>	<p>A/T fluid changing and adjustment</p>
<p>Power tool</p>  <p>PBIC0190E</p>	<p>Loosening bolts and nuts</p>

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

PERIODIC MAINTENANCE

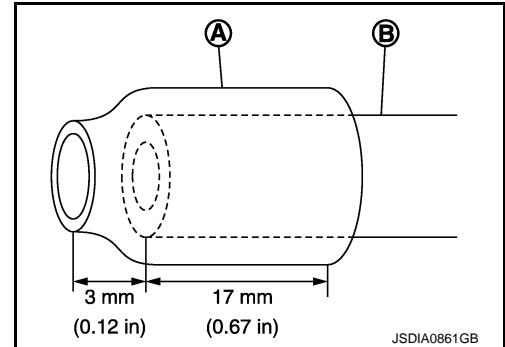
A/T FLUID

Changing

INFOID:000000003838969

1. 1st Step

- a. Cut the vacuum hose (B2318N3301) (A) by 20 mm (0.79 in) to fit in at the top of the ATF exchanger pipe (B) as shown in the figure.



2. 2nd Step

- a. Use CONSULT-III to check that the ATF temperature is 40°C (104°F) or less.
 - b. Lift up the vehicle.
 - c. Remove the drain plug from the oil pan, and then drain the ATF.
 - d. When the ATF starts to drop, temporarily tighten the drain plug to the oil pan.
- NOTE:**
Never replace drain plug and drain plug gasket with new ones yet.
- e. Remove overflow plug from oil pan.
 - f. Insert the own made tube into the overflow plug hole, and then fill approximately 3 liters (3-1/8 US qt, 2-5/8 Imp qt) of the ATF.
 - g. Temporarily tighten the overflow plug to the oil pan.

CAUTION:

Quickly remove the own made tube from the overflow plug hole. Otherwise, the ATF may leak.

- h. Lift down the vehicle.
- i. Start the engine and wait for approximately 3 minutes.
- j. Stop the engine.

3. 3rd Step

- a. Repeat the "2nd Step".

4. Final Step

- a. Use CONSULT-III to check that the ATF temperature is 40°C (104°F) or less.
 - b. Lift up the vehicle.
 - c. Remove the drain plug from the oil pan, and then drain the ATF.
 - d. When the ATF starts to drop, temporarily tighten the drain plug to the oil pan.
- CAUTION:**
- Tighten the drain plug into the oil pan to the specified torque.
 - Never reuse drain plug and drain plug gasket.
- e. Remove overflow plug from oil pan.
 - f. Insert the own made tube into the overflow plug hole, and then fill approximately 3 liters (3-1/8 US qt, 2-5/8 Imp qt) of the ATF.
 - g. Temporarily tighten the overflow plug to the oil pan.

CAUTION:

Quickly remove the own made tube from the overflow plug hole. Otherwise, the ATF may leak.

- h. Lift down the vehicle.
- i. Start the engine.
- j. Make the ATF temperature approximately 40°C (104°F).

NOTE:

The ATF level is greatly affected by the temperature. Always check the ATF temperature on "ATF TEMP 1" of Data Monitor using CONSULT-III.

- k. Park vehicle on level surface and set parking brake.
- l. Shift the selector lever through each gear position. Leave selector lever in "P" position.
- m. Lift up the vehicle when the ATF temperature reaches 40°C (104°F), and then remove the overflow plug from the oil pan.
- n. When the ATF starts to drop, tighten the overflow plug into the oil pan to the specified torque.

CAUTION:

Never reuse overflow plug.

ATF : Refer to [TM-205, "General Specification"](#).

Fluid capacity : Refer to [TM-205, "General Specification"](#).

CAUTION:

- Use only Genuine NISSAN Matic S ATF. Never mix with other ATF.
- Using ATF other than Genuine NISSAN Matic S ATF will cause deterioration in driveability and A/T durability, and may damage the A/T, which is not covered by the INFINITI new vehicle limited warranty.
- When filling ATF, be careful not to scatter heat generating parts such as exhaust.
- Never reuse drain plug gasket.

Drain plug - tightening torque : Refer to [TM-189, "Exploded View"](#).

Overflow plug - tightening torque : Refer to [TM-189, "Exploded View"](#).

Adjustment

INFOID:000000005151188

CAUTION:

Always maintain the ATF temperature within between 35°C (95°F) and 45°C (113°F) while checking with CONSULT-III when the ATF level adjustment is performed.

1. Cut the vacuum hose (B2318N3301) (A) by 20 mm (0.79 in) to fit in at the top of the ATF exchanger pipe (B) as shown in the figure.

2. Start the engine.
3. Make the ATF temperature approximately 40°C (104°F).

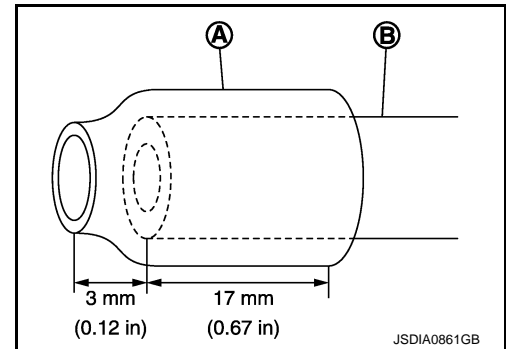
NOTE:

The ATF level is greatly affected by the temperature. Always check the ATF temperature on "ATF TEMP 1" of Data Monitor using CONSULT-III.

4. Park vehicle on level surface and set parking brake.
5. Shift the selector lever through each gear position. Leave selector lever in "P" position.
6. Lift up the vehicle.
7. Check the ATF leakage from transmission.
8. Remove overflow plug from oil pan.
9. Insert the own made tube into the overflow plug hole, and then fill approximately 0.5 liters (4/8 US qt, 4/8 Imp qt) of the ATF.
10. Check that the ATF leaks when removing the own made tube from the overflow plug hole. If the ATF does not leak, refill the ATF.
11. When the ATF starts to drop, tighten the overflow plug into the oil pan to the specified torque.

CAUTION:

Never reuse overflow plug.



A/T FLUID

< PERIODIC MAINTENANCE >

[7AT: RE7R01A (VQ35HR)]

Overflow plug - tightening torque : Refer to [TM-189, "Exploded View"](#).

A/T FLUID COOLER

Cleaning

INFOID:000000003940536

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.

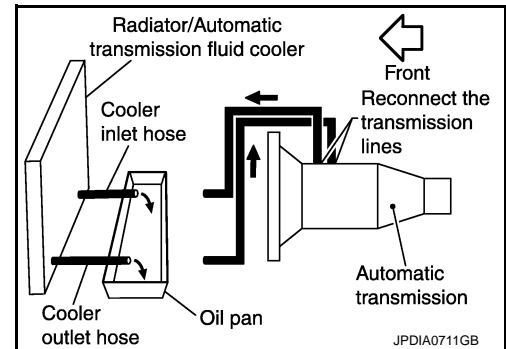
CLEANING PROCEDURE

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.

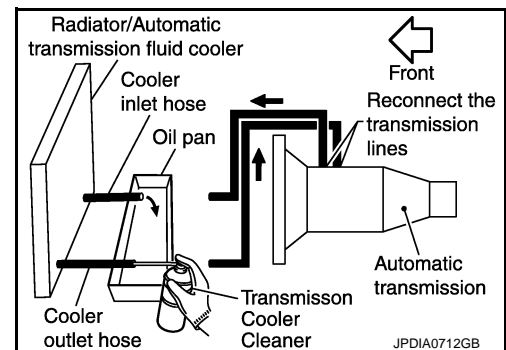


5. Insert the extension adapter hose of a can of Transmission Cooler Cleaner (Nissan P/N 999MP-AM006) into the cooler outlet hose.

CAUTION:

- Wear safety glasses and rubber gloves when spraying the Transmission Cooler Cleaner.
- Spray Transmission Cooler Cleaner only with adequate ventilation.
- Avoid contact with eyes and skin.
- Never 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.

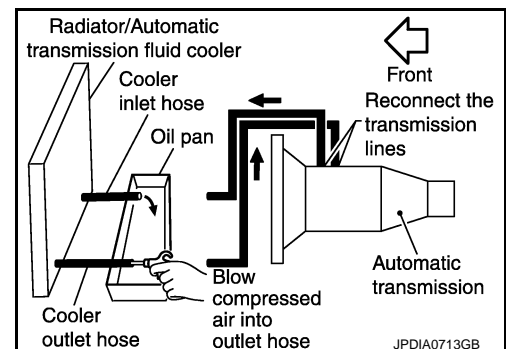
13. Flush each steel line from the cooler side back toward the A/T by spraying Transmission Cooler Cleaner in a continuous stream for 5 seconds.

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

< PERIODIC MAINTENANCE >

[7AT: RE7R01A (VQ35HR)]

DIAGNOSIS PROCEDURE

NOTE:

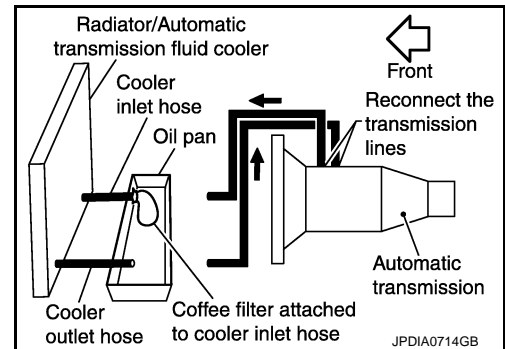
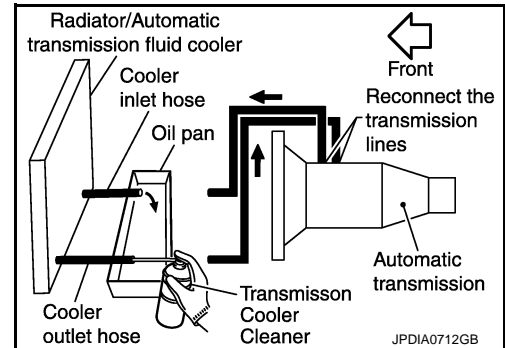
Insufficient cleaning of the cooler inlet hose exterior may lead to inaccurate debris identification.

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 (Nissan P/N 999MP-AM006) into the cooler outlet hose.

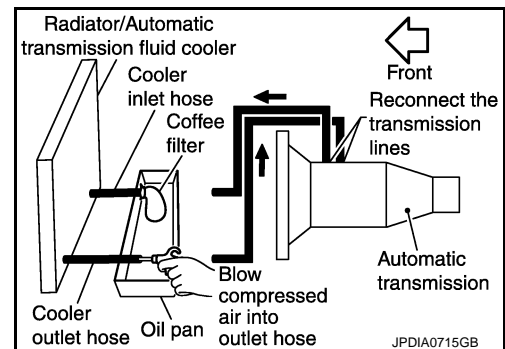
CAUTION:

- Wear safety glasses and rubber gloves when spraying the Transmission Cooler Cleaner.
- Spray Transmission Cooler Cleaner only with adequate ventilation.
- Avoid contact with eyes and skin.
- Never 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.

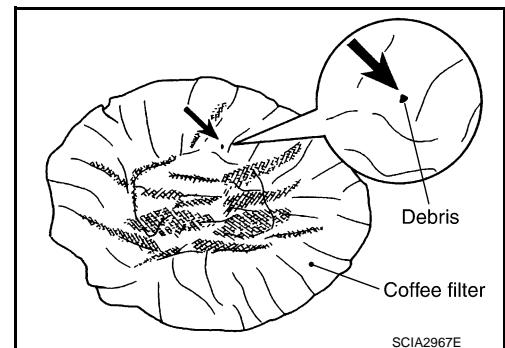


6. Insert the tip of an air gun into the end of the cooler outlet hose.
7. Wrap a shop rag around the air gun tip and end of cooler outlet hose.
8. Blow compressed air regulated to 5 to 9 kg/cm² (71 to 128 psi) through the cooler outlet hose to force any remaining ATF into the coffee filter.
9. Remove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

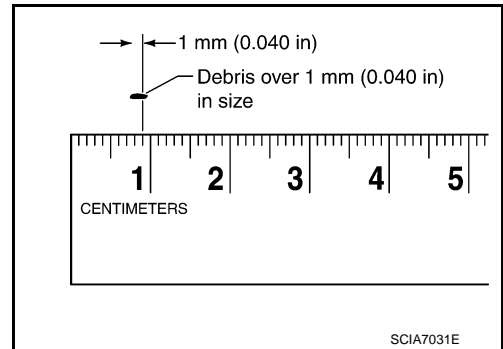


A/T FLUID COOLER

< PERIODIC MAINTENANCE >

[7AT: RE7R01A (VQ35HR)]

- b. If one or more pieces of debris are found that are over 1 mm (0.040 in) in size and/or peeled clutch facing material is found in the coffee filter, the A/T fluid cooler is not serviceable. The A/T fluid cooler/radiator must be replaced and the inspection procedure is ended. Refer to [CO-14, "Exploded View"](#).



Inspection

INFOID:000000003940537

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

STALL TEST

< PERIODIC MAINTENANCE >

[7AT: RE7R01A (VQ35HR)]

STALL TEST

Inspection and Judgment

INFOID:000000003838972

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, then quickly release the accelerator pedal.

CAUTION:

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

Stall speed : Refer to [TM-206, "Stall Speed"](#).

7. Shift the selector lever to "N" position.
8. Cool down the ATF.
9. Repeat steps 5 through 8 with selector lever in "R" position.

CAUTION:

Run the engine at idle for at least 1 minute.

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

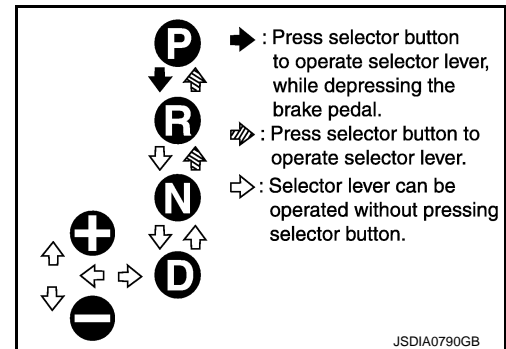
A/T POSITION

Inspection and Adjustment

INFOID:000000003838980

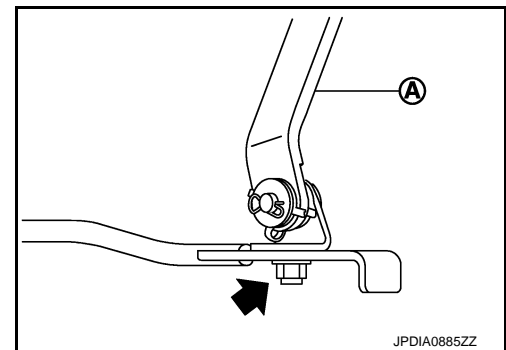
INSPECTION

1. Place selector lever in "P" position, and turn ignition switch ON (engine stop).
2. Check that selector lever can be shifted to other than "P" position when brake pedal is depressed. Also check that selector lever can be shifted from "P" position only when brake pedal is depressed.
3. Shift the selector lever and check for excessive effort, sticking, noise or rattle.
4. Confirm that the selector lever stops at each position by feeling the engagement when it is moved through all the positions. Check whether or not the actual position the selector lever matches the position shown by the shift position indicator and the A/T body.
5. The method of operating the lever to individual positions correctly is shown in the figure.
6. When selector button is pressed in "P", "R", or "N" position without applying forward/backward force to selector lever, check button operation for sticking.
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. DS mode must be indicated on the combination meter when the selector lever is shifted to the manual shift gate. When the selector lever is shifted to the "+" or "-" side in the DS mode, manual mode should be indicated on the combination meter.
In addition, a set shift position must be changed when the selector lever is shifted to the "+" or "-" side in the manual mode. (Only while driving.)



ADJUSTMENT

1. Loosen nut (↔).
2. Place manual lever and selector lever in "P" position.
3. While pressing lower lever (A) toward rear of vehicle (in "P" position direction), tighten nut to specified torque. Refer to [TM-184, "Exploded View"](#).
CAUTION:
Be careful not to touch the control rod while pressing lower lever of A/T shift selector assembly.
NOTE:
Press lower lever of A/T shift selector assembly with a force of approximately 1 kg (9.8 N).



A/T SHIFT SELECTOR

< REMOVAL AND INSTALLATION >

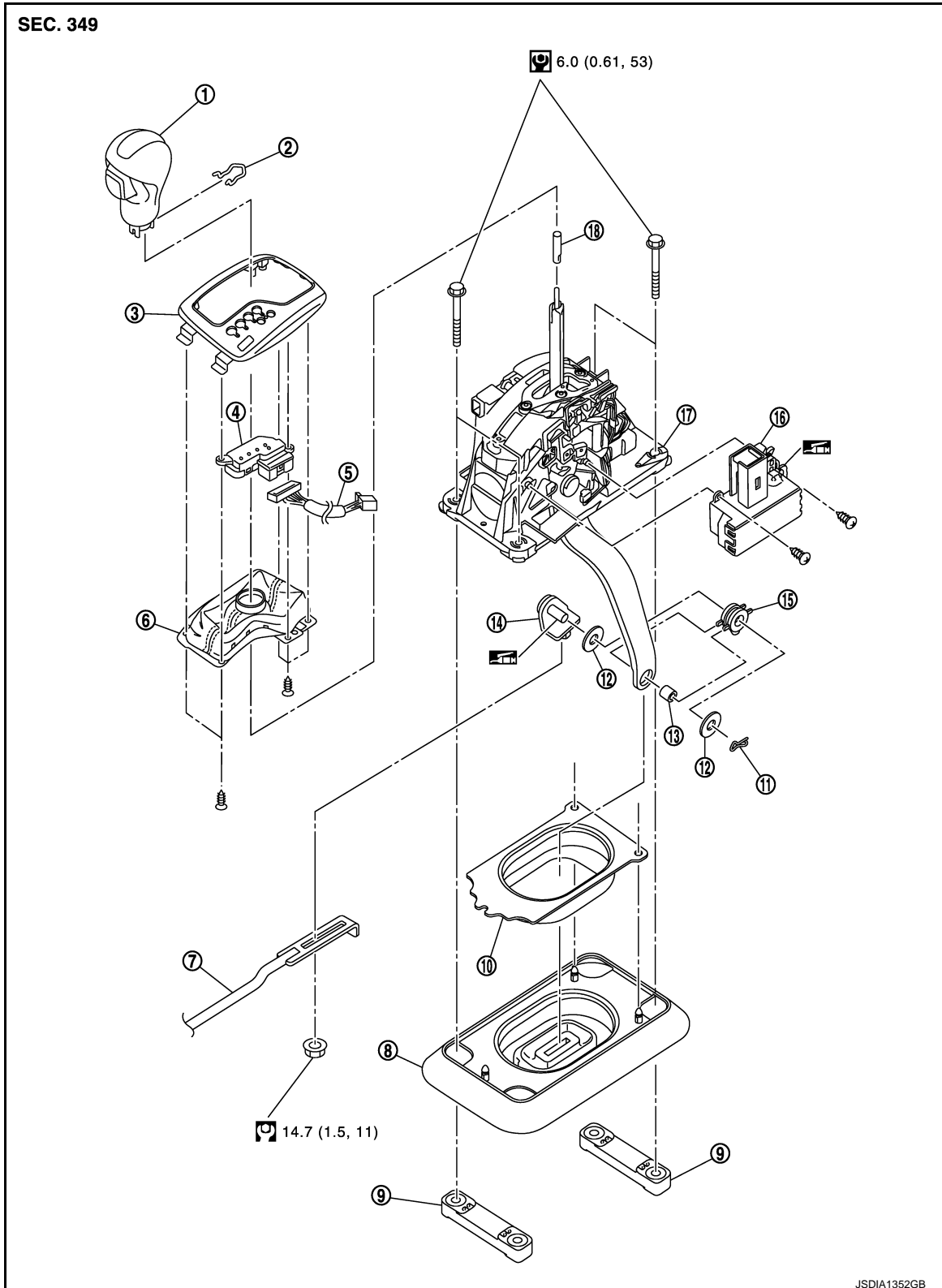
[7AT: RE7R01A (VQ35HR)]

REMOVAL AND INSTALLATION

A/T SHIFT SELECTOR

Exploded View

INFOID:000000003838982




A/T SHIFT SELECTOR

< REMOVAL AND INSTALLATION >

[7AT: RE7R01A (VQ35HR)]

- | | | |
|--------------------------------------|---------------------------------|--------------------|
| 1. Selector lever knob | 2. Lock pin | 3. Indicator plate |
| 4. Selector lever position indicator | 5. Harness connector | 6. Insert finisher |
| 7. Control rod | 8. Dust cover | 9. Bracket |
| 10. Dust cover plate | 11. Snap pin | 12. Washer |
| 13. Collar | 14. Pivot pin | 15. Insulator |
| 16. Shift lock unit | 17. A/T shift selector assembly | 18. Adapter |

 Apply multi-purpose grease.

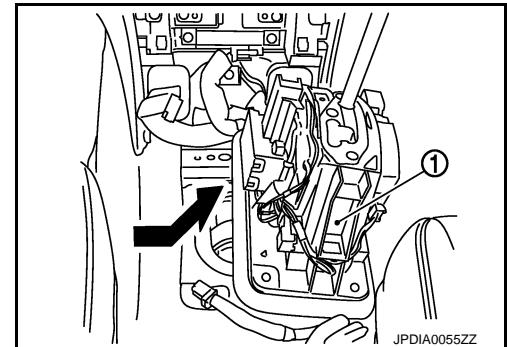
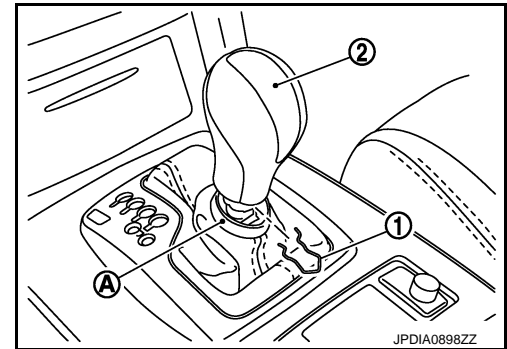
Refer to [GI-4, "Components"](#) for symbols in the figure.

Removal and Installation

INFOID:000000003838983

REMOVAL

- Shift the selector lever to "P" position.
- Remove control rod from A/T shift selector.
- Shift the selector lever to "N" position.
- Remove knob cover (A) below selector lever downward.
- Pull lock pin (1) out of selector lever knob (2).
- Remove selector lever knob.
- Remove center console assembly. Refer to [IP-22, "Exploded View"](#).
CAUTION:
When disconnecting selector lever position indicator connector from shift position switch, never twist or apply an excessive load to the connector.
- Remove rear ventilator duct 1. Refer to [VTL-11, "Exploded View"](#).
- Disconnect A/T shift selector harness connector.
- Remove harness clips from A/T shift selector assembly.
- Shift the selector lever to "P" position.
- Remove A/T shift selector assembly mounting bolts.
- Slightly lift the A/T shift selector assembly (1) and slide it rightward. Then pull it out in the diagonally right direction.
- Remove adapter from A/T shift selector assembly.
- Remove dust cover and dust cover plate from A/T shift selector assembly.
- Remove dust cover from dust cover plate.
- Remove shift lock unit from A/T shift selector assembly.
- Remove brackets from vehicle floor panel.
- Remove selector lever position indicator from console finisher assembly.
 - Remove indicator assembly from console finisher assembly. Refer to [IP-22, "Exploded View"](#).
 - Remove insert finisher from indicator assembly.
 - Remove selector lever position indicator.



INSTALLATION

CAUTION:

Apply multi-purpose grease on the pin surface (that slides after installing a collar) of the pivot pin.
Note the following, and Install in the reverse order of removal.

- Refer to the followings when installing selector lever knob to A/T shift selector assembly.
 - Insert lock pin to selector lever knob.
 - Install selector lever knob over selector lever until a click is felt.

CAUTION:

A/T SHIFT SELECTOR

< REMOVAL AND INSTALLATION >

[7AT: RE7R01A (VQ35HR)]

- **Install it straight, and never tap or apply any shock to install it.**
- **Never press selector button.**
- When installing control rod to A/T shift selector assembly, refer to “ADJUSTMENT”. Refer to [TM-183, "Inspection and Adjustment"](#).

Inspection

INFOID:000000003838984

INSPECTION AFTER INSTALLATION

Check A/T positions. Refer to [TM-183, "Inspection and Adjustment"](#).

CONTROL ROD

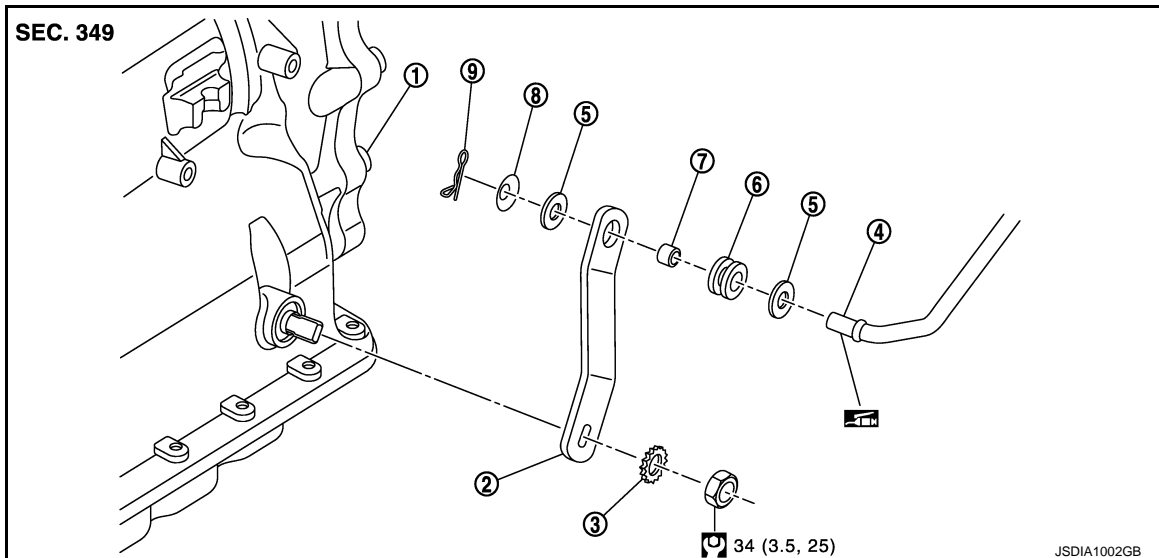
< REMOVAL AND INSTALLATION >

[7AT: RE7R01A (VQ35HR)]

CONTROL ROD

Exploded View

INFOID:000000003838988



- | | | |
|-----------------|-------------------|----------------|
| 1. A/T assembly | 2. Manual lever | 3. Lock washer |
| 4. Control rod | 5. Washer | 6. Insulator |
| 7. Collar | 8. Conical washer | 9. Snap pin |

Apply multi-purpose grease.

Refer to [GI-4, "Components"](#) for symbols in the figure.

Removal and Installation

INFOID:000000003838989

REMOVAL

1. Shift the selector lever to "P" position.
2. Disconnect A/T shift selector and control rod. Refer to [TM-184, "Exploded View"](#).
3. Remove manual lever from A/T assembly.
4. Remove control rod from manual lever.

INSTALLATION

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

CAUTION:

Apply multi-purpose grease on the pin surface (that slides after installing collar) of the tip of the control rod.

- When installing control rod to A/T shift selector assembly, refer to "ADJUSTMENT". Refer to [TM-183, "Inspection and Adjustment"](#).

Inspection

INFOID:000000003838990

INSPECTION AFTER INSTALLATION

Check A/T positions. Refer to [TM-370, "Inspection and Adjustment"](#).

PADDLE SHIFTER

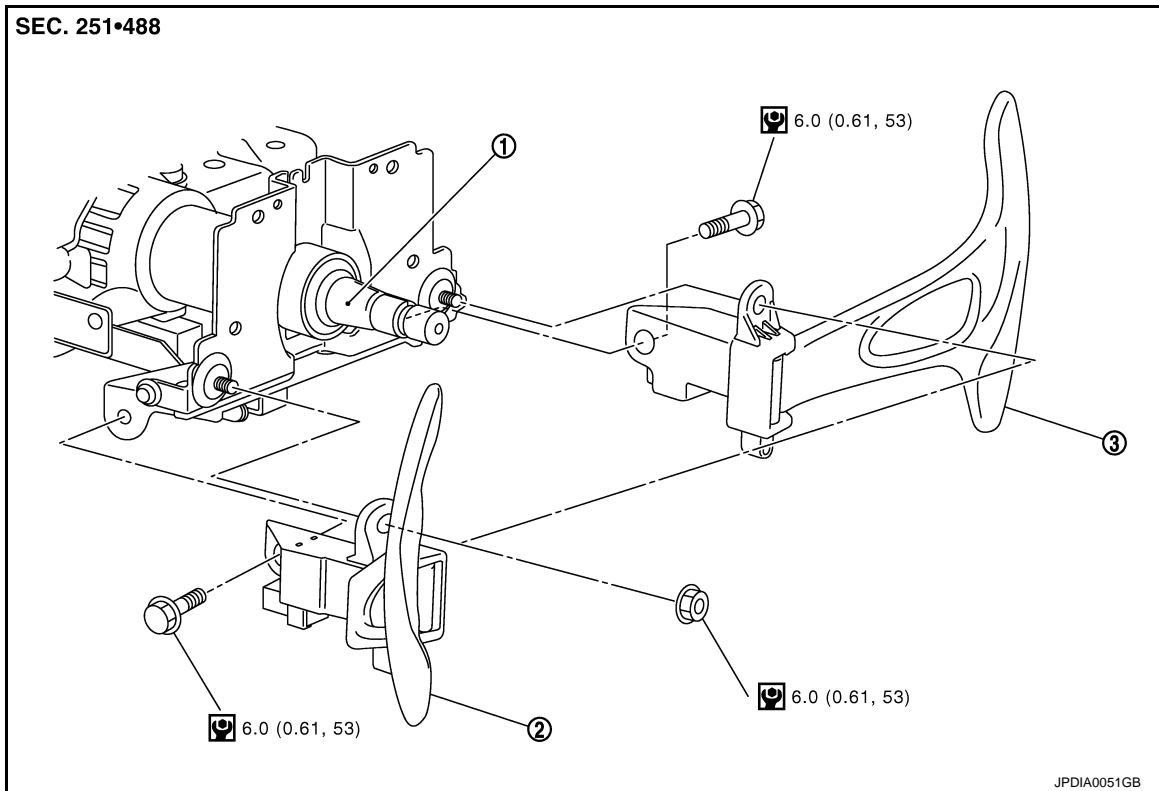
< REMOVAL AND INSTALLATION >

[7AT: RE7R01A (VQ35HR)]

PADDLE SHIFTER

Exploded View

INFOID:000000003838991



1. Steering column assembly

2. Paddle shifter (shift-down)

3. Paddle shifter (shift-up)

Refer to [GI-4, "Components"](#) for symbols in the figure.

Removal and Installation

INFOID:000000003838992

REMOVAL

1. Remove steering column cover. Refer to [IP-11, "Exploded View"](#).
2. Disconnect paddle shifter connectors from each paddle shifter.
3. Remove paddle shifter mounting bolts and nuts.
4. Remove each paddle shifter from steering column assembly.

INSTALLATION

Install in the reverse order of removal.

OIL PAN

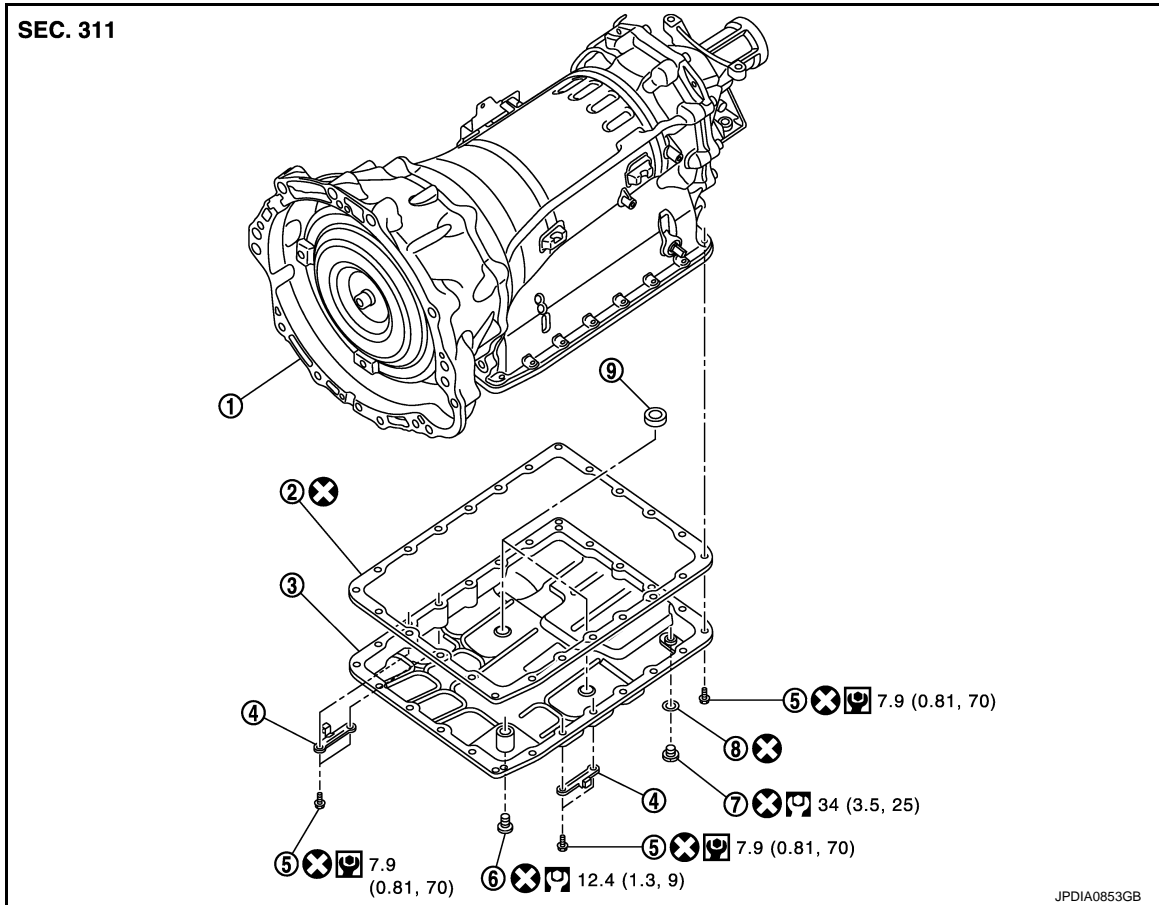
< REMOVAL AND INSTALLATION >

[7AT: RE7R01A (VQ35HR)]

OIL PAN

Exploded View

INFOID:000000003861780



- | | | |
|---------------|--------------------------|------------------|
| 1. A/T | 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 |

Refer to [GI-4, "Components"](#) for symbols in the figure.

Removal and Installation

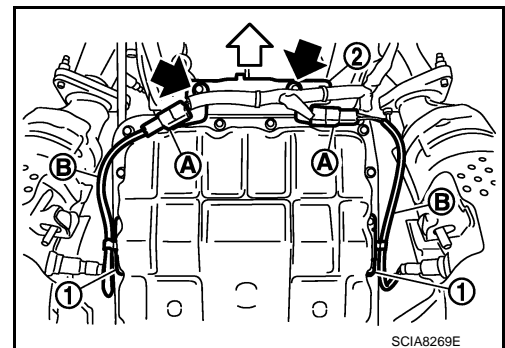
INFOID:000000003861781

REMOVAL

1. Drain ATF through drain plug.
2. Remove exhaust mounting bracket. Refer to [EX-5, "Exploded View"](#).
3. Disconnect heated oxygen sensor 2 harness connectors (A).

← : Vehicle front
← : Bolt

4. Remove heated oxygen sensor 2 harness (B) from clips (1).
5. Remove bracket (2) from A/T assembly. Refer to [TM-199, "2WD : Exploded View"](#) (2WD), [TM-202, "AWD : Exploded View"](#) (AWD).



OIL PAN

< REMOVAL AND INSTALLATION >

[7AT: RE7R01A (VQ35HR)]

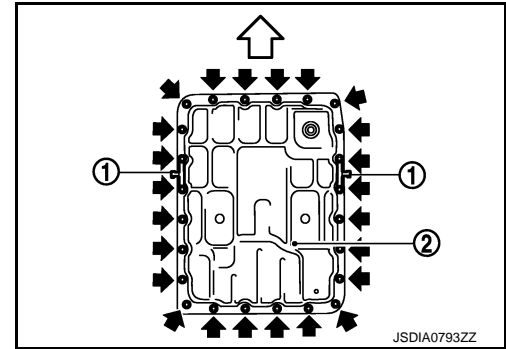
6. Remove clips (1).

⇐ : Vehicle front

◀ : Oil pan mounting bolt

7. Remove oil pan (2) and oil pan gasket.

8. Remove magnets from oil pan.



INSTALLATION

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

CAUTION:

- **Never reuse drain plug gasket.**
- **Clean foreign materials (gear wear particles) that adhere on the inside of the oil pan and on the magnet, and then assemble.**
- Refer to the followings when installing oil pan (2) (with oil pan gasket) and clips (1) to transmission case.

⇐ : Vehicle front

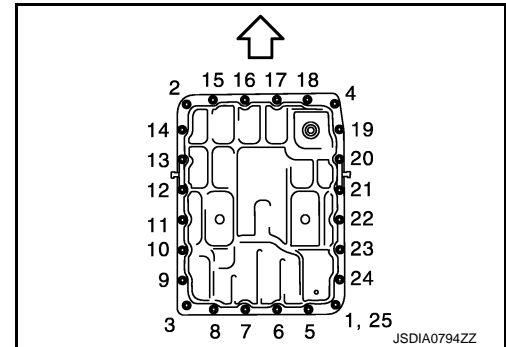
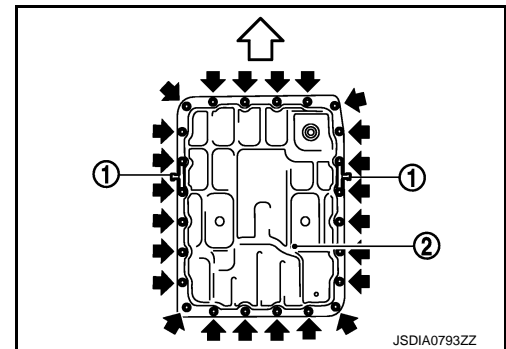
◀ : Oil pan mounting bolt

CAUTION:

- **Never reuse oil pan gasket and oil pan mounting bolts.**
- **Completely remove all moisture, oil and old gasket, etc. from oil pan gasket mounting surface of transmission case and oil pan.**
- **Install oil pan gasket in the direction to align hole position.**
- Tighten oil pan mounting bolts to the specified torque in numerical order shown in the figure after temporarily tightening them.

⇐ : Vehicle front

- Pour ATF into A/T assembly after completing installation. Refer to [TM-176, "Changing"](#).



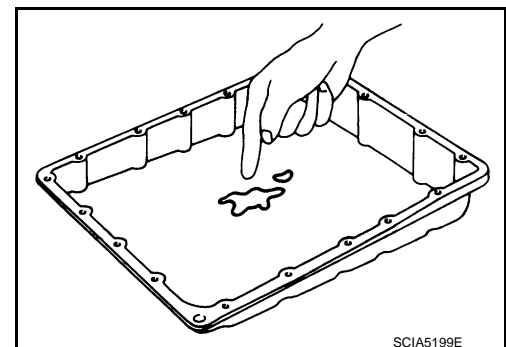
Inspection and Adjustment

INFOID:000000003890327

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-179, "Cleaning"](#).**



INSPECTION AFTER INSTALLATION

Check A/T fluid leakage.

ADJUSTMENT AFTER INSTALLATION

Adjust A/T fluid level. Refer to [TM-177, "Adjustment"](#).

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

AIR BREATHER HOSE

< REMOVAL AND INSTALLATION >

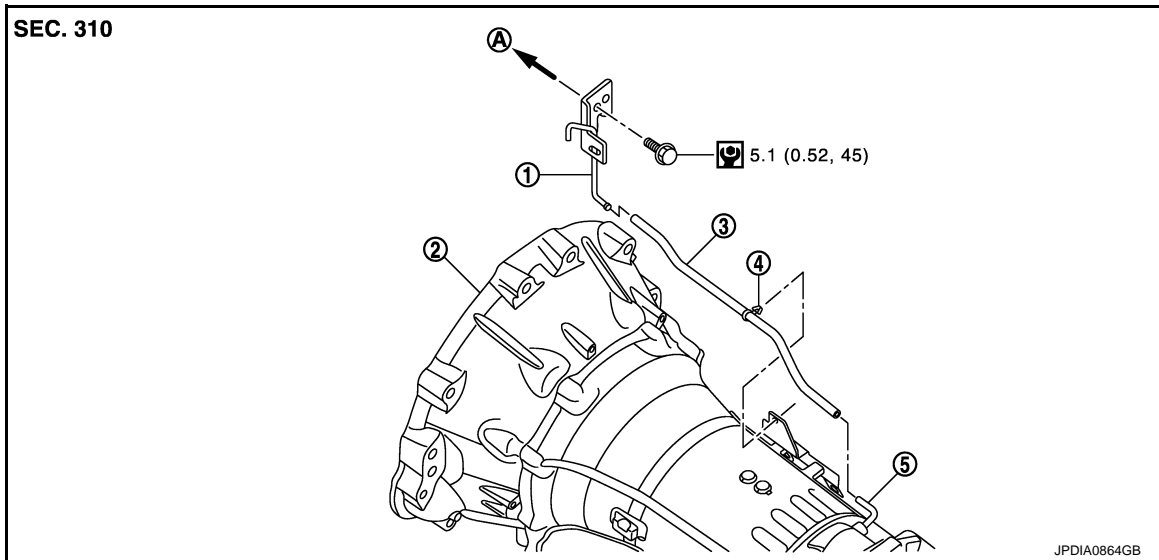
[7AT: RE7R01A (VQ35HR)]

AIR BREATHER HOSE

2WD

2WD : Exploded View

INFOID:000000003839011



- | | | |
|---------------------------|----------------------|----------------------|
| 1. Air breather vent | 2. A/T assembly | 3. Air breather hose |
| 4. Clip | 5. Air breather tube | |
| A. To water outlet (rear) | | |

Refer to [GI-4, "Components"](#) for symbols in the figure.

2WD : Removal and Installation

INFOID:000000003839012

REMOVAL

1. Remove air breather vent from water outlet (rear).
2. Remove air breather hose.

INSTALLATION

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

CAUTION:

- When installing air breather hose, be careful not to crushed or blocked by folding or bending the hose.
- When inserting air breather hose to air breather vent, be sure to insert it fully until its end reaches the tube bend "R" portion.
- Install air breather hose to air breather vent so that the paint mark is facing upward.
- Ensure clips are securely installed to brackets when installing air breather hose to brackets.

AWD

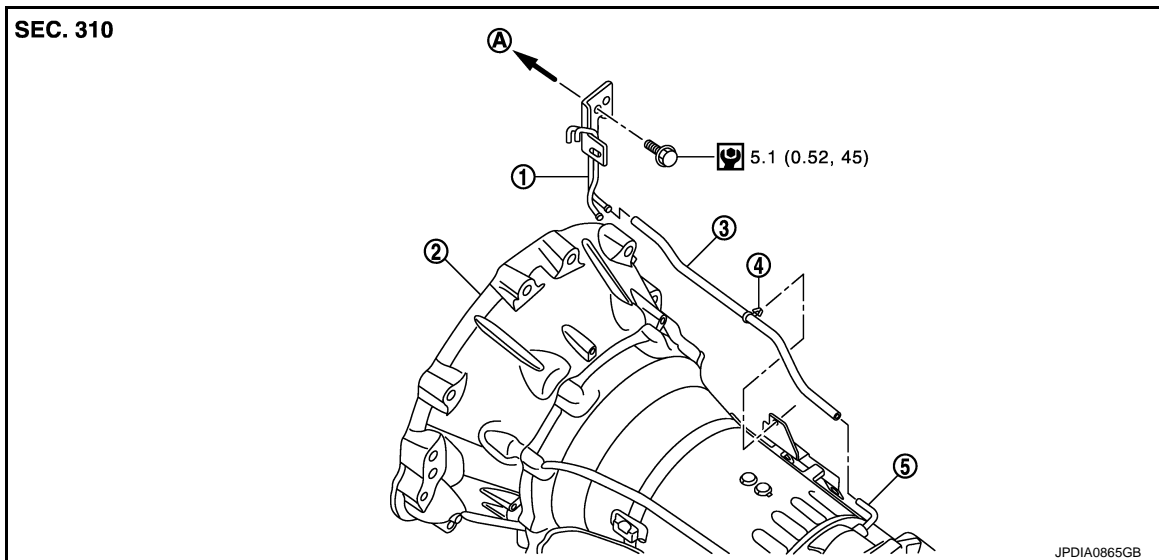
AIR BREATHER HOSE

< REMOVAL AND INSTALLATION >

[7AT: RE7R01A (VQ35HR)]

AWD : Exploded View

INFOID:000000003839013



- | | | |
|---------------------------|----------------------|----------------------|
| 1. Air breather vent | 2. A/T assembly | 3. Air breather hose |
| 4. Clip | 5. Air breather tube | |
| A. To water outlet (rear) | | |

Refer to [GI-4, "Components"](#) for symbols in the figure.

AWD : Removal and Installation

INFOID:000000003839014

REMOVAL

1. Remove air breather vent from water outlet (rear).
2. Remove front propeller shaft. Refer to [DLN-107, "VQ35HR : Exploded View"](#).
3. Remove air breather hose.

INSTALLATION

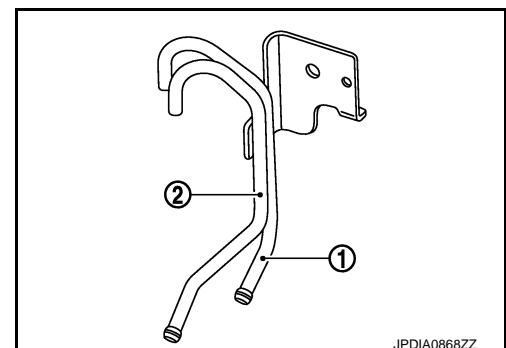
Note the following, and install in the reverse order of removal.

CAUTION:

- When installing air breather hose, be careful not to be crushed or blocked by folding or bending the hose.
- When inserting air breather hose to the air breather vent (for A/T) (1), be sure to insert it fully until its end reaches the tube bend "R" portion.

2 : Air breather vent (for transfer)

- Install air breather hose to air breather vent (for A/T) so that the paint mark is facing upward.
- Ensure clips are securely installed to brackets when installing air breather hose to brackets.



FLUID COOLER SYSTEM

< REMOVAL AND INSTALLATION >

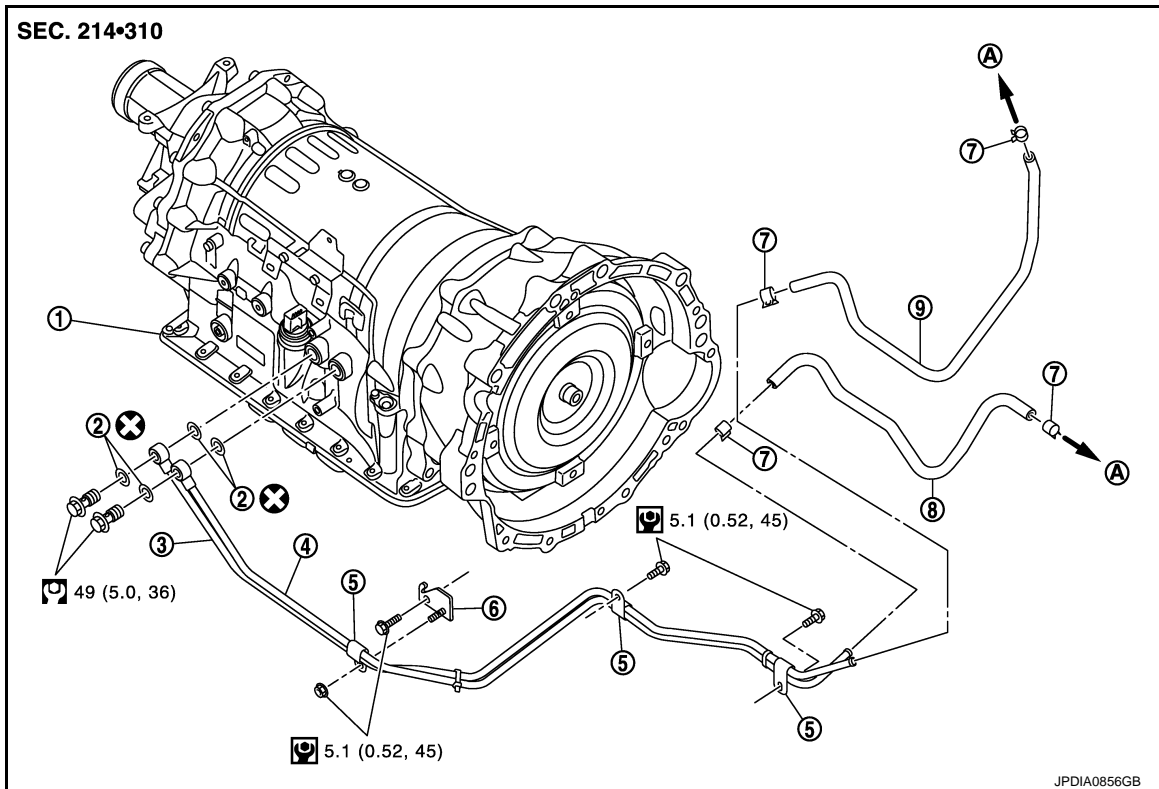
[7AT: RE7R01A (VQ35HR)]

FLUID COOLER SYSTEM

2WD

2WD : Exploded View

INFOID:000000003839015



- | | | |
|--------------------------|----------------------------|----------------------------|
| 1. A/T assembly | 2. Copper washer | 3. A/T fluid cooler tube |
| 4. A/T fluid cooler tube | 5. Clip | 6. Bracket |
| 7. Hose clamp | 8. A/T fluid cooler hose B | 9. A/T fluid cooler hose A |
| A. To radiator | | |

Refer to [GI-4. "Components"](#) for symbols in the figure.

2WD : Removal and Installation

INFOID:000000003839016

REMOVAL

1. Remove air duct (inlet). Refer to [EM-29. "Exploded View"](#).
2. Remove engine lower cover with power tool. Refer to [EXT-31. "Exploded View"](#).
3. Remove A/T fluid cooler hose A and A/T fluid cooler hose B.
4. Remove A/T fluid cooler tubes from A/T assembly and engine assembly.
5. Plug up opening such as the A/T fluid cooler tube hole.
6. Remove A/T fluid cooler tubes from the vehicle.
CAUTION:
Be careful not to bend A/T fluid cooler tube.
7. Remove clips and bracket.

INSTALLATION

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

CAUTION:

Never reuse copper washer.

- Refer to the following when installing A/T fluid cooler hoses.

FLUID COOLER SYSTEM

< REMOVAL AND INSTALLATION >

[7AT: RE7R01A (VQ35HR)]

Hose name	Hose end	Paint mark	Position of hose clamp *
A/T fluid cooler hose A	Radiator assembly side	Facing backward	A
	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

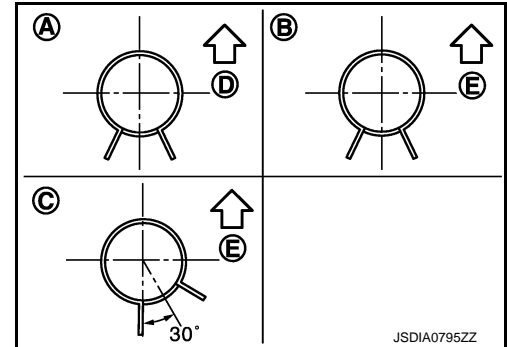
*: Refer to the illustrations for the specific position each hose clamp tab.

- The illustrations indicate the view from the hose ends.

↔ D : Vehicle front

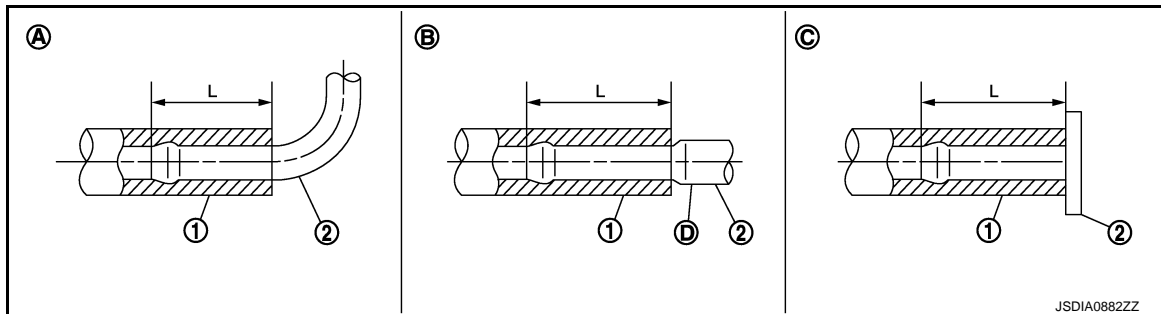
↔ E : Vehicle upper

- When installing 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.

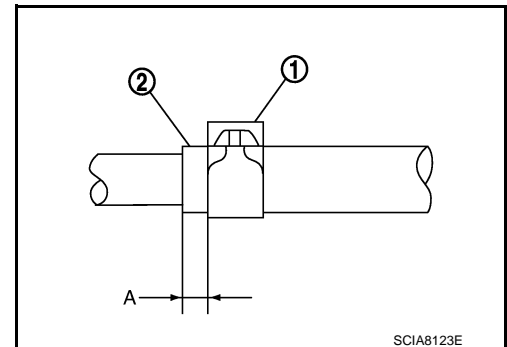
(1)	(2)	Tube type	Dimension (L)
A/T fluid cooler hose A	Radiator assembly side	A	End reaches the radius curve end.
	A/T fluid cooler tube side	B	30 mm (1.18 in) [End reaches the 2-stage bulge (D).]
A/T fluid cooler hose B	Radiator assembly side	C	Insert the hose until the hose touches the radiator.
	A/T fluid cooler tube side	B	30 mm (1.18 in) [End reaches the 2-stage bulge (D).]



- 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.



2WD : Inspection and Adjustment

INFOID:000000003839017

INSPECTION AFTER INSTALLATION

Check for A/T fluid leakage.

FLUID COOLER SYSTEM

< REMOVAL AND INSTALLATION >

[7AT: RE7R01A (VQ35HR)]

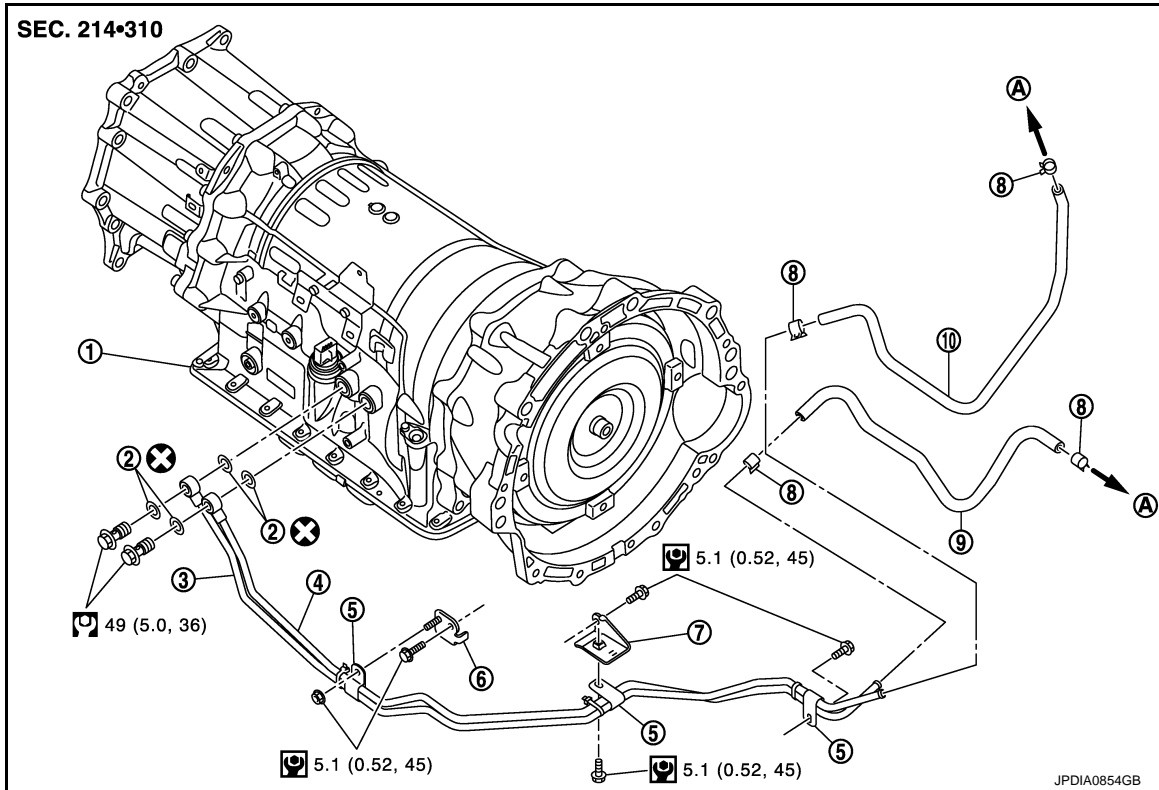
ADJUSTMENT AFTER INSTALLATION

Adjust A/T fluid level. Refer to [TM-177, "Adjustment"](#).

AWD

AWD : Exploded View

INFOID:000000003839018



- | | | |
|-----------------------------|------------------|----------------------------|
| 1. A/T assembly | 2. Copper washer | 3. A/T fluid cooler tube |
| 4. A/T fluid cooler tube | 5. Clip | 6. Bracket |
| 7. Bracket | 8. Hose clamp | 9. A/T fluid cooler hose B |
| 10. A/T fluid cooler hose A | | |
| A. To radiator | | |

Refer to [GI-4, "Components"](#) for symbols in the figure.

AWD : Removal and Installation

INFOID:000000003839019

REMOVAL

1. Remove air duct (inlet). Refer to [EM-29, "Exploded View"](#).
2. Remove engine under cover with a power tool. Refer to [EXT-31, "Exploded View"](#).
3. Remove A/T fluid cooler hose A and A/T fluid cooler hose B.
4. Remove control rod from A/T shift selector. Refer to [TM-184, "Exploded View"](#).
5. Remove exhaust mounting bracket. Refer to [EX-5, "Exploded View"](#).

FLUID COOLER SYSTEM

< REMOVAL AND INSTALLATION >

[7AT: RE7R01A (VQ35HR)]

6. Disconnect heated oxygen sensor 2 connectors (A).

↔ : Vehicle front

← : Bolt

7. Remove heated oxygen sensor 2 harness (B) from clips (1).
8. Remove harness bracket (2) from A/T assembly. Refer to [EX-5, "Exploded View"](#).
9. Remove rear propeller shaft. Refer to [DLN-124, "Exploded View"](#).
10. Remove front propeller shaft. Refer to [DLN-107, "VQ35HR : Exploded View"](#).
11. Lift up a transmission jack to make the gap between converter housing of A/T assembly and front suspension member.
- CAUTION:**
Never contact the A/T and transfer assembly with the lower lever of A/T shift selector when lifting up a transmission jack.
12. Remove A/T fluid cooler tubes from A/T assembly and engine assembly.
13. Plug up opening such as the A/T fluid cooler tube hole.
14. Remove clips and brackets.
15. Remove A/T fluid cooler tubes from the vehicle.

CAUTION:

Be careful not to bend A/T fluid cooler tubes.

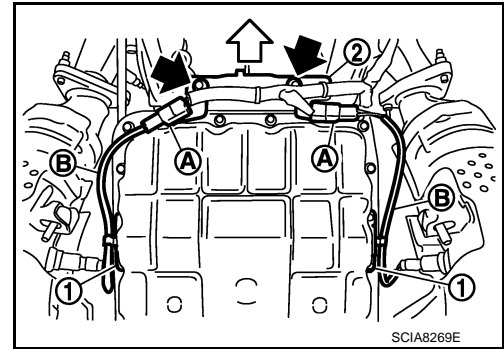
INSTALLATION

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

CAUTION:

Never reuse copper washer.

- 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	A
	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

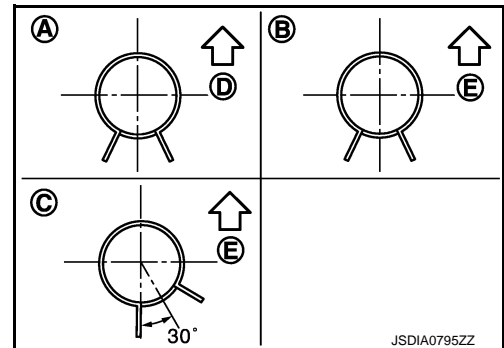
*: Refer to the illustrations for the specific position each hose clamp tab.

- The illustrations indicate the view from the hose ends.

↔ D : Vehicle front

↔ E : Vehicle upper

- When installing 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.

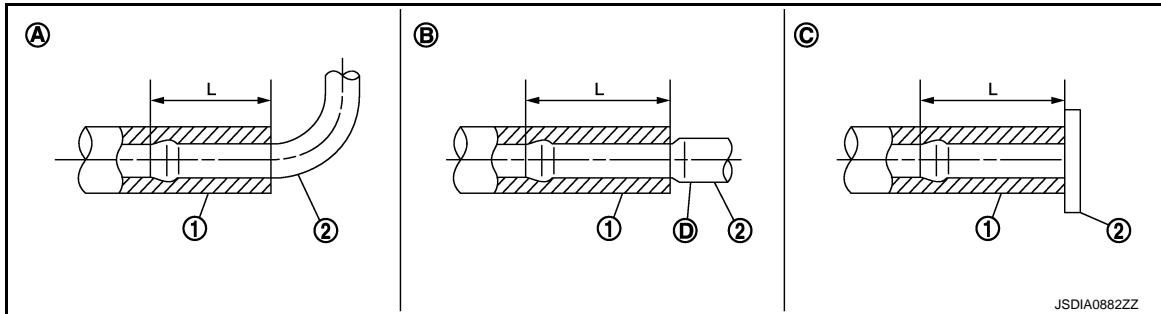
(1)	(2)	Tube type	Dimension (L)
A/T fluid cooler hose A	Radiator assembly side	A	End reaches the radius curve end.
	A/T fluid cooler tube side	B	30 mm (1.18 in) [End reaches the 2-stage bulge (D).]

FLUID COOLER SYSTEM

< REMOVAL AND INSTALLATION >

[7AT: RE7R01A (VQ35HR)]

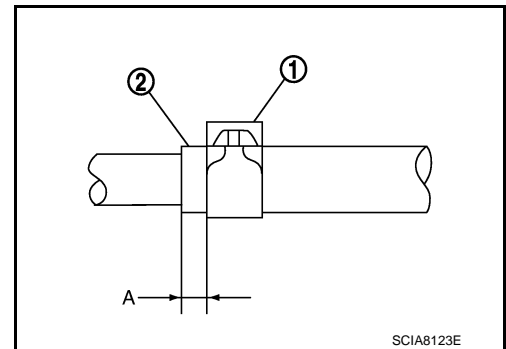
(1)	(2)	Tube type	Dimension (L)
A/T fluid cooler hose B	Radiator assembly side	C	Insert the hose until the hose touches the radiator.
	A/T fluid cooler tube side	B	30 mm (1.18 in) [End reaches the 2-stage bulge (D).]



- 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.



AWD : Inspection and Adjustment

INFOID:000000003839020

INSPECTION AFTER INSTALLATION

Check for A/T fluid leakage.

ADJUSTMENT AFTER INSTALLATION

Adjust A/T fluid level. Refer to [TM-177, "Adjustment"](#).

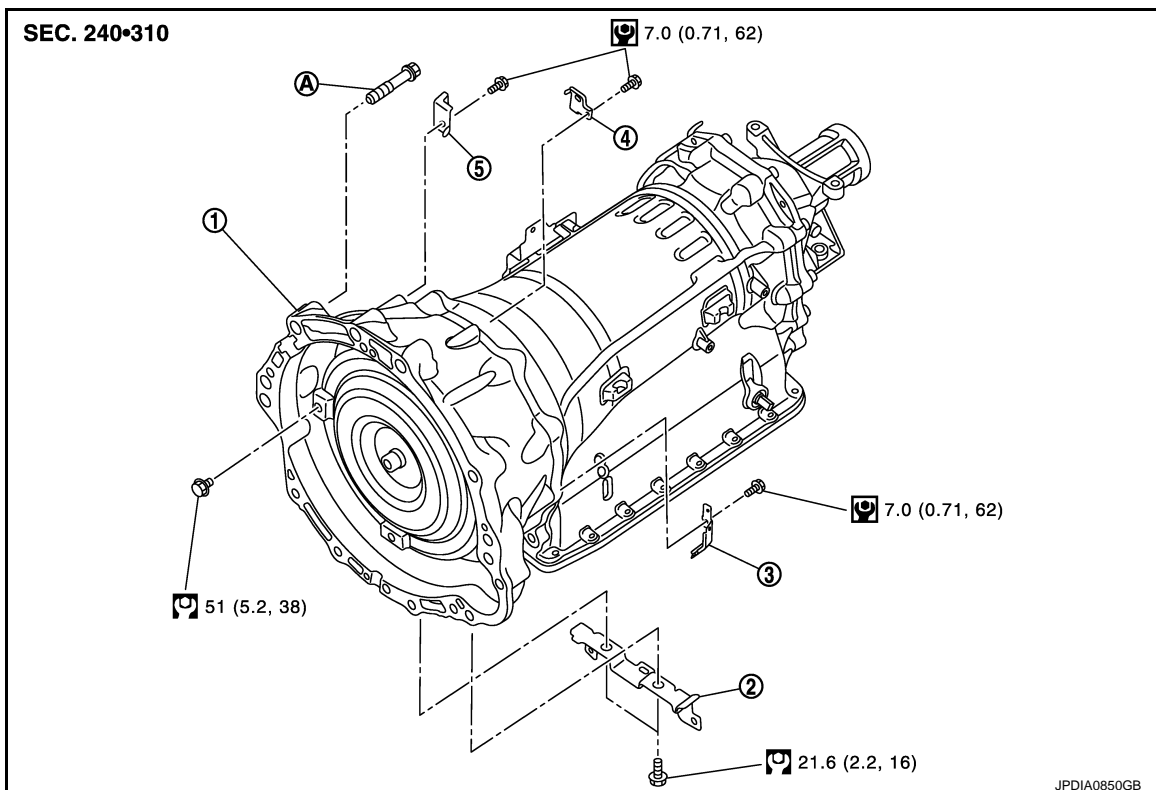
UNIT REMOVAL AND INSTALLATION

TRANSMISSION ASSEMBLY

2WD

2WD : Exploded View

INFOID:000000003839021



- | | | |
|--------------------|--------------------|--------------------|
| 1. A/T assembly | 2. Harness bracket | 3. Harness bracket |
| 4. Harness bracket | 5. Harness bracket | |

A. For tightening torque, refer to [TM-199, "2WD : Removal and Installation"](#).

Refer to [GI-4, "Components"](#) for symbols in the figure.

2WD : Removal and Installation

INFOID:000000003839022

REMOVAL

CAUTION:

- When removing the A/T assembly from engine, first remove the crankshaft position sensor (POS) from the A/T assembly.
- Be careful not to damage sensor edge.

1. Shift the selector lever to "P" position, and then release the parking brake.
2. Disconnect the battery cable from the negative terminal.
3. Remove control rod. Refer to [TM-187, "Exploded View"](#).
4. Remove rear propeller shaft. Refer to [DLN-116, "Exploded View"](#).
5. Remove engine lower cover with power tool. Refer to [EXT-31, "Exploded View"](#).
6. Remove front cross bar. Refer to [FSU-13, "Exploded View"](#).
7. Remove exhaust mounting bracket. Refer to [EX-5, "Exploded View"](#).
8. Remove three way catalyst (right bank). Refer to [EX-5, "Exploded View"](#).
9. Remove crankshaft position sensor (POS) from A/T assembly. Refer to [EM-117, "Exploded View"](#).

CAUTION:

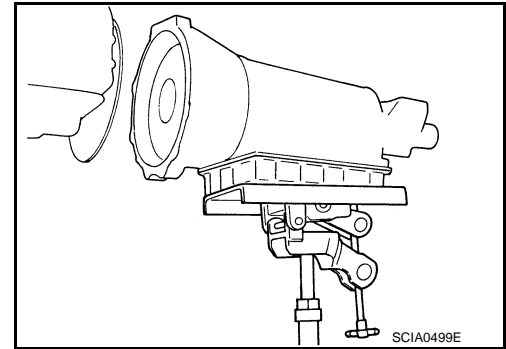
- Never subject it to impact by dropping or hitting it.

TRANSMISSION ASSEMBLY

< UNIT REMOVAL AND INSTALLATION >

[7AT: RE7R01A (VQ35HR)]

- 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.
10. Remove starter motor. Refer to [STR-17, "VQ35HR : Exploded View"](#).
 11. Remove rear plate cover. Refer to [EM-46, "Exploded View"](#).
 12. Turn crankshaft, and remove the four tightening 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 A/T fluid cooler tubes from A/T assembly and engine assembly. Refer to [TM-194, "2WD : Exploded View"](#).
 14. Plug up openings such as the A/T fluid cooler tube hole.
 15. Support A/T assembly with a transmission jack.
CAUTION:
When setting the transmission jack, be careful not to allow it to collide against the drain plug and overflow plug.
 16. Remove rear engine mounting member and engine mounting insulator (rear) with power tool. Refer to [EM-82, "2WD : Exploded View"](#).
 17. Disconnect A/T assembly connector.
 18. Remove harness and harness brackets.
 19. Remove bolts fixing A/T assembly to engine assembly with power tool.
 20. Remove air breather hose. Refer to [TM-192, "2WD : Exploded View"](#).
 21. Remove A/T assembly from vehicle.
CAUTION:
 - Secure torque converter to prevent it from dropping.
 - Secure A/T assembly to a transmission jack.
 22. Remove dynamic damper. Refer to [EM-82, "2WD : Exploded View"](#).

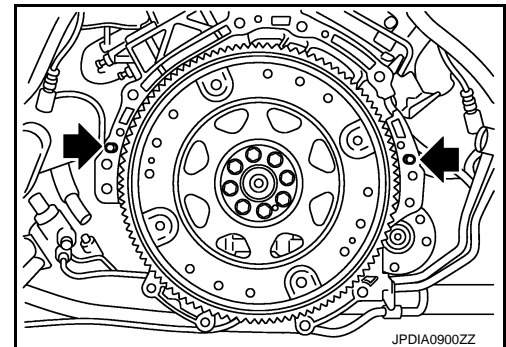


INSTALLATION

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

CAUTION:

Check fitting of dowel pin (◄) when installing A/T assembly to engine assembly.



TRANSMISSION ASSEMBLY

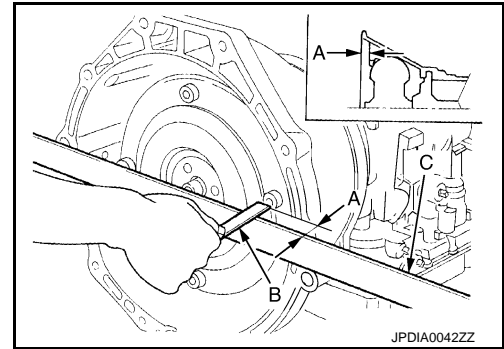
< UNIT REMOVAL AND INSTALLATION >

[7AT: RE7R01A (VQ35HR)]

- When installing A/T assembly to the engine assembly, be sure to check dimension (A) to ensure it is within the reference value limit.

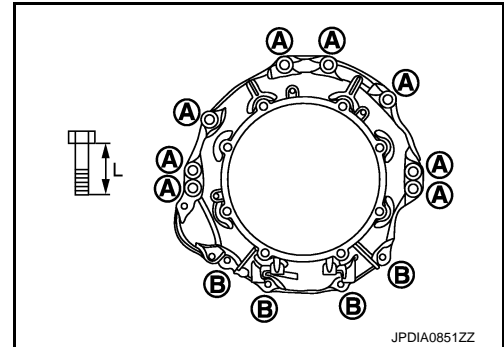
B : Scale
C : Straightedge

Dimension (A) : Refer to [TM-207, "Torque Converter"](#).



- When installing A/T assembly to the engine assembly, attach the fixing bolts in accordance with the following standard.

Bolt symbol	A	B
Insertion direction	A/T assembly to engine assembly	Engine assembly to A/T assembly
Number of bolts	8	4
Bolt length (L) mm (in)	65 (2.56)	35 (1.38)
Tightening torque N·m (kg-m, ft-lb)	75 (7.7, 55)	46.6 (4.8, 34)



- Align the positions of tightening bolts for drive plate with those of the torque converter, and temporarily tighten the bolts. Then, tighten the bolts with the specified torque.

CAUTION:

- When turning crankshaft, turn it clockwise as viewed from the front of the engine.
- When tightening the tightening bolts for the torque converter after fixing the crankshaft pulley bolts, be sure to confirm the tightening torque of the crankshaft pulley mounting bolts. Refer to [EM-53, "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:000000003839023

INSPECTION AFTER INSTALLATION

Check the following items.

- A/T fluid leakage.
- A/T position. Refer to [TM-183, "Inspection and Adjustment"](#).

ADJUSTMENT AFTER INSTALLATION

Adjust A/T fluid level. Refer to [TM-177, "Adjustment"](#).

AWD

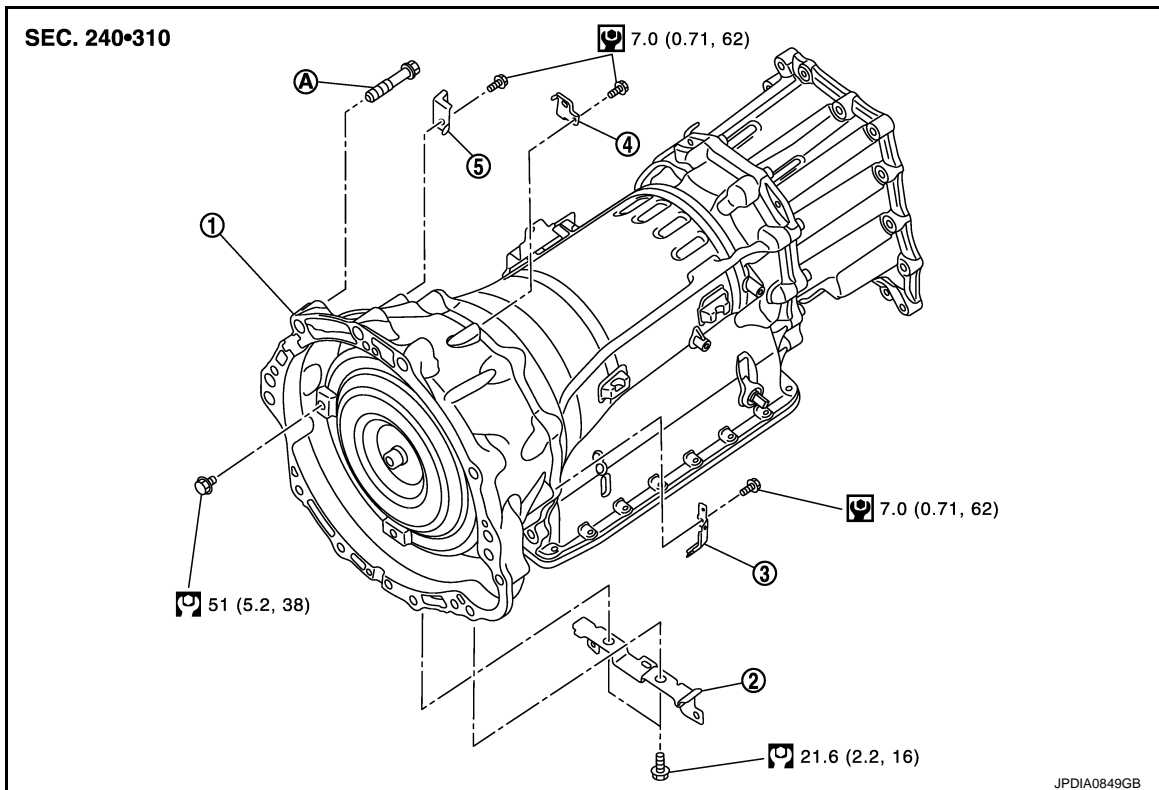
TRANSMISSION ASSEMBLY

< UNIT REMOVAL AND INSTALLATION >

[7AT: RE7R01A (VQ35HR)]

AWD : Exploded View

INFOID:000000003839024



- | | | |
|--------------------|--------------------|--------------------|
| 1. A/T assembly | 2. Harness bracket | 3. Harness bracket |
| 4. Harness bracket | 5. Harness bracket | |

A. For tightening torque, Refer to [TM-202, "AWD : Removal and Installation"](#).

Refer to [GI-4, "Components"](#) for symbols in the figure.

AWD : Removal and Installation

INFOID:000000003839025

REMOVAL

CAUTION:

- When removing the A/T assembly from engine, first remove the crankshaft position sensor (POS) from the A/T assembly.

- Be careful not to damage sensor edge.

1. Shift the selector lever to "P" position, and then release the parking brake.
2. Disconnect the battery cable from the negative terminal.
3. Remove control rod. Refer to [TM-187, "Exploded View"](#).
4. Remove rear propeller shaft. Refer to [DLN-124, "Exploded View"](#).
5. Remove front propeller shaft. Refer to [DLN-107, "VQ35HR : Exploded View"](#).
6. Support A/T assembly with a transmission jack.

CAUTION:

When setting the transmission jack, be careful not to allow it to collide against the drain plug and overflow plug.

7. Remove crankshaft position sensor (POS) from A/T assembly. Refer to [EM-117, "Exploded View"](#).

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.

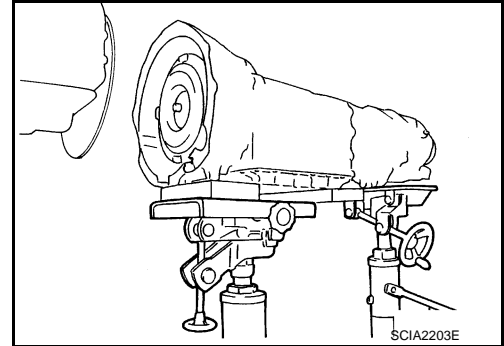
8. Remove starter motor. Refer to [STR-17, "VQ35HR : Exploded View"](#).

TRANSMISSION ASSEMBLY

< UNIT REMOVAL AND INSTALLATION >

[7AT: RE7R01A (VQ35HR)]

9. Remove rear plate cover. Refer to [EM-46, "Exploded View"](#).
10. Turn crankshaft, and remove the four tightening bolts for drive plate and torque converter.
CAUTION:
When turning the crankshaft, turn it clockwise as viewed from the front of the engine.
11. Remove A/T fluid cooler tubes. Refer to [TM-196, "AWD : Exploded View"](#).
12. Plug up openings such as the A/T fluid cooler tube hole.
13. Disconnect A/T assembly harness connector and AWD solenoid harness connector.
14. Remove harness and harness brackets.
15. Remove bolts fixing A/T assembly to engine assembly with power tool.
16. Remove air breather hose. Refer to [TM-193, "AWD : Exploded View"](#).
17. Remove A/T assembly with transfer assembly from vehicle.
CAUTION:
 - Secure torque converter to prevent it from dropping.
 - Secure A/T assembly to a transmission jack.
18. Remove transfer assembly from A/T assembly with power tool.
Refer to [DLN-63, "VQ35HR : Exploded View"](#).

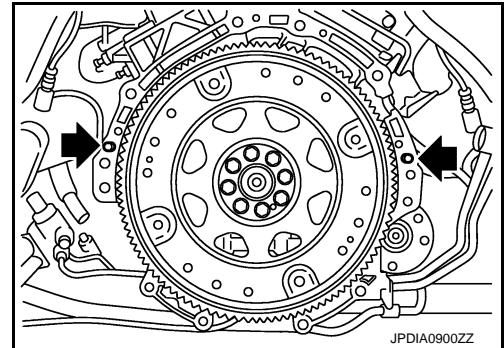


INSTALLATION

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

CAUTION:

Check fitting of dowel pin (↔) when installing A/T assembly to engine assembly.

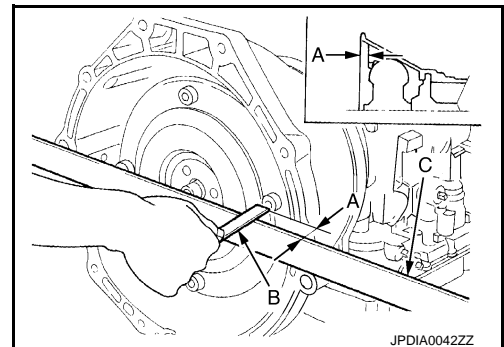


- When installing A/T assembly to the engine assembly, be sure to check dimension (A) to ensure it is within the reference value limit.

B : Scale

C : Straightedge

Dimension (A) : Refer to [TM-207, "Torque Converter"](#).



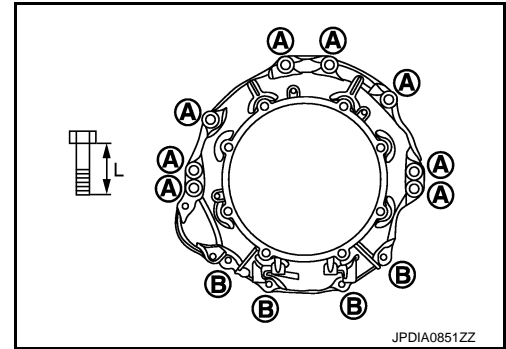
TRANSMISSION ASSEMBLY

< UNIT REMOVAL AND INSTALLATION >

[7AT: RE7R01A (VQ35HR)]

- When installing A/T assembly to the engine assembly, attach the fixing bolts in accordance with the following standard.

Bolt symbol	A	B
Insertion direction	A/T assembly to engine assembly	Engine assembly to A/T assembly
Number of bolts	8	4
Bolt length (L) mm (in)	65 (2.56)	35 (1.38)
Tightening torque N·m (kg-m, ft-lb)	75 (7.7, 55)	46.6 (4.8, 34)



- Align the positions of tightening bolts for drive plate with those of the torque converter, and temporarily tighten the bolts. Then, tighten the bolts with the specified torque.

CAUTION:

- When turning crankshaft, turn it clockwise as viewed from the front of the engine.
- When tightening the tightening bolts for the torque converter after fixing the crankshaft pulley bolts, be sure to confirm the tightening torque of the crankshaft pulley mounting bolts. Refer to [EM-53, "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.

AWD : Inspection and Adjustment

INFOID:000000003839026

INSPECTION AFTER INSTALLATION

Check the following item after completing installation.

- A/T fluid leakage.
- A/T position. Refer to [TM-183, "Inspection and Adjustment"](#).

ADJUSTMENT AFTER INSTALLATION

Adjust A/T fluid level. Refer to [TM-177, "Adjustment"](#).

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

[7AT: RE7R01A (VQ35HR)]

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

General Specification

INFOID:000000003839056

Applied model		2WD	AWD
Transmission model code number		1XJ0A, 1XJ6C, 1XJ8E, 1RX3A	1XJ0B, 1XJ6D, 1XJ9A, 1RX3B
Stall torque ratio		1.92 : 1	
Transmission gear ratio	1st	4.924	
	2nd	3.194	
	3rd	2.043	
	4th	1.412	
	5th	1.000	
	6th	0.862	
	7th	0.772	
	Reverse	3.972	
Recommended fluid		Genuine NISSAN Matic S ATF ^{*1}	
Fluid capacity		9.2 liter (9-3/4 US qt, 8-1/8 Imp qt) ^{*2}	

CAUTION:

- Use only Genuine NISSAN Matic S ATF. Never mix with other ATF.
- Using ATF other than Genuine NISSAN Matic S ATF will cause deterioration driveability and A/T durability, and may damage the A/T, which is not covered by the INFINITI new vehicle limited warranty.

*1: Refer to [MA-12, "Fluids and Lubricants"](#).

*2: The fluid capacity is the reference value.

Vehicle Speed at Which Gear Shifting Occurs

INFOID:000000003839057

2WD MODELS

Unit: km/h (MPH)

Gear position	Throttle position	
	Full throttle	Half throttle
D1 → D2	58 – 62 (36 – 38)	24 – 28 (15 – 17)
D2 → D3	91 – 99 (57 – 61)	50 – 58 (31 – 36)
D3 → D4	143 – 153 (89 – 95)	81 – 91 (51 – 56)
D4 → D5	209 – 219 (130 – 136)	116 – 126 (73 – 78)
D5 → D6	250 – 260 (156 – 161)	174 – 184 (109 – 114)
D6 → D7	250 – 260 (156 – 161)	250 – 260 (156 – 161)
D7 → D6	240 – 250 (150 – 155)	201 – 211 (125 – 131)
D6 → D5	215 – 225 (134 – 139)	127 – 137 (79 – 85)
D5 → D4	197 – 207 (123 – 128)	75 – 85 (47 – 52)
D4 → D3	121 – 131 (76 – 81)	46 – 56 (29 – 34)
D3 → D2	70 – 78 (44 – 48)	22 – 30 (14 – 18)
D2 → D1	23 – 27 (15 – 16)	8 – 12 (5 – 7)

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

AWD MODELS

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

[7AT: RE7R01A (VQ35HR)]

Unit: km/h (MPH)

Gear position	Throttle position	
	Full throttle	Half throttle
D1 → D2	52 – 56 (33 – 34)	22 – 26 (14 – 16)
D2 → D3	82 – 90 (51 – 55)	45 – 53 (28 – 32)
D3 → D4	129 – 139 (81 – 86)	73 – 83 (46 – 51)
D4 → D5	189 – 199 (118 – 123)	105 – 115 (66 – 71)
D5 → D6	250 – 260 (156 – 161)	157 – 167 (98 – 103)
D6 → D7	250 – 260 (156 – 161)	237 – 247 (148 – 153)
D7 → D6	240 – 250 (150 – 155)	181 – 191 (113 – 118)
D6 → D5	195 – 205 (122 – 127)	115 – 125 (72 – 77)
D5 → D4	179 – 189 (112 – 117)	68 – 78 (43 – 48)
D4 → D3	119 – 129 (74 – 80)	42 – 52 (27 – 32)
D3 → D2	63 – 71 (40 – 44)	20 – 28 (13 – 17)
D2 → D1	21 – 25 (14 – 15)	7 – 11 (5 – 6)

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

Vehicle Speed at Which Lock-up Occurs/Releases

INFOID:0000000003839058

2WD MODELS

Throttle position	Vehicle speed km/h (MPH)	
	Lock-up ON	Lock-up OFF
Closed throttle	54 – 62 (34 – 38)	51 – 59 (32 – 36)
Half throttle	64 – 72 (40 – 44)	61 – 69 (38 – 42)

- At closed throttle, the accelerator opening is less than 1/8 condition. (Closed throttle position signal OFF)
- At half throttle, the accelerator opening is 4/8 of the full opening.

AWD MODELS

Throttle position	Vehicle speed km/h (MPH)	
	Lock-up ON	Lock-up OFF
Closed throttle	49 – 57 (31 – 35)	46 – 54 (29 – 33)
Half throttle	58 – 66 (37 – 41)	55 – 63 (35 – 39)

- 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:0000000003839059

Stall speed	2,475 – 2,775 rpm
-------------	-------------------

Input Speed Sensor

INFOID:0000000003839061

2WD MODELS

Name	Condition	Data (Approx.)
Input speed sensor 1	When running at 23 km/h (14 MPH) in 2nd speed with the closed throttle position signal OFF.	0.8 kHz
Input speed sensor 2	When running at 55 km/h (34 MPH) in 4th speed with the closed throttle position signal OFF.	1.3 kHz

AWD MODELS

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

[7AT: RE7R01A (VQ35HR)]

Name	Condition	Data (Approx.)
Input speed sensor 1	When running at 21 km/h (13 MPH) in 2nd speed with the closed throttle position signal OFF.	0.8 kHz
Input speed sensor 2	When running at 50 km/h (31 MPH) in 4th speed with the closed throttle position signal OFF.	1.3 kHz

Output Speed Sensor

INFOID:0000000003839062

Name	Condition	Data (Approx.)
Output speed sensor	When running at 20 km/h (12 MPH).	159 Hz

Torque Converter

INFOID:0000000003839065

Dimension between end of converter housing and torque converter	25.0 mm (0.98 in)
---	-------------------

BASIC INSPECTION

DIAGNOSIS AND REPAIR WORK FLOW

Diagnosis Flow

INFOID:000000004040633

1.OBTAIN INFORMATION ABOUT SYMPTOM

1. Refer to [TM-209, "Question sheet"](#) and interview the customer to obtain the malfunction information (conditions and environment when the malfunction occurred) as much as possible when the customer brings in the vehicle.
2. Check the following:
 - Service history
 - Harnesses and connectors malfunction. Refer to [GI-35, "Intermittent Incident"](#).

>> GO TO 2.

2.CHECK DTC

1. Before checking the malfunction, check whether any DTC exists.
2. If DTC exists, perform the following operations.
 - Record the DTC and freeze frame data. (Print out the data using CONSULT-III and affix 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-355, "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-349, "Fail-Safe"](#).When a malfunction symptom is reproduced, the question sheet is effective. Refer to [TM-209, "Question 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-349, "Fail-Safe"](#).When a malfunction symptom is reproduced, the question sheet is effective. Refer to [TM-209, "Question 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-353, "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.

DIAGNOSIS AND REPAIR WORK FLOW

< BASIC INSPECTION >

[7AT: RE7R01B (VK50VE)]

NO >> Check according to [GI-35, "Intermittent Incident"](#).

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

Use [TM-355, "Symptom Table"](#) from the symptom inspection result in step 4. Then identify where to start performing the diagnosis based on possible causes and symptoms.

>> GO TO 8.

7. REPAIR OR REPLACE THE MALFUNCTIONING PARTS

Repair or replace the detected malfunctioning parts.

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

>> GO TO 8.

8. FINAL CHECK

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

Is DTC or malfunction symptom reproduced?

YES-1 >> DTC is reproduced: GO TO 5.

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

NO >> Before delivering the vehicle to the customer, make sure that DTC is erased.

Question sheet

INFOID:000000004040634

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 (VK50VE)]

Question Sheet

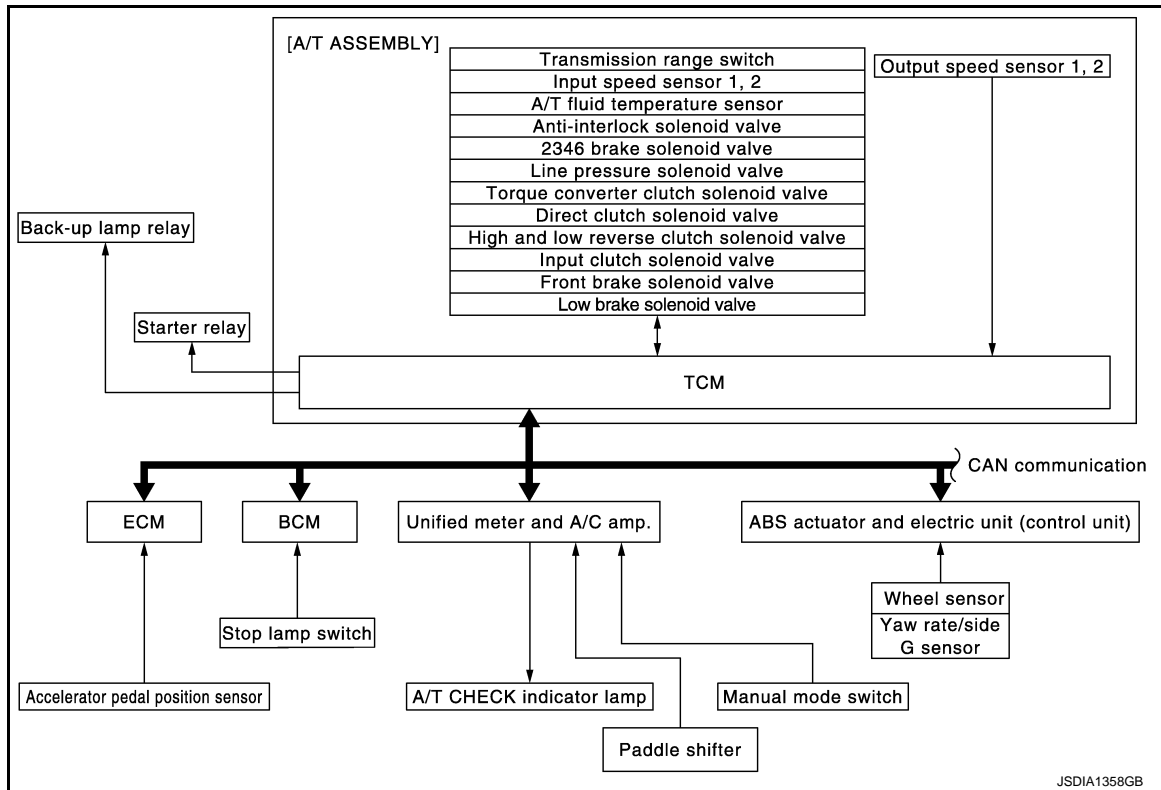
Symptoms	<input type="checkbox"/> Vehicle does not move (<input type="checkbox"/> Any position <input type="checkbox"/> Particular position)				
	<input type="checkbox"/> No up-shift (<input type="checkbox"/> 1st → 2nd <input type="checkbox"/> 2nd → 3rd <input type="checkbox"/> 3rd → 4th <input type="checkbox"/> 4th → 5th <input type="checkbox"/> 5th → 6th <input type="checkbox"/> 6th → 7th)				
	<input type="checkbox"/> No down-shift (<input type="checkbox"/> 7th → 6th <input type="checkbox"/> 6th → 5th <input type="checkbox"/> 5th → 4th <input type="checkbox"/> 4th → 3rd <input type="checkbox"/> 3rd → 2nd <input type="checkbox"/> 2nd → 1st)				
	<input type="checkbox"/> Lock-up malfunction				
	<input type="checkbox"/> Shift point too high or too low				
	<input type="checkbox"/> Shift shock or slip				
	<input type="checkbox"/> 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					

SYSTEM DESCRIPTION

A/T CONTROL SYSTEM

System Diagram

INFOID:000000004040635



System Description

INFOID:000000005151367

INPUT/OUTPUT SIGNAL CHART

Switch, Sensor or Signal	TCM function	Actuator
<ul style="list-style-type: none"> Transmission range switch Accelerator pedal position signal Closed throttle position signal Wide open throttle position signal Engine speed signal A/T fluid temperature sensor Output speed sensor Vehicle speed signal Manual mode switch signal Stop lamp switch signal Side G sensor signal Input speed sensor 1, 2 	<ul style="list-style-type: none"> Line pressure control (TM-214) Shift change control (TM-218) Shift pattern control <ul style="list-style-type: none"> Shift pattern (TM-223) Manual mode (TM-227) Lock-up control (TM-230) Fail-safe control (TM-349) Self-diagnosis (TM-264) CONSULT-III communication line (TM-264) CAN communication line (TM-270) 	<ul style="list-style-type: none"> Input clutch solenoid valve Direct clutch solenoid valve Front brake solenoid valve High and low reverse clutch solenoid valve Low brake solenoid valve Torque converter clutch solenoid valve Line pressure solenoid valve Anti-interlock solenoid valve 2346 brake solenoid valve A/T CHECK indicator lamp Back-up lamp relay Starter relay

SYSTEM DESCRIPTION

- The A/T senses vehicle operating conditions through various sensors or signals. It always controls the optimum shift position and reduces shifting and lock-up shocks.
- Receive input signals transmitted from various switches and sensors.
- Determine required line pressure, shifting point, lock-up operation, etc.
- Transmit required output signals to the respective solenoids.

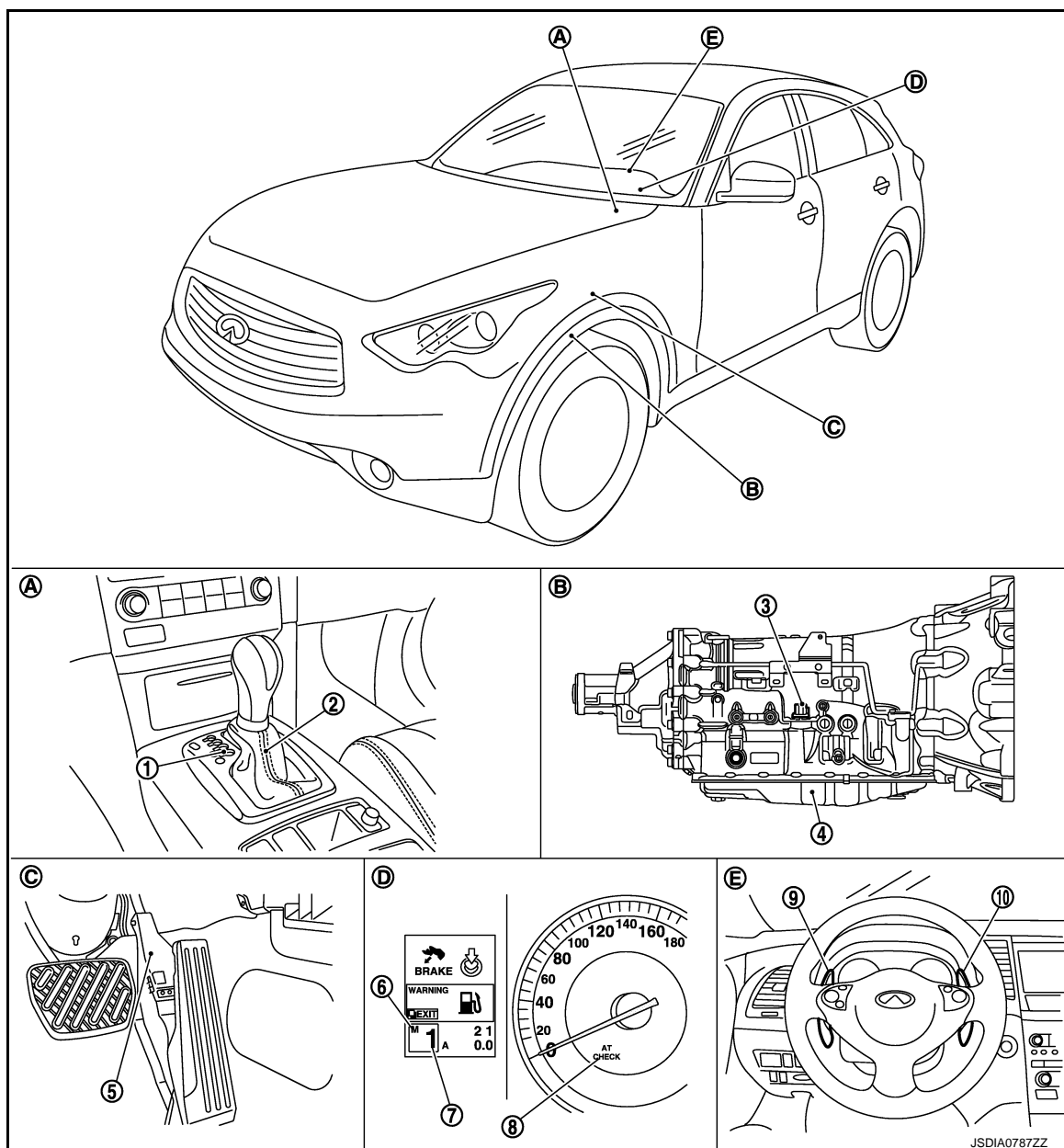
A/T CONTROL SYSTEM

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]

Component Parts Location

INFOID:000000004040637



- | | | |
|--------------------------------------|--------------------------------------|--------------------------------|
| 1. Selector lever position indicator | 2. A/T shift selector assembly | 3. A/T assembly connector |
| 4. Control valve with TCM* | 5. Accelerator pedal position sensor | 6. Manual mode indicator |
| 7. Shift position indicator | 8. A/T CHECK indicator lamp | 9. Paddle shifter (shift-down) |
| 10. Paddle shifter (shift-up) | | |
| A. Center console | B. A/T assembly | C. Accelerator pedal |
| D. Combination meter | E. Steering wheel | |

NOTE:

- The following components are included in A/T shift selector assembly.
 - Manual mode select switch
 - Manual mode position select switch
 - Shift position switch
- The following components are included in control valve with TCM.
 - TCM
 - Input speed sensor 1, 2

A/T CONTROL SYSTEM

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]

- Output speed sensor
- A/T fluid temperature sensor
- Transmission range switch
- Direct clutch solenoid valve
- High and low reverse clutch solenoid valve
- Input clutch solenoid valve
- Front brake solenoid valve
- Low brake solenoid valve
- Anti-interlock solenoid valve
- 2346 brake solenoid valve
- Line pressure solenoid valve
- Torque converter clutch solenoid valve

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

Component Description

INFOID:000000004040638

Name	Function
TCM	The TCM consists of a microcomputer and connectors for signal input and output and for power supply. The TCM controls the A/T.
Transmission range switch	TM-273, "Description"
Output speed sensor	TM-278, "Description"
Input speed sensor 1	TM-276, "Description"
Input speed sensor 2	
A/T fluid temperature sensor	TM-274, "Description"
Input clutch solenoid valve	TM-300, "Description"
Front brake solenoid valve	TM-302, "Description"
Direct clutch solenoid valve	TM-320, "Description"
High and low reverse clutch solenoid valve	TM-317, "Description"
Low brake solenoid valve	TM-318, "Description"
Anti-interlock solenoid valve	TM-299, "Description"
2346 brake solenoid valve	TM-319, "Description"
Line pressure solenoid valve	TM-298, "Description"
Torque converter clutch solenoid valve	TM-295, "Description"
Accelerator pedal position sensor	TM-303, "Description"
Manual mode switch	TM-311, "Description"
Paddle shifter	TM-311, "Description"
Starter relay	TM-271, "Description"
A/T CHECK indicator lamp	When the ignition switch is pushed to the ON position, the light comes on for 2 seconds.
Stop lamp switch	TM-138, "Description"
ECM	EC-589, "System Description"
BCM	BCS-6, "System Description"
Unified meter and A/C amp.	MWI-6, "METER SYSTEM : System Description"
ABS actuator and electric unit (control unit)	BRC-29, "System Description"
Wheel sensor	BRC-53, "Description"
Yaw rate/side G sensor	BRC-79, "Description"

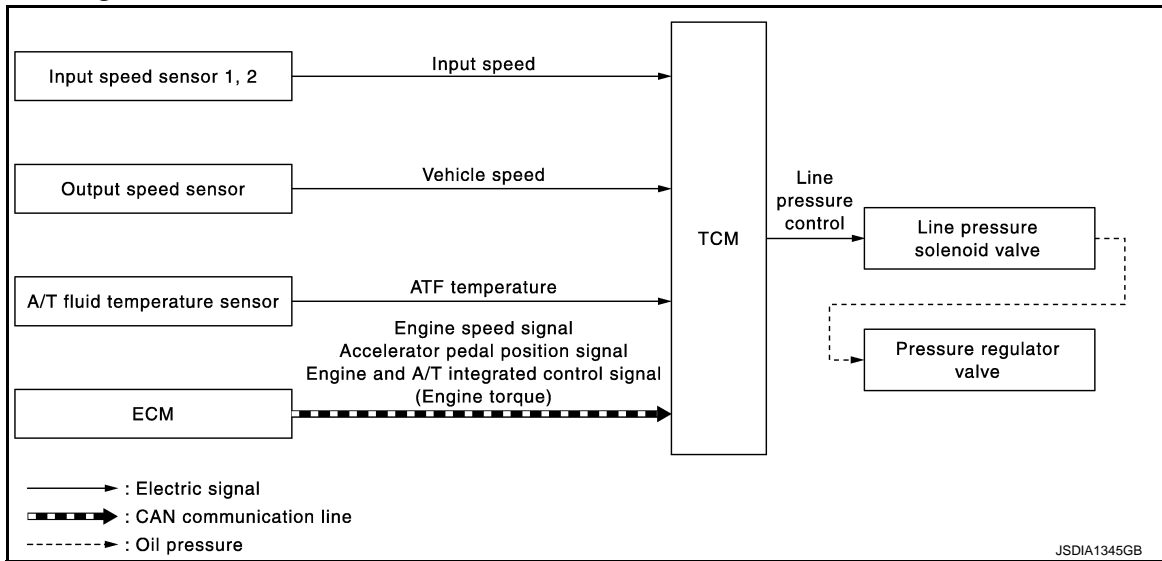
LINE PRESSURE CONTROL

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]

LINE PRESSURE CONTROL

System Diagram



System Description

INFOID:0000000004040640

INPUT/OUTPUT SIGNAL CHART

Sensor	Input signal to TCM	TCM function	Actuator
Input speed sensor 1, 2	Input speed	Line pressure control	Line pressure solenoid valve ↓ Pressure regulator valve
Output speed sensor	Vehicle speed		
A/T fluid temperature sensor	ATF temperature		
ECM	Engine speed signal* Accelerator pedal position signal* Engine and A/T integrated control signal (Engine torque)*		

*: This signal is transmitted via CAN communication line.

SYSTEM DESCRIPTION

- When an engine and A/T integrated control signal (engine torque) equivalent to the engine drive force is transmitted from the ECM to the TCM, the TCM controls the line pressure solenoid valve. This line pressure solenoid controls the pressure regulator valve as the signal pressure and adjusts the 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.

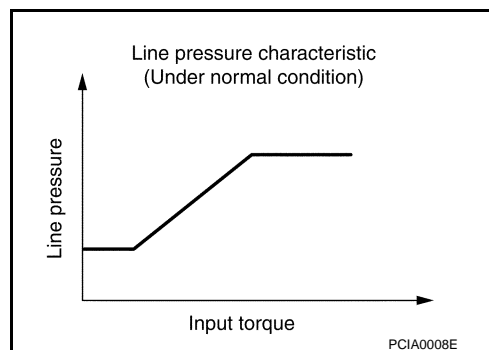
Normal Control

LINE PRESSURE CONTROL

< SYSTEM DESCRIPTION >

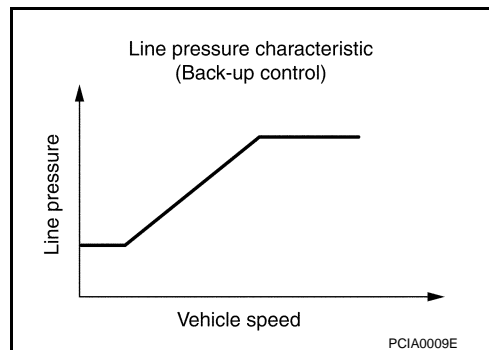
[7AT: RE7R01B (VK50VE)]

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



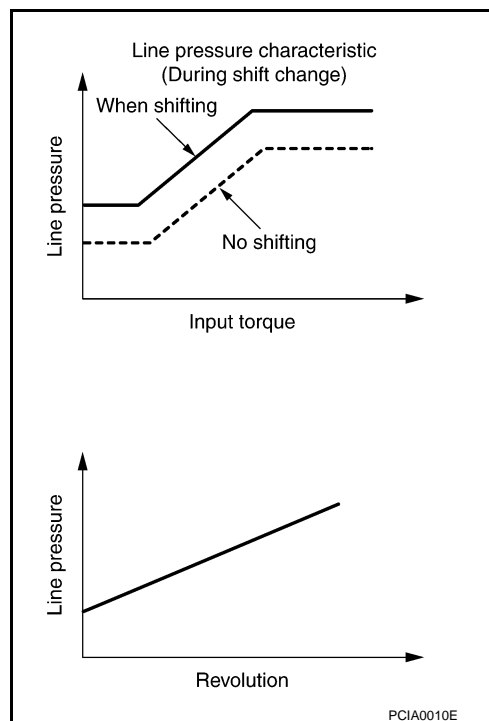
Back-up Control (Engine Brake)

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



During Shift Change

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



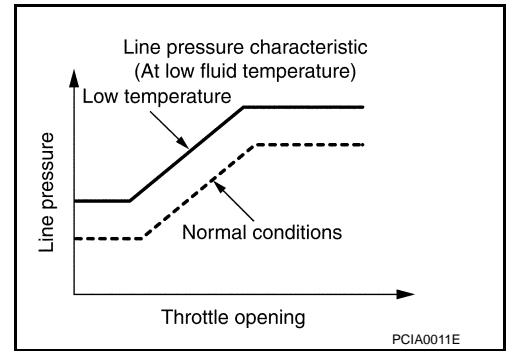
At Low Fluid Temperature

LINE PRESSURE CONTROL

< SYSTEM DESCRIPTION >

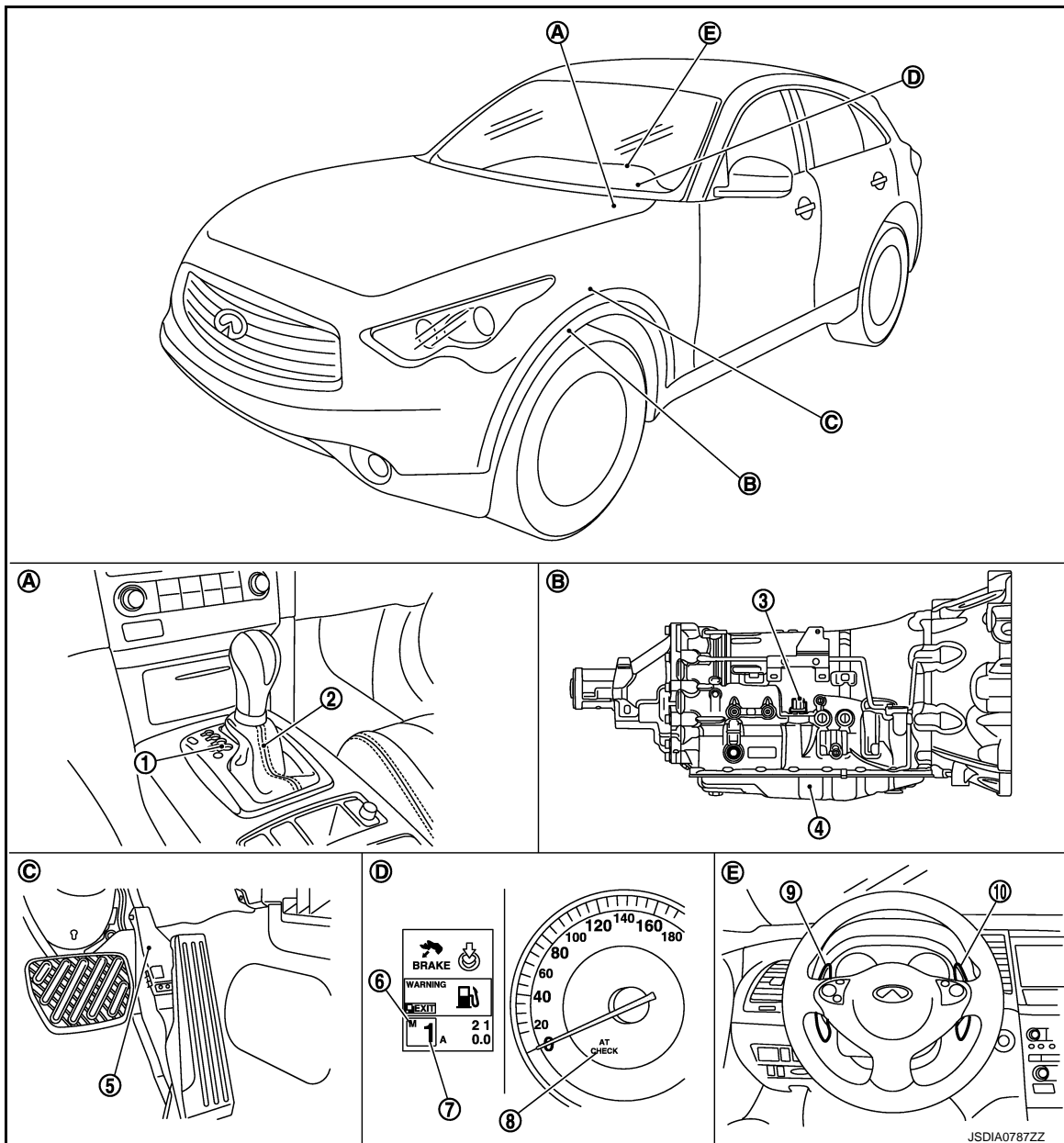
[7AT: RE7R01B (VK50VE)]

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.



Component Parts Location

INFOID:000000005151379



- | | | |
|--------------------------------------|--------------------------------------|--------------------------------|
| 1. Selector lever position indicator | 2. A/T shift selector assembly | 3. A/T assembly connector |
| 4. Control valve with TCM* | 5. Accelerator pedal position sensor | 6. Manual mode indicator |
| 7. Shift position indicator | 8. A/T CHECK indicator lamp | 9. Paddle shifter (shift-down) |
| 10. Paddle shifter (shift-up) | | |

LINE PRESSURE CONTROL

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]

- | | | |
|----------------------|-------------------|----------------------|
| A. Center console | B. A/T assembly | C. Accelerator pedal |
| D. Combination meter | E. Steering wheel | |

NOTE:

- The following components are included in A/T shift selector assembly.
 - Manual mode select switch
 - Manual mode position select switch
 - Shift position switch
- The following components are included in control valve with TCM.
 - TCM
 - Input speed sensor 1, 2
 - Output speed sensor
 - A/T fluid temperature sensor
 - Transmission range switch
 - Direct clutch solenoid valve
 - High and low reverse clutch solenoid valve
 - Input clutch solenoid valve
 - Front brake solenoid valve
 - Low brake solenoid valve
 - Anti-interlock solenoid valve
 - 2346 brake solenoid valve
 - Line pressure solenoid valve
 - Torque converter clutch solenoid valve

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

Component Description

INFOID:000000004040642

Name	Function
TCM	The TCM consists of a microcomputer and connectors for signal input and output and for power supply. The TCM controls the A/T.
Output speed sensor	TM-278, "Description"
Input speed sensor 1	TM-276, "Description"
Input speed sensor 2	
A/T fluid temperature sensor	TM-274, "Description"
Line pressure solenoid valve	TM-298, "Description"
Pressure regulator valve	Adjusts the oil discharged from the oil pump to the optimum pressure (line pressure) for the driving state.
ECM	EC-589, "System Description"

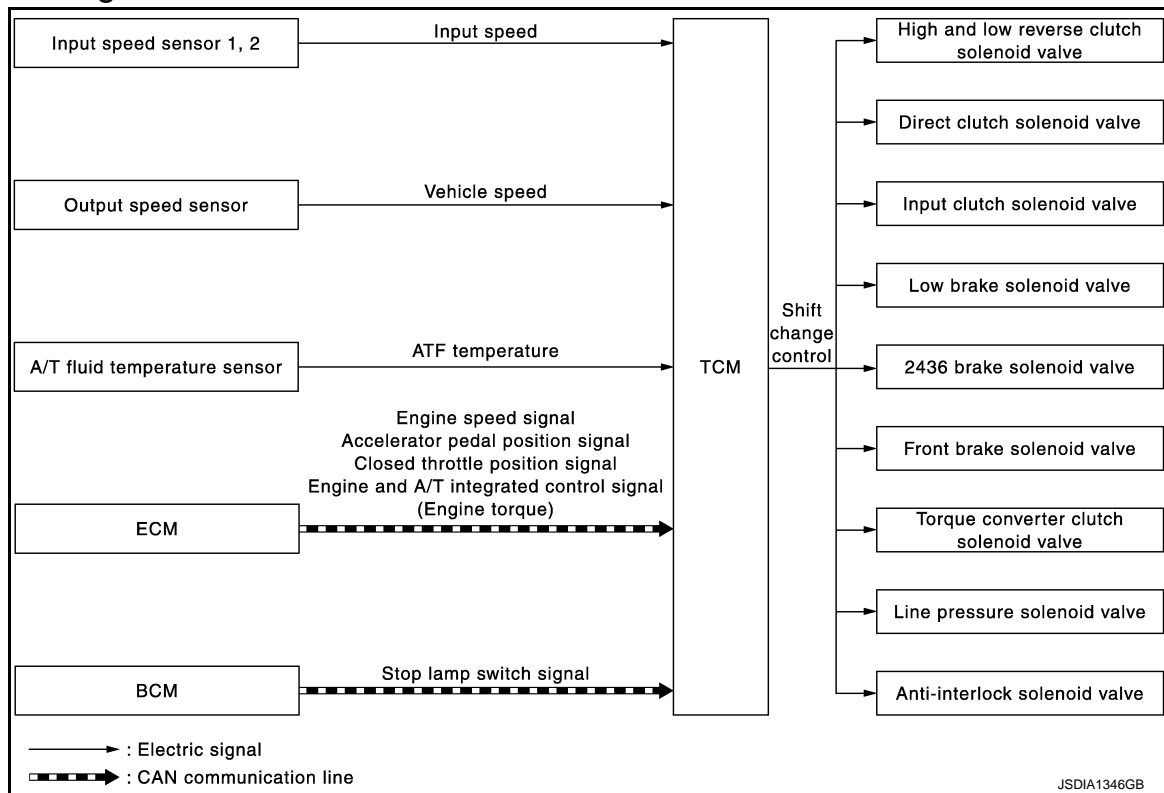
SHIFT CHANGE CONTROL

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]

SHIFT CHANGE CONTROL

System Diagram



System Description

INFOID:000000004040644

INPUT/OUTPUT SIGNAL CHART

Sensor	Input signal to TCM	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*		

*: This signal is transmitted via CAN communication line.

SYSTEM DESCRIPTION

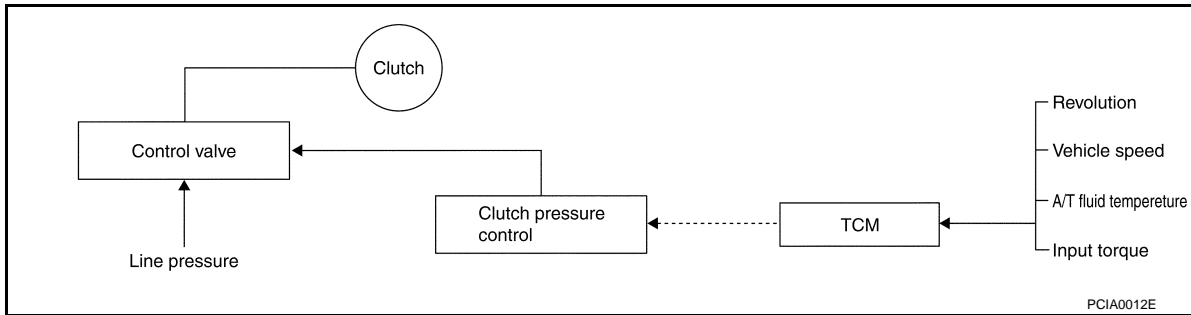
The clutch pressure control solenoid is controlled by the signals from the switches and sensors. Thus, the clutch pressure is adjusted to be appropriate to the engine load state and vehicle driving state. It becomes

SHIFT CHANGE CONTROL

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]

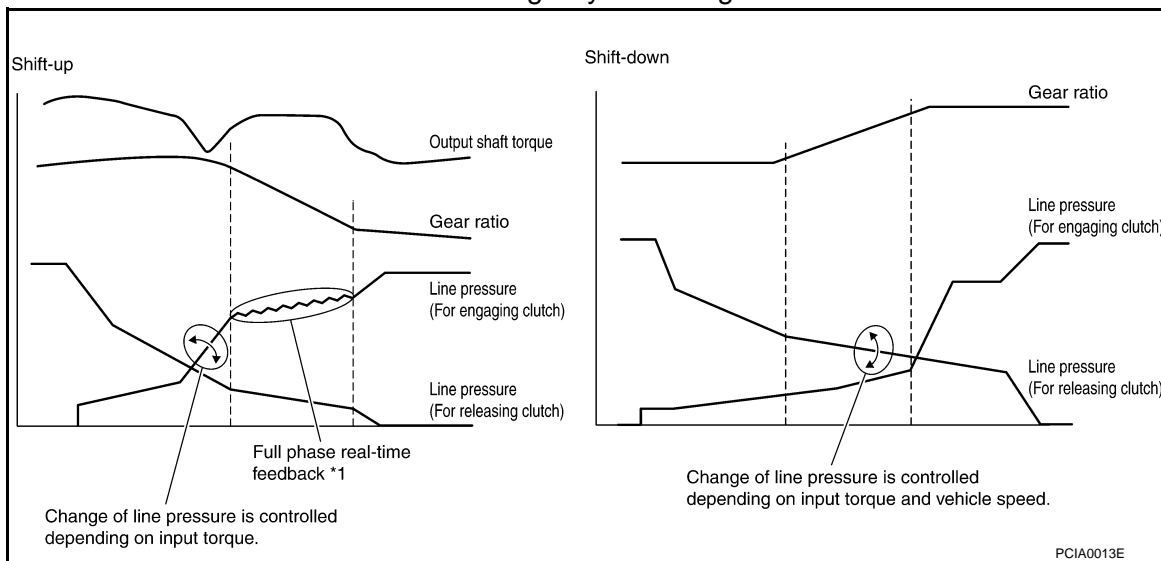
possible to finely control the clutch hydraulic pressure with high precision and a smoother shift change characteristic is attained.



Shift Change

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

Shift Change System Diagram

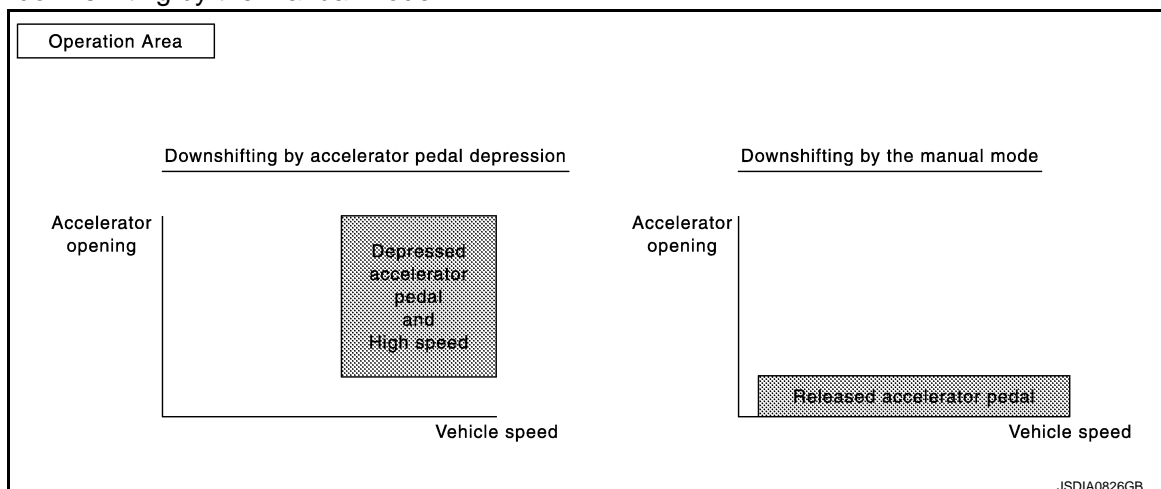


*1: Full phase real-time feedback control monitors movement of gear ratio at gear change, and controls oil pressure in real-time to achieve the best gear ratio.

Blipping Control

This system makes transmission clutch engage readily by controlling (synchronizing) engine revolution according to the (calculation of) engine revolution after shifting down.

- “BLIPPING CONTROL” functions.
- When downshifting by accelerator pedal depression.
- When downshifting by the manual mode.



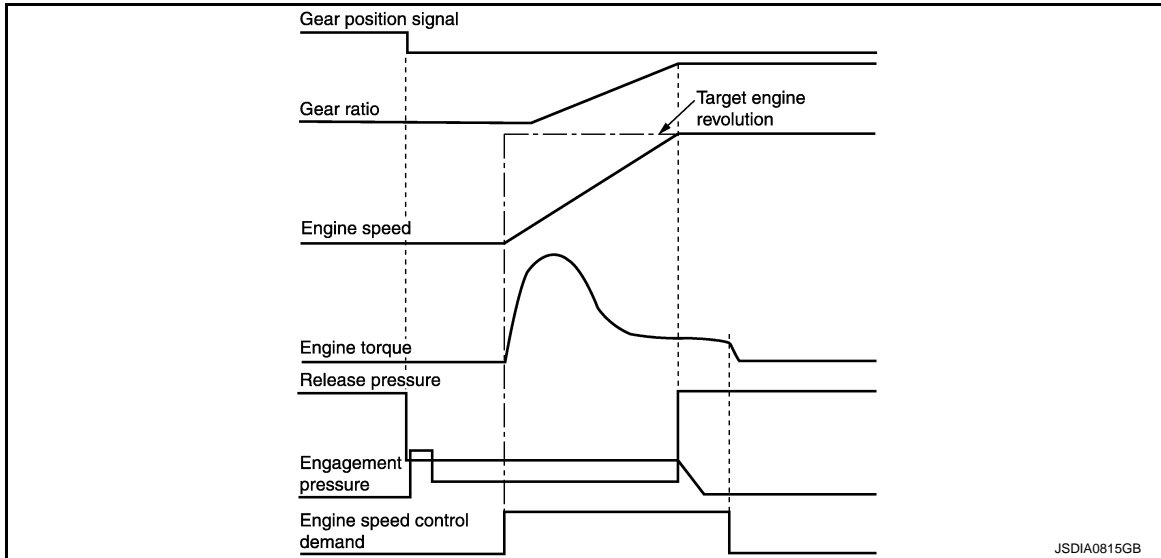
SHIFT CHANGE CONTROL

< SYSTEM DESCRIPTION >

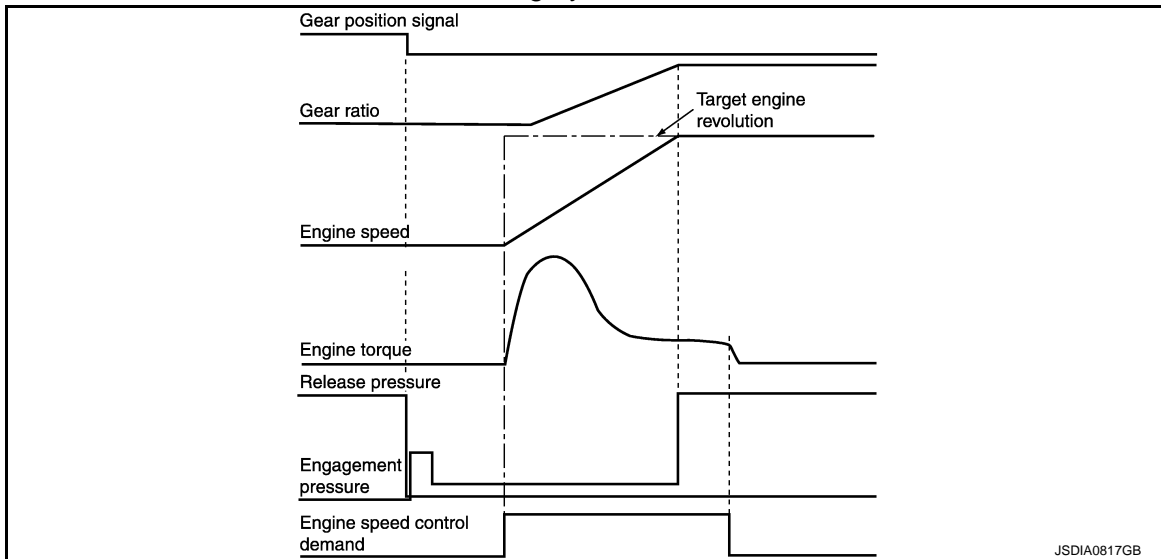
[7AT: RE7R01B (VK50VE)]

- 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



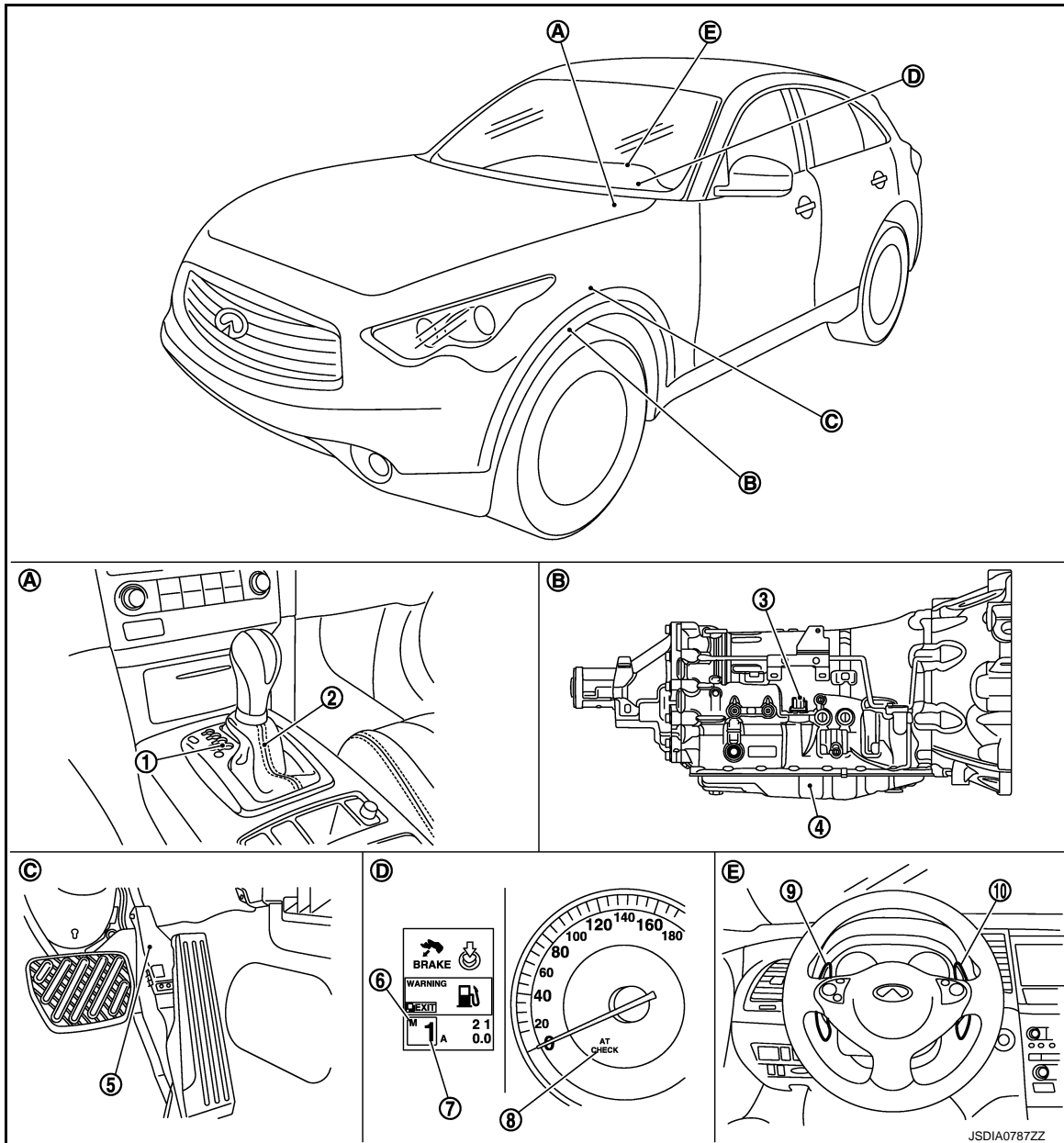
SHIFT CHANGE CONTROL

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]

Component Parts Location

INFOID:000000005151380



- | | | |
|--------------------------------------|--------------------------------------|--------------------------------|
| 1. Selector lever position indicator | 2. A/T shift selector assembly | 3. A/T assembly connector |
| 4. Control valve with TCM* | 5. Accelerator pedal position sensor | 6. Manual mode indicator |
| 7. Shift position indicator | 8. A/T CHECK indicator lamp | 9. Paddle shifter (shift-down) |
| 10. Paddle shifter (shift-up) | | |
| A. Center console | B. A/T assembly | C. Accelerator pedal |
| D. Combination meter | E. Steering wheel | |

NOTE:

- The following components are included in A/T shift selector assembly.
 - Manual mode select switch
 - Manual mode position select switch
 - Shift position switch
- The following components are included in control valve with TCM.
 - TCM
 - Input speed sensor 1, 2

SHIFT CHANGE CONTROL

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]

- Output speed sensor
- A/T fluid temperature sensor
- Transmission range switch
- Direct clutch solenoid valve
- High and low reverse clutch solenoid valve
- Input clutch solenoid valve
- Front brake solenoid valve
- Low brake solenoid valve
- Anti-interlock solenoid valve
- 2346 brake solenoid valve
- Line pressure solenoid valve
- Torque converter clutch solenoid valve

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

Component Description

INFOID:000000004040646

Name	Function
TCM	The TCM consists of a microcomputer and connectors for signal input and output and for power supply. The TCM controls the A/T.
Output speed sensor	TM-278, "Description"
Input speed sensor 1	TM-276, "Description"
Input speed sensor 2	
A/T fluid temperature sensor	TM-274, "Description"
Input clutch solenoid valve	TM-300, "Description"
Front brake solenoid valve	TM-302, "Description"
Direct clutch solenoid valve	TM-320, "Description"
High and low reverse clutch solenoid valve	TM-317, "Description"
Low brake solenoid valve	TM-318, "Description"
Anti-interlock solenoid valve	TM-299, "Description"
2346 brake solenoid valve	TM-319, "Description"
Line pressure solenoid valve	TM-298, "Description"
Torque converter clutch solenoid valve	TM-295, "Description"
ECM	EC-589, "System Description"
BCM	BCS-6, "System Description"

SHIFT PATTERN CONTROL

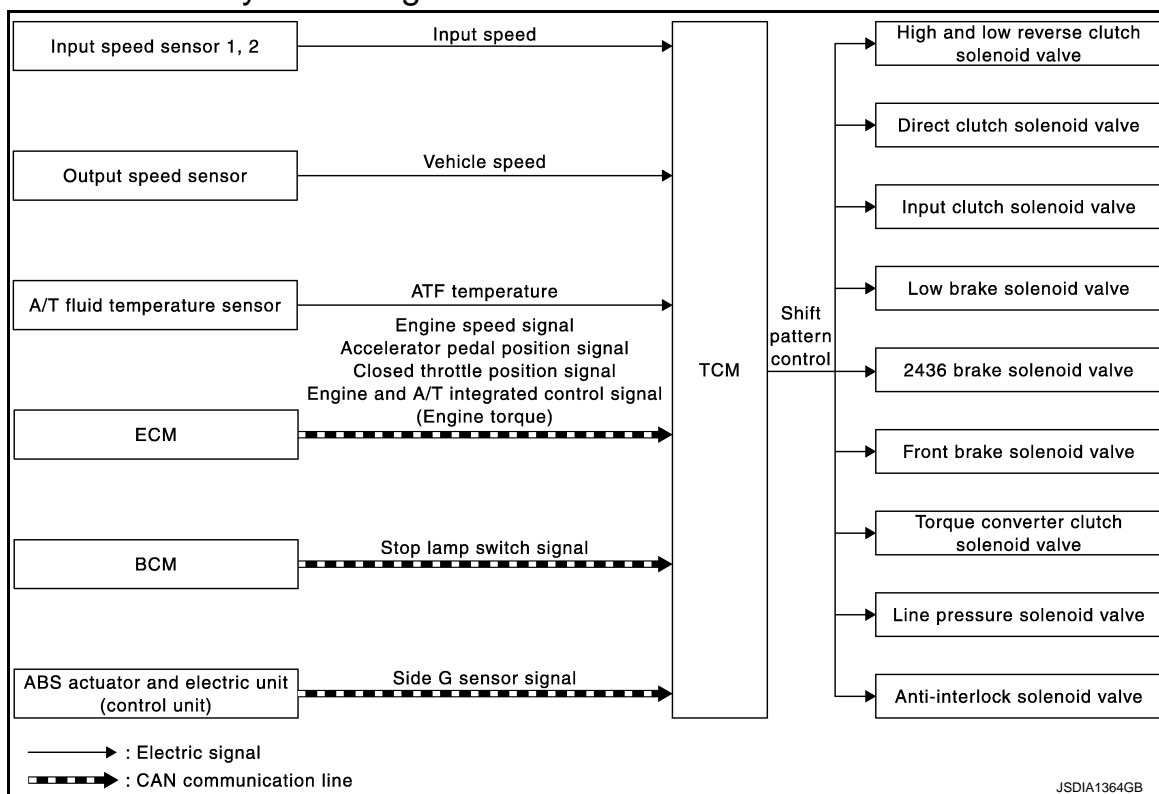
< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]

SHIFT PATTERN CONTROL

SHIFT PATTERN

SHIFT PATTERN : System Diagram



SHIFT PATTERN : System Description

INFOID:000000005151372

INPUT/OUTPUT SIGNAL CHART

Sensor	Input signal to TCM	TCM function	Actuator
Input speed sensor 1, 2	Input speed	Shift pattern control	<ul style="list-style-type: none">High and low reverse clutch solenoid valveDirect clutch solenoid valveInput clutch solenoid valveLow brake solenoid valve2346 brake solenoid valveFront brake solenoid valveTorque converter clutch solenoid valveLine pressure solenoid valveAnti-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*		

*: This signal is transmitted via CAN communication line.

SYSTEM DESCRIPTION

ASC (Adaptive Shift Control)

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.

For example.....

- When driving on an up/down slope

SHIFT PATTERN CONTROL

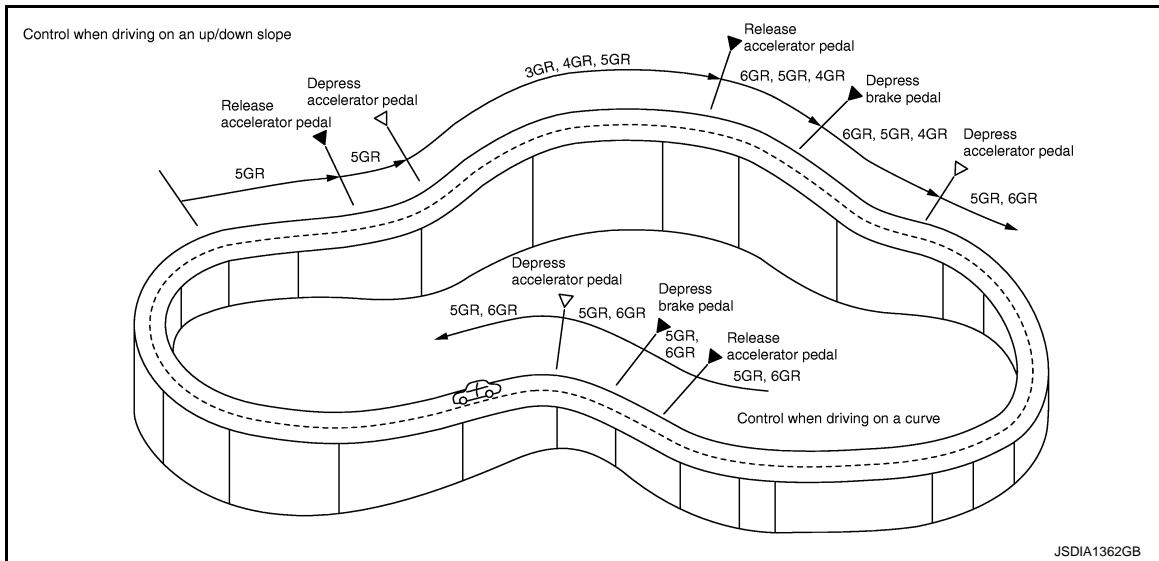
< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]

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.



DS Mode

- Changes to the shift schedule that mainly utilizes the high engine speed zone when ASC is active.
- DS mode can be switched according to the following method.
 - When the selector lever is in the "D" position, shifting the selector lever to manual shift gate enables switching to DS mode.
 - When in DS mode, shifting the selector lever to the main gate enables to cancel DS mode.
 - After switching to manual mode with paddle shifter, switching to DS mode can not be enabled even when the selector lever is shifted to the manual gate. (With paddle shifter)

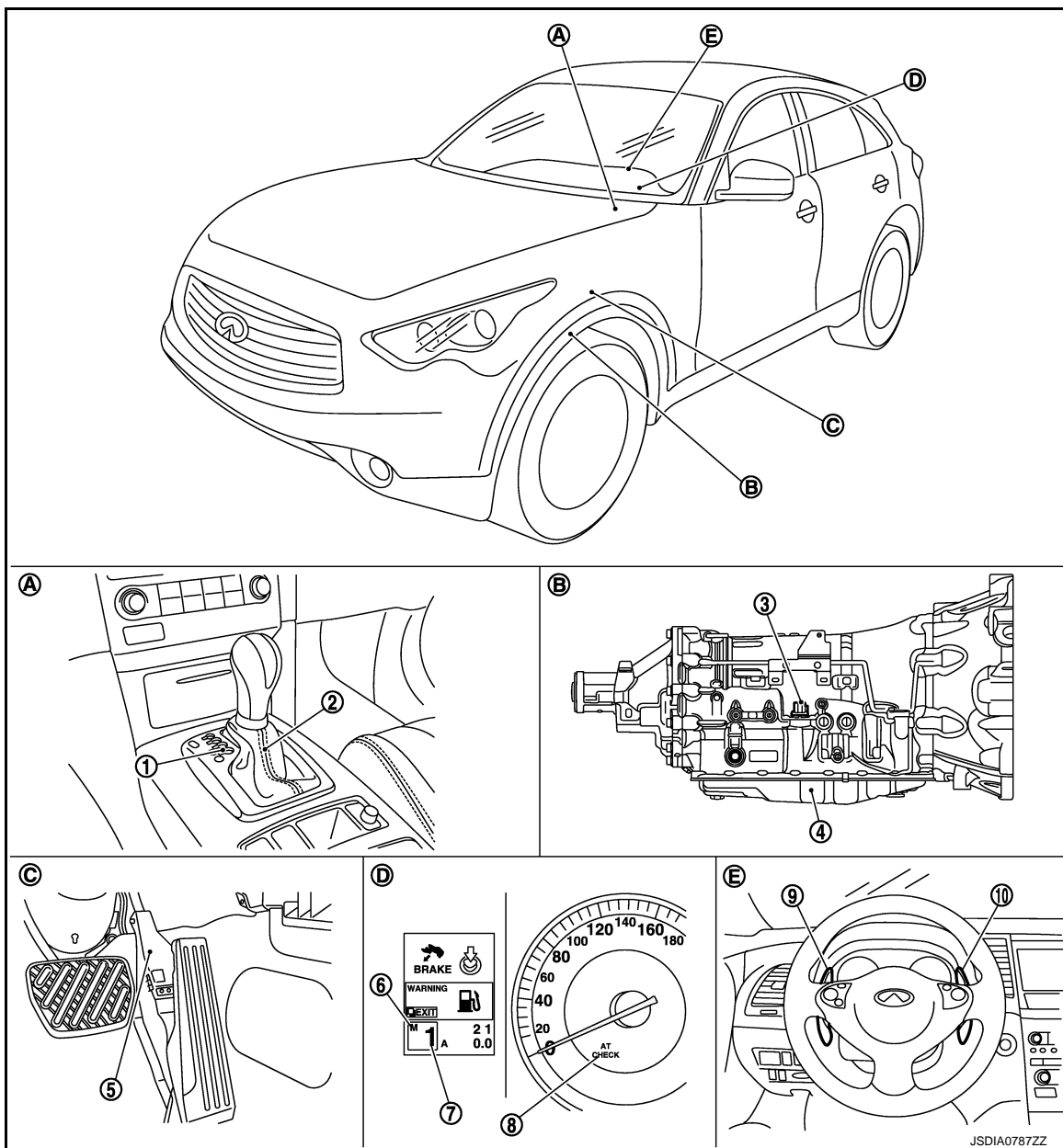
SHIFT PATTERN CONTROL

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]

SHIFT PATTERN : Component Parts Location

INFOID:000000005151381



- | | | |
|--------------------------------------|--------------------------------------|--------------------------------|
| 1. Selector lever position indicator | 2. A/T shift selector assembly | 3. A/T assembly connector |
| 4. Control valve with TCM* | 5. Accelerator pedal position sensor | 6. Manual mode indicator |
| 7. Shift position indicator | 8. A/T CHECK indicator lamp | 9. Paddle shifter (shift-down) |
| 10. Paddle shifter (shift-up) | | |
| A. Center console | B. A/T assembly | C. Accelerator pedal |
| D. Combination meter | E. Steering wheel | |

NOTE:

- The following components are included in A/T shift selector assembly.
 - Manual mode select switch
 - Manual mode position select switch
 - Shift position switch
- The following components are included in control valve with TCM.
 - TCM
 - Input speed sensor 1, 2

SHIFT PATTERN CONTROL

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]

- Output speed sensor
- A/T fluid temperature sensor
- Transmission range switch
- Direct clutch solenoid valve
- High and low reverse clutch solenoid valve
- Input clutch solenoid valve
- Front brake solenoid valve
- Low brake solenoid valve
- Anti-interlock solenoid valve
- 2346 brake solenoid valve
- Line pressure solenoid valve
- Torque converter clutch solenoid valve

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

SHIFT PATTERN : Component Description

INFOID:000000005151374

Name	Function
TCM	The TCM consists of a microcomputer and connectors for signal input and output and for power supply. The TCM controls the A/T.
Output speed sensor	TM-89, "Description"
Input speed sensor 1	TM-87, "Description"
Input speed sensor 2	
A/T fluid temperature sensor	TM-85, "Description"
Input clutch solenoid valve	TM-112, "Description"
Front brake solenoid valve	TM-114, "Description"
Direct clutch solenoid valve	TM-133, "Description"
High and low reverse clutch solenoid valve	TM-130, "Description"
Low brake solenoid valve	TM-131, "Description"
Anti-interlock solenoid valve	TM-110, "Description"
2346 brake solenoid valve	TM-132, "Description"
Line pressure solenoid valve	TM-109, "Description"
Torque converter clutch solenoid valve	TM-106, "Description"
ECM	EC-30, "System Description"
BCM	BCS-6, "System Description"
ABS actuator and electric unit (control unit)	BRC-29, "System Description"

MANUAL MODE

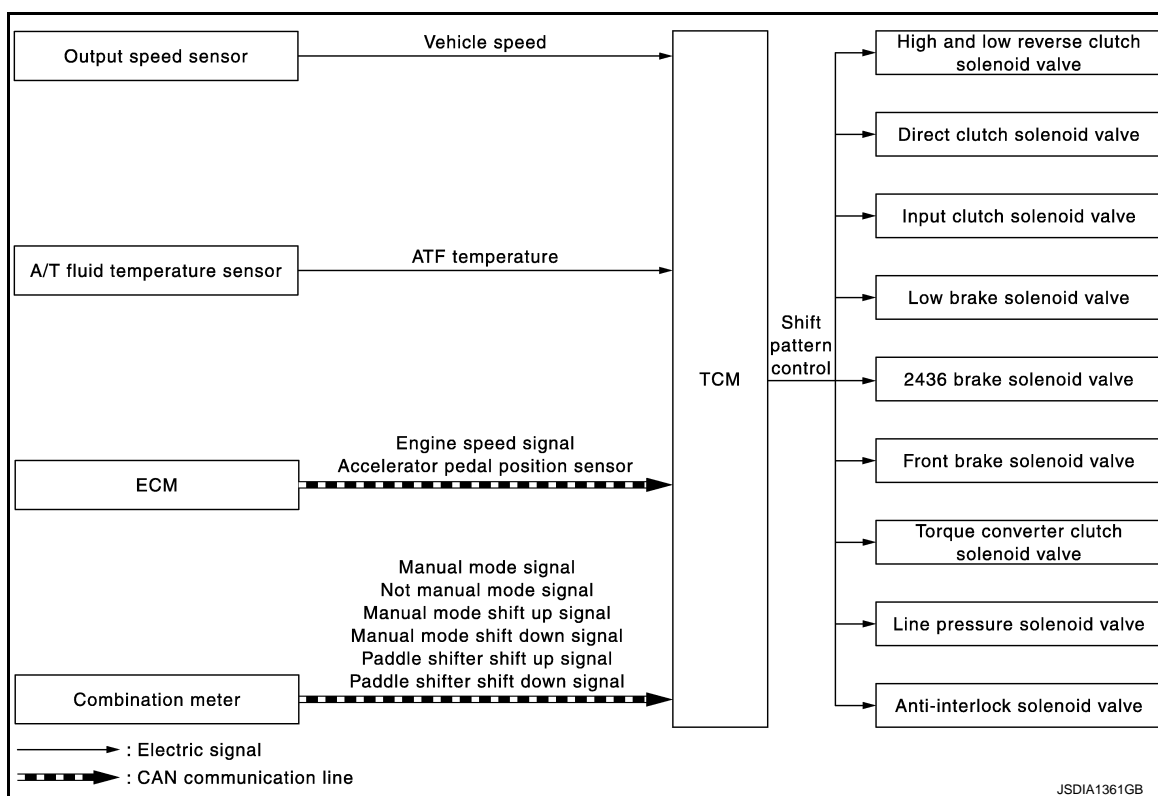
SHIFT PATTERN CONTROL

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]

MANUAL MODE : System Diagram

INFOID:000000005151375



MANUAL MODE : System Description

INFOID:000000005151376

INPUT/OUTPUT SIGNAL CHART

Sensor	Input signal to TCM	TCM function	Actuator
Output speed sensor	Vehicle speed	Shift pattern 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
A/T fluid temperature sensor	ATF temperature		
ECM	Engine speed signal*		
	Accelerator pedal position signal*		
Combination meter	Manual mode signal*		
	Not manual mode signal*		
	Manual mode shift up signal*		
	Manual mode shift down signal*		
	Paddle shifter shift up signal*		
	Paddle shifter shift down signal*		

*: This signal is transmitted via CAN communication line.

SYSTEM DESCRIPTION

Manual Mode

- The TCM receives the manual mode signal, not manual mode signal, manual mode shift up signal, manual mode shift down signal, paddle shifter shift up signal and paddle shifter shift down signal from combination meter via CAN communication line. The TCM shifts shift pattern control to the manual mode based on these signals, and then shifts the A/T by operating each solenoid valve according to the shift operation of the driver.
- The TCM prohibits the manual mode while being in fail-safe mode due to an A/T malfunction, etc. Refer to [TM-349, "Fail-Safe"](#).

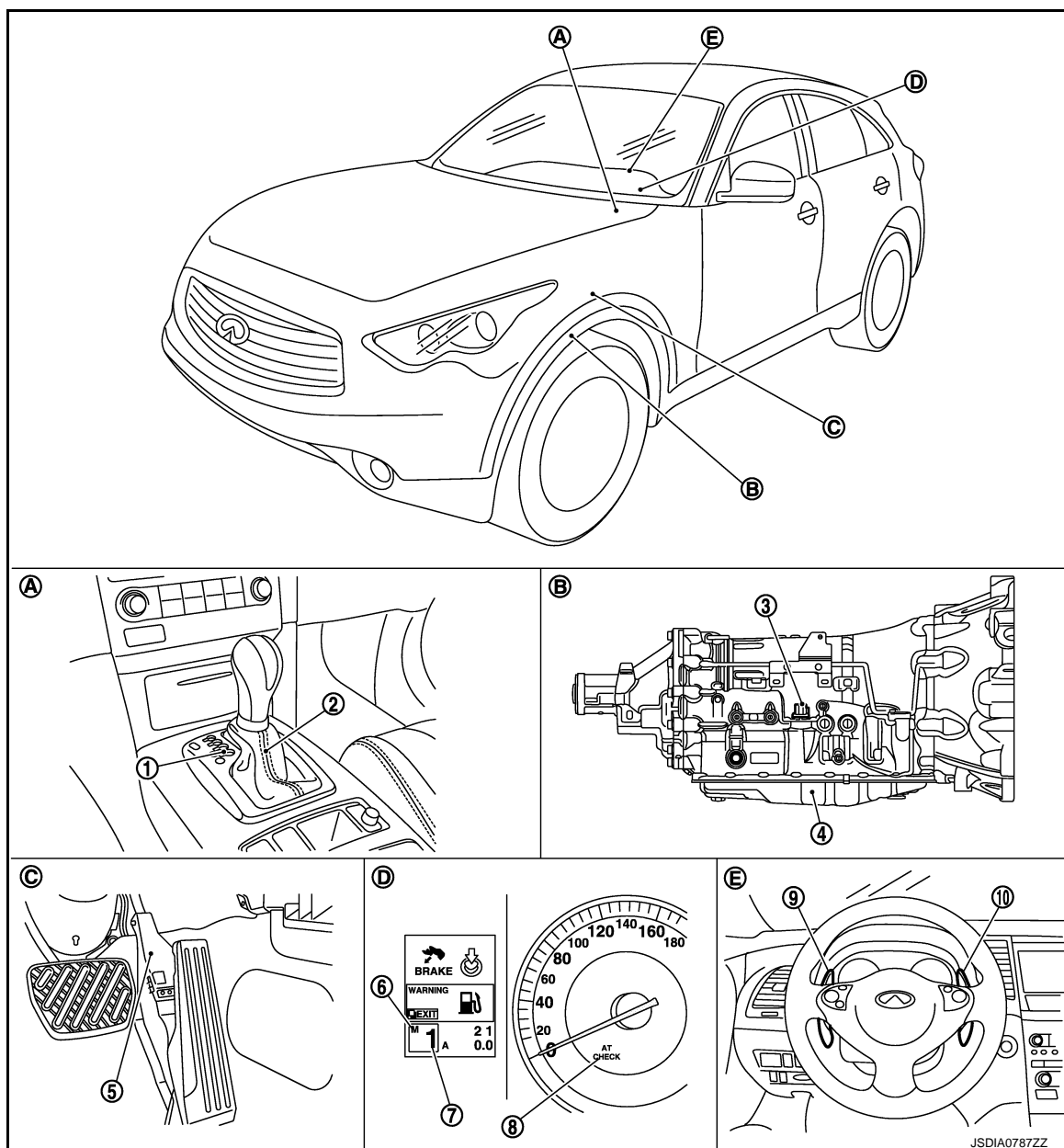
SHIFT PATTERN CONTROL

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]

MANUAL MODE : Component Parts Location

INFOID:000000005151382



- | | | |
|--------------------------------------|--------------------------------------|--------------------------------|
| 1. Selector lever position indicator | 2. A/T shift selector assembly | 3. A/T assembly connector |
| 4. Control valve with TCM* | 5. Accelerator pedal position sensor | 6. Manual mode indicator |
| 7. Shift position indicator | 8. A/T CHECK indicator lamp | 9. Paddle shifter (shift-down) |
| 10. Paddle shifter (shift-up) | | |
| A. Center console | B. A/T assembly | C. Accelerator pedal |
| D. Combination meter | E. Steering wheel | |

NOTE:

- The following components are included in A/T shift selector assembly.
 - Manual mode select switch
 - Manual mode position select switch
 - Shift position switch
- The following components are included in control valve with TCM.
 - TCM
 - Input speed sensor 1, 2

SHIFT PATTERN CONTROL

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]

- Output speed sensor
- A/T fluid temperature sensor
- Transmission range switch
- Direct clutch solenoid valve
- High and low reverse clutch solenoid valve
- Input clutch solenoid valve
- Front brake solenoid valve
- Low brake solenoid valve
- Anti-interlock solenoid valve
- 2346 brake solenoid valve
- Line pressure solenoid valve
- Torque converter clutch solenoid valve

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

MANUAL MODE : Component Description

INFOID:000000005151378

Name	Function
TCM	The TCM consists of a microcomputer and connectors for signal input and output and for power supply. The TCM controls the A/T.
Output speed sensor	TM-89, "Description"
A/T fluid temperature sensor	TM-85, "Description"
Input clutch solenoid valve	TM-112, "Description"
Front brake solenoid valve	TM-114, "Description"
Direct clutch solenoid valve	TM-133, "Description"
High and low reverse clutch solenoid valve	TM-130, "Description"
Low brake solenoid valve	TM-131, "Description"
Anti-interlock solenoid valve	TM-110, "Description"
2346 brake solenoid valve	TM-132, "Description"
Line pressure solenoid valve	TM-109, "Description"
Torque converter clutch solenoid valve	TM-106, "Description"
ECM	EC-30, "System Description"
Combination meter	MWI-6, "METER SYSTEM : System Description"

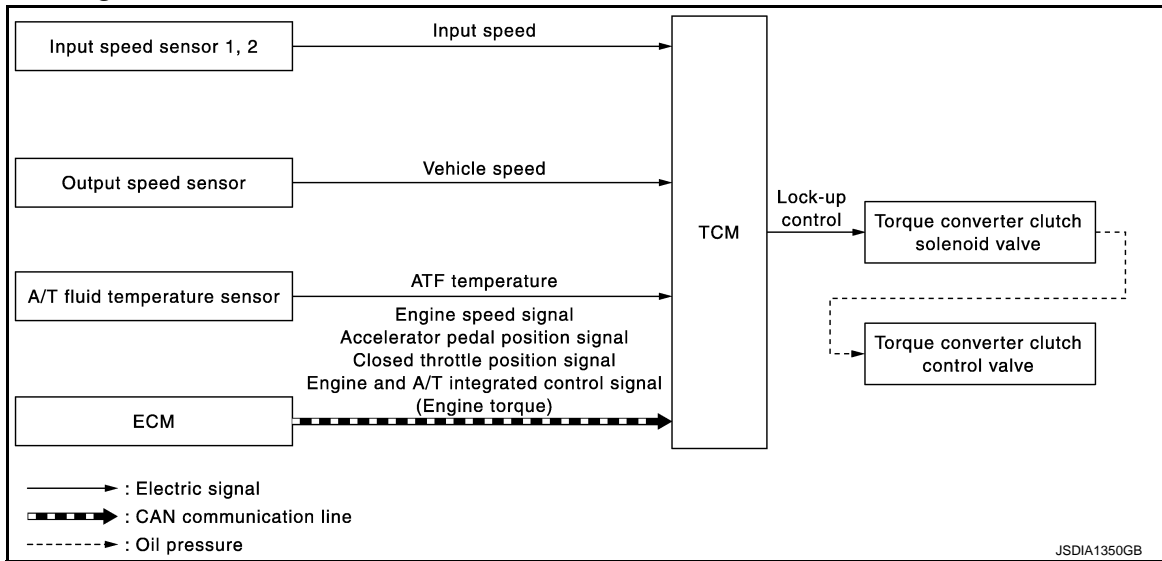
LOCK-UP CONTROL

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]

LOCK-UP CONTROL

System Diagram



System Description

INFOID:000000004040652

INPUT/OUTPUT SIGNAL CHART

Sensor	Input signal to TCM	TCM function	Actuator
Input speed sensor 1, 2	Input speed	Lock-up control	Torque converter clutch solenoid valve ↓ Torque converter clutch control 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)*		

*: This signal is transmitted via CAN communication line.

SYSTEM DESCRIPTION

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

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

Lock-up operation condition table

Selector lever	"D" position						"M" position					
Gear position	7	6	5	4	3	2	7	6	5	4	3	2
Lock-up	×	—	—	—	—	—	×	×	×	×	×	×
Slip lock-up	×	×	×	×	×	×	×	×	×	×	×	×

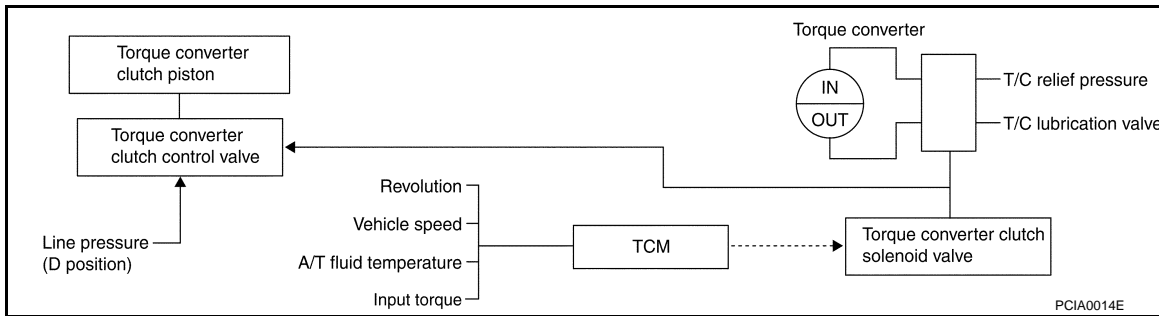
Torque Converter Clutch Control Valve Control

Lock-up control system diagram

LOCK-UP CONTROL

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]



Lock-up released

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

Lock-up Applied

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

Smooth Lock-up Control

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

Half-clutched State

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

Slip Lock-up Control

- In the slip region, the torque converter clutch solenoid current is controlled with the TCM to put it into the half-clutched state. This absorbs the engine torque fluctuation and lock-up operates from low speed. This raises the fuel efficiency for 2GR, 3GR, 4GR, 5GR, 6GR and 7GR.

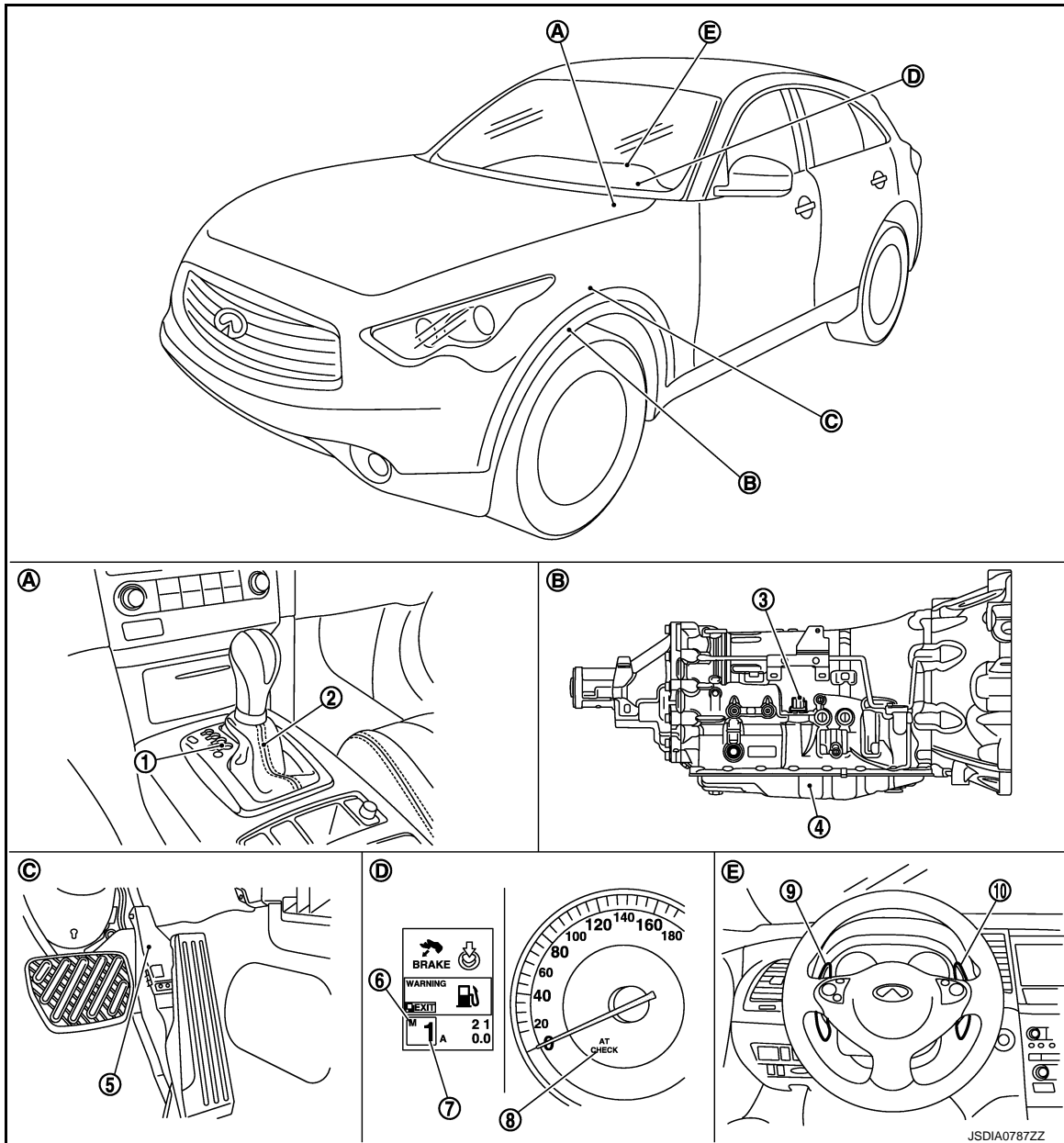
LOCK-UP CONTROL

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]

Component Parts Location

INFOID:000000005151393



- | | | |
|--------------------------------------|--------------------------------------|--------------------------------|
| 1. Selector lever position indicator | 2. A/T shift selector assembly | 3. A/T assembly connector |
| 4. Control valve with TCM* | 5. Accelerator pedal position sensor | 6. Manual mode indicator |
| 7. Shift position indicator | 8. A/T CHECK indicator lamp | 9. Paddle shifter (shift-down) |
| 10. Paddle shifter (shift-up) | | |
| A. Center console | B. A/T assembly | C. Accelerator pedal |
| D. Combination meter | E. Steering wheel | |

NOTE:

- The following components are included in A/T shift selector assembly.
 - Manual mode select switch
 - Manual mode position select switch
 - Shift position switch
- The following components are included in control valve with TCM.
 - TCM
 - Input speed sensor 1, 2

LOCK-UP CONTROL

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]

- Output speed sensor
- A/T fluid temperature sensor
- Transmission range switch
- Direct clutch solenoid valve
- High and low reverse clutch solenoid valve
- Input clutch solenoid valve
- Front brake solenoid valve
- Low brake solenoid valve
- Anti-interlock solenoid valve
- 2346 brake solenoid valve
- Line pressure solenoid valve
- Torque converter clutch solenoid valve

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

Component Description

INFOID:000000004040654

Name	Function
TCM	The TCM consists of a microcomputer and connectors for signal input and output and for power supply. The TCM controls the A/T.
Output speed sensor	TM-278, "Description"
Input speed sensor 1	TM-276, "Description"
Input speed sensor 2	
A/T fluid temperature sensor	TM-274, "Description"
Torque converter clutch solenoid valve	TM-295, "Description"
Torque converter clutch control valve	Switches the lock-up to operating or released. Also, by performing the lock-up operation transiently, lock-up smoothly.
ECM	EC-589, "System Description"

SHIFT MECHANISM

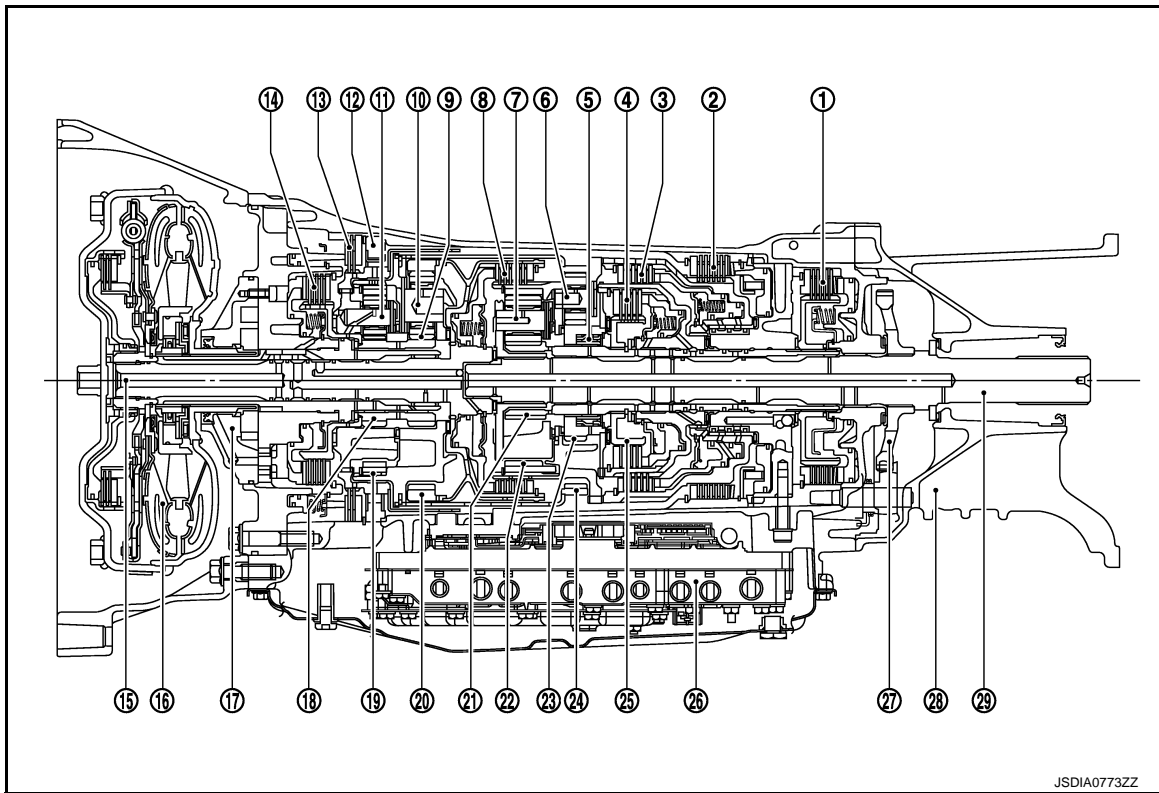
< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]

SHIFT MECHANISM

Cross-Sectional View

INFOID:000000004040655



- | | | |
|-------------------------------------|----------------------------|----------------------------|
| 1. Low brake | 2. Reverse brake | 3. Direct clutch |
| 4. High and low reverse clutch | 5. 2nd one-way clutch | 6.*1 Rear carrier |
| 7. Mid carrier | 8. Input clutch | 9.*2 Front sun gear |
| 10.*3 Front carrier | 11. Under drive carrier | 12. 1st one-way clutch |
| 13. Front brake | 14. 2346 brake | 15.*4 Input shaft |
| 16. Torque converter | 17. Oil pump | 18.*2 Under drive sun gear |
| 19.*3 Under drive internal gear | 20.*4 Front internal gear | 21. Mid sun gear |
| 22.*1 Mid internal gear | 23. Rear sun gear | 24. Rear internal gear |
| 25. High and low reverse clutch hub | 26. Control valve with TCM | 27. Parking gear |
| 28. Adapter case | 29. Output shaft | |

*1: 6 and 22 are one unit.

*2: 9 and 18 are one unit.

*3: 10 and 19 are one unit.

*4: 15 and 20 are one unit.

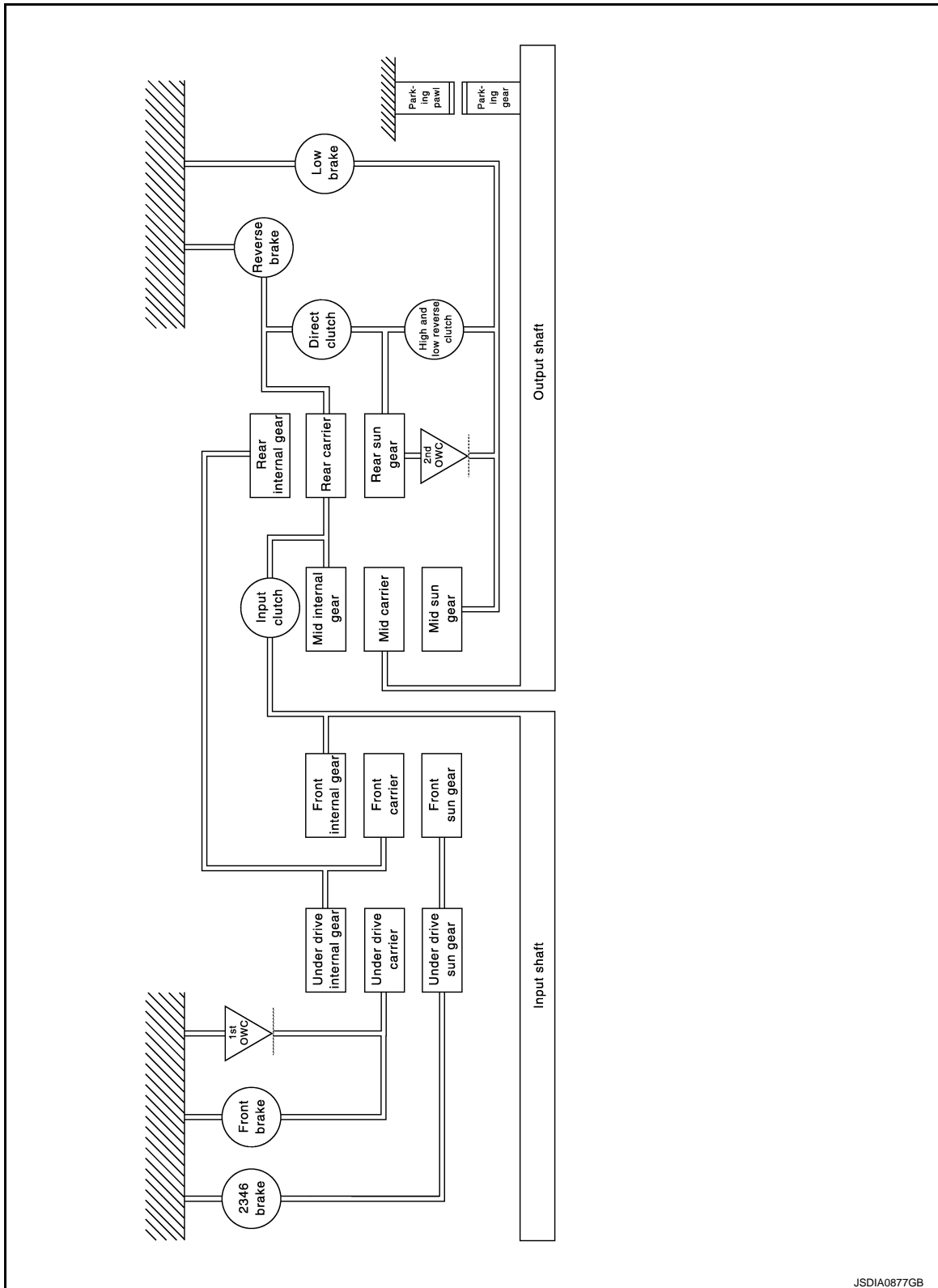
SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]

System Diagram

INFOID:000000004172970



System Description

INFOID:000000004172971

DESCRIPTION

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]

With the use of 4 sets of planetary gears, A/T enables 7-speed transmission for forward and 1-speed transmission for backward, depending on the combination of 3 sets of multiple-disc clutches, 4 sets of multiple-disc brakes and 2 sets of one-way clutches.

CLUTCH AND BAND CHART

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, DS	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.

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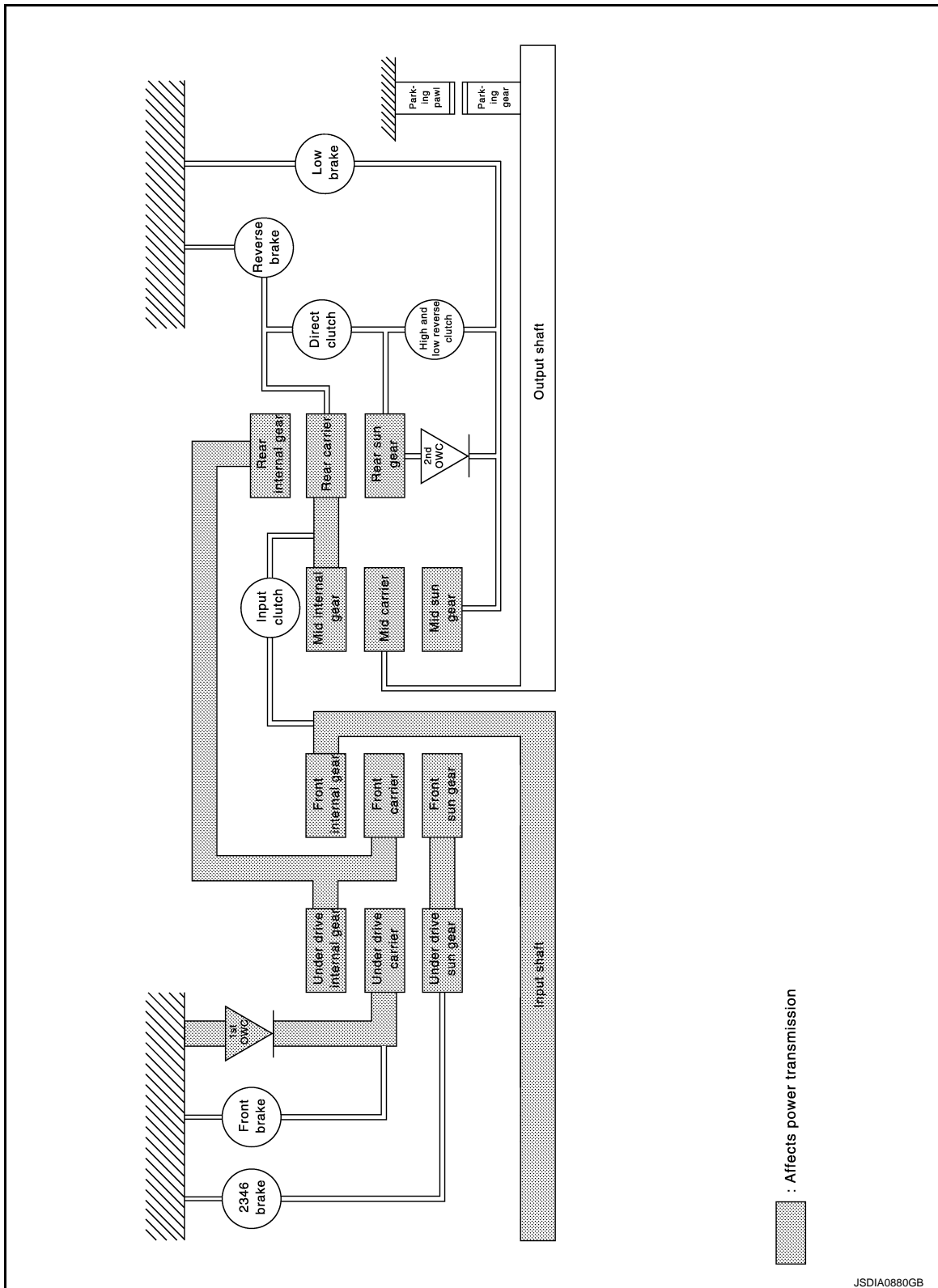
POWER TRANSMISSION

"N" Position

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]



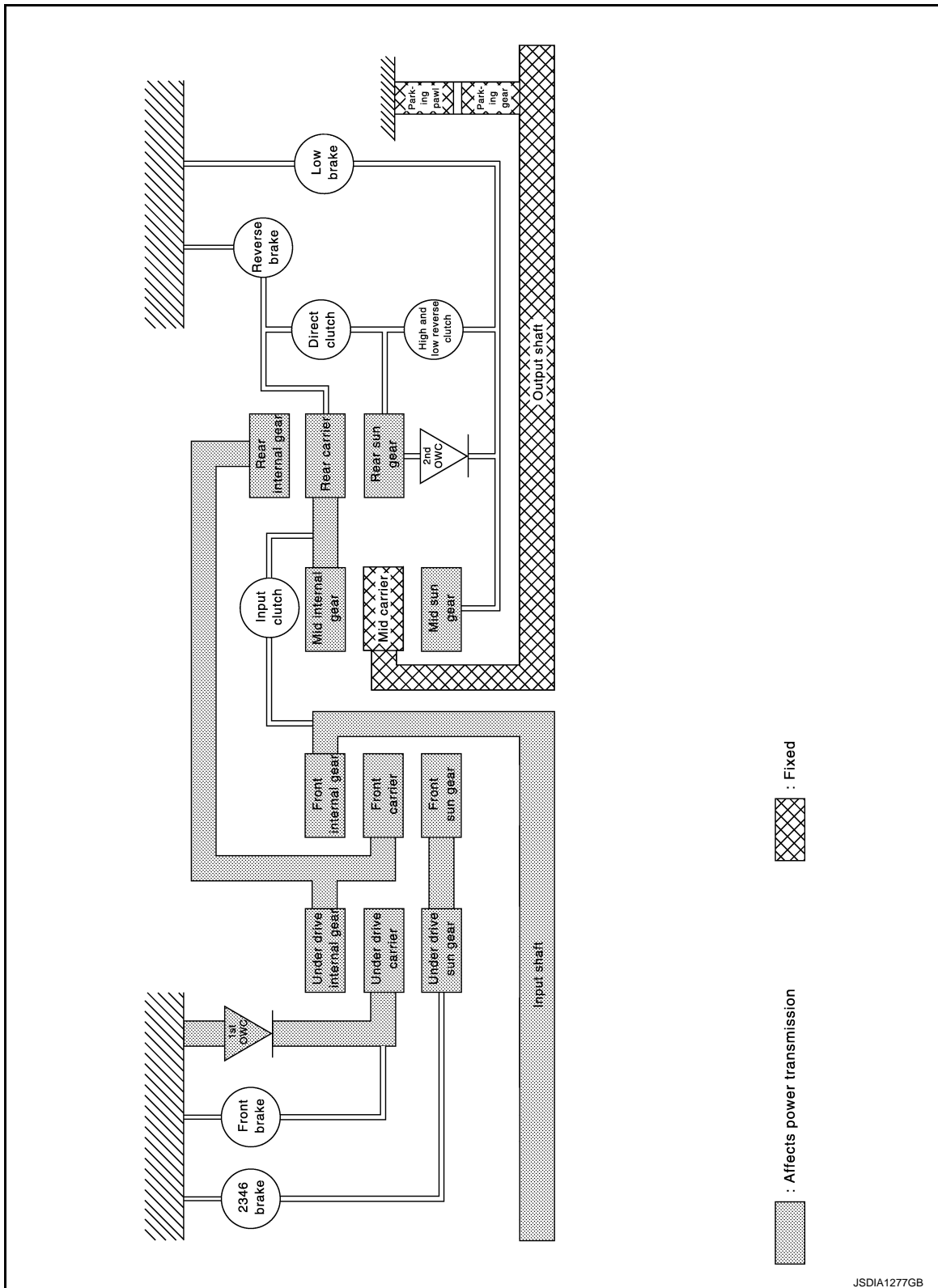
Since the low brake is released, torque from the input shaft drive is not transmitted to the output shaft.

“P” Position

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]



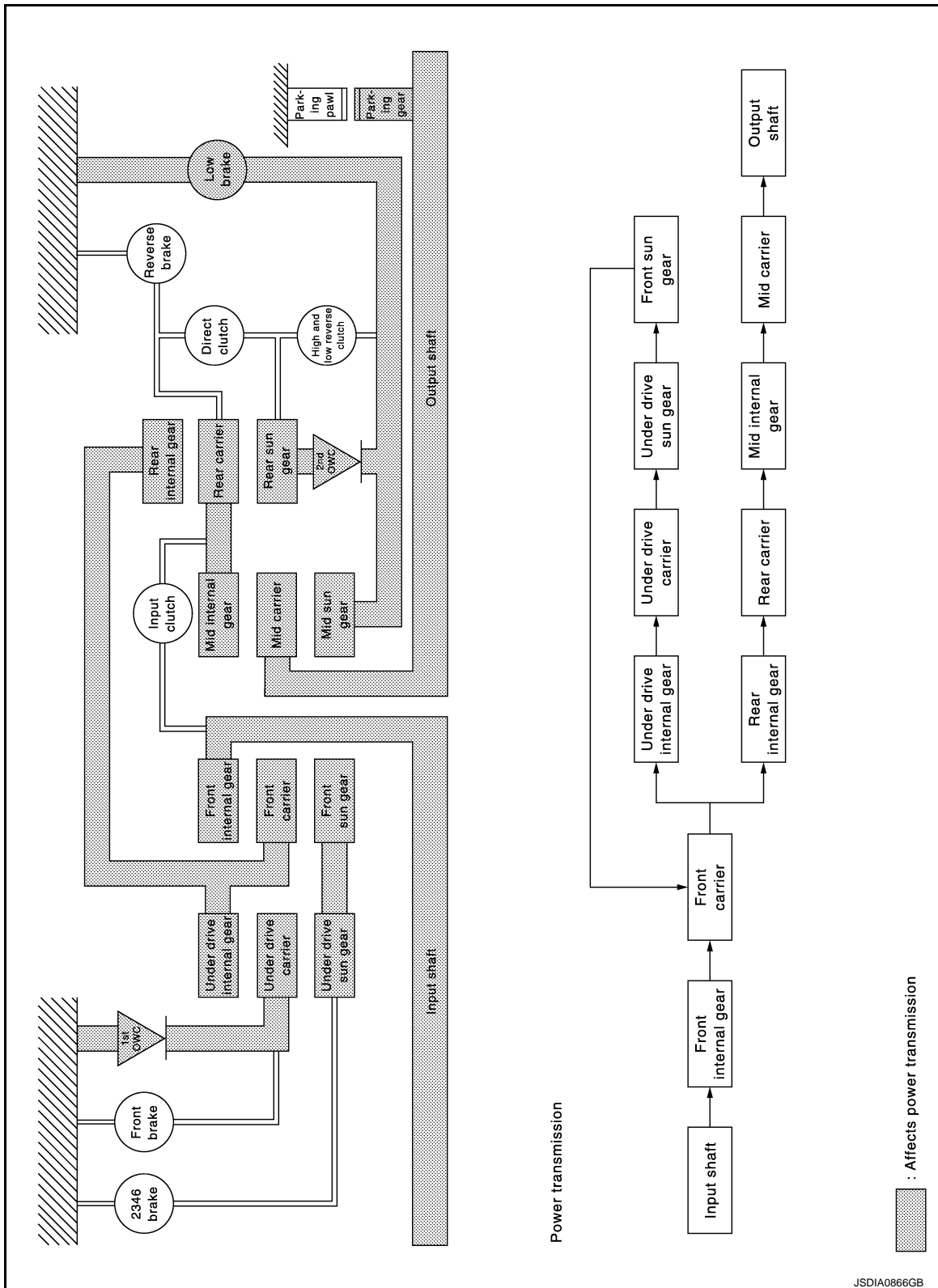
- The same as for the “N” position, since the low brake is released, so torque from the input shaft drive is not transmitted to the output shaft.
- The parking pawl linked with the selector lever meshes with the parking gear and fastens the output shaft mechanically.

“D1” and “DS1” Positions

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]



- The 1st one-way clutch regulates counterclockwise rotation of the under drive carrier.
- The 2nd one-way clutch regulates counterclockwise rotation of the rear sun gear.
- The mid sun gear is fixed by the low brake.
- Each planetary gear enters the state described below.

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SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]

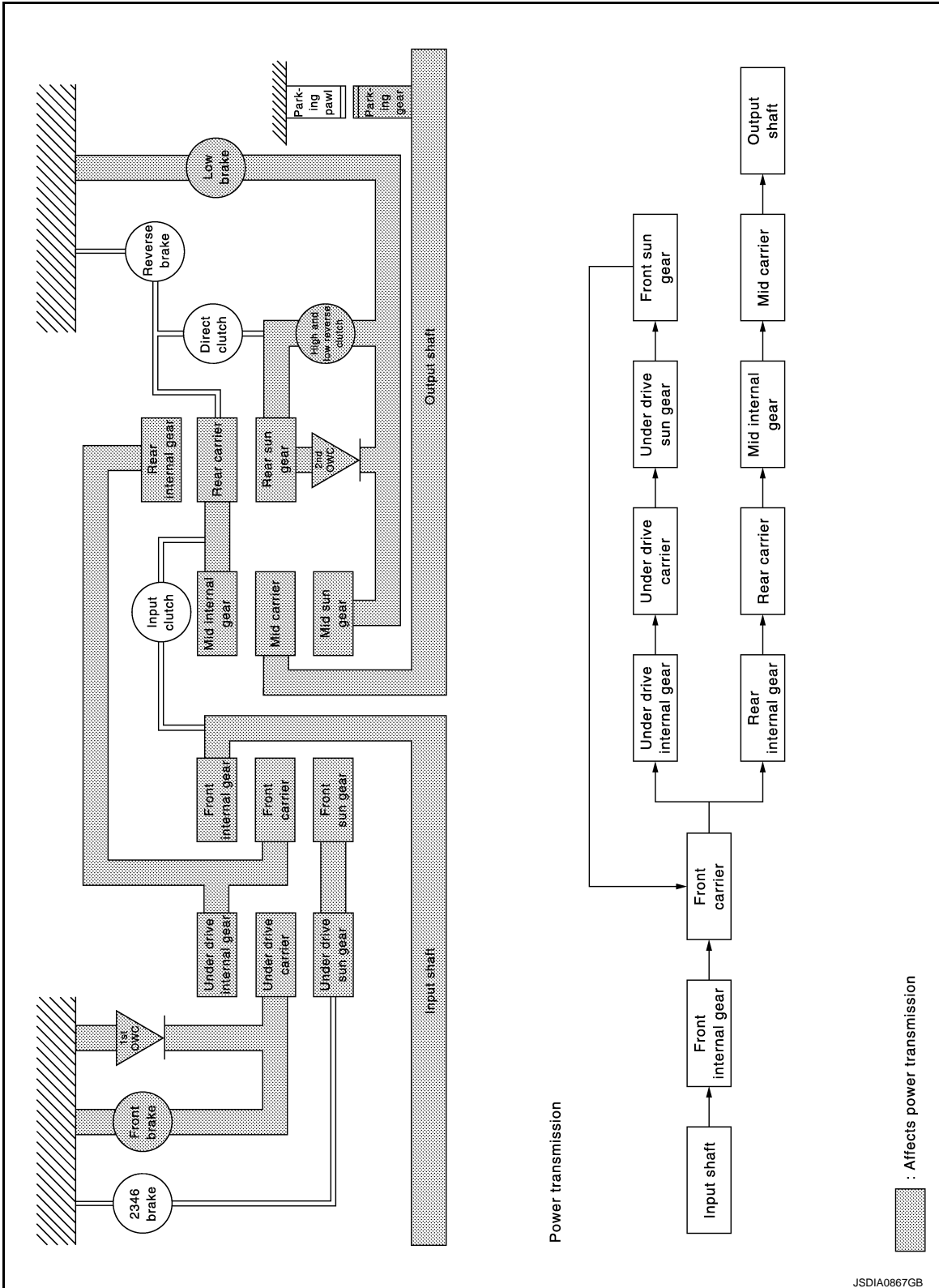
Front planetary gear			
Name	Front sun gear	Front carrier	Front internal gear
Condition	—	Output	Input
Direction of rotation	Counterclockwise revolution	Clockwise revolution	Clockwise revolution
Number of revolutions	Deceleration from front internal gear	Deceleration from front internal gear	Same number 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

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]



- The 1st one-way clutch and the front brake regulates 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 reverses clutch regulate counterclockwise rotation of the rear sun gear.
NOTE:
The high and low reverse clutch operates only while coasting.
- The mid sun gear is fixed by the low brake.

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]

- 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

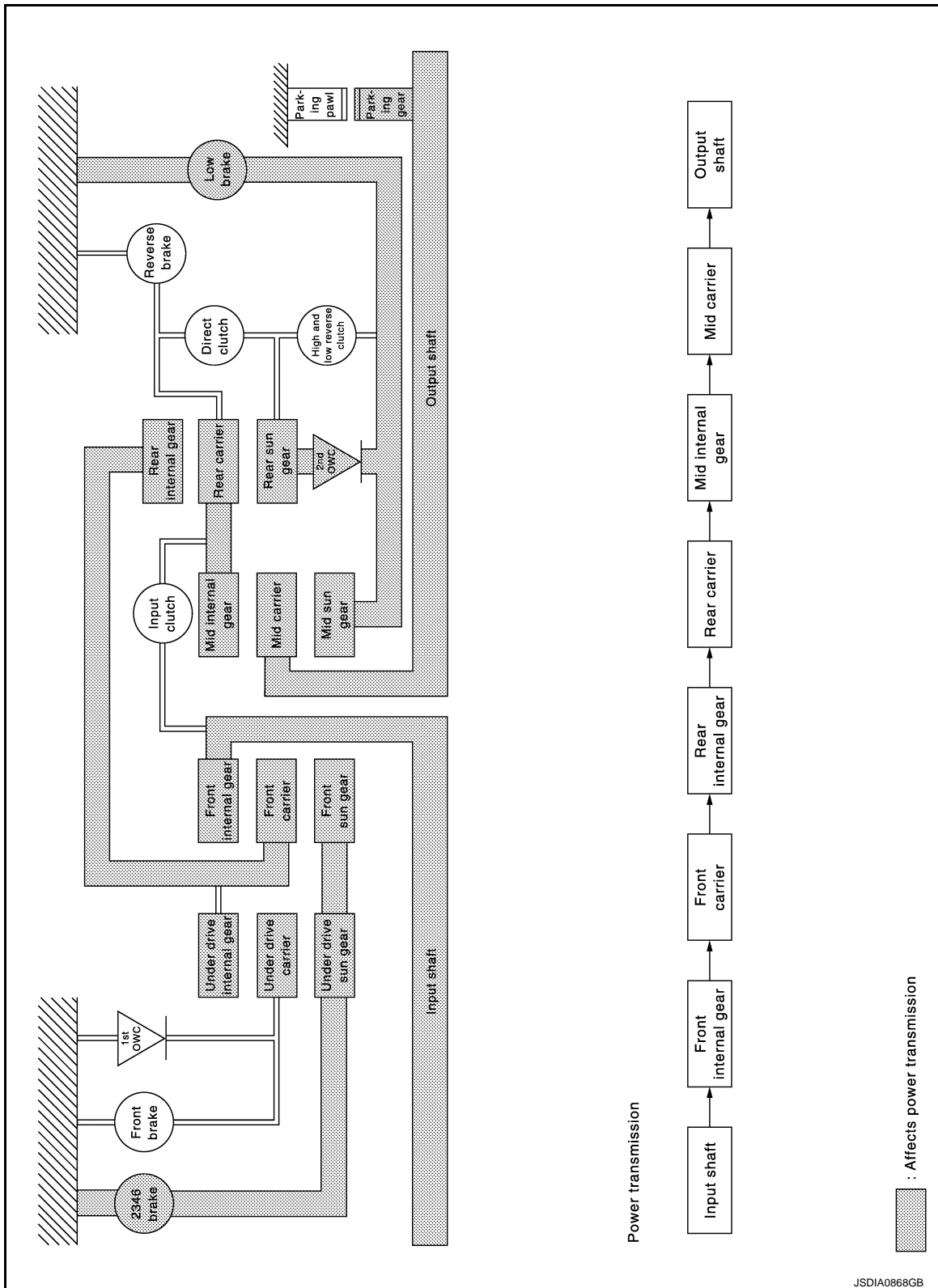
Name	Mid sun gear	Mid carrier	Mid internal gear
Condition	Fixed	Output	Input
Direction of rotation	—	Clockwise revolution	Clockwise revolution
Number of revolutions	—	Deceleration from mid internal gear	Same number of revolution as the rear carrier

“D2” and “DS2” Positions

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]



- 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.

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]

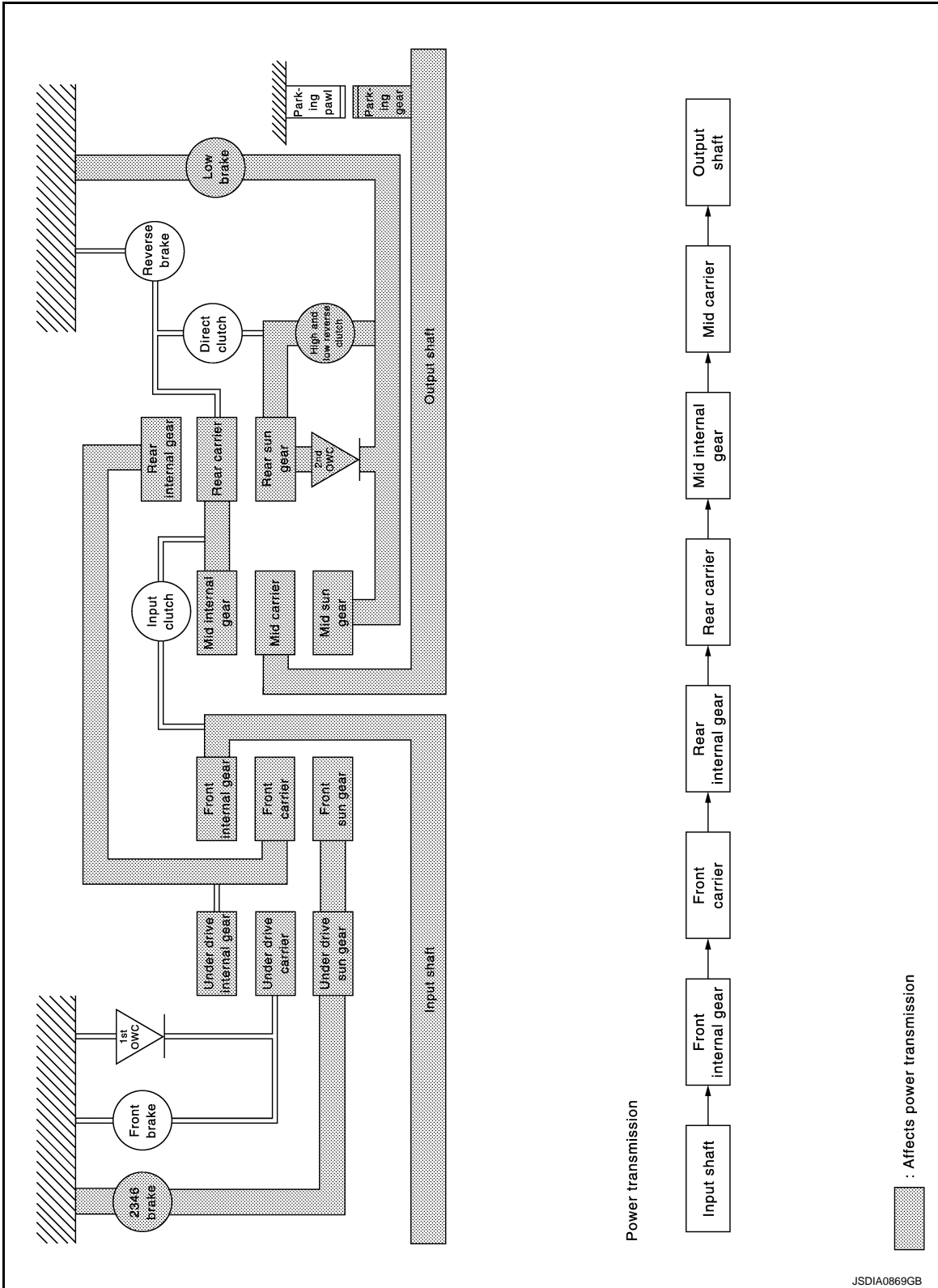
Front planetary gear			
Name	Front sun gear	Front carrier	Front internal gear
Condition	Fixed	Output	Input
Direction of rotation	—	Clockwise revolution	Clockwise revolution
Number of revolutions	—	Deceleration from front internal gear	Same number of revolution as the input shaft
Under drive planetary 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

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]



- The front sun gear and the under drive sun gear are fixed by the 2346 brake.
- The 2nd one-way clutch and the high and low reverse clutch regulates counterclockwise rotation of the rear sun gear.

NOTE:

The high and low reverse clutch operates only while coasting.

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

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

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]

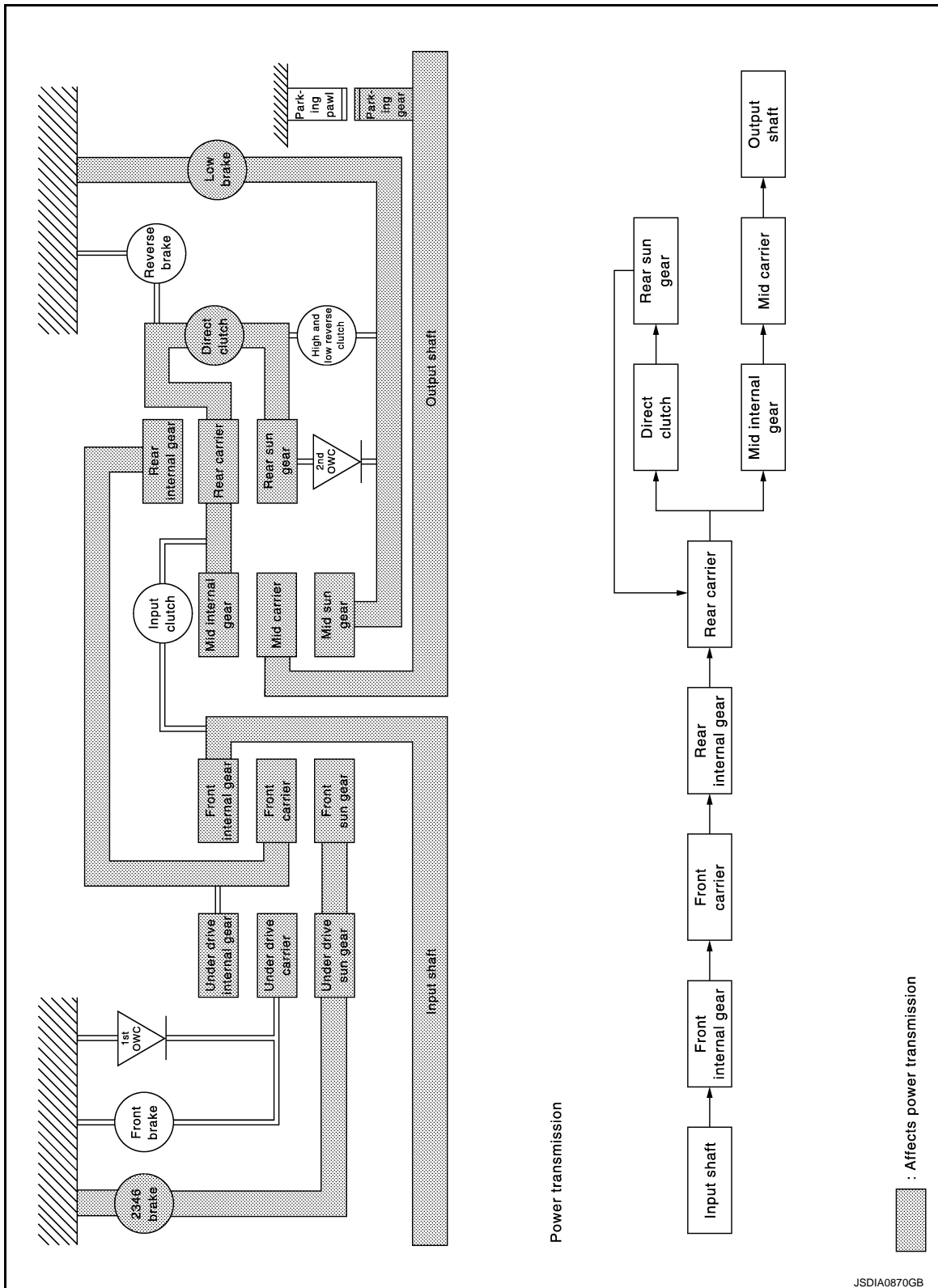
Front planetary gear			
Name	Front sun gear	Front carrier	Front internal gear
Condition	Fixed	Output	Input
Direction of rotation	—	Clockwise revolution	Clockwise revolution
Number of revolutions	—	Deceleration from front internal gear	Same number of revolution as the input shaft
Under drive planetary 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”, “DS3” and “M3” Positions

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]



- The front sun gear and the under drive sun gear are fixed by the 2346 brake.
- The direct clutch gets engaged and connects the rear sun gear with the rear carrier.
- The mid sun gear is fixed by the low brake.
- Each planetary gear enters the state described below.

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

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]

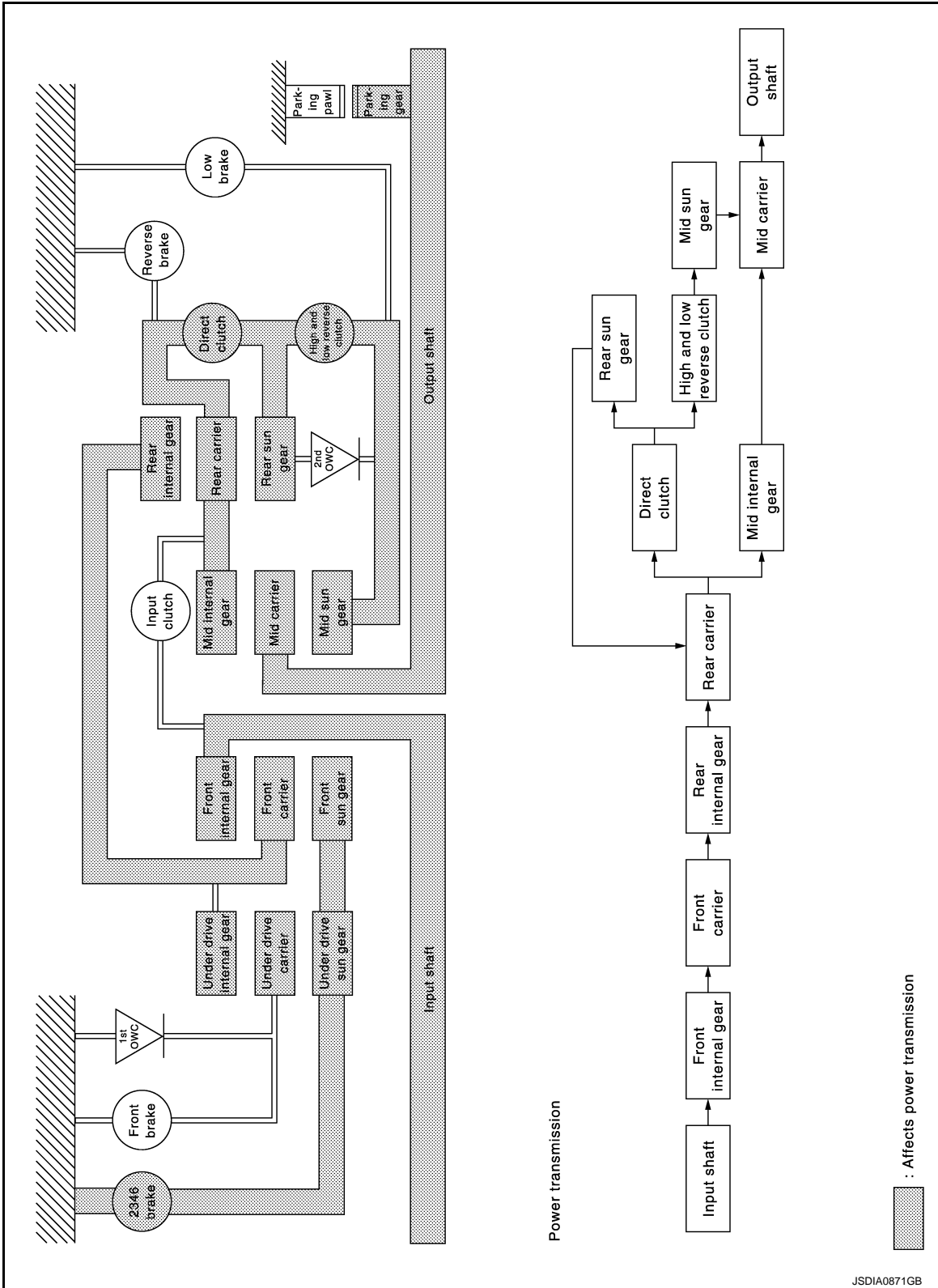
Front planetary gear			
Name	Front sun gear	Front carrier	Front internal gear
Condition	Fixed	Output	Input
Direction of rotation	—	Clockwise revolution	Clockwise revolution
Number of revolutions	—	Deceleration from front internal gear	Same number of revolution as the input shaft
Under drive planetary 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”, “DS4” and “M4” Positions

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]



- The front sun gear and the under drive sun gear are fixed by the 2346 brake.
- The direct clutch gets engaged and connects the rear sun gear with the rear carrier.
- The high and low reverse clutch gets engaged and connects the rear sun gear with the mid sun gear.
- Each planetary gear enters the state described below.

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SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]

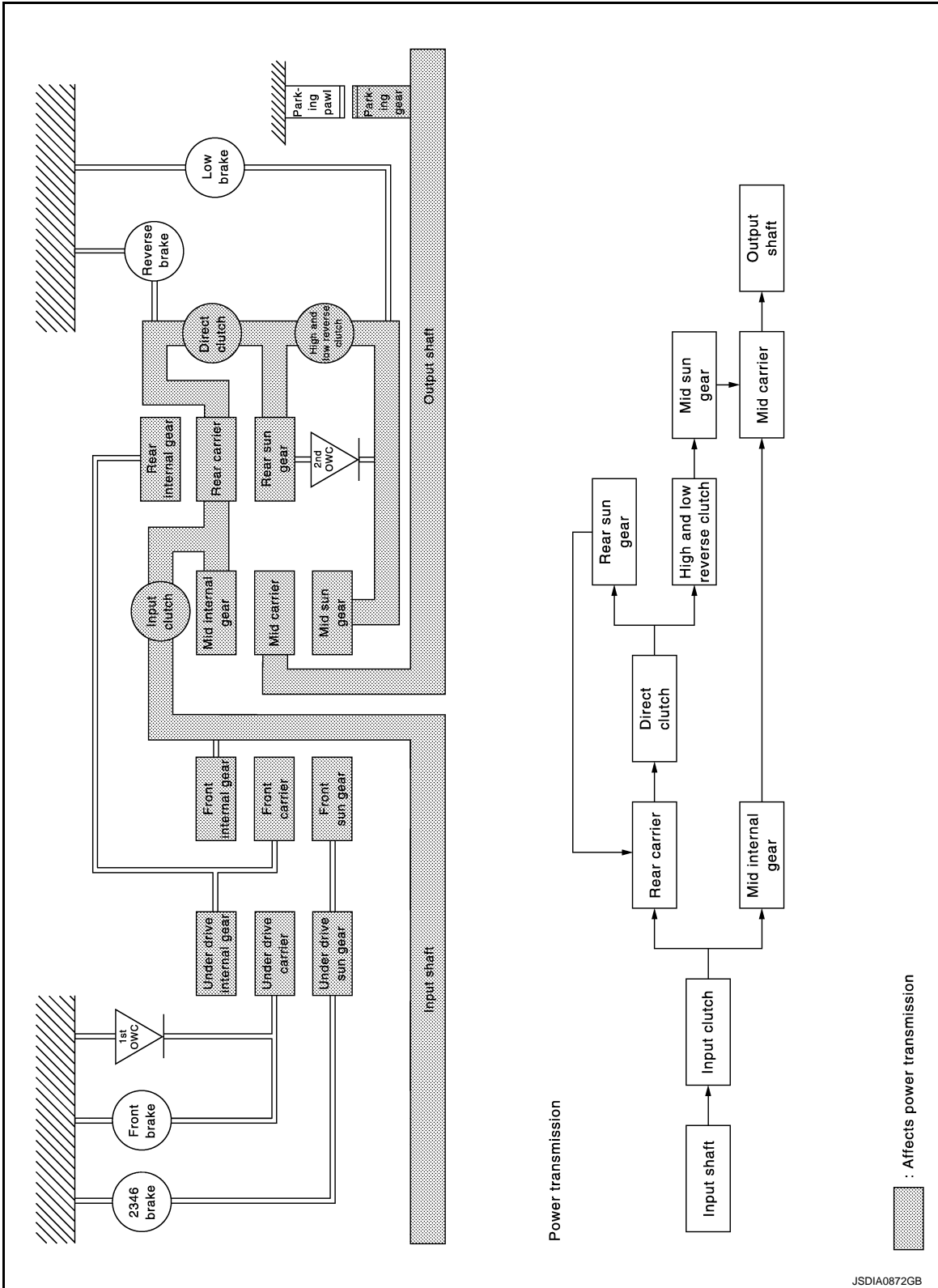
Front planetary gear			
Name	Front sun gear	Front carrier	Front internal gear
Condition	Fixed	Output	Input
Direction of rotation	—	Clockwise revolution	Clockwise revolution
Number of revolutions	—	Deceleration from front internal gear	Same number of revolution as the input shaft
Under drive planetary 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”, “DS5” and “M5” Positions

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]



- 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.

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]

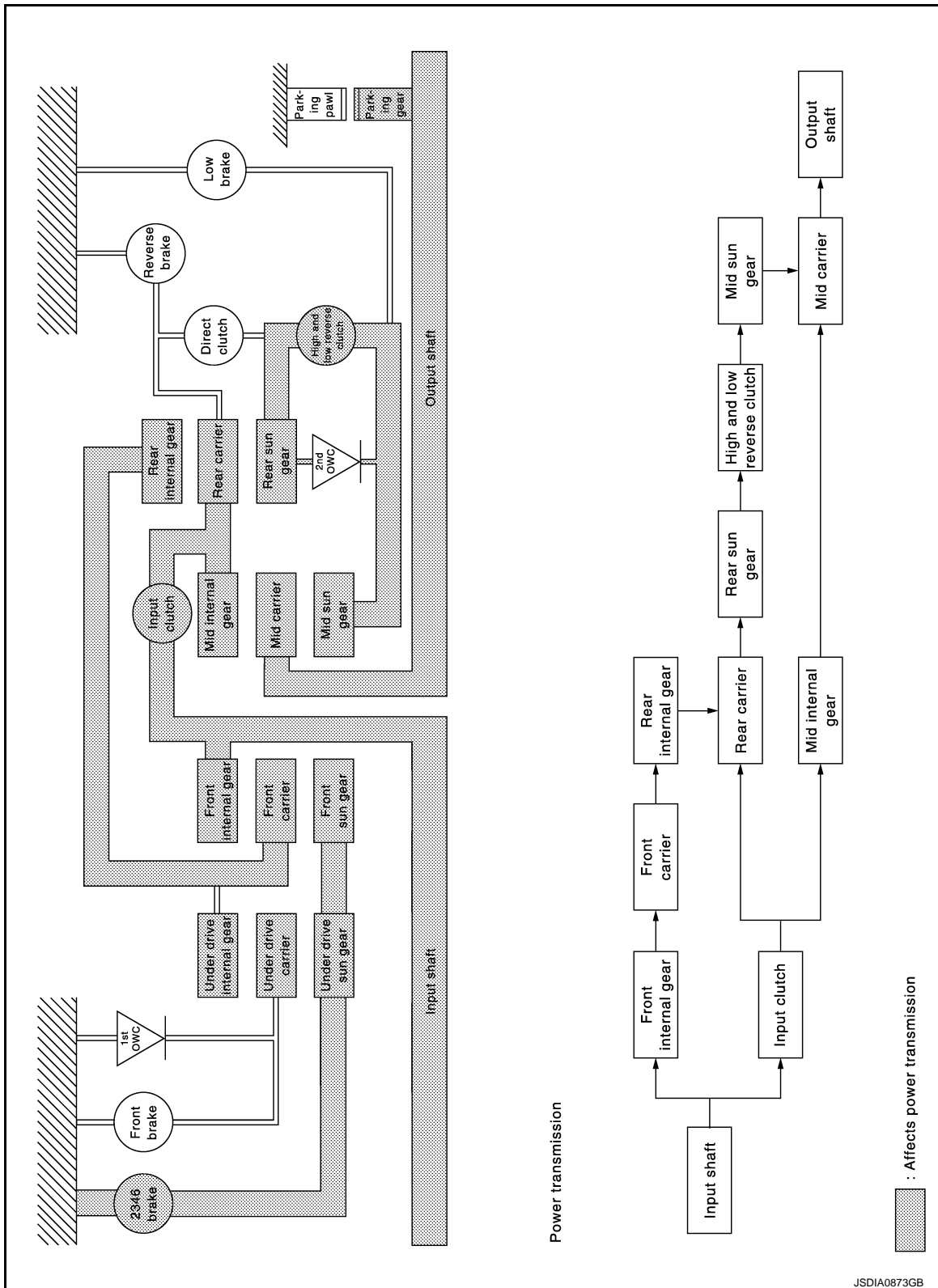
Rear planetary gear			
Name	Rear sun gear	Rear carrier	Rear internal gear
Condition	—	input/Output	—
Direction of rotation	Clockwise revolution	Clockwise revolution	Clockwise revolution
Number of revolutions	Same number of revolution as the rear carrier	Same number of revolution as the input shaft	Same 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”, “DS6” and “M6” Positions

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]



- The front sun gear and the under drive sun gear are fixed by the 234/6 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.

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]

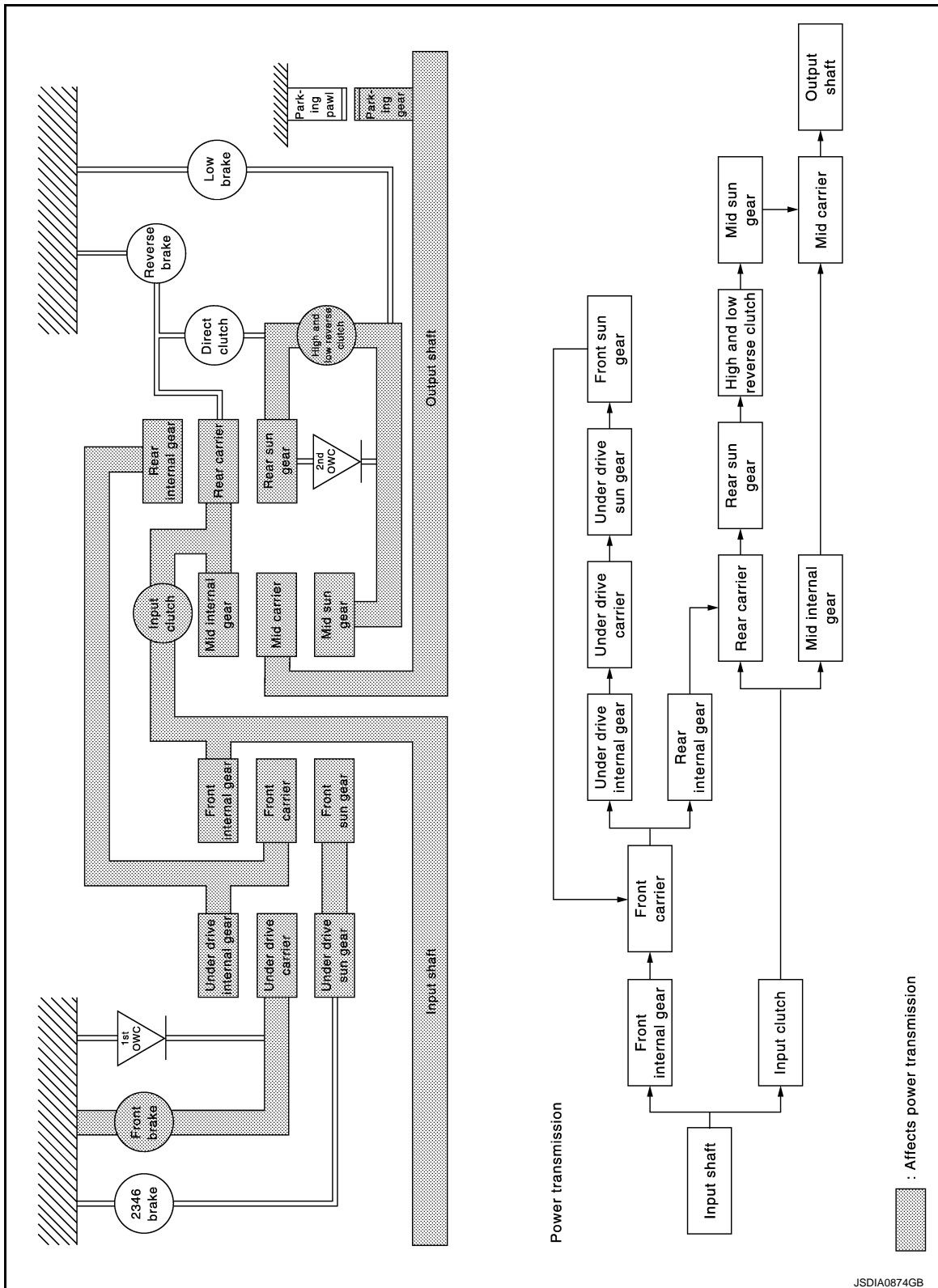
Front planetary gear			
Name	Front sun gear	Front carrier	Front internal gear
Condition	Fixed	Output	Input
Direction of rotation	—	Clockwise revolution	Clockwise revolution
Number of revolutions	—	Deceleration from front internal gear	Same number of revolution as the input shaft
Rear planetary gear			
Name	Rear sun gear	Rear carrier	Rear internal gear
Condition	—	Input/Output	Input
Direction of rotation	Clockwise revolution	Clockwise revolution	Clockwise revolution
Number of revolutions	Acceleration from rear carrier	Same number of revolution as the input shaft	Same number of revolution as the front carrier
Mid planetary gear			
Name	Mid sun gear	Mid carrier	Mid internal gear
Condition	—	Output	Input
Direction of rotation	Clockwise revolution	Clockwise revolution	Clockwise revolution
Number of revolutions	Acceleration from mid internal gear	Acceleration from mid internal gear	Same number of revolution as the input shaft

“D7”, “DS7” and “M7” Positions

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]



- The under drive carrier is fixed by the front brake.
- The input clutch gets engaged and connects the mid internal gear with the rear carrier.
- The high and low reverse clutch gets engaged and connects the rear sun gear with the mid sun gear.
- Each planetary gear enters state described below.

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]

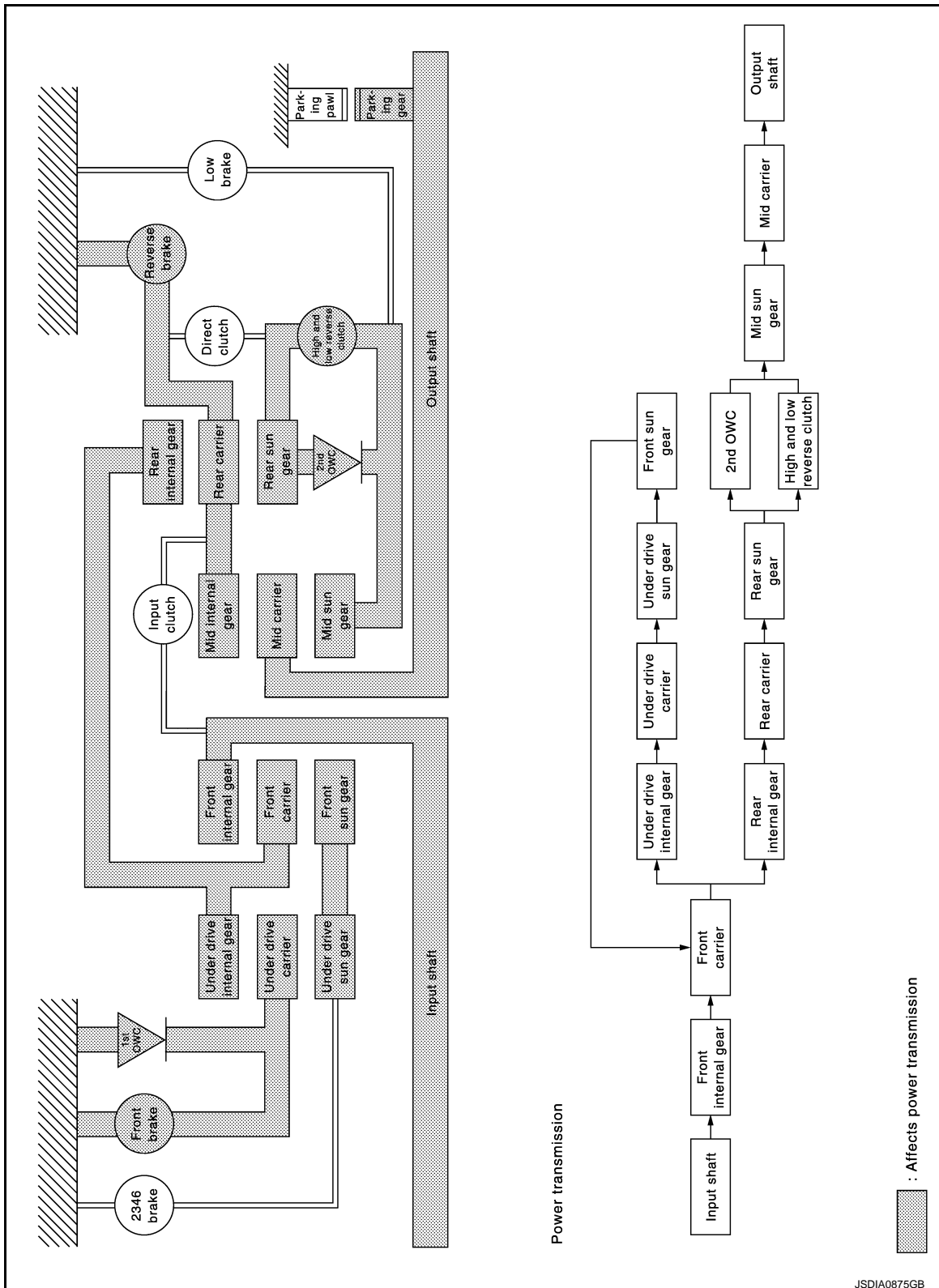
Front planetary gear			
Name	Front sun gear	Front carrier	Front internal gear
Condition	—	Output	Input
Direction of rotation	Counterclockwise revolution	Clockwise revolution	Clockwise revolution
Number of revolutions	Deceleration from front internal gear	Deceleration from front internal gear	Same number 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

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]



- The 1st one-way clutch and the front brake regulates counterclockwise rotation of the under drive carrier.

NOTE:

The front brake operates at the fixed speed or less.

- The rear carrier and the mid internal gear are fixed by the reverse brake.
- The mid sun gear rotates at the same speed as the rear sun gear by operation of the 2nd one-way clutch and the high and low reverse clutch.

NOTE:

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

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]

- 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	—

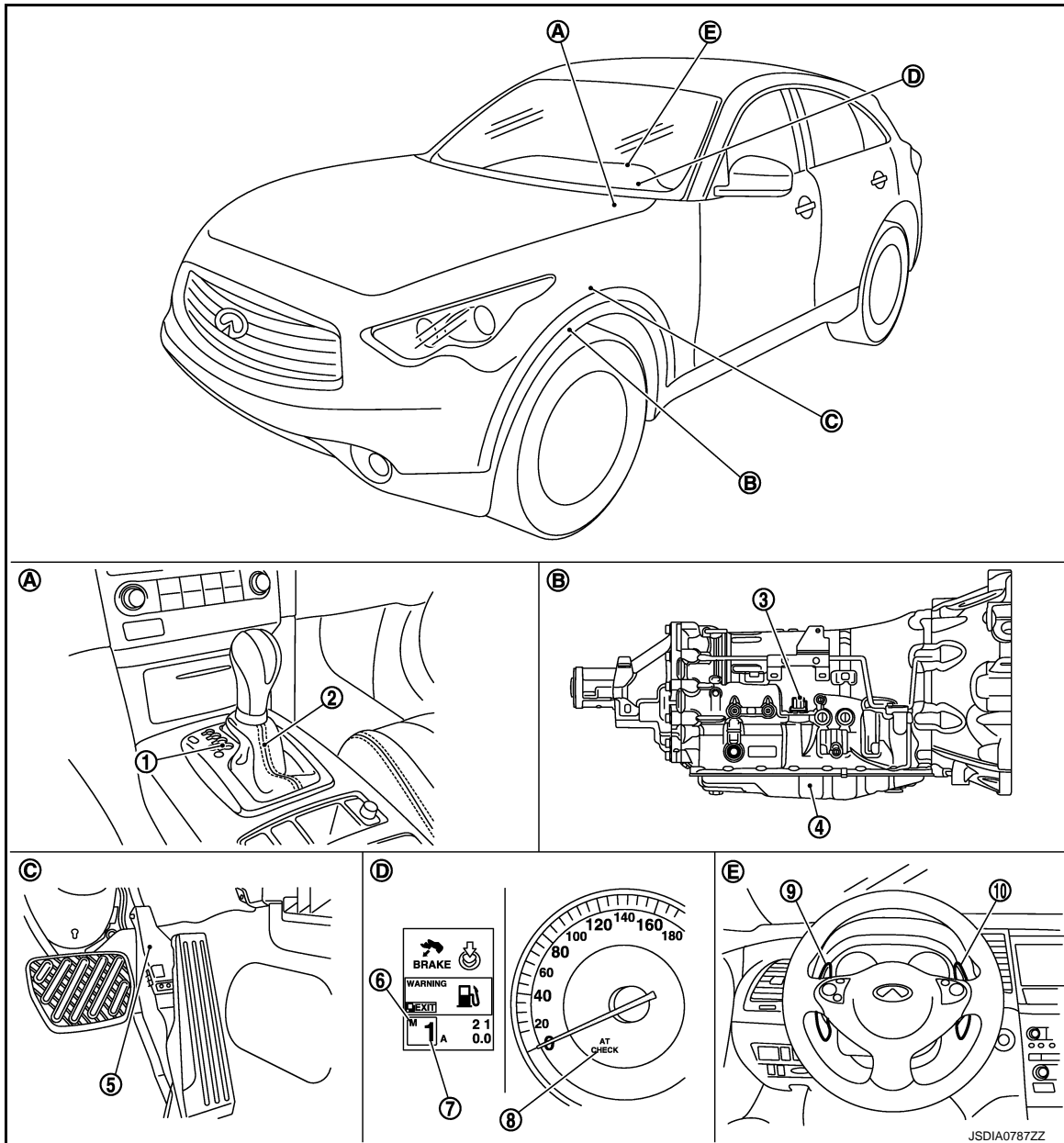
SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]

Component Parts Location

INFOID:000000005151398



- | | | |
|--------------------------------------|--------------------------------------|--------------------------------|
| 1. Selector lever position indicator | 2. A/T shift selector assembly | 3. A/T assembly connector |
| 4. Control valve with TCM* | 5. Accelerator pedal position sensor | 6. Manual mode indicator |
| 7. Shift position indicator | 8. A/T CHECK indicator lamp | 9. Paddle shifter (shift-down) |
| 10. Paddle shifter (shift-up) | | |
| A. Center console | B. A/T assembly | C. Accelerator pedal |
| D. Combination meter | E. Steering wheel | |

NOTE:

- The following components are included in A/T shift selector assembly.
 - Manual mode select switch
 - Manual mode position select switch
 - Shift position switch
- The following components are included in control valve with TCM.
 - TCM
 - Input speed sensor 1, 2

SHIFT MECHANISM

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]

- Output speed sensor
- A/T fluid temperature sensor
- Transmission range switch
- Direct clutch solenoid valve
- High and low reverse clutch solenoid valve
- Input clutch solenoid valve
- Front brake solenoid valve
- Low brake solenoid valve
- Anti-interlock solenoid valve
- 2346 brake solenoid valve
- Line pressure solenoid valve
- Torque converter clutch solenoid valve

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

Component Description

INFOID:000000004040659

Name of the Part (Abbreviation)	Function
Front brake (FR/B)	Fastens the under drive carrier.
Input clutch (I/C)	Connects the mid internal gear and the rear carrier.
Direct clutch (D/C)	Connects the rear carrier and the rear sun gear.
High and low reverse clutch (HLR/C)	Connects the rear sun gear and the mid sun gear.
Reverse brake (R/B)	Fastens the rear carrier.
Low brake (L/B)	Fastens the mid sun gear.
2346 brake (2346/B)	Fastens the under drive sun gear.
1st one-way clutch (1st OWC)	Allows the under drive carrier to turn freely in the forward direction but fastens it for reverse rotation.
2nd one-way clutch (2nd OWC)	Allows the rear sun gear to turn freely in the forward direction but fastens it for reverse rotation.
Torque converter	Amplifies driving force the engine, and transmits it to transmission input shaft.
Oil pump	Driven by the engine, oil pump supplies oil to torque converter, control valve assembly, and each lubricating system.

SHIFT LOCK SYSTEM

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]

SHIFT LOCK SYSTEM

System Description

INFOID:000000004040660

The selector lever cannot be shifted from the “P” position unless the brake pedal is depressed while the ignition switch is ON.

The shift lock is unlocked by the shift lock unit that is activated when the ignition switch is ON and the stop lamp switch is turned ON (brake pedal is depressed).

Therefore, the shift lock unit receives no ON signal and the shift lock remains locked if the above conditions are not fulfilled. (However, a shift operation is allowed if the shift lock release button is pressed.)

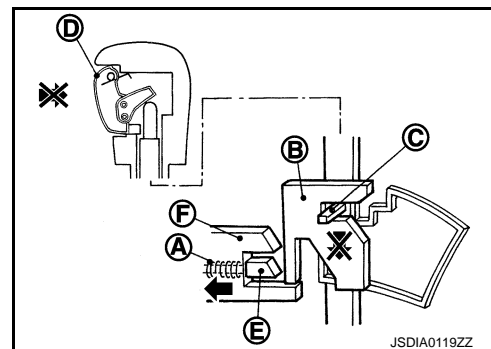
SHIFT LOCK OPERATION AT “P” POSITION

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

The shift lock solenoid (A) inside the shift lock unit is not energized if the brake pedal is not depressed while the ignition switch is ON.

The lock plate (B) lowers according to the downward movement of the position pin (C) when the selector button (D) is pressed, and presses only slider B (E) into the shift lock unit. Slider A (F) located below the lock plate prevents the downward movement of the lock plate with the spring force. The selector lever cannot be shifted from the “P” position for this reason.

However, slider A is forcibly pressed into the shift lock unit, allowing the selector lever to shift if the shift lock release button is pressed.

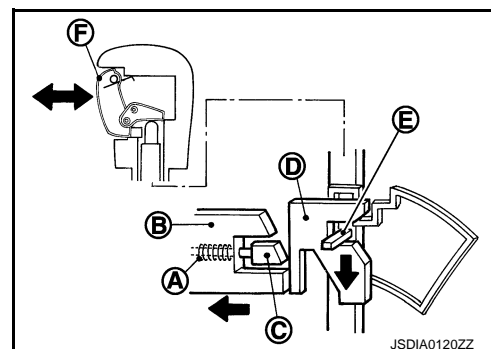


When Brake Pedal Is Depressed (Shift Operation Allowed)

The shift lock solenoid (A) inside the shift lock unit is energized and the relative positions of sliders A (B) and B (C) are maintained when the brake pedal is depressed while the ignition switch is ON.

The lock plate (D) lowers according to the downward movement of the position pin (E), thrusting away sliders A and B, when the selector button (F) is pressed.

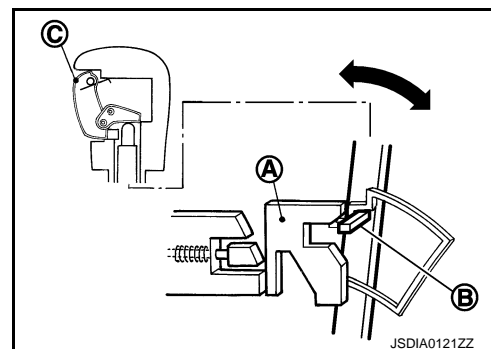
The position pin lowers to the position that allows shift operation for this reason. As a result, the selector lever can be shifted out of the P position.



OPERATION AT OTHER THAN “P” POSITION

The shift lock function will not operate at any position other than “P” because the lock plate (A) is only set for the “P” position. Accordingly, the selector lever can be shifted to any position regardless of the brake operation.

The position pin (B) enters the “P” position thrusting away the lock plate when the selector lever is shifted to the “P” position. Then, the shift mechanism is locked when the selector button (C) is released.



“P” POSITION RETAINING MECHANISM (IGNITION SWITCH LOCK)

When ignition switch is not in the ON position, power is not applied to the shift lock solenoid in the shift lock unit. This causes shift lock state, and then “P” position is retained.

When an actuating system in the shift lock unit has a malfunction, selector lever is unable to operate from the “P” position even when pressing the brake pedal with the ignition switch ON. However, when pressing the shift lock release button, slider A is forcibly pressed into the shift lock unit. This allows shift lock to be released and selector lever enables the select operation from the “P” position.

CAUTION:

Never use the shift lock release button except when the select lever is inoperative even when pressing the brake pedal with the ignition switch ON.

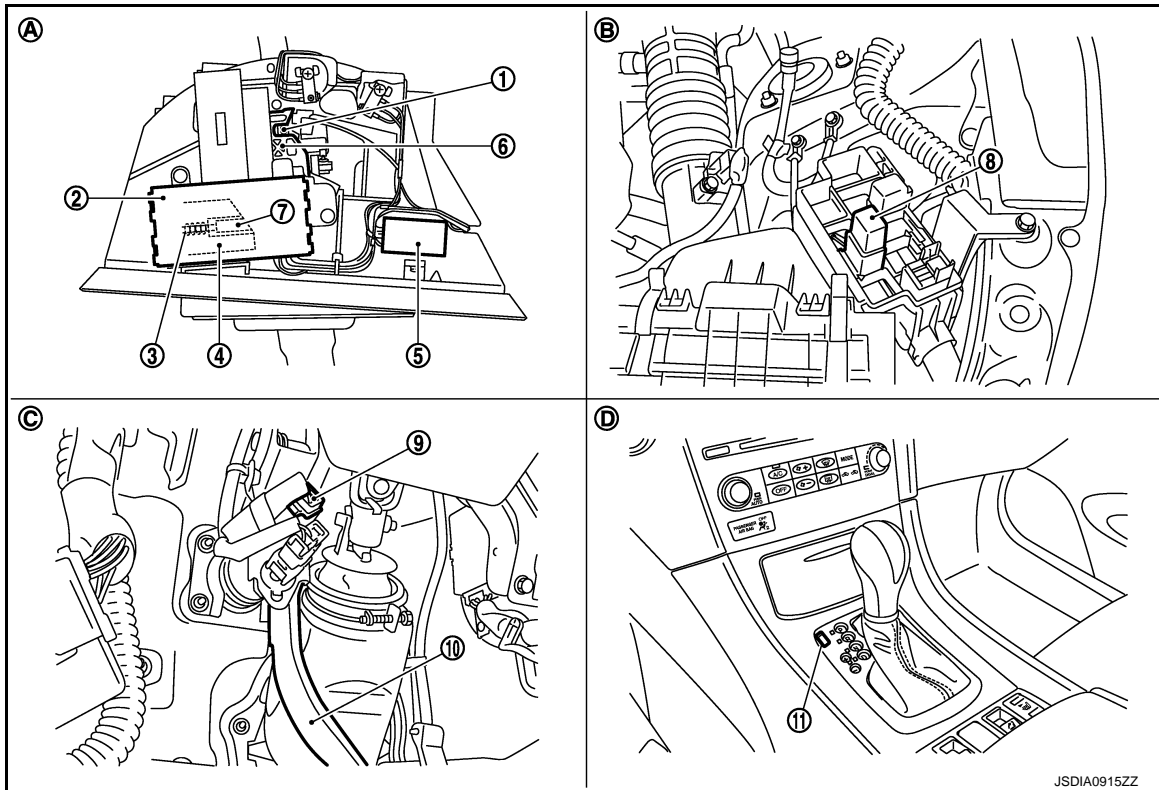
SHIFT LOCK SYSTEM

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]

Component Parts Location

INFOID:000000004040661



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|--------------------------------|---------------------------------|------------------------|
| 1. Position pin | 2. Shift lock unit | 3. Shift lock solenoid |
| 4. Slider A | 5. A/T shift selector connector | 6. Lock plate |
| 7. Slider B | 8. Shift lock relay | 9. Stop lamp switch |
| 10. Brake pedal | 11. Shift lock cover * | |
| A. A/T shift selector assembly | B. Engine room | C. Brake pedal, upper |
| D. Center console | | |

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

Component Description

INFOID:000000004040662

Component			Function
A/T shift selector assembly	Shift lock unit	Shift lock solenoid	TM-325. "Description"
		Lock plate	The lock plate restricts the position pin stroke by selector button operation according to the shift lock unit status.
		Shift lock release button	Pressing the shift lock release button cancels the shift lock forcibly.
	Position pin		The position pin, linking with the selector button, restricts the selector lever movement.
Shift lock relay			TM-325. "Description"
Stop lamp switch			

ON BOARD DIAGNOSTIC (OBD) SYSTEM

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]

ON BOARD DIAGNOSTIC (OBD) SYSTEM

Diagnosis Description

INFOID:000000004040663

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 [EC-1172, "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-706, "Diagnosis Description"](#).

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DIAGNOSIS SYSTEM (TCM)

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]

DIAGNOSIS SYSTEM (TCM)

CONSULT-III Function (TRANSMISSION)

INFOID:000000004040664

CONSULT-III 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 starts of CAN communication.
DTC & SRT confirmation	The status of system monitoring tests and the self-diagnosis status/result can be confirmed.
ECU Identification	Display the ECU identification number (part number etc.) of the selected system.

SELF-DIAGNOSTIC RESULTS

Display Items List

Refer to [TM-353, "DTC Index"](#).

DATA MONITOR

Display Items List

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 shaft revolution calculated from the pulse signal of revolution sensor.
INPUT SPEED (rpm)	X	X	▼	Displays the input shaft revolution calculated from front sun gear revolution and front carrier revolution.
F SUN GR REV (rpm)	—	—	▼	Displays the front sun gear revolution calculated from the pulse signal of input speed sensor 1.
F CARR GR REV (rpm)	—	—	▼	Displays the front carrier gear revolution 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.

DIAGNOSIS SYSTEM (TCM)

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]

Monitored item (Unit)	Monitor Item Selection			Remarks
	ECU IN-PUT SIG- NALS	MAIN SIGNALS	SELEC- TION FROM ITEM	
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.
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 revolution and output revolution.
ENGINE TORQUE (Nm)	—	—	▼	Displays the engine torque estimated value received via CAN communication.

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DIAGNOSIS SYSTEM (TCM)

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]

Monitored item (Unit)	Monitor Item Selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM ITEM	
ENG TORQUE D (Nm)	—	—	▼	Displays the engine torque estimated value reflected the requested torque of each control unit received via CAN communication.
INPUT TRQ S (Nm)	—	—	▼	Displays the input torque using for the oil pressure calculation process of shift change control.
INPUT TRQ L/P (Nm)	—	—	▼	Displays the input torque using for the oil pressure calculation process of line pressure control.
TRGT PRES L/P (kPa, kg/cm ² or psi)	—	—	▼	Displays the target oil pressure value of torque converter clutch solenoid valve calculated by the oil pressure calculation process of lock-up control.
TRGT PRES TCC (kPa, kg/cm ² or psi)	—	—	▼	Displays the target oil pressure value of torque converter clutch solenoid valve calculated by the oil pressure calculation process of shift change control.
TRGT PRES L/B (kPa, kg/cm ² or psi)	—	—	▼	Displays the target oil pressure value of low brake solenoid valve calculated by the oil pressure calculation process of shift change control.
TRGT PRE FR/B (kPa, kg/cm ² or psi)	—	—	▼	Displays the target oil pressure value of front brake solenoid valve calculated by the oil pressure calculation process of shift change control.
TRG PRE HLR/C (kPa, kg/cm ² or psi)	—	—	▼	Displays the target oil pressure value of high and low reverse clutch solenoid valve calculated by the oil pressure calculation process of shift change control.
TRGT PRES I/C (kPa, kg/cm ² or psi)	—	—	▼	Displays the target oil pressure value of input clutch solenoid valve calculated by the oil pressure calculation process of shift change control.
TRGT PRES D/C (kPa, kg/cm ² or psi)	—	—	▼	Displays the target oil pressure value of direct clutch solenoid valve calculated by the oil pressure calculation process of shift change control.
TRG PRE 2346/B (kPa, kg/cm ² or psi)	—	—	▼	Displays the target oil pressure value of 2346 brake solenoid valve calculated by the oil pressure calculation process of shift change control.
SHIFT PATTERN	—	—	▼	Displays the gear change data using the shift pattern control.
VEHICLE SPEED (km/h or mph)	—	—	▼	Displays the vehicle speed for control using the control of TCM.
RANGE SW 4 (ON/OFF)	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	—	▼	Displays the operation status of paddle shifter (down switch).
SFT UP ST SW (ON/OFF)	X	—	▼	Displays the operation status of paddle shifter (up switch).
DOWN SW LEVER (ON/OFF)	X	—	▼	Displays the operation status of selector lever (down switch).

DIAGNOSIS SYSTEM (TCM)

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]

Monitored item (Unit)	Monitor Item Selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM ITEM	
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.
DS RANGE (ON/OFF)	—	—	▼	Displays whether it is the DS mode.
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.
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)	—	—	▼	In "Final fail-safe" mode, displays whether the identified malfunction point judged by TCM is the related parts of low brake.
HC/IC/FRB PARTS (FAIL/NOTFAIL)	—	—	▼	In "Final fail-safe" mode, 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)	—	—	▼	In "Final fail-safe" mode, displays whether the identified malfunction point judged by TCM is the related parts of input clutch or front brake.
HLR/C PARTS (FAIL/NOTFAIL)	—	—	▼	In "Final fail-safe" mode, 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.

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DIAGNOSIS SYSTEM (TCM)

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]

Monitored item (Unit)	Monitor Item Selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM ITEM	
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)	—	—	▼	<ul style="list-style-type: none"> Displays the transmission status of ATF temperature signal transmitted via CAN communication. Not mounted but displayed.
MANU MODE IND (ON/OFF)	—	—	▼	Displays the transmission status of manual mode signal transmitted via CAN communication.
ON OFF SOL MON (ON/OFF)	—	—	▼	Monitors the command value from TCM to the anti-interlock solenoid, and displays the monitor status.
START RLY MON (ON/OFF)	—	—	▼	Monitors the command value from TCM to the starter relay, and displays the monitor status.
ON OFF SOL (ON/OFF)	—	—	▼	Displays the command status from TCM to anti-interlock solenoid.
SLCT LVR POSI	—	X	▼	Displays the shift positions recognized by TCM.
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)	—	—	▼	In “Final fail-safe” mode, displays whether the identified malfunction point judged by TCM is the related parts of direct clutch.
FR/B PARTS (FAIL/NOTFAIL)	—	—	▼	In “Final fail-safe” mode, displays whether the identified malfunction point judged by TCM is the related parts of front brake.
2346/B PARTS (FAIL/NOTFAIL)	—	—	▼	In “Final fail-safe” mode, displays whether the identified malfunction point judged by TCM is the related parts of 2346 brake.
2346B/DC PARTS (FAIL/NOTFAIL)	—	—	▼	In “Final fail-safe” mode, displays whether the identified malfunction point judged by TCM is the related parts of 2346 brake or direct clutch.

DTC & SRT CONFIRMATION

DTC Work Support

DIAGNOSIS SYSTEM (TCM)

< SYSTEM DESCRIPTION >

[7AT: RE7R01B (VK50VE)]

Item	Description	Check item
1ST GR FNCTN P0731	Following items for "1GR function 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 • Output speed sensor • Input speed sensor 1, 2 • Each clutch and brake • Hydraulic control circuit
2ND GR FNCTN P0732	Following items for "2GR function 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 function 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 function 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 function 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 function 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 function ratio" can be confirmed. • Self-diagnosis status (whether the diagnosis is being performed or not) • Self-diagnostic results (OK or NG)	
TCC SOL FNCTN 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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DTC/CIRCUIT DIAGNOSIS

U1000 CAN COMM CIRCUIT

Description

INFOID:0000000004040665

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

DTC Logic

INFOID:0000000004040666

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
U1000	CAN Communication Line	TCM is not transmitting or receiving CAN communication signal for 2 seconds or more.	<ul style="list-style-type: none"> Harness or connectors (CAN communication line is open or shorted.) TCM

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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

>> GO TO 2.

2.CHECK DTC DETECTION

With CONSULT-III

1. Start the engine.
2. Run engine for at least 2 consecutive seconds at idle speed.
3. Perform "Self Diagnostic Results" mode for "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III"

Is "U1000" detected?

- YES >> Go to [TM-270. "Diagnosis Procedure"](#).
 NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000004040667

Go to [LAN-22. "Trouble Diagnosis Flow Chart"](#).

P0615 STARTER RELAY

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

P0615 STARTER RELAY

Description

INFOID:000000004040668

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

DTC Logic

INFOID:000000004040669

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P0615	Starter Relay Circuit	Set DTC if the starter monitor value is OFF when the ignition switch is ON at the "P" and "N" positions.	<ul style="list-style-type: none">• Harness or connectors (Starter relay and TCM circuit is open or shorted.)• Starter relay circuit

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-III

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" mode for "TRANSMISSION".

Is "P0615" detected?

- YES >> Go to [TM-271, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000004040670

1. CHECK STARTER RELAY SIGNAL

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

IPDM E/R connector			Condition	Voltage (Approx.)
Connector	Terminal			
E5	30	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-10, "Wiring Diagram - STARTING SYSTEM -"](#).
NO >> GO TO 2.

2. CHECK HARNESS BETWEEN A/T ASSEMBLY AND IPDM E/R (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 vehicle side harness connector terminal and IPDM E/R vehicle side harness connector terminal.

P0615 STARTER RELAY

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

A/T assembly vehicle side harness connector		IPDM E/R vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F51	9	E5	30	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace damaged parts.

3.CHECK HARNESS BETWEEN A/T ASSEMBLY AND IPDM E/R (PART 2)

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

A/T assembly vehicle side harness connector		Ground	Continuity
Connector	Terminal		
F51	9		Not existed

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace damaged parts.

4.CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to [TM-384, "Exploded View"](#).

NO >> Repair or replace damaged parts.

P0705 TRANSMISSION RANGE SWITCH A

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

P0705 TRANSMISSION RANGE SWITCH A

Description

INFOID:000000004040671

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

DTC Logic

INFOID:000000004040672

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P0705	Transmission Range Sensor A Circuit (PRNDL Input)	Transmission range switch signals input with impossible pattern.	<ul style="list-style-type: none">• Harness or connectors (Transmission range switches 1, 2, 3, 4 and TCM circuit is open or shorted.)• Transmission range switches 1, 2, 3 and 4

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" 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-III

1. Start the engine.
2. Select "ACCELE POSI" and "VHCL/S SE-A/T" with "Data Monitor".
3. Shift the selector lever throughout the entire shift position from "P" to "D". (Hold the selector lever at each position for 2 seconds or more)
4. Drive vehicle and maintain the following conditions for 2 seconds or more.

ACCELE POSI : More than 1.0/8

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

5. Perform "Self Diagnostic Results" mode for "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P0705" detected?

YES >> Go to [TM-273, "Diagnosis Procedure"](#).

NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000004040673

1. CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to [TM-384, "Exploded View"](#).

NO >> Repair or replace damaged parts.

P0710 TRANSMISSION FLUID TEMPERATURE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

P0710 TRANSMISSION FLUID TEMPERATURE SENSOR A

Description

INFOID:0000000004040674

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

DTC Logic

INFOID:0000000004040675

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...		Possible cause
P0710	Transmission Fluid Temperature Sensor A Circuit	Set DTC when the A/T fluid temperature sensor is -40°C (-40°F) or less for 5 seconds while driving the vehicle at the vehicle speed 10 km/h (7 MPH) or more.		<ul style="list-style-type: none">• Harness or connectors (Sensor circuit is open.)• A/T fluid temperature sensor
		Set DTC when the A/T fluid temperature sensor is 180°C (356°F) or more for 5 seconds.		<ul style="list-style-type: none">• Harness or connectors (Sensor circuit is short.)• A/T fluid temperature sensor
		Set DTC when the A/T fluid temperature sensor is in the following conditions while driving the vehicle at the vehicle speed 10 km/h (7 MPH) or more.		<ul style="list-style-type: none">• Harness or connectors (Sensor circuit is stuck.)• A/T fluid temperature sensor
		For 4 minutes	: $15^{\circ}\text{C} - 20^{\circ}\text{C}$ ($59^{\circ}\text{F} - 68^{\circ}\text{F}$)	
			: $10^{\circ}\text{C} - 15^{\circ}\text{C}$ ($50^{\circ}\text{F} - 59^{\circ}\text{F}$)	
			: $5^{\circ}\text{C} - 10^{\circ}\text{C}$ ($41^{\circ}\text{F} - 50^{\circ}\text{F}$)	
			: $0^{\circ}\text{C} - 5^{\circ}\text{C}$ ($32^{\circ}\text{F} - 41^{\circ}\text{F}$)	
		For 7 minutes	: $-5^{\circ}\text{C} - 0^{\circ}\text{C}$ ($23^{\circ}\text{F} - 32^{\circ}\text{F}$)	
			: $-10^{\circ}\text{C} - -5^{\circ}\text{C}$ ($14^{\circ}\text{F} - 23^{\circ}\text{F}$)	
			: $-15^{\circ}\text{C} - -10^{\circ}\text{C}$ ($5^{\circ}\text{F} - 14^{\circ}\text{F}$)	
			: $-20^{\circ}\text{C} - -15^{\circ}\text{C}$ ($-4^{\circ}\text{F} - 5^{\circ}\text{F}$)	
		For 14 minutes	: $-40^{\circ}\text{C} - -20^{\circ}\text{C}$ ($-40^{\circ}\text{F} - -4^{\circ}\text{F}$)	

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

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-III

1. Start the engine.
2. Select "SLCT LVR POSI" and "VHCL/S SE-A/T" with "Data Monitor".
3. Drive vehicle and maintain the following conditions for 14 minutes or more.

SLCT LVR POSI : D

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

4. Perform "Self Diagnostic Results" mode for "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P0710" detected?

YES >> Go to [TM-275, "Diagnosis Procedure"](#).

P0710 TRANSMISSION FLUID TEMPERATURE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000004040676

1.CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to [TM-384, "Exploded View"](#).

NO >> Repair or replace damaged parts.

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P0717 INPUT SPEED SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

P0717 INPUT SPEED SENSOR A

Description

INFOID:000000004040677

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

DTC Logic

INFOID:000000004040678

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P0717	Input/Turbine Speed Sensor A Circuit No Signal	Set DTC when the revolution of input speed sensor 1 and/or 2 is 270 rpm or less.	<ul style="list-style-type: none">• Harness or connectors (Sensor circuit is open.)• Input speed sensor 1 and/or 2

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

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-III

1. Start the engine.
2. Select "SLCT LVR POSI", "GEAR", "VHCL/S SE-A/T", "W/O THL POS" and "ENGINE SPEED" with "Data Monitor".
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.

SLCT LVR POSI	: D
GEAR	: 2nd, 3rd, 4th, 5th or 6th
VHCL/S SE-A/T	: More than 40 km/h (25 MPH)
CLSD THL POS	: OFF
ENGINE SPEED	: More than 1,500 rpm

4. Perform "Self Diagnostic Results" mode for "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P0717" detected?

- YES >> Go to [TM-276, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000004040679

1. CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

P0717 INPUT SPEED SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

YES >> Replace A/T assembly. Refer to [TM-384, "Exploded View"](#).
NO >> Repair or replace damaged parts.

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P0720 OUTPUT SPEED SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

P0720 OUTPUT SPEED SENSOR

Description

INFOID:000000004040680

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

DTC Logic

INFOID:000000004040681

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P0720	Output Speed Sensor Circuit	<ul style="list-style-type: none">• Set DTC when the output speed sensor recognizes that the vehicle speed is 5 km/h (3 MPH) or less even if the vehicle speed signal recognizes that the vehicle speed is 20 km/h (12 MPH) or more. (Only when starts after the ignition switch is turned ON.)• Set DTC if the vehicle speed recognized by the output speed sensor decelerates 36 km/h (23 MPH) or more during 60 msec when the output speed sensor recognizes that the vehicle speed is 36 km/h (23 MPH) or more and the vehicle speed signal recognizes that the vehicle speed is 24 km/h (15 MPH) or more.• Set DTC if the vehicle speed of output speed sensor decelerates 36 km/h (23 MPH) or more even if the vehicle speed of vehicle speed signal accelerates or decelerates 24 km/h (15 MPH) or less during 60 msec when the output speed sensor recognizes that the vehicle speed is 36 km/h (23 MPH) or more.	<ul style="list-style-type: none">• Harness or connectors (Sensor circuit is open.)• Output speed sensor

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" 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-III

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.

P0720 OUTPUT SPEED SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

ESTM VSP SIG : 40 km/h (25 MPH) or more

4. Perform "Self Diagnostic Results" mode for "TRANSMISSION".

 **With GST**

Follow the procedure "With CONSULT-III".

Is "P0720" detected?

YES >> Go to [TM-279, "Diagnosis Procedure"](#).

NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000004040682

1.CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to [TM-384, "Exploded View"](#).

NO >> Repair or replace damaged parts.

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P0725 ENGINE SPEED

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

P0725 ENGINE SPEED

Description

INFOID:0000000004040683

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

DTC Logic

INFOID:0000000004040684

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P0725	Engine Speed Input Circuit	<ul style="list-style-type: none">TCM does not receive the CAN communication signal from the ECM.Set DTC when the engine speed is more less 150 rpm even if the vehicle speed is more than 10 km/h (7 MPH).	Harness or connectors (ECM to TCM circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

1. PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" 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-III

- Start the engine.
- Select "SLCT LVR POSI" and "VHCL/S SE-A/T" with "Data Monitor".
- Drive vehicle and maintain the following conditions for 5 seconds or more.

SLCT LVR POSI : D

VHCL/S SE-A/T : More than 10km/h (7 MPH)

- Perform "Self Diagnostic Results" mode for "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P0725" detected?

YES >> Go to [TM-280, "Diagnosis Procedure"](#).

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000004040685

1. CHECK DTC OF ECM

With CONSULT-III

- Turn ignition switch ON.
- Perform "Self Diagnostic Results" mode for "ENGINE".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Check DTC detected item. Refer to [EC-719, "CONSULT-III Function"](#).

2. CHECK DTC OF TCM

With CONSULT-III

Perform "Self Diagnostic Results" mode for "TRANSMISSION".

P0725 ENGINE SPEED

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

Is any DTC other than “P0725” detected?

- YES >> GO TO 3.
- NO >> Check DTC detected item. Refer to [TM-264, "CONSULT-III Function \(TRANSMISSION\)"](#).

3.CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

- YES >> Replace A/T assembly. Refer to [TM-384, "Exploded View"](#).
- NO >> Repair or replace damaged parts.

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P0729 6GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

P0729 6GR INCORRECT RATIO

Description

INFOID:000000004040686

This malfunction is detected when the A/T does not shift into 6GR position as instructed by TCM. This is not only caused by electrical malfunction (circuits open or shorted) but by mechanical malfunction such as control valve sticking, improper solenoid valve operation, etc.

DTC Logic

INFOID:000000004040687

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P0729	Gear 6 Incorrect Ratio	Set DTC when the gear ratio is; <ul style="list-style-type: none">• 0.916 or more• 0.815 or less	<ul style="list-style-type: none">• Input clutch solenoid valve• Direct clutch solenoid valve• High and low reverse clutch solenoid valve• Front brake solenoid valve• Low brake solenoid valve• 2346 brake solenoid valve• Anti-interlock solenoid valve• Each clutch and brake• Output speed sensor• Input speed sensor 1, 2• Hydraulic control circuit

DTC CONFIRMATION PROCEDURE

CAUTION:

- **"TM-283, "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" 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 ATF TEMPERATURE

With CONSULT-III

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

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

With GST

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

Is ATF temperature within specified range?

YES >> GO TO 3.

NO >> Drive vehicle to warm ATF or stop engine to cool ATF.

3. CHECK SYMPTOM (PART 1)

With CONSULT-III

1. Select "6TH GR FNCTN P0729" of "DTC & SRT confirmation".
2. Drive vehicle with manual mode and maintain the following conditions.

P0729 6GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

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-III screen changes from "OUT OF CONDITION" to "TESTING".

CAUTION:

When "TESTING" is not detected on CONSULT-III for a long time, check "Self Diagnostic Results" in "TRANSMISSION". When a DTC other than "P0729" is detected, check the DTC. Refer to [TM-353, "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 4.

YES-3 >> "COMPLETED RESULT NG": Go to [TM-283, "Diagnosis Procedure"](#).

YES-4 >> "P0729" is detected: Go to [TM-283, "Diagnosis Procedure"](#).

NO >> GO TO 4.

4.CHECK SYMPTOM (PART 2)

1. Stop vehicle.
2. Drive vehicle in "D" position allowing it to shift from 1GR to 7GR and check shift timing and shift shock.

>> INSPECTION END

Diagnosis Procedure

INFOID:000000004040688

1.CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to [TM-384, "Exploded View"](#).

NO >> Repair or replace damaged parts.

P0730 INCORRECT GEAR RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

P0730 INCORRECT GEAR RATIO

Description

INFOID:000000004040689

- TCM detects a high-rpm state of the under drive sun gear.
- The number of revolutions of the under drive sun gear is calculated with the input speed sensor 1 and 2.

DTC Logic

INFOID:000000004040690

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P0730	Incorrect Gear Ratio	Set DTC when the revolution of under drive sun gear is 8,000 rpm or more.	<ul style="list-style-type: none">• 2346 brake solenoid valve• Front brake solenoid valve• Input speed sensor 1, 2

DTC CONFIRMATION PROCEDURE

CAUTION:

- **"[TM-284, "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" 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-III

1. Start the engine.
2. Select "Self Diagnostic Results" mode for "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-III".

Is "P0730" detected?

- YES >> Go to [TM-284, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000004040691

1. CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

- YES >> Replace A/T assembly. Refer to [TM-384, "Exploded View"](#).
NO >> Repair or replace damaged parts.

P0731 1GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

P0731 1GR INCORRECT RATIO

Description

INFOID:000000004040692

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

DTC Logic

INFOID:000000004040693

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P0731	Gear 1 Incorrect Ratio	Set DTC when the gear ratio is; • 5.180 or more • 4.610 or less	<ul style="list-style-type: none">• Input clutch solenoid valve• Direct clutch solenoid valve• High and low reverse clutch solenoid valve• Front brake solenoid valve• Low brake solenoid valve• 2346 brake solenoid valve• Anti-interlock solenoid valve• Each clutch and brake• Output speed sensor• Input speed sensor 1, 2• Hydraulic control circuit

DTC CONFIRMATION PROCEDURE

CAUTION:

- **“[TM-286, "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” 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 ATF TEMPERATURE

With CONSULT-III

1. Start the engine.
2. Select “ATF TEMP 1” with “Data Monitor”.
3. Check ATF temperature is in the following range.

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

With GST

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

Is ATF temperature within specified range?

YES >> GO TO 3.

NO >> Drive vehicle to warm ATF or stop engine to cool ATF.

3.CHECK SYMPTOM (PART 1)

With CONSULT-III

1. Select “1ST GR FNCTN P0731” of “DTC & SRT confirmation”.
2. Drive vehicle with manual mode and maintain the following conditions.

P0731 1GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

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-III screen changes from "OUT OF CONDITION" to "TESTING".

CAUTION:

When "TESTING" is not detected on CONSULT-III for a long time, check "Self Diagnostic Results" in "TRANSMISSION". When a DTC other than "P0731" is detected, check the DTC. Refer to [TM-353, "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 4.

YES-3 >> "COMPLETED RESULT NG": Go to [TM-286, "Diagnosis Procedure"](#).

YES-4 >> "P0731" is detected: Go to [TM-286, "Diagnosis Procedure"](#).

NO >> GO TO 4.

4.CHECK SYMPTOM (PART 2)

1. Stop vehicle.
2. Drive vehicle in "D" position allowing it to shift from 1GR to 7GR and check shift timing and shift shock.

>> INSPECTION END

Diagnosis Procedure

INFOID:000000004040694

1.CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to [TM-384, "Exploded View"](#).

NO >> Repair or replace damaged parts.

P0732 2GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

P0732 2GR INCORRECT RATIO

Description

INFOID:000000004040695

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

DTC Logic

INFOID:000000004040696

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P0732	Gear 2 Incorrect Ratio	Set DTC when the gear ratio is; • 3.360 or more • 2.991 or less	<ul style="list-style-type: none">• Input clutch solenoid valve• Direct clutch solenoid valve• High and low reverse clutch solenoid valve• Front brake solenoid valve• Low brake solenoid valve• 2346 brake solenoid valve• Anti-interlock solenoid valve• Each clutch and brake• Output speed sensor• Input speed sensor 1, 2• Hydraulic control circuit

DTC CONFIRMATION PROCEDURE

CAUTION:

- **"[TM-288, "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" 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 ATF TEMPERATURE

With CONSULT-III

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

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

With GST

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

Is ATF temperature within specified range?

YES >> GO TO 3.

NO >> Drive vehicle to warm ATF or stop engine to cool ATF.

3.CHECK SYMPTOM (PART 1)

With CONSULT-III

1. Select "2ND GR FNCTN P0732" of "DTC & SRT confirmation".
2. Drive vehicle with manual mode and maintain the following conditions.

P0732 2GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

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-III screen changes from "OUT OF CONDITION" to "TESTING".

CAUTION:

When "TESTING" is not detected on CONSULT-III for a long time, check "Self Diagnostic Results" in "TRANSMISSION". When a DTC other than "P0732" is detected, check the DTC. Refer to [TM-353, "DTC Index"](#).



With GST

1. Drive vehicle and maintain the following conditions for 2 seconds or more.

Selector lever : "M" position
Gear position : 2nd
Accelerator pedal opening : 0.7/8 or more
Vehicle speed : 10 km/h (7 MPH) or more

2. Check DTC.

Is "OUT OF CONDITION", "STOP VEHICLE" or "COMPLETED RESULT NG" displayed? / Is "P0732" detected?

YES-1 >> "OUT OF CONDITION": Perform "Step 3" again.

YES-2 >> "STOP VEHICLE": GO TO 4.

YES-3 >> "COMPLETED RESULT NG": Go to [TM-288, "Diagnosis Procedure"](#).

YES-4 >> "P0732" is detected: Go to [TM-288, "Diagnosis Procedure"](#).

NO >> GO TO 4.

4.CHECK SYMPTOM (PART 2)

1. Stop vehicle.
2. Drive vehicle in "D" position allowing it to shift from 1GR to 7GR and check shift timing and shift shock.

>> INSPECTION END

Diagnosis Procedure

INFOID:000000004040697

1.CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to [TM-384, "Exploded View"](#).

NO >> Repair or replace damaged parts.

P0733 3GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

P0733 3GR INCORRECT RATIO

Description

INFOID:000000004040698

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

DTC Logic

INFOID:000000004040699

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P0733	Gear 3 Incorrect Ratio	Set DTC when the gear ratio is; • 1.149 or more • 1.912 or less	<ul style="list-style-type: none">• Input clutch solenoid valve• Direct clutch solenoid valve• High and low reverse clutch solenoid valve• Front brake solenoid valve• Low brake solenoid valve• 2346 brake solenoid valve• Anti-interlock solenoid valve• Each clutch and brake• Output speed sensor• Input speed sensor 1, 2• Hydraulic control circuit

DTC CONFIRMATION PROCEDURE

CAUTION:

- **“[TM-290, "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” 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 ATF TEMPERATURE

With CONSULT-III

1. Start the engine.
2. Select “ATF TEMP 1” with “Data Monitor”.
3. Check ATF temperature is in the following range.

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

With GST

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

Is ATF temperature within specified range?

YES >> GO TO 3.

NO >> Drive vehicle to warm ATF or stop engine to cool ATF.

3.CHECK SYMPTOM (PART 1)

With CONSULT-III

1. Select “3RD GR FNCTN P0733” of “DTC & SRT confirmation”.
2. Drive vehicle with manual mode and maintain the following conditions.

P0733 3GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

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-III screen changes from "OUT OF CONDITION" to "TESTING".

CAUTION:

When "TESTING" is not detected on CONSULT-III for a long time, check "Self Diagnostic Results" in "TRANSMISSION". When a DTC other than "P0733" is detected, check the DTC. Refer to [TM-353, "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 4.

YES-3 >> "COMPLETED RESULT NG": Go to [TM-290, "Diagnosis Procedure"](#).

YES-4 >> "P0733" is detected: Go to [TM-290, "Diagnosis Procedure"](#).

NO >> GO TO 4.

4.CHECK SYMPTOM (PART 2)

1. Stop vehicle.
2. Drive vehicle in "D" position allowing it to shift from 1GR to 7GR gear and check shift timing and shift shock.

>> INSPECTION END

Diagnosis Procedure

INFOID:000000004040700

1.CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to [TM-384, "Exploded View"](#).

NO >> Repair or replace damaged parts.

P0734 4GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

P0734 4GR INCORRECT RATIO

Description

INFOID:000000004040701

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

DTC Logic

INFOID:000000004040702

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P0734	Gear 4 Incorrect Ratio	Set DTC when the gear ratio is; • 1.497 or more • 1.332 or less	<ul style="list-style-type: none">• Input clutch solenoid valve• Direct clutch solenoid valve• High and low reverse clutch solenoid valve• Front brake solenoid valve• Low brake solenoid valve• 2346 brake solenoid valve• Anti-interlock solenoid valve• Each clutch and brake• Output speed sensor• Input speed sensor 1, 2• Hydraulic control circuit

DTC CONFIRMATION PROCEDURE

CAUTION:

- **“[TM-292, "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” 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 ATF TEMPERATURE

With CONSULT-III

1. Start the engine.
2. Select “ATF TEMP 1” with “Data Monitor”.
3. Check ATF temperature is in the following range.

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

With GST

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

Is ATF temperature within specified range?

YES >> GO TO 3.

NO >> Drive vehicle to warm ATF or stop engine to cool ATF.

3.CHECK SYMPTOM (PART 1)

With CONSULT-III

1. Select “4TH GR FNCTN P0734” of “DTC & SRT confirmation”.
2. Drive vehicle with manual mode and maintain the following conditions.

P0734 4GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

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-III screen changes from "OUT OF CONDITION" to "TESTING".

CAUTION:

When "TESTING" is not detect on CONSULT-III for a long time, check "Self Diagnostic Results" in "TRANSMISSION". When a DTC other than "P0734" is detected, check the DTC. Refer to [TM-353, "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 4.

YES-3 >> "COMPLETED RESULT NG": Go to [TM-292, "Diagnosis Procedure"](#).

YES-4 >> "P0734" is detected: Go to [TM-292, "Diagnosis Procedure"](#).

NO >> GO TO 4.

4.CHECK SYMPTOM (PART 2)

1. Stop vehicle.
2. Drive vehicle in "D" position allowing it to shift from 1GR to 7GR and check shift timing and shift shock.

>> INSPECTION END

Diagnosis Procedure

INFOID:000000004040703

1.CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to [TM-384, "Exploded View"](#).

NO >> Repair or replace damaged parts.

P0735 5GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

P0735 5GR INCORRECT RATIO

Description

INFOID:000000004040704

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

DTC Logic

INFOID:000000004040705

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P0735	Gear 5 Incorrect Ratio	Set DTC when the gear ratio is; • 1.060 or more • 0.943 or less	<ul style="list-style-type: none">• Input clutch solenoid valve• Direct clutch solenoid valve• High and low reverse clutch solenoid valve• Front brake solenoid valve• Low brake solenoid valve• 2346 brake solenoid valve• Anti-interlock solenoid valve• Each clutch and brake• Output speed sensor• Input speed sensor 1, 2• Hydraulic control circuit

DTC CONFIRMATION PROCEDURE

CAUTION:

- **"[TM-294, "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" 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 ATF TEMPERATURE

With CONSULT-III

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

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

With GST

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

Is ATF temperature within specified range?

YES >> GO TO 3.

NO >> Drive vehicle to warm ATF or stop engine to cool ATF.

3.CHECK SYMPTOM (PART 1)

With CONSULT-III

1. Select "5TH GR FNCTN P0735" of "DTC & SRT confirmation".
2. Drive vehicle with manual mode and maintain the following conditions.

P0735 5GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

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-III screen changes from "OUT OF CONDITION" to "TESTING".

CAUTION:

When "TESTING" is not detected on CONSULT-III for a long time, check "Self Diagnostic Results" in "TRANSMISSION". When a DTC other than "P0735" is detected, check the DTC. Refer to [TM-353, "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 4.

YES-3 >> "COMPLETED RESULT NG": Go to [TM-294, "Diagnosis Procedure"](#).

YES-4 >> "P0735" is detected: Go to [TM-294, "Diagnosis Procedure"](#).

NO >> GO TO 4.

4.CHECK SYMPTOM (PART 2)

1. Stop vehicle.
2. Drive vehicle in "D" position allowing it to shift from 1GR to 7GR and check shift timing and shift shock.

>> INSPECTION END

Diagnosis Procedure

INFOID:000000004040706

1.CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to [TM-384, "Exploded View"](#).

NO >> Repair or replace damaged parts.

P0740 TORQUE CONVERTER

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

P0740 TORQUE CONVERTER

Description

INFOID:000000004040707

- 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 vehicle speed sensor and accelerator pedal position sensor (throttle position sensor). Torque converter clutch piston operation will then be controlled.
- Lock-up operation, however, is prohibited when A/T fluid temperature is too low.
- When the accelerator pedal is depressed (less than 1.0/8) in lock-up condition, the engine speed should not change abruptly. If there is a big jump in engine speed, there is no lock-up.

DTC Logic

INFOID:000000004040708

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P0740	Torque Converter Clutch Circuit/Open	A DTC is set if the torque converter clutch solenoid valve monitor value is 0.4 A or less when the torque converter clutch solenoid valve command value is more than 0.75 A.	<ul style="list-style-type: none">• Harness or connectors (Solenoid valve circuit is open or shorted.)• Torque converter clutch solenoid valve

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

1. PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" 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-III

1. Start the engine.
2. Select "MANU MODE SW", "GEAR" and "VEHICLE SPEED" with "Data Monitor".
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" mode for "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P0740" detected?

YES >> Go to [TM-295, "Diagnosis Procedure"](#).

NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000004040709

1. CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

P0740 TORQUE CONVERTER

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to [TM-384, "Exploded View"](#).

NO >> Repair or replace damaged parts.

P0744 TORQUE CONVERTER

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

P0744 TORQUE CONVERTER

Description

INFOID:000000004040710

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

DTC Logic

INFOID:000000004040711

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P0744	Torque Converter Clutch Circuit Intermittent	Set DTC when the lock-up is not performed in spite of within the lock-up area.	<ul style="list-style-type: none">• Harness or connectors• Torque converter clutch solenoid valve• Torque converter• Input speed sensor 1, 2• Hydraulic control circuit

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

1. PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" 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-III

1. Start the engine.
2. Select "MANU MODE SW", "GEAR" and "VEHICLE SPEED" with "Data Monitor".
3. Drive vehicle and maintain the following conditions for 10 seconds or more.

NOTE:

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

MANU MODE SW : ON

GEAR : 2nd

VEHICLE SPEED : 40 km/h (25 MPH) or more

4. Perform "Self Diagnostic Results" mode for "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P0744" detected?

YES >> Go to [TM-297, "Diagnosis Procedure"](#).

NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000004040712

1. CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to [TM-384, "Exploded View"](#).

NO >> Repair or replace damaged parts.

P0745 PRESSURE CONTROL SOLENOID A

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

P0745 PRESSURE CONTROL SOLENOID A

Description

INFOID:000000004040713

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

DTC Logic

INFOID:000000004040714

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P0745	Pressure Control Solenoid A	A DTC is set if the line pressure solenoid valve monitor value is 0.4 A or less when the line pressure solenoid valve command value is more than 0.75 A.	<ul style="list-style-type: none">• Harness or connectors (Solenoid valve circuit is open or shorted.)• Line pressure solenoid valve

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-III

1. Start the engine.
2. Wait for 5 seconds or more at idle speed in "N" position.
3. Perform "Self Diagnostic Results" mode for "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P0745" detected?

- YES >> Go to [TM-298, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000004040715

1. CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

- YES >> Replace A/T assembly. Refer to [TM-384, "Exploded View"](#).
NO >> Repair or replace damaged parts.

P0750 SHIFT SOLENOID A

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

P0750 SHIFT SOLENOID A

Description

INFOID:000000004040716

- Anti-interlock solenoid valve prevents the simultaneous activation of the input clutch and the low brake.
- The anti-interlock solenoid valve is an ON/OFF type solenoid valve.

DTC Logic

INFOID:000000004040717

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P0750	Shift Solenoid A	<ul style="list-style-type: none">• A DTC is set if the anti-interlock solenoid valve monitor value is ON when the anti-interlock solenoid valve command value is OFF.• A DTC is set if the anti-interlock solenoid valve monitor value is OFF when the anti-interlock solenoid valve command value is ON.	<ul style="list-style-type: none">• Harness or connectors (Solenoid valve circuit is open or shorted.)• Anti-interlock solenoid valve

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

1. PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" 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-III

1. Start the engine.
2. Select "BATTERY VOLT", "MANU MODE SW", "GEAR" and "VHCL/S SE-A/T" with "Data Monitor".
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" mode for "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P0750" detected?

YES >> Go to [TM-299, "Diagnosis Procedure"](#).

NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000004040718

1. CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to [TM-384, "Exploded View"](#).

NO >> Repair or replace damaged parts.

P0775 PRESSURE CONTROL SOLENOID B

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

P0775 PRESSURE CONTROL SOLENOID B

Description

INFOID:000000004040719

- The Input clutch solenoid valve is controlled by the TCM in response to signals transmitted from the transmission range switch, output speed sensor and accelerator pedal position sensor. Gears will then be shifted to the optimum position.
- The Input clutch solenoid valve controls the input clutch control valve in response to a signal transmitted from the TCM.

DTC Logic

INFOID:000000004040720

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P0775	Pressure Control Solenoid B	A DTC is set if the input clutch solenoid valve monitor value is 0.4 A or less when the input clutch solenoid valve command value is more than 0.75 A.	<ul style="list-style-type: none">• Harness or connectors (Solenoid valve circuit is open or shorted.)• Input clutch solenoid valve

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

1. PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" 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-III

1. Start the engine.
2. Select "BATTERY VOLT", "MANU MODE SW", "GEAR" and "VHCL/S SE-A/T" with "Data Monitor".
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" mode for "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P0775" detected?

YES >> Go to [TM-300, "Diagnosis Procedure"](#).

NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000004040721

1. CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to [TM-384, "Exploded View"](#).

NO >> Repair or replace damaged parts.

P0780 SHIFT

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

P0780 SHIFT

Description

INFOID:0000000004040722

The TCM detects the malfunction of low brake solenoid valve. This is not only caused by electrical malfunction (circuits open or shorted) but also by mechanical malfunction such as control valve sticking, improper solenoid valve operation, etc.

DTC Logic

INFOID:0000000004040723

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P0780	Shift Error	<ul style="list-style-type: none">Shifting from 3rg to 4th with the selector level in "D" position, the gear ratio does not shift to 1.412 (gear ratio of 4th).Shifting from 5th to 6th or 6th to 7th, the engine speed exceeds the prescribed speed.	<ul style="list-style-type: none">Anti-interlock solenoid valveLow brake solenoid valveHydraulic control circuit

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

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-III

- Start the engine.
- Select "SLCT LVR POSI", "ACCELE POSI" and "GEAR" with "Data Monitor".
- Drive vehicle and maintain the following conditions.

SLCT LVR POSI : D
ACCELE POSI : More than 1.0/8
GEAR : 3rd → 4th

- Perform "Self Diagnostic Results" mode for "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P0780" detected?

- YES >> Go to [TM-301, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000004040724

1. CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

- YES >> Replace A/T assembly. Refer to [TM-384, "Exploded View"](#).
NO >> Repair or replace damaged parts.

P0795 PRESSURE CONTROL SOLENOID C

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

P0795 PRESSURE CONTROL SOLENOID C

Description

INFOID:000000004040725

- The front brake solenoid valve is controlled by the TCM in response to signals transmitted from the transmission range switch, output speed sensor and accelerator pedal position sensor. Gears will then be shifted to the optimum position.
- The front brake solenoid valve controls the front brake control valve in response to a signal transmitted from the TCM.

DTC Logic

INFOID:000000004040726

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P0795	Pressure Control Solenoid C	A DTC is set if the front brake solenoid valve monitor value is 0.4 A or less when the front brake solenoid valve command value is more than 0.75 A.	<ul style="list-style-type: none">• Harness or connectors (Solenoid valve circuit is open or shorted.)• Front brake solenoid valve

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

1. PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" 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-III

1. Start the engine.
2. Select "BATTERY VOLT", "MANU MODE SW", "GEAR" and "VHCL/S SE-A/T" with "Data Monitor".
3. Drive vehicle and maintain the following conditions for 5 seconds or more.

BATTERY VOLT : 9 V or more

MANU MODE SW : ON

GEAR : 7th

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

4. Perform "Self Diagnostic Results" mode for "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P0795" detected?

YES >> Go to [TM-302, "Diagnosis Procedure"](#).

NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000004040727

1. CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to [TM-384, "Exploded View"](#).

NO >> Repair or replace damaged parts.

P1705 TP SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

P1705 TP SENSOR

Description

INFOID:000000004040728

- The accelerator pedal position sensor is installed on the upper end of the accelerator pedal assembly.
- The accelerator pedal position sensor detects the accelerator position.
- The accelerator pedal position sensor transform the accelerator pedal position into output voltage, and emit the voltage signal to the ECM.
- The TCM receives accelerator pedal position signal from the ECM via CAN communication.

DTC Logic

INFOID:000000004040729

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P1705	Accelerator Pedal Position Sensor Signal	TCM detects the difference between two accelerator pedal position signals received from ECM via CAN communication.	Harness or connectors (Sensor circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" 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-III

1. Start the engine.
2. Select "SLCT LVR POSI" and "VHCL/S SE-A/T" with "Data Monitor".
3. 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

4. Perform "Self Diagnostic Results" mode for "TRANSMISSION".

Is "P1705" detected?

YES >> Go to [TM-303, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000004040730

1.CHECK DTC OF ECM

With CONSULT-III

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

Is any DTC detected?

YES >> Check DTC detected item. Refer to [EC-1172, "DTC Index"](#).
NO >> GO TO 2.

2.CHECK DTC OF TCM

With CONSULT-III

Perform "Self Diagnostic Results" mode for "TRANSMISSION".

Is any DTC other than "P1705" detected?

YES >> Check DTC detected item. Refer to [TM-353, "DTC Index"](#).

P1705 TP SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

NO >> GO TO 3.

3.CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to [TM-384, "Exploded View"](#).

NO >> Repair or replace damaged parts.

P1721 VEHICLE SPEED SIGNAL

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

P1721 VEHICLE SPEED SIGNAL

Description

INFOID:000000004040734

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

DTC Logic

INFOID:000000004040735

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P1721	Vehicle Speed Signal	<ul style="list-style-type: none">• Set DTC when the vehicle speed signal recognizes that the vehicle speed is 5 km/h (3 MPH) or less even if the output speed sensor recognizes that the vehicle speed is 20 km/h (12 MPH) or more. (Only when starts after the ignition switch is turned ON.)• Set DTC if the vehicle speed recognized by the vehicle speed signal decelerates 36 km/h (23 MPH) or more during 60 msec when the vehicle speed signal recognizes that the vehicle speed is 36 km/h (23 MPH) or more and the output speed sensor recognizes that the vehicle speed is 24 km/h (15 MPH) or more.• Set DTC if the vehicle speed of vehicle speed signal decelerates 36 km/h (23 MPH) or more even if the vehicle speed of output speed sensor accelerates or decelerates 24 km/h (15 MPH) or less during 60 msec when the vehicle speed sensor recognizes that the vehicle speed is 36 km/h (23 MPH) or more.	Harness or connectors (Sensor circuit is open or shorted.)

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" 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-III

1. Start the engine.
2. Shift the selector lever to manual shift gate side.
3. Start up in M1, and then upshift to M2.
4. Accelerate to approximately 40 km/h (25 MPH) in M2.

P1721 VEHICLE SPEED SIGNAL

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

5. Perform "Self Diagnostic Results" mode for "TRANSMISSION".

Is "P1721" detected?

- YES >> Go to [TM-118, "Diagnosis Procedure"](#).
- NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000004040736

1. CHECK DTC OF ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT).

With CONSULT-III

Perform "Self Diagnostic Results" mode for "ABS".

Is any DTC detected?

- YES >> Check DTC detected item. Refer to [BRC-121, "DTC Index"](#).
- NO >> GO TO 2.

2. CHECK DTC OF UNIFIED METER AND A/C AMP.

With CONSULT-III

Perform "Self Diagnostic Results" mode for "METER/M&A".

Is any DTC detected?

- YES >> Check DTC detected item. Refer to [MWI-112, "DTC Index"](#).
- NO >> GO TO 3.

3. CHECK DTC OF TCM

With CONSULT-III

Perform "Self Diagnostic Results" mode for "TRANSMISSION".

Is any DTC other than "P1721" detected?

- YES >> Check DTC detected item. Refer to [TM-353, "DTC Index"](#).
- NO >> GO TO 4.

4. CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

- YES >> Replace A/T assembly. Refer to [TM-384, "Exploded View"](#).
- NO >> Repair or replace damaged parts.

P1730 INTERLOCK

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

P1730 INTERLOCK

Description

INFOID:000000004040737

Fail-safe function to detect interlock conditions.

DTC Logic

INFOID:000000004040738

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P1730	Interlock	Set DTC when the output speed sensor detects the deceleration of 12 km/h (7 MPH) or more for 1 second.	<ul style="list-style-type: none">• Harness or connectors (Solenoid valve circuit is open or shorted.)• Input clutch solenoid valve• Direct clutch solenoid valve• High and low reverse clutch solenoid valve• Front brake solenoid valve• Low brake solenoid valve• 2346 brake solenoid valve• Anti-interlock solenoid valve• Each clutch and brake• Hydraulic control circuit

NOTE:

When the vehicle is driven fixed in second gear, a input speed sensor malfunction is displayed, but this is not a input speed sensor malfunction.

DTC CONFIRMATION PROCEDURE

CAUTION:

- “[TM-308, "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” 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-III

1. Start the engine.
2. Select “SLCT LVR POSI” and “GEAR” with “Data Monitor”.
3. Drive vehicle the following condition.

SLCT LVR POSI : D

GEAR : 1st through 7th

4. Perform “Self Diagnostic Results” mode for “TRANSMISSION”.

With GST

Follow the procedure “With CONSULT-III”.

Is “P1730” detected?

- YES >> Go to [TM-308, "Diagnosis Procedure"](#).
NO >> INSPECTION END

P1730 INTERLOCK

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

Judgment of A/T Interlock

INFOID:0000000004040739

Refer to [TM-349, "Fail-Safe"](#).

Diagnosis Procedure

INFOID:0000000004040740

1. CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

- YES >> Replace A/T assembly. Refer to [TM-384, "Exploded View"](#).
- NO >> Repair or replace damaged parts.

P1734 7GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

P1734 7GR INCORRECT RATIO

Description

INFOID:000000004040741

This malfunction is detected when the A/T does not shift into 7GR position as instructed by TCM. This is not only caused by electrical malfunction (circuits open or shorted) but by mechanical malfunction such as control valve sticking, improper solenoid valve operation, etc.

DTC Logic

INFOID:000000004040742

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P1734	Gear 7 Incorrect Ratio	Set DTC when the gear ratio is; • 0.822 or more • 0.731 or less	<ul style="list-style-type: none">• Input clutch solenoid valve• Direct clutch solenoid valve• High and low reverse clutch solenoid valve• Front brake solenoid valve• Low brake solenoid valve• 2346 brake solenoid valve• Anti-interlock solenoid valve• Each clutch and brake• Output speed sensor• Input speed sensor 1, 2• Hydraulic control circuit

DTC CONFIRMATION PROCEDURE

CAUTION:

- **“[TM-310, "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” 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 ATF TEMPERATURE

With CONSULT-III

1. Start the engine.
2. Select “ATF TEMP 1” with “Data Monitor”.
3. Check ATF temperature is in the following range.

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

With GST

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

Is ATF temperature within specified range?

YES >> GO TO 3.

NO >> Drive vehicle to warm ATF or stop engine to cool ATF.

3. CHECK SYMPTOM (PART 1)

With CONSULT-III

1. Select “7TH GR FNCTN P1734” of “DTC & SRT confirmation”.
2. Drive vehicle with manual mode and maintain the following conditions.

P1734 7GR INCORRECT RATIO

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

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-III screen changes from "OUT OF CONDITION" to "TESTING".

CAUTION:

When "TESTING" is not detected on CONSULT-III for a long time, check "Self Diagnostic Results" in "TRANSMISSION". When a DTC other than "P1734" is detected, check the DTC. Refer to [TM-353, "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 4.

YES-3 >> "COMPLETED RESULT NG": Go to [TM-310, "Diagnosis Procedure"](#).

YES-4 >> "P1734" is detected: Go to [TM-310, "Diagnosis Procedure"](#).

NO >> GO TO 4.

4.CHECK SYMPTOM (PART 2)

1. Stop vehicle.
2. Drive vehicle in "D" position allowing it to shift from 1GR to 7GR and check shift timing and shift shock.

>> INSPECTION END

Diagnosis Procedure

INFOID:000000004040743

1.CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to [TM-384, "Exploded View"](#).

NO >> Repair or replace damaged parts.

P1815 M-MODE SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

P1815 M-MODE SWITCH

Description

INFOID:000000004040744

- The manual mode switch, manual mode shift-up switch and manual mode shift-down switch are installed in the A/T shift selector assembly. It transmits manual mode switch, shift up and shift down switch signals to unified meter and A/C amp. Then unified meter and A/C amp. transmits signals to TCM via CAN communication.
- Manual mode switch transmits manual mode switch signal or not manual mode switch signal to unified meter and A/C amp. Then TCM receives signals from unified meter and A/C amp. via CAN communication.
- The manual mode shift-up switch transmits manual mode shift up signal to the unified meter and A/C amp. Then TCM receives signal from the unified meter and A/C amp. via CAN communication.
- The manual mode shift-down switch transmits manual mode shift down signal to the unified meter and A/C amp. Then TCM receives signal from the unified meter and A/C amp. via CAN communication.
- The paddle shifter transmits shift up and shift down switch signals to unified meter and A/C amp. Then TCM receives signals from the unified meter and A/C amp. via CAN communication.
- The TCM transmits manual mode indicator signal to the unified meter and A/C amp. via CAN communication line.

DTC Logic

INFOID:000000004040745

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P1815	Manual Mode Switch Circuit	<ul style="list-style-type: none">• TCM monitors manual mode, non manual mode, up or down switch signal, and detects as irregular when impossible input pattern occurs 2 second or more.• When shift up/down signal of paddle shifter continuously remains ON for 60 seconds.	<ul style="list-style-type: none">• Harness or connectors (These switches circuit is open or shorted.)• Manual mode select switch (Into A/T shift selector)• Manual mode position select switch (Into A/T shift selector)• Paddle shifter

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" 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-III

1. Turn ignition switch ON.
2. Select "SLCT LVR POSI" and "MANU MODE SW" with "Data Monitor".
3. Maintain the following each conditions more than 60 seconds.

SLCT LVR POSI : D

MANU MODE SW : ON

4. Perform "Self Diagnostic Results" mode for "TRANSMISSION".

Is "P1815" detected?

YES >> Go to [TM-311. "Diagnosis Procedure"](#).

NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000004040746

1. CHECK MANUAL MODE SWITCH CIRCUIT

P1815 M-MODE SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

Ⓢ With CONSULT-III

1. Turn ignition switch ON.
2. Select "MANU MODE SW", "NON M MODE SW", "UP SW LEVER", "DOWN SW LEVER", "SFT UP ST SW" and "SFT DWN ST SW" with "Data Monitor".
3. Check the ON/OFF operations of each monitor item.

Item	Monitor Item	Condition	Status
Manual mode switch	MANU MODE SW	Manual shift gate side (neutral)	ON
		Other than the above	OFF
	NON M-MODE SW	Manual shift gate side	OFF
		Other than the above	ON
	UP SW LEVER	Selector lever: UP (+ side)	ON
		Other than the above	OFF
	DOWN SW LEVER	Selector lever: DOWN (– side)	ON
		Other than the above	OFF
Paddle shifter	SFT UP ST SW	Paddle shifter: UP (+ side)	ON
		Other than the above	OFF
	SFT DWN ST SW	Paddle shifter: DOWN (– side)	ON
		Other than the above	OFF

ⓧ Without CONSULT-III

Drive the vehicle in the manual mode, and then check that the indication of the shift position indicator matches with the actual gear position.

1. Shift the selector lever to UP side, and then accelerate from 1GR to 7GR.
2. Shift the selector lever to DOWN side, and then decelerate from 7GR to 1GR.
3. Shift the paddle shifter to UP side, and then accelerate from 1GR to 7GR.
4. Shift the paddle shifter to DOWN side, and then decelerate from 7GR to 1GR.

Which item is abnormal?

Manual mode switch>>GO TO 2.

Paddle shifter>>GO TO 9.

2.CHECK MANUAL MODE SWITCH CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect A/T shift selector connector.
3. Turn ignition switch ON.
4. Check voltage between A/T shift selector vehicle side harness connector terminals.

A/T shift selector vehicle side harness connector			Voltage (Approx.)
Connector	Terminal		
M137	1	4	Battery voltage
	2		
	3		
	5		

Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 5.

3.CHECK MANUAL MODE SWITCH

Check manual mode switch. Refer to [TM-316, "Component Inspection \(Manual Mode Switch\)"](#).

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace damaged parts.

P1815 M-MODE SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

4.CHECK MALFUNCTIONING ITEM

Check the following.

- Check terminals of A/T shift selector harness connector and harness cladding for damage.
- Check connector for loose connection.

Is the inspection result normal?

YES >> GO TO 17.

NO >> Repair or replace damaged parts.

5.CHECK GROUND CIRCUIT

Check continuity between A/T shift selector vehicle side harness connector terminal and ground.

A/T shift selector vehicle side harness connector		Ground	Continuity
Connector	Terminal		
M137	4		Existed

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace damaged parts.

6.CHECK POWER SOURCE CIRCUIT

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

A/T shift selector vehicle side harness connector		Ground	Voltage (Approx.)
Connector	Terminal		
M137	1		Battery voltage
	2		
	3		
	5		

Is the inspection result normal?

YES >> GO TO 16.

NO >> GO TO 7.

7.CHECK HARNESS BETWEEN A/T SHIFT SELECTOR AND UNIFIED METER AND A/C AMP. (STEP 1)

1. Turn ignition switch OFF.
2. Disconnect unified meter and A/C amp. connector.
3. Check continuity between A/T shift selector vehicle side harness connector terminals and unified meter and A/C amp. vehicle side harness connector terminals.

A/T shift selector vehicle side harness connector		Unified meter and A/C amp. vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
M137	1	M66	10	Existed
	2		25	
	3		5	
	5		11	

Is the inspection result normal?

YES >> GO TO 8.

NO >> Repair or replace damaged parts.

8.CHECK HARNESS BETWEEN A/T SHIFT SELECTOR AND UNIFIED METER AND A/C AMP. (STEP 2)

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

P1815 M-MODE SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

A/T shift selector vehicle side harness connector		Ground	Continuity
Connector	Terminal		
M137	1		Not existed
	2		
	3		
	5		

Is the inspection result normal?

YES >> GO TO 16.

NO >> Repair or replace damaged parts.

9.CHECK PADDLE SHIFTER CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect paddle shifter connectors.
3. Turn ignition switch ON.
4. Check voltage between paddle shifter vehicle side harness connector terminals.

Paddle shifter vehicle side harness connector			Voltage (Approx.)
Connector	Terminal		
M38	3	1	Battery voltage
M39	3	1	

Is the inspection result normal?

YES >> GO TO 10.

NO >> GO TO 12.

10.CHECK PADDLE SHIFTER

Check paddle shifter. Refer to [TM-316, "Component Inspection \[Paddle Shifter \(Shift-up\)\]"](#), [TM-316, "Component Inspection \[Paddle Shifter \(Shift-down\)\]"](#).

Is the inspection result normal?

YES >> GO TO 11.

NO >> Repair or replace damaged parts.

11.CHECK MALFUNCTIONING ITEM

Check the following.

- Check terminals of paddle shifter connector for damage.
- Check connector for loose connection.

Is the inspection result normal?

YES >> GO TO 17.

NO >> Repair or replace damaged parts.

12.CHECK GROUND CIRCUIT

Check continuity between paddle shifter vehicle side harness connector terminals and ground.

Paddle shifter vehicle side harness connector		Ground	Continuity
Connector	Terminal		
M38	1		Existed
M39	1		

Is the inspection result normal?

YES >> GO TO 13.

NO >> Repair or replace damaged parts.

13.CHECK POWER SOURCE CIRCUIT

Check voltage between paddle shifter vehicle side harness connector terminals and ground.

P1815 M-MODE SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

Paddle shifter vehicle side harness connector		Ground	Voltage (Approx.)
Connector	Terminal		
M38	3		
M39	3		Battery voltage

Is the inspection result normal?

YES >> GO TO 16.

NO >> GO TO 14.

14.CHECK HARNESS BETWEEN PADDLE SHIFTER AND UNIFIED METER AND A/C AMP. (PART 1)

1. Turn ignition switch OFF.
2. Disconnect unified meter and A/C amp. connector.
3. Check continuity between paddle shifter vehicle side harness connector terminals and unified meter and A/C amp. vehicle side harness connector terminals.

Paddle shifter vehicle side harness connector		Unified meter and A/C amp. vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
M38	3	M66	6	Existed
M39	3		26	

Is the inspection result normal?

YES >> GO TO 15.

NO >> Repair or replace damaged parts.

15.CHECK HARNESS BETWEEN PADDLE SHIFTER AND UNIFIED METER AND A/C AMP. (PART 2)

Check continuity between paddle shifter vehicle side harness connector terminals and ground.

Paddle shifter vehicle side harness connector		Ground	Continuity
Connector	Terminal		
M38	3		
M39	3		Not existed

Is the inspection result normal?

YES >> GO TO 16.

NO >> Repair or replace damaged parts.

16.CHECK MALFUNCTIONING ITEM

Check the following.

- Check terminals of unified meter and A/C amp. connector for damage.
- Check connector for loose connection.

Is the inspection result normal?

YES >> GO TO 17.

NO >> Repair or replace damaged parts.

17.CHECK UNIFIED METER AND A/C AMP.

1. Reconnect all the connectors.
2. Turn ignition switch ON.
3. Select "M RANGE SW", "NM RANGE SW", "AT SFT UP SW", "AT SFT DWN SW", "ST SFT UP SW" and "ST SFT DWN SW" on "Data Monitor" mode for "METER/M&A", and check the On/Off operations of each monitor item. Refer to [MWI-93. "Reference Value"](#).

Is the inspection result normal?

YES >> GO TO 18.

NO >> Replace unified meter and A/C amp. Refer to [MWI-175. "Exploded View"](#).

18.CHECK INTERMITTENT INCIDENT

Refer to [GI-35. "Intermittent Incident"](#).

P1815 M-MODE SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to [TM-384, "Exploded View"](#).

NO >> Repair or replace damaged parts.

Component Inspection (Manual Mode Switch)

INFOID:000000004040747

1.CHECK MANUAL MODE SWITCH

Check continuity between A/T shift selector connector terminals.

A/T shift selector harness connector			Condition	Continuity
Connector	Terminal			
M137	1	4	Selector lever: Manual (Neutral)	Existed
			Other than the above	Not existed
	2		Selector lever: DOWN (– side)	Existed
			Other than the above	Not existed
	3		Selector lever: UP (+ side)	Existed
			Other than the above	Not existed
	5		Selector lever: “D” position (Auto)	Existed
			Other than the above	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair or replace damaged parts. Refer to [TM-371, "Exploded View"](#).

Component Inspection [Paddle Shifter (Shift-up)]

INFOID:000000005151401

1.CHECK PADDLE SHIFTER

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

Paddle shifter (shift-up) connector			Condition	Continuity
Connector	Terminal			
M38	1	3	Paddle shifter (shift-up) is pulled.	Existed
			Other than the above	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace damaged parts. Refer to [TM-375, "Exploded View"](#).

Component Inspection [Paddle Shifter (Shift-down)]

INFOID:000000005151402

1.CHECK PADDLE SHIFTER (SHIFT-DOWN)

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

Paddle shifter (shift-down) connector			Condition	Continuity
Connector	Terminal			
M39	1	3	Paddle shifter (shift-down) is pulled.	Existed
			Other than the above	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace paddle shifter (shift-down). Refer to [TM-375, "Exploded View"](#).

P2713 PRESSURE CONTROL SOLENOID D

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

P2713 PRESSURE CONTROL SOLENOID D

Description

INFOID:000000004040749

- The high and low reverse clutch solenoid valve is controlled by the TCM in response to signals transmitted from the transmission range switch, output speed sensor and accelerator pedal position sensor. Gears will then be shifted to the optimum position.
- The high and low reverse clutch solenoid valve controls the high and low reverse clutch control valve in response to a signal transmitted from the TCM.

DTC Logic

INFOID:000000004040750

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P2713	Pressure Control Solenoid D	A DTC is set if the high and low reverse clutch solenoid valve monitor value is 0.4 A or less when the high and low reverse clutch solenoid valve command value is more than 0.75 A.	<ul style="list-style-type: none">• Harness or connectors (Solenoid valve circuit is open or shorted.)• High and low reverse clutch solenoid valve

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

1. PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" 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-III

1. Start the engine.
2. Select "BATTERY VOLT", "MANU MODE SW", "GEAR" and "VHCL/S SE-A/T" with "Data Monitor".
3. Drive the vehicle and maintain the following conditions for 5 seconds or more.

BATTERY VOLT : 9 V or more

MANU MODE SW : ON

GEAR : 3rd

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

4. Perform "Self Diagnostic Results" mode for "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P2713" detected?

YES >> Go to [TM-317, "Diagnosis Procedure"](#).

NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000004040751

1. CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to [TM-384, "Exploded View"](#).

NO >> Repair or replace damaged parts.

P2722 PRESSURE CONTROL SOLENOID E

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

P2722 PRESSURE CONTROL SOLENOID E

Description

INFOID:000000004040752

- The low brake solenoid valve is controlled by the TCM in response to signals transmitted from the transmission range switch, output speed sensor and accelerator pedal position sensor. Gears will then be shifted to the optimum position.
- The low brake solenoid valve controls the low brake control valve in response to a signal transmitted from the TCM.

DTC Logic

INFOID:000000004040753

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P2722	Pressure Control Solenoid E	A DTC is set if the low brake solenoid valve monitor value is 0.4 A or less when the low brake solenoid valve command value is more than 0.75 A.	<ul style="list-style-type: none">• Harness or connectors (Solenoid valve circuit is open or shorted.)• Low brake solenoid valve

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

1. PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" 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-III

1. Start the engine.
2. Select "BATTERY VOLT", "MANU MODE SW", "GEAR" and "VHCL/S SE-A/T" with "Data Monitor".
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" mode for "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P2722" detected?

YES >> Go to [TM-318, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000004040754

1. CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to [TM-384, "Exploded View"](#).
NO >> Repair or replace damaged parts.

P2731 PRESSURE CONTROL SOLENOID F

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

P2731 PRESSURE CONTROL SOLENOID F

Description

INFOID:000000004040755

- The 2346 brake solenoid valve is controlled by the TCM in response to signals transmitted from the transmission range switch, output speed sensor and accelerator pedal position sensor. Gears will then be shifted to the optimum position.
- The 2346 brake solenoid valve controls the 2346 brake control valve in response to a signal transmitted from the TCM.

DTC Logic

INFOID:000000004040756

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P2731	Pressure Control Solenoid F	A DTC is set if the 2346 brake solenoid valve monitor value is 0.4 A or less when the 2346 brake solenoid valve command value is more than 0.75 A.	<ul style="list-style-type: none">• Harness or connectors (Solenoid valve circuit is open or shorted.)• 2346 brake solenoid valve

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

1. PRECONDITIONING

If "DTC CONFIRMATION PROCEDURE" 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-III

1. Start the engine.
2. Select "BATTERY VOLT", "MANU MODE SW", "GEAR" and "VHCL/S SE-A/T" with "Data Monitor".
3. Drive vehicle and maintain the following conditions for 5 seconds or more.

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" mode for "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P2731" detected?

YES >> Go to [TM-319, "Diagnosis Procedure"](#).

NO >> Check intermittent incident. Refer to [GI-35, "Intermittent Incident"](#).

Diagnosis Procedure

INFOID:000000004040757

1. CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to [TM-384, "Exploded View"](#).

NO >> Repair or replace damaged parts.

P2807 PRESSURE CONTROL SOLENOID G

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

P2807 PRESSURE CONTROL SOLENOID G

Description

INFOID:000000004040758

- The direct clutch solenoid valve is controlled by the TCM in response to signals transmitted from the transmission range switch, output speed sensor and accelerator pedal position sensor. Gears will then be shifted to the optimum position.
- The direct clutch solenoid valve controls the direct clutch control valve in response to a signal transmitted from the TCM.

DTC Logic

INFOID:000000004040759

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	Diagnostic item is detected when...	Possible cause
P2807	Pressure Control Solenoid G	A DTC is set if the direct clutch solenoid valve monitor value is 0.4 A or less when the direct clutch solenoid valve command value is more than 0.75 A.	<ul style="list-style-type: none">• Harness or connectors (Solenoid valve circuit is open or shorted.)• Direct clutch solenoid valve

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

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

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-III

1. Start the engine.
2. Select "BATTERY VOLT", "MANU MODE SW", "GEAR" and "VHCL/S SE-A/T" with "Data Monitor".
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" mode for "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P2807" detected?

YES >> Go to [TM-320, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000004040760

1. CHECK INTERMITTENT INCIDENT

Refer to [GI-35, "Intermittent Incident"](#).

Is the inspection result normal?

YES >> Replace A/T assembly. Refer to [TM-384, "Exploded View"](#).

P2807 PRESSURE CONTROL SOLENOID G

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

NO >> Repair or replace damaged parts.

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

MAIN POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

MAIN POWER SUPPLY AND GROUND CIRCUIT

Description

INFOID:000000004040761

Supply power to TCM.

Diagnosis Procedure

INFOID:000000004040762

1.CHECK TCM POWER SOURCE

1. Turn ignition switch OFF.
2. Disconnect A/T assembly harness connector.
3. Turn ignition switch ON.
4. Check voltage between A/T assembly vehicle side harness connector terminals.

A/T assembly vehicle side harness connector			Voltage (Approx.)
Connector	Terminal		
F51	1	5	Battery voltage
		10	
	2	5	
		10	
	6	5	
		10	

Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 2.

2.CHECK TCM GROUND CIRCUIT

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

A/T assembly vehicle side harness connector		Ground	Continuity
Connector	Terminal		
F51	5		Existed
	10		

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace damaged parts.

3.CHECK TCM POWER SOURCE CIRCUIT

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

A/T assembly vehicle side harness connector		Ground	Voltage (Approx.)
Connector	Terminal		
F51	1		Battery voltage
	2		
	6		

Is the inspection result normal?

YES >> GO TO 4.

NO >> Check the following. If NG, repair or replace damaged parts.

- Harness for short or open between battery and A/T assembly vehicle side harness connector terminal 2.
- Harness for short or open between push-button ignition switch and A/T assembly vehicle side harness connector terminals 1 and 6.
- 10A fuse (No. 36, located in the fuse, fusible link and relay box)

MAIN POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

- 10A fuse (No. 43, located in the IPDM E/R)
- Push-button ignition switch. Refer to [PG-61, "Wiring Diagram - IGNITION POWER SUPPLY -"](#).

4.DETECT MALFUNCTIONING ITEM

Check the following.

- Check terminals of A/T assembly connector for damage.
- Check connector for loose connection.

Is the inspection result normal?

- YES >> INSPECTION END
- NO >> Repair or replace damaged parts.

A

B

C

E

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G

H

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L

M

N

O

P

TM

SHIFT POSITION INDICATOR CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

SHIFT POSITION INDICATOR CIRCUIT

Description

INFOID:000000004040763

TCM transmit the switch signals to unified meter and A/C amp. by CAN communication line. Then manual mode switch position is indicated on the shift position indicator.

Component Function Check

INFOID:000000004040764

1. CHECK A/T INDICATOR

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 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-324, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000004040765

1. CHECK INPUT SIGNALS

With CONSULT-III

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-151, "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-151, "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-316, "Component Inspection \(Manual Mode Switch\)"](#).

- Check A/T main system (Fail-safe function actuated).

- Perform "Self Diagnostic Results" mode for "TRANSMISSION". Refer to [TM-264, "CONSULT-III Function \(TRANSMISSION\)"](#).

NO-2 (The actual gear position changes, but the shift position indicator is not indicated.)>>•Perform "Self Diagnostic Results" mode for "TRANSMISSION". Refer to [TM-264, "CONSULT-III Function \(TRANSMISSION\)"](#).

NO-3 (The actual gear position and the indication on the shift position indicator do not coincide.)>>•Perform "Self Diagnostic Results" mode for "TRANSMISSION". Refer to [TM-264, "CONSULT-III Function \(TRANSMISSION\)"](#).

NO-4 (Only a specific position or positions is/are not indicated on the shift position indicator.)>>•Check the unified meter and A/C amp. Refer to [MWI-4, "Work flow"](#).

SHIFT LOCK SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

SHIFT LOCK SYSTEM

Description

INFOID:000000004040766

Shift lock system circuit consists of the following part.

Component	Function
Shift lock solenoid	Activated by the push-button ignition switch and stop lamp signals, it holds the relative positions of sliders A and B.
Shift lock relay	Current flow to stop lamp switch allows shift lock relay contact ON, and then power is applied to shift lock solenoid.
Stop lamp switch	Depressing the brake pedal turns ON the stop lamp switch and energizes the shift lock relay.

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B

C

TM

E

F

G

H

I

J

K

L

M

N

O

P

SHIFT LOCK SYSTEM

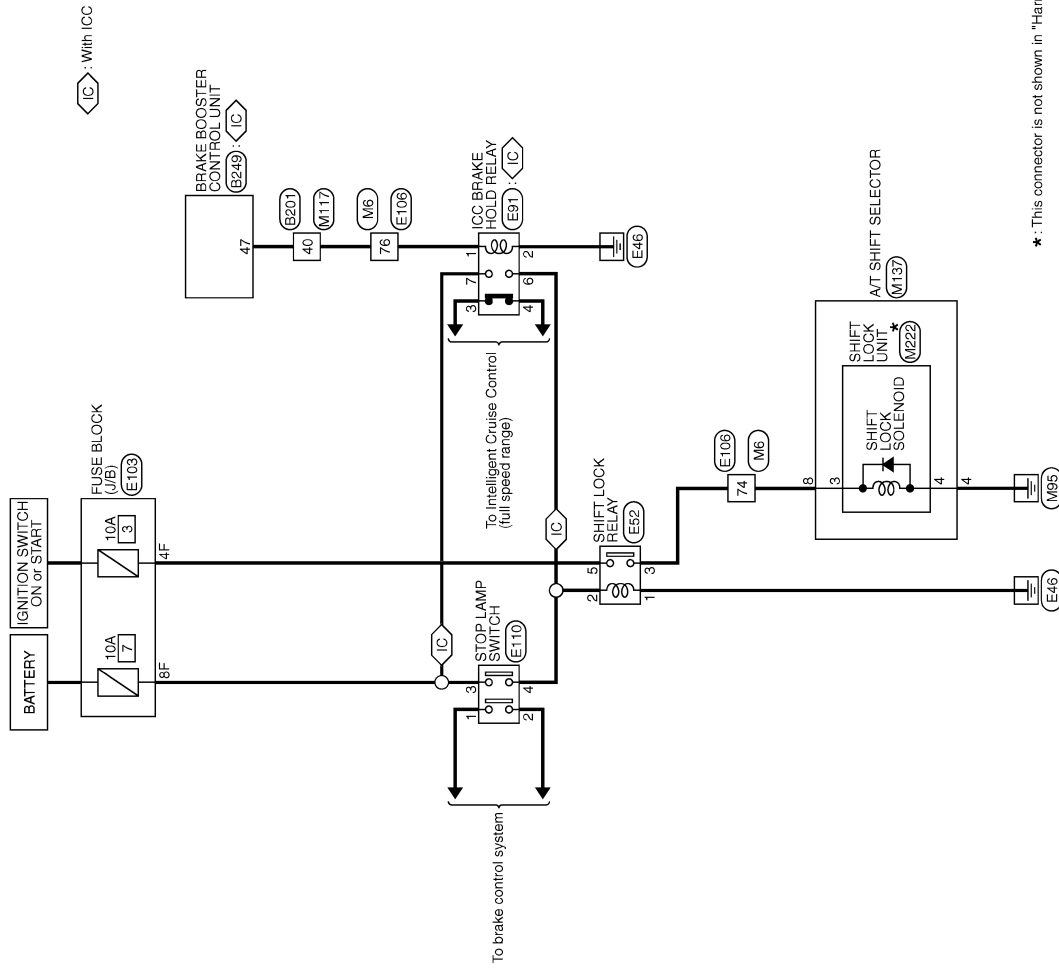
< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

Wiring Diagram - A/T SHIFT LOCK SYSTEM -

INFOID:0000000004040767

A/T SHIFT LOCK SYSTEM



2008/03/04

JCDWM0313GB

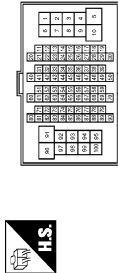
SHIFT LOCK SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

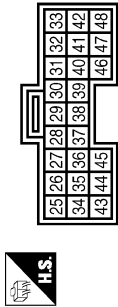
A/T SHIFT LOCK SYSTEM

Connector No.	B201
Connector Name	WIRE TO WIRE
Connector Type	TH80FW-CS16-TM4



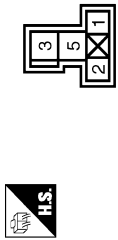
Terminal No.	Color of Wire	Signal Name [Specification]
40	LG	- [With ICC]

Connector No.	B249
Connector Name	BRAKE BOOSTER CONTROL UNIT
Connector Type	TK24GY



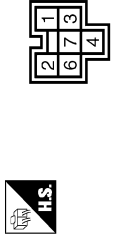
Terminal No.	Color of Wire	Signal Name [Specification]
47	LG	BRAKE HOLD RLY DRIVE SIGNAL

Connector No.	E52
Connector Name	SHIFT LOCK RELAY
Connector Type	MS02FL-M2-LC



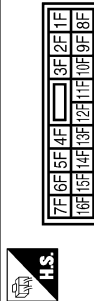
Terminal No.	Color of Wire	Signal Name [Specification]
1	B	-
2	W	-
3	SB	-
3	G	-

Connector No.	E51
Connector Name	ICC BRAKE HOLD RELAY
Connector Type	M06GY-R-US



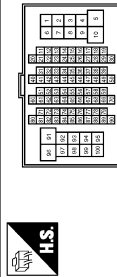
Terminal No.	Color of Wire	Signal Name [Specification]
1	L	-
2	B	-
3	G	-
4	W	-
6	G	-
7	L	-

Connector No.	E103
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS10FW-CS



Terminal No.	Color of Wire	Signal Name [Specification]
4F	G	-
8F	L	-

Connector No.	E106
Connector Name	WIRE TO WIRE
Connector Type	TH80FW-CS16-TM4



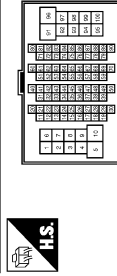
Terminal No.	Color of Wire	Signal Name [Specification]
74	SB	-
76	L	-

Connector No.	E110
Connector Name	STOP LAMP SWITCH
Connector Type	M04FW-LG



Terminal No.	Color of Wire	Signal Name [Specification]
1	L	-
2	SB	-
3	L	-
4	W	-

Connector No.	M6
Connector Name	WIRE TO WIRE
Connector Type	TH80MW-CS16-TM4



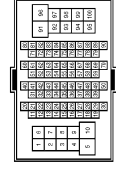

Terminal No.	Color of Wire	Signal Name [Specification]
74	SB	-
76	V	-

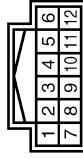

JCDWM0314GB



SHIFT LOCK SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

A/T SHIFT LOCK SYSTEM		
Connector No.	M117	
Connector Name	WIRE TO WIRE	
Connector Type	TH80MW-GS16-TM4	
		
Terminal No.	40	V
Color of Wire		
Signal Name [Specification]		
		

Connector No.	M137	
Connector Name	A/T SHIFT SELECTOR	
Connector Type	TH12FW-NH	
		
Terminal No.	4	B
Color of Wire		
Signal Name [Specification]		
		

Connector No.	M222	
Connector Name	SHIFT LOCK UNIT	
Connector Type		
		
Terminal No.	3	BR
Color of Wire		
Signal Name [Specification]		IGN
Terminal No.	4	L
Color of Wire		
Signal Name [Specification]		GND
		

JCDWM0315GB

INFOID:000000004040768

Component Function Check

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

1. Turn ignition switch ON.
2. Shift the selector lever to "P" position.
3. Attempt to shift the selector lever to any other position with the brake pedal released.

Can the selector lever be shifted to any other position?

SHIFT LOCK SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

- YES >> Go to [TM-329, "Diagnosis Procedure"](#).
NO >> GO TO 2.

2.CHECK A/T SHIFT LOCK OPERATION (PART 2)

Attempt to shift the selector lever to any other position with the brake pedal depressed.

Can the selector lever be shifted to any other position?

- YES >> INSPECTION END
NO >> Go to [TM-329, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000005151528

1.CHECK SELECTOR LEVER POSITION

Check the selector lever position for damage. Refer to [TM-370, "Inspection and Adjustment"](#).

Is the inspection result normal?

- YES >> GO TO 2.
NO >> Adjust control linkage. Refer to [TM-370, "Inspection and Adjustment"](#).

2.CHECK POWER SOURCE

1. Turn ignition switch OFF.
2. Disconnect shift lock relay.
3. Check voltage between shift lock relay harness connector terminal and ground.

Shift lock relay harness connector		Ground	Condition	Voltage (Approx.)
Connector	Terminal			
E52	2		Depressed brake pedal.	Battery voltage
			Released brake pedal.	0 V

Is the inspection result normal?

- YES >> GO TO 7.
NO-1 >> When pressing the brake pedal, the voltage is 0 V: GO TO 3.
NO-2 >> When releasing the brake pedal, the voltage is battery voltage: GO TO 5.

3.CHECK POWER SOURCE

1. Disconnect stop lamp switch connector.
2. Check voltage between stop lamp switch vehicle side harness connector terminal and ground.

Stop lamp switch vehicle side harness connector		Ground	Voltage (Approx.)
Connector	Terminal		
E110	3		Battery voltage

Is the inspection result normal?

- YES >> GO TO 4.
NO >> Check the following. If NG, repair or replace damaged parts.
- 10 A fuse [No. 7, located in the fuse block (J/B)]
 - Harness for short to ground or open between fuse block (J/B) vehicle side harness connector terminal 8F and stop lamp switch vehicle side harness connector terminal 3.
 - Harness for short to ground or open between battery and fuse block (J/B).
 - Harness for short to ground between battery and ICC brake hold relay vehicle side harness connector terminal 7. [With ICC (Full Speed Range) System]

4.CHECK STOP LAMP SWITCH

Check stop lamp switch. Refer to [TM-332, "Component Inspection \(Stop lamp switch\)"](#).

Is the inspection result normal?

- YES >> Check the following. If NG, repair or replace damaged parts.
- Harness for short to ground or open between stop lamp switch vehicle side harness connector terminal 4 and shift lock relay vehicle side harness connector terminal 2.

SHIFT LOCK SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

- Harness for short to ground between ICC brake hold relay vehicle side harness connector terminal 6 and shift lock relay vehicle side harness connector terminal 2. [With ICC (Full Speed Range) System]

NO >> Repair or replace damaged parts.

5.CHECK STOP LAMP SWITCH

Check stop lamp switch. Refer to [TM-332, "Component Inspection \(Stop lamp switch\)"](#).

Is the inspection result normal?

YES-1 >> Without ICC (Full Speed Range) System: Repair or replace harness between stop lamp switch and shift lock relay.

YES-2 >> With ICC (Full Speed Range) System: GO TO 6.

NO >> Repair or replace damaged parts.

6.CHECK DTC WITH ICC (FULL SPEED RANGE) SYSTEM

With CONSULT-III

Perform "Self Diagnostic Results" mode for "ICC".

Is any malfunction detected?

YES >> Check the DTC detected item. Refer to [CCS-158, "DTC Index"](#).

NO >> Repair or replace harness between stop lamp switch and shift lock relay.

7.CHECK GROUND CIRCUIT

Check continuity between shift lock relay vehicle side harness connector terminal and ground.

Shift lock relay vehicle side harness connector		Ground	Continuity
Connector	Terminal		
E52	1		Existed

Is the inspection result normal?

YES >> GO TO 8.

NO >> Repair or replace damaged parts.

8.CHECK SHIFT LOCK RELAY

Check shift lock relay. Refer to [TM-331, "Component Inspection \(Shift lock relay\)"](#).

Is the inspection result normal?

YES >> GO TO 9.

NO >> Repair or replace damaged parts.

9.CHECK POWER SOURCE

1. Turn ignition switch ON.
2. Check voltage between shift lock relay vehicle side harness connector terminal and ground.

Shift lock relay vehicle side harness connector		Ground	Voltage (Approx.)
Connector	Terminal		
E52	5		Battery voltage

Is the inspection result normal?

YES >> GO TO 10.

NO >> Check the following. If NG, repair or replace damaged parts.

- 10 A fuse [No. 3, located in the fuse block (J/B)]
- Harness for short to ground or open between push-button ignition switch and fuse block (J/B).
- Harness for short to ground or open between fuse block (J/B) vehicle side harness connector terminal 4F and shift lock relay vehicle side harness connector terminal 5.

10.CHECK GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect A/T shift selector connector.
3. Check continuity between A/T shift selector vehicle side harness connector terminal and ground.

SHIFT LOCK SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

A/T shift selector vehicle side harness connector		Ground	Continuity
Connector	Terminal		
M137	4		Existed

Is the inspection result normal?

YES >> GO TO 11.

NO >> Repair or replace damaged parts.

11.CHECK SHIFT LOCK SOLENOID

Check shift lock solenoid. Refer to [TM-331. "Component Inspection \(Shift lock solenoid\)".](#)

Is the inspection result normal?

YES >> Check the following. If NG, repair or replace damaged parts.

- Harness for short to ground, short to power or open between shift lock relay vehicle side harness connector terminal 3 and A/T shift selector vehicle side harness connector terminal 8.
- Harness for short to ground, short to power or open between A/T shift selector harness conductor terminal 8 and shift lock unit harness connector terminal 3.
- Harness for open between A/T shift selector harness conductor terminal 4 and shift lock unit harness connector terminal 4.

NO >> Repair or replace damaged parts.

Component Inspection (Shift lock solenoid)

INFOID:000000005151529

1.CHECK SHIFT LOCK SOLENOID

1. Remove shift lock unit. Refer to [TM-371. "Exploded View".](#)
2. Apply voltage to terminals 3 and 4 of shift lock unit connector, and then check that shift lock solenoid is activated.

CAUTION:

Connect the fuse between the terminals when applying the voltage.

(+ (fuse)		(–)		Condition	Status
Shift lock unit connector					
Connector	Terminal	Connector	Terminal		
M222	3	M222	4	Apply 12 V direct current between terminals 3 and 4.	Shift lock solenoid operates

Can the lock plate be moved up and down?

YES >> INSPECTION END

NO >> Replace shift lock unit. Refer to [TM-371. "Exploded View".](#)

Component Inspection (Shift lock relay)

INFOID:000000004040771

1.CHECK SHIFT LOCK RELAY

Check continuity between shift lock relay terminals.

CAUTION:

Connect the fuse between the terminals when applying the voltage.

Shift lock relay connector			Condition	Continuity
Connector	Terminal			
E52	3	5	Apply 12 V direct current between terminals 1 and 2.	Existed
			OFF	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace shift lock relay.

SHIFT LOCK SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

Component Inspection (Stop lamp switch)

INFOID:000000004040772

1.CHECK STOP LAMP SWITCH

Check continuity between stop lamp switch connector terminals.

Stop lamp switch connector			Condition	Continuity
Connector	Terminal			
E110	3	4	Depressed brake pedal.	Existed
			Released brake pedal.	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace stop lamp switch. Refer to [BR-18. "Exploded View"](#).

SELECTOR LEVER POSITION INDICATOR

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

SELECTOR LEVER POSITION INDICATOR

Description

INFOID:000000004040773

Indicates selector lever position.

Component Function Check

INFOID:000000004040774

1.CHECK SELECTOR LEVER POSITION INDICATOR (PART 1)

1. Turn ignition switch ON.
2. Check that each position indicator lamp of the selector lever position indicator turns on when shifting the selector lever from "P" to "M" position.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Go to [TM-333, "Diagnosis Procedure"](#).

2.CHECK SELECTOR LEVER POSITION INDICATOR (PART 2)

Check that the night illumination of the selector lever position indicator turns on when setting the lighting switch in 1st position.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to [TM-333, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000004040775

1.CHECK MALFUNCTIONING ITEM

Which item is abnormal?

Position indicator lamp>> GO TO 2.

Illumination lamp>> GO TO 10.

2.CHECK POWER SOURCE

1. Turn ignition switch OFF.
2. Disconnect A/T shift selector connector.
3. Turn ignition switch ON.
4. Check voltage between A/T shift selector vehicle side harness connector terminals.

A/T shift selector vehicle side harness connector			Voltage (Approx.)
Connector	Terminal		
	(+)	(-)	
M137	10	4	Battery voltage

Is the inspection result normal?

YES >> GO TO 6.

NO >> GO TO 3.

3.CHECK GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between A/T shift selector vehicle side harness connector terminal and ground.

A/T shift selector vehicle side harness connector		Ground	Continuity
Connector	Terminal		
M137	4		Existed

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace damaged parts.

SELECTOR LEVER POSITION INDICATOR

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

4.CHECK HARNESS BETWEEN A/T SHIFT SELECTOR AND BCM (PART 1)

1. Disconnect BCM connector.
2. Check continuity between A/T shift selector vehicle side harness connector terminal and BCM vehicle side harness connector terminal.

A/T shift selector vehicle side harness connector		BCM vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
M137	10	M122	96	Existed

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace damaged parts.

5.CHECK HARNESS BETWEEN A/T SHIFT SELECTOR AND BCM (PART 2)

Check continuity between A/T shift selector vehicle side harness connector terminal and ground.

A/T shift selector vehicle side harness connector		Ground	Continuity
Connector	Terminal		
M137	10		Not existed

Is the inspection result normal?

YES >> Check BCM input/output signal. Refer to [BCS-44, "Reference Value"](#).

NO >> Repair or replace damaged parts.

6.CHECK SHIFT POSITION SWITCH

1. Disconnect shift position switch connector.
2. Check continuity between A/T shift selector harness connector terminals and shift position switch connector terminals.

A/T shift selector harness connector		Shift position switch connector		Condition	Continuity
Connector	Terminal	Connector	Terminal		
M137	4	M221	7	Selector lever in “D” position.	Existed
			2, 3, 4, 5, 6, 9, 10, 11		Not existed
			9	Selector lever in “M” position.	Existed
			2, 3, 4, 5, 6, 7, 10, 11		Not existed
	10		2, 6	Selector lever in “N” and “M” position.	Existed
			3, 4, 5, 7, 9, 10, 11		Not existed
			3, 6	Selector lever in “D” position.	Existed
			2, 4, 5, 7, 9, 10, 11		Not existed
			4, 6	Selector lever in “R” position.	Existed
			2, 3, 5, 7, 9, 10, 11		Not existed
			5, 6	Selector lever in “P” position.	Existed
			2, 3, 4, 7, 9, 10, 11		Not existed

Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair or replace damaged parts. Refer to [TM-371, "Exploded View"](#).

7.CHECK HARNESS BETWEEN SHIFT POSITION SWITCH AND SELECTOR LEVER POSITION INDICATOR (PART 1)

1. Disconnect selector lever position indicator connector.
2. Check continuity between shift position switch harness connector terminals and selector lever position indicator connector terminals.

SELECTOR LEVER POSITION INDICATOR

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

Shift position switch harness connector		Selector lever position indicator harness connector		Continuity
Connector	Terminal	Connector	Terminal	
M221	2	M223	3	Existed
	3		4	
	4		5	
	5		7	
	6		6	
	7		8	
	9		2	

Is the inspection result normal?

YES >> GO TO 8.

NO >> Repair or replace damaged parts. Refer to [TM-371. "Exploded View"](#).

8.CHECK HARNESS BETWEEN SHIFT POSITION SWITCH AND SELECTOR LEVER POSITION INDICATOR (PART 2)

Check harness cladding between shift position switch connector and selector lever position indicator connector for damage.

Is the inspection result normal?

YES >> GO TO 9.

NO >> Repair or replace damaged parts. Refer to [TM-371. "Exploded View"](#).

9.CHECK SELECTOR LEVER POSITION INDICATOR

Check selector lever position indicator. Refer to [TM-336. "Component Inspection"](#).

Is the inspection result normal?

YES >> Check the following.

- Check terminals of A/T shift selector connector, shift position switch connector and selector lever position indicator connector for damage.
- Check connector for loose connection.

NO >> Repair or replace damaged parts. Refer to [TM-371. "Exploded View"](#).

10.CHECK POWER SOURCE

1. Turn ignition switch OFF.
2. Disconnect A/T shift selector connector.
3. Turn ignition switch ON.
4. Check voltage between A/T shift selector vehicle side harness connector terminals.

A/T shift selector vehicle side harness connector			Condition	Voltage (Approx.)
Connector	Terminal			
	(+)	(-)		
M137	7	9	Lighting switch 1ST	Battery voltage

Is the inspection result normal?

YES >> GO TO 11.

NO >> Check illumination circuit. Refer to [INL-85. "Wiring Diagram - ILLUMINATION -"](#).

11.CHECK SHIFT POSITION SWITCH

1. Disconnect shift position switch connector.
2. Check continuity between A/T shift selector harness connector terminals and shift position switch connector terminals.

SELECTOR LEVER POSITION INDICATOR

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

A/T shift selector harness connector		Shift position switch connector		Continuity
Connector	Terminal	Connector	Terminal	
M137	7	M221	10	Existed
			2, 3, 4, 5, 6, 7, 9, 11	Not existed
	9		11	Existed
			2, 3, 4, 5, 6, 7, 9, 10	Not existed

Is the inspection result normal?

YES >> GO TO 12.

NO >> Repair or replace damaged parts. Refer to [TM-371, "Exploded View"](#).

12.CHECK HARNESS BETWEEN SHIFT POSITION SWITCH AND SELECTOR LEVER POSITION INDICATOR (PART 1)

1. Disconnect selector lever position indicator connector.
2. Check continuity between shift position switch harness connector terminals and selector lever position indicator connector terminals.

Shift position switch harness connector		Selector lever position indicator harness connector		Continuity
Connector	Terminal	Connector	Terminal	
M221	10	M223	1	Existed
	11		9	

Is the inspection result normal?

YES >> GO TO 13.

NO >> Repair or replace damaged parts. Refer to [TM-371, "Exploded View"](#).

13.CHECK HARNESS BETWEEN SHIFT POSITION SWITCH AND SELECTOR LEVER POSITION INDICATOR (PART 2)

Check harness cladding between shift position switch connector and selector lever position indicator connector for damage.

Is the inspection result normal?

YES >> GO TO 9.

NO >> Repair or replace damaged parts. Refer to [TM-371, "Exploded View"](#).

Component Inspection

INFOID:000000004040776

1.CHECK SELECTOR LEVER POSITION INDICATOR

Check that selector lever position indicator lamps turn on.

CAUTION:

Connect the fuse between the terminals when applying the voltage.

SELECTOR LEVER POSITION INDICATOR

< DTC/CIRCUIT DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

Selector lever position indicator connector			Condition	Status
Connector	Terminal			
	(+) (fuse)	(-)		
M223	1	9	Apply 12 V direct current between terminals 1 and 9.	Illumination lamp turns on.
	3	8	Apply 12 V direct current between terminals 3 and 8.	“N” position indicator lamp turns on.
	4		Apply 12 V direct current between terminals 4 and 8.	“D” position indicator lamp turns on.
	5		Apply 12 V direct current between terminals 5 and 8.	“R” position indicator lamp turns on.
	7		Apply 12 V direct current between terminals 7 and 8.	“P” position indicator lamp turns on.
	6	2	Apply 12 V direct current between terminals 6 and 2.	“M” mode indicator lamp turns on.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace the selector lever position indicator. Refer to [TM-371, "Exploded View"](#).

ECU DIAGNOSIS INFORMATION

TCM

Reference Value

INFOID:000000004040777

VALUES ON DIAGNOSIS TOOL

NOTE:

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

CONSULT-III MONITOR ITEM

Item name	Condition	Value / Status (Approx.)
VHCL/S SE-A/T	During driving	Approximately matches the speedometer reading.
ESTM VSP SIG	During driving	Approximately matches the speedometer reading.
OUTPUT REV	During driving (lock-up ON)	Tachometer/Gear ratio
INPUT SPEED	During driving (lock-up ON)	Approximately matches 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 matches the tachometer reading.
TC SLIP SPEED	During driving	Engine speed – Input speed
ACCELE POSI	Released accelerator pedal	0.0/8
	Fully depressed accelerator pedal	8.0/8
THROTTLE POSI	Released accelerator pedal	0.0/8
	Fully depressed accelerator pedal	8.0/8
ATF TEMP 1	Ignition switch ON	Temperature of ATF in the oil pan is indicated.
ATF TEMP 2	Ignition switch ON	Temperature of ATF at the exit of torque converter.
ATF TEMP SE 1	0°C (32° F) – 20°C (68°F) – 80°C (176°F)	3.3 – 2.7 – 0.9 V
BATTERY VOLT	Ignition switch ON	Battery voltage (11 V – 14 V)
LINE PRES SOL	During driving	0.2 – 0.6 A
TCC SOLENOID	Slip lock-up is active	0.2 – 0.8 A
	Lock-up is active	0.8 A
	Other than the above	0 A
L/B SOLENOID	Low brake engaged	0.6 – 0.8 A
	Low brake disengaged	0 – 0.05 A

TCM

< ECU DIAGNOSIS INFORMATION >

[7AT: RE7R01B (VK50VE)]

Item name	Condition	Value / Status (Approx.)
FR/B SOLENOID	Front brake engaged	0.6 – 0.8 A
	Front brake disengaged	0 – 0.05 A
HLR/C SOL	High and low reverse clutch disengaged	0.6 – 0.8 A
	High and low reverse clutch engaged	0 – 0.05 A
I/C SOLENOID	Input clutch disengaged	0.6 – 0.8 A
	Input clutch engaged	0 – 0.05 A
D/C SOLENOID	Direct clutch disengaged	0.6 – 0.8 A
	Direct clutch engaged	0 – 0.05 A
2346/B SOL	2346 brake engaged	0.6 – 0.8 A
	2346 brake disengaged	0 – 0.05 A
L/P SOL MON	During driving	0.2 – 0.6 A
TCC SOL MON	Slip lock-up is active	0.2 – 0.8 A
	Lock-up is active	0.8 A
	Other than the above	0 A
L/B SOL MON	Low brake engaged	0.6 – 0.8 A
	Low brake disengaged	0 – 0.05 A
FR/B SOL MON	Front brake engaged	0.6 – 0.8 A
	Front brake disengaged	0 – 0.05 A
HLR/C SOL MON	High and low reverse clutch disengaged	0.6 – 0.8 A
	High and low reverse clutch engaged	0 – 0.05 A
I/C SOL MON	Input clutch disengaged	0.6 – 0.8 A
	Input clutch engaged	0 – 0.05 A
D/C SOL MON	Direct clutch disengaged	0.6 – 0.8 A
	Direct clutch engaged	0 – 0.05 A
2346/B SOL MON	2346 brake engaged	0.6 – 0.8 A
	2346 brake disengaged	0 – 0.05 A
GEAR RATIO	Driving with 1GR	4.887
	Driving with 2GR	3.170
	Driving with 3GR	2.027
	Driving with 4GR	1.412
	Driving with 5GR	1.000
	Driving with 6GR	0.864
	Driving with 7GR	0.775
ENGINE TORQUE	During driving	Changes the value according to the acceleration or deceleration.
ENG TORQUE D	During driving	Changes the value according to the acceleration or deceleration.
INPUT TRQ S	During driving	Changes the value according to the acceleration or deceleration.
INPUT TRQ L/P	During driving	Changes the value according to the acceleration or deceleration.
TRGT PRES L/P	Selector lever in "P" and "N" positions	490 kPa
	Other than the above	490 – 1370 kPa
TRGT PRES TCC	Slip lock-up is active	0 – 600 kPa
	Lock-up is active	600 kPa
	Other than the above	0 kPa

A

B

C

TM

E

F

G

H

I

J

K

L

M

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O

P

TCM

< ECU DIAGNOSIS INFORMATION >

[7AT: RE7R01B (VK50VE)]

Item name	Condition	Value / Status (Approx.)
TRGT PRES L/B	Low brake engaged	1370 kPa
	Low brake disengaged	0 kPa
TRGT PRES FR/B	Front brake engaged	1370 kPa
	Front brake disengaged	0 kPa
TRG PRE HLR/C	High and low reverse clutch disengaged	1370 kPa
	High and low reverse clutch engaged	0 kPa
TRGT PRES I/C	Input clutch disengaged	1370 kPa
	Input clutch engaged	0 kPa
TRGT PRES D/C	Direct clutch disengaged	1370 kPa
	Direct clutch engaged	0 kPa
TRG PRE 2346/B	2346 brake engaged	1370 kPa
	2346 brake disengaged	0 kPa
SHIFT PATTERN	During normal driving (without shift changes)	FF
VEHICLE SPEED	During driving	Approximately matches the speedometer reading.
RANGE SW 4	Selector lever in "P" and "N" positions	ON
	Other than the above	OFF
RANGE SW 3	Selector lever in "P", "R" and "N" positions	ON
	Other than the above	OFF
RANGE SW 2	Selector lever in "P" and "R" positions	ON
	Other than the above	OFF
RANGE SW 1	Selector lever in "P" position	ON
	Other than the above	OFF
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: DOWN (– side)	ON
	Other than the above	OFF
UP SW LEVER	Selector lever: UP (+ side)	ON
	Other than the above	OFF
NON M-MODE SW	Manual shift gate side	OFF
	Other than the above	ON
MANU MODE SW	Manual shift gate side (neutral)	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	Depressed brake pedal	ON
	Released brake pedal	OFF
POWERSHIFT SW	Power mode	ON
	Other than the above	OFF

TCM

< ECU DIAGNOSIS INFORMATION >

[7AT: RE7R01B (VK50VE)]

Item name	Condition	Value / Status (Approx.)
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
TCS SIGNAL 2	When the reception value of A/T shift schedule change demand signal is "cold"	ON
	Other than the above	OFF
TCS SIGNAL 1	When the reception value of A/T shift schedule change demand signal is "warm"	ON
	Other than the above	OFF
LOW/B PARTS	At 4 - 5 - 6 gear shift control	FAIL
	Other than the above	NOTFAIL
HC/IC/FRB PARTS	At 1 - 2 - 3 gear shift control	FAIL
	Other than the above	NOTFAIL
IC/FRB PARTS	At 4 - 5 - 6 gear shift control	FAIL
	Other than the above	NOTFAIL
HLR/C PARTS	At 4 - 5 - 6 gear shift control	FAIL
	Other than the above	NOTFAIL
W/O THL POS	Fully depressed accelerator pedal	ON
	Released accelerator pedal	OFF
CLSD THL POS	Released accelerator pedal	ON
	Fully depressed accelerator pedal	OFF
DRV CST JUDGE	Depressed accelerator pedal	DRIVE
	Released accelerator pedal	COAST

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< ECU DIAGNOSIS INFORMATION >

[7AT: RE7R01B (VK50VE)]

Item name	Condition	Value / Status (Approx.)
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
	Selector lever in "N" position	N
	Selector lever in "D" position	D
	Selector lever in "D" position: 7GR	
	Selector lever in "D" position: 6GR	6
	Selector lever in "D" position: 5GR	5
	Selector lever in "D" position: 4GR	4
	Selector lever in "D" position: 3GR	3
	Selector lever in "D" position: 2GR	2
	Selector lever in "D" position: 1GR	1
	Selector lever in "M" position: 1GR	M1
	Selector lever in "M" position: 2GR	M2
	Selector lever in "M" position: 3GR	M3
	Selector lever in "M" position: 4GR	M4
	Selector lever in "M" position: 5GR	M5
	Selector lever in "M" position: 6GR	M6
	Selector lever in "M" position: 7GR	M7
	Driving with DS mode	DS
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
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

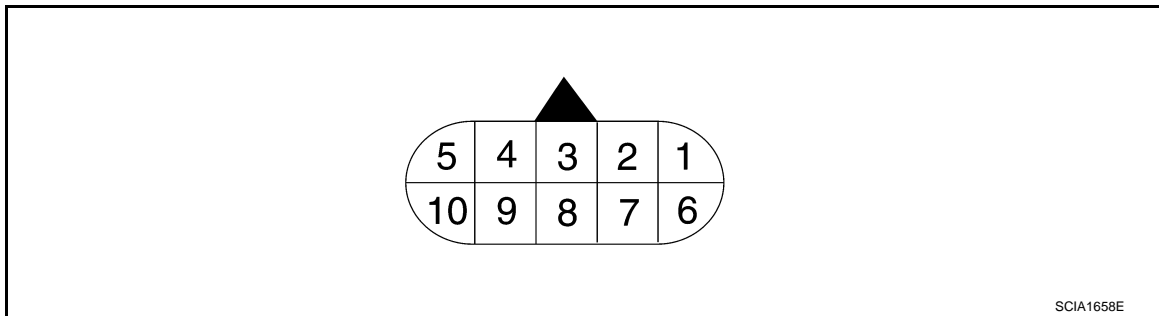
TCM

< ECU DIAGNOSIS INFORMATION >

[7AT: RE7R01B (VK50VE)]

Item name	Condition	Value / Status (Approx.)
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 1 - 2 gear 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 2 - 3 - 4 gear shift control	FAIL
	Other than the above	NOTFAIL

TERMINAL LAYOUT



PHYSICAL VALUES

Terminal (Wire color)		Description		Condition	Value (Approx.)
+	-	Signal name	Input/ Output		
1 (Y)	Ground	Power supply	Input	Ignition switch ON	Battery voltage
				Ignition switch OFF	0 V
2 (R)	Ground	Power supply (Memory back-up)	Input	Always	Battery voltage
3 (L)	—	CAN-H	Input/ Output	—	—
4 (V)	—	K-line	Input/ Output	—	—

TCM

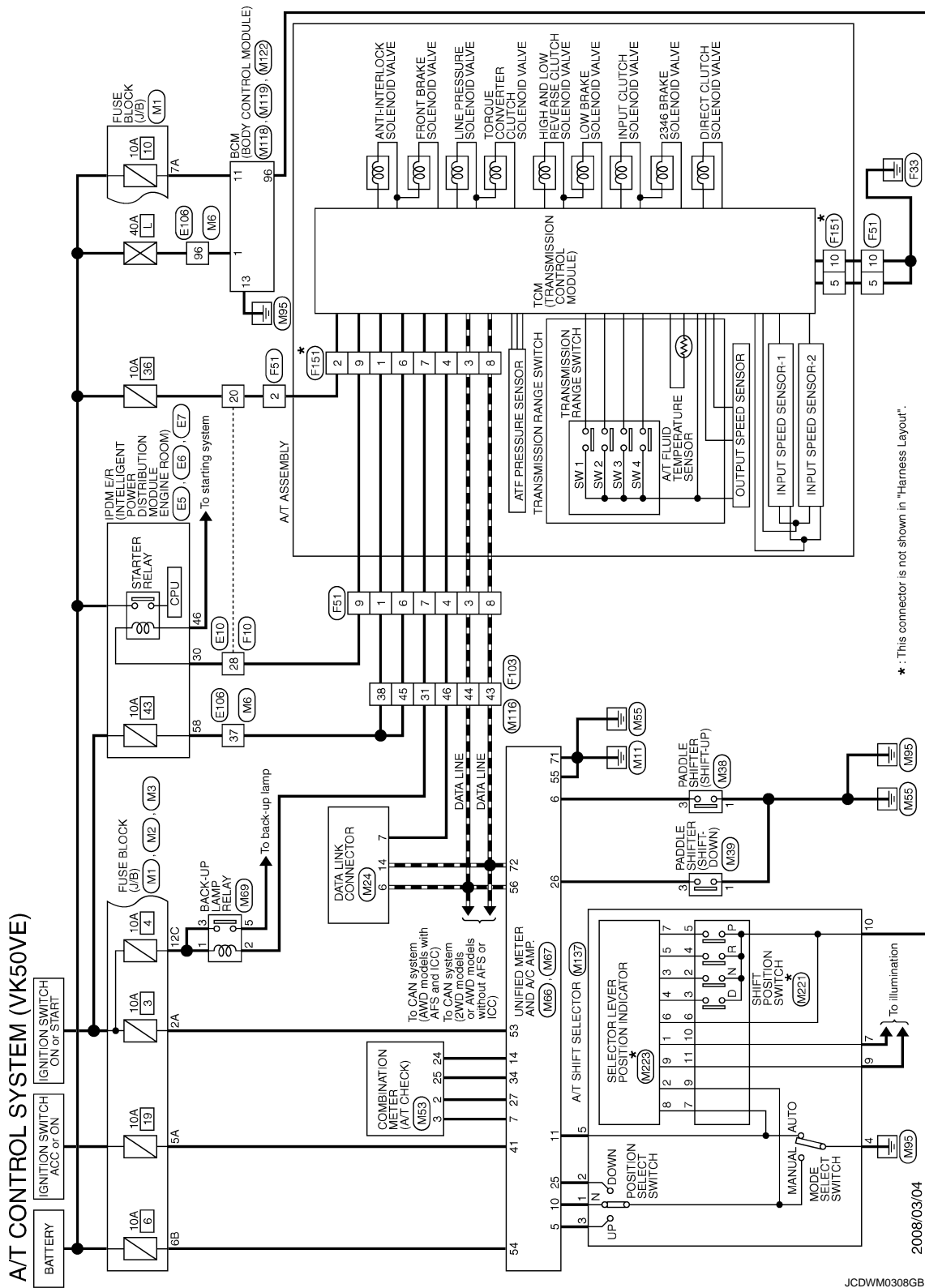
< ECU DIAGNOSIS INFORMATION >

[7AT: RE7R01B (VK50VE)]

Terminal (Wire color)		Description		Condition		Value (Approx.)
+	—	Signal name	Input/ Output			
5 (B)	Ground	Ground	Output	Always		0 V
6 (Y)	Ground	Power supply	Input	Ignition switch ON		Battery voltage
				Ignition switch OFF		0 V
7 (R)	Ground	Back-up lamp relay	Input	Ignition switch ON	Selector lever in "R" position.	0 V
					Selector lever in other positions.	Battery voltage
8 (P)	—	CAN-L	Input/ Output	—		—
9 (LG)	Ground	Starter relay	Output	Ignition switch ON	Selector lever in "N" and "P" positions.	Battery voltage
					Selector lever in other positions.	0 V
10 (B)	Ground	Ground	Output	Always		0 V

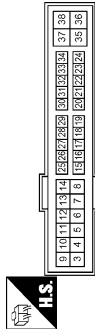
Wiring Diagram - A/T CONTROL SYSTEM -

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A/T CONTROL SYSTEM (VK50VE)

Connector No.	E5
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	TH20FW-CS12-M4-1V



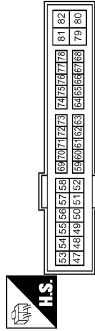
Terminal No.	30
Color of Wire	GR
Signal Name [Specification]	-

Connector No.	E6
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	TH08FW-NH



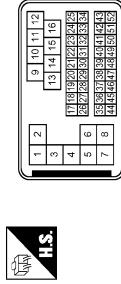
Terminal No.	46
Color of Wire	BR
Signal Name [Specification]	-

Connector No.	E7
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	TH20FW-CS12-M4



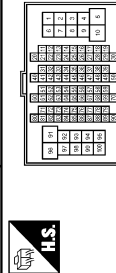
Terminal No.	58
Color of Wire	Y
Signal Name [Specification]	-

Connector No.	E10
Connector Name	WIRE TO WIRE
Connector Type	SAA38ME-RSS-SHZ8



Terminal No.	20
Color of Wire	BR
Signal Name [Specification]	-
Terminal No.	28
Color of Wire	GR
Signal Name [Specification]	-

Connector No.	E106
Connector Name	WIRE TO WIRE
Connector Type	TH80FW-CS16-TM4



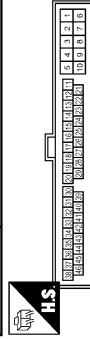
Terminal No.	37
Color of Wire	Y
Signal Name [Specification]	-
Terminal No.	56
Color of Wire	W
Signal Name [Specification]	-

Connector No.	F51
Connector Name	A/T ASSEMBLY
Connector Type	RK10FC-DGY



Terminal No.	1
Color of Wire	Y
Signal Name [Specification]	-
Terminal No.	2
Color of Wire	R
Signal Name [Specification]	- [With VK engine]
Terminal No.	3
Color of Wire	L
Signal Name [Specification]	-
Terminal No.	4
Color of Wire	V
Signal Name [Specification]	-
Terminal No.	5
Color of Wire	B
Signal Name [Specification]	-
Terminal No.	6
Color of Wire	Y
Signal Name [Specification]	-
Terminal No.	7
Color of Wire	R
Signal Name [Specification]	-
Terminal No.	8
Color of Wire	P
Signal Name [Specification]	-
Terminal No.	9
Color of Wire	LG
Signal Name [Specification]	- [With VK engine]
Terminal No.	10
Color of Wire	B
Signal Name [Specification]	-

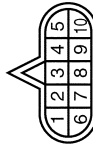
Connector No.	F103
Connector Name	WIRE TO WIRE
Connector Type	TK38FW-NS10



Terminal No.	31
Color of Wire	R
Signal Name [Specification]	-
Terminal No.	38
Color of Wire	Y
Signal Name [Specification]	-
Terminal No.	43
Color of Wire	P
Signal Name [Specification]	-
Terminal No.	44
Color of Wire	L
Signal Name [Specification]	-
Terminal No.	45
Color of Wire	Y
Signal Name [Specification]	-
Terminal No.	46
Color of Wire	V
Signal Name [Specification]	-

A/T CONTROL SYSTEM (VK50VE)

Connector No.	F151
Connector Name	TCM (TRANSMISSION CONTROL MODULE)
Connector Type	SPI0FG



Terminal No.	Color of Wire	Signal Name [Specification]
1	W	VIGN
2	B	BATT
3	R	CAN-H
4	O	K LINE
5	G	GND
6	GR	VIGN
7	L	REV LAMP RLY
8	BR	CAN-L
9	Y	START RLY
10	W/B	GND

Connector No.	M6
Connector Name	WIRE TO WIRE
Connector Type	TH80MW-GS10-TM4



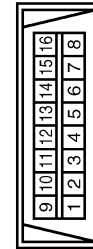
Terminal No.	Color of Wire	Signal Name [Specification]
37	G	-
96	W	-

Connector No.	M1
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS06FW-M2



Terminal No.	Color of Wire	Signal Name [Specification]
2A	G	-
5A	V	-
7A	R	-

Connector No.	M24
Connector Name	DATA LINK CONNECTOR
Connector Type	BD16FW



Terminal No.	Color of Wire	Signal Name [Specification]
6	L	-
7	GR	-
14	P	-

Connector No.	M2
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS10FW-CS



Terminal No.	Color of Wire	Signal Name [Specification]
6B	Y	-

Connector No.	M38
Connector Name	PADDLE SHIFTER(SHIFT-UP)
Connector Type	A04FW



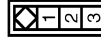
Terminal No.	Color of Wire	Signal Name [Specification]
1	B	-
3	O	-

Connector No.	M3
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS12FW-CS



Terminal No.	Color of Wire	Signal Name [Specification]
12C	R	-

Connector No.	M39
Connector Name	PADDLE SHIFTER(SHIFT-DOWN)
Connector Type	A03FW



Terminal No.	Color of Wire	Signal Name [Specification]
1	B	-
3	G	-

JCDWM0310GB

A/T CONTROL SYSTEM (VK50VE)

Connector No.	M63
Connector Name	COMBINATION METER
Connector Type	TH40FW-NH



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

Terminal No.	Color of Wire	Signal Name [Specification]
2	LG	COMM (METER->AMP)
3	GR	COMM (AMP->METER)
24	BR	COMM (LCD->AMP)
25	Y	COMM (AMP->LCD)

Connector No.	M116
Connector Name	WIRE TO WIRE
Connector Type	TK30MW-NS10



1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20

Terminal No.	Color of Wire	Signal Name [Specification]
31	W	-
38	O	-
43	P	-
44	L	-
45	G	-
46	Y	-

Connector No.	M66
Connector Name	UNIFIED METER AND A/C AMP.
Connector Type	TH40FW-NH



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

Terminal No.	Color of Wire	Signal Name [Specification]
5	L	SHIFT UP
6	O	PADDLE UP
7	GR	COMM (AMP->METER)
10	W	MANUAL MODE
11	G	NOT MANUAL MODE
14	BR	COMM (LCD->AMP)
23	V	SHIFT DOWN
26	G	PADDLE DOWN
27	LG	COMM (METER->AMP)
34	Y	COMM (AMP->LCD)

Connector No.	M118
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	M08FB-LC



1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20

Terminal No.	Color of Wire	Signal Name [Specification]
1	W	BAT (B/L)

Connector No.	M67
Connector Name	UNIFIED METER AND A/C AMP.
Connector Type	TH43FW-NH



41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80

Terminal No.	Color of Wire	Signal Name [Specification]
41	V	ACC
53	G	IGN
54	Y	BAT
55	B	GND
56	L	CAN-H
71	B	GND
72	P	CAN-L

Connector No.	M119
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	NS18FW-CS



4	5	6	7	8	9	10		
11	12	13	14	15	16	17	18	19

Terminal No.	Color of Wire	Signal Name [Specification]
11	R	BAT (FUSE)
13	B	GND

Connector No.	M69
Connector Name	BACK-UP LAMP RELAY
Connector Type	MS02EL-M2-LC



2	3	4	5	6	7	8	9	10	11
12	13	14	15	16	17	18	19	20	21

Terminal No.	Color of Wire	Signal Name [Specification]
1	R	-
2	W	-
3	R	-
5	O	-

Connector No.	M122
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	TH40FB-NH



31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50

Terminal No.	Color of Wire	Signal Name [Specification]
98	GR	A/T SHIFT SELECTOR POWER SUPPLY

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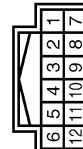
A/T CONTROL SYSTEM (VK50VE)

Connector No.	M137
Connector Name	A/T SHIFT SELECTOR
Connector Type	TH12FW-NH






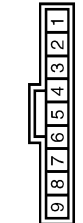




Connector No.	M221
Connector Name	SHIFT POSITION SWITCH
Connector Type	TH12FW

Connector No.	M223
Connector Name	SELECTOR LEVER POSITION INDICATOR
Connector Type	XARP-36V





Terminal No.	Color of Wire	Signal Name [Specification]
1	R	ILL
2	Y	MT
3	L	N
4	BR	D
5	G	R
6	V	M
7	P	P
8	O	AT
9	B	GND

JCDWM0312GB

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Fail-Safe

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-208. "Diagnosis 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 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) • 30 km/h (19MPH) or less • Lock-up is prohibited • The shifting between the gears of 3 - 4 - 5 - 6 - 7 can be performed • Manual mode is prohibited • Shift position indicator is switched OFF • Starter relay is switched OFF (starter is disabled) • Back-up lamp is OFF • Large shift shock 	—	<ul style="list-style-type: none"> • Fixed in the "D" position (The shifting can be performed) • 30 km/h (19MPH) or less • Lock-up is prohibited • The shifting between the gears of 3 - 4 - 5 - 6 - 7 can be performed • Manual mode is prohibited • Shift position indicator is switched OFF • Starter relay is switched OFF (starter is disabled) • Back-up lamp is OFF • Large shift shock
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 • Treat the vehicle speed that the vehicle speed signal receives as positive 	—	<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 • Treat the vehicle speed that the vehicle speed signal receives as positive 	—	

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	Neutral malfunction between the gears of 1 - 2 - 3 and 7	<ul style="list-style-type: none"> Locks in 4GR Manual mode is prohibited Neutral 	—	<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 	A B C
	Other than the above	<ul style="list-style-type: none"> Driving with the gear ratio between 1GR and 2GR Driving with the gear ratio between 2GR and 3GR Locks in 3GR Locks in 4GR Fix the gear while driving Manual mode is prohibited Neutral 	<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 	TM E F
P0730	—	<ul style="list-style-type: none"> Manual mode is prohibited Neutral 	<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 	G H
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 	I
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 	J
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 	K L
P0780	—	<ul style="list-style-type: none"> Manual mode is prohibited Neutral 	—	<ul style="list-style-type: none"> The shifting between the gears of 1 - 2 - 3 can be performed Manual mode is prohibited 	M
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 	N O
P1730	—	<ul style="list-style-type: none"> Neutral Driving with the gear ratio between 2GR and 3GR 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 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 	P

TCM

< ECU DIAGNOSIS INFORMATION >

[7AT: RE7R01B (VK50VE)]

DTC	Vehicle condition	Vehicle behavior for 1st fail-safe	Vehicle behavior for 2nd fail-safe	Vehicle behavior for final fail-safe
P1815	Paddle switch malfunction	Only the paddle switch is prohibited	—	Only the paddle switch is prohibited
	Gate switch malfunction	Only the gate switch is prohibited	—	Only the gate switch is prohibited
	Malfunction of both switches	Manual mode is prohibited	—	Manual mode is prohibited
U1000	Between the gears of 1 - 2 - 3	<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:000000004040780

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 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 or 1GR.

Malfunction detection condition	<ul style="list-style-type: none"> Select lever and gear: Except for “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 malfunction detection condition
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

TCM

< ECU DIAGNOSIS INFORMATION >

[7AT: RE7R01B (VK50VE)]

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:000000004040781

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

Priority	Detected items (DTC)
1	<ul style="list-style-type: none"> • U1000 CAN COMM CIRCUIT
2	<ul style="list-style-type: none"> • P0615 STATER RELAY • P0705 T/M RANGE SWITCH A • P0710 FLUID TEMP SENSOR A • P0717 INPUT SPEED SENSOR A • P0720 OUTPUT SPEED SENSOR • P0740 TORQUE CONVERTER • P0745 PC SOLENOID A • P0750 SHIFT SOLENOID A • P0775 PC SOLENOID B • P0795 PC SOLENOID C • P2713 PC SOLENOID D • P2722 PC SOLENOID E • P2731 PC SOLENOID F • P2807 PC SOLENOID G
3	<ul style="list-style-type: none"> • 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 • P0744 TORQUE CONVERTER • P0780 SHIFT • P1730 INTERLOCK • P1734 7GR INCORRECT RATIO
4	<ul style="list-style-type: none"> • P0725 ENGINE SPEED • P1705 TP SENSOR • P1721 VEHICLE SPEED SIGNAL • P1815 M-MODE SWITCH

DTC Index

INFOID:000000004040782

NOTE:

If DTC “U1000” is displayed with other DTC, first perform the trouble diagnosis for “U1000 CAN COMM CIRCUIT”. Refer to [TM-270, "Description"](#).

Items (CONSULT-III screen terms)	DTC*2		Reference
	MIL*1, “ENGINE” with CONSULT-III or GST	CONSULT-III only “TRANSMISSION”	
STARTER RELAY	—	P0615	TM-271
T/M RANGE SWITCH A	P0705	P0705	TM-273
FLUID TEMP SENSOR A	P0710	P0710	TM-274
INPUT SPEED SENSOR A	P0717	P0717	TM-276
OUTPUT SPEED SENSOR	P0720	P0720	TM-278
ENGINE SPEED	—	P0725	TM-280
6GR INCORRECT RATIO	P0729	P0729	TM-282

Items (CONSULT-III screen terms)	DTC*2		Reference
	MIL *1, "ENGINE" with CONSULT-III or GST	CONSULT-III only "TRANSMISSION"	
INCORRECT GR RATIO	P0730	P0730	TM-284
1GR INCORRECT RATIO	P0731	P0731	TM-285
2GR INCORRECT RATIO	P0732	P0732	TM-287
3GR INCORRECT RATIO	P0733	P0733	TM-289
4GR INCORRECT RATIO	P0734	P0734	TM-291
5GR INCORRECT RATIO	P0735	P0735	TM-293
TORQUE CONVERTER	P0740	P0740	TM-295
TORQUE CONVERTER	P0744	P0744	TM-297
PC SOLENOID A	P0745	P0745	TM-298
SHIFT SOLENOID A	P0750	P0750	TM-299
PC SOLENOID B	P0775	P0775	TM-300
SHIFT	P0780	P0780	TM-301
PC SOLENOID C	P0795	P0795	TM-302
TP SENSOR	—	P1705	TM-303
VEHICLE SPEED SIGNAL	—	P1721	TM-305
INTERLOCK	P1730	P1730	TM-307
7GR INCORRECT RATIO	P1734	P1734	TM-309
M-MODE SWITCH	—	P1815	TM-311
PC SOLENOID D	P2713	P2713	TM-317
PC SOLENOID E	P2722	P2722	TM-318
PC SOLENOID F	P2731	P2731	TM-319
PC SOLENOID G	P2807	P2807	TM-320
CAN COMM CIRCUIT	U1000	U1000	TM-270

*1: Refer to [TM-263, "Diagnosis Description"](#).

*2: These numbers are prescribed by SAE J2012.

IGN COUNTER

IGN counter indicates the number of items that ignition switch is turned ON after DTC is detected.

- CAN malfunction
 - The number is 0 when a malfunction is detected now.
 - The number increases like 1 → 2 → 3...38 → 39 after returning to the normal condition whenever ignition switch OFF → ON.
 - The number is fixed to 39 until self-diagnosis results are erased if it is over 39.
- Except for 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 self-diagnosis results are erased if it is over 255.

SYSTEM SYMPTOM

< SYMPTOM DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

SYMPTOM DIAGNOSIS

SYSTEM SYMPTOM

Symptom Table

INFOID:000000004040783

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

CAUTION:

If any malfunction occurs in the RE7R01A transmission, replace the A/T assembly.

Symptom					Diagnostic item																				
					Control linkage	Output speed sensor	Vehicle speed signal	Accelerator pedal position sensor	Engine speed signal	Input speed sensor	A/T fluid temperature sensor	Transmission range switch	Line pressure solenoid valve	Torque converter solenoid valve	Low brake solenoid valve	Front brake solenoid valve	High and low reverse clutch solenoid valve	Input clutch solenoid valve	Direct clutch solenoid valve	2346 brake solenoid valve	Anti-interlock solenoid valve	CAN communication			
Poor performance	Driving performance	Shift point is high in “D” position.			TM-370	TM-278	TM-305	TM-303	TM-280	TM-276	TM-274	TM-273	TM-298	TM-295	TM-318	TM-302	TM-317	TM-300	TM-320	TM-319	TM-299	TM-270			
		Shift point is low in “D” position.				1	2			3															
		Large shock	When shifting gears	→ “D” position	3		6	5		5	4	2		1								2	5		
				→ “R” position	3		6	5		5	4	2							1				5		
				1GR ⇔ 2GR		3	1	5	3	3											2			4	
				2GR ⇔ 3GR		3	1	5	3	3										2				4	
				3GR ⇔ 4GR		3	1	5	3	3					2		2							4	
				4GR ⇔ 5GR		3	1	5	3	3										2		2			4
				5GR ⇔ 6GR		3	1	5	3	3										2	2				4
				6GR ⇔ 7GR		3	1	5	3	3							2					2			4
				Downshift when accelerator pedal is depressed		2	1	4	2	2															3
				Upshift when accelerator pedal is released		2	1	4	2	2															3
		Lock-up		3	1	3	3	3					2										4		
		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 >

[7AT: RE7R01B (VK50VE)]

Symptom				Diagnostic item																	
				Output speed sensor	Engine speed signal	Input speed sensor	A/T fluid temperature sensor	Battery voltage	transmission range switch	Manual mode switch	Stop lamp switch	Line pressure solenoid valve	Torque converter solenoid valve	Low brake solenoid valve	Front brake solenoid valve	High and low reverse clutch solenoid valve	Input clutch solenoid valve	Direct clutch solenoid valve	2346 brake solenoid valve	Anti-interlock solenoid valve	CAN communication
Function trouble	Gear does no change	“D” position	Locks in 1GR	1										1	1		1				
			Locks in 5GR				1														
			1GR → 2GR	1									1		1		1				
			2GR → 3GR													1					
			3GR → 4GR	1		1	1						1	1	1	1				1	
			4GR → 5GR														1	1			
			5GR → 6GR														1				
			6GR → 7GR										1	1	1	1			1		
			5GR → 4GR													1					
			4GR → 3GR										1		1				1		
			3GR → 2GR						1								1				
			2GR → 1GR						1								1	1			
			Does not lock-up	1	1	1	1	3	4		2	1	1	1	1	1	1	1	1	1	1
		“M” position	1GR ⇔ 2GR	2		2	2		2	1		2	2	2	2	2	2	2	2	2	2
			2GR ⇔ 3GR	2		2	2		2	1		2	2	2	2	2	2	2	2	2	2
			3GR ⇔ 4GR	2		2	2		2	1		2	2	2	2	2	2	2	2	2	2
			4GR ⇔ 5GR	2		2	2		2	1		2	2	2	2	2	2	2	2	2	2
			5GR ⇔ 6GR	2		2	2		2	1		2	2	2	2	2	2	2	2	2	2
			6GR ⇔ 7GR	2		2	2		2	1		2	2	2	2	2	2	2	2	2	2

SYSTEM SYMPTOM

< SYMPTOM DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

Symptom					Diagnostic item																
					TM-370 Control linkage	TM-278 Output speed sensor	TM-280 Engine speed signal	TM-276 Input speed sensor	TM-274 A/T fluid temperature sensor	TM-273 Transmission range switch	TM-311 Manual mode switch	TM-298 Line pressure solenoid valve	TM-295 Torque converter clutch solenoid valve	TM-318 Low brake solenoid valve	TM-302 Front brake solenoid valve	TM-317 High and low reverse clutch solenoid valve	TM-300 Input clutch solenoid valve	TM-320 Direct clutch solenoid valve	TM-319 2346 brake solenoid valve	TM-299 Anti-interlock solenoid valve	TM-270 CAN communication
Function trouble	Poor shifting	Slip	When shift- ing gears	1GR ⇔ 2GR		3	3	3	4			1						1		2	
				2GR ⇔ 3GR		3	3	3	4			1					1			2	
				3GR ⇔ 4GR		3	3	3	4			1		1		1			1	2	
				4GR ⇔ 5GR		3	3	3	4			1				1		1		2	
				5GR ⇔ 6GR		3	3	3	4			1					1	1		2	
				6GR ⇔ 7GR		3	3	3	4			1			1			1		2	
		En- gine brake does not work	“D” position → “M” position				4	4	4	5	3	1	2								3
			“M” position	7GR → 6GR		4	4	4	5	3	1	2			2				2		3
				6GR → 5GR		4	4	4	5	3	1	2						2	2		3
				5GR → 4GR		4	4	4	5	3	1	2					2		2		3
				4GR → 3GR		4	4	4	5	3	1	2		2		2				2	3
				3GR → 2GR		4	4	4	5	3	1	2					2				3
				2GR → 1GR		4	4	4	5	3	1	2							2		3

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SYSTEM SYMPTOM

< SYMPTOM DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

Symptom				Diagnostic item																	
				Control linkage	Output speed sensor	Engine speed signal	Input speed sensor	A/T fluid temperature sensor	Transmission range switch	Manual mode switch	Line pressure solenoid valve	Torque converter clutch solenoid valve	Low brake solenoid valve	Front brake solenoid valve	High and low reverse clutch solenoid valve	Input clutch solenoid valve	Direct clutch solenoid valve	2346 brake solenoid valve	Anti-interlock solenoid valve	CAN communication	
Function trouble	Poor power transmission	Slip	With selector lever in “D” position, acceleration is extremely poor.	5	3	3	3	4			1		1						1	2	
			With selector lever in “R” position, acceleration is extremely poor.	5	3	3	3	4			1						1		1	2	
			While starting off by accelerating in 1st, engine races.		3	3	3	4			1		1						1	2	
			While accelerating in 2GR, engine races.		3	3	3	4			1		1					1	1	2	
			While accelerating in 3GR, engine races.		3	3	3	4			1		1				1	1		2	
			While accelerating in 4GR, engine races.		3	3	3	4			1				1		1	1		2	
			While accelerating in 5GR, engine races.		3	3	3	4			1				1	1	1		1	2	
	Poor power transmission	Slip	While accelerating in 6GR, engine races.		3	3	3	4			1				1	1		1	1	2	
			While accelerating in 7GR, engine races.		3	3	3	4			1			1	1	1				1	2
			Lock-up		3	3	3	4			1	1									2
			No creep at all.								1	1	1	1	1	1	1	1	1		
			Extremely large creep.			1															

SYSTEM SYMPTOM

< SYMPTOM DIAGNOSIS >

[7AT: RE7R01B (VK50VE)]

Symptom			Diagnostic item																																	
			TM-370	Control linkage	TM-278	Output speed sensor	TM-303	Accelerator pedal position sensor	TM-280	Engine speed signal	TM-322	Battery voltage	TM-273	Transmission range switch	TM-332	Stop lamp switch	TM-298	Line pressure solenoid valve	TM-295	Torque converter clutch solenoid valve	TM-318	Low brake solenoid valve	TM-302	Front brake solenoid valve	TM-317	High and low reverse clutch solenoid valve	TM-300	Input clutch solenoid valve	TM-320	Direct clutch solenoid valve	TM-319	2346 brake solenoid valve	TM-299	Anti-interlock solenoid valve	TM-271	Starter relay
Function trouble	Power transmission cannot be performed	Vehicle cannot run in all position.	3						2		1	1	1	1	1	1	1	1	1	1	1	1	1	1	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	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
		Driving is not possible in “R” position.	3						2		1																	1			1					
		Engine stall		3	4	4	5		2			1																								
		Engine stalls when selector lever shifted “N” → “D” or “R”.		3	4	4		2				1																								
		Engine does not start in “N” or “P” position.	3				1	2																											1	
		Engine starts in position other than “N” or “P”.	3					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 “P” position.	1					2																												
		Vehicle moves backward with the “D” position.	1					2																												

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PRECAUTION

PRECAUTIONS

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

INFOID:000000004040784

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

WARNING:

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

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

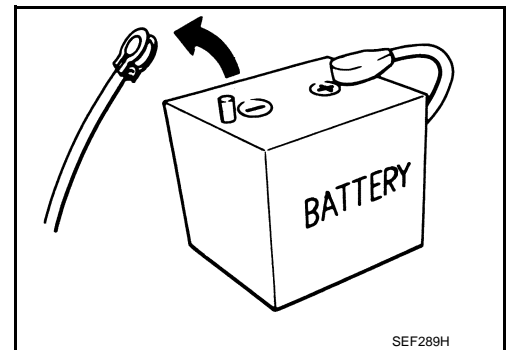
WARNING:

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

General Precautions

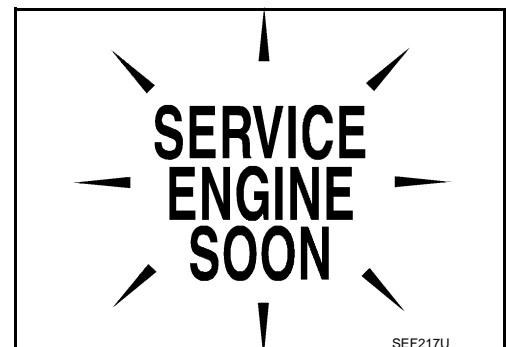
INFOID:000000004040785

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



SEF289H

- Perform "DTC (Diagnostic Trouble Code) CONFIRMATION PROCEDURE" after performing each TROUBLE DIAGNOSIS. If the repair is completed DTC should not be displayed in the "DTC CONFIRMATION PROCEDURE".
- Always use the specified brand of ATF. Refer to [MA-12, "Fluids and Lubricants"](#).
- Use lint-free paper not cloth rags during work.
- Dispose of the waste oil using the methods prescribed by law, ordinance, etc. after replacing the ATF.
- Before proceeding with disassembly, thoroughly clean the outside of the transmission. It is important to prevent the internal parts from becoming contaminated by dirt or other foreign matter.



SEF217U

PRECAUTIONS

< PRECAUTION >

[7AT: RE7R01B (VK50VE)]

- Disassembly should be done in a clean work area.
- Use lint-free paper or towels for wiping parts clean. Common shop rags can leave fibers that could interfere with the operation of the transmission.
- Place disassembled parts in order for easier and proper assembly.
- All parts should be carefully cleaned with a general purpose, non-flammable solvent before inspection or reassembly.
- Gaskets, seals and O-rings should be replaced any time the A/T is disassembled.
- It is very important to perform functional tests whenever they are indicated.
- The valve body contains precision parts and requires extreme care when parts are removed and serviced. Place disassembled valve body parts in order for easier and proper assembly. Care will also prevent springs and small parts from becoming scattered or lost.
- Properly installed valves, sleeves, plugs, etc. will slide along bores in valve body under their own weight.
- Before assembly, apply a coat of recommended ATF to all parts. Apply petroleum jelly to protect O-rings and seals, or hold bearings and washers in place during assembly. Never use grease.
- Extreme care should be taken to avoid damage to O-rings, seals and gaskets when assembling.
- Clean or replace ATF cooler if excessive foreign material is found in oil pan or clogging strainer. Refer to [TM-361, "Service Notice or Precaution"](#).
- When the A/T drain plug is removed, only some of the ATF is drained. Old ATF will remain in torque converter and ATF cooling system. Always follow the procedures under "Changing" when changing ATF. Refer to [TM-363, "Changing"](#).
- Occasionally, the parking gear may be locked with the torque insufficiently released, when stopping the vehicle by shifting the selector lever from "D" or "R" to "P" position with the brake pedal depressed. In this case, the shock with a thud caused by the abrupt release of torque may occur when shifting the selector lever from "P" position to other positions. However, this symptom is not a malfunction resulting the damage of parts.

Service Notice or Precaution

INFOID:0000000004040786

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-179, "Cleaning"](#). For radiator replacement, refer to [CO-39, "Exploded View"](#).

PREPARATION

< PREPARATION >

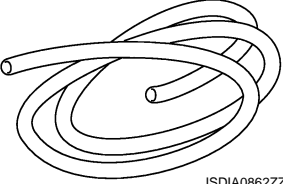
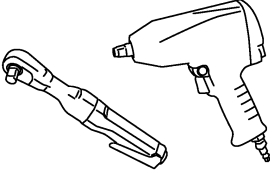
[7AT: RE7R01B (VK50VE)]

PREPARATION

PREPARATION

Commercial Service Tool

INFOID:000000004040787

Tool number Tool name		Description
B2318N3301* Vacuum hose Inside dia.: 3.5 mm (0.14 in) Outside dia.: 7.5 mm (0.30 in) Length: 5.0 m (16.4 ft)	 JSDIA0862ZZ	A/T fluid changing and adjustment
Power tool	 PBIC0190E	Loosening bolts and nuts

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

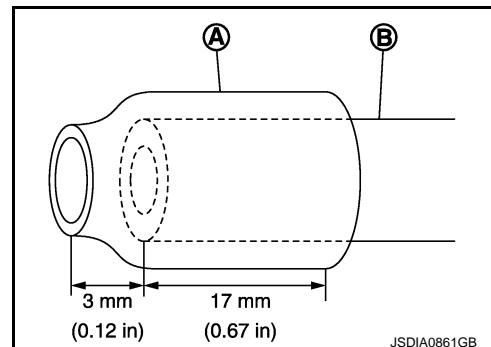
PERIODIC MAINTENANCE

A/T FLUID

Changing

INFOID:000000005151189

1. 1st Step
 - a. Cut the vacuum hose (B2318N3301) (A) by 20 mm (0.79 in) to fit in at the top of the ATF exchanger pipe (B) as shown in the figure.



2. 2nd Step
 - a. Use CONSULT-III to check that the ATF temperature is 40°C (104°F) or less.
 - b. Lift up the vehicle.
 - c. Remove the drain plug from the oil pan, and then drain the ATF.
 - d. When the ATF starts to drop, temporarily tighten the drain plug to the oil pan.
NOTE:
 Never replace drain plug and drain plug gasket with new ones yet.
 - e. Remove overflow plug from oil pan.
 - f. Insert the own made tube into the overflow plug hole, and then fill approximately 3 liters (3-1/8 US qt, 2-5/8 Imp qt) of the ATF.
 - g. Temporarily tighten the overflow plug to the oil pan.
CAUTION:
Quickly remove the own made tube from the overflow plug hole. Otherwise, the ATF may leak.
 - h. Lift down the vehicle.
 - i. Start the engine and wait for approximately 3 minutes.
 - j. Stop the engine.
3. 3rd Step
 - a. Repeat the "2nd Step".
4. Final Step
 - a. Use CONSULT-III to check that the ATF temperature is 40°C (104°F) or less.
 - b. Lift up the vehicle.
 - c. Remove the drain plug from the oil pan, and then drain the ATF.
 - d. When the ATF starts to drop, temporarily tighten the drain plug to the oil pan.
CAUTION:
 - Tighten the drain plug into the oil pan to the specified torque.
 - Never reuse drain plug and drain plug gasket.
 - e. Remove overflow plug from oil pan.
 - f. Insert the own made tube into the overflow plug hole, and then fill approximately 3 liters (3-1/8 US qt, 2-5/8 Imp qt) of the ATF.
 - g. Temporarily tighten the overflow plug to the oil pan.
CAUTION:
Quickly remove the own made tube from the overflow plug hole. Otherwise, the ATF may leak.
 - h. Lift down the vehicle.
 - i. Start the engine.
 - j. Make the ATF temperature approximately 40°C (104°F).

NOTE:

The ATF level is greatly affected by the temperature. Always check the ATF temperature on "ATF TEMP 1" of Data Monitor using CONSULT-III.

- k. Park vehicle on level surface and set parking brake.
- l. Shift the selector lever through each gear position. Leave selector lever in "P" position.
- m. Lift up the vehicle when the ATF temperature reaches 40°C (104°F), and then remove the overflow plug from the oil pan.
- n. When the ATF starts to drop, tighten the overflow plug into the oil pan to the specified torque.

CAUTION:

Never reuse overflow plug.

ATF : Refer to [TM-387, "General Specification"](#).

Fluid capacity : Refer to [TM-387, "General Specification"](#).

CAUTION:

- Use only Genuine NISSAN Matic S ATF. Never mix with other ATF.
- Using ATF other than Genuine NISSAN Matic S ATF will cause deterioration in driveability and A/T durability, and may damage the A/T, which is not covered by the INFINITI new vehicle limited warranty.
- When filling ATF, be careful not to scatter heat generating parts such as exhaust.
- Never reuse drain plug gasket.

Drain plug - tightening torque : Refer to [TM-376, "Exploded View"](#).

Overflow plug - tightening torque : Refer to [TM-376, "Exploded View"](#).

Adjustment

INFOID:000000005151190

CAUTION:

Always maintain the ATF temperature within between 35°C (95°F) and 45°C (113°F) while checking with CONSULT-III when the ATF level adjustment is performed.

1. Cut the vacuum hose (B2318N3301) (A) by 20 mm (0.79 in) to fit in at the top of the ATF exchanger pipe (B) as shown in the figure.
2. Start the engine.
3. Make the ATF temperature approximately 40°C (104°F).

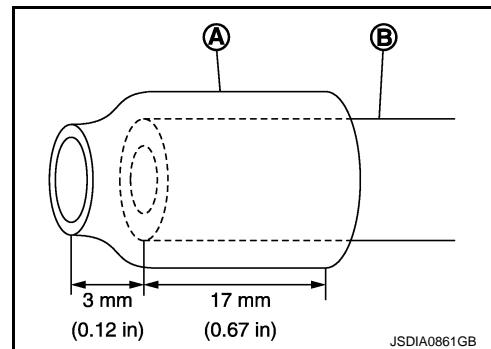
NOTE:

The ATF level is greatly affected by the temperature. Always check the ATF temperature on "ATF TEMP 1" of Data Monitor using CONSULT-III.

4. Park vehicle on level surface and set parking brake.
5. Shift the selector lever through each gear position. Leave selector lever in "P" position.
6. Lift up the vehicle.
7. Check the ATF leakage from transmission.
8. Remove overflow plug from oil pan.
9. Insert the own made tube into the overflow plug hole, and then fill approximately 0.5 liters (4/8 US qt, 4/8 Imp qt) of the ATF.
10. Check that the ATF leaks when removing the own made tube from the overflow plug hole. If the ATF does not leak, refill the ATF.
11. When the ATF starts to drop, tighten the overflow plug into the oil pan to the specified torque.

CAUTION:

Never reuse overflow plug.



Overflow plug - tightening torque : Refer to [TM-376, "Exploded View"](#).

A

B

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P

A/T FLUID COOLER

Cleaning

INFOID:000000004040789

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.

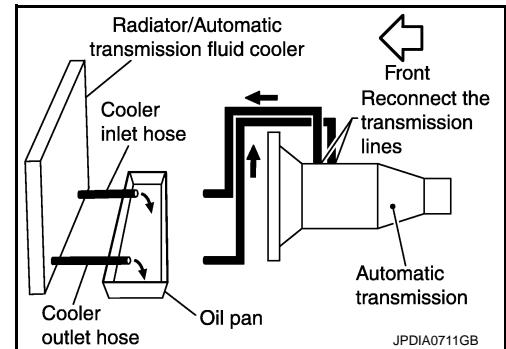
CLEANING PROCEDURE

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.

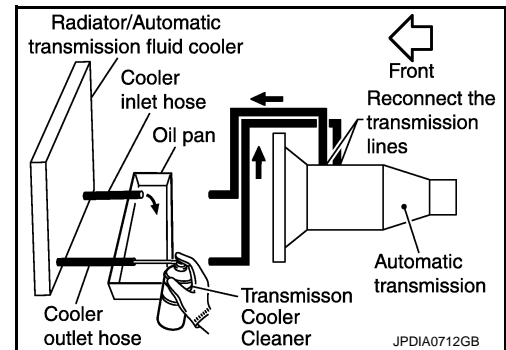


5. Insert the extension adapter hose of a can of Transmission Cooler Cleaner (Nissan P/N 999MP-AM006) into the cooler outlet hose.

CAUTION:

- Wear safety glasses and rubber gloves when spraying the Transmission Cooler Cleaner.
- Spray Transmission Cooler Cleaner only with adequate ventilation.
- Avoid contact with eyes and skin.
- Never 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.

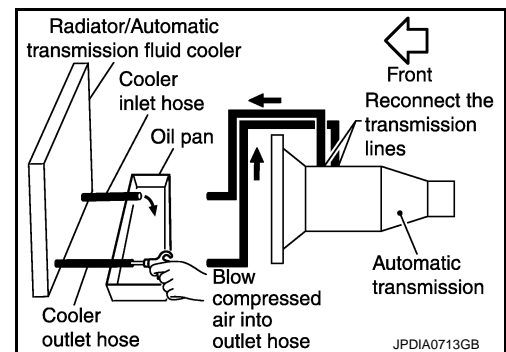
13. Flush each steel line from the cooler side back toward the A/T by spraying Transmission Cooler Cleaner in a continuous stream for 5 seconds.

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

< PERIODIC MAINTENANCE >

[7AT: RE7R01B (VK50VE)]

DIAGNOSIS PROCEDURE

NOTE:

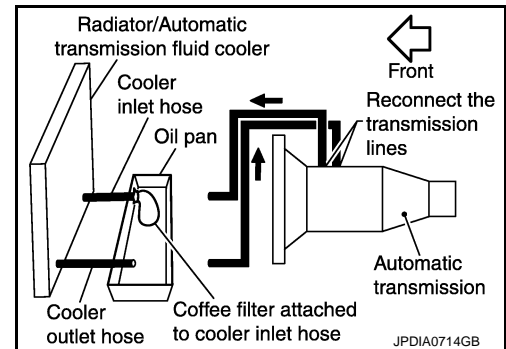
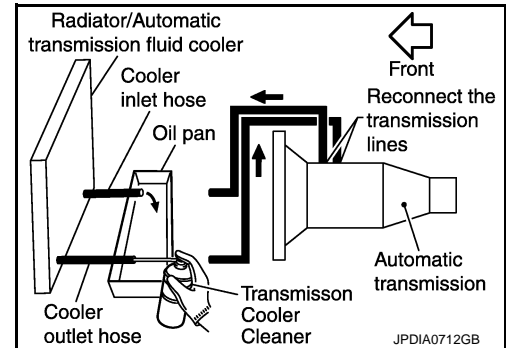
Insufficient cleaning of the cooler inlet hose exterior may lead to inaccurate debris identification.

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 (Nissan P/N 999MP-AM006) into the cooler outlet hose.

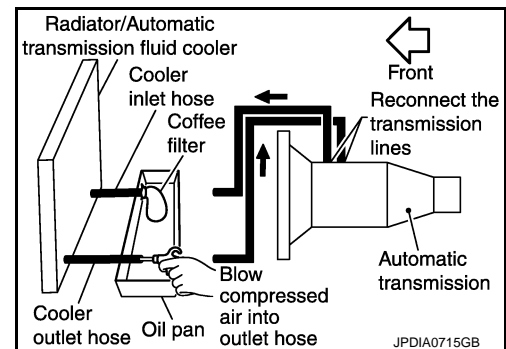
CAUTION:

- Wear safety glasses and rubber gloves when spraying the Transmission Cooler Cleaner.
- Spray Transmission Cooler Cleaner only with adequate ventilation.
- Avoid contact with eyes and skin.
- Never 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.

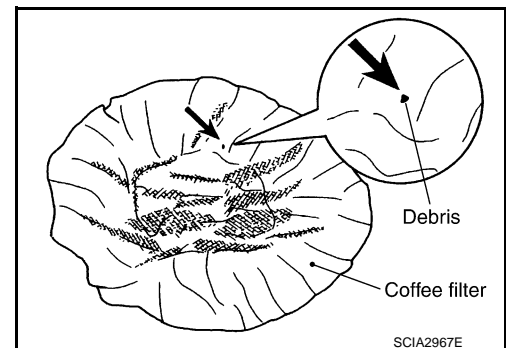


6. Insert the tip of an air gun into the end of the cooler outlet hose.
7. Wrap a shop rag around the air gun tip and end of cooler outlet hose.
8. Blow compressed air regulated to 5 to 9 kg/cm² (71 to 128 psi) through the cooler outlet hose to force any remaining ATF into the coffee filter.
9. Remove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

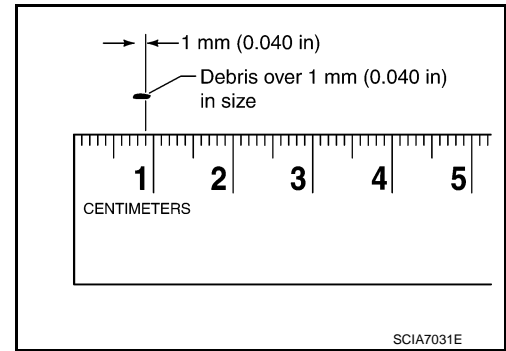


A/T FLUID COOLER

< PERIODIC MAINTENANCE >

[7AT: RE7R01B (VK50VE)]

- b. If one or more pieces of debris are found that are over 1 mm (0.040 in) in size and/or peeled clutch facing material is found in the coffee filter, the A/T fluid cooler is not serviceable. The A/T fluid cooler/radiator must be replaced and the inspection procedure is ended. Refer to [CO-39, "Exploded View"](#).



Inspection

INFOID:000000004040790

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

STALL TEST

< PERIODIC MAINTENANCE >

[7AT: RE7R01B (VK50VE)]

STALL TEST

Inspection and Judgment

INFOID:000000004040791

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, then quickly release the accelerator pedal.

CAUTION:

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

Stall speed : Refer to [TM-388, "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

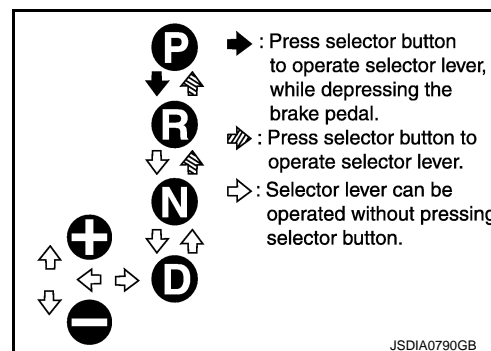
A/T POSITION

Inspection and Adjustment

INFOID:000000004040793

INSPECTION

1. Place selector lever in "P" position, and turn ignition switch ON (engine stop).
2. Check that selector lever can be shifted to other than "P" position when brake pedal is depressed. Also check that selector lever can be shifted from "P" position only when brake pedal is depressed.
3. Shift the selector lever and check for excessive effort, sticking, noise or rattle.
4. Confirm that the selector lever stops at each position by feeling the engagement when it is moved through all the positions. Check whether or not the actual position the selector lever matches the position shown by the shift position indicator and the A/T body.
5. The method of operating the lever to individual positions correctly is shown in the figure.
6. When selector button is pressed in "P", "R", or "N" position without applying forward/backward force to selector lever, check button operation for sticking.
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. DS mode must be indicated on the combination meter when the selector lever is shifted to the manual shift gate. When the selector lever is shifted to the "+" or "-" side in the DS mode, manual mode should be indicated on the combination meter.
In addition, a set shift position must be changed when the selector lever is shifted to the "+" or "-" side in the manual mode. (Only while driving.)



ADJUSTMENT

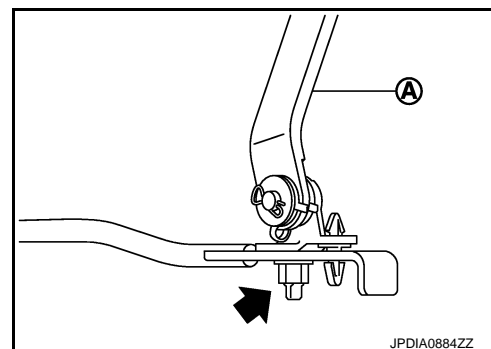
1. Loosen nut (↔).
2. Place manual lever and selector lever in "P" position.
3. While pressing lower lever (A) toward rear of vehicle (in "P" position direction), tighten nut to specified torque. Refer to [TM-374](#), "Exploded View".

CAUTION:

Be careful not to touch the control rod while pressing lower lever of A/T shift selector assembly.

NOTE:

Press lower lever of A/T shift selector assembly with a force of approximately 1 kg (9.8 N).



A/T SHIFT SELECTOR

< REMOVAL AND INSTALLATION >

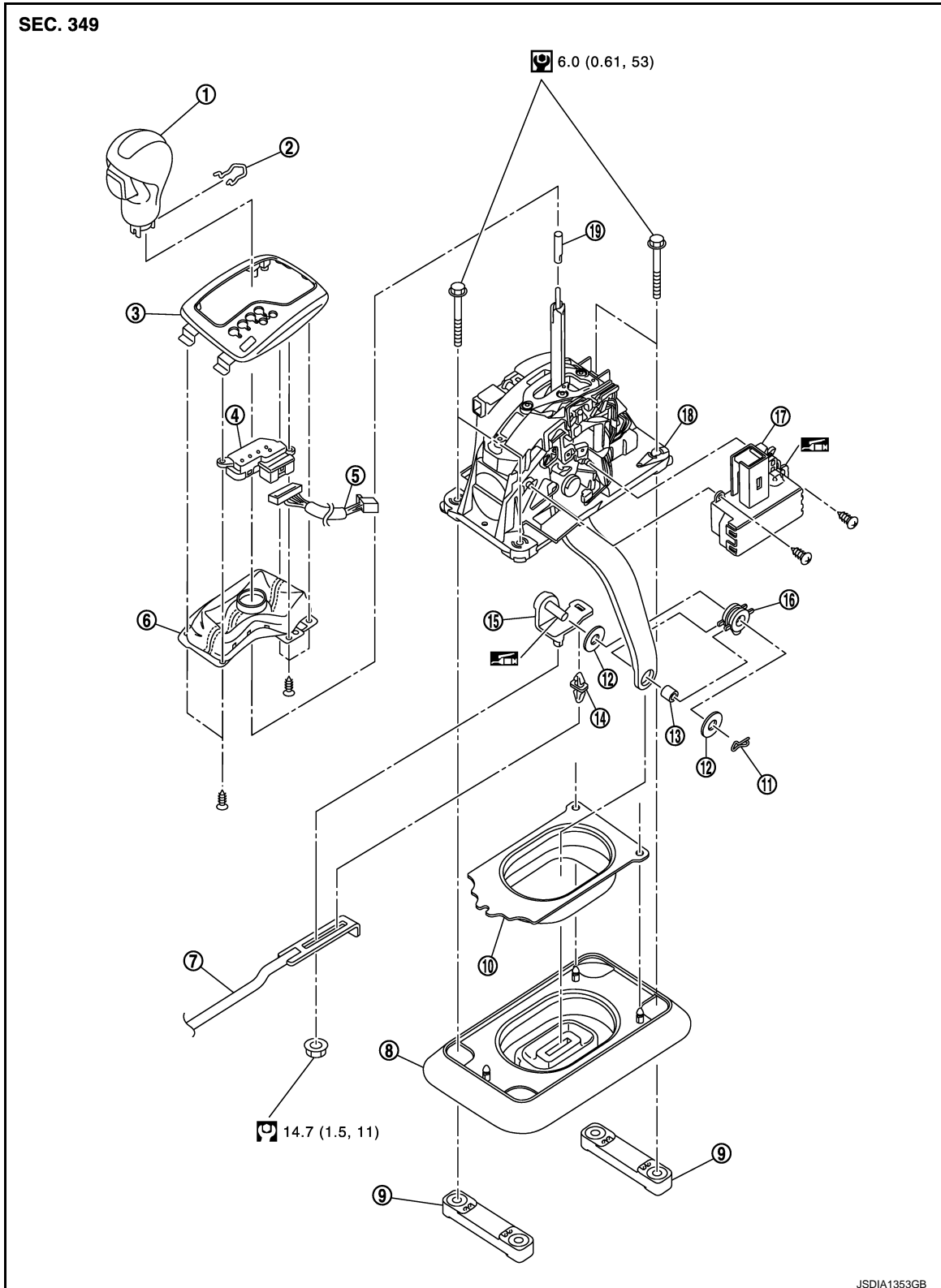
[7AT: RE7R01B (VK50VE)]

REMOVAL AND INSTALLATION

A/T SHIFT SELECTOR

Exploded View

INFOID:000000004040815



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A/T SHIFT SELECTOR

< REMOVAL AND INSTALLATION >

[7AT: RE7R01B (VK50VE)]

- | | | |
|--------------------------------------|----------------------|---------------------------------|
| 1. Selector lever knob | 2. Lock pin | 3. Indicator plate |
| 4. Selector lever position indicator | 5. Harness connector | 6. Insert finisher |
| 7. Control rod | 8. Dust cover | 9. Bracket |
| 10. Dust cover plate | 11. Snap pin | 12. Washer |
| 13. Collar | 14. Clip | 15. Pivot pin |
| 16. Insulator | 17. Shift lock unit | 18. A/T shift selector assembly |
| 19. Adapter | | |

 Apply multi-purpose grease.

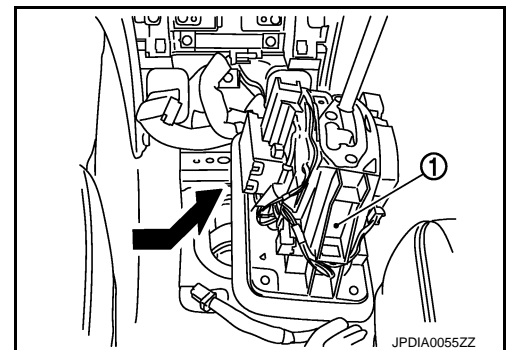
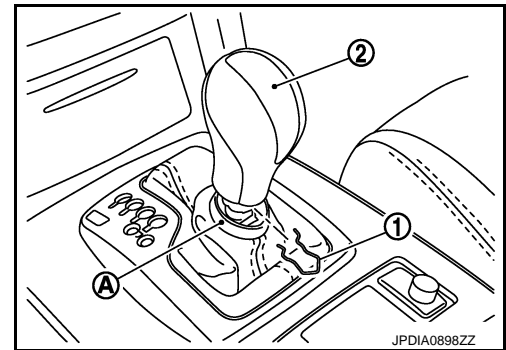
Refer to [GI-4, "Components"](#) for symbols in the figure.

Removal and Installation

INFOID:000000004040816

REMOVAL

- Shift the selector lever to "P" position.
- Remove control rod from A/T shift selector.
- Shift the selector lever to "N" position.
- Remove knob cover (A) below selector lever downward.
- Pull lock pin (1) out of selector lever knob (2).
- Remove selector lever knob.
- Remove center console assembly. Refer to [IP-22, "Exploded View"](#).
CAUTION:
When disconnecting selector lever position indicator connector from shift position switch, never twist or apply an excessive load to the connector.
- Remove the rear ventilator duct 1. Refer to [VTL-11, "Exploded View"](#).
- Disconnect A/T shift selector connector.
- Remove harness clips from A/T shift selector assembly.
- Shift the selector lever to "P" position.
- Remove A/T shift selector assembly mounting bolts.
- Slightly lift the A/T shift selector assembly (1) and slide it rightward. Then pull it out in the diagonally right direction.
- Remove adapter from A/T shift selector assembly.
- Remove dust cover and dust cover plate from A/T shift selector assembly.
- Remove dust cover from dust cover plate.
- Remove shift lock unit from A/T shift selector assembly.
- Remove brackets from vehicle floor panel.
- Remove selector lever position indicator from console finisher assembly:
 - Remove indicator assembly from console finisher assembly. Refer to [IP-22, "Exploded View"](#).
 - Remove insert finisher from indicator assembly.
 - Remove selector lever position indicator.



INSTALLATION

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

CAUTION:

Apply multi-purpose grease on the pin surface (that slides after installing a collar) of the pivot pin.

- Refer to the followings when installing selector lever knob to A/T shift selector assembly.
 - Insert lock pin to selector lever knob.
 - Install selector lever knob over selector lever until a click is felt.

A/T SHIFT SELECTOR

< REMOVAL AND INSTALLATION >

[7AT: RE7R01B (VK50VE)]

CAUTION:

- Install it straight, and never tap or apply any shock to install it.
- Never push selector button.
- When installing control rod to A/T shift selector assembly, refer to “ADJUSTMENT”. Refer to [TM-370, "Inspection and Adjustment"](#).

Inspection

INFOID:000000004040817

INSPECTION AFTER INSTALLATION

Check A/T positions. Refer to [TM-370, "Inspection and Adjustment"](#).

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CONTROL ROD

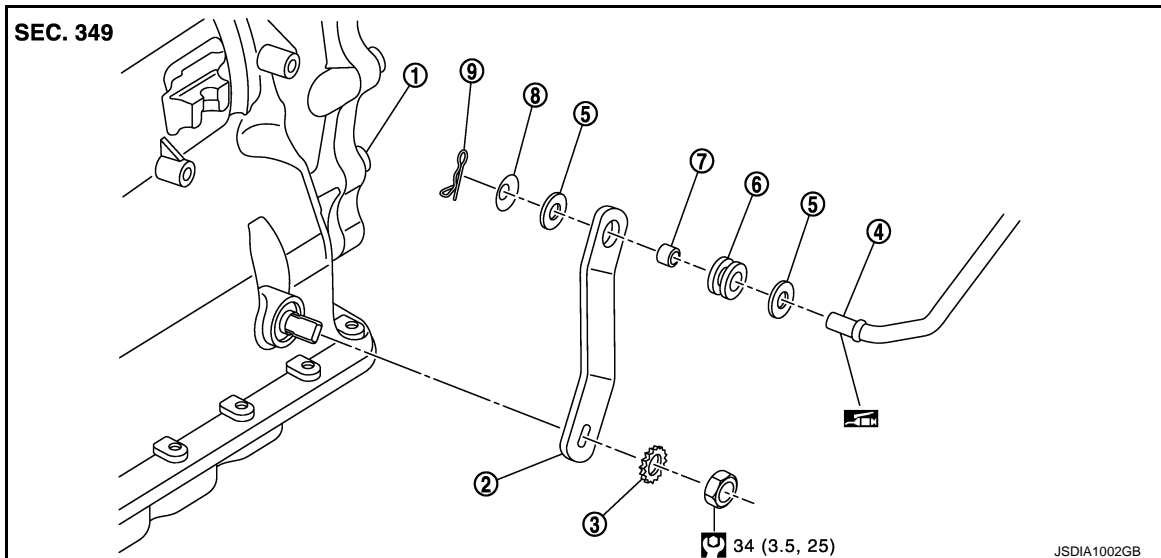
< REMOVAL AND INSTALLATION >

[7AT: RE7R01B (VK50VE)]


CONTROL ROD

Exploded View

INFOID:000000004040818



- | | | |
|-----------------|-------------------|----------------|
| 1. A/T assembly | 2. Manual lever | 3. Lock washer |
| 4. Control rod | 5. Washer | 6. Insulator |
| 7. Collar | 8. Conical washer | 9. Snap pin |

: Apply multi-purpose grease.

Refer to [GI-4, "Components"](#) for symbols in the figure.

Removal and Installation

INFOID:000000004040819

REMOVAL

1. Shift the selector lever to "P" position.
2. Disconnect A/T shift selector and control rod. Refer to [TM-371, "Exploded View"](#).
3. Remove manual lever from A/T assembly.
4. Remove control rod from manual lever.

INSTALLATION

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

CAUTION:

Apply multi-purpose grease on the pin surface (that slides after installing collar) of the tip of the control rod.

- When installing control rod to A/T shift selector assembly, refer to "ADJUSTMENT". Refer to [TM-370, "Inspection and Adjustment"](#).

Inspection

INFOID:000000004040820

INSPECTION AFTER INSTALLATION

Check A/T positions. Refer to [TM-370, "Inspection and Adjustment"](#).

PADDLE SHIFTER

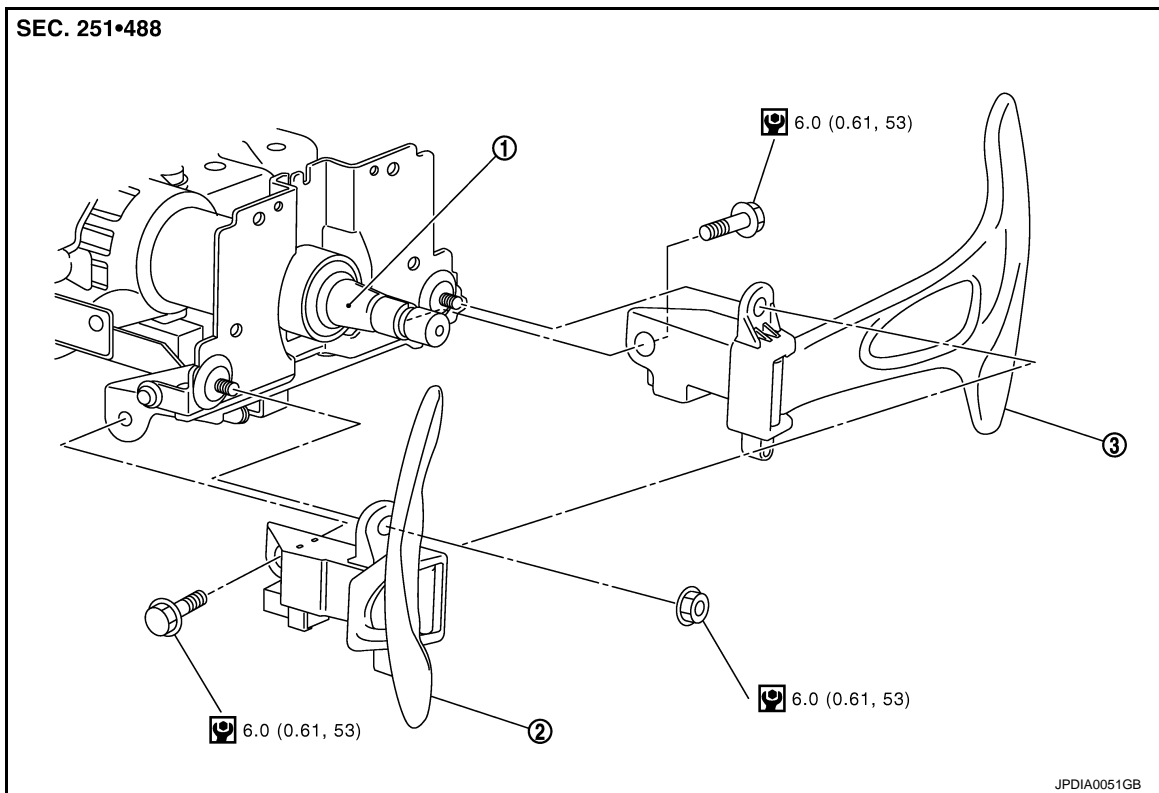
< REMOVAL AND INSTALLATION >

[7AT: RE7R01B (VK50VE)]

PADDLE SHIFTER

Exploded View

INFOID:000000004040821



1. Steering column assembly

2. Paddle shifter (shift-down)

3. Paddle shifter (shift-up)

Refer to [GI-4, "Components"](#) for symbols in the figure.

Removal and Installation

INFOID:000000004040822

REMOVAL

1. Remove steering column cover. Refer to [IP-11, "Exploded View"](#).
2. Disconnect paddle shifter connectors from each paddle shifter.
3. Remove paddle shifter mounting bolts and nuts.
4. Remove each paddle shifter from steering column assembly.

INSTALLATION

Install in the reverse order of removal.

OIL PAN

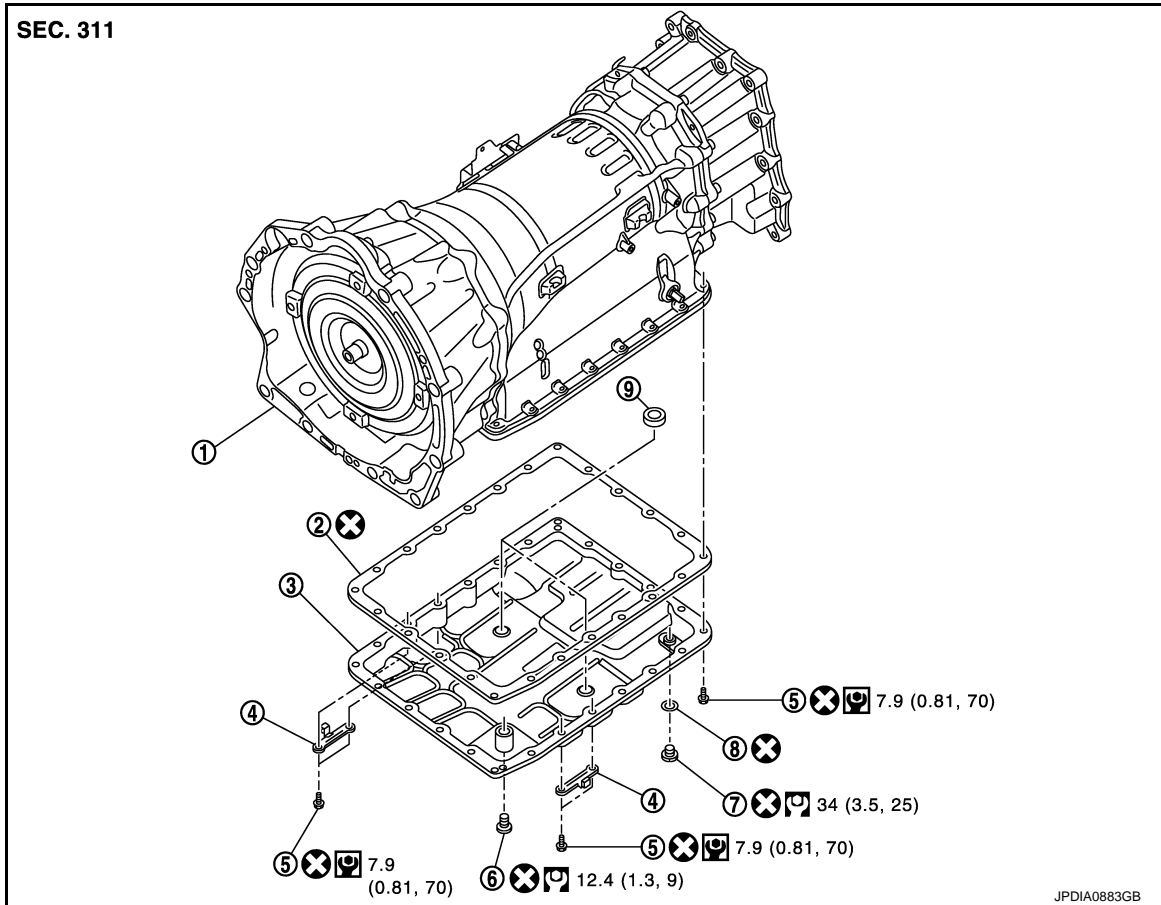
< REMOVAL AND INSTALLATION >

[7AT: RE7R01B (VK50VE)]

OIL PAN

Exploded View

INFOID:000000004040823



- | | | |
|---------------|--------------------------|------------------|
| 1. A/T | 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 |

Refer to [GI-4, "Components"](#) for symbols in the figure.

Removal and Installation

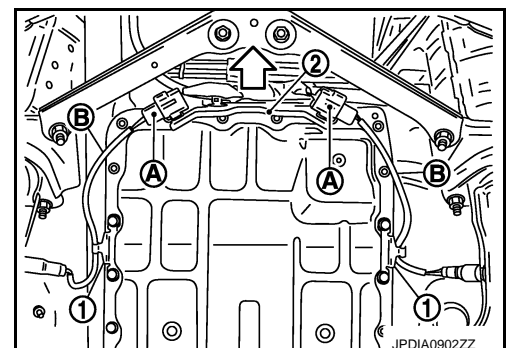
INFOID:000000004040824

REMOVAL

1. Drain ATF through drain plug.
2. Disconnect heated oxygen sensor 2 connectors (A).

← : Vehicle front

3. Remove heated oxygen sensor 2 harness (B) from clips (1).
4. Remove bracket (2) from A/T assembly.





OIL PAN

< REMOVAL AND INSTALLATION >

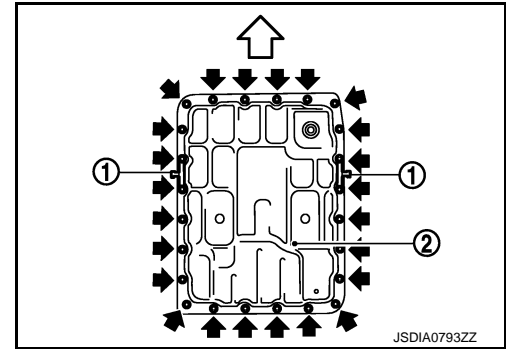
[7AT: RE7R01B (VK50VE)]

5. Remove clips (1).

-  : Vehicle front
 : Oil pan mounting bolt

6. Remove oil pan (2) and oil pan gasket.

7. Remove magnets from oil pan.





INSTALLATION

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

CAUTION:

- **Never reuse drain plug and drain plug gasket.**
- **Clean foreign materials (gear wear particles) that adhere on the inside of the oil pan and on the magnet, and then assemble.**
- Refer to the followings when installing oil pan (2) (with oil pan gasket) and clips (1) to transmission case.

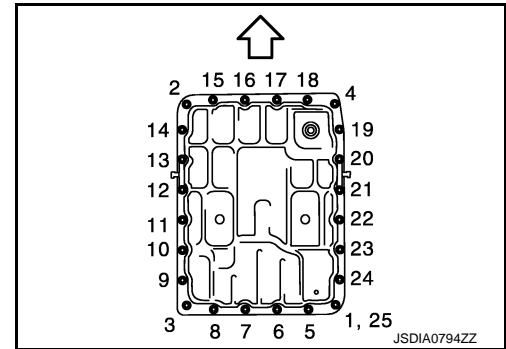
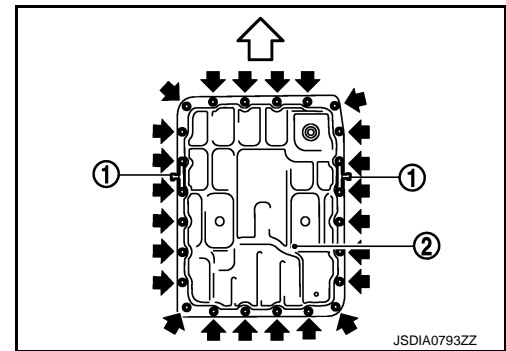
-  : Vehicle front
 : Oil pan mounting bolt

CAUTION:

- **Never reuse oil pan gasket and oil pan mounting bolts.**
- **Completely remove all moisture, oil and old gasket, etc. from oil pan gasket mounting surface of transmission case and oil pan.**
- **Install oil pan gasket in the direction to align hole position.**
- Tighten oil pan mounting bolts to the specified torque in numerical order shown in the figure after temporarily tightening them.

-  : Vehicle front

- Pour ATF into A/T assembly after completing installation. Refer to [TM-363. "Changing"](#).



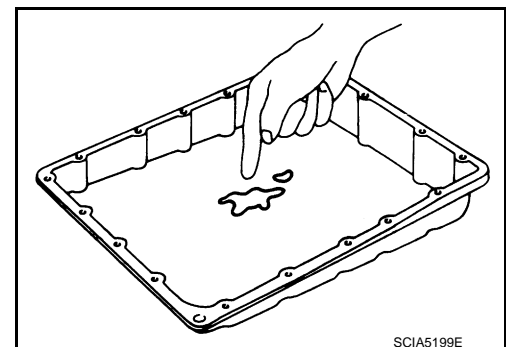
Inspection and Adjustment

INFOID:000000004040825

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-366. "Cleaning"](#).**



INSPECTION AFTER INSTALLATION

Check A/T fluid leakage.

ADJUSTMENT AFTER INSTALLATION

OIL PAN

< REMOVAL AND INSTALLATION >

[7AT: RE7R01B (VK50VE)]

Adjust A/T fluid level. Refer to [TM-364, "Adjustment"](#).

AIR BREATHER HOSE

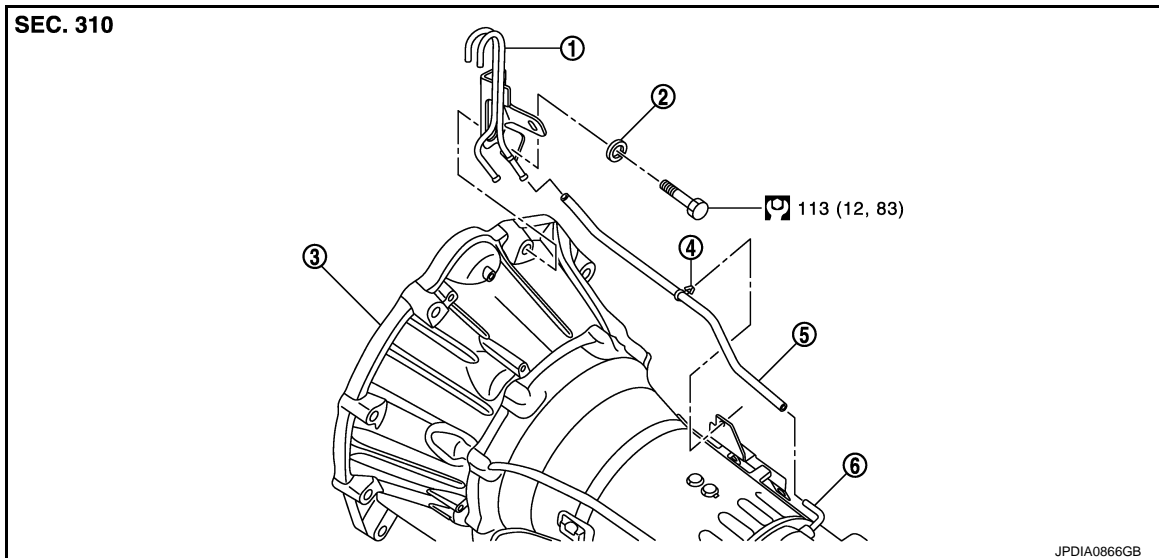
< REMOVAL AND INSTALLATION >

[7AT: RE7R01B (VK50VE)]

AIR BREATHER HOSE

Exploded View

INFOID:000000004040826



- | | | |
|----------------------|----------------------|----------------------|
| 1. Air breather vent | 2. Spring washer | 3. A/T assembly |
| 4. Clip | 5. Air breather hose | 6. Air breather tube |

Refer to [GI-4, "Components"](#) for symbols in the figure.

Removal and Installation

INFOID:000000004040827

REMOVAL

1. Remove front propeller shaft. Refer to [DLN-109, "VK50VE : Exploded View"](#).
2. Remove exhaust mounting bracket and three way catalyst (right bank). Refer to [EX-10, "Exploded View"](#).
3. Remove air breather hose.
4. Remove rear propeller shaft. Refer to [DLN-132, "Exploded View"](#).
5. Remove control rod from A/T shift selector. Refer to [TM-371, "Exploded View"](#).
6. Support A/T assembly with a transmission jack.

AIR BREATHER HOSE

< REMOVAL AND INSTALLATION >

[7AT: RE7R01B (VK50VE)]

7. Insert a wooden block (A) between oil pan (upper) (1) of engine and front suspension member (2).

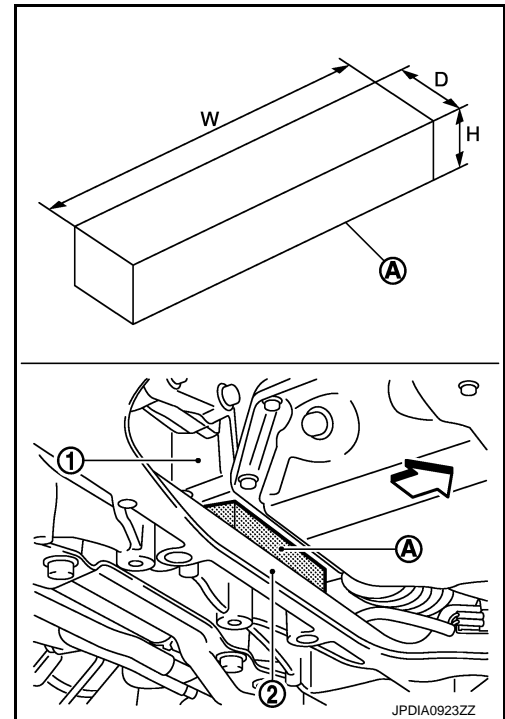
W : 150 mm (5.91 in)

D : 30 mm (1.18 in)

H : 20 mm (0.79 in)

CAUTION:

- Always insert a wooden block between oil pan (upper) of engine and front suspension member when removing air breather vent. (Because VVEL control shaft position sensor may be damaged by the interference between VVEL control shaft position sensor and dash panel if the operation is performed without the wooden block inserted.)
 - After inserting wooden block, check it does not fall out easily.
8. Remove rear engine mounting member with a power tool. Refer to [EM-196, "Exploded View"](#).
9. Remove bolt fixing A/T assembly to engine assembly with power tool.
10. Remove air breather vent.



INSTALLATION

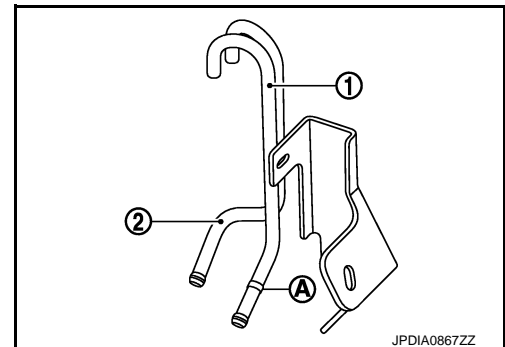
Note the following, and install in the reverse order of removal.

CAUTION:

- When installing air breather hose, be careful not to be crushed or blocked by folding or bending the hose.
- When inserting air breather hose to the air breather vent (for A/T) (1), be sure to insert it fully until its end reaches the spool (A) portion.

2 : Air breather vent (for transfer)

- Install air breather hose to air breather vent (for A/T) so that the paint mark is facing upward.
- Ensure clips are securely installed to brackets when installing air breather hose to brackets.



FLUID COOLER SYSTEM

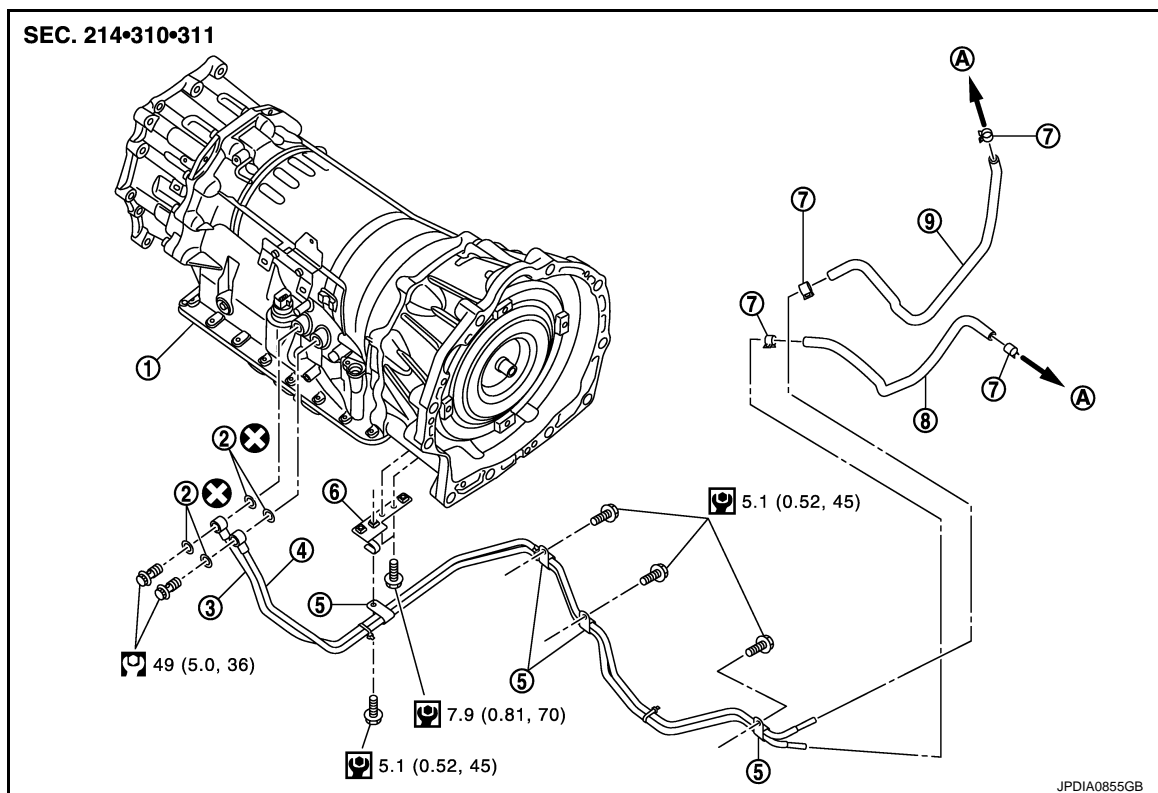
< REMOVAL AND INSTALLATION >

[7AT: RE7R01B (VK50VE)]

FLUID COOLER SYSTEM

Exploded View

INFOID:000000004040828



- | | | |
|--------------------------|----------------------------|----------------------------|
| 1. A/T assembly | 2. Copper washer | 3. A/T fluid cooler tube |
| 4. A/T fluid cooler tube | 5. Clip | 6. Bracket |
| 7. Hose clamp | 8. A/T fluid cooler hose B | 9. A/T fluid cooler hose A |
| A. To radiator | | |

Refer to [GI-4, "Components"](#) for symbols in the figure.

Removal and Installation

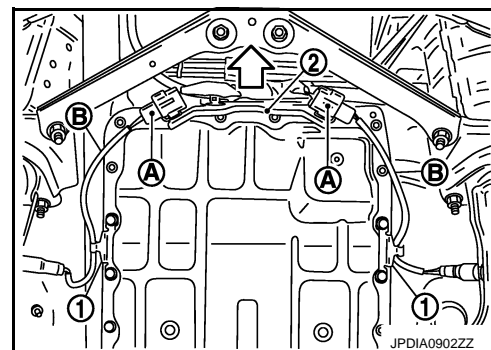
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REMOVAL

- Shift the selector lever to "N" position, and release the parking brake.
- Remove air duct (inlet). Refer to [EM-177, "Exploded View"](#).
- Remove engine under cover with a power tool. Refer to [EXT-31, "Exploded View"](#).
- Remove A/T fluid cooler hose A and A/T fluid cooler hose B.
- Disconnect heated oxygen sensor 2 harness connectors (A).

↔ : Vehicle front

- Remove heated oxygen sensor 2 harness (B) from clips (1).
- Remove harness bracket (2) from A/T assembly. Refer to [TM-384, "Exploded View"](#).
- Remove front propeller shaft. Refer to [DLN-109, "VK50VE : Exploded View"](#).
- Remove front drive shaft (right side). Refer to [FAX-26, "Exploded View"](#).
- Remove A/T fluid cooler tubes from A/T assembly and engine assembly.
- Plug up opening such as the A/T fluid cooler tube hole.



FLUID COOLER SYSTEM

< REMOVAL AND INSTALLATION >

[7AT: RE7R01B (VK50VE)]

12. Remove clips and bracket.

13. Remove A/T fluid cooler tubes from the vehicle.

CAUTION:

Be careful not to bend A/T fluid cooler tubes.

INSTALLATION

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

CAUTION:

Never reuse copper washer.

- 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	A
	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

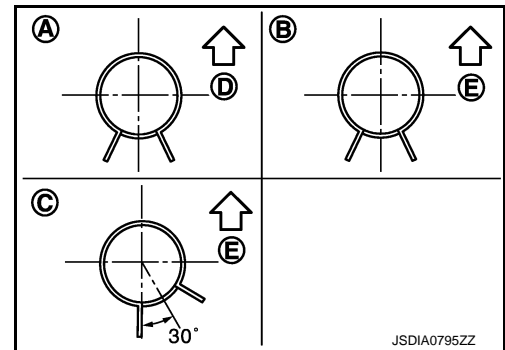
*: Refer to the illustrations for the specific position each hose clamp tab.

- The illustrations indicate the view from the hose ends.

⇐ D : Vehicle front

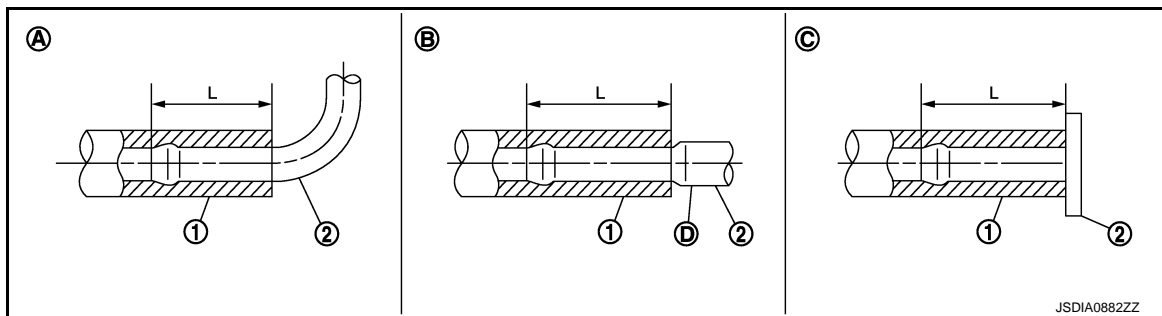
⇐ E : Vehicle upper

- When installing 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.

(1)	(2)	Tube type	Dimension (L)
A/T fluid cooler hose A	Radiator assembly side	A	End reaches the radius creve end.
	A/T fluid cooler tube side	B	30 mm (1.18 in) [End reaches the 2-stage bulge (D).]
A/T fluid cooler hose B	Radiator assembly side	C	Insert the hose until the hose touches the radiator.
	A/T fluid cooler tube side	B	30 mm (1.18 in) [End reaches the 2-stage bulge (D).]



FLUID COOLER SYSTEM

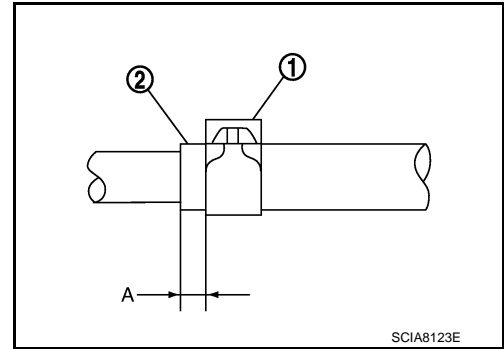
< REMOVAL AND INSTALLATION >

[7AT: RE7R01B (VK50VE)]

- 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.



INFOID:000000004040830

Inspection and Adjustment

INSPECTION AFTER INSTALLATION

Check for A/T fluid leakage.

ADJUSTMENT AFTER INSTALLATION

Adjust A/T fluid level. Refer to [TM-364, "Adjustment"](#).

TRANSMISSION ASSEMBLY

< UNIT REMOVAL AND INSTALLATION >

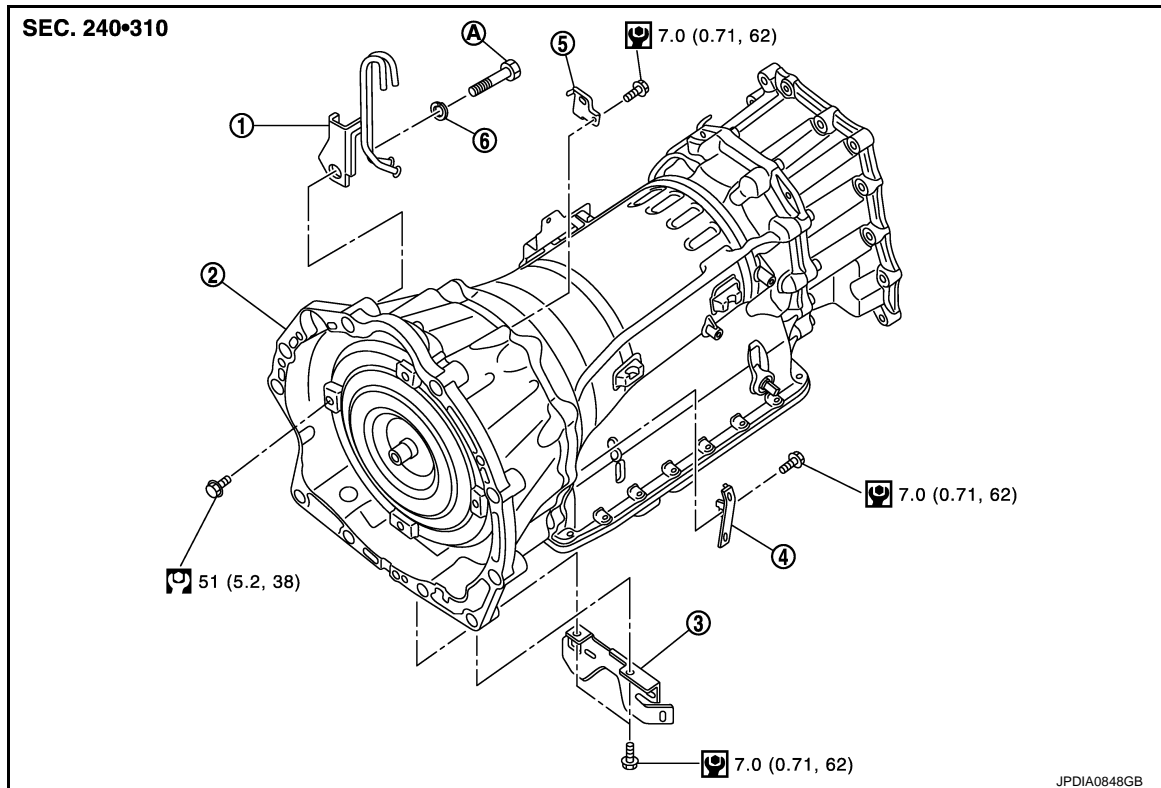
[7AT: RE7R01B (VK50VE)]

UNIT REMOVAL AND INSTALLATION

TRANSMISSION ASSEMBLY

Exploded View

INFOID:000000004040837



- | | | |
|----------------------|--------------------|--------------------|
| 1. Air breather vent | 2. A/T assembly | 3. Harness bracket |
| 4. Harness bracket | 5. Harness bracket | 6. Spring washer |

A. For tightening torque, Refer to [TM-384, "Removal and Installation"](#).

Refer to [GI-4, "Components"](#) for symbols in the figure.

Removal and Installation

INFOID:000000004040838

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.
- Always insert a wooden block between oil pan (upper) of engine and front suspension member when removing A/T assembly from the engine. (Because VVEL control shaft position sensor may be damaged by the interference between VVEL control shaft position sensor and dash panel if the operation is performed without the wooden block inserted.)

1. Shift the selector lever to "P" position, and then release the parking brake.
2. Disconnect the battery cable from the negative terminal.
3. Remove control rod from A/T shift selector. Refer to [TM-371, "Exploded View"](#).
4. Remove rear propeller shaft. Refer to [DLN-132, "Exploded View"](#).
5. Remove front propeller shaft. Refer to [DLN-109, "VK50VE : Exploded View"](#).
6. Remove crankshaft position sensor (POS) from A/T assembly. Refer to [EM-188, "Exploded View"](#).

CAUTION:

- Never subject it to impact by dropping or hitting it.
- Never disassemble.

TRANSMISSION ASSEMBLY

< UNIT REMOVAL AND INSTALLATION >

[7AT: RE7R01B (VK50VE)]

- Never allow metal filings, etc. to get on the sensor's front edge magnetic area.
- Never place in an area affected by magnetism.

7. Remove rear plate cover. Refer to [EM-188, "Exploded View"](#).

8. Turn crankshaft, and remove the four tightening bolts for drive plate and torque converter.

CAUTION:

When turning the crankshaft, turn it clockwise as viewed from the front of the engine.

9. Remove A/T fluid cooler tube from the A/T assembly and engine assembly. Refer to [TM-381, "Exploded View"](#).

10. Plug up openings such as the A/T fluid cooler tube hole.

11. Support A/T assembly with a transmission jack.

CAUTION:

When setting the transmission jack, be careful not to allow it to collide against the drain plug.

12. Insert a wooden block (A) between oil pan (upper) (1) of engine and front suspension member (2).

W : 150 mm (5.91 in)

D : 30 mm (1.18 in)

H : 20 mm (0.79 in)

⇐ : Vehicle front

CAUTION:

- Always insert a wooden block between oil pan (upper) of engine and front suspension member when removing A/T assembly from the engine. (Because VVEL control shaft position sensor may be damaged by the interference between VVEL control shaft position sensor and dash panel if the operation is performed without the wooden block inserted.)
- After inserting wooden block, check it does not fall out easily.

13. Remove rear engine mounting member with power tool. Refer to [EM-196, "Exploded View"](#).

14. Disconnect A/T assembly connector and AWD solenoid connector.

15. Remove harness and harness brackets.

16. Remove bolts fixing A/T assembly to engine assembly with power tool.

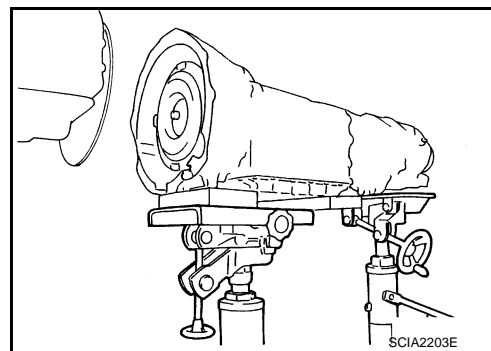
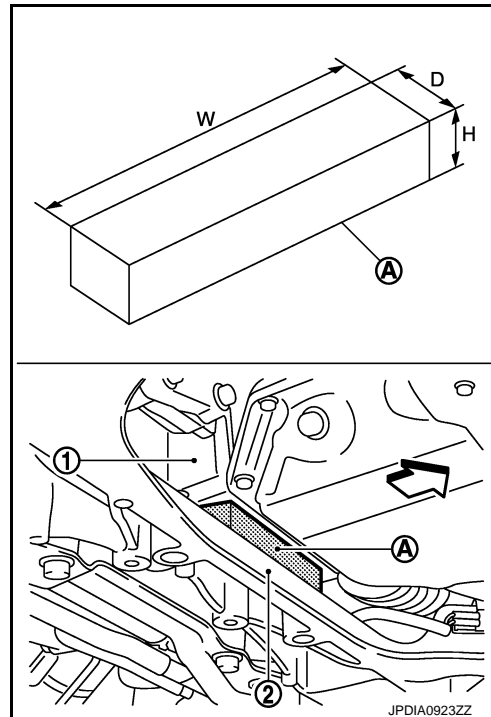
17. Remove air breather hose and air breather vent. Refer to [TM-379, "Exploded View"](#).

18. Remove A/T assembly with transfer assembly from vehicle.

CAUTION:

- Secure torque converter to prevent it from dropping.
- Secure A/T assembly to a transmission jack.

19. Remove transfer assembly from A/T assembly with power tool. Refer to [DLN-65, "VK50VE : Exploded View"](#).



INSTALLATION

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

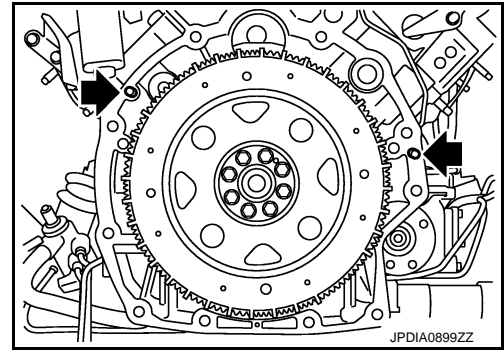
CAUTION:

TRANSMISSION ASSEMBLY

< UNIT REMOVAL AND INSTALLATION >

[7AT: RE7R01B (VK50VE)]

Check fitting of dowel pin (↔) when installing A/T assembly to engine assembly.

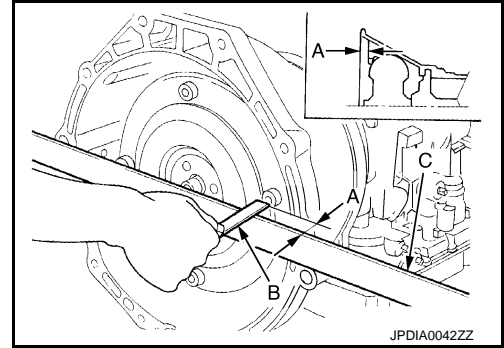


- When installing A/T assembly to the engine assembly, be sure to check dimension (A) to ensure it is within the reference value limit.

B : Scale

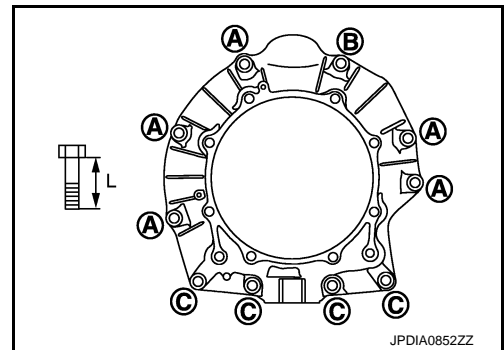
C : Straightedge

Dimension (A) : Refer to [TM-388, "Torque Converter"](#).



- When installing A/T assembly to the engine assembly, attach the fixing bolts in accordance with the following standard.

Bolt symbol	A	B*	C
Insertion direction	A/T assembly to engine assembly		
Number of bolts	5	1	4
Bolt length (L) mm (in)	70 (2.76)		65 (2.56)
Tightening torque N·m (kg·m, ft·lb)	113 (12, 83)		74 (7.5, 55)



*: Tightening the bolt with air breather vent and spring washer.

- 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-212, "Exploded View"](#).
- Rotate crankshaft several turns and check to be sure that A/T rotates freely without binding after converter is installed to drive plate.

Inspection and Adjustment

INFOID:0000000004040839

INSPECTION AFTER INSTALLATION

Check the following items.

- A/T fluid leakage.
- A/T position. Refer to [TM-370, "Inspection and Adjustment"](#).

ADJUSTMENT AFTER INSTALLATION

Adjust A/T fluid level. Refer to [TM-364, "Adjustment"](#).

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

[7AT: RE7R01B (VK50VE)]

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

General Specification

INFOID:0000000004040840

Transmission model code number		1XR0A, 1XR2A, 1XR2B, 1XR4D
Stall torque ratio		1.93 : 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		Genuine NISSAN Matic S ATF ^{*1}
Fluid capacity		11.3 liter (12 US qt, 10 Imp qt) ^{*2}

CAUTION:

- Use only Genuine NISSAN Matic S ATF. Never mix with other ATF.
 - Using ATF other than Genuine NISSAN Matic S ATF will cause deterioration driveability and A/T durability, and may damage the A/T, which is not covered by the INFINITI new vehicle limited warranty.
- *1: Refer to [MA-12, "Fluids and Lubricants"](#).
 - *2: The fluid capacity is the reference value.

Vehicle Speed at Which Gear Shifting Occurs

INFOID:0000000004040841

Unit: km/h (MPH)

Gear position	Throttle position	
	Full throttle	Half throttle
D1 → D2	50 – 54 (32 – 33)	19 – 23 (12 – 14)
D2 → D3	79 – 87 (50 – 54)	41 – 49 (26 – 30)
D3 → D4	126 – 136 (79 – 84)	68 – 78 (43 – 48)
D4 → D5	181 – 191 (113 – 118)	99 – 109 (62 – 67)
D5 → D6	235 – 245 (147 – 152)	155 – 165 (97 – 102)
D6 → D7	250 – 260 (156 – 161)	206 – 216 (129 – 134)
D7 → D6	240 – 250 (150 – 155)	162 – 172 (101 – 106)
D6 → D5	219 – 229 (137 – 142)	105 – 115 (66 – 71)
D5 → D4	165 – 175 (103 – 108)	53 – 63 (33 – 39)
D4 → D3	110 – 120 (69 – 74)	31 – 41 (20 – 25)
D3 → D2	40 – 48 (25 – 29)	16 – 24 (10 – 14)
D2 → D1	16 – 20 (10 – 12)	7 – 11 (5 – 6)

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

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

[7AT: RE7R01B (VK50VE)]

Vehicle Speed at Which Lock-up Occurs/Releases

INFOID:0000000004040842

Throttle position	Vehicle speed km/h (MPH)	
	Lock-up ON	Lock-up OFF
Closed throttle	47 – 55 (30 – 34)	44 – 52 (28 – 32)
Half throttle	60 – 68 (38 – 42)	57 – 65 (36 – 40)

- 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:0000000004040843

Stall speed	2,467 – 2,767 rpm
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Input Speed Sensor

INFOID:0000000004040845

Name	Condition	Data (Approx.)
Input speed sensor 1	When running at 34 km/h (21 MPH) in 3rd speed with the closed throttle position signal OFF.	0.8 kHz
Input speed sensor 2	When running at 52 km/h (32 MPH) in 5th speed with the closed throttle position signal OFF.	1.3 kHz

Output Speed Sensor

INFOID:0000000004040846

Name	Condition	Data (Approx.)
Output speed sensor	When running at 20 km/h (12 MPH).	185 Hz

Torque Converter

INFOID:0000000004040847

Dimension between end of converter housing and torque converter	24.0 mm (0.94 in)
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