

2010 TRANSMISSION**Transaxle & Transmission (7AT: RE7R01A) - 370Z****BASIC INSPECTION****DIAGNOSIS AND REPAIR WORK FLOW****Diagnosis Flow****1. OBTAIN INFORMATION ABOUT SYMPTOM**

1. Refer to "**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 "**INTERMITTENT INCIDENT**".

GO TO 2.

2. CHECK DTC

1. Before checking the malfunction, check whether any DTC exists.
2. If DTC exists, perform the following operations.
 - Record the DTC and freeze frame data. (Print out the data using CONSULT-III and affix them to the Work Order Sheet.)
 - Erase DTCs.
 - Check the relationship between the cause that is clarified with DTC and the malfunction information described by the customer. "**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 "**FAIL-SAFE**".

When a malfunction symptom is reproduced, the question sheet is effective. Refer to "**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 "**FAIL-SAFE**".

When a malfunction symptom is reproduced, the question sheet is effective. Refer to "**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 "**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 "**INTERMITTENT INCIDENT**".

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

Use "**SYMPTOM TABLE**" from the symptom inspection result in step 4. Then identify where to start performing the diagnosis based on possible causes and symptoms.

GO TO 8.

7. REPAIR OR REPLACE THE MALFUNCTIONING PARTS

Repair or replace the detected malfunctioning parts.

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

GO TO 8.

8. FINAL CHECK

Perform "DTC CONFIRMATION PROCEDURE" again to make sure that the repair is correctly performed.

Check that malfunctions are not reproduced when obtaining the malfunction information from the customer, referring to the symptom inspection result in step 3 or 4.

Is DTC or malfunction symptom reproduced?

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

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

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

Question sheet

DESCRIPTION

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

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

KEY POINTS

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

SEP907L

Fig. 1: Identifying Key Points

Courtesy of NISSAN MOTOR CO., U.S.A.

WORKSHEET SAMPLE

2010 Nissan 370Z**2010 TRANSMISSION Transaxle & Transmission (7AT: RE7R01A) - 370Z**

Question Sheet					
Customer name	MR/MS	Engine #		Manuf. Date	
		Incident Date		VIN	
		Model & Year		In Service Date	
		Trans.		Mileage	km / Mile
Symptoms		☐ Vehicle does not move (☐ Any position ☐ Particular position)			
		☐ No up-shift (☐ 1GR → 2GR ☐ 2GR → 3GR ☐ 3GR → 4GR ☐ 4GR → 5GR ☐ 5GR → 6GR ☐ 6GR → 7GR)			
		☐ No down-shift (☐ 7GR → 6GR ☐ 6GR → 5GR ☐ 5GR → 4GR ☐ 4GR → 3GR ☐ 3GR → 2GR ☐ 2GR → 1GR)			
		☐ Lock-up malfunction			
		☐ Shift point too high or too low			
		☐ Shift shock or slip			
		☐ Noise or vibration			
		☐ No kick down			
		☐ No pattern select			
		☐ Others			
Frequency		☐ All the time ☐ Under certain conditions ☐ Sometimes (times a day)			
Weather conditions		☐ Not affected			
	Weather	☐ Fine	☐ Clouding	☐ Raining	☐ Snowing ☐ Other ()
	Temp.	☐ Hot	☐ Warm	☐ Cool	☐ Cold ☐ Temp. [Approx. °C (°F)]
	Humidity	☐ High	☐ Middle	☐ Low	
Transmission conditions		☐ Not affected			
		☐ Cold	☐ During warm-up	☐ After warm-up	
		☐ Engine speed (rpm)			
Road conditions		☐ Not affected			
		☐ In town	☐ In suburbs	☐ Freeway	☐ Off road (Up / Down)
Driving conditions		☐ Not affected			
		☐ At starting	☐ While idling	☐ While engine racing	☐ At racing ☐ While cruising
		☐ While accelerating	☐ While decelerating	☐ While turning (Right / Left)	
		☐ Vehicle speed [km/h (MPH)]			
Other conditions					

Fig. 2: Worksheet Sample

Courtesy of NISSAN MOTOR CO., U.S.A.

SYSTEM DESCRIPTION**A/T CONTROL SYSTEM****System Diagram**

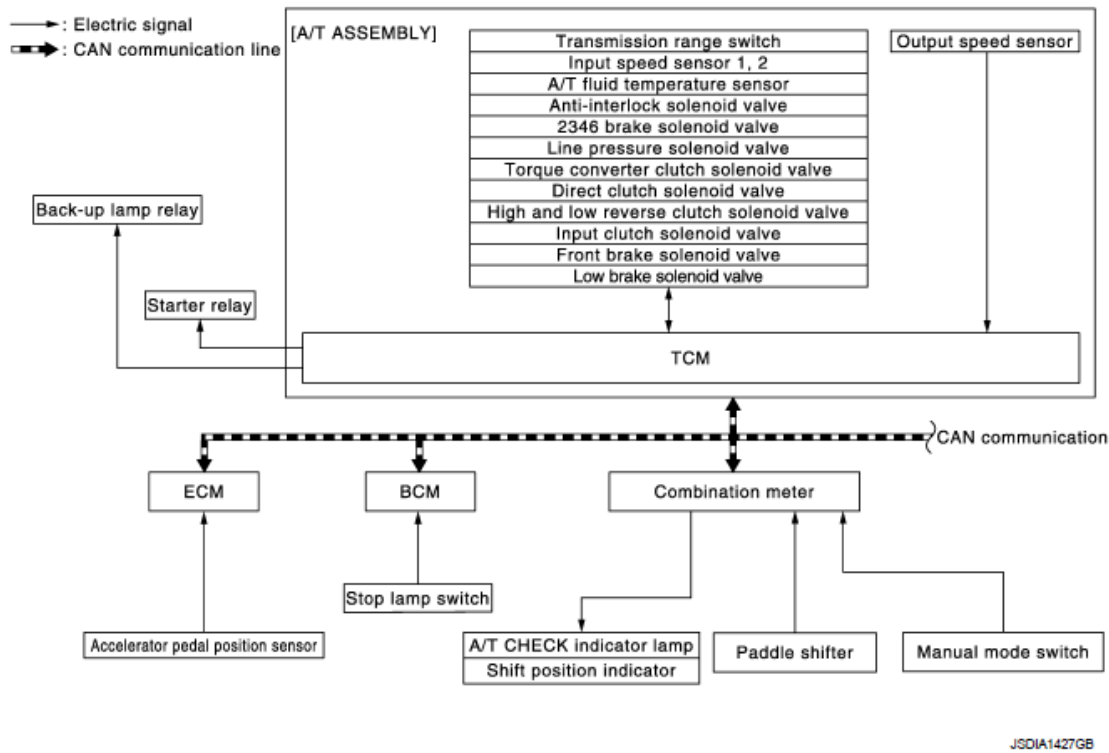


Fig. 3: A/T Control System Diagram
Courtesy of NISSAN MOTOR CO., U.S.A.

System Description

INPUT/OUTPUT SIGNAL CHART

INPUT/OUTPUT SIGNAL CHART

Sensor (or signal)	TCM function	Actuator
- Transmission range switch - Accelerator pedal position signal - Closed throttle position signal - Wide open throttle position signal - Engine speed signal - A/T fluid temperature sensor - Output speed	- Line pressure control (<u>LINE PRESSURE CONTROL</u>) - Shift change control (<u>SHIFT CHANGE CONTROL</u>) - Shift pattern control - Shift pattern (<u>SHIFT PATTERN CONTROL</u>) - Manual mode (<u>MANUAL MODE</u>) - Lock-up control (<u>LOCK-UP CONTROL</u>) - Fail-safe control (<u>FAIL-SAFE</u>)	- Input clutch solenoid valve - Direct clutch solenoid valve - Front brake solenoid valve - High and low reverse clutch solenoid valve - Low brake solenoid valve - Torque converter clutch solenoid valve - Line pressure

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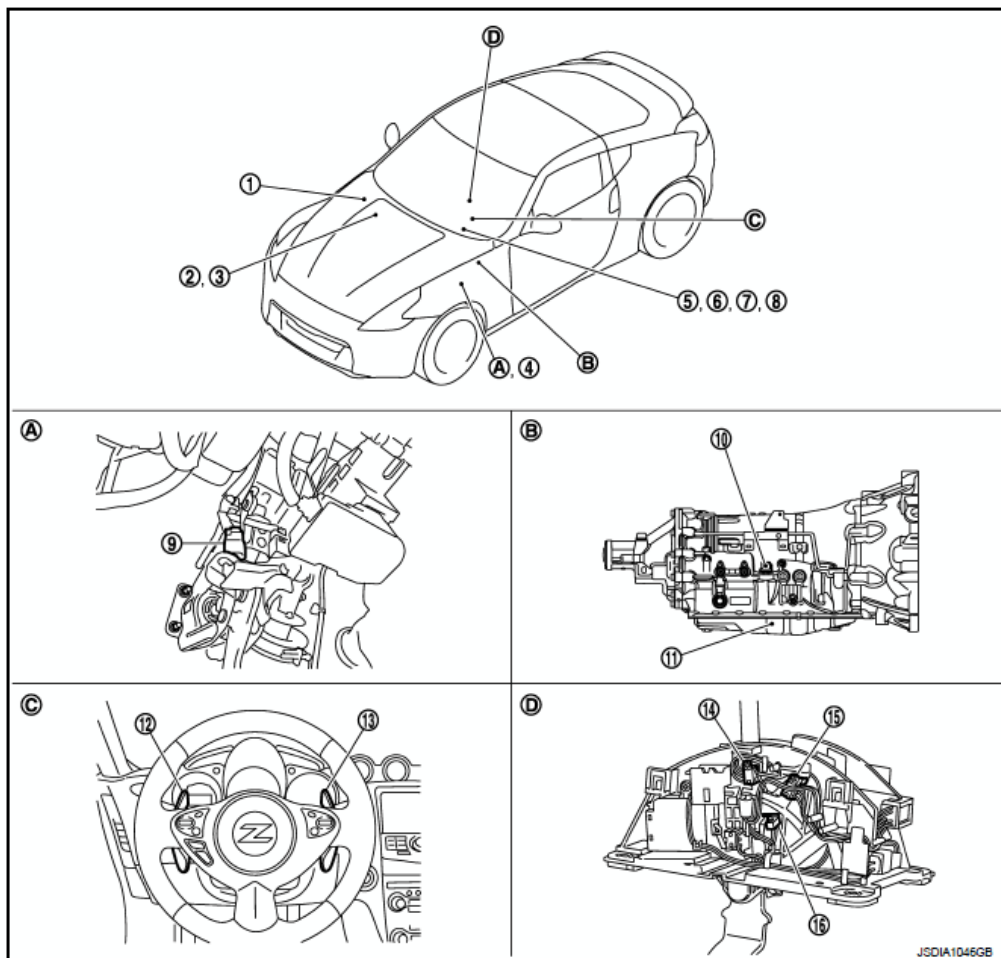
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sensor • Vehicle speed signal • Manual mode switch signal • Stop lamp switch signal • Input speed sensor 1, 2	• Self-diagnosis (<u>DIAGNOSIS SYSTEM (TCM)</u>) • CONSULT-III communication line (<u>CONSULT-III FUNCTION (TRANSMISSION)</u>) • CAN communication line (<u>U1000 CAN COMM CIRCUIT</u>)	solenoid valve • Anti-interlock solenoid valve • 2346 brake solenoid valve • A/T CHECK indicator lamp • Back-up lamp relay • Starter relay
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SYSTEM DESCRIPTION

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

Component Parts Location



- | | | |
|---|--|---|
| 1. IPDM E/R | 2. ECM | 3. BCM |
| 4. Accelerator pedal position sensor | 5. Combination meter | 6. A/T CHECK indicator lamp
(On the combination meter) |
| 7. Shift position indicator
(On the combination meter) | 8. Manual mode indicator
(On the combination meter) | 9. Stop lamp switch |
| 10. A/T assembly connector | 11. Control valve with TCM* | 12. Paddle shifter (shift-down) |
| 13. Paddle shifter (shift-up) | 14. Manual mode position select switch
(shift-up) | 15. Manual mode position select switch
(shift-down) |
| 16. Manual mode select switch | | |
| A. Brake pedal | B. A/T assembly | C. Steering wheel |
| D. A/T shift selector assembly | | |

Fig. 4: Identifying A/T Control System Component Parts Location
 Courtesy of NISSAN MOTOR CO., U.S.A.

NOTE: The following components are included in control valve with TCM.

- TCM
- Input speed sensor 1, 2
- Output speed sensor

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- 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**COMPONENT DESCRIPTION CHART**

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	"DESCRIPTION"
Output speed sensor	"DESCRIPTION"
Input speed sensor 1	"DESCRIPTION"
Input speed sensor 2	
A/T fluid temperature sensor	"DESCRIPTION"
Input clutch solenoid valve	"DESCRIPTION"
Front brake solenoid valve	"DESCRIPTION"
Direct clutch solenoid valve	"DESCRIPTION"
High and low reverse clutch solenoid valve	"DESCRIPTION"
Low brake solenoid valve	"DESCRIPTION"
Anti-interlock solenoid valve	"DESCRIPTION"
2346 brake solenoid valve	"DESCRIPTION"
Torque converter clutch solenoid valve	"DESCRIPTION"
Line pressure solenoid valve	"DESCRIPTION"
Accelerator pedal position sensor	"DESCRIPTION"

Manual mode switch	"DESCRIPTION"
Paddle shifter	"DESCRIPTION"
Starter relay	"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	"DESCRIPTION"
ECM	"SYSTEM DESCRIPTION "
BCM	"SYSTEM DESCRIPTION "
Combination meter	"METER SYSTEM : SYSTEM DESCRIPTION "

LINE PRESSURE CONTROL

System Diagram

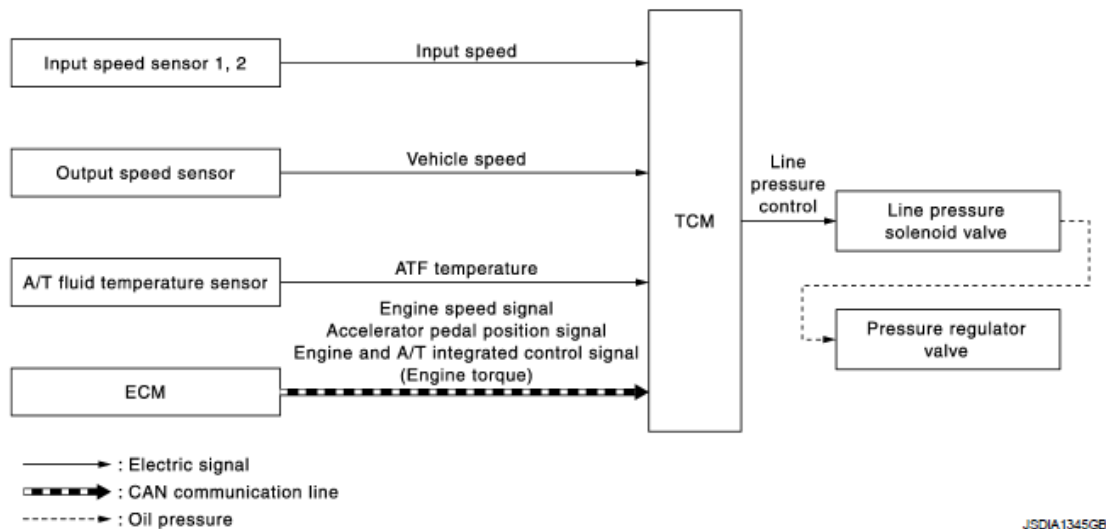


Fig. 5: Line Pressure Control System Diagram
Courtesy of NISSAN MOTOR CO., U.S.A.

System Description

INPUT/OUTPUT SIGNAL CHART

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		
	Engine speed signal ⁽¹⁾		
	Accelerator pedal position signal ⁽¹⁾		

ECM	Engine and A/T integrated control signal (Engine torque) ⁽¹⁾		
(1) 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

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

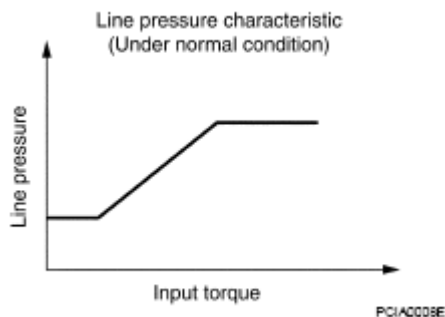


Fig. 6: Line Pressure Characteristic Graph - Normal Control

Courtesy of NISSAN MOTOR CO., U.S.A.

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.

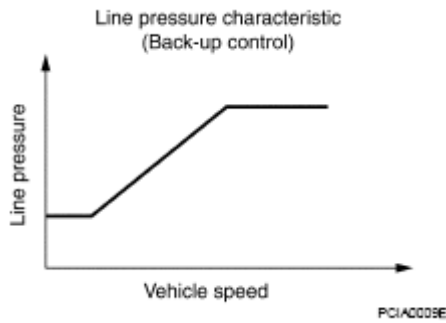


Fig. 7: Line Pressure Characteristic Graph - Back-up Control (Engine Brake)
 Courtesy of NISSAN MOTOR CO., U.S.A.

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.

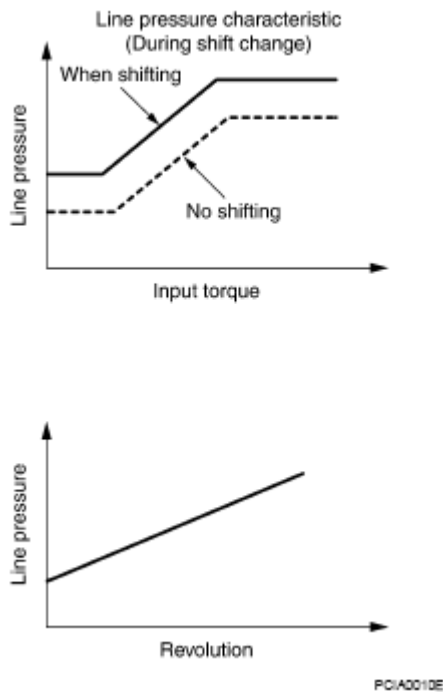


Fig. 8: Line Pressure Characteristic Graph - During Shift Change
 Courtesy of NISSAN MOTOR CO., U.S.A.

At Low Fluid Temperature

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

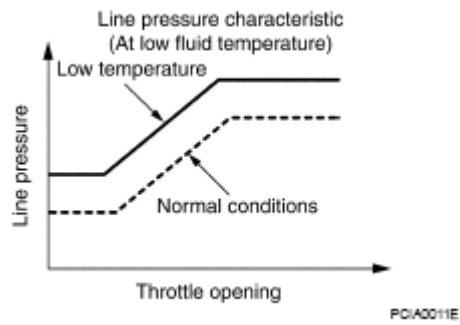
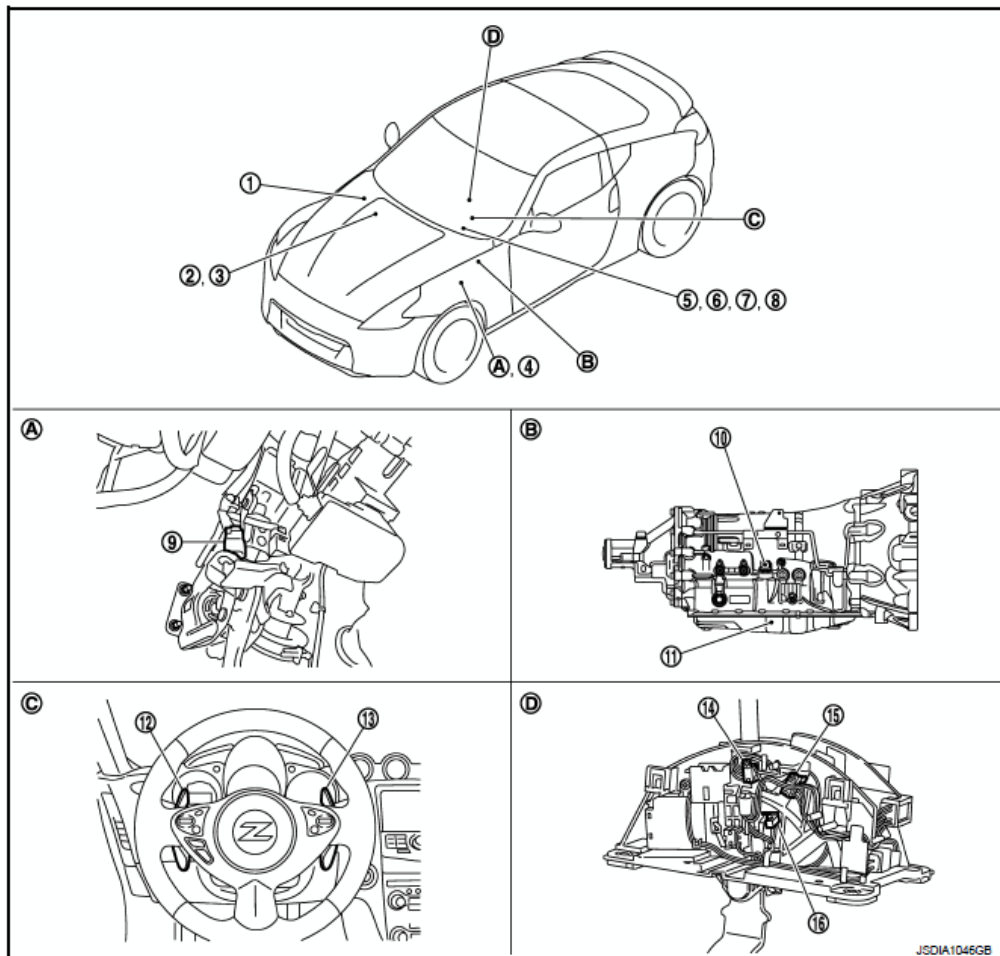


Fig. 9: Line Pressure Characteristic Graph - At Low Fluid Temperature
Courtesy of NISSAN MOTOR CO., U.S.A.

Component Parts Location



- | | | |
|---|--|---|
| 1. IPDM E/R | 2. ECM | 3. BCM |
| 4. Accelerator pedal position sensor | 5. Combination meter | 6. A/T CHECK indicator lamp
(On the combination meter) |
| 7. Shift position indicator
(On the combination meter) | 8. Manual mode indicator
(On the combination meter) | 9. Stop lamp switch |
| 10. A/T assembly connector | 11. Control valve with TCM* | 12. Paddle shifter (shift-down) |
| 13. Paddle shifter (shift-up) | 14. Manual mode position select switch
(shift-up) | 15. Manual mode position select switch
(shift-down) |
| 16. Manual mode select switch | | |
| A. Brake pedal | B. A/T assembly | C. Steering wheel |
| D. A/T shift selector assembly | | |

Fig. 10: Identifying Line Pressure Control Component Parts Location
 Courtesy of NISSAN MOTOR CO., U.S.A.

NOTE: The following components are included in control valve with TCM.

- TCM
- Input speed sensor 1, 2
- Output speed sensor

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- 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

COMPONENT DESCRIPTION CHART

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	" <u>DESCRIPTION</u> "
Input speed sensor 1	" <u>DESCRIPTION</u> "
Input speed sensor 2	
A/T fluid temperature sensor	" <u>DESCRIPTION</u> "
Line pressure solenoid valve	" <u>DESCRIPTION</u> "
Pressure regulator valve	Adjusts the oil discharged from the oil pump to the optimum pressure (line pressure) for the driving state.
ECM	" <u>SYSTEM DESCRIPTION</u> "

SHIFT CHANGE CONTROL

System Diagram

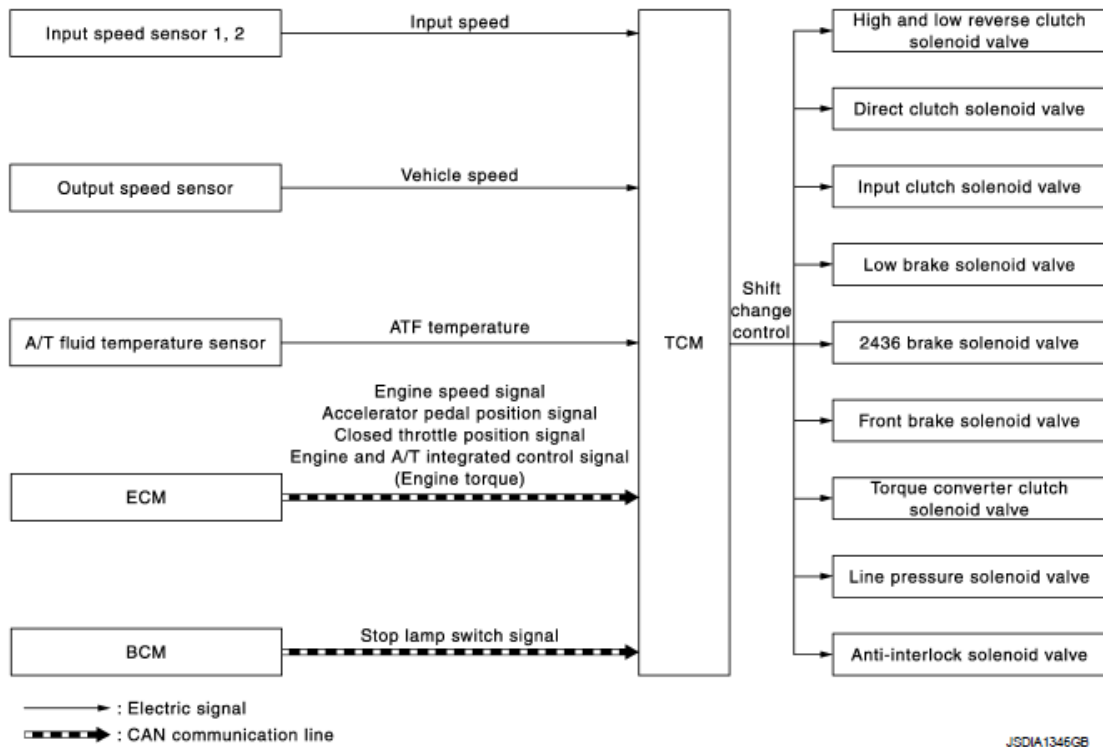


Fig. 11: Shift Change Control System Diagram
 Courtesy of NISSAN MOTOR CO., U.S.A.

System Description

INPUT/OUTPUT SIGNAL CHART

INPUT/OUTPUT SIGNAL CHART

Sensor	Input signal to TCM	TCM function	Actuator
Input speed sensor 1, 2	Input speed	Shift change control	• 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
Output speed sensor	Vehicle speed		
A/T fluid temperature sensor	ATF temperature		
ECM	Engine speed signal ⁽¹⁾		
	Accelerator pedal position signal ⁽¹⁾		
	Closed throttle position signal ⁽¹⁾		
	Engine and A/T integrated control signal (Engine torque) ⁽¹⁾		

BCM

Stop lamp switch signal⁽¹⁾

- Anti-interlock solenoid valve

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

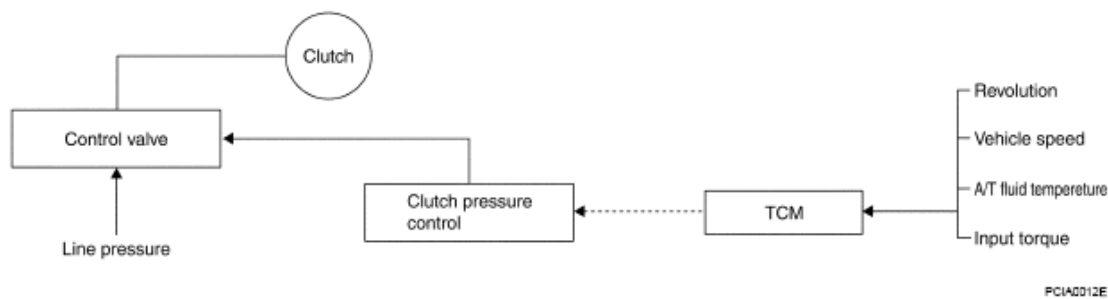


Fig. 12: Clutch Pressure Control Diagram
Courtesy of NISSAN MOTOR CO., U.S.A.

Shift Change

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

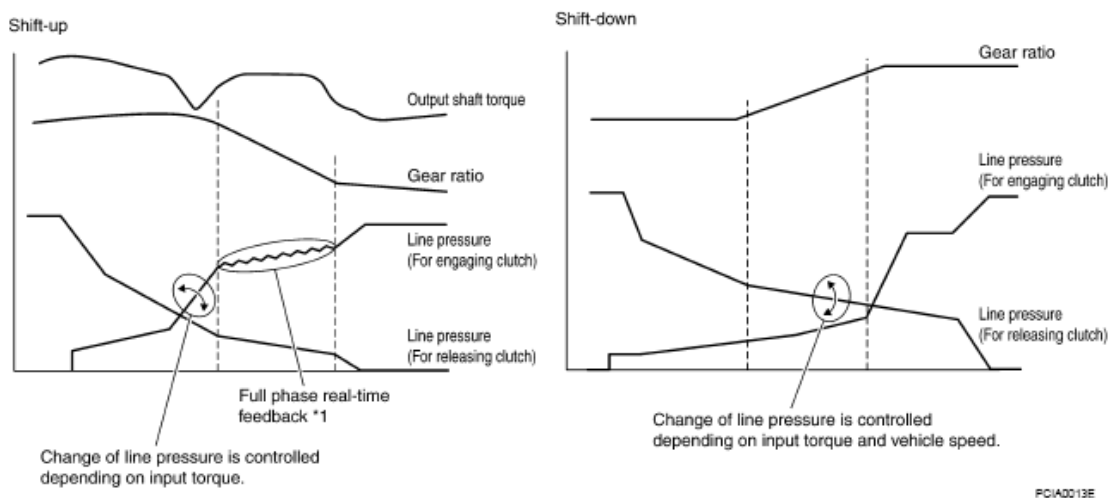


Fig. 13: Shift Change System Diagram
Courtesy of NISSAN MOTOR CO., U.S.A.

*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.

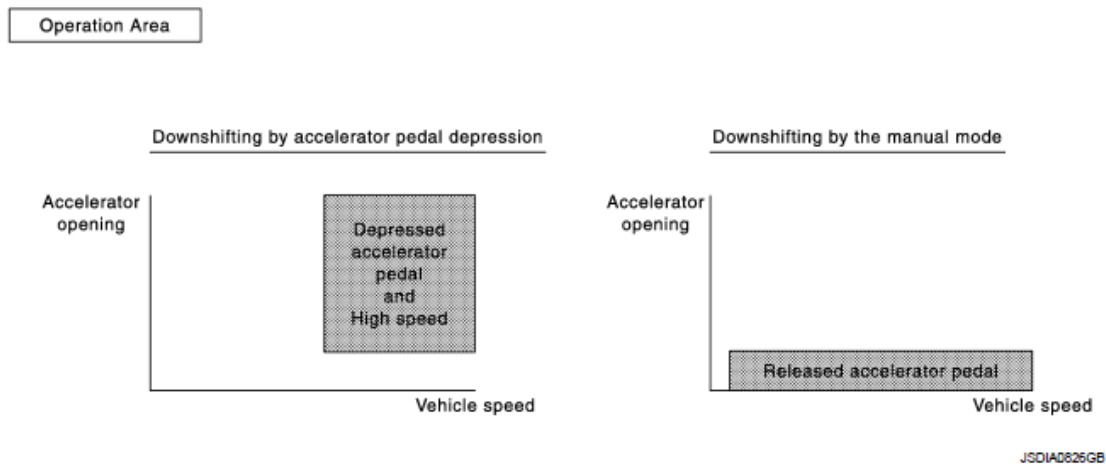


Fig. 14: Blipping Control Function Graph
 Courtesy of NISSAN MOTOR CO., U.S.A.

- 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.

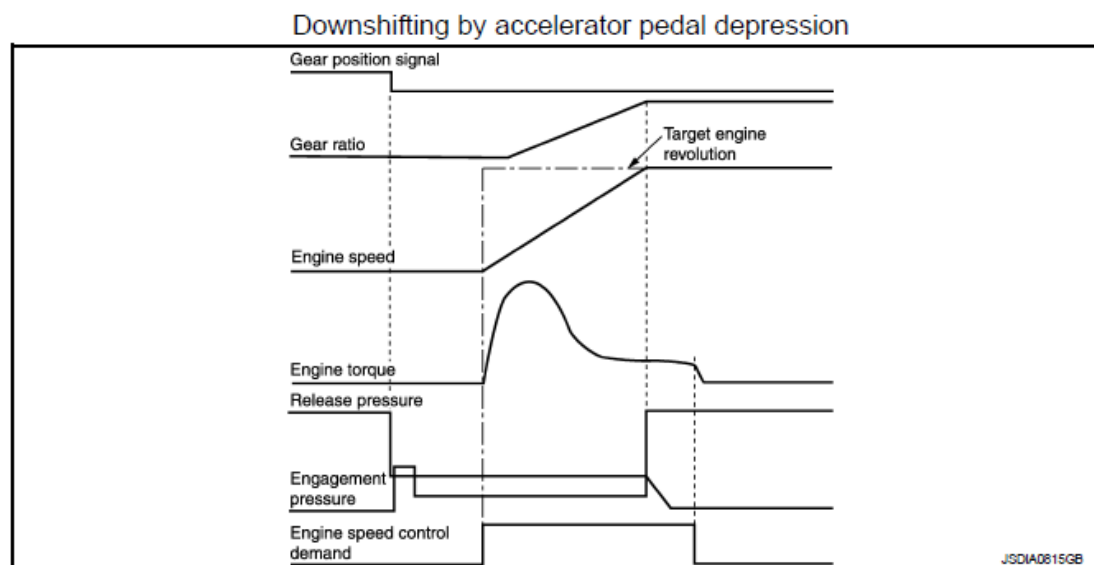


Fig. 15: Engine Speed Control Demand Signal - Downshifting By Accelerator Pedal Depression
 Courtesy of NISSAN MOTOR CO., U.S.A.

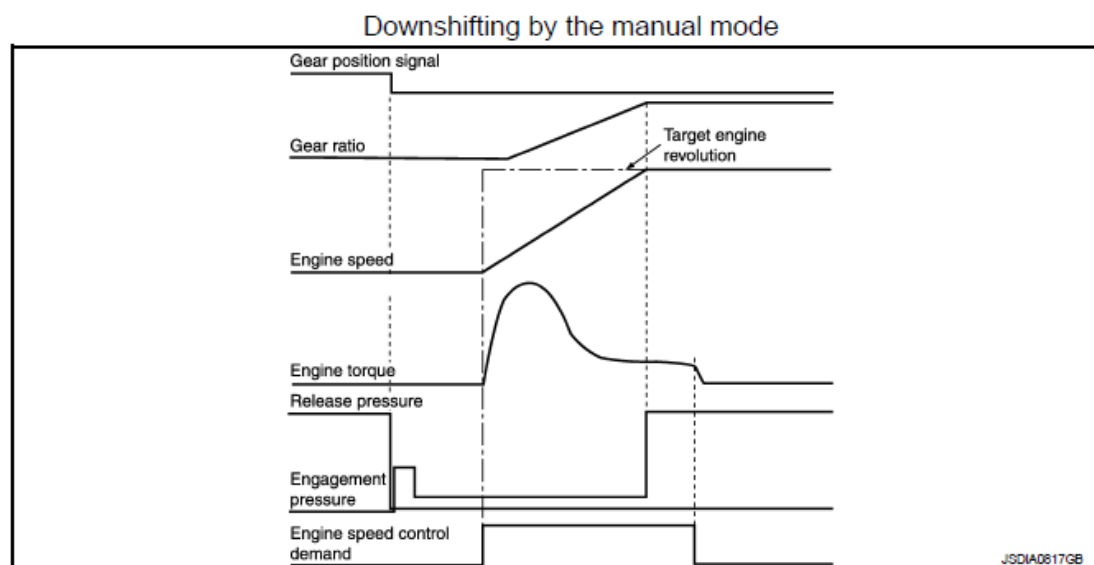
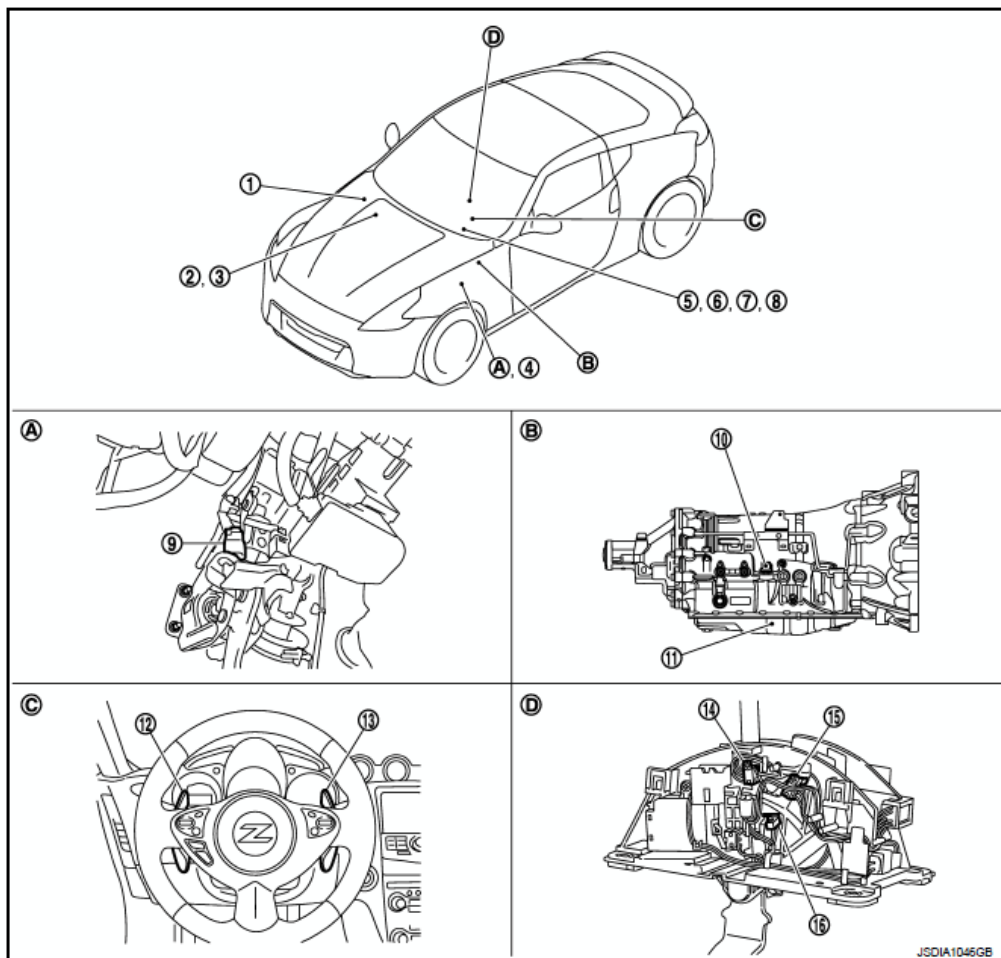


Fig. 16: Engine Speed Control Demand Signal - Downshifting By Manual Mode
 Courtesy of NISSAN MOTOR CO., U.S.A.

Component Parts Location



- | | | |
|---|--|---|
| 1. IPDM E/R | 2. ECM | 3. BCM |
| 4. Accelerator pedal position sensor | 5. Combination meter | 6. A/T CHECK indicator lamp
(On the combination meter) |
| 7. Shift position indicator
(On the combination meter) | 8. Manual mode indicator
(On the combination meter) | 9. Stop lamp switch |
| 10. A/T assembly connector | 11. Control valve with TCM* | 12. Paddle shifter (shift-down) |
| 13. Paddle shifter (shift-up) | 14. Manual mode position select switch
(shift-up) | 15. Manual mode position select switch
(shift-down) |
| 16. Manual mode select switch | | |
| A. Brake pedal | B. A/T assembly | C. Steering wheel |
| D. A/T shift selector assembly | | |

Fig. 17: Identifying Shift Change Control Component Parts Location
 Courtesy of NISSAN MOTOR CO., U.S.A.

NOTE: The following components are included in control valve with TCM.

- TCM
- Input speed sensor 1, 2
- Output speed sensor

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- 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**COMPONENT DESCRIPTION CHART**

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	" <u>DESCRIPTION</u> "
Input speed sensor 1	"DESCRIPTION"
Input speed sensor 2	
A/T fluid temperature sensor	"DESCRIPTION"
Input clutch solenoid valve	"DESCRIPTION"
Front brake solenoid valve	"DESCRIPTION"
Direct clutch solenoid valve	"DESCRIPTION"
High and low reverse clutch solenoid valve	"DESCRIPTION"
Low brake solenoid valve	"DESCRIPTION"
Anti-interlock solenoid valve	"DESCRIPTION"
2346 brake solenoid valve	"DESCRIPTION"
Line pressure solenoid valve	"DESCRIPTION"
Torque converter clutch solenoid valve	"DESCRIPTION"
ECM	"SYSTEM DESCRIPTION "
BCM	"SYSTEM DESCRIPTION "

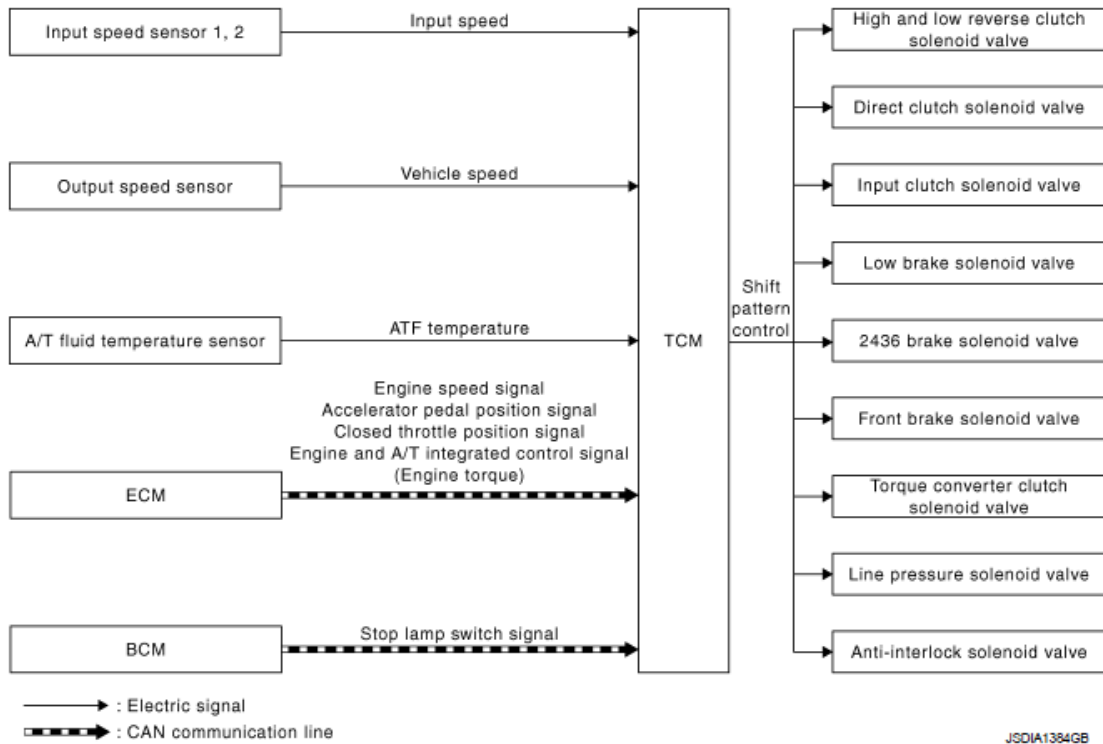
SHIFT PATTERN CONTROL**SHIFT PATTERN****SHIFT PATTERN : System Diagram**

Fig. 18: Shift Pattern System Diagram
 Courtesy of NISSAN MOTOR CO., U.S.A.

SHIFT PATTERN : System Description**INPUT/OUTPUT SIGNAL CHART****INPUT/OUTPUT SIGNAL CHART**

Sensor	Input signal to TCM	TCM function	Actuator
Input speed sensor 1, 2	Input speed	Shift pattern control	• 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
Output speed sensor	Vehicle speed		
A/T fluid temperature sensor	ATF temperature		
	Engine speed signal ⁽¹⁾		
	Accelerator pedal position signal ⁽¹⁾		

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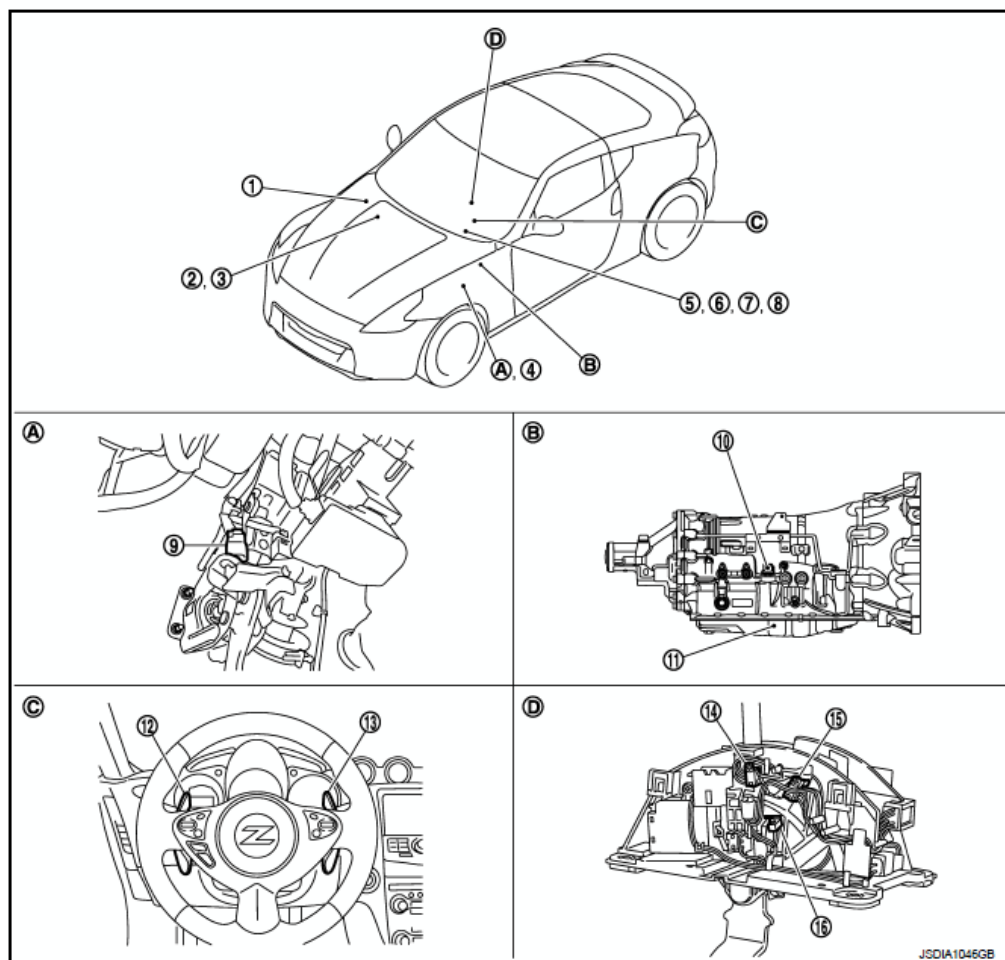
ECM	Closed throttle position signal ⁽¹⁾	• Torque converter clutch solenoid valve • Line pressure solenoid valve • Anti-interlock solenoid valve
	Engine and A/T integrated control signal (engine torque) ⁽¹⁾	
BCM	Stop lamp switch signal ⁽¹⁾	
(1) This signal is transmitted via CAN communication line.		

SYSTEM DESCRIPTION

It automatically selects the shift pattern (such as road environment and driving style) suitable for the various situations so as to allow the vehicle to be driven efficiently and smoothly.

TCM judges up/down slope according to engine torque data transmitted from the ECM and vehicle speed. Fixing at 4GR, 5GR or 6GR on an up-slope prevents shift hunting and controls the vehicle to gain optimum driving force. On a down-slope, automatic shift-down to 4GR, 5GR or 6GR controls to gain optimum engine brake.

SHIFT PATTERN : Component Parts Location



- | | | |
|---|--|---|
| 1. IPDM E/R | 2. ECM | 3. BCM |
| 4. Accelerator pedal position sensor | 5. Combination meter | 6. A/T CHECK indicator lamp
(On the combination meter) |
| 7. Shift position indicator
(On the combination meter) | 8. Manual mode indicator
(On the combination meter) | 9. Stop lamp switch |
| 10. A/T assembly connector | 11. Control valve with TCM* | 12. Paddle shifter (shift-down) |
| 13. Paddle shifter (shift-up) | 14. Manual mode position select switch
(shift-up) | 15. Manual mode position select switch
(shift-down) |
| 16. Manual mode select switch | | |
| A. Brake pedal | B. A/T assembly | C. Steering wheel |
| D. A/T shift selector assembly | | |

Fig. 19: Identifying Shift Pattern Component Parts Location
 Courtesy of NISSAN MOTOR CO., U.S.A.

NOTE: The following components are included in control valve with TCM.

- TCM
- Input speed sensor 1, 2
- Output speed sensor

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- 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**SHIFT PATTERN COMPONENT DESCRIPTION CHART**

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	" <u>DESCRIPTION</u> "
Input speed sensor 1	"DESCRIPTION"
Input speed sensor 2	
A/T fluid temperature sensor	"DESCRIPTION"
Input clutch solenoid valve	"DESCRIPTION"
Front brake solenoid valve	"DESCRIPTION"
Direct clutch solenoid valve	"DESCRIPTION"
High and low reverse clutch solenoid valve	"DESCRIPTION"
Low brake solenoid valve	"DESCRIPTION"
Anti-interlock solenoid valve	"DESCRIPTION"
2346 brake solenoid valve	"DESCRIPTION"
Line pressure solenoid valve	"DESCRIPTION"
Torque converter clutch solenoid valve	"DESCRIPTION"
ECM	"SYSTEM DESCRIPTION "
BCM	"SYSTEM DESCRIPTION "

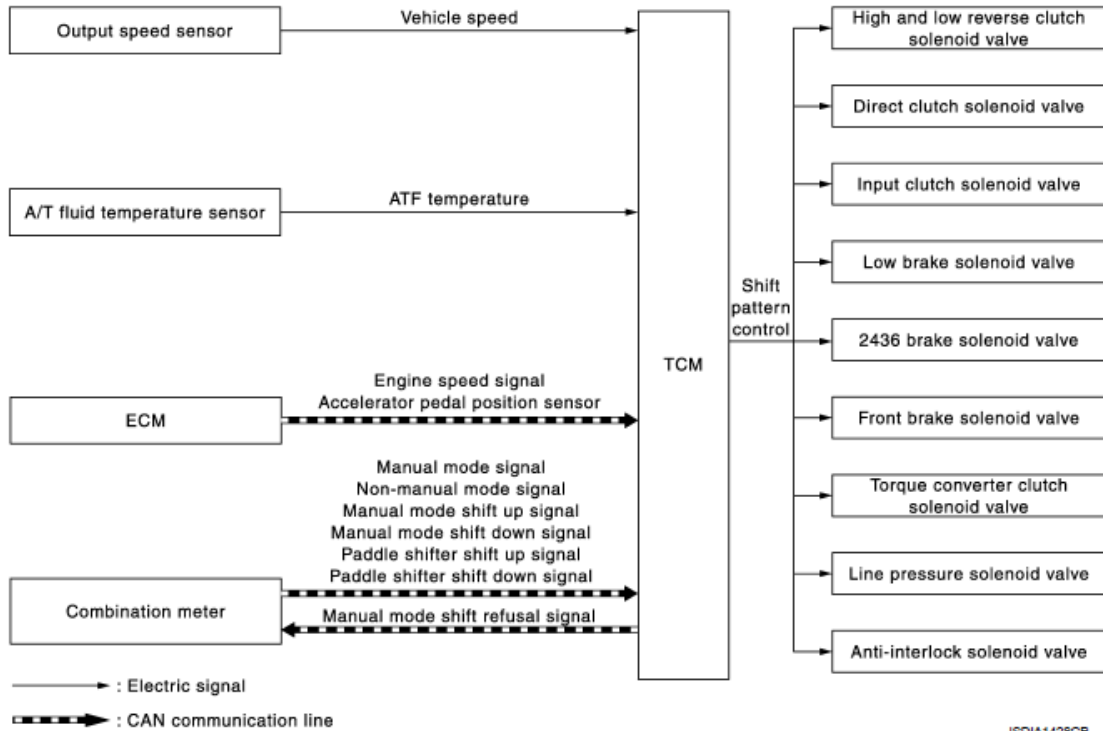
MANUAL MODE**MANUAL MODE : System Diagram**

Fig. 20: Manual Mode System Diagram
 Courtesy of NISSAN MOTOR CO., U.S.A.

MANUAL MODE : System Description**INPUT/OUTPUT SIGNAL CHART****INPUT/OUTPUT SIGNAL CHART**

Sensor	Input signal to TCM	TCM function	Actuator
Output speed sensor	Vehicle speed	Shift pattern control	• 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
A/T fluid temperature sensor	ATF temperature		
ECM	Engine speed signal ⁽¹⁾		
	Accelerator pedal position signal ⁽¹⁾		
	Manual mode signal ⁽¹⁾		
	Non-manual mode signal ⁽¹⁾		
	Manual mode shift up signal ⁽¹⁾		

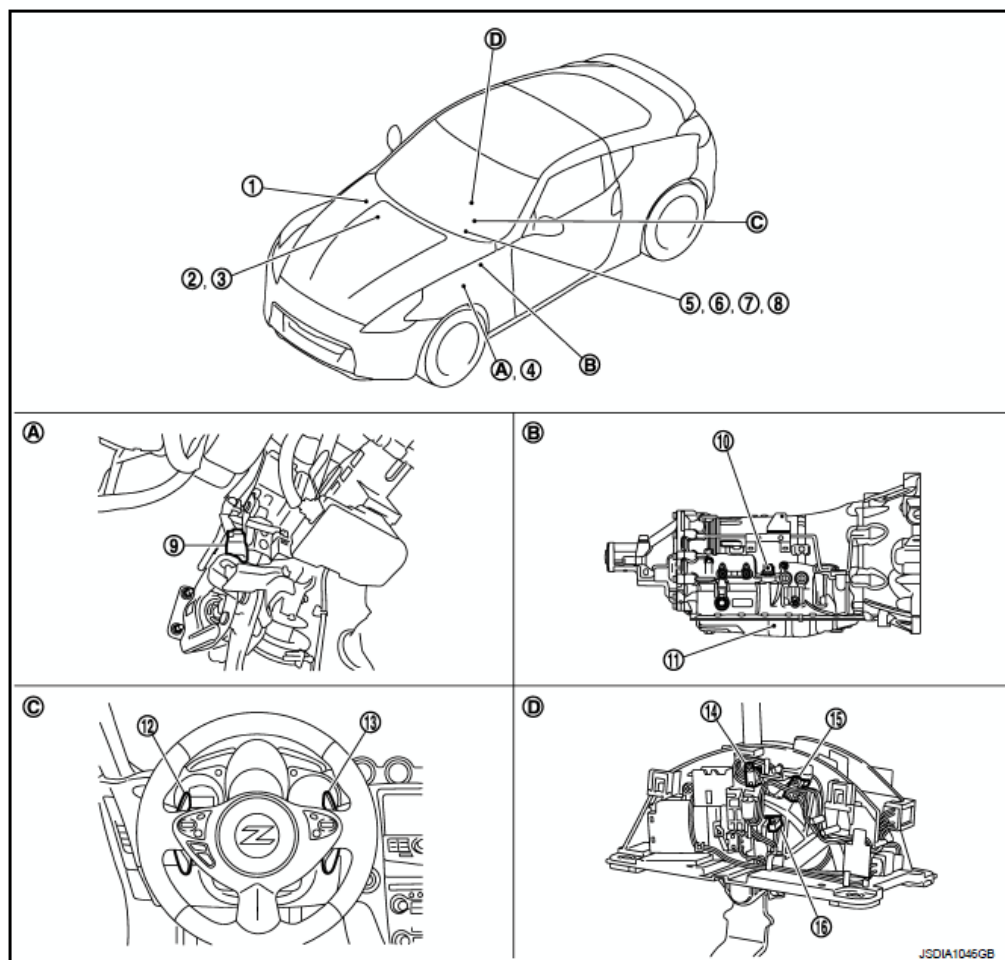
Combination meter	Manual mode shift down signal ⁽¹⁾	solenoid valve • Line pressure solenoid valve • Anti-interlock solenoid valve
	Paddle shifter shift up signal ⁽¹⁾	
	Paddle shifter shift down signal ⁽¹⁾	
(1) This signal is transmitted via CAN communication line.		

SYSTEM DESCRIPTION

Manual Mode

- The TCM receives the manual mode signal, non-manual mode signal, manual mode shift up signal, manual mode shift down signal, paddle shifter shift up signal and paddle shifter shift down signal from combination meter via CAN communication line. The TCM shifts shift pattern control to the manual mode based on these signals, and then shifts the A/T by operating each solenoid valve according to the shift operation of the driver.
- The TCM prohibits the manual mode while being in fail-safe mode due to an A/T malfunction, etc. Refer to "**FAIL-SAFE**".
- The TCM transmits the manual mode shift refusal signal to the combination meter if the TCM refuses the transmission from the driving status of vehicle when the selector lever or paddle shifter shifts to "UP (+ side)" or "DOWN (- side)" side. The combination meter blinks shift indicator on the combination meter and sounds the buzzer to indicate the driver that the shifting is not performed when receiving this signal. However, the TCM does not transmit the manual mode shift refusal signal in the conditions as per the following.
 - When the selector lever or the paddle shifter shifts to "DOWN (- side)" side while driving in 1GR.
 - When the selector lever or the paddle shifter shifts to "UP (+ side)" side while driving in 7GR.

MANUAL MODE : Component Parts Location



- | | | |
|---|--|---|
| 1. IPDM E/R | 2. ECM | 3. BCM |
| 4. Accelerator pedal position sensor | 5. Combination meter | 6. A/T CHECK indicator lamp
(On the combination meter) |
| 7. Shift position indicator
(On the combination meter) | 8. Manual mode indicator
(On the combination meter) | 9. Stop lamp switch |
| 10. A/T assembly connector | 11. Control valve with TCM* | 12. Paddle shifter (shift-down) |
| 13. Paddle shifter (shift-up) | 14. Manual mode position select switch
(shift-up) | 15. Manual mode position select switch
(shift-down) |
| 16. Manual mode select switch | | |
| A. Brake pedal | B. A/T assembly | C. Steering wheel |
| D. A/T shift selector assembly | | |

Fig. 21: Identifying Manual Mode Component Parts Location

Courtesy of NISSAN MOTOR CO., U.S.A.

NOTE: The following components are included in control valve with TCM.

- TCM
- Input speed sensor 1, 2
- Output speed sensor

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- 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

MANUAL MODE COMPONENT DESCRIPTION CHART

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	" <u>DESCRIPTION</u> "
A/T fluid temperature sensor	" <u>DESCRIPTION</u> "
Input clutch solenoid valve	" <u>DESCRIPTION</u> "
Front brake solenoid valve	" <u>DESCRIPTION</u> "
Direct clutch solenoid valve	" <u>DESCRIPTION</u> "
High and low reverse clutch solenoid valve	" <u>DESCRIPTION</u> "
Low brake solenoid valve	" <u>DESCRIPTION</u> "
Anti-interlock solenoid valve	" <u>DESCRIPTION</u> "
2346 brake solenoid valve	" <u>DESCRIPTION</u> "
Line pressure solenoid valve	" <u>DESCRIPTION</u> "
Torque converter clutch solenoid valve	" <u>DESCRIPTION</u> "
ECM	" <u>SYSTEM DESCRIPTION</u> "
Combination meter	" <u>METER SYSTEM : SYSTEM DESCRIPTION</u> "

LOCK-UP CONTROL

System Diagram

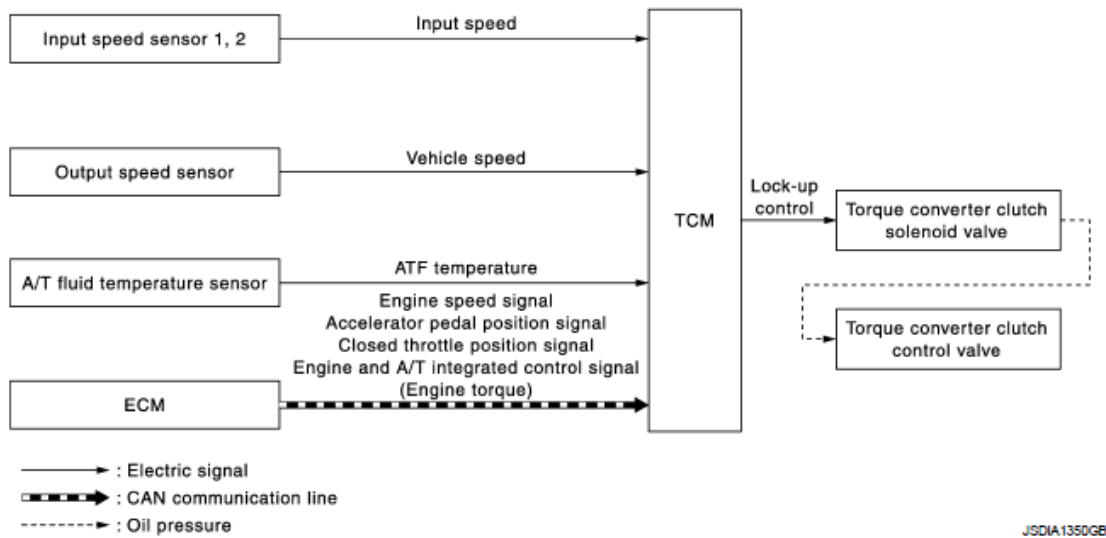


Fig. 22: Lock-Up Control System Diagram
 Courtesy of NISSAN MOTOR CO., U.S.A.

System Description

INPUT/OUTPUT SIGNAL CHART

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 ⁽¹⁾		
	Accelerator pedal position signal ⁽¹⁾		
	Closed throttle position signal ⁽¹⁾		
	Engine and A/T integrated control signal (Engine torque) ⁽¹⁾		
(1) 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

- The current output from the TCM to the torque converter clutch solenoid is varied to steadily increase the torque converter clutch solenoid pressure.

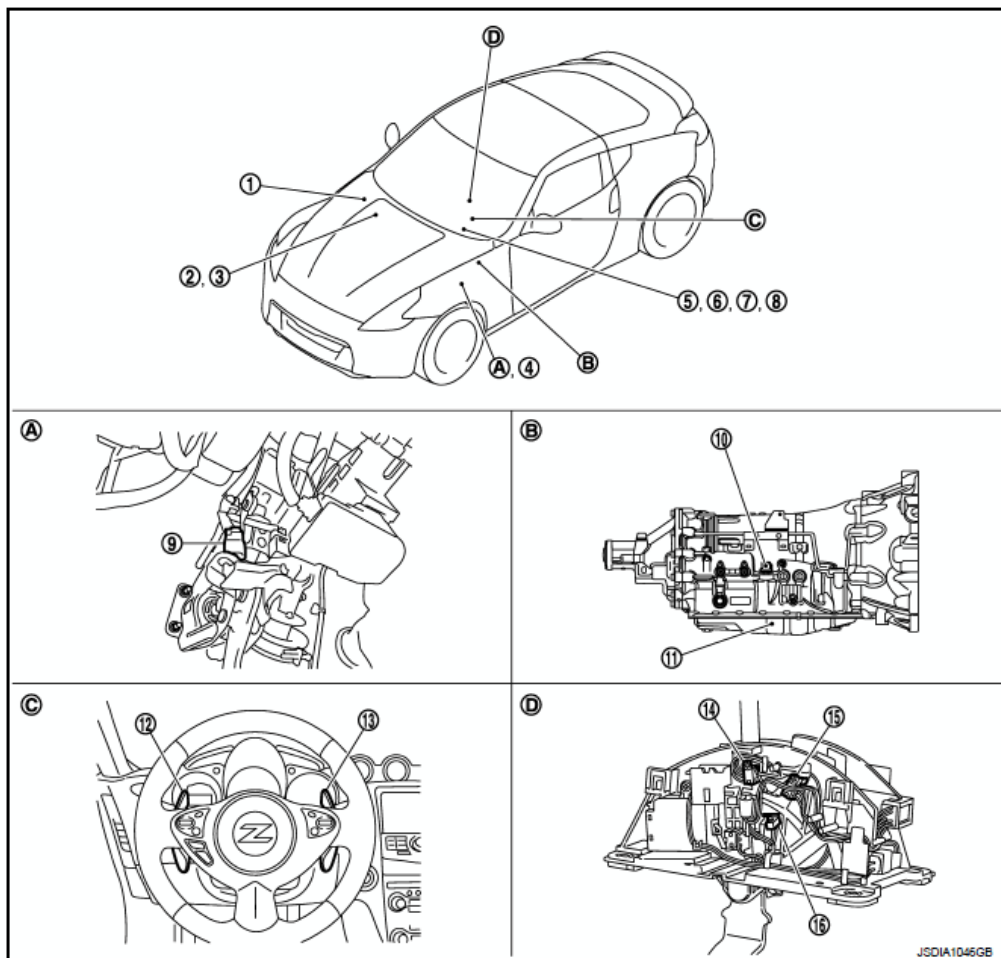
In this way, the lock-up apply pressure gradually rises and while the torque converter clutch piston is put into half-clutched states, the torque converter clutch piston operating pressure is increased and the coupling is completed smoothly.

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.

Component Parts Location



- | | | |
|---|--|---|
| 1. IPDM E/R | 2. ECM | 3. BCM |
| 4. Accelerator pedal position sensor | 5. Combination meter | 6. A/T CHECK indicator lamp
(On the combination meter) |
| 7. Shift position indicator
(On the combination meter) | 8. Manual mode indicator
(On the combination meter) | 9. Stop lamp switch |
| 10. A/T assembly connector | 11. Control valve with TCM* | 12. Paddle shifter (shift-down) |
| 13. Paddle shifter (shift-up) | 14. Manual mode position select switch
(shift-up) | 15. Manual mode position select switch
(shift-down) |
| 16. Manual mode select switch | | |
| A. Brake pedal | B. A/T assembly | C. Steering wheel |
| D. A/T shift selector assembly | | |

Fig. 24: Identifying Lock-Up Control Component Parts Location
 Courtesy of NISSAN MOTOR CO., U.S.A.

NOTE: The following components are included in control valve with TCM.

- TCM
- Input speed sensor 1, 2
- Output speed sensor

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- 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.

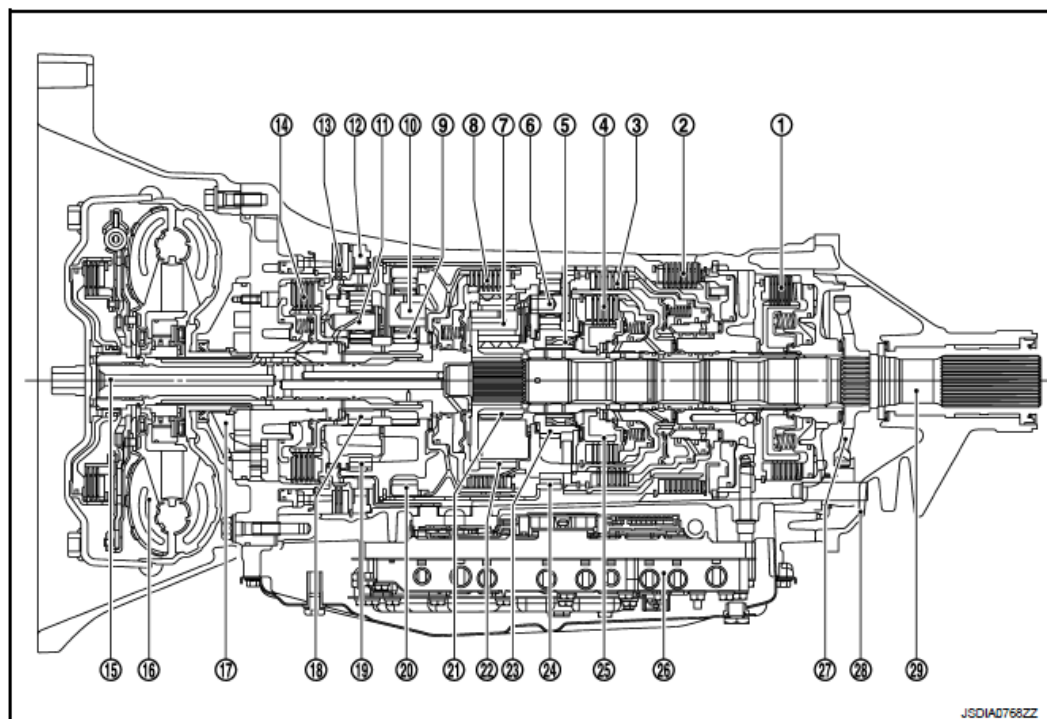
Component Description

COMPONENT DESCRIPTION CHART

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	" <u>DESCRIPTION</u> "
Input speed sensor 1	"DESCRIPTION"
Input speed sensor 2	
A/T fluid temperature sensor	"DESCRIPTION"
Torque converter clutch solenoid valve	"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	"SYSTEM DESCRIPTION "

SHIFT MECHANISM

Cross-Sectional View



- | | | |
|-------------------------------------|----------------------------|----------------------------|
| 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.

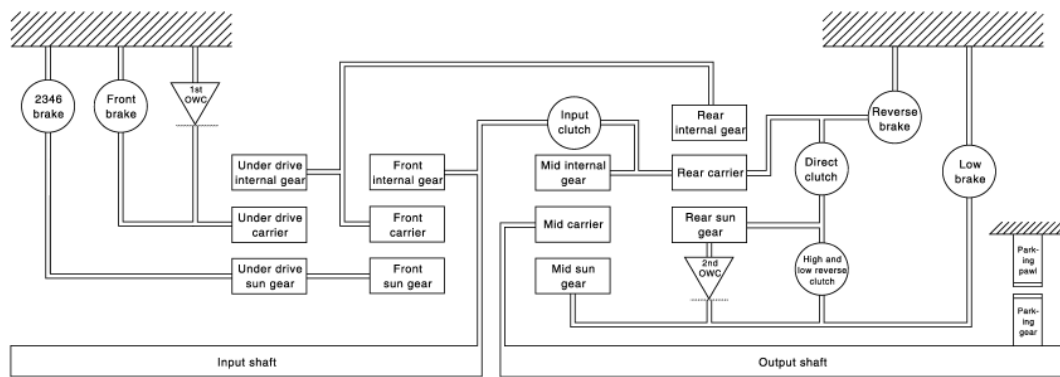
*2: 9 and 18 are one unit.

*3: 10 and 19 are one unit.

*4: 15 and 20 are one unit.

Fig. 25: Cross-Sectional View Of Shift Mechanism
 Courtesy of NISSAN MOTOR CO., U.S.A.

System Diagram



JSCN427708

Fig. 26: Shift Mechanism System Diagram
 Courtesy of NISSAN MOTOR CO., U.S.A.

System Description

DESCRIPTION

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

CLUTCH AND BAND CHART

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Name of the part Shift position	I/C	D/C		H&L/R/C	F/B	L/B		2346/B	REV/B	1st OWC	2nd OWC	Remarks
		FRONT	REAR			INNER	OUTER					
P				△	△							Park position
R				◇	◇				○	◎	◎	Reverse position
N				△	△							Neutral position
D	1st			☆	☆	○	○			◎	◎	Automatic shift 1↔2↔3↔4↔5↔6↔7
	2nd					○	○	○			◎	
	3rd	○	○			○		○				
	4th	○	○	○				○				
	5th	○	○	○								
	6th	○		○				○				
	7th	○		○	○							
7M	7th	○		○	○							Locks* (held stationary) in 7GR
6M	6th	○		○				○				Locks* (held stationary) in 6GR
5M	5th	○	○	○								Locks* (held stationary) in 5GR
4M	4th		○	○	○			○				Locks* (held stationary) in 4GR
3M	3rd		○	○		○		○				Locks* (held stationary) in 3GR
2M	2nd			◇		○	○	○			◎	Locks* (held stationary) in 2GR
1M	1st			◇	◇	○	○			◎	◎	Locks (held stationary) in 1GR

*: Down shift automatically according to the vehicle speed.

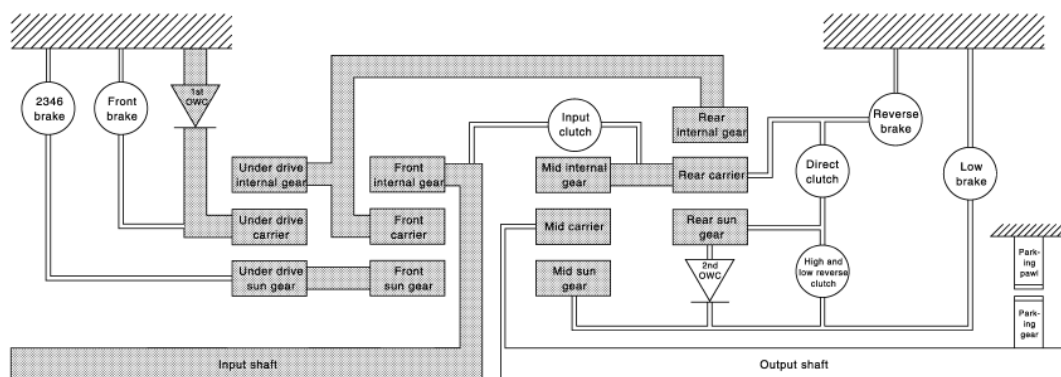
- - Operates
- ◎ - Operates during "progressive" acceleration.
- ◇ - Operates and affects power transmission while coasting.
- △ - Line pressure is applied but does not affect power transmission.
- ☆ - Operates at the fixed speed or less.

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Fig. 27: Clutch And Band Chart
Courtesy of NISSAN MOTOR CO., U.S.A.

POWER TRANSMISSION

"N" Position



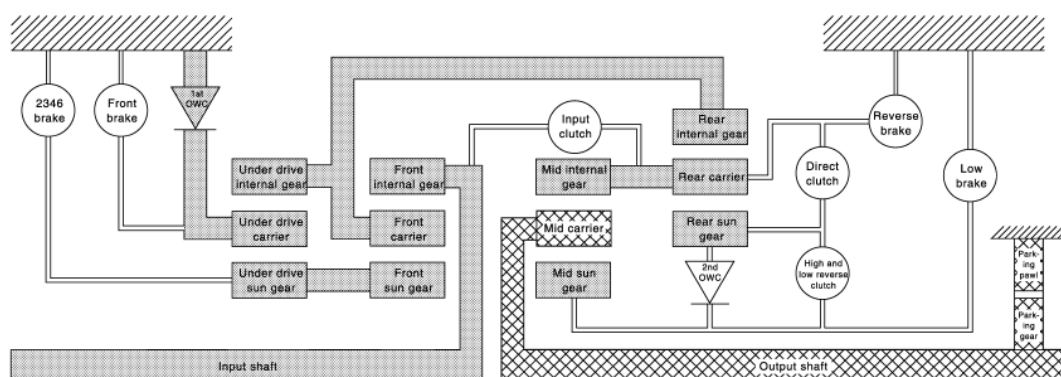
: Affects power transmission

8D0309400F

Fig. 28: Power Transmission Chart - N Position
Courtesy of NISSAN MOTOR CO., U.S.A.

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

"P" Position



: Affects power transmission

: Fixed

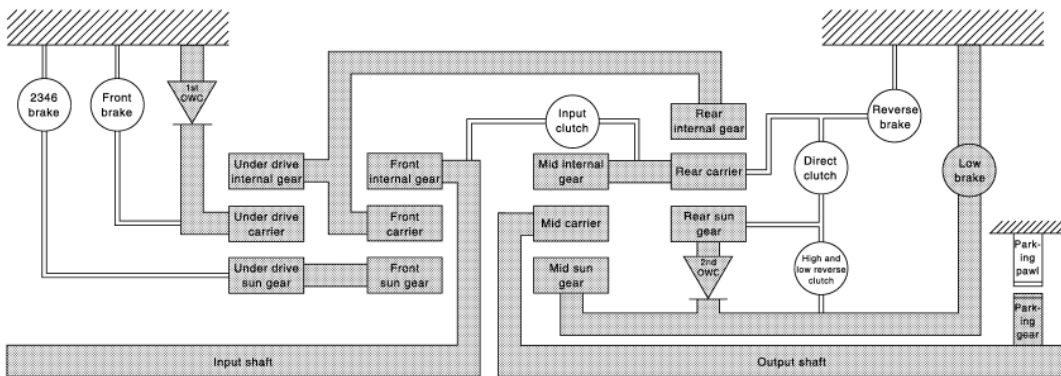
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Fig. 29: Power Transmission Chart - P Position

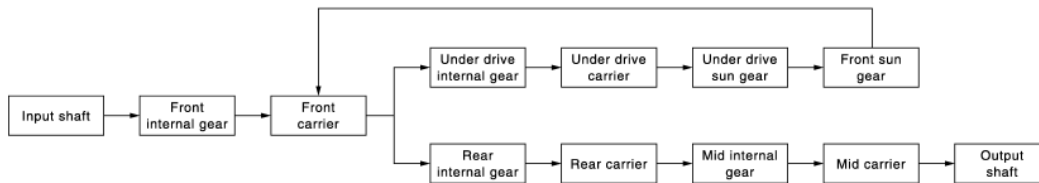
Courtesy of NISSAN MOTOR CO., U.S.A.

- 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



Power transmission



809960N02P

: Affects power transmission

Fig. 30: Power Transmission Chart - D1 And DS1 Positions

Courtesy of NISSAN MOTOR CO., U.S.A.

- The 1st one-way clutch regulates counterclockwise rotation of the under drive carrier. P
- 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.

Front planetary gear

FRONT PLANETARY GEAR REFERENCE CHART

Name	Front sun gear	Front carrier	Front internal gear
Condition	-	Output	Input

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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

UNDER DRIVE PLANETARY GEAR REFERENCE CHART

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

REAR PLANETARY GEAR REFERENCE CHART

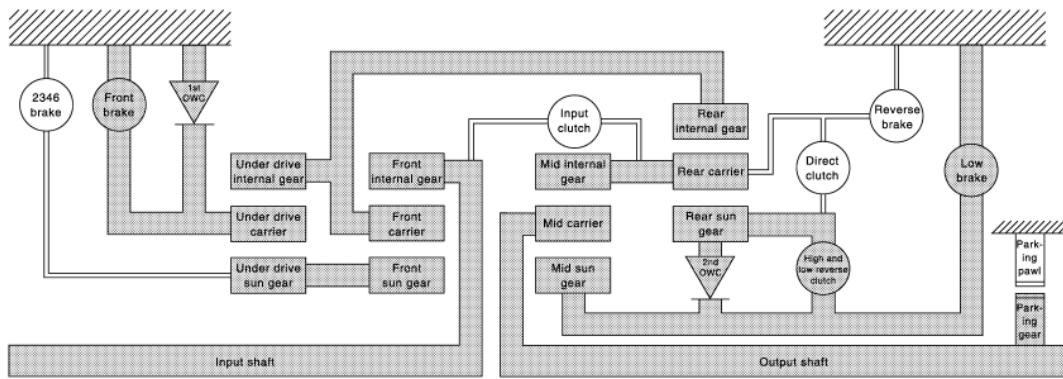
Name	Rear sun gear	Rear carrier	Rear internal gear
Condition	Fixed	Output	Input
Direction of rotation	-	Clockwise revolution	Clockwise revolution
Number of revolutions	-	Deceleration from rear internal gear	Same number of revolution as the under drive internal gear

Mid planetary gear

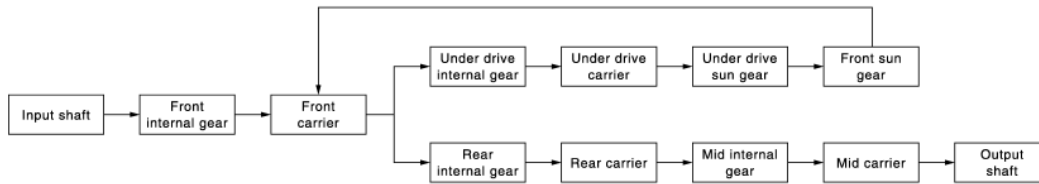
MID PLANETARY GEAR REFERENCE CHART

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



Power transmission



90J5000002

: Affects power transmission

Fig. 31: Power Transmission Chart - M1 Position

Courtesy of NISSAN MOTOR CO., U.S.A.

- The 1st one-way clutch and the front brake regulate counterclockwise rotation of the under drive carrier.
P

NOTE: The front brake operates only while coasting.

- The 2nd one-way clutch and the high and low reverse clutch regulate counterclockwise rotation of the rear sun gear.

NOTE: The high and low reverse clutch operates only while coasting.

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

Front planetary gear

FRONT PLANETARY GEAR REFERENCE CHART

Name	Front sun gear	Front carrier	Front internal gear
Condition	-	Output	Input
Direction of rotation	Counterclockwise revolution	Clockwise revolution	Clockwise revolution

2010 Nissan 370Z

2010 TRANSMISSION Transaxle & Transmission (7AT: RE7R01A) - 370Z

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

UNDER DRIVE PLANETARY GEAR REFERENCE CHART

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

REAR PLANETARY GEAR REFERENCE CHART

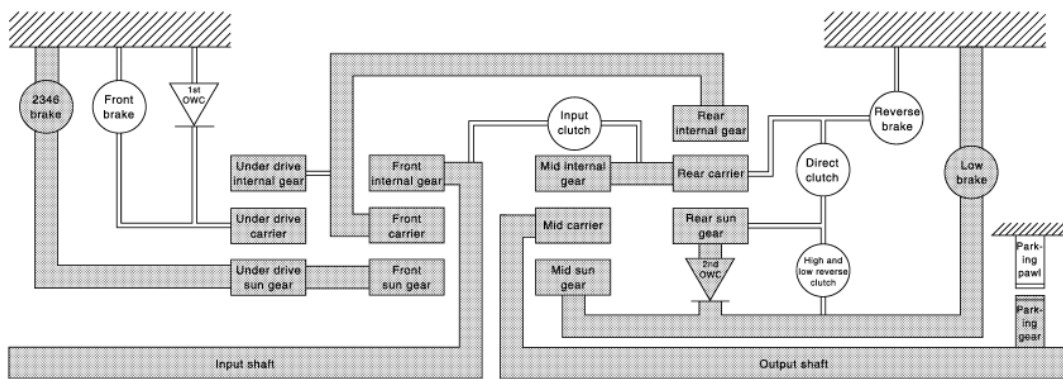
Name	Rear sun gear	Rear carrier	Rear internal gear
Condition	Fixed	Output	Input
Direction of rotation	-	Clockwise revolution	Clockwise revolution
Number of revolutions	-	Deceleration from rear internal gear	Same number of revolution as the under drive internal gear

Mid planetary gear

MID PLANETARY GEAR REFERENCE CHART

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



Power transmission



80596902F

: Affects power transmission

Fig. 32: Power Transmission Chart - D2 And DS2 Positions
 Courtesy of NISSAN MOTOR CO., U.S.A.

- The front sun gear and the under drive sun gear are fixed by the 2346 brake. P
- 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.

Front planetary gear

FRONT PLANETARY GEAR REFERENCE CHART

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

UNDER DRIVE PLANETARY GEAR REFERENCE CHART

	Under drive	
--	-------------	--

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Name	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

REAR PLANETARY GEAR REFERENCE CHART

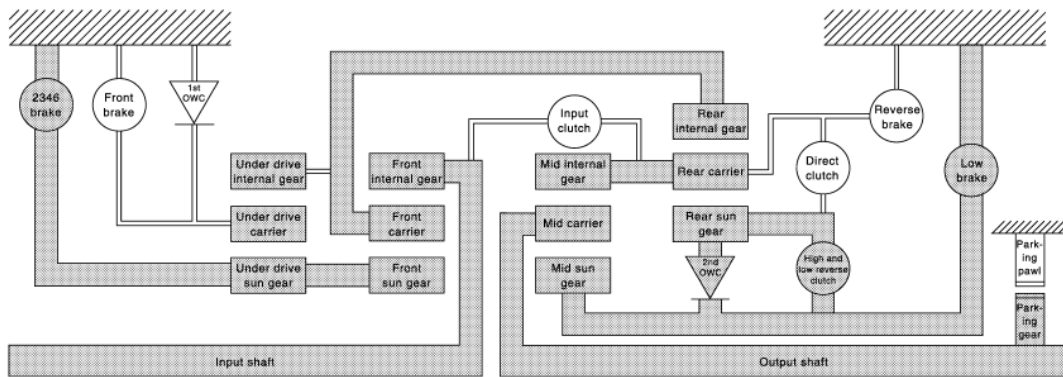
Name	Rear sun gear	Rear carrier	Rear internal gear
Condition	Fixed	Output	Input
Direction of rotation	-	Clockwise revolution	Clockwise revolution
Number of revolutions	-	Deceleration from rear internal gear	Same number of revolution as the under drive internal gear

Mid planetary gear

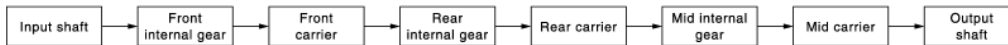
MID PLANETARY GEAR REFERENCE CHART

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



Power transmission



805560N02F

: Affects power transmission

Fig. 33: Power Transmission Chart - M2 Positions

Courtesy of NISSAN MOTOR CO., U.S.A.

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

NOTE: The high and low reverse clutch operates only while coasting.

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

Front planetary gear

FRONT PLANETARY GEAR REFERENCE CHART

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

UNDER DRIVE PLANETARY GEAR REFERENCE CHART

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

REAR PLANETARY GEAR REFERENCE CHART

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

MID PLANETARY GEAR REFERENCE CHART

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



 : Affects power transmission

- The front sun gear and the under drive sun gear are fixed by the 2346 brake. P
- 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.

FRONT PLANETARY GEAR REFERENCE CHART

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 REFERENCE CHART

	Under drive		
--	--------------------	--	--

2010 Nissan 370Z

2010 TRANSMISSION Transaxle & Transmission (7AT: RE7R01A) - 370Z

Name	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

REAR PLANETARY GEAR REFERENCE CHART

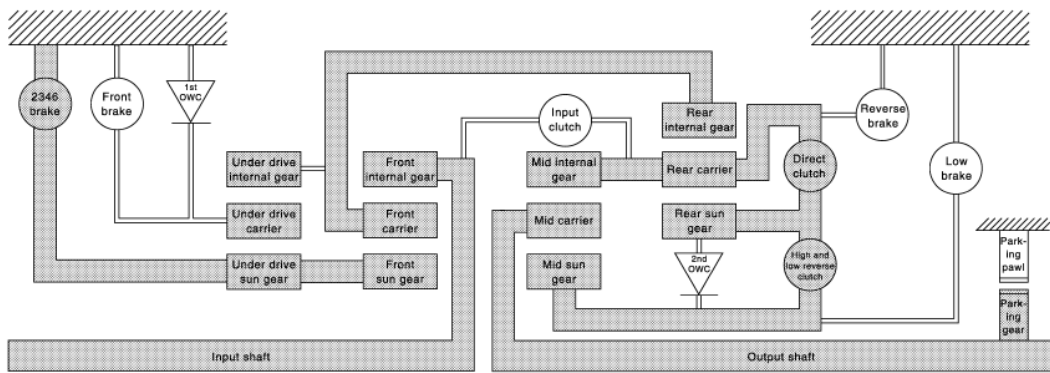
Name	Rear sun gear	Rear carrier	Rear internal gear
Condition	-	Output	Input
Direction of rotation	Clockwise revolution	Clockwise revolution	Clockwise revolution
Number of revolutions	Same number of revolution as the rear internal gear	Same number of revolution as the rear internal gear	Same number of revolution as the under drive internal gear

Mid planetary gear

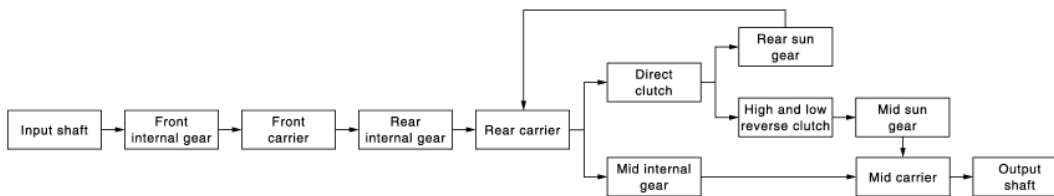
MID PLANETARY GEAR REFERENCE CHART

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



Power transmission



BOLSONOCT

 : Affects power transmission

Fig. 35: Power Transmission Chart - D4, DS4 And M4 Positions
 Courtesy of NISSAN MOTOR CO., U.S.A.

- The front sun gear and the under drive sun gear are fixed by the 2346 brake. P
- 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.

Front planetary gear

FRONT PLANETARY GEAR REFERENCE CHART

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

UNDER DRIVE PLANETARY GEAR REFERENCE CHART

Name	Under drive	Under drive carrier	Under drive internal gear
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	sun 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

REAR PLANETARY GEAR REFERENCE CHART

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

MID PLANETARY GEAR REFERENCE CHART

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

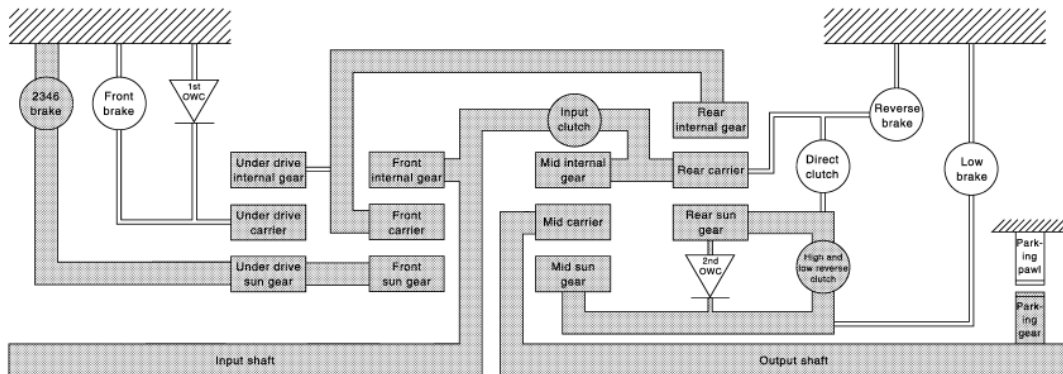
"D5", "DS5" and "M5" Positions

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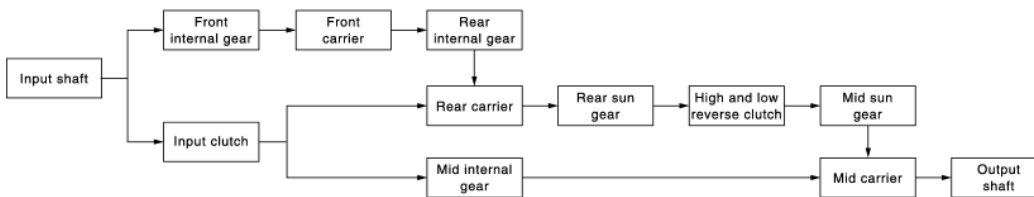
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Condition	-	Output	Input
Direction of rotation	Clockwise revolution	Clockwise revolution	Clockwise revolution
Number of revolutions	Same number of revolution as the mid internal gear	Same number of revolution as the mid internal gear	Same number of revolution as the input shaft

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



Power transmission



BDL3040730B

: Affects power transmission

Fig. 37: Power Transmission Chart - D6, DS6 And M6 Positions
Courtesy of NISSAN MOTOR CO., U.S.A.

- The front sun gear and the under drive sun gear are fixed by the 2346 brake. P
- 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.

Front planetary gear

FRONT PLANETARY GEAR REFERENCE CHART

Name	Front sun gear	Front carrier	Front internal gear
Condition	Fixed	Output	Input

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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

REAR PLANETARY GEAR REFERENCE CHART

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

MID PLANETARY GEAR REFERENCE CHART

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

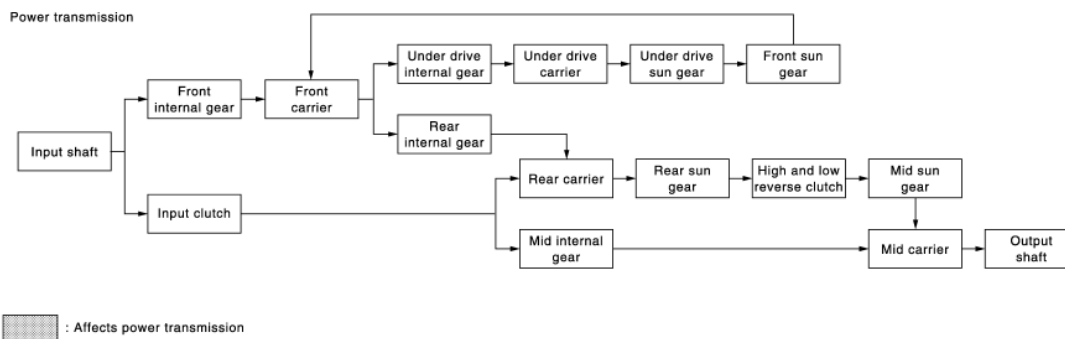
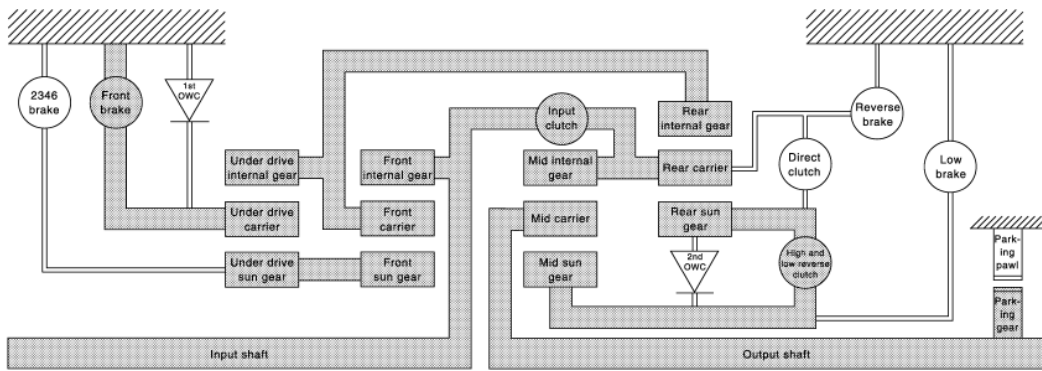


Fig. 38: Power Transmission Chart - D7, DS7 And M7 Positions
Courtesy of NISSAN MOTOR CO., U.S.A.

- The under drive carrier is fixed by the front brake. P
- 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.

Front planetary gear

FRONT PLANETARY GEAR REFERENCE CHART

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

UNDER DRIVE PLANETARY GEAR REFERENCE CHART

Name	Under drive sun gear	Under drive carrier	Under drive internal gear

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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

REAR PLANETARY GEAR REFERENCE CHART

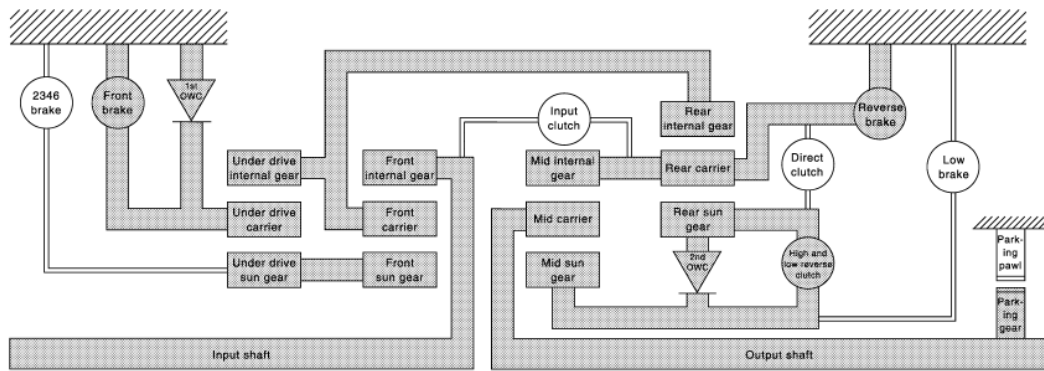
Name	Rear sun gear	Rear carrier	Rear internal gear
Condition	-	Input/Output	Input
Direction of rotation	Clockwise revolution	Clockwise revolution	Clockwise revolution
Number of revolutions	Acceleration from rear carrier	Same number of revolution as the input shaft	Same number of revolution as the under drive internal gear

Mid planetary gear

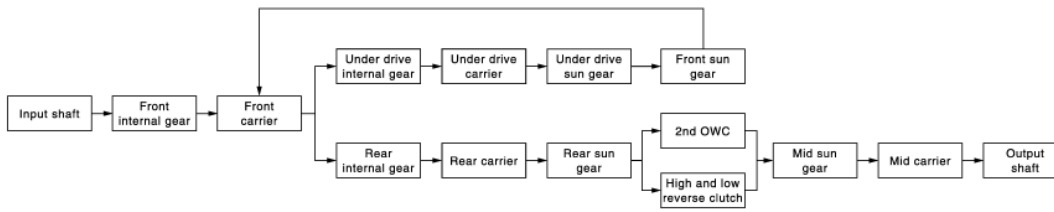
MID PLANETARY GEAR REFERENCE CHART

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



Power transmission



85532-00002P

: Affects power transmission

Fig. 39: Power Transmission Chart - R Position
 Courtesy of NISSAN MOTOR CO., U.S.A.

- The 1st one-way clutch and the front brake regulate counterclockwise rotation of the under drive carrier.
P

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.

- Each planetary gear enters the state described below.

Front planetary gear

FRONT PLANETARY GEAR REFERENCE CHART

Name	Front sun gear	Front carrier	Front internal gear
Condition	-	Output	Input
Direction of rotation	Counterclockwise revolution	Clockwise revolution	Clockwise revolution

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Number of revolutions	Deceleration from front internal gear	Deceleration from front internal gear	Same number of revolution as the input shaft
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Under drive planetary gear

UNDER DRIVE PLANETARY GEAR REFERENCE CHART

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

REAR PLANETARY GEAR REFERENCE CHART

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

MID PLANETARY GEAR REFERENCE CHART

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

Component Parts LocationRefer to "**CROSS-SECTIONAL VIEW**".**Component Description****COMPONENT DESCRIPTION CHART**

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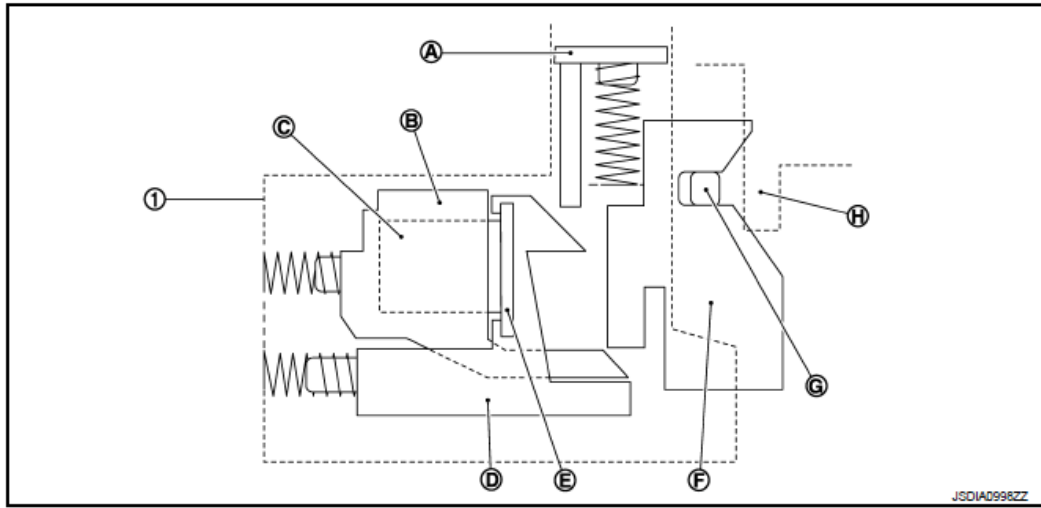
Front brake (FR/B)	Fastens the under drive carrier.
Input clutch (I/C)	Connects the input shaft, the mid internal gear and the rear carrier.
Direct clutch (D/C)	Connects the rear carrier and the rear sun gear.
High and low reverse clutch (HLR/C)	Connects the rear sun gear and the mid sun gear.
Reverse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

SHIFT LOCK SYSTEM

System Description

- Shift lock prevents an unintentional start of the vehicle that may be caused by an incorrect operation while selector lever is in the "P" position.
- Selector lever can be shifted from the "P" position to another position when the following conditions are satisfied.
 - Ignition switch ON
 - Stop lamp switch is ON (brake pedal is depressed)
 - Selector lever knob button is pressed

SHIFT LOCK MECHANISM



- | | | |
|------------------------------|----------------|------------------|
| 1. Shift lock unit | B. Slider | C. Electromagnet |
| A. Shift lock release button | E. Iron plate | F. Plate |
| D. Stopper | H. Detent gate | |
| G. Detent pin | | |

Fig. 40: Identifying Shift Lock Mechanism
Courtesy of NISSAN MOTOR CO., U.S.A.

SHIFT LOCK OPERATION

When brake pedal is not depressed and selector lever is in "P" position. (Unable to shift selector lever.)

Without brake pedal depressed and with ignition switch ON, electromagnet (A) of slider (B) is not magnetized because of non electrical current. When selector lever knob button is pressed in this situation, detent pin (C) lowers. According to the movement of detent pin, plate (D) also lowers while pressing slider into shift lock unit. However, stopper (E) pressed by spring comes underneath plate. Plate cannot lower further when it contacts stopper, and detent pin cannot lower to the point that releases selector lever. Thus selector lever stays in the "P" position and selector lever is unable to shift.

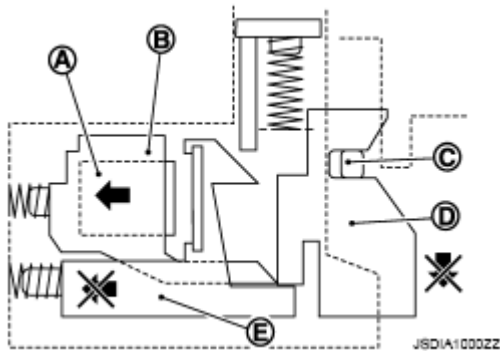


Fig. 41: Identifying Shift Lock Operation (Unable To Shift Selector Lever)
Courtesy of NISSAN MOTOR CO., U.S.A.

When brake pedal is depressed and selector lever is in "P" position. (Able to shift selector lever.)

With brake pedal depressed and with ignition switch ON, electromagnet (A) of slider (B) becomes magnetized because of live electricity. stopper (C) has an iron plate (D) to unify stopper with slider when electromagnet becomes magnetized. When selector lever knob button is pressed in this situation, detent pin (E) lowers. According to the movement of detent pin, plate (F) also lowers while pressing slider into shift lock unit. Because stopper is unified with slider, the slider unit moves into shift lock unit. Detent pin lowers to the point that releases selector lever from the "P" position and selector lever becomes able to shift.

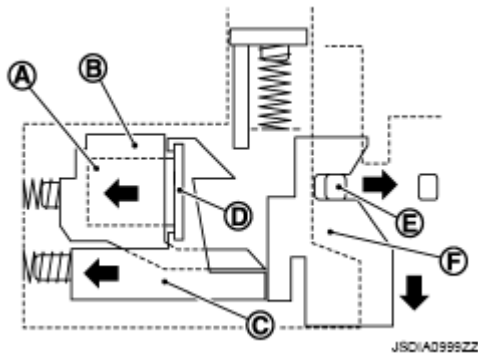


Fig. 42: Identifying Shift Lock Operation (Able To Shift Selector Lever)

Courtesy of NISSAN MOTOR CO., U.S.A.

FORCIBLE RELEASE OF SHIFT LOCK

When an electrical or mechanical malfunction occurs in shift lock system, selector lever shift operation from the "P" position becomes impossible. When shift lock release button (A) is pressed in this state, stopper (B) is forcibly pressed into shift lock unit, and then it becomes possible to release shift lock. By this operation, shift operation becomes possible when a malfunction occurs in shift lock system.

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

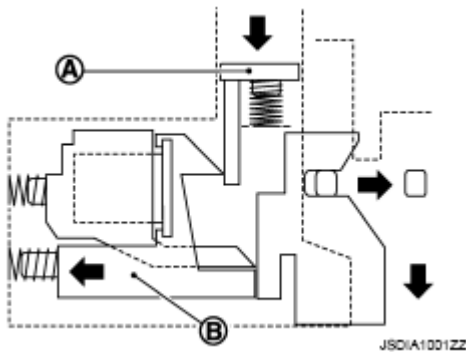
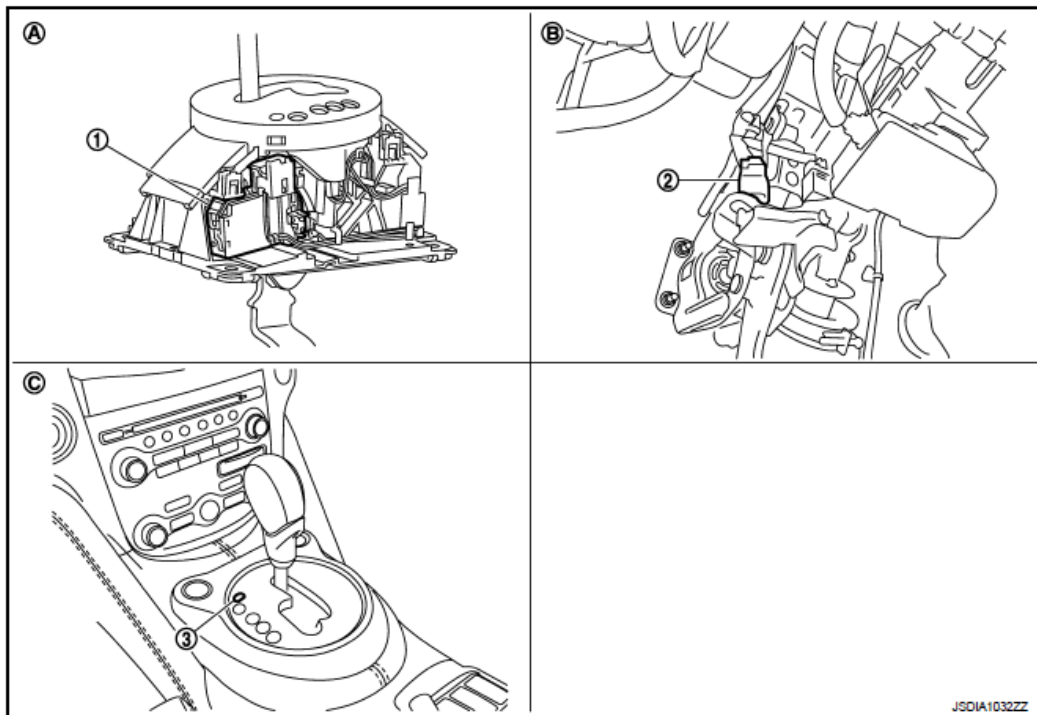


Fig. 43: Identifying Forcible Release Of Shift Lock

Courtesy of NISSAN MOTOR CO., U.S.A.

Component Parts Location



- | | | |
|--------------------------------|-----------------------|----------------------|
| 1. Shift lock unit | 2. Stop lamp switch | 3. Shift lock cover* |
| A. A/T shift selector assembly | B. Brake pedal, upper | C. Center console |

Fig. 44: Identifying Shift Lock System Component Parts Location
 Courtesy of NISSAN MOTOR CO., U.S.A.

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

Component Description

COMPONENT DESCRIPTION CHART

Component	Function
Slider	- Electromagnet is built into slider. - When electromagnet of slider is magnetized, stopper is unified with slider.
Stopper	- Iron plate is built into stopper. - Restricts plate moving.
Detent pin	Links with selector knob button and restricts selector lever shift operation.
Plate	Restricts detent pin moving.
Shift lock release button	When shift lock release button is pressed, shift lock is forcibly released.
Stop lamp switch	- When brake pedal is depressed, stop lamp switch turns ON. - When stop lamp switch turns ON, power is supplied to shift lock unit.

ON BOARD DIAGNOSTIC (OBD) SYSTEM

Diagnosis Description

The A/T system has two self-diagnostic systems.

The first is the emission-related on board diagnostic system (OBD-II) performed by the TCM in combination with the ECM. A malfunction is indicated by the MIL (malfunction indicator lamp) and is stored as a DTC in the ECM memory and in the TCM memory.

The second is the TCM original self-diagnosis indicated by the TCM. A malfunction history is stored in the TCM memory. The detected items are overlapped with OBD-II self-diagnostic items. For details, refer to "**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 "**DIAGNOSIS DESCRIPTION**".

DIAGNOSIS SYSTEM (TCM)

CONSULT-III Function (TRANSMISSION)

CONSULT-III APPLICATION ITEMS

CONSULT-III APPLICATION ITEMS REFERENCE CHART

Diagnostic test mode	Function
Self Diagnostic Results	Retrieve DTC from ECU and display diagnostic items.
Data Monitor	Monitor the input/output signal of the control unit in real time.
CAN Diagnosis	This mode displays a network diagnosis result about CAN by a diagram.
CAN Diagnostic Support Monitor	It monitors the starts of CAN communication.
DTC & SRT confirmation	The status of system monitoring tests and the self-diagnosis status/result can be confirmed.
ECU Identification	Display the ECU identification number (part number etc.) of the selected system.
Function Test ⁽¹⁾	This mode can show results of self-diagnosis of ECU with either "OK" or "NG". For engine, more practical tests regarding sensors/switches and/or actuators are available.
Special Function ⁽¹⁾	Other results or histories, etc. that are recorded in ECU are displayed.

(1) Although "Function Test" and "Special Function" are selectable, do not use its.

SELF DIAGNOSTIC RESULTS

Display Items List

Refer to "**DTC INDEX**".

DATA MONITOR

Display Items List

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 output speed sensor.
INPUT SPEED (rpm)	X	X	?	Displays the input speed calculated from front sun gear revolution and front carrier revolution.
F SUN GR REV (rpm)	-	-	?	Displays the front sun gear revolution calculated from the pulse signal of input speed sensor 1.
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

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				communication.
THROTTLE POSI (0.0/8)	X	X	?	Displays the throttle position received via CAN communication.
ATF TEMP 1 (°C or °F)	X	X	?	Displays the ATF temperature of oil pan calculated from the signal voltage of A/T fluid temperature sensor.
ATF TEMP 2 (°C or °F)	X	X	?	Displays the ATF temperature estimated value of torque converter outlet calculated from the signal voltage of A/T fluid temperature sensor.
ATF TEMP SE 1 (V)	-	-	?	Displays the signal voltage of A/T fluid temperature sensor.
BATTERY VOLT (V)	X	-	?	Displays the power supply voltage of TCM.
LINE PRES SOL (A)	-	X	?	Displays the command current from TCM to the line pressure solenoid.
TCC SOLENOID (A)	-	X	?	Displays the command current from TCM to the torque converter clutch solenoid.
L/B SOLENOID (A)	-	X	?	Displays the command current from TCM to the low brake solenoid.
FR/B SOLENOID (A)	-	X	?	Displays the command current from TCM to the front brake solenoid.
HLR/C SOL (A)	-	X	?	Displays the command current from TCM to the high and low reverse clutch solenoid.
I/C SOLENOID (A)	-	X	?	Displays the command current from TCM to the input clutch solenoid.
D/C SOLENOID (A)	-	X	?	Displays the command current from TCM to the direct clutch solenoid.
2346/B SOL (A)	-	X	?	Displays the command current from TCM to the 2346 brake solenoid.
L/P SOL MON (A)	-	-	?	Monitors the command current from TCM to the line pressure solenoid, and

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				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 speed and output revolution.
ENGINE TORQUE (Nm)	-	-	?	Displays the engine torque estimated value received via CAN communication.
ENG TORQUE D (Nm)	-	-	?	Displays the engine torque estimated value reflected the requested torque of each control unit received via CAN communication.
INPUT TRQ S (Nm)	-	-	?	Displays the input torque using for the oil pressure calculation process of shift change control.

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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.
					Displays the target oil

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TRG PRE 2346/B	(kPa, kg/cm ² or psi)	-	-	?	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).
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. - Not mounted but displayed.
					Displays the reception status of 1 position

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1 POSITION SW	(ON/OFF)	X	-	?	switch signal received via CAN communication. • Not mounted but displayed.
OD CONT SW	(ON/OFF)	X	-	?	• Displays the reception status of overdrive control switch signal received via CAN communication. • Not mounted but displayed.
BRAKE SW	(ON/OFF)	X	-	?	Displays the reception status of stop lamp switch signal received via CAN communication.
POWERSHIFT SW	(ON/OFF)	X	-	?	• 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					Displays whether the reception value of A/T shift

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1	(ON/OFF)	X	-	?	schedule change demand signal received via CAN communication is "warm".
LOW/B PARTS	(FAIL/NOTFAIL)	-	-	?	Displays whether the identified malfunction point judged by TCM is the related parts of low brake.
HC/IC/FRB PARTS	(FAIL/NOTFAIL)	-	-	?	Displays whether the identified malfunction point judged by TCM is the related parts of high and low reversed clutch, input clutch or front brake.
IC/FRB PARTS	(FAIL/NOTFAIL)	-	-	?	Displays whether the identified malfunction point judged by TCM is the related parts of input clutch or front brake.
HLR/C PARTS	(FAIL/NOTFAIL)	-	-	?	Displays whether the identified malfunction point judged by TCM is the related parts of high and low reversed clutch.
W/O THL POS	(ON/OFF)	X	-	?	Displays the kickdown condition signal status received via CAN communication.
CLSD THL POS	(ON/OFF)	X	-	?	Displays the idling status signal status received via CAN communication.
DRV CST JUDGE	(DRIVE/COAST)	-	-	?	Displays the judgment results of "driving" or "coasting" judged by TCM.
SHIFT IND SIGNAL		-	-	?	Displays the transmission value of shift position signal transmitted via CAN communication.
STARTER RELAY	(ON/OFF)	-	-	?	Displays the command status from TCM to starter relay.
F-SAFE IND/L	(ON/OFF)	-	-	?	Displays the transmission status of A/T CHECK indicator lamp signal transmitted via CAN communication.
					Displays the transmission status of

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ATF WARN LAMP (ON/OFF)	-	-	?	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)	-	-	?	Displays whether the identified malfunction point judged by TCM is the related parts of direct clutch.
FR/B PARTS (FAIL/NOTFAIL)	-	-	?	Displays whether the identified malfunction point judged by TCM is the related parts of front brake.
2346/B PARTS (FAIL/NOTFAIL)	-	-	?	Displays whether the identified malfunction point judged by TCM is the related parts of 2346 brake.
				Displays whether the

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2346B/DC PARTS	(FAIL/NOTFAIL)	-	-	?	identified malfunction point judged by TCM is the related parts of 2346 brake or direct clutch.
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DTC & SRT CONFIRMATION

DTC Work Support

DTC WORK SUPPORT

Item name	Description	Check item
1ST GR FNCTN P0731	Following items for "1GR incorrect ratio" can be confirmed. - Self-diagnosis status (whether the diagnosis is being performed or not) - Self-diagnostic results (OK or NG)	- Input clutch solenoid valve - Front brake solenoid valve - Direct clutch solenoid valve - High and low reverse clutch solenoid valve - Low brake solenoid valve 2346 brake solenoid valve - Anti-interlock solenoid valve - Each clutch and brake - Output speed sensor - Input speed sensor 1, 2 - Hydraulic control circuit
2ND GR FNCTN P0732	Following items for "2GR incorrect ratio" can be confirmed. - Self-diagnosis status (whether the diagnosis is being performed or not) - Self-diagnostic results (OK or NG)	
3RD GR FNCTN P0733	Following items for "3GR incorrect ratio" can be confirmed. - Self-diagnosis status (whether the diagnosis is being performed or not) - Self-diagnostic results (OK or NG)	
4TH GR FNCTN P0734	Following items for "4GR incorrect ratio" can be confirmed. - Self-diagnosis status (whether the diagnosis is being performed or not) - Self-diagnostic results (OK or NG)	
5TH GR FNCTN P0735	Following items for "5GR incorrect ratio" can be confirmed. - Self-diagnosis status (whether the diagnosis is being performed or not) - Self-diagnostic results (OK or NG)	
6TH GR FNCTN P0729	Following items for "6GR incorrect ratio" can be confirmed. Self-diagnosis status (whether the	

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	diagnosis is being performed or not) • Self-diagnostic results (OK or NG)	
7TH GR FNCTN P1734	Following items for "7GR incorrect ratio" can be confirmed. • Self-diagnosis status (whether the diagnosis is being performed or not) • Self-diagnostic results (OK or NG)	
TCC SOL FUNCTN CHECK	Following items for "TCC solenoid function" can be confirmed. • Self-diagnosis status (whether the diagnosis is being performed or not) • Self-diagnostic results (OK or NG)	• Harness or connectors • Torque converter clutch solenoid valve • Torque converter • Input speed sensor 1, 2 • Hydraulic control circuit

DTC/CIRCUIT DIAGNOSIS

DTC INDEX

DTC INDEX

DTC	Description
<u>DTC U1000</u>	CAN COMM CIRCUIT
<u>DTC P0615</u>	STARTER RELAY
<u>DTC P0705</u>	TRANSMISSION RANGE SWITCH A
<u>DTC P0710</u>	TRANSMISSION FLUID TEMPERATURE SENSOR A
<u>DTC P0717</u>	INPUT SPEED SENSOR A
<u>DTC P0720</u>	OUTPUT SPEED SENSOR
<u>DTC P0725</u>	ENGINE SPEED
<u>DTC P0729</u>	6GR INCORRECT RATIO
<u>DTC P0730</u>	INCORRECT GEAR RATIO
<u>DTC P0731</u>	1GR INCORRECT RATIO
<u>DTC P0732</u>	2GR INCORRECT RATIO
<u>DTC P0733</u>	3GR INCORRECT RATIO
<u>DTC P0734</u>	4GR INCORRECT RATIO
<u>DTC P0735</u>	5GR INCORRECT RATIO
<u>DTC P0740</u>	TORQUE CONVERTER
<u>DTC P0744</u>	TORQUE CONVERTER
<u>DTC P0745</u>	PRESSURE CONTROL SOLENOID A
<u>DTC P0750</u>	SHIFT SOLENOID A
<u>DTC P0775</u>	PRESSURE CONTROL SOLENOID B

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DTC P0780	SHIFT
DTC P0795	PRESSURE CONTROL SOLENOID C
DTC P1705	TP SENSOR
DTC P1721	VEHICLE SPEED SIGNAL
DTC P1730	INTERLOCK
DTC P1734	7GR INCORRECT RATIO
DTC P1815	M-MODE SWITCH
DTC P2713	PRESSURE CONTROL SOLENOID D
DTC P2722	PRESSURE CONTROL SOLENOID E
DTC P2731	PRESSURE CONTROL SOLENOID F
DTC P2807	PRESSURE CONTROL SOLENOID G

DTC U1000: CAN COMM CIRCUIT**Description**

CAN (Controller Area Network) is a serial communication line for real-time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent malfunction detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independently). In CAN communication, control units are 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**DTC DETECTION LOGIC****DTC DETECTION LOGIC CHART**

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
U1000	CAN Communication Line	TCM cannot transmit or receive CAN communication signals continuously for 2 seconds or more when the ignition switch is ON.	• Harness or connectors (CAN communication line is open or shorted.) • TCM

DTC CONFIRMATION PROCEDURE**1. PRECONDITIONING**

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

GO TO 2.

2. CHECK DTC DETECTION

With CONSULT-III

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

With GST

Follow the procedure "With CONSULT-III"

Is "U1000" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: INSPECTION END

Diagnosis Procedure

Go to "**TROUBLE DIAGNOSIS FLOW CHART**".

DTC P0615: STARTER RELAY**Description**

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

DTC Logic**DTC DETECTION LOGIC****DTC DETECTION LOGIC CHART**

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0615	Starter Relay Circuit	The starter monitor value is OFF when the ignition switch is ON at the "P" and "N" positions.	• Harness or connectors (Starter relay and TCM circuit is open or shorted.) • Starter relay circuit

DTC CONFIRMATION PROCEDURE**1. PRECONDITIONING**

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

GO TO 2.

2. CHECK DTC DETECTION

With CONSULT-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" in "TRANSMISSION".

Is "P0615" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: INSPECTION END

Diagnosis Procedure

1. CHECK STARTER RELAY SIGNAL

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

TERMINAL VOLTAGE REFERENCE CHART

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

Is the inspection result normal?

YES: Check starter relay circuit. Refer to "**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 continuity between A/T assembly vehicle side harness connector terminal and IPDM E/R vehicle side harness connector terminal.

TERMINAL CONTINUITY REFERENCE CHART

A/T assembly vehicle side harness connector		IPDM E/R vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F51	9	E5 ⁽¹⁾	30 ⁽¹⁾	Existed
		E7 ⁽²⁾	72 ⁽²⁾	
(1) Roadster models				
(2) Coupe models				

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

TERMINAL CONTINUITY REFERENCE CHART

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 "**INTERMITTENT INCIDENT**".

Is the inspection result normal?

YES: Replace A/T assembly. Refer to "**EXPLODED VIEW**".

NO: Repair or replace damaged parts.

DTC P0705: TRANSMISSION RANGE SWITCH A**Description**

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

DTC Logic

DTC DETECTION LOGIC

DTC DETECTION LOGIC CHART

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0705	Transmission Range Sensor A Circuit (PRNDL Input)	Transmission range switch signals input with impossible pattern.	• Harness or connectors (Transmission range switches 1, 2, 3, 4 and TCM circuit is open or shorted.) • Transmission range switches 1, 2, 3 and 4

DTC CONFIRMATION PROCEDURE

1. PRECONDITIONING

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

GO TO 2.

2. CHECK DTC DETECTION

With CONSULT-III

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

ACCELE POSI : More than 1.0/8

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

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

With GST

Follow the procedure "With CONSULT-III".

Is "P0705" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: INSPECTION END

Diagnosis Procedure

1. CHECK INTERMITTENT INCIDENT

Refer to "**INTERMITTENT INCIDENT**".

Is the inspection result normal?

YES: Replace A/T assembly. Refer to "**EXPLODED VIEW**".

NO: Repair or replace damaged parts.

DTC P0710: TRANSMISSION FLUID TEMPERATURE SENSOR A

Description

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

DTC Logic

DTC DETECTION LOGIC

DTC DETECTION LOGIC CHART

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0710	Transmission Fluid Temperature Sensor A Circuit	TCM judges that the A/T fluid temperature is -40°C (-40°F) or less continuously for 5 seconds while driving at 10 km/h (7 MPH) or more.	• Harness or connectors (Sensor circuit is open.) • A/T fluid temperature sensor
		TCM judges that the A/T fluid temperature is 180°C (356°F) or more continuously for 5 seconds.	• Harness or connectors (Sensor circuit is short.) • A/T fluid temperature sensor
		TCM judges the following conditions while driving the vehicle at 10 km/h (7 MPH) or more: • The time required for A/T fluid temperature to rise by 1°C (1.8°F) exceeds 14 minutes when A/T fluid temperature is -20°C (-4°F) or less.	• Harness or connectors (Sensor

		• The time required for A/T fluid temperature to rise by 1°C (1.8°F) exceeds 7 minutes when A/T fluid temperature is between -19°C (-2°F) and 0°C (32°F). • The time required for A/T fluid temperature to rise by 1°C (1.8°F) exceeds 4 minutes when A/T fluid temperature is between 1°C (34°F) and 20°C (68°F).	circuit is stuck.) • A/T fluid temperature sensor
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DTC CONFIRMATION PROCEDURE

CAUTION: Always drive vehicle at a safe speed.

1. PRECONDITIONING

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

GO TO 2.

2. CHECK DTC DETECTION

With CONSULT-III

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

With GST

Follow the procedure "With CONSULT-III".

Is "P0710" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: INSPECTION END

Diagnosis Procedure**1. CHECK INTERMITTENT INCIDENT**

Refer to "**INTERMITTENT INCIDENT**".

Is the inspection result normal?

YES: Replace A/T assembly. Refer to "**EXPLODED VIEW**".

NO: Repair or replace damaged parts.

DTC P0717: INPUT SPEED SENSOR A**Description**

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

DTC Logic**DTC DETECTION LOGIC****DTC DETECTION LOGIC CHART**

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0717	Input/Turbine Speed Sensor A Circuit No Signal	The revolution of input speed sensor 1 and/or 2 is 270 rpm or less.	• Harness or connectors (Sensor circuit is open.) • Input speed sensor 1 and/or 2

DTC CONFIRMATION PROCEDURE

CAUTION: Always drive vehicle at a safe speed.

1. PRECONDITIONING

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

GO TO 2.

2. CHECK DTC DETECTION

With CONSULT-III

1. Start the engine.
2. Select "SLCT LVR POSI", "GEAR", "VHCL/S SE-A/T", "CLSD THL POS" and "ENGINE SPEED" in "Data Monitor" in "TRANSMISSION".
3. Drive vehicle and maintain the following conditions for 5 seconds or more.

CAUTION: Keep the same gear position.

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

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" in "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P0717" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: INSPECTION END

Diagnosis Procedure

1. CHECK INTERMITTENT INCIDENT

Refer to "**INTERMITTENT INCIDENT**".

Is the inspection result normal?

YES: Replace A/T assembly. Refer to "**EXPLODED VIEW**".

NO: Repair or replace damaged parts.

DTC P0720: OUTPUT SPEED SENSOR**Description**

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

DTC Logic**DTC DETECTION LOGIC****DTC DETECTION LOGIC CHART**

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0720	Output Speed Sensor Circuit	- The vehicle speed detected by the output speed sensor is 5 km/h (3MPH) or less when the vehicle speed transmitted from the combination meter to TCM is 20 km/h or more. (Only when starts after the ignition switch is turned ON.) - The vehicle speed transmitted from the combination meter to TCM does not decrease despite the 36 km/h (23 MPH) or more of deceleration in vehicle speed detected by the output speed sensor. when the vehicle speed detected by the output speed sensor is 36 km/h (23 MPH) or more and the vehicle speed transmitted from the combination meter to TCM is 24 (15 MPH) or more.	- 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" is previously conducted, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

GO TO 2.

2. CHECK DTC DETECTION**With CONSULT-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.

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

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

With GST

Follow the procedure "With CONSULT-III".

Is "P0720" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: INSPECTION END

Diagnosis Procedure

1. CHECK INTERMITTENT INCIDENT

Refer to "**INTERMITTENT INCIDENT**".

Is the inspection result normal?

YES: Replace A/T assembly. Refer to "**EXPLODED VIEW**".

NO: Repair or replace damaged parts.

DTC P0725: ENGINE SPEED

Description

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

DTC Logic

DTC DETECTION LOGIC

DTC DETECTION LOGIC CHART

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0725	Engine Speed Input Circuit	• TCM does not receive the CAN communication signal from the ECM. • The engine speed is more less 150 rpm even if the vehicle speed is more than 10 km/h (7	Harness or connectors (ECM to TCM circuit is open or shorted.)

MPH).

DTC CONFIRMATION PROCEDURE**CAUTION: Always drive vehicle at a safe speed.****1. PRECONDITIONING**

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

GO TO 2.

2. CHECK DTC DETECTION**With CONSULT-III**

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

SLCT LVR POSI : D

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

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

With GST

Follow the procedure "With CONSULT-III".

Is "P0725" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: INSPECTION END

Diagnosis Procedure**1. CHECK DTC OF ECM****With CONSULT-III**

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

Is any DTC detected?

YES: Check DTC detected item. Refer to "**DTC INDEX**".

NO: GO TO 2.

2. CHECK DTC OF TCM**With CONSULT-III**

Perform "Self Diagnostic Results" in "TRANSMISSION".

Is any DTC other than "P0725" detected?

YES: Check DTC detected item. Refer to "**DTC INDEX**".

NO: GO TO 3.

3. CHECK INTERMITTENT INCIDENT

Refer to "**INTERMITTENT INCIDENT**".

Is the inspection result normal?

YES: Replace A/T assembly. Refer to "**EXPLODED VIEW**".

NO: Repair or replace damaged parts.

DTC P0729: 6GR INCORRECT RATIO**Description**

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

DTC Logic**DTC DETECTION LOGIC****DTC DETECTION LOGIC CHART**

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
			• Input clutch solenoid valve • Direct clutch solenoid valve • High and low reverse clutch solenoid valve • Front brake solenoid valve

P0729	Gear 6 Incorrect Ratio	The gear ratio is: • 0.914 or more • 0.810 or less	• 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
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DTC CONFIRMATION PROCEDURE

- CAUTION:**
- " **"DIAGNOSIS PROCEDURE"** must be performed before starting "DTC CONFIRMATION PROCEDURE".
 - Never perform "DTC CONFIRMATION PROCEDURE" before completing the repair, which may cause secondary malfunction.
 - Always drive vehicle at a safe speed.

1. PRECONDITIONING

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

GO TO 2.

2. CHECK ATF TEMPERATURE

With CONSULT-III

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

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

With GST

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

Is ATF temperature within specified range?

YES: GO TO 3.

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

3. CHECK SYMPTOM (PART 1)

With CONSULT-III

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

GEAR : 6th

ACCELE POSI : 0.7/8 or more

VEHICLE SPEED : 10 km/h (7 MPH) or more

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

CAUTION: When "TESTING" is not indicated on CONSULT-III for a long time, check "Self Diagnostic Results" in "TRANSMISSION". When a DTC other than "P0729" is detected, check the DTC. Refer to "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 "DIAGNOSIS PROCEDURE".

YES-4 ("P0729" is detected): Go to "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

1. CHECK INTERMITTENT INCIDENT

Refer to "INTERMITTENT INCIDENT".

Is the inspection result normal?

YES: Replace A/T assembly. Refer to "EXPLODED VIEW".

NO: Repair or replace damaged parts.

DTC P0730: INCORRECT GEAR RATIO

Description

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

DTC Logic

DTC DETECTION LOGIC

DTC DETECTION LOGIC CHART

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0730	Incorrect Gear Ratio	The revolution of under drive sun gear is 8,000 rpm or more. NOTE: Not detected when in "P" or "N" position and during a shift to "P" or "N" position.	• 2346 brake solenoid valve • Front brake solenoid valve • Input speed sensor 1, 2

DTC CONFIRMATION PROCEDURE

CAUTION: • " "DIAGNOSIS PROCEDURE"" must be performed before starting

"DTC CONFIRMATION PROCEDURE".

- **Never perform "DTC CONFIRMATION PROCEDURE" before completing the repair, which may cause secondary malfunction.**
- **Always drive vehicle at a safe speed.**

1. PRECONDITIONING

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

GO TO 2.

2. CHECK DTC DETECTION**With CONSULT-III**

1. Start the engine.
2. Select "Self Diagnostic Results" in "ENGINE".
3. Drive vehicle under the similar conditions to (1st trip) Freeze Frame Data for 10 minutes. Refer to the table below.

Hold the accelerator pedal as steady as possible.

FREEZE FRAME DATA

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 "**DIAGNOSIS PROCEDURE**".

NO: INSPECTION END

Diagnosis Procedure**1. CHECK INTERMITTENT INCIDENT**

Refer to "**INTERMITTENT INCIDENT**".

Is the inspection result normal?

YES: Replace A/T assembly. Refer to "**EXPLODED VIEW**".

NO: Repair or replace damaged parts.

DTC P0731: 1GR INCORRECT RATIO

Description

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

DTC Logic

DTC DETECTION LOGIC

DTC DETECTION LOGIC CHART

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0731	Gear 1 Incorrect Ratio	The gear ratio is: • 5.219 or more • 4.629 or less	• Input clutch solenoid valve • Direct clutch solenoid valve • High and low reverse clutch solenoid valve • Front brake solenoid valve • Low brake solenoid valve • 2346 brake solenoid valve • Anti-interlock solenoid valve • Each clutch and brake • Output speed sensor • Input speed sensor 1, 2 • Hydraulic control circuit

DTC CONFIRMATION PROCEDURE

- CAUTION:**
- " "**DIAGNOSIS PROCEDURE**" must be performed before starting "**DTC CONFIRMATION PROCEDURE**".
 - Never perform "**DTC CONFIRMATION PROCEDURE**" before completing the repair, which may cause secondary malfunction.
 - Always drive vehicle at a safe speed.

1. PRECONDITIONING

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

GO TO 2.

2. CHECK ATF TEMPERATURE

With CONSULT-III

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

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

With GST

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

Is ATF temperature within specified range?

YES: GO TO 3.

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

3. CHECK SYMPTOM (PART 1)

With CONSULT-III

1. Select "1ST GR FNCTN P0731" in "DTC & SRT confirmation" in "TRANSMISSION".
2. Drive vehicle with manual mode and maintain the following conditions.

GEAR : 1st

ACCELE POSI : 0.7/8 or more

VEHICLE SPEED : 10 km/h (7 MPH) or more

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

CAUTION: When "TESTING" is not indicated on CONSULT-III for a long time, check "Self Diagnostic Results" in "TRANSMISSION". When a DTC other than "P0731" is detected, check the DTC. Refer to "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 "**DIAGNOSIS PROCEDURE**".

YES-4 ("P0731" is detected): Go to "**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

1. CHECK INTERMITTENT INCIDENT

Refer to "**INTERMITTENT INCIDENT**".

Is the inspection result normal?

YES: Replace A/T assembly. Refer to "**EXPLODED VIEW**".

NO: Repair or replace damaged parts.

DTC P0732: 2GR INCORRECT RATIO

Description

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

DTC Logic

DTC DETECTION LOGIC

DTC DETECTION LOGIC CHART

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0732	Gear 2 Incorrect Ratio	The gear ratio is: • 3.386 or more • 3.002 or less	• Input clutch solenoid valve • Direct clutch solenoid valve • High and low reverse clutch solenoid valve • Front brake solenoid valve • Low brake solenoid valve • 2346 brake solenoid valve • Anti-interlock solenoid valve • Each clutch and brake • Output speed sensor • Input speed sensor 1, 2 • Hydraulic control circuit

DTC CONFIRMATION PROCEDURE

CAUTION:

- " **"DIAGNOSIS PROCEDURE"** must be performed before starting "DTC CONFIRMATION PROCEDURE".
- Never perform "DTC CONFIRMATION PROCEDURE" before completing the repair, which may cause secondary malfunction.
- Always drive vehicle at a safe speed.

1. PRECONDITIONING

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

GO TO 2.

2. CHECK ATF TEMPERATURE

With CONSULT-III

1. Start the engine.
2. Select "ATF TEMP 1" in "Data Monitor" in "TRANSMISSION".

3. Check ATF temperature is in the following range.

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

With GST

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

Is ATF temperature within specified range?

YES: GO TO 3.

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

3. CHECK SYMPTOM (PART 1)**With CONSULT-III**

1. Select "2ND GR FNCTN P0732" in "DTC & SRT confirmation" in "TRANSMISSION".
2. Drive vehicle with manual mode and maintain the following conditions.

GEAR : 2nd

ACCELE POSI : 0.7/8 or more

VEHICLE SPEED : 10 km/h (7 MPH) or more

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

CAUTION: When "TESTING" is not indicated on CONSULT-III for a long time, check "Self Diagnostic Results" in "TRANSMISSION". When a DTC other than "P0732" is detected, check the DTC. Refer to "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 "**DIAGNOSIS PROCEDURE**".

YES-4 ("P0732" is detected): Go to "**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

1. CHECK INTERMITTENT INCIDENT

Refer to "**INTERMITTENT INCIDENT**".

Is the inspection result normal?

YES: Replace A/T assembly. Refer to "**EXPLODED VIEW**".

NO: Repair or replace damaged parts.

DTC P0733: 3GR INCORRECT RATIO

Description

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

DTC Logic

DTC DETECTION LOGIC

DTC DETECTION LOGIC CHART

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0733	Gear 3 Incorrect Ratio	The gear ratio is: • 2.166 or more • 1.920 or less	• Input clutch solenoid valve • Direct clutch solenoid valve • High and low reverse clutch solenoid valve • Front brake solenoid valve • Low brake solenoid valve • 2346 brake solenoid valve • Anti-interlock solenoid valve • Each clutch and brake • Output speed sensor • Input speed sensor 1, 2 • Hydraulic control circuit

DTC CONFIRMATION PROCEDURE**CAUTION:**

- " **"DIAGNOSIS PROCEDURE"** must be performed before starting **"DTC CONFIRMATION PROCEDURE"**.
- Never perform **"DTC CONFIRMATION PROCEDURE"** before completing the repair, which may cause secondary malfunction.
- Always drive vehicle at a safe speed.

1. PRECONDITIONING

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

GO TO 2.

2. CHECK ATF TEMPERATURE**With CONSULT-III**

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

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

With GST

1. Start the engine.

2. Drive vehicle for approximately 5 minutes in urban areas.

Is ATF temperature within specified range?

YES: GO TO 3.

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

3. CHECK SYMPTOM (PART 1)

With CONSULT-III

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

GEAR : 3rd

ACCELE POSI : 0.7/8 or more

VEHICLE SPEED : 10 km/h (7 MPH) or more

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

CAUTION: When "TESTING" is not indicated on CONSULT-III for a long time, check "Self Diagnostic Results" in "TRANSMISSION". When a DTC other than "P0733" is detected, check the DTC. Refer to "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 "**DIAGNOSIS PROCEDURE**".

YES-4 ("P0733" is detected): Go to "**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

1. CHECK INTERMITTENT INCIDENT

Refer to "**INTERMITTENT INCIDENT**".

Is the inspection result normal?

YES: Replace A/T assembly. Refer to "**EXPLODED VIEW**".

NO: Repair or replace damaged parts.

DTC P0734: 4GR INCORRECT RATIO

Description

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

DTC Logic

DTC DETECTION LOGIC

DTC DETECTION LOGIC CHART

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
			• Input clutch solenoid valve • Direct clutch solenoid valve • High and low reverse clutch solenoid valve

P0734	Gear 4 Incorrect Ratio	The gear ratio is: • 1.497 or more • 1.327 or less	• 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
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DTC CONFIRMATION PROCEDURE

- CAUTION:**
- " **"DIAGNOSIS PROCEDURE"** must be performed before starting "DTC CONFIRMATION PROCEDURE".
 - Never perform "DTC CONFIRMATION PROCEDURE" before completing the repair, which may cause secondary malfunction.
 - Always drive vehicle at a safe speed.

1. PRECONDITIONING

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

GO TO 2.

2. CHECK ATF TEMPERATURE**With CONSULT-III**

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

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

With GST

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

Is ATF temperature within specified range?

YES: GO TO 3.

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

3. CHECK SYMPTOM (PART 1)

With CONSULT-III

1. Select "4TH GR FNCTN P0734" in "DTC & SRT confirmation" in "TRANSMISSION".
2. Drive vehicle with manual mode and maintain the following conditions.

GEAR : 4th

ACCELE POSI : 0.7/8 or more

VEHICLE SPEED : 10 km/h (7 MPH) or more

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

CAUTION: When "TESTING" is not indicated on CONSULT-III for a long time, check "Self Diagnostic Results" in "TRANSMISSION". When a DTC other than "P0734" is detected, check the DTC. Refer to "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 "DIAGNOSIS PROCEDURE".

YES-4 ("P0734" is detected): Go to "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

1. CHECK INTERMITTENT INCIDENT

Refer to "INTERMITTENT INCIDENT".

Is the inspection result normal?

YES: Replace A/T assembly. Refer to "EXPLODED VIEW".

NO: Repair or replace damaged parts.

DTC P0735: 5GR INCORRECT RATIO

Description

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

DTC Logic

DTC DETECTION LOGIC

DTC DETECTION LOGIC CHART

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0735	Gear 5 Incorrect Ratio	The gear ratio is: • 1.060 or more • 0.940 or less	• Input clutch solenoid valve • Direct clutch solenoid valve • High and low reverse clutch solenoid valve • Front brake solenoid valve • Low brake solenoid valve • 2346 brake solenoid valve • Anti-interlock solenoid valve • Each clutch and brake • Output speed sensor

- | | | | |
|--|--|--|--|
| | | | <ul style="list-style-type: none"> • Input speed sensor 1, 2 • Hydraulic control circuit |
|--|--|--|--|

DTC CONFIRMATION PROCEDURE

- CAUTION:**
- " **"DIAGNOSIS PROCEDURE"** must be performed before starting **"DTC CONFIRMATION PROCEDURE"**.
 - Never perform **"DTC CONFIRMATION PROCEDURE"** before completing the repair, which may cause secondary malfunction.
 - Always drive vehicle at a safe speed.

1. PRECONDITIONING

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

GO TO 2.

2. CHECK ATF TEMPERATURE**With CONSULT-III**

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

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

With GST

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

Is ATF temperature within specified range?

YES: GO TO 3.

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

3. CHECK SYMPTOM (PART 1)**With CONSULT-III**

1. Select "5TH GR FNCTN P0735" in "DTC & SRT confirmation" in "TRANSMISSION".

2. Drive vehicle with manual mode and maintain the following conditions.

GEAR : 5th

ACCELE POSI : 0.7/8 or more

VEHICLE SPEED : 10 km/h (7 MPH) or more

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

CAUTION: When "TESTING" is not indicated on CONSULT-III for a long time, check "Self Diagnostic Results" in "TRANSMISSION". When a DTC other than "P0735" is detected, check the DTC. Refer to "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 "DIAGNOSIS PROCEDURE".

YES-4 ("P0735" is detected): Go to "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

1. CHECK INTERMITTENT INCIDENT

Refer to "**INTERMITTENT INCIDENT**".

Is the inspection result normal?

YES: Replace A/T assembly. Refer to "**EXPLODED VIEW**".

NO: Repair or replace damaged parts.

DTC P0740: TORQUE CONVERTER

Description

- The torque converter clutch solenoid valve is activated, with the gear in D2, D3, D4, D5, D6, D7, M2, M3, M4, M5, M6 and M7 by the TCM in response to signals transmitted from the output speed sensor and accelerator pedal position sensor. Torque converter clutch piston operation will then be controlled.
- Lock-up operation, however, is prohibited when A/T fluid temperature is too low.
- When the accelerator pedal is depressed (less than 1.0/8) in lock-up condition, the engine speed should not change abruptly. If there is a big jump in engine speed, there is no lock-up.

DTC Logic

DTC DETECTION LOGIC

DTC DETECTION LOGIC CHART

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0740	Torque Converter Clutch Circuit/Open	The torque converter clutch solenoid valve monitor value is 0.4 A or less when the torque converter clutch solenoid valve command value is more than 0.75 A.	• Harness or connectors (Solenoid valve circuit is open or shorted.) • Torque converter clutch solenoid valve

DTC CONFIRMATION PROCEDURE

CAUTION: Always drive vehicle at a safe speed.

1. PRECONDITIONING

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

GO TO 2.

2. CHECK DTC DETECTION

With CONSULT-III

1. Start the engine.
2. Select "BATTERY VOLT", "MANU MODE SW", "GEAR" and "VEHICLE SPEED" in "Data Monitor" in "TRANSMISSION".
3. Drive vehicle and maintain the following conditions for 30 seconds or more.

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

BATTERY VOLT : 9 V or more

MANU MODE SW : ON

GEAR : 2nd

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

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

With GST

Follow the procedure "With CONSULT-III".

Is "P0740" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: INSPECTION END

Diagnosis Procedure

1. CHECK INTERMITTENT INCIDENT

Refer to "**INTERMITTENT INCIDENT**".

Is the inspection result normal?

YES: Replace A/T assembly. Refer to "**EXPLODED VIEW**".

NO: Repair or replace damaged parts.

DTC P0744: TORQUE CONVERTER

Description

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

DTC Logic

DTC DETECTION LOGIC

DTC DETECTION LOGIC CHART

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0744	Torque Converter Clutch Circuit Intermittent	The lock-up is not performed in spite of within the lock-up area.	• Harness or connectors • Torque converter clutch 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" is previously conducted, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

GO TO 2.

2. CHECK DTC DETECTION

With CONSULT-III

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

NOTE: Driving the vehicle uphill (increased engine load) will help maintain

the driving conditions required for this test.

MANU MODE SW : ON

GEAR : 2nd

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

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

With GST

Follow the procedure "With CONSULT-III".

Is "P0744" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: INSPECTION END

Diagnosis Procedure

1. CHECK INTERMITTENT INCIDENT

Refer to "**INTERMITTENT INCIDENT**".

Is the inspection result normal?

YES: Replace A/T assembly. Refer to "**EXPLODED VIEW**".

NO: Repair or replace damaged parts.

DTC P0745: PRESSURE CONTROL SOLENOID A**Description**

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

DTC Logic**DTC DETECTION LOGIC****DTC DETECTION LOGIC CHART**

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause

P0745	Pressure Control Solenoid A	The line pressure solenoid valve monitor value is 0.4 A or less when the line pressure solenoid valve command value is more than 0.75 A.	• Harness or connectors (Solenoid valve circuit is open or shorted.) • Line pressure solenoid valve
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DTC CONFIRMATION PROCEDURE**1. PRECONDITIONING**

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

GO TO 2.

2. CHECK DTC DETECTION**With CONSULT-III**

1. Start the engine.
2. Select "BATTERY VOLT" and "SLCT LVR POSI" in "Data Monitor" in "TRANSMISSION".
3. Shift the selector lever to "N" position.
4. Maintain the following conditions for 5 seconds or more.

BATTERY VOLT : 9 V or more

SLCT LVR POSI : N/P

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

With GST

Follow the procedure "With CONSULT-III".

Is "P0745" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: INSPECTION END

Diagnosis Procedure**1. CHECK INTERMITTENT INCIDENT**

Refer to "**INTERMITTENT INCIDENT**".

Is the inspection result normal?

YES: Replace A/T assembly. Refer to "**EXPLODED VIEW**".

NO: Repair or replace damaged parts.

DTC P0750: SHIFT SOLENOID A**Description**

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

DTC Logic**DTC DETECTION LOGIC****DTC DETECTION LOGIC CHART**

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0750	Shift Solenoid A	• The anti-interlock solenoid valve monitor value is ON when the anti-interlock solenoid valve command value is OFF. • The anti-interlock solenoid valve monitor value is OFF when the anti-interlock solenoid valve command value is ON.	• Harness or connectors (Solenoid valve circuit is open or shorted.) • Anti-interlock solenoid valve

DTC CONFIRMATION PROCEDURE

CAUTION: Always drive vehicle at a safe speed.

1. PRECONDITIONING

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

GO TO 2.

2. CHECK DTC DETECTION**With CONSULT-III**

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

Monitor" in "TRANSMISSION".

3. Drive vehicle and maintain the following conditions for 5 seconds or more.

BATTERY VOLT : 9 V or more

MANU MODE SW : ON

GEAR : 1st

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

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

With GST

Follow the procedure "With CONSULT-III".

Is "P0750" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: INSPECTION END

Diagnosis Procedure

1. CHECK INTERMITTENT INCIDENT

Refer to "**INTERMITTENT INCIDENT**".

Is the inspection result normal?

YES: Replace A/T assembly. Refer to "**EXPLODED VIEW**".

NO: Repair or replace damaged parts.

DTC P0775: PRESSURE CONTROL SOLENOID B

Description

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

DTC Logic

DTC DETECTION LOGIC**DTC DETECTION LOGIC CHART**

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0775	Pressure Control Solenoid B	The input clutch solenoid valve monitor value is 0.4 A or less when the input clutch solenoid valve command value is more than 0.75 A.	• Harness or connectors (Solenoid valve circuit is open or shorted.) • Input clutch solenoid valve

DTC CONFIRMATION PROCEDURE

CAUTION: Always drive vehicle at a safe speed.

1. PRECONDITIONING

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

GO TO 2.

2. CHECK DTC DETECTION**With CONSULT-III**

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

BATTERY VOLT : 9 V or more

MANU MODE SW : ON

GEAR : 1st

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

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

With GST

Follow the procedure "With CONSULT-III".

Is "P0775" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: INSPECTION END

Diagnosis Procedure

1. CHECK INTERMITTENT INCIDENT

Refer to "**INTERMITTENT INCIDENT**".

Is the inspection result normal?

YES: Replace A/T assembly. Refer to "**EXPLODED VIEW**".

NO: Repair or replace damaged parts.

DTC P0780: SHIFT

Description

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

DTC Logic

DTC DETECTION LOGIC

DTC DETECTION LOGIC CHART

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0780	Shift Error	- TCM judges that the gear ratio is not switched to that of 4GR (1.412) while shifting from 3GR to 4GR in "D" position. - TCM judges that the engine speed is more than the specified one while shifting from 5GR to 6GR or from 6GR to 7GR in "D" position.	- Anti-interlock solenoid valve - Low brake solenoid valve - Hydraulic control circuit

DTC CONFIRMATION PROCEDURE

- CAUTION:**
- " "**DIAGNOSIS PROCEDURE**"" must be performed before starting "DTC CONFIRMATION PROCEDURE".
 - Never perform "DTC CONFIRMATION PROCEDURE" before

completing the repair, which may cause secondary malfunction.

- **Always drive vehicle at a safe speed.**

1. PRECONDITIONING

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

GO TO 2.

2. CHECK DTC DETECTION

With CONSULT-III

1. Start the engine.
2. Select "SLCT LVR POSI", "ACCELE POSI" and "GEAR" in "Data Monitor" in "TRANSMISSION".
3. Drive vehicle and maintain the following conditions.

SLCT LVR POSI : D

ACCELE POSI : More than 1.0/8

GEAR : 3rd --> 4th

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

With GST

Follow the procedure "With CONSULT-III".

Is "P0780" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: INSPECTION END

Diagnosis Procedure

1. CHECK INTERMITTENT INCIDENT

Refer to "**INTERMITTENT INCIDENT**".

Is the inspection result normal?

YES: Replace A/T assembly. Refer to "**EXPLODED VIEW**".

NO: Repair or replace damaged parts.

DTC P0795: PRESSURE CONTROL SOLENOID C

Description

- 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

DTC DETECTION LOGIC

DTC DETECTION LOGIC CHART

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0795	Pressure Control Solenoid C	The front brake solenoid valve monitor value is 0.4 A or less when the front brake solenoid valve command value is more than 0.75 A.	• Harness or connectors (Solenoid valve circuit is open or shorted.) • Front brake solenoid valve

DTC CONFIRMATION PROCEDURE

CAUTION: Always drive vehicle at a safe speed.

1. PRECONDITIONING

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

GO TO 2.

2. CHECK DTC DETECTION

With CONSULT-III

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

BATTERY VOLT : 9 V or more

MANU MODE SW : ON

GEAR : 7th

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

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

With GST

Follow the procedure "With CONSULT-III".

Is "P0795" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: INSPECTION END

Diagnosis Procedure

1. CHECK INTERMITTENT INCIDENT

Refer to "**INTERMITTENT INCIDENT**".

Is the inspection result normal?

YES: Replace A/T assembly. Refer to "**EXPLODED VIEW**".

NO: Repair or replace damaged parts.

DTC P1705: TP SENSOR

Description

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

DTC Logic

DTC DETECTION LOGIC

DTC DETECTION LOGIC CHART

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P1705	Accelerator Pedal Position Sensor Signal Circuit	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" is previously conducted, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

GO TO 2.

2. CHECK DTC DETECTION**With CONSULT-III**

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

SLCT LVR POSI : D

VHCL/S SE-A/T : 5 km/h (3 MPH) or more

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

Is "P1705" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: INSPECTION END

Diagnosis Procedure**1. CHECK DTC OF ECM****With CONSULT-III**

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

Is any DTC detected?

YES: Check DTC detected item. Refer to "**DTC INDEX**".

NO: GO TO 2.

2. CHECK DTC OF TCM

With CONSULT-III

Perform "Self Diagnostic Results" in "TRANSMISSION".

Is any DTC other than "P1705" detected?

YES: Check DTC detected item. Refer to "**DTC INDEX**".

NO: GO TO 3.

3. CHECK INTERMITTENT INCIDENT

Refer to "**INTERMITTENT INCIDENT**".

Is the inspection result normal?

YES: Replace A/T assembly. Refer to "**EXPLODED VIEW**".

NO: Repair or replace damaged parts.

DTC P1721: VEHICLE SPEED SIGNAL

Description

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

DTC Logic

DTC DETECTION LOGIC

DTC DETECTION LOGIC CHART

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
	Vehicle	- The vehicle speed transmitted from the combination meter to TCM is 5 km/h (3MPH) or less when the vehicle speed detected by the output speed sensor is 20 km/h or more. (Only when starts after the ignition switch is turned ON.) - The vehicle speed detected by the output speed sensor does	Harness or

P1721	Speed Signal Circuit	not decrease despite the 36 km/h (23 MPH) or more of deceleration in vehicle speed received from the combination meter when the vehicle speed transmitted from the combination meter to TCM is 36 km/h (23 MPH) or more and the vehicle speed detected by the output speed sensor is 24 (15 MPH) or more.	connectors (Sensor circuit is open or shorted.)
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DTC CONFIRMATION PROCEDURE**CAUTION:**

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

1. PRECONDITIONING

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

GO TO 2.

2. CHECK DTC DETECTION**With CONSULT-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.

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

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

Is "P1721" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: INSPECTION END

Diagnosis Procedure**1. CHECK DTC OF COMBINATION METER****With CONSULT-III**

1. Turn ignition switch ON.
2. Perform "Self Diagnostic Results" in "METER/M&A".

Is any DTC detected?

YES: Check DTC detected item. Refer to "**DTC INDEX**".

NO: GO TO 2.

2. CHECK DTC OF TCM

With CONSULT-III

Perform "Self Diagnostic Results" in "TRANSMISSION".

Is any DTC other than "P1721" detected?

YES: Check DTC detected item. Refer to "**DTC INDEX**".

NO: GO TO 3.

3. CHECK INTERMITTENT INCIDENT

Refer to "**INTERMITTENT INCIDENT**".

Is the inspection result normal?

YES: Replace A/T assembly. Refer to "**EXPLODED VIEW**".

NO: Repair or replace damaged parts.

DTC P1730: INTERLOCK**Description**

Fail-safe function to detect interlock conditions.

DTC Logic**DTC DETECTION LOGIC****DTC DETECTION LOGIC CHART**

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
			• Harness or connectors (Solenoid valve circuit is open or shorted.) • Input clutch solenoid valve

P1730	Interlock	The output speed sensor detects the deceleration of 12 km/h (7 MPH) or more for 1 second.	• 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
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NOTE: When the vehicle is driven fixed in 2GR, a input speed sensor malfunction is displayed, but this is not a input speed sensor malfunction.

DTC CONFIRMATION PROCEDURE

- CAUTION:**
- " **"DIAGNOSIS PROCEDURE"** must be performed before starting "DTC CONFIRMATION PROCEDURE".
 - Never perform "DTC CONFIRMATION PROCEDURE" before completing the repair, which may cause secondary malfunction.
 - Always drive vehicle at a safe speed.

1. PRECONDITIONING

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

GO TO 2.

2. CHECK DTC DETECTION

With CONSULT-III

1. Start the engine.
2. Select "SLCT LVR POSI" and "GEAR" in "Data Monitor" in "TRANSMISSION".
3. Drive vehicle the following condition.

SLCT LVR POSI : D

GEAR : 1st through 7th

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

With GST

Follow the procedure "With CONSULT-III".

Is "P1730" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: INSPECTION END

Judgment of A/T Interlock

Refer to "**FAIL-SAFE**".

Diagnosis Procedure

1. CHECK INTERMITTENT INCIDENT

Refer to "**INTERMITTENT INCIDENT**".

Is the inspection result normal?

YES: Replace A/T assembly. Refer to "**EXPLODED VIEW**".

NO: Repair or replace damaged parts.

DTC P1734: 7GR INCORRECT RATIO

Description

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

DTC Logic

DTC DETECTION LOGIC

DTC DETECTION LOGIC CHART

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P1734	Gear 7 Incorrect Ratio	The gear ratio is: • 0.818 or more • 0.726 or less	• Input clutch solenoid valve • Direct clutch solenoid valve • High and low reverse 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:**
- " **"DIAGNOSIS PROCEDURE"** must be performed before starting "DTC CONFIRMATION PROCEDURE".
 - Never perform "DTC CONFIRMATION PROCEDURE" before completing the repair, which may cause secondary malfunction.
 - Always drive vehicle at a safe speed.

1. PRECONDITIONING

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

GO TO 2.

2. CHECK ATF TEMPERATURE

With CONSULT-III

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

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

With GST

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

Is ATF temperature within specified range?

YES: GO TO 3.

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

3. CHECK SYMPTOM (PART 1)

With CONSULT-III

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

GEAR : 7th

ACCELE POSI : 0.7/8 or more

VEHICLE SPEED : 10 km/h (7 MPH) or more

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

CAUTION: When "TESTING" is not indicated on CONSULT-III for a long time, check "Self Diagnostic Results" in "TRANSMISSION". When a DTC other than "P1734" is detected, check the DTC. Refer to "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 "DIAGNOSIS PROCEDURE".

YES-4 ("P1734" is detected): Go to "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

1. CHECK INTERMITTENT INCIDENT

Refer to "INTERMITTENT INCIDENT".

Is the inspection result normal?

YES: Replace A/T assembly. Refer to "EXPLODED VIEW".

NO: Repair or replace damaged parts.

DTC P1815: M-MODE SWITCH

Description

- The manual mode switch [manual mode select switch and manual mode position select switch (shift-up/shiftdown)] is installed in the A/T shift selector assembly.
- The manual mode select switch detects the position (the main shift gate side or manual shift gate side) of the selector lever and transmits a manual mode signal or a not manual mode signal to the combination meter. Then, the TCM receives a manual mode signal or non-manual mode signal from the combination meter.
- The manual mode position select switch (shift-up) detects that the selector lever is shifted to the shift-up side of the manual shift gate and transmits a manual mode shift up signal to the combination meter. Then, the TCM receives a manual mode shift up signal from the combination meter.
- The manual mode position select switch (shift-down) detects that the selector lever is shifted to the shiftdown side of the manual shift gate and transmits a manual mode shift down signal to the combination meter. Then, the TCM receives a manual mode shift down signal from the combination meter.
- The paddle shifter transmits shift up and shift down switch signals to the combination meter. Then TCM receives signals from the combination meter via CAN communication.

DTC Logic

DTC DETECTION LOGIC

DTC DETECTION LOGIC CHART

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
			• Harness or connectors (These switches circuit

P1815	Manual Mode Switch Circuit	• TCM monitors manual mode, non manual mode, up or down switch signal, and detects as irregular when impossible input pattern occurs 2 seconds or more. • Shift up/down signal of paddle shifter continuously remains ON for 60 seconds.	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
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DTC CONFIRMATION PROCEDURE**1. PRECONDITIONING**

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

GO TO 2.

2. CHECK DTC DETECTION**With CONSULT-III**

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

SLCT LVR POSI : D

MANU MODE SW : ON

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

Is "P1815" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: INSPECTION END

Diagnosis Procedure**1. CHECK INPUT SIGNAL****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" in "Data Monitor" in "TRANSMISSION".

3. Check the ON/OFF operations of each monitor item.

MONITOR ITEM REFERENCE CHART

Item	Monitor Item	Condition	Status
Manual mode switch	MANU MODE SW	Selector lever is shifted to manual shift gate side	ON
		Other than the above	OFF
	NON M-MODE SW	Selector lever is shifted to manual shift gate side	OFF
		Other than the above	ON
	UP SW LEVER	Selector lever is shifted to + side	ON
		Other than the above	OFF
	DOWN SW LEVER	Selector lever is shifted to - side	ON
		Other than the above	OFF
Paddle shifter	SFT UP ST SW	Paddle shifter (shift-up) is pulled	ON
		Other than the above	OFF
	SFT DWN ST SW	Paddle shifter (shift-down) is pulled	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 7.

2. CHECK MANUAL MODE SWITCH CIRCUIT

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

TERMINAL VOLTAGE REFERENCE CHART

A/T shift selector vehicle side harness connector		Voltage (Approx.)
	Terminal	

Connector	+	-	
M137	1	4	Battery voltage
	2		
	3		
	5		

Is the inspection result normal?

YES: GO TO 3.

NO: GO TO 4.

3. CHECK MANUAL MODE SWITCH

1. Turn ignition switch OFF.
2. Check manual mode switch. Refer to "**COMPONENT INSPECTION (MANUAL MODE SWITCH)**".

Is the inspection result normal?

YES: GO TO 12.

NO: Repair or replace damaged parts.

4. CHECK GROUND CIRCUIT (MANUAL MODE SWITCH CIRCUIT)

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

TERMINAL CONTINUITY REFERENCE CHART

A/T shift selector vehicle side harness connector		Ground	Continuity
Connector	Terminal		
M137	4		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 COMBINATION METER (PART 1)

1. Disconnect combination meter connector.
2. Check continuity between A/T shift selector vehicle side harness connector terminals and combination meter vehicle side harness connector terminals.

TERMINAL CONTINUITY REFERENCE CHART

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A/T shift selector vehicle side harness connector		Combination meter vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
M137	1	M54	40	Existed
	2		38	
	3		39	
	5		37	

Is the inspection result normal?

YES: GO TO 6.

NO: Repair or replace damaged parts.

6. CHECK HARNESS BETWEEN A/T SHIFT SELECTOR AND COMBINATION METER (PART 2)

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

TERMINAL CONTINUITY REFERENCE CHART

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

Is the inspection result normal?

YES: GO TO 12.

NO: Repair or replace damaged parts.

7. 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.

TERMINAL VOLTAGE REFERENCE CHART

Paddle shifter vehicle side harness connector			Voltage (Approx.)
Connector	Terminal		
	+	-	
M32	3	1	Battery voltage

M39					
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Is the inspection result normal?

YES: GO TO 8.

NO: GO TO 9.

8. CHECK PADDLE SHIFTER

1. Turn ignition switch OFF.
2. Check paddle shifter. Refer to "**COMPONENT INSPECTION [PADDLE SHIFTER (SHIFT-UP)]**", "**COMPONENT INSPECTION [PADDLE SHIFTER (SHIFT-DOWN)]**".

Is the inspection result normal?

YES: GO TO 12.

NO: Replace paddle shifter. Refer to "**COMPONENT INSPECTION [PADDLE SHIFTER (SHIFT-UP)]**", "**COMPONENT INSPECTION [PADDLE SHIFTER (SHIFT-DOWN)]**".

9. CHECK GROUND CIRCUIT (PADDLE SHIFTER CIRCUIT)

1. Turn ignition switch OFF.
2. Check continuity between paddle shifter vehicle side harness connector terminals and ground.

TERMINAL CONTINUITY REFERENCE CHART

Paddle shifter vehicle side harness connector			Continuity
Connector	Terminal		
M32	1	Ground	Existed
M39			

Is the inspection result normal?

YES: GO TO 10.

NO: Repair or replace damaged parts.

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

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

TERMINAL CONTINUITY REFERENCE CHART

Paddle shifter vehicle side harness connector	Combination meter vehicle side harness connector	Continuity

Connector	Terminal	Connector	Terminal	
M32	3	M54	32	Existed
M39			33	

Is the inspection result normal?

YES: GO TO 11.

NO: Repair or replace damaged parts.

11. CHECK HARNESS BETWEEN PADDLE SHIFTER AND COMBINATION METER (PART 2)

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

TERMINAL CONTINUITY REFERENCE CHART

Paddle shifter vehicle side harness connector		Ground	Continuity
Connector	Terminal		
M32	3		Not existed
M39			

Is the inspection result normal?

YES: GO TO 12.

NO: Repair or replace damaged parts.

12. CHECK INTERMITTENT INCIDENT

Refer to "**INTERMITTENT INCIDENT**".

Is the inspection result normal?

YES: GO TO 13.

NO: Repair or replace damaged parts.

13. CHECK COMBINATION METER

1. Reconnect all the connectors.
2. Turn ignition switch ON.
3. Select "M RANGE SW", "NM RANGE SW", "AT SFT UP SW", "AT SFT DWN SW", "ST SFT UP SW" and "ST SFT DWN SW" in "Data Monitor" in "METER/M&A".
4. Check the ON/OFF operations of each monitor item. Refer to "**REFERENCE VALUE**".

Is the inspection result normal?

YES: Replace A/T assembly. Refer to "**EXPLODED VIEW**".

NO: Replace combination meter. Refer to "**EXPLODED VIEW**".

Component Inspection (Manual Mode Switch)

1. CHECK MANUAL MODE SWITCH

Check continuity between A/T shift selector connector terminals.

TERMINAL CONTINUITY REFERENCE CHART

A/T shift selector connector			Condition	Continuity
Connector		Terminal		
M137	1	4	Selector lever is shifted to manual shift gate side	Existed
			Other than the above	Not existed
	2		Selector lever is shifted to - side	Existed
			Other than the above	Not existed
	3		Selector lever is shifted to + side	Existed
			Other than the above	Not existed
	5		Selector lever is shifted to manual shift gate side	Not existed
			Other than the above	Existed

Is the inspection result normal?

YES: INSPECTION END

NO: Replace A/T shift selector harness assembly. Refer to "**EXPLODED VIEW**".

Component Inspection [Paddle Shifter (Shift-up)]

1. CHECK PADDLE SHIFTER (SHIFT-UP)

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

TERMINAL CONTINUITY REFERENCE CHART

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

Is the inspection result normal?

YES: INSPECTION END

NO: Replace paddle shifter (shift-up). Refer to "**EXPLODED VIEW**".

Component Inspection [Paddle Shifter (Shift-down)]**1. CHECK PADDLE SHIFTER (SHIFT-DOWN)**

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

TERMINAL CONTINUITY REFERENCE CHART

Paddle shifter (shift-down) connector			Condition	Continuity
Connector		Terminal		
M32	1	3	Paddle shifter (shift-down) is pulled.	Existed
			Other than the above	Not existed

Is the inspection result normal?

YES: INSPECTION END

NO: Replace paddle shifter (shift-down). Refer to "**EXPLODED VIEW**".

DTC P2713: PRESSURE CONTROL SOLENOID D**Description**

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

DTC Logic**DTC DETECTION LOGIC****DTC DETECTION LOGIC CHART**

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P2713	Pressure Control Solenoid D	The high and low reverse clutch solenoid valve monitor value is 0.4 A or less when the high and low reverse clutch solenoid valve command value is more than 0.75 A.	• Harness or connectors (Solenoid valve circuit is open or shorted.) • High and low reverse clutch solenoid valve

DTC CONFIRMATION PROCEDURE

CAUTION: Always drive vehicle at a safe speed.

1. PRECONDITIONING

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

GO TO 2.

2. CHECK DTC DETECTION**With CONSULT-III**

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

BATTERY VOLT : 9 V or more

MANU MODE SW : ON

GEAR : 3rd

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

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

With GST

Follow the procedure "With CONSULT-III".

Is "P2713" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: INSPECTION END

Diagnosis Procedure**1. CHECK INTERMITTENT INCIDENT**

Refer to "**INTERMITTENT INCIDENT**".

Is the inspection result normal?

YES: Replace A/T assembly. Refer to "**EXPLODED VIEW**".

NO: Repair or replace damaged parts.

DTC P2722: PRESSURE CONTROL SOLENOID E

Description

- 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

DTC DETECTION LOGIC

DTC DETECTION LOGIC CHART

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P2722	Pressure Control Solenoid E	The low brake solenoid valve monitor value is 0.4 A or less when the low brake solenoid valve command value is more than 0.75 A.	• Harness or connectors (Solenoid valve circuit is open or shorted.) • Low brake solenoid valve

DTC CONFIRMATION PROCEDURE

CAUTION: Always drive vehicle at a safe speed.

1. PRECONDITIONING

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

GO TO 2.

2. CHECK DTC DETECTION

With CONSULT-III

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

BATTERY VOLT : 9 V or more

MANU MODE SW : ON

GEAR : 1st

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

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

With GST

Follow the procedure "With CONSULT-III".

Is "P2722" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: INSPECTION END

Diagnosis Procedure

1. CHECK INTERMITTENT INCIDENT

Refer to "**INTERMITTENT INCIDENT**".

Is the inspection result normal?

YES: Replace A/T assembly. Refer to "**EXPLODED VIEW**".

NO: Repair or replace damaged parts.

DTC P2731: PRESSURE CONTROL SOLENOID F

Description

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

DTC Logic

DTC DETECTION LOGIC

DTC DETECTION LOGIC CHART

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DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P2731	Pressure Control Solenoid F	The 2346 brake solenoid valve monitor value is 0.4 A or less when the 2346 brake solenoid valve command value is more than 0.75 A.	• Harness or connectors (Solenoid valve circuit is open or shorted.) • 2346 brake solenoid valve

DTC CONFIRMATION PROCEDURE

CAUTION: Always drive vehicle at a safe speed.

1. PRECONDITIONING

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

GO TO 2.

2. CHECK DTC DETECTION

With CONSULT-III

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

BATTERY VOLT : 9 V or more

MANU MODE SW : ON

GEAR : 2nd

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

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

With GST

Follow the procedure "With CONSULT-III".

Is "P2731" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: INSPECTION END

Diagnosis Procedure

1. CHECK INTERMITTENT INCIDENT

Refer to "**INTERMITTENT INCIDENT**".

Is the inspection result normal?

YES: Replace A/T assembly. Refer to "**EXPLODED VIEW**".

NO: Repair or replace damaged parts.

DTC P2807: PRESSURE CONTROL SOLENOID G

Description

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

DTC Logic

DTC DETECTION LOGIC

DTC DETECTION LOGIC CHART

DTC	Trouble diagnosis name	DTC is detected is...	Possible cause
P2807	Pressure Control Solenoid G	The direct clutch solenoid valve monitor value is 0.4 A or less when the direct clutch solenoid valve command value is more than 0.75 A.	• Harness or connectors (Solenoid valve circuit is open or shorted.) • Direct clutch solenoid valve

DTC CONFIRMATION PROCEDURE

CAUTION: Always drive vehicle at a safe speed.

1. PRECONDITIONING

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

GO TO 2.

2. CHECK DTC DETECTION

With CONSULT-III

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

BATTERY VOLT : 9 V or more

MANU MODE SW : ON

GEAR : 1st

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

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

With GST

Follow the procedure "With CONSULT-III".

Is "P2807" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: INSPECTION END

Diagnosis Procedure

1. CHECK INTERMITTENT INCIDENT

Refer to "**INTERMITTENT INCIDENT**".

Is the inspection result normal?

YES: Replace A/T assembly. Refer to "**EXPLODED VIEW**".

NO: Repair or replace damaged parts.

MAIN POWER SUPPLY AND GROUND CIRCUIT

Description

Supply power to the TCM.

Diagnosis Procedure**1. CHECK TCM POWER SOURCE (PART 1)**

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

TERMINAL VOLTAGE REFERENCE CHART

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

Is the inspection result normal?

YES: GO TO 2.

NO: GO TO 4.

2. CHECK TCM POWER SOURCE (PART 2)

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

TERMINAL VOLTAGE REFERENCE CHART

A/T assembly vehicle side harness connector		Ground	Condition	Voltage (Approx.)
Connector	Terminal			
F51	1		Turn ignition switch ON	Battery voltage
			Turn ignition switch OFF	0 V
	6		Turn ignition switch ON	Battery voltage
			Turn ignition switch OFF	0 V

Is the inspection result normal?

YES: GO TO 3.

NO: GO TO 5.

3. CHECK TCM GROUND CIRCUIT

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

TERMINAL CONTINUITY REFERENCE CHART

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

Is the inspection result normal?

YES: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

NO: Repair or replace damaged parts.

4. DETECT MALFUNCTIONING ITEM

Check the following.

- Harness for short or open between battery positive terminal and A/T assembly vehicle side harness connector terminal 2. Refer to "**WIRING DIAGRAM - BATTERY POWER SUPPLY**".
- Battery
- 10A fuse (No. 36, located in the fuse, fusible link and relay box). Refer to "**FUSE AND FUSIBLE LINK ARRANGEMENT**".

Is the inspection result normal?

YES: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

NO: Repair or replace damaged parts.

5. CHECK HARNESS BETWEEN IPDM E/R AND A/T ASSEMBLY (PART 1)

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

TERMINAL CONTINUITY REFERENCE CHART

IPDM E/R vehicle side harness connector		A/T assembly vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
E7	58	F51	1	Existed
			6	

Is the inspection result normal?

YES: GO TO 6.

NO: Repair or replace damaged parts.

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

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

TERMINAL CONTINUITY REFERENCE CHART

A/T assembly vehicle side harness connector		Ground	Continuity
Connector	Terminal		
E51	1		Not existed
	6		

Is the inspection result normal?

YES: GO TO 7.

NO: Repair or replace damaged parts.

7. DETECT MALFUNCTIONING ITEM

Check the following.

- Harness for short or open between ignition switch and IPDM E/R. Refer to "**WIRING DIAGRAM - IGNITION POWER SUPPLY**".
- Ignition switch
- 10A fuse (No. 43, located in the IPDM E/R). Refer to "**FUSE, CONNECTOR AND TERMINAL ARRANGEMENT**".
- IPDM E/R

Is the inspection result normal?

YES: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

NO: Repair or replace damaged parts.

SHIFT POSITION INDICATOR CIRCUIT

Description

The TCM transmits shift position signal to the combination meter via CAN communication line.

Component Function Check

1. CHECK A/T INDICATOR

CAUTION: Always drive vehicle at a safe speed.

1. Start the engine.
2. Check the actual selector lever position ("P", "R", "N" and "D") and the indication of the shift position indicator mutually coincide.
3. Drive vehicle in the manual mode, and then check that the actual gear position and the indication of the shift position indicator mutually coincide when the selector lever is shifted to "UP (+ side)" or "DOWN (- side)" side (1GR <--> 7GR).

Is the inspection result normal?

YES: INSPECTION END

NO: Go to "**DIAGNOSIS PROCEDURE**".

Diagnosis Procedure

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 "**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 "**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 "**COMPONENT INSPECTION (MANUAL MODE SWITCH)**".
- Check A/T main system (Fail-safe function actuated).
 - Perform "Self Diagnostic Results" in "TRANSMISSION". Refer to "**DTC INDEX**".

NO-2 (The actual gear position changes, but the shift position indicator is not indicated.): Perform "Self Diagnostic Results" in "TRANSMISSION". Refer to "**DTC INDEX**".

NO-3 (The actual gear position and the indication on the shift position indicator do not coincide.):

Perform "Self Diagnostic Results" in "TRANSMISSION". Refer to "**DTC INDEX**".

NO-4 (Only a specific position or positions is/are not indicated on the shift position indicator.):
Check the combination meter. Refer to "**WORK FLOW**".

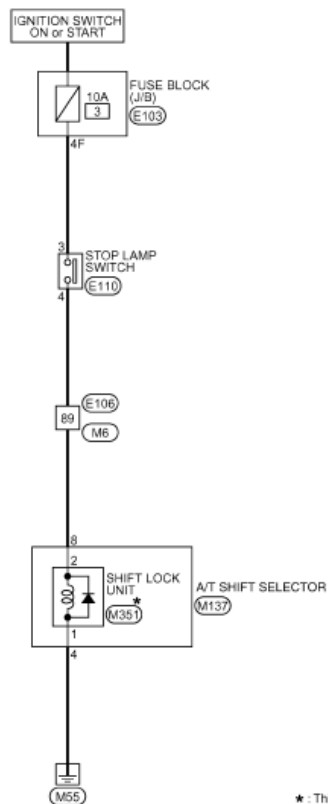
SHIFT LOCK SYSTEM

Description

Refer to "**SYSTEM DESCRIPTION**".

Wiring Diagram - A/T SHIFT LOCK SYSTEM -

A/T SHIFT LOCK SYSTEM



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

JCMWA0356B

2008/09/12

Fig. 45: A/T Shift Lock System Wiring Diagram
Courtesy of NISSAN MOTOR CO., U.S.A.

A/T SHIFT LOCK SYSTEM

Connector No.	E103
Connector Name	FUSE BLOCK (J/S)
Connector Type	NS16FW-C5



Terminal No.	Color of Wire	Signal Name [Specification]
1F	SB	-
2F	W	-
3F	G	-
4F	BQ	- (Coupe models)
5F	O	- (Roadster models)
6F	L	- (Coupe models)
7F	R	- (Coupe models)
8F	V	- (Roadster models)

Connector No.	E106
Connector Name	WIRE TO WIRE
Connector Type	TH80FW-C518-TM4



Terminal No.	Color of Wire	Signal Name [Specification]
1	Y	-
2	L	-
3	L	-
4	L	-
5	B	-
6	P	-
7	L	- (Coupe models)
8	B	- (Roadster models)
9	V	-
10	R	-
11	L	-
12	GR	-
13	P	-
14	W	-
15	SB	-

20	LG	-
21	BR	- (Coupe models)
22	G	- (Roadster models)
23	L	-
24	Y	-
25	P	-
26	L	-
27	BR	-
28	V	-
29	Y	-
30	R	-
31	B	-
32	W	-
33	LG	-
34	SB	-
35	G	- (Roadster models with M/T)
36	GR	- (Except for roadster models with M/T)
37	BQ	- (Coupe models)
38	O	- (Roadster models)
39	L	- (Coupe models)
40	R	- (Coupe models)
41	P	-
42	SHIELD	-
43	P	-
44	W	-
45	P	-
46	G	-
47	V	-
48	L	-
49	BQ	- (Coupe models)
50	O	- (Roadster models)
51	LG	-
52	R	-
53	P	-
54	W	-
55	L	-
56	Y	-
57	GR	-
58	Y	-
59	GR	-
60	LG	-
61	BQ	- (Coupe models)
62	O	- (Roadster models)
63	L	-
64	R	-
65	P	-
66	W	-
67	L	-
68	Y	-
69	GR	-
70	Y	-
71	GR	-
72	LG	-
73	BQ	- (Coupe models)
74	O	- (Roadster models)
75	L	-
76	R	-
77	P	-
78	W	-
79	L	-
80	Y	-
81	GR	-
82	LG	-
83	BQ	- (Coupe models)
84	O	- (Roadster models)
85	L	-
86	R	-
87	P	-
88	W	-
89	L	-
90	Y	-
91	GR	-
92	LG	-
93	BQ	- (Coupe models)
94	O	- (Roadster models)
95	L	-
96	R	-
97	P	-
98	W	-
99	L	-
100	Y	-

Connector No.	E110
Connector Name	STOP LAMP SWITCH
Connector Type	MD4FW-LG



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

Connector No.	MS
Connector Name	WIRE TO WIRE
Connector Type	TH80FW-C518-TM4



Terminal No.	Color of Wire	Signal Name [Specification]
1	Y	-
2	L	-
3	L	-
4	L	-
5	B	-
6	P	-
7	L	- (Coupe models)
8	B	- (Roadster models)
9	V	-
10	R	-
11	L	-
12	GR	-
13	P	-
14	W	-
15	L	-
16	Y	-
17	GR	-
18	LG	-
19	BQ	- (Coupe models)
20	O	- (Roadster models)
21	L	-
22	R	-
23	P	-
24	W	-
25	L	-
26	Y	-
27	GR	-
28	Y	-
29	GR	-
30	LG	-
31	BQ	- (Coupe models)
32	O	- (Roadster models)
33	L	-
34	R	-
35	P	-
36	W	-
37	L	-
38	Y	-
39	GR	-
40	LG	-
41	BQ	- (Coupe models)
42	O	- (Roadster models)
43	L	-
44	R	-
45	P	-
46	W	-
47	L	-
48	Y	-
49	GR	-
50	LG	-
51	BQ	- (Coupe models)
52	O	- (Roadster models)
53	L	-
54	R	-
55	P	-
56	W	-
57	L	-
58	Y	-
59	GR	-
60	LG	-
61	BQ	- (Coupe models)
62	O	- (Roadster models)
63	L	-
64	R	-
65	P	-
66	W	-
67	L	-
68	Y	-
69	GR	-
70	LG	-
71	BQ	- (Coupe models)
72	O	- (Roadster models)
73	L	-
74	R	-
75	P	-
76	W	-
77	L	-
78	Y	-
79	GR	-
80	LG	-
81	BQ	- (Coupe models)
82	O	- (Roadster models)
83	L	-
84	R	-
85	P	-
86	W	-
87	L	-
88	Y	-
89	GR	-
90	LG	-
91	BQ	- (Coupe models)
92	O	- (Roadster models)
93	L	-
94	R	-
95	P	-
96	W	-
97	L	-
98	Y	-
99	GR	-
100	LG	-

31	BR	- (Except for roadster models with M/T)
32	Y	- (Roadster models with M/T)
33	V	- (Except for roadster models with M/T)
34	L	-
35	BR	-
36	SB	-
37	V	-
38	LG	-
39	SB	-
40	W	-
41	LG	-
42	R	-
43	G	-
44	G	- (With A/T)
45	R	- (With M/T)
46	G	-
47	BR	-
48	SHIELD	-
49	R	-
50	LG	-
51	GR	-
52	V	-
53	V	-
54	L	-
55	BR	-
56	Y	-
57	V	- (Roadster models with M/T)
58	G	- (Except for roadster models with M/T)
59	P	-
60	W	-
61	P	-
62	P	-
63	P	-
64	V	-
65	P	-
66	GR	-
67	O	-
68	W	-
69	R	-

800-944-6207

Fig. 46: A/T Shift Lock System Connector Terminals Reference Chart (1 Of 2)
 Courtesy of NISSAN MOTOR CO., U.S.A.

A/T SHIFT LOCK SYSTEM

Connector No.	M137
Connector Name	A/T SHIFT SELECTOR
Connector Type	TK13FW



Terminal No.	Color of Wire	Signal Name [Specification]
1	W	—
2	V	—
3	L	—
4	B	—
5	G	—
6	R	—
7	W	—
8	P	—
9	Y	—
10	R	—

Connector No.	M351
Connector Name	SHIFT LOCK UNIT
Connector Type	—



Terminal No.	Color of Wire	Signal Name [Specification]
1	—	—
2	—	—

JCOMW0709GB

Fig. 47: A/T Shift Lock System Connector Terminals Reference Chart (2 Of 2)
 Courtesy of NISSAN MOTOR CO., U.S.A.

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?

YES: Go to "**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 "**DIAGNOSIS PROCEDURE**".

Diagnosis Procedure

1. CHECK POWER SOURCE (PART 1)

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

TERMINAL VOLTAGE REFERENCE CHART

A/T shift selector vehicle side harness connector		Ground	Condition	Voltage (Approx.)
Connector	Terminal		Depressed brake pedal.	Battery voltage
M137	8		Released brake pedal.	0 V

Is the inspection result normal?

YES: GO TO 2.

NO: GO TO 5.

2. CHECK GROUND CIRCUIT

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

TERMINAL CONTINUITY REFERENCE CHART

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

Is the inspection result normal?

YES: GO TO 3.

NO: Repair or replace damaged parts.

3. CHECK HARNESS BETWEEN A/T SHIFT SELECTOR AND SHIFT LOCK UNIT

1. Disconnect shift lock unit connector.
2. Check continuity between A/T shift selector connector terminals and shift lock unit A/T shift selector side connector terminals.

TERMINAL CONTINUITY REFERENCE CHART

A/T shift selector connector		Shift lock unit A/T shift selector side connector		Continuity
Connector	Terminal	Connector	Terminal	
M137	8	M351	2	Existed
	4		1	

Is the inspection result normal?

YES: GO TO 4.

NO: Repair or replace damaged parts.

4. CHECK SHIFT LOCK UNIT

1. Remove shift lock unit. Refer to "**EXPLODED VIEW**".
2. Check shift lock unit. Refer to "**COMPONENT INSPECTION (SHIFT LOCK UNIT)**".

Is the inspection result normal?YES: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".NO: Replace shift lock unit. Refer to "**EXPLODED VIEW**".**5. CHECK POWER SOURCE (PART 2)**

1. Turn ignition switch OFF.
2. Disconnect stop lamp switch connector.
3. Turn ignition switch ON.
4. Check voltage between stop lamp switch vehicle side harness connector terminal and ground.

TERMINAL VOLTAGE REFERENCE CHART

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

Is the inspection result normal?

YES: GO TO 6.

NO: GO TO 9.

6. CHECK STOP LAMP SWITCH (PART 1)

Check stop lamp switch. Refer to "**COMPONENT INSPECTION (STOP LAMP SWITCH)**".

Is the inspection result normal?

YES: GO TO 7.

NO: GO TO 12.

7. CHECK HARNESS BETWEEN STOP LAMP SWITCH AND A/T SHIFT SELECTOR (PART 1)

Check continuity between stop lamp switch vehicle side harness connector terminal and A/T shift selector vehicle side harness connector terminal.

TERMINAL CONTINUITY REFERENCE CHART

Stop lamp switch vehicle side harness connector		A/T shift selector vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
E110	4	M137	8	Existed

Is the inspection result normal?

YES: GO TO 8.

NO: Repair or replace damaged parts.

8. CHECK HARNESS BETWEEN STOP LAMP SWITCH AND A/T SHIFT SELECTOR (PART 2)

Check continuity between stop lamp switch vehicle side harness connector terminal and ground.

TERMINAL CONTINUITY REFERENCE CHART

Stop lamp switch vehicle side harness connector		Ground	Continuity
Connector	Terminal		
E110	4		Not existed

Is the inspection result normal?

YES: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

NO: Repair or replace damaged parts.

9. CHECK HARNESS BETWEEN FUSE BLOCK (J/B) AND STOP LAMP SWITCH (PART 1)

1. Turn ignition switch OFF.
2. Disconnect fuse block (J/B) connector.
3. Check continuity between fuse block (J/B) vehicle side harness connector terminal and stop lamp switch vehicle side harness connector terminal.

TERMINAL CONTINUITY REFERENCE CHART

Fuse block (J/B) vehicle side harness connector		Stop lamp switch vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
E103	4F	E110	3	Existed

Is the inspection result normal?

YES: GO TO 10.

NO: Repair or replace damaged parts.

10. CHECK HARNESS BETWEEN FUSE BLOCK (J/B) AND STOP LAMP SWITCH (PART 2)

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

TERMINAL CONTINUITY REFERENCE CHART

Fuse block (J/B) vehicle side harness connector		Ground	Continuity
Connector	Terminal		
E103	4F		Not existed

Is the inspection result normal?

YES: GO TO 11.

NO: Repair or replace damaged parts.

11. DETECT MALFUNCTIONING ITEM

Check the following.

- Harness for short or open between ignition switch and fuse block (J/B). Refer to "**WIRING DIAGRAM - IGNITION POWER SUPPLY -**".
- Ignition switch
- 10A fuse [No. 3, located in the fuse block (J/B)]. Refer to "**FUSE, CONNECTOR AND TERMINAL ARRANGEMENT**".

- Fuse block (J/B)

Is the inspection result normal?

YES: Check intermittent incident. Refer to "INTERMITTENT INCIDENT".

NO: Repair or replace damaged parts.

12. CHECK INSTALLATION POSITION OF STOP LAMP SWITCH

Adjust stop lamp switch position. Refer to "INSPECTION AND ADJUSTMENT".

GO TO 13.

13. CHECK STOP LAMP SWITCH (PART 2)

Check stop lamp switch. Refer to "COMPONENT INSPECTION (STOP LAMP SWITCH)".

Is the inspection result normal?

YES: INSPECTION END

NO: Replace stop lamp switch. Refer to "EXPLODED VIEW".

Component Inspection (Shift Lock Unit)**1. CHECK SHIFT LOCK UNIT**

Apply voltage to terminals 1 and 2 of shift lock unit connector, and then check that shift lock unit is activated.

CAUTION: Connect the fuse between the terminals when applying the voltage.

TERMINAL VOLTAGE REFERENCE CHART

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

Can the plate be moved up and down?

YES: INSPECTION END

NO: Replace shift lock unit. Refer to "EXPLODED VIEW".

Component Inspection (Stop Lamp Switch)**1. CHECK STOP LAMP SWITCH**

Check continuity between stop lamp switch connector terminals.

TERMINAL CONTINUITY REFERENCE CHART

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 "**EXPLODED VIEW**".

ECU DIAGNOSIS INFORMATION**TCM****Reference Value****VALUES ON DIAGNOSIS TOOL****NOTE:**

1. The CONSULT-III electrically displays shift timing and lock-up timing (that is, operation timing of each solenoid).

Check for time difference between actual shift timing and the CONSULT-III display. If the difference is noticeable, mechanical parts (except solenoids, sensors, etc.) may be malfunctioning. Check mechanical parts in accordance with the specified diagnostic procedures.

2. Shift schedule (that implies gear position) on CONSULT-III may slightly differ from that is described in Service Information. This occurs because of the reasons as per the following:
 - Actual shift schedule has more or less tolerance or allowance
 - Shift schedule in Service Information refers to the point where shifting starts
 - Gear position on CONSULT-III indicates the point where shifting completes
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).

2010 Nissan 370Z

2010 TRANSMISSION Transaxle & Transmission (7AT: RE7R01A) - 370Z

CONSULT-III MONITOR ITEM

CONSULT-III MONITOR ITEM REFERENCE CHART

Item name	Condition	Value (Approx.)/Status
VHCL/S SE-A/T	During driving	Approximately equals the speedometer reading.
ESTM VSP SIG	During driving	Approximately equals the speedometer reading.
OUTPUT REV	During driving (lock-up ON)	Tachometer/Gear ratio
INPUT SPEED	During driving (lock-up ON)	Approximately equals the engine speed.
F SUN GR REV	During driving	Revolution of front sun gear is indicated.
F CARR GR REV	During driving	Revolution of front carrier is indicated.
ENGINE SPEED	Engine running	Closely equals the tachometer reading.
TC SLIP SPEED	During driving	Engine speed - Input speed
ACCELE POSI	Accelerator pedal is released	0.0/8
	Accelerator pedal is fully depressed	8.0/8
THROTTLE POSI	Accelerator pedal is released	0.0/8
	Accelerator pedal is fully depressed	8.0/8
ATF TEMP 1	Ignition switch ON	Temperature of ATF in the oil pan is indicated.
ATF TEMP 2	Ignition switch ON	Temperature of ATF at the exit of torque converter.
ATF TEMP SE 1	0°C (32°F) - 20°C (68°F) - 80°C (176°F)	3.3 - 2.7 - 0.9 V
BATTERY VOLT	Ignition switch ON	Battery voltage (11 V - 14 V)
LINE PRES SOL	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 is engaged	0.6 - 0.8 A
	Low brake is disengaged	0 - 0.05 A
FR/B SOLENOID	Front brake is engaged	0.6 - 0.8 A
	Front brake is disengaged	0 - 0.05 A
HLR/C SOL	High and low reverse clutch is disengaged	0.6 - 0.8 A
	High and low reverse clutch is engaged	0 - 0.05 A
I/C SOLENOID	Input clutch is disengaged	0.6 - 0.8 A
	Input clutch is engaged	0 - 0.05 A
D/C SOLENOID	Direct clutch is disengaged	0.6 - 0.8 A
	Direct clutch is engaged	0 - 0.05 A
2346/B SOL	2346 brake is engaged	0.6 - 0.8 A
	2346 brake is disengaged	0 - 0.05 A
L/P SOL MON	During driving	0.2 - 0.6 A

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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 is engaged	0.6 - 0.8 A
	Low brake is disengaged	0 - 0.05 A
FR/B SOL MON	Front brake is engaged	0.6 - 0.8 A
	Front brake is disengaged	0 - 0.05 A
HLR/C SOL MON	High and low reverse clutch is disengaged	0.6 - 0.8 A
	High and low reverse clutch is engaged	0 - 0.05 A
I/C SOL MON	Input clutch is disengaged	0.6 - 0.8 A
	Input clutch is engaged	0 - 0.05 A
D/C SOL MON	Direct clutch is disengaged	0.6 - 0.8 A
	Direct clutch is engaged	0 - 0.05 A
2346/B SOL MON	2346 brake is engaged	0.6 - 0.8 A
	2346 brake is 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
TRGT PRES L/B	Low brake is engaged	1370 kPa
	Low brake is disengaged	0 kPa
TRGT PRES FR/B	Front brake is engaged	1370 kPa
	Front brake is disengaged	0 kPa
TRG PRE HLR/C	High and low reverse clutch is disengaged	1370 kPa
	High and low reverse clutch is engaged	0 kPa
	Input clutch is disengaged	1370 kPa

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TRGT PRES I/C	Input clutch is engaged	0 kPa
TRGT PRES D/C	Direct clutch is disengaged	1370 kPa
	Direct clutch is engaged	0 kPa
TRG PRE 2346/B	2346 brake is engaged	1370 kPa
	2346 brake is disengaged	0 kPa
SHIFT PATTERN	During normal driving (without shift changes)	FF
VEHICLE SPEED	During driving	Approximately equals the speedometer reading.
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 is shifted to - side	ON
	Other than the above	OFF
UP SW LEVER	Selector lever is shifted to + side	ON
	Other than the above	OFF
NON M-MODE SW	Selector lever is shifted to manual shift gate side	OFF
	Other than the above	ON
MANU MODE SW	Selector lever is shifted to manual shift gate side	ON
	Other than the above	OFF
DS RANGE ⁽¹⁾	Driving with DS mode	ON
	Other than the above	OFF
1 POSITION SW ⁽¹⁾	Selector lever in "1" position	ON
	Other than the above	OFF
OD CONT SW ⁽¹⁾	When overdrive control switch is depressed	ON
	When overdrive control switch is released	OFF
BRAKE SW	Brake pedal is depressed	ON
	Brake pedal is released	OFF
POWERSHIFT SW ⁽¹⁾	Power mode	ON
	Other than the above	OFF
	When TCM receives ASCD OD cancel	

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ASCD-OD CUT	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	Accelerator pedal is fully depressed	ON
	Accelerator pedal is released	OFF
CLSD THL POS	Accelerator pedal is released	ON
	Accelerator pedal is fully depressed	OFF
DRV CST JUDGE	Accelerator pedal is depressed	DRIVE
	Accelerator pedal is released	COAST
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

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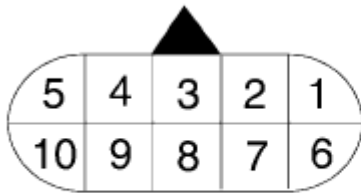
	Selector lever in "M" position: 1GR	M1
	Selector lever in "M" position: 2GR	M2
	Selector lever in "M" position: 3GR	M3
	Selector lever in "M" position: 4GR	M4
	Selector lever in "M" position: 5GR	M5
	Selector lever in "M" position: 6GR	M6
	Selector lever in "M" position: 7GR	M7
STARTER RELAY	Selector 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 ⁽¹⁾	When TCM transmits the ATF indicator lamp signal	ON
	Other than the above	OFF
MANU MODE IND	Driving with manual mode	ON
	Other than the above	OFF
ON OFF SOL MON	Selector lever in "P" and "N" positions	ON
	Driving with 1GR to 3GR	
	Other than the above	OFF
START RLY MON	Selector lever in "P" and "N" positions	ON
	Other than the above	OFF
ON OFF SOL	Selector lever in "P" and "N" positions	ON
	Driving with 1GR to 3GR	
	Other than the above	OFF
SLCT LVR POSI	Selector lever in "N" and "P" positions	N/P
	Selector lever in "R" position	R
	Selector lever in "D" 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

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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
(1) Not mounted but always display as OFF.		

TERMINAL LAYOUT



SCIA1655E

Fig. 48: Identifying TCM Terminal Layout
Courtesy of NISSAN MOTOR CO., U.S.A.

PHYSICAL VALUES

PHYSICAL VALUES REFERENCE CHART

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	-		-
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 (W)	Ground	Back-up lamp relay	Input	Ignition switch ON	Selector lever in "R" position.	0 V
					Selector lever in other than above.	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
10 (B)	Ground	Ground	Output		Selector lever in other than above.	0 V
					Always	0 V

Wiring Diagram - A/T CONTROL SYSTEM -

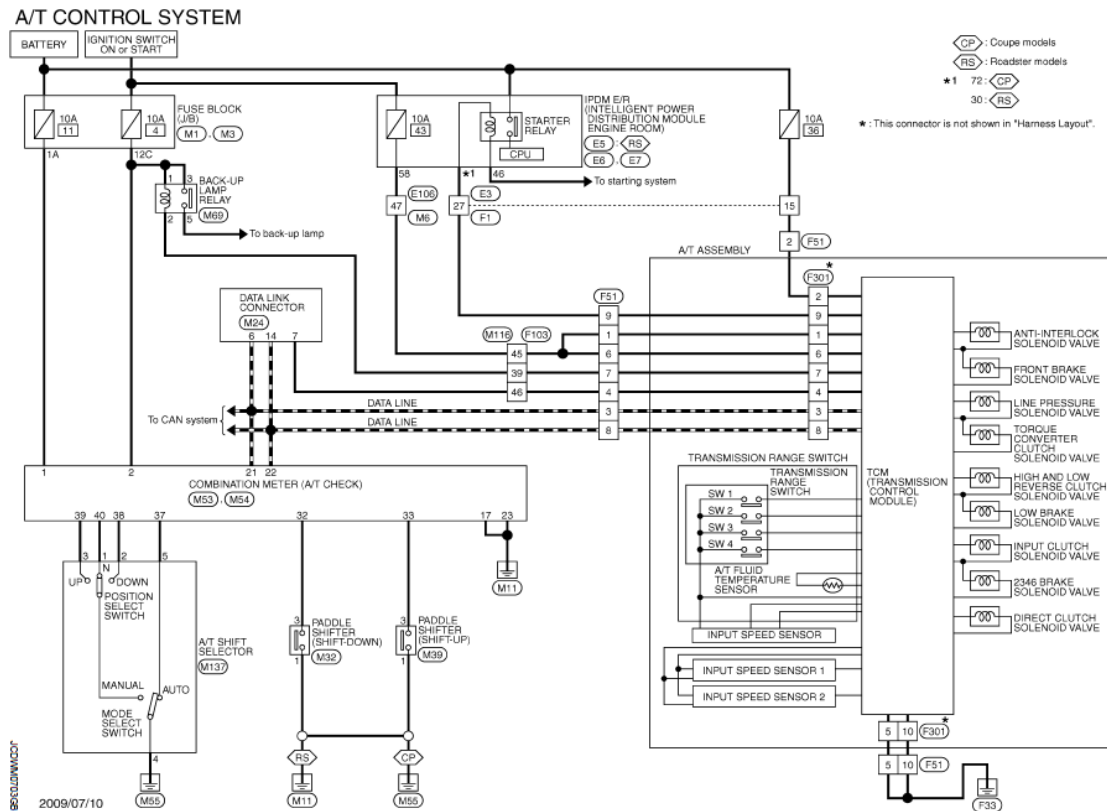
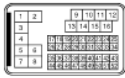


Fig. 49: A/T Control System Wiring Diagram
 Courtesy of NISSAN MOTOR CO., U.S.A.

A/T CONTROL SYSTEM

Connector No.	E3
Connector Name	WIRE TO WIRE
Connector Type	SAA3MB-RS2-SH28



Terminal No.	Color of Wire	Signal Name [Specification]
1	L/Y	-
2	SHIELD	-
3	L/S	-
4	SHIELD	-
5	BR	-
6	G	-
7	W	-
8	W	-
9	W	-
10	Y	-
11	V	-
12	SB	-
13	L	-
14	G	-
15	R	-
16	LG	-
17	GR	-
18	Y	-
19	BG	- (Coupe models)
19	O	- (Roadster models)
20	B	-
21	SB	-
22	W	-
23	SB	-
24	GR	-
25	V	-
27	GR	-
28	Y	-
29	P	-
30	R	-
31	BR	-
32	Y	-
33	G	-
34	BG	- (Coupe models)
34	O	- (Roadster models)
36	GR	-
37	SHIELD	-
38	L	-
39	P	-

40	R	-
41	W	-
42	LG	-
43	LG	-
45	SB	-
46	SHIELD	-
47	W	-
48	BR	-
49	G	-
50	B	-
51	SB	-
52	R	-

Connector No.	E5
Connector Name	WIRE & INTELLIGENT POWER DISTRIBUTION MODULE (IPD) POWER
Connector Type	TH2PW-CS12-M4-1V



Terminal No.	Color of Wire	Signal Name [Specification]
4	V	-
5	L	-
6	R	-
7	BR	-
11	BR	-
12	B/W	-
13	Y	-
16	LG	-
18	W	-
25	G	-
27	Y	-
30	GR	-
32	L	-
33	P	-
36	G	-

Connector No.	E6
Connector Name	WIRE & INTELLIGENT POWER DISTRIBUTION MODULE (IPD) POWER
Connector Type	TH2PW-NH



Terminal No.	Color of Wire	Signal Name [Specification]
39	P	-
40	L	-
41	B/W	-
42	Y	-
43	SB	-
44	W	-
45	G	-
46	V	-

Connector No.	E7
Connector Name	WIRE & INTELLIGENT POWER DISTRIBUTION MODULE (IPD) POWER
Connector Type	TH2PW-CS12-M4



Terminal No.	Color of Wire	Signal Name [Specification]
48	L	-
49	BG	- (Coupe models)
49	O	- (Roadster models)
51	Y	-
53	W	-
54	V	-
55	SB	-
56	LG	-
57	G	-
58	P	-
59	BR	-
70	BG	- (Coupe models)
70	O	- (Roadster models)
72	GR	-

73	GR	-
74	G	-
75	SB	-
76	V	-
77	R	-
80	W	-

880000WAC07

Fig. 50: A/T Control System Connector Terminals Reference Chart (1 Of 4)
 Courtesy of NISSAN MOTOR CO., U.S.A.

A/T CONTROL SYSTEM

Connector No.	E10B
Connector Name	WIRE TO WIRE
Connector Type	TH2PW-CS18-TM4



Terminal No.	Color of Wire	Signal Name [Specification]
1	Y	-
3	L	-
4	L	-
7	B	-
8	P	-
9	L	- (Coupe models)
9	B	- (Roadster models)
11	V	-
12	R	-
13	L	-
14	GR	-
15	P	-
16	W	-
17	SB	-
20	LG	-
21	BR	- (Coupe models)
21	G	- (Roadster models)
31	L	-
32	Y	-
33	P	-
34	L	-
35	BR	-
36	V	-
37	Y	-
38	R	-
39	B	-
40	W	-
41	LG	-
42	SB	-
43	G	-
44	R	- (Roadster models with M/T)
44	GR	- (Except for roadster models with M/T)
45	BG	- (Coupe models)
45	O	- (Roadster models)
46	W	-
47	P	-
58	SHIELD	-
59	L	-

70	P	-
80	W	-
81	P	-
82	G	-
83	V	-
84	L	-
85	BG	- (Coupe models)
85	O	- (Roadster models)
86	LG	-
87	R	-
89	P	-
91	W	-
92	L	-
93	G	-
94	V	-
96	Y	-
97	BR	-
98	GR	-
99	LG	-
100	BG	- (Coupe models)
100	O	- (Roadster models)

Connector No.	F1
Connector Name	WIRE TO WIRE
Connector Type	SAA3PFB-RS2-SH28



Terminal No.	Color of Wire	Signal Name [Specification]
1	L/Y	-
2	SHIELD	-
3	L/B	-
4	SHIELD	-
5	BR	-
7	G	-
8	W	-
9	R	-
10	G	-
11	R	-
12	P	-
13	BG	- (Coupe models)
13	O	- (Roadster models)
14	LG	-
15	BR	-

16	Y	-
17	W	-
18	LG	-
19	P	-
20	BG	- (Coupe models)
20	O	- (Roadster models)
21	BR	-
22	G	-
23	Y	-
24	LG	-
25	V	-
27	GR	-
28	BR	-
29	L	-
30	R	-
31	P	-
32	W	-
33	SB	-
34	BG	- (Coupe models)
34	O	- (Roadster models)
36	GR	-
37	SHIELD	- (Coupe models)
37	B	- (Roadster models)
38	W	-
39	Y	-
40	G	-
41	B	-
42	GR	-
43	R	-
45	SB	-
46	SHIELD	-
47	W/L	-
48	LG	-
49	O/L	-
50	L/Y	-
51	W	-
52	L/G	-

Connector No.	FS1
Connector Name	A/T ASSEMBLY
Connector Type	RK19G-DGY



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

Connector No.	F103
Connector Name	WIRE TO WIRE
Connector Type	TK38PW-NS10



Terminal No.	Color of Wire	Signal Name [Specification]
2	G	-
3	W	-
4	R	-
5	B	-
8	L	-
9	Y	-
10	GR	-
19	BG	- (Coupe models)
19	O	- (Roadster models)
20	Y	-
28	B	-
29	LG	-
30	R	-
31	BG	- (Coupe models)
31	O	- (Roadster models)
39	W	-
42	G	-
43	P	-
44	L	-
45	V	-
46	V	-

880000WAC07

Fig. 51: A/T Control System Connector Terminals Reference Chart (2 Of 4)
 Courtesy of NISSAN MOTOR CO., U.S.A.

A/T CONTROL SYSTEM

Connector No.	F301
Connector Name	IGN TRANSMISSION CONTROL MODULE
Connector Type	SP10FG



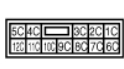
Terminal No.	Color of Wire	Signal Name [Specification]
1	W	VIGN
2	B	BATT
3	R	CAN-H
4	O	K-LINE
5	G	GND
6	GR	VIGN
7	L	REV LAMP RLY
8	BR	CAN-L
9	Y	STARTER RLY
10	R/B	GND

Connector No.	M1
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS06FW-M3



Terminal No.	Color of Wire	Signal Name [Specification]
1A	Y	-
2A	G	-
3A	L	-
4A	P	-
5A	L	-
6A	Y	-
7A	BR	-
8A	L	-

Connector No.	M3
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS12FW-C5



Terminal No.	Color of Wire	Signal Name [Specification]
6C	R	-
7C	B	-
8C	R	- (Coupe models)
9C	O	- (Roadster models)
10C	L	-
11C	LG	-
12C	O	-

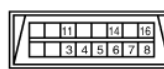
Connector No.	M6
Connector Name	WIRE TO WIRE
Connector Type	TH03MY-GS16-TM4



Terminal No.	Color of Wire	Signal Name [Specification]
1	Y	-
3	L	-
4	R	-
7	B	-
8	P	-
9	L	- (Coupe models)
10	B	- (Roadster models)
11	GR	-
12	R	-
13	L	-
14	G	-
15	P	-
16	W	-
17	BR	-
20	GR	-

21	BR	- (Coupe models)
21	R	- (Roadster models)
31	L	- (Roadster models with M/T)
31	BR	- (Except for roadster models with M/T)
32	Y	- (Roadster models with M/T)
32	V	- (Except for roadster models with M/T)
33	P	-
34	L	-
35	BR	-
35	SB	-
37	Y	-
38	LG	-
39	SB	-
40	W	-
41	LG	-
42	R	-
43	G	-
44	G	- (With A/T)
44	R	- (With M/T)
45	O	-
46	G	-
47	BR	-
58	SHIELD	-
59	L	-
60	R	-
80	LG	-
81	GR	-
82	V	-
83	V	-
84	L	-
85	BR	-
86	Y	-
87	V	- (Roadster models with M/T)
87	G	- (Except for roadster models with M/T)
89	P	-
91	W	-
92	P	-
93	P	-
94	Y	-
95	R	-
97	GR	-
98	O	-
99	W	-
100	R	-

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



Terminal No.	Color of Wire	Signal Name [Specification]
3	Y	-
4	B	-
5	R	-
6	L	-
7	V	- (Coupe models)
8	G	- (Roadster models)
11	LG	-
14	P	-
15	Y	-

Connector No.	M32
Connector Name	PADDOLE SHIFTER (SHIFT-DOWN)
Connector Type	A03FW



Terminal No.	Color of Wire	Signal Name [Specification]
1	W	- (Coupe models)
1	B	- (Roadster models)
3	G	-

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Fig. 52: A/T Control System Connector Terminals Reference Chart (3 Of 4)
Courtesy of NISSAN MOTOR CO., U.S.A.

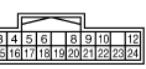
A/T CONTROL SYSTEM

Connector No.	M33
Connector Name	PADDOLE SHIFTER (SHIFT-UP)
Connector Type	A04FW



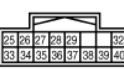
Terminal No.	Color of Wire	Signal Name [Specification]
1	B	-
3	O	-

Connector No.	M34
Connector Name	COMBINATION METER
Connector Type	TH04FW-NH



Terminal No.	Color of Wire	Signal Name [Specification]
1	Y	BATTERY POWER SUPPLY
2	O	IGNITION POWER SUPPLY
3	L	VEHICLE SPEED SIGNAL (2-PULSE)
4	Y	VEHICLE SPEED SIGNAL (8-PULSE)
5	B	ILLUMINATION CONTROL SIGNAL
6	R	ROOF STATUS SIGNAL
9	BR	COMMUNICATION SIGNAL METER - TRIPLE METER
10	L	COMMUNICATION SIGNAL TRIPLE METER - METER
12	G	S-MODE SWITCH SIGNAL
15	L	ACC POWER SUPPLY
16	R	AIR BAG SIGNAL
17	B	GROUND
18	Y	AMBIENT SENSOR SIGNAL
19	G	A/C AUTO AMP. CONNECTION RECOGNITION SIGNAL
20	GR	AMBIENT SENSOR GROUND
21	L	CAN-H
22	P	CAN-L
23	B	GROUND
24	Y	FUEL LEVEL SENSOR GROUND

Connector No.	M34
Connector Name	COMBINATION METER
Connector Type	TH04FW-NH



Terminal No.	Color of Wire	Signal Name [Specification]
25	W	ALTERNATOR SIGNAL
26	O	PARKING BRAKE SWITCH SIGNAL
27	LG	BRAKE FLUID LEVEL SWITCH SIGNAL
28	Y	SECURITY SIGNAL
29	GR	WASHER LEVEL SWITCH SIGNAL
32	G	PADDOLE SHIFTER DOWN SIGNAL
33	O	PADDOLE SHIFTER UP SIGNAL
34	BR	FUEL LEVEL SENSOR SIGNAL
35	L	SEAT BELT BUCKLE SWITCH SIGNAL (DRIVER SIDE)
36	L	SEAT BELT BUCKLE SWITCH SIGNAL (PASSENGER SIDE)
36	P	SEAT BELT BUCKLE SWITCH SIGNAL (PASSENGER SIDE)
37	G	NON-MANUAL MODE SIGNAL
38	V	MANUAL MODE SHIFT DOWN SIGNAL
39	L	MANUAL MODE SHIFT UP SIGNAL
40	W	MANUAL MODE SIGNAL

Connector No.	M35
Connector Name	BACK-UP LAMP RELAY
Connector Type	M30FL-M2-LG



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

Connector No.	M116
Connector Name	WIRE TO WIRE
Connector Type	TK36MW-N510



Terminal No.	Color of Wire	Signal Name [Specification]
2	W	-
3	BG	- (Coupe models)
3	O	- (Roadster models)
4	W	-
5	B	-
6	L	-
9	Y	-
10	R	-
19	O	-
20	G	-
29	B	-
29	LG	-
30	LG	-
31	O	-
39	G	-
42	O	-
43	P	-
44	L	-
45	BR	-
45	V	-

3	L	-
4	B	-
5	G	-
6	R	-
7	W	-
8	P	-
9	Y	-
10	R	-

Connector No.	M137
Connector Name	A/T SHIFT SELECTOR
Connector Type	TK10FW



Terminal No.	Color of Wire	Signal Name [Specification]
1	W	-
2	V	-

80L000WAC07

Fig. 53: A/T Control System Connector Terminals Reference Chart (4 Of 4)
Courtesy of NISSAN MOTOR CO., U.S.A.

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 "**DIAGNOSIS FLOW**".

FAIL-SAFE REFERENCE CHART

1st fail-safe	The mode that the vehicle can stop safely, to prompt the driver to stop if the malfunction occurs and to shift to 2nd Fail-Safe early. It shifts to 2nd Fail-Safe or Final Fail-Safe after the vehicle stopped.
2nd fail-safe	The mode that the vehicle shifts to Final Fail-Safe without changing the behavior, by identifying the malfunctioning parts in the condition that the driving force required for the driving is secured.
Final fail-safe	• Selects the shifting pattern that the malfunctioning parts identified at 1st and 2nd Fail-Safe are not used, and then secure the driving force that is required for the driving. • The mode that the shifting performance does not decrease by normal shift control.

FAIL-SAFE FUNCTION**FAIL-SAFE FUNCTION CHART**

DTC	Vehicle condition	Vehicle behavior for 1st fail-safe	Vehicle behavior for 2nd fail-safe	Vehicle behavior for final fail-safe
P0615	-	Starter is disabled	-	Starter is disabled
P0705	-	• Fixed in the "D" position (The shifting can be performed) • 30 km/h (19MPH) or less • Lock-up is prohibited • The shifting between the gears of 3 - 4 - 5 - 6 - 7 can be performed • Manual mode is prohibited • Shift position	-	• Fixed in the "D" position (The shifting can be performed) • 30 km/h (19 MPH) or less • Lock-up is prohibited • The shifting between the gears of 3 - 4 - 5 - 6 - 7 can be performed • Manual mode is prohibited • Shift position

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		- indicator is switched OFF • Starter relay is switched OFF (starter is disabled) • Back-up lamp is OFF • Large shift shock		- indicator is switched OFF • Starter relay is switched OFF (starter is disabled) • Back-up lamp is OFF • Large shift shock
P0710	Between the gears of 1 - 2 - 3	• The shifting between the gears of 1 - 2 - 3 can be performed • Manual mode is prohibited	-	• The shifting between the gears of 1 - 2 - 3 can be performed • Manual mode is prohibited
	Between the gears of 4 - 5 - 6 - 7	• Fix the gear while driving • Manual mode is prohibited	-	
P0717	Between the gears of 1 - 2 - 3	• The shifting between the gears of 1 - 2 - 3 can be performed • Manual mode is prohibited	-	• The shifting between the gears of 1 - 2 - 3 can be performed • Manual mode is prohibited
	Between the gears of 4 - 5 - 6 - 7	• Fix the gear while driving • Manual mode is prohibited	-	
P0720	Between the gears of 1 - 2 - 3	• Only downshift can be performed • Manual mode is prohibited • Treat the vehicle speed that the vehicle speed signal receives as positive	-	• The shifting between the gears of 1 - 2 - 3 can be performed • Manual mode is prohibited
	Between the gears of 4 - 5 - 6 - 7	• Fix the gear at driving • Manual mode is prohibited • Treat the vehicle speed that the	-	

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		vehicle speed signal receives as positive		
	Neutral malfunction between the gears of 1 - 2 - 3 and 7	- Locks in 4GR - Manual mode is prohibited - Neutral	-	- 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
P0729 P0731 P0732 P0733 P0734 P0735 P1734	Other than the above	- Driving with the gear ratio between 1GR and 2GR - Driving with the gear ratio between 2GR and 3GR - Locks in 3GR - Locks in 4GR - Fix the gear while driving - Manual mode is prohibited - Neutral	- The shifting between the gears of 1 - 2 - 3 can be performed - Manual mode is prohibited	- Locks in 1GR - The shifting between the gears of 1 - 2 can be performed - The shifting between the gears of 1 - 2 - 3 can be performed - The shifting between the gears of 2 - 3 - 4 can be performed - The shifting between the gears of 3 - 4 can be performed - The shifting between the gears of 4 - 5 - 6 can be performed - Manual mode is prohibited
			The shifting	- Locks in 1GR - The shifting between the gears

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P0730	-	- Manual mode is prohibited - Neutral	between the gears of 1 - 2 - 3 can be performed Manual mode is prohibited	of 1 - 2 can be performed - The shifting between the gears of 1 - 2 - 3 can be performed - Manual mode is prohibited
P0740	-	- Lock-up is prohibited - Slip lock-up is prohibited	-	- Lock-up is prohibited - Slip lock-up is prohibited
P0744	-	- Lock-up is prohibited - Slip lock-up is prohibited	-	- Lock-up is prohibited - Slip lock-up is prohibited
P0750 P0775 P0795 P2713 P2722 P2731 P2807	-	- Locks in 2GR, 3GR, 4GR, 5GR, 6GR or 7GR - Manual mode is prohibited	-	- Locks in 1GR - The shifting between the gears of 1 - 2 - 3 can be performed - The shifting between the gears of 3 - 4 - 5 can be performed - The shifting between the gears of 4 - 5 - 6 can be performed - The shifting between the gears of 1 - 2 - 3 - 4 - 5 - 6 can be performed - Manual mode is prohibited
P0780	-	- Manual mode is prohibited - Neutral	-	- The shifting between the gears of 1 - 2 - 3 can be performed - Manual mode is prohibited
		Downshift when accelerator pedal is	Downshift when accelerator pedal	Downshift when accelerator pedal is

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P1705	-	depressed is prohibited • Upshift when accelerator pedal is released is prohibited • Manual mode is prohibited	is depressed is prohibited • Upshift when accelerator pedal is released is prohibited • Manual mode is prohibited	depressed is prohibited • Upshift when accelerator pedal is released is prohibited • Manual mode is prohibited
P1730	-	• Neutral • Driving with the gear ratio between 2GR and 3GR • Locks in 5GR, 6GR or 7GR • Manual mode is prohibited	• The shifting between the gears of 1 - 2 - 3 can be performed • Manual mode is prohibited	• Locks in 1GR • The shifting between the gears of 2 - 3 - 4 can be performed • The shifting between the gears of 3 - 4 can be performed • The shifting between the gears of 4 - 5 - 6 can be performed • Manual mode is prohibited
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	• The shifting between the gears of 1 - 2 - 3 can be performed • Manual mode is prohibited	-	• The shifting between the gears of 1 - 2 - 3 can be performed • Line pressure is set to the maximum hydraulic pressure • Manual mode is prohibited
	Between the gears of 4 - 5 - 6 - 7	• Fix the gear at driving • Manual mode is prohibited	-	
P0720 and P1721	-	Locks in 5GR	-	Locks in 5GR

Protection Control

The TCM becomes the protection control status temporarily to protect the safety when the safety of TCM and transmission is lost. It automatically returns to the normal status if the safety is secured.

The TCM has the following protection control.

REVERSE INHIBIT CONTROL

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.

REVERSE INHIBIT CONTROL REFERENCE CHART

Malfunction detection condition	Vehicle speed: 10 km/h (7 MPH) or more
Control at malfunction	Neutral
Normal return condition	• Vehicle speed: 8 km/h (5 MPH) or less and • Engine speed: 2,200 rpm or less
Vehicle behavior	• The torque transmission cannot be performed • There is a shock just before a vehicle stop

1ST ENGINE BRAKE PROTECTION CONTROL

Controls the engine brake so as not to make effective by turning the front brake solenoid output to OFF when each solenoid becomes the electricity pattern of 1st engine brake during driving at the vehicle speed 25 km/h or more in any positions other than "R" position and 1GR.

1ST ENGINE BRAKE PROTECTION CONTROL REFERENCE CHART

Malfunction detection condition	• Select lever and gear: Any position other than "R" position and 1GR and • Vehicle speed: More than 25 km/h (16 MPH)
Control at malfunction	Front brake solenoid output signal; OFF
Normal return condition	Other than detection condition of malfunction
Vehicle behavior	Does not exist

TCM HIGH TEMPERATURE PROTECTION CONTROL

Limit the accelerator opening and forcibly control the vehicle to the low torque driving when the electronic substrate in TCM reaches the high temperature.

TCM HIGH TEMPERATURE PROTECTION CONTROL REFERENCE CHART

	TCM electronic substrate temperature
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Malfunction detection condition	• 145°C (293°F) and 120 seconds or • 150°C (302°F)
Control at malfunction	Accelerator opening: 0.5/8 or less
Normal return condition	• TCM electronic substrate temperature: Less than 140°C (284°F) and • Vehicle speed: 5 km/h (3 MPH) or less
Vehicle behavior	Accelerator opening: output torque of approximately 0.5/8

DTC Inspection Priority Chart

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

DTC INSPECTION PRIORITY CHART

Priority	Detected items (DTC)	Reference
1	U1000 CAN COMM CIRCUIT	" <u>DTC LOGIC</u> "
2	P0615 STARTER RELAY	" <u>DTC LOGIC</u> "
	P0705 T/M RANGE SWITCH A	" <u>DTC LOGIC</u> "
	P0710 FLUID TEMP SENSOR A	" <u>DTC LOGIC</u> "
	P0717 INPUT SPEED SENSOR A	" <u>DTC LOGIC</u> "
	P0720 OUTPUT SPEED SENSOR	" <u>DTC LOGIC</u> "
	P0740 TORQUE CONVERTER	" <u>DTC LOGIC</u> "
	P0745 PC SOLENOID A	" <u>DTC LOGIC</u> "
	P0750 SHIFT SOLENOID A	" <u>DTC LOGIC</u> "
	P0775 PC SOLENOID B	" <u>DTC LOGIC</u> "
	P0795 PC SOLENOID C	" <u>DTC LOGIC</u> "
	P2713 PC SOLENOID D	" <u>DTC LOGIC</u> "
	P2722 PC SOLENOID E	" <u>DTC LOGIC</u> "
	P2731 PC SOLENOID F	" <u>DTC LOGIC</u> "
	P2807 PC SOLENOID G	" <u>DTC LOGIC</u> "
3	P0729 6GR INCORRECT RATIO	" <u>DTC LOGIC</u> "
	P0730 INCORRECT GR RATIO	" <u>DTC LOGIC</u> "
	P0731 1GR INCORRECT RATIO	" <u>DTC LOGIC</u> "
	P0732 2GR INCORRECT RATIO	" <u>DTC LOGIC</u> "
	P0733 3GR INCORRECT RATIO	" <u>DTC LOGIC</u> "
	P0734 4GR INCORRECT RATIO	" <u>DTC LOGIC</u> "
	P0735 5GR INCORRECT RATIO	" <u>DTC LOGIC</u> "

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	P0744 TORQUE CONVERTER	" <u>DTC LOGIC</u> "
	P0780 SHIFT	" <u>DTC LOGIC</u> "
	P1730 INTERLOCK	" <u>DTC LOGIC</u> "
	P1734 7GR INCORRECT RATIO	" <u>DTC LOGIC</u> "
4	P0725 ENGINE SPEED	" <u>DTC LOGIC</u> "
	P1705 TP SENSOR	" <u>DTC LOGIC</u> "
	P1721 VEHICLE SPEED SIGNAL	" <u>DTC LOGIC</u> "
	P1815 M-MODE SWITCH	" <u>DTC LOGIC</u> "

DTC Index

NOTE: If some DTCs are displayed at the same time, perform inspections one by one based on the priority as per the following list. Refer to "DTC INSPECTION PRIORITY CHART".

DTC INDEX

Items (CONSULT-III screen terms)	DTC ⁽²⁾		Reference
	MIL ⁽¹⁾ , "ENGINE" with CONSULT-III or GST	CONSULT-III only "TRANSMISSION"	
STARTER RELAY	-	P0615	" <u>DESCRIPTION</u> "
T/M RANGE SWITCH A	P0705	P0705	" <u>DESCRIPTION</u> "
FLUID TEMP SENSOR A	P0710	P0710	" <u>DESCRIPTION</u> "
INPUT SPEED SENSOR A	P0717	P0717	" <u>DESCRIPTION</u> "
OUTPUT SPEED SENSOR	P0720	P0720	" <u>DESCRIPTION</u> "
ENGINE SPEED	-	P0725	" <u>DESCRIPTION</u> "
6GR INCORRECT RATIO	P0729	P0729	" <u>DESCRIPTION</u> "
INCORRECT GR RATIO	P0730	P0730	" <u>DESCRIPTION</u> "
1GR INCORRECT RATIO	P0731	P0731	" <u>DESCRIPTION</u> "
2 GR INCORRECT RATIO	P0732	P0732	" <u>DESCRIPTION</u> "
3GR INCORRECT RATIO	P0733	P0733	" <u>DESCRIPTION</u> "
4GR INCORRECT RATIO	P0734	P0734	" <u>DESCRIPTION</u> "
5GR INCORRECT RATIO	P0735	P0735	" <u>DESCRIPTION</u> "

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TORQUE CONVERTER	P0740	P0740	"DESCRIPTION"
TORQUE CONVERTER	P0744	P0744	"DESCRIPTION"
PC SOLENOID A	P0745	P0745	"DESCRIPTION"
SHIFT SOLENOID A	P0750	P0750	"DESCRIPTION"
PC SOLENOID B	P0775	P0775	"DESCRIPTION"
SHIFT	P0780	P0780	"DESCRIPTION"
PC SOLENOID C	P0795	P0795	"DESCRIPTION"
TP SENSOR	-	P1705	"DESCRIPTION"
VEHICLE SPEED SIGNAL	-	P1721	"DESCRIPTION"
INTERLOCK	P1730	P1730	"DESCRIPTION"
7 GR INCORRECT RATIO	P1734	P1734	"DESCRIPTION"
M-MODE SWITCH	-	P1815	"DESCRIPTION"
PC SOLENOID D	P2713	P2713	"DESCRIPTION"
PC SOLENOID E	P2722	P2722	"DESCRIPTION"
PC SOLENOID F	P2731	P2731	"DESCRIPTION"
PC SOLENOID G	P2807	P2807	"DESCRIPTION"
CAN COMM CIRCUIT	U1000	U1000	"DESCRIPTION"

(1) Refer to **"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 the self-diagnosis results are erased if it is over 39.
- Other than CAN malfunction
 - The number is 0 when a malfunction is detected now.
 - The number increases like 1 --> 2 --> 3...254 --> 255 after returning to the normal condition whenever ignition switch OFF --> ON.
 - The number is fixed to 255 until the self-diagnosis results are erased if it is over 255.

SYMPTOM DIAGNOSIS**SYSTEM SYMPTOM**

Symptom Table

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

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

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.			1	2		3													
		Shift point is low in "D" position.			1	2															
		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				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													

Fig. 54: Symptom Chart (1 Of 5)

Courtesy of NISSAN MOTOR CO., U.S.A.

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
Function trouble	Gear does not 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
		"M" position	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	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

Fig. 55: Symptom Chart (2 Of 5)

Courtesy of NISSAN MOTOR CO., U.S.A.

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	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	
		Engine brake does not work	"M" position	"D" position → "M" position	4	4	4	5	3	1	2								3	
				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	
	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 1GR, 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

Fig. 56: Symptom Chart (3 Of 5)

Courtesy of NISSAN MOTOR CO., U.S.A.

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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	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														

Fig. 57: Symptom Chart (4 Of 5)

Courtesy of NISSAN MOTOR CO., U.S.A.

Symptom			Diagnostic item																
			Control linkage	Output speed sensor	Accelerator pedal position sensor	Engine speed signal	Battery voltage	Transmission range switch	Stop lamp switch	Line pressure solenoid valve	Torque converter clutch solenoid valve	Low brake solenoid valve	Front brake solenoid valve	High and low reverse clutch solenoid valve	Input clutch solenoid valve	Direct clutch solenoid valve	2346 brake solenoid valve	Anti-interlock solenoid valve	Starter relay
Function trouble	Power transmission cannot be performed	Vehicle cannot run in all position.	3				2		1	1	1	1	1	1	1	1	1		
		Driving is not possible in "D" position.	3				2		1	1	1	1	1	1	1	1	1		
		Driving is not possible in "R" position.	3				2		1						1		1		
		Engine stall		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											

Fig. 58: Symptom Chart (5 Of 5)

Courtesy of NISSAN MOTOR CO., U.S.A.

PRECAUTION

PRECAUTIONS

FOR USA AND CANADA

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

The Supplemental Restraint System such as "AIR BAG" and "SEAT BELT PRE-TENSIONER", used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air

bag, depending on the severity of a collision and whether the front occupants are belted or unbelted.

Information necessary to service the system safely is included in the "**SRS AIRBAG** " and "**SEAT BELTS** " articles.

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 AIRBAG** ".
- Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Information. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.

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

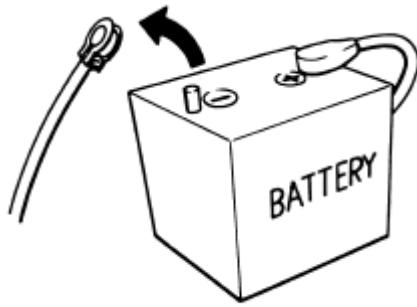
- When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious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

FOR USA AND CANADA : Precaution for Battery Service

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

FOR USA AND CANADA : General Precautions

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



SEF289H

Fig. 59: Disconnecting Battery Cable From Negative Terminal
 Courtesy of NISSAN MOTOR CO., U.S.A.

- 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 "**FOR NORTH AMERICA : FLUIDS AND LUBRICANTS**".
- Use lint-free paper not cloth rags during work.
- Dispose of the waste oil using the methods prescribed by law, ordinance, etc. after replacing the ATF.
- Before proceeding with disassembly, thoroughly clean the outside of the transmission. It is important to prevent the internal parts from becoming contaminated by dirt or other foreign matter.



SEF217U

Fig. 60: Screen Display - Service Engine Soon
 Courtesy of NISSAN MOTOR CO., U.S.A.

- 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 "**FOR USA AND CANADA : SERVICE NOTICE OR PRECAUTION**".
- When the A/T drain plug is removed, only some of the ATF is drained. Old ATF will remain in torque converter and ATF cooling system.

Always follow the procedures under "Changing" when changing ATF. Refer to "**CHANGING**".

- Occasionally, the parking gear may be locked with the torque insufficiently released, when stopping the vehicle by shifting the selector lever from "D" or "R" to "P" position with the brake pedal depressed.

In this case, the shock with a thud caused by the abrupt release of torque may occur when shifting the selector lever from "P" position to other positions.

However, this symptom is not a malfunction which results in the damage of parts.

FOR USA AND CANADA : Service Notice or Precaution

ATF COOLER SERVICE

If ATF contains frictional material (clutches, bands, etc.), or if an A/T is repaired, overhauled, or replaced, inspect and clean the A/T fluid cooler mounted in the radiator or replace the radiator. Flush cooler lines using cleaning solvent and compressed air after repair. For A/T fluid cooler cleaning procedure, refer to "**CLEANING**". For radiator replacement, refer to "**EXPLODED VIEW**".

FOR MEXICO

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

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

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 AIRBAG".
- Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Information. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.

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

WARNING:

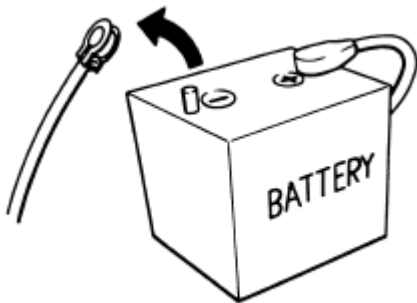
- When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious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

FOR MEXICO : Precaution for Battery Service

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

FOR MEXICO : General Precautions

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



SEF285H

Fig. 61: Disconnecting Battery Cable From Negative Terminal
Courtesy of NISSAN MOTOR CO., U.S.A.

- 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 "**FOR MEXICO : FLUIDS AND LUBRICANTS**".
- Use lint-free paper not cloth rags during work.
- Dispose of the waste oil using the methods prescribed by law, ordinance, etc. after replacing the ATF.
- Before proceeding with disassembly, thoroughly clean the outside of the transmission. It is important to prevent the internal parts from becoming contaminated by dirt or other foreign matter.



Fig. 62: Screen Display - Service Engine Soon
Courtesy of NISSAN MOTOR CO., U.S.A.

- 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 "**FOR MEXICO : SERVICE NOTICE OR PRECAUTION**".
- When the A/T drain plug is removed, only some of the ATF is drained. Old ATF will remain in torque converter and ATF cooling system.

Always follow the procedures under "Changing" when changing ATF. Refer to "**CHANGING**".

- Occasionally, the parking gear may be locked with the torque insufficiently released, when stopping the vehicle by shifting the selector lever from "D" or "R" to "P" position with the brake pedal depressed.

In this case, the shock with a thud caused by the abrupt release of torque may occur when shifting the selector lever from "P" position to other positions.

However, this symptom is not a malfunction which results in the damage of parts.

FOR MEXICO : Service Notice or Precaution

ATF COOLER SERVICE

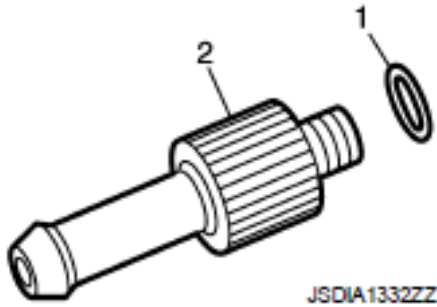
If ATF contains frictional material (clutches, bands, etc.), or if an A/T is repaired, overhauled, or replaced, inspect and clean the A/T fluid cooler mounted in the radiator or replace the radiator. Flush cooler lines using cleaning solvent and compressed air after repair. For A/T fluid cooler cleaning procedure, refer to "**CLEANING**". For radiator replacement, refer to "**EXPLODED VIEW**".

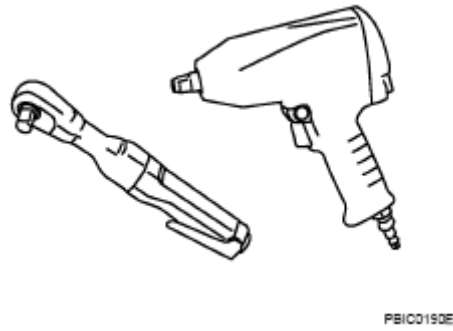
PREPARATION

PREPARATION

Commercial Service Tool

COMMERCIAL SERVICE TOOL

Tool number Tool name	Description
1. 315268E000 ⁽¹⁾ O-ring 2. 310811EA5A ⁽¹⁾ Charging pipe	 A/T fluid changing and adjustment
Power tool	Loosening bolts and nuts



(1) Always check with the Parts Department for the latest parts information.

PERIODIC MAINTENANCE

A/T FLUID

Changing

ATF : Refer to "GENERAL SPECIFICATION".

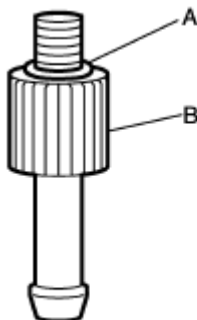
Fluid capacity : Refer to "GENERAL SPECIFICATION".

CAUTION:

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

1. Step 1

- a. Install the O-ring (315268E000) (A) to the charging pipe (310811EA5A) (B).



JSDIA1334ZZ

Fig. 63: Identifying O-Ring (315268E000) To Charging Pipe (310811EA5A)

Courtesy of NISSAN MOTOR CO., U.S.A.

2. Step 2

- a. Use CONSULT-III to check that the ATF temperature is 40°C (104°F) or less.
- b. Lift up the vehicle.
- c. Remove the drain plug from the oil pan, and then drain the ATF.
- d. When the ATF starts to drip, temporarily tighten the drain plug to the oil pan.

NOTE: Never replace drain plug and drain plug gasket with new ones yet.

- e. Remove overflow plug from oil pan.
- f. Install the charging pipe (A) to the overflow plug hole.

CAUTION: Tighten the charging pipe by hand.

- g. Install the bucket pump hose (B) to the charging pipe.

CAUTION: Insert the bucket pump hose all the way to the end of the charging pipe.

- h. Fill approximately 3 liters (3-1/8 US qt, 2-5/8 Imp qt) of the ATF.
- i. Remove the bucket pump hose to remove the charging pipe, and then temporarily tighten the overflow plug to the oil pan.

CAUTION: Quickly perform the procedure to avoid ATF leakage from the oil pan.

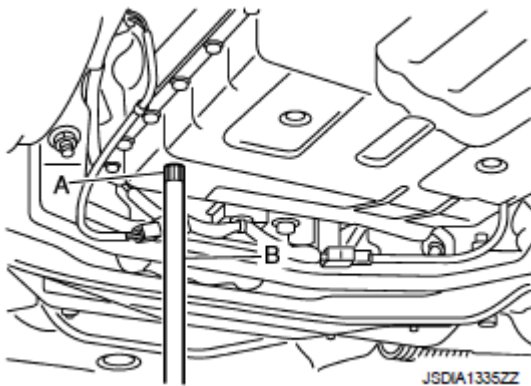


Fig. 64: Installing Charging Pipe To Overflow Plug Hole
Courtesy of NISSAN MOTOR CO., U.S.A.

- j. Lift down the vehicle.
 - k. Start the engine and wait for approximately 3 minutes.
 - l. Stop the engine.
3. Step 3
- a. Repeat "Step 2".
4. Final Step
- a. Use CONSULT-III to check that the ATF temperature is 40°C (104°F) or less.
 - b. Lift up the vehicle.
 - c. Remove the drain plug from the oil pan, and then drain the ATF.
 - d. When the ATF starts to drip, tighten the drain plug to the oil pan to the specified torque. Refer to **"EXPLODED VIEW"**.

CAUTION: Never reuse drain plug and drain plug gasket.

- e. Remove overflow plug from oil pan.
- f. Install the charging pipe (A) to the overflow plug hole.

CAUTION: Tighten the charging pipe by hand.

- g. Install the bucket pump hose (B) to the charging pipe.

CAUTION: Insert the bucket pump hose all the way to the end of the charging pipe.

- h. Fill approximately 3 liters (3-1/8 US qt, 2-5/8 Imp qt) of the ATF.
- i. Remove the bucket pump hose to remove the charging pipe, and then temporarily tighten the overflow plug to the oil pan.

CAUTION: Quickly perform the procedure to avoid ATF leakage from the oil pan.

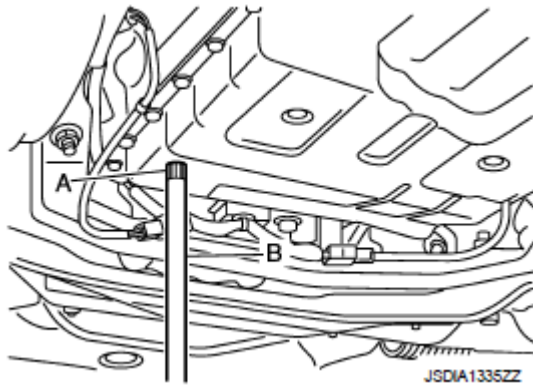


Fig. 65: Installing Charging Pipe To Overflow Plug Hole
Courtesy of NISSAN MOTOR CO., U.S.A.

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

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

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

CAUTION: Never reuse overflow plug.

Adjustment

ATF : Refer to "**GENERAL SPECIFICATION**".

Fluid capacity : Refer to "**GENERAL SPECIFICATION**".

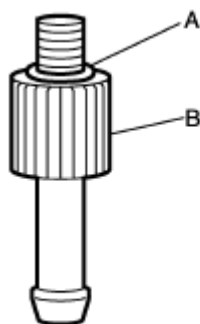
- CAUTION:**
- Use only Genuine NISSAN Matic S ATF. Never mix with other ATF.
 - Using ATF other than Genuine NISSAN Matic S ATF will cause deterioration in driveability and A/T durability, and may damage the A/T, which is not covered by the NISSAN new vehicle limited warranty.

- When filling ATF, be careful not to scatter heat generating parts such as exhaust.
- Always maintain the ATF temperature within between 35°C (95°F) and 45°C (113°F) while checking with CONSULT-III when the ATF level adjustment is performed.

1. Install the O-ring (315268E000) (A) to the charging pipe (310811EA5A) (B).
2. Start the engine.
3. Make the ATF temperature approximately 40°C (104°F).

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



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Fig. 66: Identifying O-Ring (315268E000) To Charging Pipe (310811EA5A)
Courtesy of NISSAN MOTOR CO., U.S.A.

6. Lift up the vehicle.
7. Check the ATF leakage from transmission.
8. Remove overflow plug from oil pan.
9. Install the charging pipe (A) to the overflow plug hole.

CAUTION: Tighten the charging pipe by hand.

10. Install the bucket pump hose (B) to the charging pipe.

CAUTION: Insert the bucket pump hose all the way to the end of the charging pipe.

11. Fill approximately 0.5 liters (1/2 US qt, 1/2 Imp qt) of the ATF.
12. Check that the ATF leaks when removing the charging pipe and the bucket pump hose. If the ATF does not leak, refill the ATF.
13. When the ATF starts to drip, tighten the overflow plug to the oil pan to the specified torque. Refer to "**EXPLODED VIEW**".

CAUTION: Never reuse overflow plug.

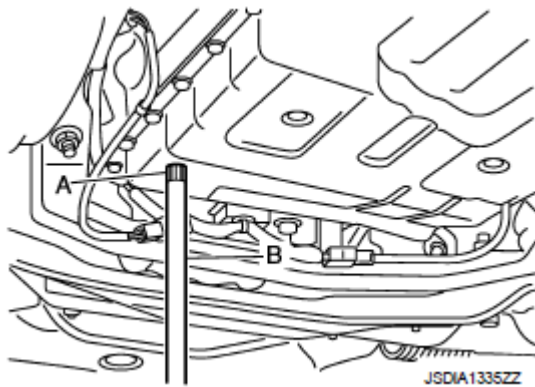


Fig. 67: Installing Charging Pipe To Overflow Plug Hole
Courtesy of NISSAN MOTOR CO., U.S.A.

A/T FLUID COOLER

Cleaning

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.

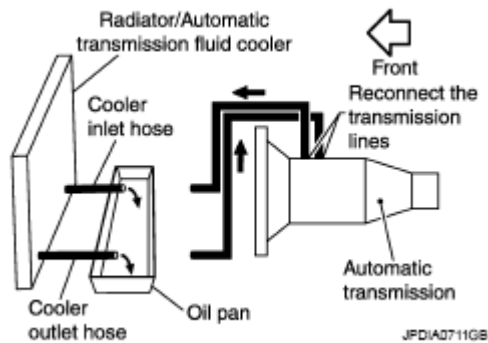


Fig. 68: Allowing Any ATF That Remains In Cooler Hoses To Drain Into Oil Pan
 Courtesy of NISSAN MOTOR CO., U.S.A.

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 breathe vapors or spray mist.

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

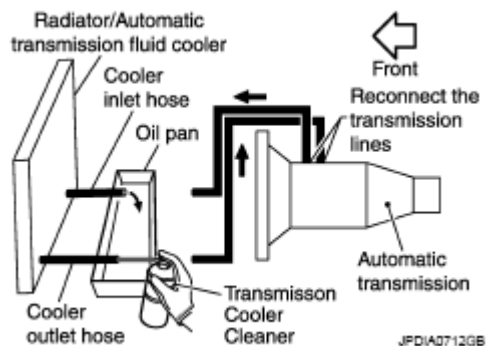


Fig. 69: Inserting Extension Adapter Hose Of Can Of Transmission Cooler Cleaner (Nissan P/N 999MP-AM006) Into Cooler Outlet Hose
 Courtesy of NISSAN MOTOR CO., U.S.A.

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.

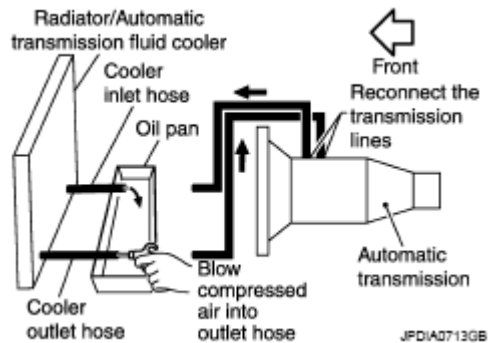


Fig. 70: Blowing Compressed Air Into Outlet Hose

Courtesy of NISSAN MOTOR CO., U.S.A.

13. Flush each steel line from the cooler side back toward the A/T by spraying Transmission Cooler Cleaner in a continuous stream for 5 seconds.
14. Blow compressed air regulated to 5 to 9 kg/cm² (71 to 128 psi) through each steel line from the cooler side back toward the A/T for 10 seconds to force out any remaining ATF.
15. Ensure all debris is removed from the steel cooler lines.
16. Ensure all debris is removed from the banjo bolts and fittings.
17. Perform "DIAGNOSIS PROCEDURE".

DIAGNOSIS PROCEDURE

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

1. Position an oil pan under the A/T inlet and outlet cooler hoses.
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 breathe vapors or spray mist.

4. Hold the hose and can as high as possible and spray Transmission Cooler Cleaner in a continuous stream

into the cooler outlet hose until ATF flows out of the cooler inlet hose for 5 seconds.

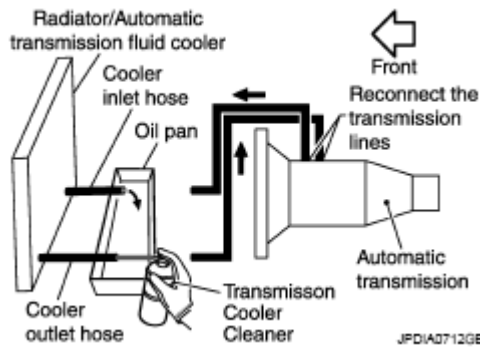


Fig. 71: Inserting Extension Adapter Hose Of Can Of Transmission Cooler Cleaner (Nissan P/N 999MP-AM006) Into Cooler Outlet Hose
Courtesy of NISSAN MOTOR CO., U.S.A.

5. Tie a common white, basket-type coffee filter to the end of the cooler inlet hose.

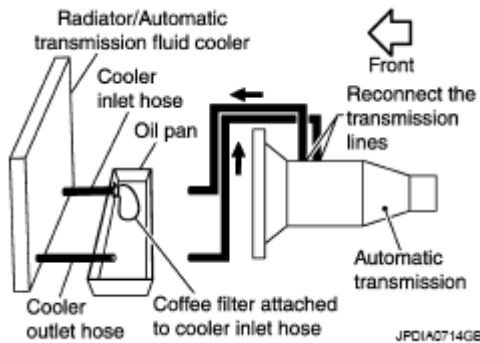


Fig. 72: Tying Common White, Basket-Type Coffee Filter To End Of Cooler Inlet Hose
Courtesy of NISSAN MOTOR CO., U.S.A.

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".

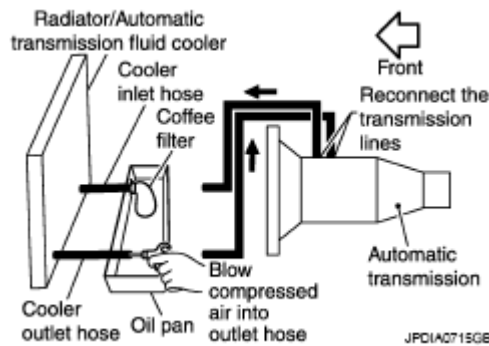


Fig. 73: Blowing Compressed Air Regulated To Through Cooler Outlet Hose To Force Any Remaining ATF Into Coffee Filter
 Courtesy of NISSAN MOTOR CO., U.S.A.

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.

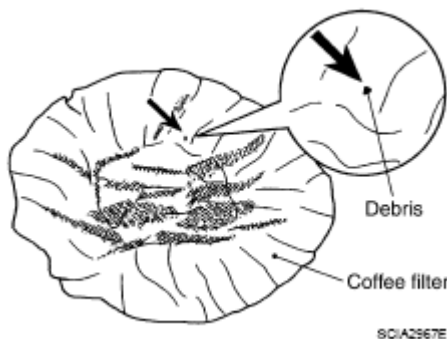


Fig. 74: Locating Small Metal Debris Or Metal Powder Is Found In Coffee Filter
 Courtesy of NISSAN MOTOR CO., U.S.A.

- 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 "**EXPLODED VIEW**".

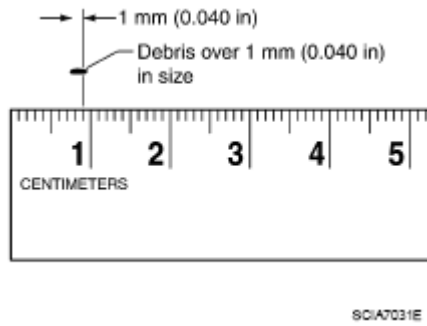


Fig. 75: Measuring Debris
 Courtesy of NISSAN MOTOR CO., U.S.A.

Inspection

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

STALL TEST

Inspection and Judgment

INSPECTION

1. Inspect the amount of engine oil. Replenish the engine oil if necessary.
2. Drive for about 10 minutes to warm up the vehicle so that the A/T fluid temperature is 50 to 80°C (122 to 176°F). Inspect the amount of ATF. Replenish if necessary.
3. Securely engage the parking brake so that the tires do not turn.
4. Start the engine, apply foot brake, and place selector lever in "D" position.
5. Gradually press down the accelerator pedal while holding down the foot brake.
6. Quickly read off the stall speed, and 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 "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

STALL TEST REFERENCE CHART

	Selector lever position		Possible location of malfunction
	"D" and "M"	"R"	
Stall speed	H	O	- Low brake 1st one-way clutch 2nd one-way clutch
	O	H	- Reverse brake 1st one-way clutch 2nd one-way clutch
	L	L	Engine and torque converter one-way clutch
	H	H	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

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

INSPECTION

- Place selector lever in "P" position, and turn ignition switch ON (engine stop).
- Check that selector lever can be shifted to other than "P" position when brake pedal is depressed. Also check that selector lever can be shifted from "P" position only when brake pedal is depressed.
- Shift the selector lever and check for excessive effort, sticking, noise or rattle.
- 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 does not illuminate when selector lever is pushed against "R" position in the "P" or "N" position.
8. Confirm that the engine can only be started with the selector lever in the "P" and "N" positions. (With selector lever in the "P" position, engine can be started even when selector lever is moved forward and backward.)

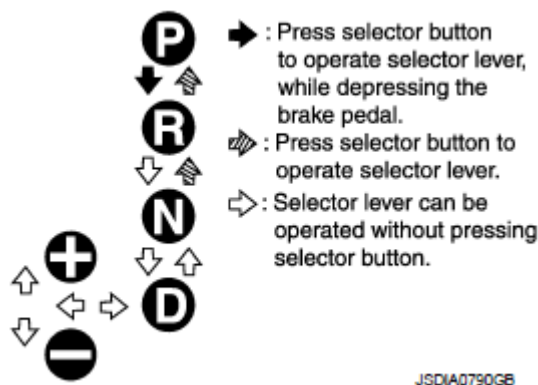


Fig. 76: Identifying A/T Positions

Courtesy of NISSAN MOTOR CO., U.S.A.

9. Make sure that A/T is locked completely in "P" position.
10. When selector lever is set to manual shift gate, make sure that manual mode is displayed on combination meter.

In addition, a set shift position must be changed when the selector lever is shifted to the "+" or "-" side in the manual mode. (Only while driving.)

ADJUSTMENT

1. Loosen nut ($\leq$).
2. Place manual lever and selector lever in "P" position.
3. While pressing lower lever (A) of A/T shift selector assembly toward rear of vehicle (in "P" position direction), tighten nut to specified torque. Refer to "**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).

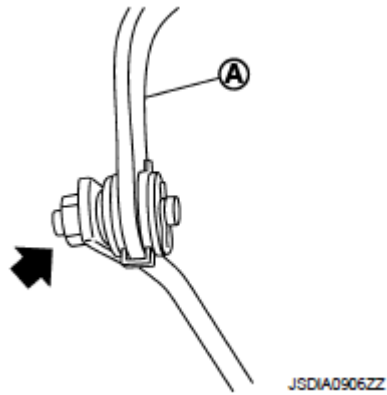


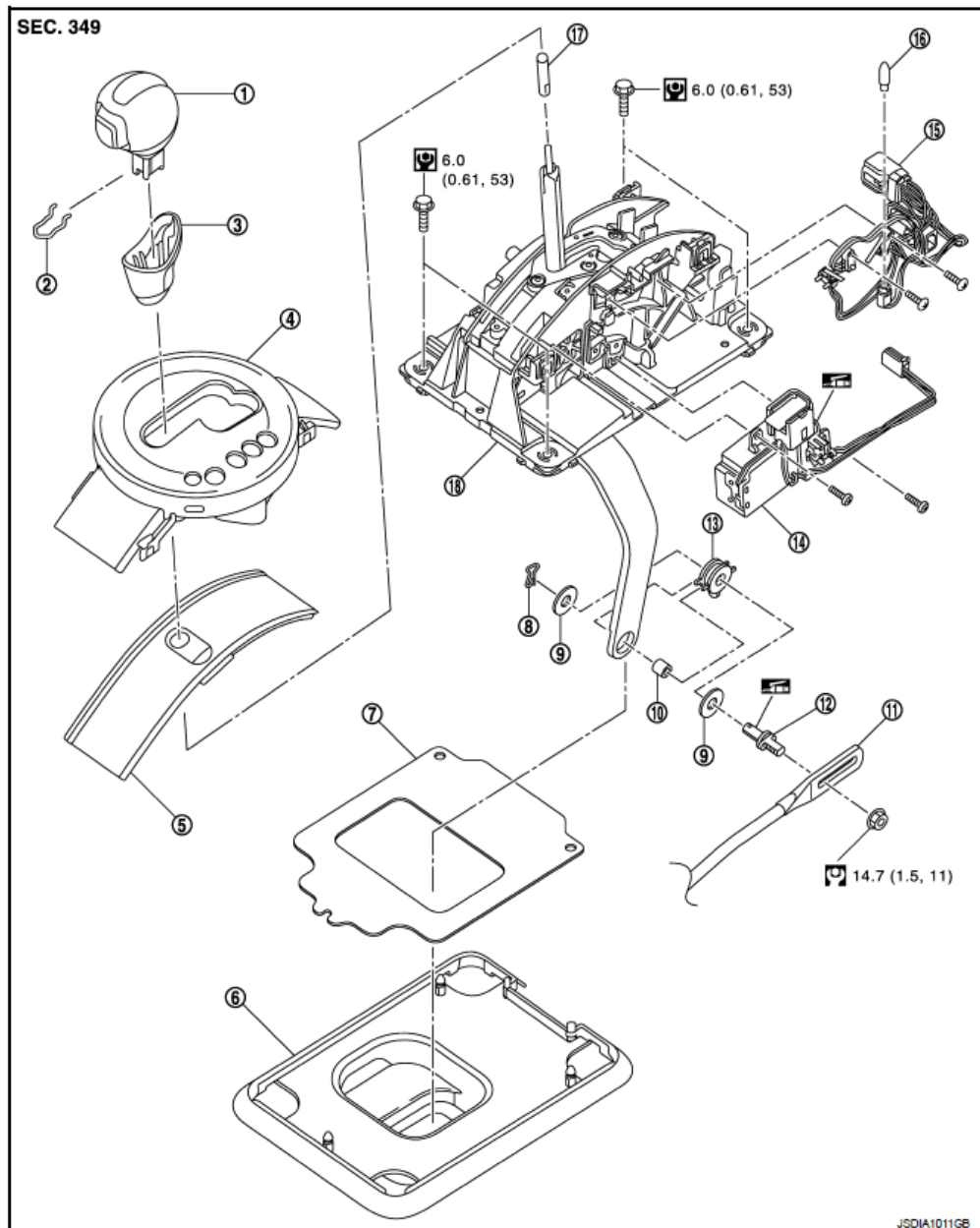
Fig. 77: Locating Lower Lever Nut
Courtesy of NISSAN MOTOR CO., U.S.A.

REMOVAL AND INSTALLATION

A/T SHIFT SELECTOR

Exploded View

Symbol	Description
	N·m (kg-m, ft-lb)
	N·m (kg-m, in-lb)
	Always replace after disassembly.



- | | | |
|-----------------------------|---------------------|---|
| 1. Selector lever knob | 2. Lock pin | 3. Knob cover |
| 4. Position indicator plate | 5. Slide cover | 6. Dust cover |
| 7. Dust cover plate | 8. Snap pin | 9. Washer |
| 10. Collar | 11. Control rod | 12. Pivot pin |
| 13. Insulator | 14. Shift lock unit | 15. A/T shift selector harness assembly |
| 16. Position lamp | 17. Adapter | 18. A/T shift selector assembly |

: Apply multi-purpose grease.

Fig. 78: Exploded View Of A/T Shift Selector With Torque Specifications

Courtesy of NISSAN MOTOR CO., U.S.A.

Refer to "**COMPONENTS**" for symbols not described on the above.

Removal and Installation

REMOVAL

1. Shift the selector lever to "P" position.
2. Remove the control rod from the A/T shift selector assembly.
3. Shift the selector lever to "N" position.
4. Remove the knob cover (1) below the selector lever downward.
5. Pull the lock pin (2) out of the selector lever knob (3).
6. Remove the selector lever knob and the knob cover.
7. Remove the center console assembly. Refer to "**EXPLODED VIEW**".
8. Shift the selector lever to "P" position.

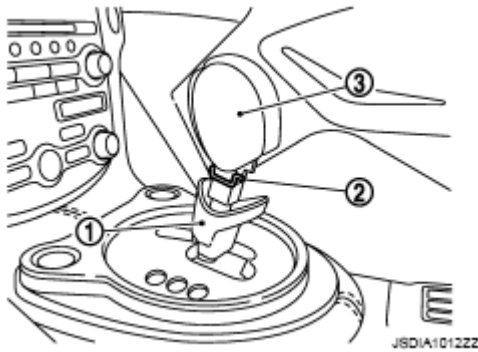


Fig. 79: Identifying Knob Cover, Lock Pin And Selector Lever Knob
Courtesy of NISSAN MOTOR CO., U.S.A.

9. Disconnect the A/T shift selector connector (A).
10. Remove mounting bolts (<=).
11. Remove the main harness clip (B).
12. Remove the A/T shift selector assembly from the vehicle.
13. Remove the snap pin, washers, insulator, collar and pivot pin from the A/T shift selector assembly.
14. Remove the dust cover and dust cover plate from the A/T shift selector assembly.

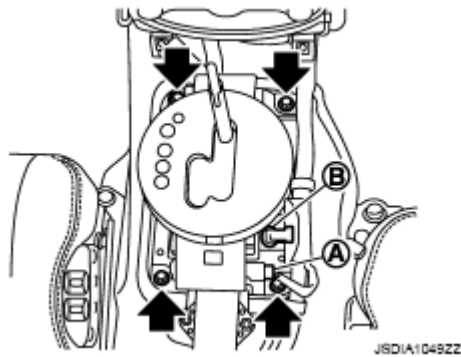


Fig. 80: Locating A/T Shift Selector Assembly Mounting Bolts
 Courtesy of NISSAN MOTOR CO., U.S.A.

INSTALLATION

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

CAUTION: Apply multi-purpose grease on the pin surface (that slides after installing a collar) of the pivot pin.

- Refer to the followings when installing the selector lever knob to the A/T shift selector assembly.

1. Install the lock pin to the selector lever knob.
2. Install the knob cover to the selector lever knob.
3. Insert the shift lever knob into the shift lever until it clicks.

CAUTION:

- Install it straight, and never tap or apply any shock to install it.
- Never press selector button.

Disassembly and Assembly

DISASSEMBLY

1. Remove the position lamp.
2. Remove the adapter from the A/T shift selector assembly.
3. Insert a flat-bladed screwdriver into pawls (A: 4 locations), and remove the position indicator plate (1) from the A/T shift selector assembly (2) while lifting it up.

CAUTION: The pawls crack easily. Be careful when removing.

4. Remove the slide cover from the A/T shift selector assembly.

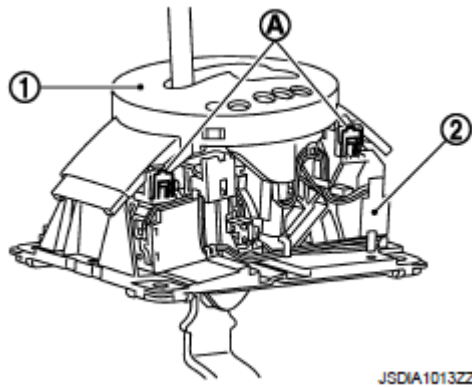


Fig. 81: Identifying Position Indicator Plate And A/T Shift Selector Assembly
Courtesy of NISSAN MOTOR CO., U.S.A.

5. Remove the shift lock unit (1) from the A/T shift selector assembly.
6. Remove the A/T shift selector harness assembly (2) from the A/T shift selector assembly.

A : Screw

B : Screw

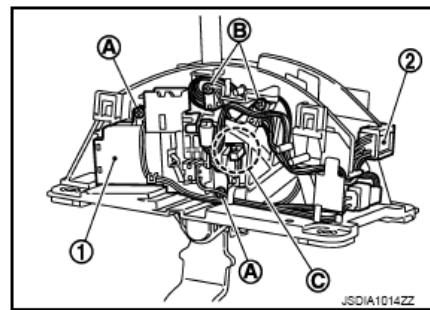


Fig. 82: Identifying Mode Select Switch
Courtesy of NISSAN MOTOR CO., U.S.A.

CAUTION: Be careful not to break the pawl when remove the mode select switch (C) from the A/T shift selector assembly.

ASSEMBLY

Note the following, and assembly in the reverse order of disassembly.

CAUTION: Apply multi-purpose grease on the surface that the shift lock unit plate slides vertically.

- Face the concave (A) of the slide cover (1) forward of the A/T shift selector assembly to install.

↩ : Front side

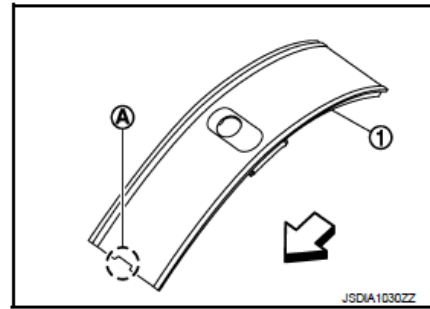


Fig. 83: Identifying Concave Of Slide Cover
Courtesy of NISSAN MOTOR CO., U.S.A.

Inspection and Adjustment

INSPECTION AFTER INSTALLATION

Check A/T position. Refer to "INSPECTION AND ADJUSTMENT".

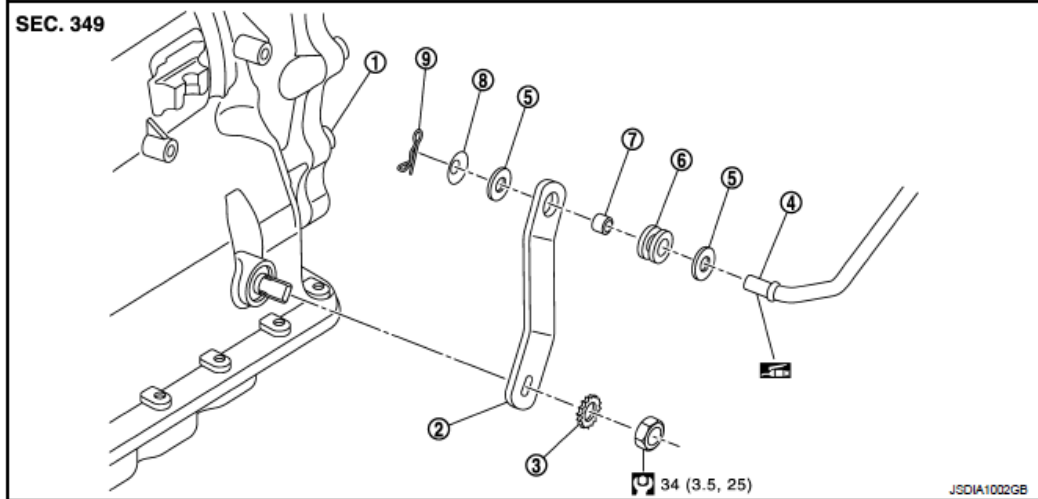
ADJUSTMENT AFTER INSTALLATION

Adjust A/T position. Refer to "INSPECTION AND ADJUSTMENT".

CONTROL ROD

Exploded View

Symbol	Description
	N·m (kg-m, ft-lb)
	N·m (kg-m, in-lb)
	Always replace after disassembly.



- | | | |
|-----------------|-------------------|----------------|
| 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.

Fig. 84: Exploded View Of Control Rod With Torque Specifications
 Courtesy of NISSAN MOTOR CO., U.S.A.

Refer to "**COMPONENTS**" for symbols not described on the above.

Removal and Installation

REMOVAL

- Shift the selector lever to "P" position.
- Remove the control rod from the A/T shift selector assembly. Refer to "**EXPLODED VIEW**".
- Remove the manual lever from the A/T assembly.
- Remove the control rod from the manual lever.
- Remove the insulator and collar from manual lever.

INSTALLATION

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

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

Inspection and Adjustment

INSPECTION AFTER INSTALLATION

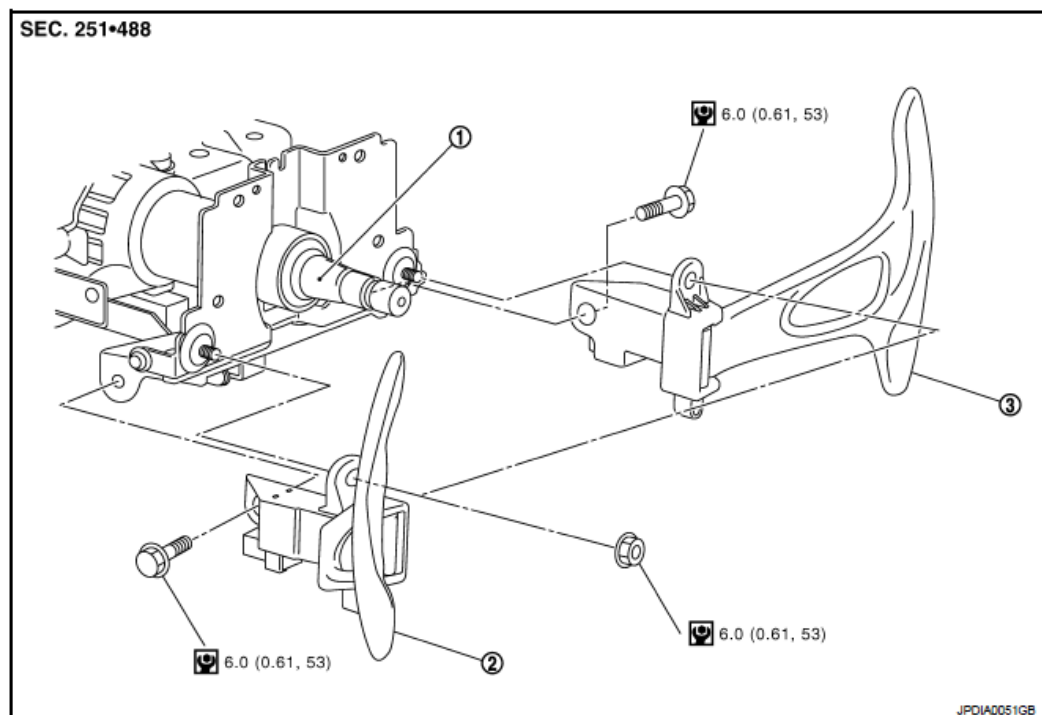
Check A/T position. Refer to "**INSPECTION AND ADJUSTMENT**".

ADJUSTMENT AFTER INSTALLATION

Adjust A/T position. Refer to "**INSPECTION AND ADJUSTMENT**".

PADDLE SHIFTER**Exploded View**

Symbol	Description
	N·m (kg-m, ft-lb)
	N·m (kg-m, in-lb)
	Always replace after disassembly.



1. Steering column assembly

2. Paddle shifter (shift-down)

3. Paddle shifter (shift-up)

Fig. 85: Identifying Paddle Shifter With Torque Specifications
Courtesy of NISSAN MOTOR CO., U.S.A.

Refer to "**COMPONENTS**" for symbols in the figure.

Removal and Installation**REMOVAL**

1. Remove the steering column cover. Refer to "**EXPLODED VIEW**".

2. Disconnect the paddle shifter connectors from each paddle shifter.
3. Remove paddle shifter mounting bolts and nuts.
4. Remove each paddle shifter from the steering column assembly.

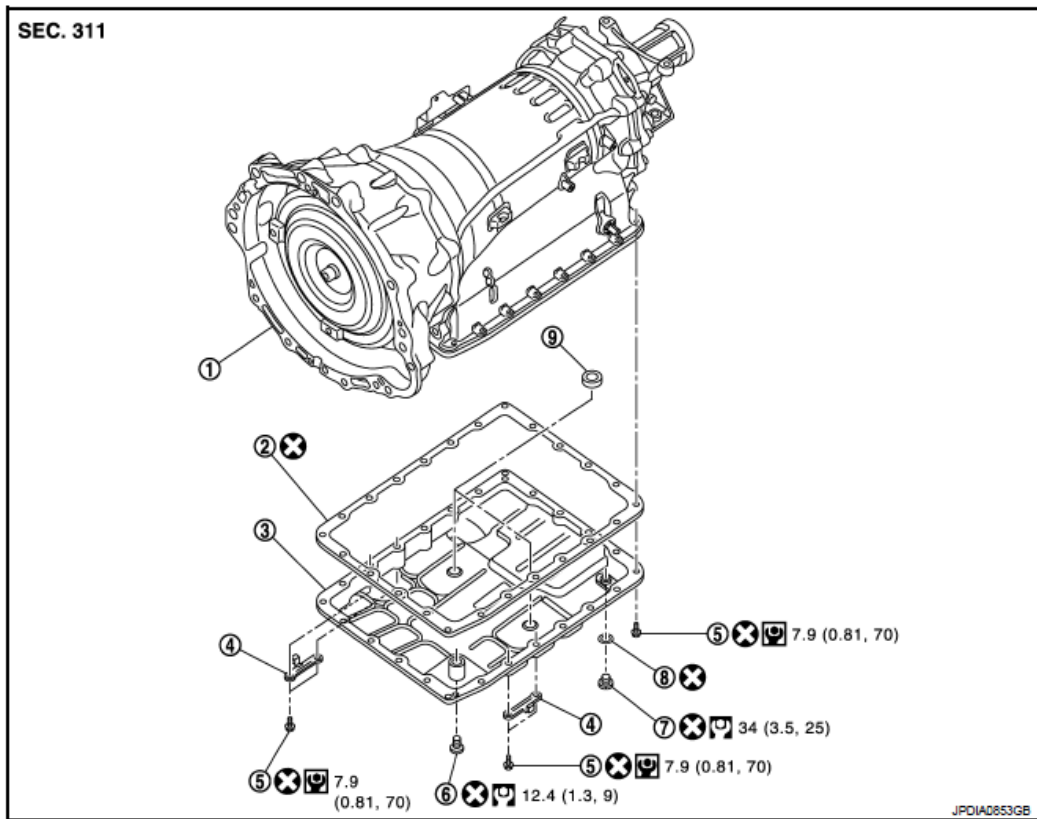
INSTALLATION

Install in the reverse order of removal.

OIL PAN

Exploded View

Symbol	Description
	N·m (kg-m, ft-lb)
	N·m (kg-m, in-lb)
	Always replace after disassembly.



- | | | |
|---------------|--------------------------|------------------|
| 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 |

Fig. 86: Exploded View Of Oil Pan With Torque Specifications
 Courtesy of NISSAN MOTOR CO., U.S.A.

Refer to "**COMPONENTS**" for symbols in the figure.

Removal and Installation

REMOVAL

1. Drain ATF through the drain plug.
2. Remove the exhaust mounting bracket with power tool. Refer to "**EXPLODED VIEW**".
3. Disconnect the heated oxygen sensor 2 connectors (A).

 : Vehicle front
 : Bolt

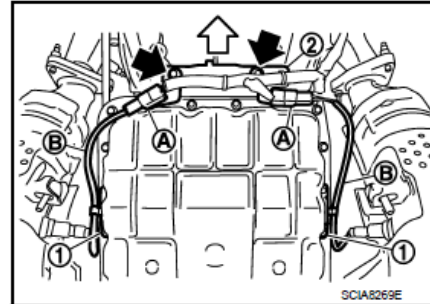


Fig. 87: Identifying Heated Oxygen Sensor 2 Connectors
 Courtesy of NISSAN MOTOR CO., U.S.A.

4. Remove the heated oxygen sensor 2 harness (B) from the clips (1).
5. Remove the bracket (2) from the A/T assembly. Refer to "**EXPLODED VIEW**".
6. Remove the clips (1).

 : Vehicle front
 : Oil pan mounting bolt

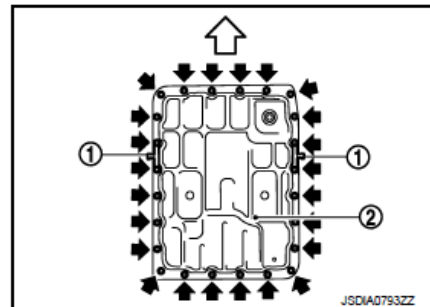


Fig. 88: Identifying Clips And Oil Pan
 Courtesy of NISSAN MOTOR CO., U.S.A.

7. Remove the oil pan (2) and oil pan gasket.
8. Remove the magnets from the oil pan.

INSTALLATION

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

CAUTION: • Clean foreign materials (gear wear particles) that adhere on the inside of the oil pan and on the magnet, and then assembly.

- Completely remove all moisture, oil and old gasket, etc. from oil pan gasket mounting surface of transmission case and oil pan.
 - Never reuse oil pan gasket and oil pan mounting bolts.
 - Install oil pan gasket in the direction to align hole position.
 - Never reuse drain plug and drain plug gasket. In addition, install new drain plug and drain plug gasket after adjustment of A/T fluid filling.
- Tighten the oil pan mounting bolts to the specified torque in the numerical order as shown in the figure after temporarily tightening them.

← : Vehicle front

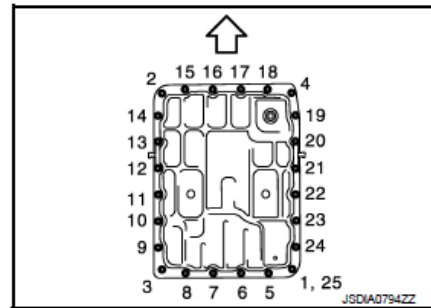


Fig. 89: Identifying Oil Pan Mounting Bolts Tightening Sequence
Courtesy of NISSAN MOTOR CO., U.S.A.

Inspection and Adjustment

INSPECTION AFTER REMOVAL

Check foreign materials in oil pan to help determine causes of malfunction. If the ATF is very dark, smells burned, or contains foreign particles, the frictional material (clutches, band) may need replacement. A tacky film that will not wipe clean indicates varnish build up. Varnish can cause valves, servo, and clutches to stick and can inhibit pump pressure.

- If frictional material is detected, perform A/T fluid cooler cleaning. Refer to "CLEANING".

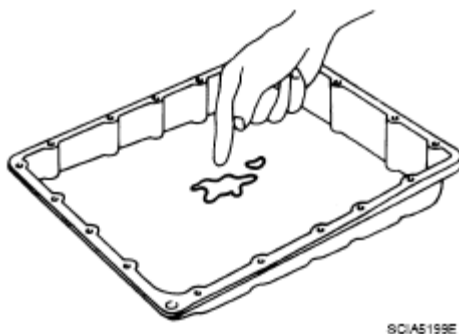


Fig. 90: Checking Foreign Materials In Oil Pan To Help Determine Causes Of Malfunction
Courtesy of NISSAN MOTOR CO., U.S.A.

INSPECTION AFTER INSTALLATION

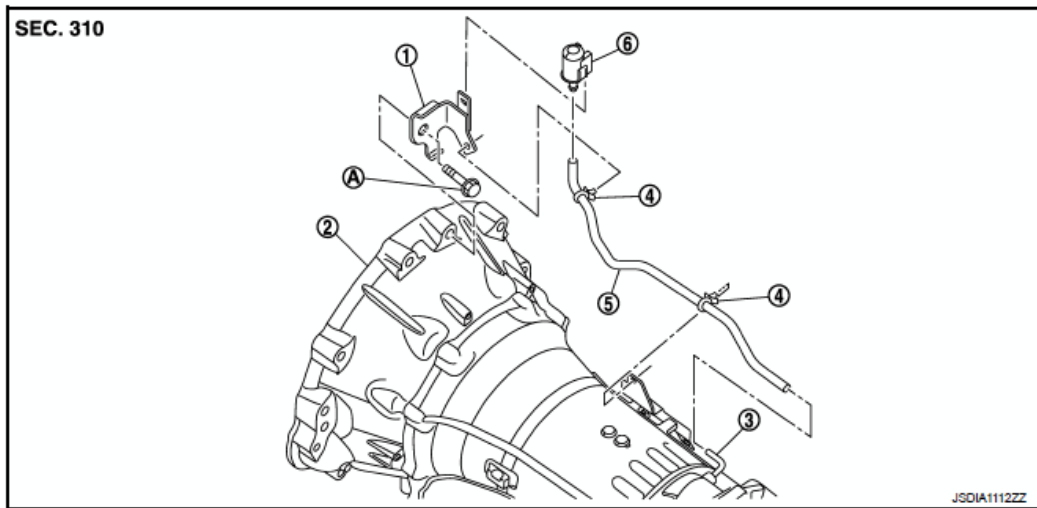
Check A/T fluid leakage.

ADJUSTMENT AFTER INSTALLATION

Adjust A/T fluid level. Refer to "**ADJUSTMENT**".

AIR BREATHER HOSE

Exploded View



- | | | |
|--|----------------------|----------------------|
| 1. Bracket | 2. A/T assembly | 3. Air breather tube |
| 4. Clip | 5. Air breather hose | 6. Air breather box |
| A. Tightening must be done following the installation procedure. | | |

Fig. 91: Exploded View Of Air Breather Hose
Courtesy of NISSAN MOTOR CO., U.S.A.

Removal and Installation

REMOVAL

1. Remove the three way catalyst (bank 1). Refer to "**EXPLODED VIEW**".
2. Remove the clips of air breather hose from the brackets.
3. Remove the air breather box from the bracket.
4. Remove the air breather box from the air breather hose.
5. Remove the air breather hose from the A/T assembly.
6. Separate the propeller shaft assembly. Refer to "**EXPLODED VIEW**".
7. Remove the control rod from the A/T shift selector assembly. Refer to "**EXPLODED VIEW**".
8. Support the A/T assembly with a transmission jack.

CAUTION: Be careful not to allow it to collide against the drain plug and overflow plug when setting the transmission jack.

9. Remove the rear engine mounting member with power tool. Refer to "**EXPLODED VIEW**".
10. Remove the bolt fixing the A/T assembly to the engine with a power tool.
11. Remove the bracket.

INSTALLATION

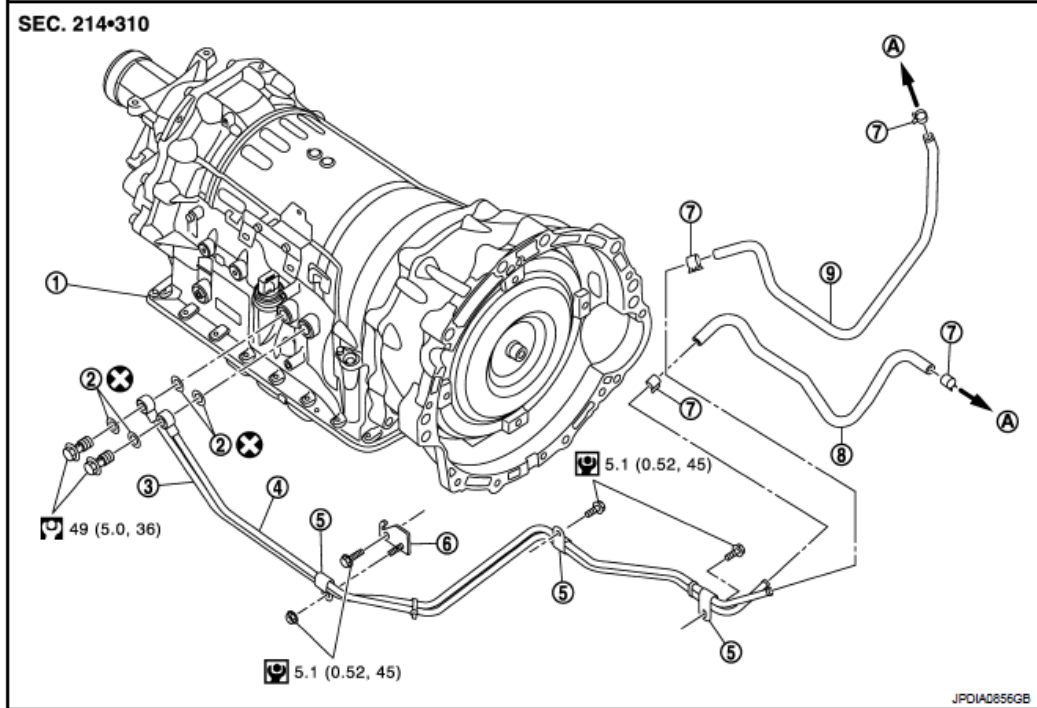
Note the following, and install in the reverse order of removal.

- CAUTION:**
- Be careful not to be crushed or blocked by folding or bending the hose when installing the air breather hose.
 - Be sure to insert it fully until its end reaches the radius curve end when inserting the air breather hose to the air breather tube.
 - Be sure to insert it fully until its end reaches the stop when inserting the air breather hose to the air breather box.
 - Install the air breather hose to the air breather box so that the paint mark is facing backward.
 - Ensure the clips are securely installed to the brackets when installing the air breather hose to the brackets.

FLUID COOLER SYSTEM

Exploded View

Symbol	Description
	N·m (kg-m, ft-lb)
	N·m (kg-m, in-lb)
	Always replace after disassembly.



- | | | |
|--------------------------|----------------------------|----------------------------|
| 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 | | |

Fig. 92: Exploded View Of Fluid Cooler System With Torque Specifications
 Courtesy of NISSAN MOTOR CO., U.S.A.

Refer to "COMPONENTS" for symbols in the figure.

Removal and Installation

REMOVAL

1. Remove the air cleaner case (LH). Refer to "EXPLODED VIEW".
2. Remove the engine cover (front). Refer to "EXPLODED VIEW".
3. Remove the floor under cover with a power tool. Refer to "ENGINE UNDER COVER : EXPLODED VIEW".
4. Remove the A/T fluid cooler hose A and A/T fluid cooler hose B.
5. Remove the exhaust mounting bracket with power tool. Refer to "EXPLODED VIEW".
6. Remove the A/T fluid cooler tube mounting bolts and bracket.
7. Remove the band fixing two A/T fluid cooler tubes.

8. Remove the stabilizer clamp from the front suspension member. Refer to "**EXPLODED VIEW**".
9. Remove the lower mounting nuts for the engine mounting insulators (RH and LH). Refer to "**EXPLODED VIEW**".
10. Set a jack under the engine to lift it to the position where the A/T fluid cooler tube can be removed.

CAUTION:

- Never set a jack on the engine oil pan.
- Never pull the harnesses, hoses, etc. excessively.

11. Remove the A/T fluid cooler tubes one at a time from the vehicle.

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

12. Plug up opening such as the A/T fluid cooler tube holes.

INSTALLATION

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

CAUTION: Never reuse copper washers.

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

A/T FLUID COOLER HOSES REFERENCE CHART

Hose name	Hose end	Paint mark	Position of hose clamp ⁽¹⁾
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

(1) 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

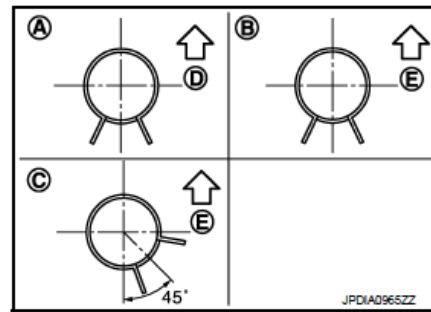


Fig. 93: Identifying Hose Clamps Installing Position

Courtesy of NISSAN MOTOR CO., U.S.A.

- When installing the hose clamps center line of each hose clamp tab should be positioned as shown in the figure.
- Insert the A/T fluid cooler hoses according to dimension "L" described below.

A/T FLUID COOLER HOSES DIMENSION L REFERENCE CHART

(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).]

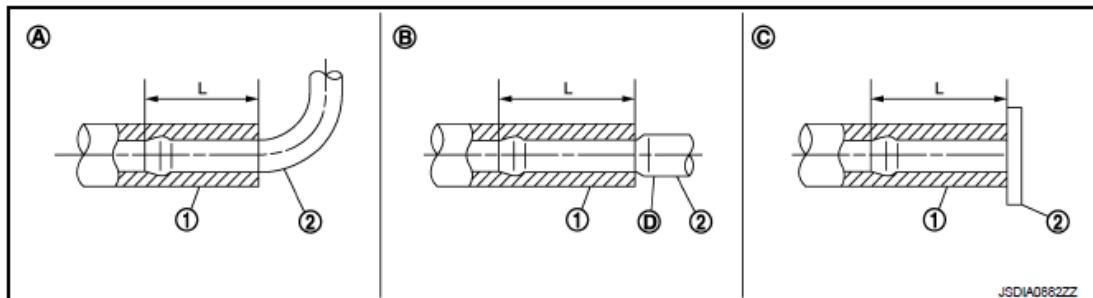


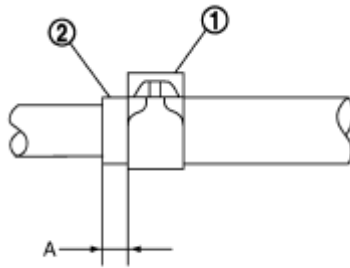
Fig. 94: Inserting A/T Fluid Cooler Hoses According To Dimension L

Courtesy of NISSAN MOTOR CO., U.S.A.

- Set the hose clamps (1) at the both ends of A/T fluid cooler hoses (2) with dimension "A" from the hose edge.

Dimension "A" : 5 - 9 mm (0.20 - 0.35 in)

- The hose clamp should not interfere with the bulge of fluid cooler tube.



SCIAB123E

Fig. 95: Setting Hose Clamps At Both Ends Of A/T Fluid Cooler Hoses With Dimension A From Hose Edge

Courtesy of NISSAN MOTOR CO., U.S.A.

Inspection and Adjustment

INSPECTION AFTER INSTALLATION

Check A/T fluid leakage.

ADJUSTMENT AFTER INSTALLATION

Adjust A/T fluid level. Refer to "ADJUSTMENT".

UNIT REMOVAL AND INSTALLATION

TRANSMISSION ASSEMBLY

Exploded View

Symbol	Description
	N·m (kg-m, ft-lb)
	N·m (kg-m, in-lb)
	Always replace after disassembly.

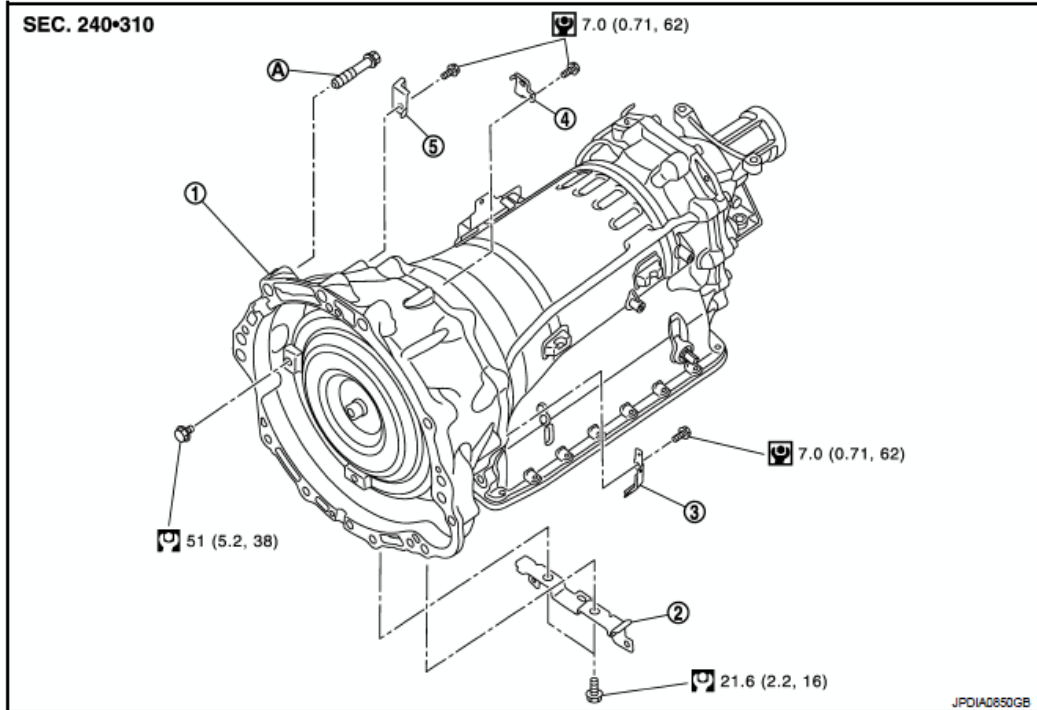


Fig. 96: Exploded View Of Transmission Assembly With Torque Specifications
 Courtesy of NISSAN MOTOR CO., U.S.A.

Refer to "COMPONENTS" for symbols in the figure.

Removal and Installation

REMOVAL

CAUTION:

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

1. Shift the selector lever to "P" position, and then release the parking brake.
2. Disconnect the battery cable from the negative terminal.
3. Remove the control rod from the A/T shift selector assembly. Refer to "EXPLODED VIEW".
4. Remove the engine cover (front and rear). Refer to "EXPLODED VIEW".
5. Separate the propeller shaft assembly. Refer to "EXPLODED VIEW".

6. Remove the manual lever from the A/T assembly. Refer to "**EXPLODED VIEW**".
7. Remove the floor under cover with a power tool. Refer to "**ENGINE UNDER COVER : EXPLODED VIEW**".
8. Remove the suspension member stay. Refer to "**EXPLODED VIEW**".
9. Remove the exhaust mounting bracket with power tool. Refer to "**EXPLODED VIEW**".
10. Remove the crankshaft position sensor (POS) from the A/T assembly. Refer to "**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.

11. Remove the starter motor. Refer to "**EXPLODED VIEW**".
12. Remove the rear plate cover. Refer to "**EXPLODED VIEW**".
13. Turn the crankshaft, and remove the tightening bolts for drive plate and torque converter.

CAUTION: When turning the crankshaft, turn it clockwise as viewed from the front of the engine.

14. Remove the A/T fluid cooler tubes from the A/T assembly. Refer to "**EXPLODED VIEW**".
15. Plug up openings such as the A/T fluid cooler tube holes.
16. Support the A/T assembly with a transmission jack.

CAUTION: Be careful not to allow it to collide against the drain plug and overflow plug when setting the transmission jack.

NOTE:

Be placing wooden block between oil pan (upper) and front suspension member, the removal of A/T assembly from engine becomes easier.

17. Remove the rear engine mounting member and engine mounting insulator (rear) with a power tool. Refer to "**EXPLODED VIEW**".
18. Disconnect the A/T assembly connector.
19. Remove the harness and brackets.
20. Remove the bolts fixing A/T assembly to the engine with a power tool.
21. Remove the air breather hose, air breather box and bracket. Refer to "**EXPLODED VIEW**".
22. Remove the A/T assembly from the engine.

CAUTION:

- Secure torque converter to prevent it from dropping.
- Secure A/T assembly to a transmission jack.

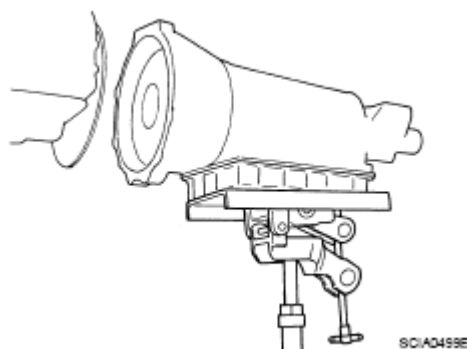


Fig. 97: Securing A/T Assembly To Transmission Jack
Courtesy of NISSAN MOTOR CO., U.S.A.

INSTALLATION

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

- Check fitting of the dowel pins ($\leq$).

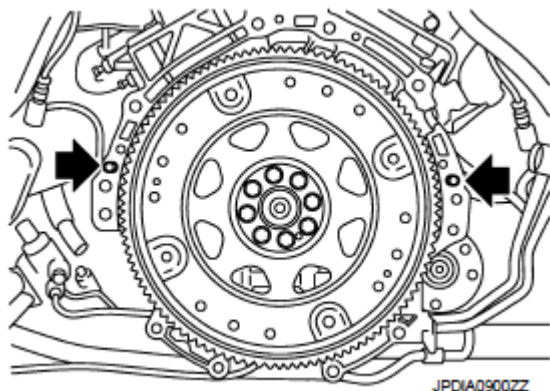


Fig. 98: Checking Fitting Of Dowel Pins
Courtesy of NISSAN MOTOR CO., U.S.A.

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

B : Scale
 C : Straightedge

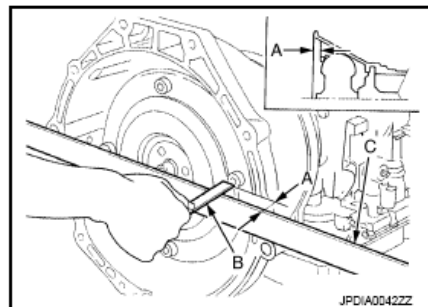


Fig. 99: Checking Dimension A

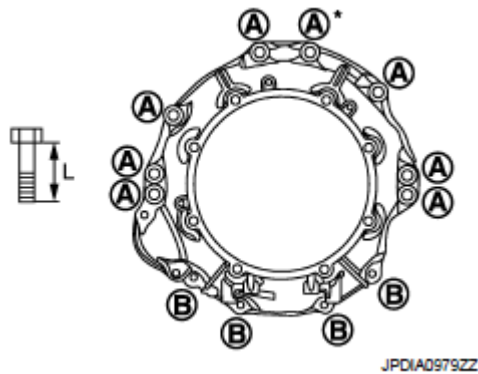
Courtesy of NISSAN MOTOR CO., U.S.A.

Dimension "A" : Refer to "**TORQUE CONVERTER**".

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

A/T ASSEMBLY TO ENGINE FIXING BOLTS REFERENCE CHART

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

**Fig. 100: Identifying A/T Assembly To Engine Fixing Bolts**

Courtesy of NISSAN MOTOR CO., U.S.A.

*: Tightening the bolt with bracket.

- Align the positions of tightening bolts for drive plate with those of the torque converter, and temporarily tighten the bolts. Then, tighten the bolts with the specified torque.

CAUTION:

- When turning crankshaft, turn it clockwise as viewed from the front of the engine.
- When tightening the tightening bolts for the torque converter after fixing the crankshaft pulley bolts, be sure to confirm the tightening torque of the crankshaft pulley mounting bolts. Refer to "**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

INSPECTION AFTER INSTALLATION

- Check A/T fluid leakage.
- Check A/T position. Refer to "**INSPECTION AND ADJUSTMENT**".

ADJUSTMENT AFTER INSTALLATION

- Adjust A/T fluid level. Refer to "**ADJUSTMENT**".
- Adjust A/T position. Refer to "**INSPECTION AND ADJUSTMENT**".

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

General Specification

GENERAL SPECIFICATION

Transmission model code number		1XJ9E
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 NISSAN new vehicle limited warranty.		
(1) Refer to " <u>FOR NORTH AMERICA : FLUIDS AND LUBRICANTS</u> " (For North America), " <u>FOR MEXICO : FLUIDS AND LUBRICANTS</u> " (For Mexico).		
(2) The fluid capacity is the reference value.		

Vehicle Speed at Which Gear Shifting Occurs

VEHICLE SPEED AT WHICH GEAR SHIFTING OCCURS

		Unit: km/h (MPH)
	Throttle position	

2010 Nissan 370Z

2010 TRANSMISSION Transaxle & Transmission (7AT: RE7R01A) - 370Z

Gear position	Full throttle	Half throttle
D1 --> D2	50 - 54 (32 - 33)	38 - 42 (24 - 26)
D2 --> D3	79 - 87 (50 - 54)	65 - 73 (41 - 45)
D3 --> D4	124 - 134 (78 - 83)	94 - 104 (59 - 64)
D4 --> D5	181 - 191 (113 - 118)	139 - 149 (87 - 92)
D5 --> D6	250 - 260 (156 - 161)	182 - 192 (114 - 119)
D6 --> D7	250 - 260 (156 - 161)	214 - 224 (133 - 139)
D7 --> D6	240 - 250 (150 - 155)	169 - 179 (105 - 111)
D6 --> D5	240 - 250 (150 - 155)	139 - 149 (87 - 92)
D5 --> D4	171 - 181 (107 - 112)	69 - 79 (43 - 49)
D4 --> D3	109 - 119 (68 - 73)	37 - 47 (23 - 29)
D3 --> D2	52 - 60 (33 - 37)	10 - 18 (7 - 11)
D2 --> D1	8 - 12 (5 - 7)	5 - 9 (4 - 5)

- At half throttle, the accelerator opening is 4/8 of the full opening.

Vehicle Speed at Which Lock-up Occurs/Releases**VEHICLE SPEED AT WHICH LOCK-UP OCCURS/RELEASES**

Unit: km/h (MPH)		
Throttle position	Vehicle speed	
	Lock-up ON	Lock-up OFF
Closed throttle	36 - 44 (23 - 27)	33 - 41 (21 - 25)
Half throttle	64 - 72 (40 - 44)	61 - 69 (38 - 42)

- At closed throttle, the accelerator opening is less than 1/8 condition. (Closed throttle position signal OFF)
- At half throttle, the accelerator opening is 4/8 of the full opening.

Stall Speed**STALL SPEED REFERENCE CHART**

Stall speed	2,475 - 2,775 rpm
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Torque Converter**TORQUE CONVERTER REFERENCE CHART**

Dimension between end of converter housing and torque converter	25.0 mm (0.98 in)
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