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DIAGNOSIS AND REPAIR WORK FLOW

[TRANSFER] < BASIC INSPECTION > BASIC INSPECTION Α DIAGNOSIS AND REPAIR WORK FLOW Work Flow (GT-R certified NISSAN dealer) INFOID:0000000011490256 В DETAILED FLOW 1.INTERVIEW FROM THE CUSTOMER Clarify customer complaints before inspection. First of all, reproduce symptoms, and understand them fully. Ask customer about his/her complaints carefully. Check symptoms by driving vehicle with customer, if neces-DLN sary. **CAUTION:** Customers are not professional. Never guess easily like "maybe the customer means that...," or "maybe the customer mentions this symptom". Е >> GO TO 2. 2 .CHECK AWD WARNING LAMP F Start the engine and drive at 30 km/h (19 MPH) or more for approximately 1 minute. Does AWD warning lamp turn ON? YES >> GO TO 3. NO >> GO TO 6. 3.PERFORM SELF-DIAGNOSIS Н (P)With CONSULT 1. Perform self-diagnosis for "ALL MODE AWD/4WD". 2. Check malfunction detected by self-diagnosis. 3. Erase self-diagnostic results for "ALL MODE AWD/4WD". >> GO TO 4. f 4.CHECK TERMINALS AND HARNESS CONNECTORS Check pin terminals for damage or loose connection with harness connector. >> GO TO 5. 5.CHECK SYMPTOM REPRODUCTION L (P)With CONSULT Perform DTC reproduction procedure for the error system. Is any error detected? YES >> GO TO 2. NO >> GO TO 6. N 6. PERFORM SYMPTOM DIAGNOSIS Perform the symptom diagnosis for each system. Is any malfunction present? YES >> GO TO 2. NO >> GO TO 7. Р 7. FINAL CHECK (P)With CONSULT Check input/output signal standard of "ALL MODE AWD/4WD". Is the input/output the standard value? YES >> INSPECTION END NO >> GO TO 2.

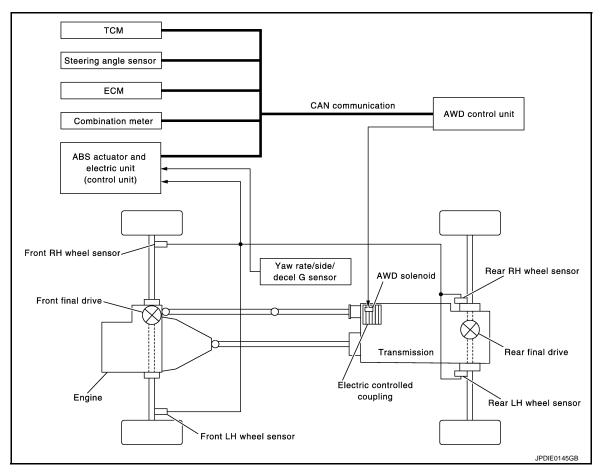
SYSTEM DESCRIPTION

AWD SYSTEM

System Diagram (GT-R certified NISSAN dealer)

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CONTROL DIAGRAM



System Description (GT-R certified NISSAN dealer)

INFOID:0000000011490258

DESCRIPTION

- AWD control unit controls distribution of drive torque between rear-wheel drive (0:100) and 4-wheel drive (50:50) conditions according to road conditions.
- AWD control unit controls fix the drive torque distribution for front and rear wheels to stabilize the start-up on icv roads.
- Makes possible stable driving, with no wheel spin, on snowy roads or other slippery surfaces.
- Via each relevant sensor, AWD control unit judges road conditions and the vehicle cornering condition and distributes appropriate torques to the front wheel to prevent the tight-corner braking phenomenon, as well as to improve steering stability in a curve and vehicle stability during acceleration in a straight line and high speed driving.
- When set-up switch (transmission) is pressed down for 4 seconds while engine running, it enters to tight-corner phenomenon relieve mode and gives temporarily rear-wheel drive condition. Normal 4-wheel drive condition is recovered if the switch is pressed down for 4 seconds again. When the mode is being switched, SAVE mode lamp of transmission blinks once.

NOTE:

- Tight-corner braking phenomenon relieve mode is activated only when steering wheel is turned largely at low speed.
- The tight-corner braking phenomenon relieve mode is canceled automatically at following conditions:
- Transmission is in R mode.
- Transmission is in SAVE mode under VDC-R OFF.

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- Ignition switch is OFF.
- It transmits/receives each signal from the following AWD control unit via CAN communication line.

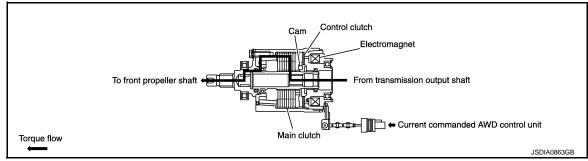
Component parts	Function		
ABS actuator and electric unit (control unit)	This part mainly transmits the following signals to AWD control unit via CAN communication. • Vehicle speed signal (ABS) • Stop lamp switch signal (brake signal) • Yaw rate sensor signal • Side G sensor signal • Decel G sensor signal • VDC-R mode signal		
ECM	This part mainly transmits the following signals to AWD control unit via CAN communicat • Accelerator pedal position signal • Engine speed signal		
ТСМ	This part mainly transmits the following signals to AWD control unit via CAN communication Transmission oil temperature signal SAVE mode control signal		
Combination meter	Transmits conditions of parking brake switch to AWD control unit via CAN communication.		
Steering angle sensor	Transmits the steering angle sensor signal to AWD control unit via CAN communication.		

NOTE:

- When driving, if there is a large difference between front and rear wheel speed which continues for a long time, fluid temperature of drive system parts becomes too high and AWD warning lamp blinks quickly. (When AWD warning lamp blinks, vehicle changes to rear-wheel drive conditions.) Also, optional distribution of torque sometimes becomes rigid before lamp blinks quickly, but it is not a malfunction.
- If AWD warning lamp is blinking quickly, stop vehicle and allow it to idle for some time. Blinking will stop and AWD system will be restored.
- When driving, AWD warning lamp may blink slowly if there is a significant difference in diameter of the tires.
 At this time, vehicle performance is not fully available and cautious driving is required. (Continues until the engine is turned OFF.)
- If the warning lamp blinks slowly during driving but remains OFF after the engine is restarted, the system is normal. If it again blinks slowly after driving for some time, vehicle must be inspected.
- While the AWD warning lamp is blinking or illuminating, the vehicle enters rear-wheel drive condition or weak 4-wheel drive condition.

OPERATION PRINCIPLE

ELECTRIC CONTROLLED COUPLING



- 1. AWD control unit supplies command current to the electric controlled coupling (AWD solenoid).
- 2. Control clutch is engaged by electromagnet and torque is detected in control clutch.
- 3. The cam operates in response to control clutch torque and applies pressure to main clutch.
- 4. Main clutch transmits torque to front wheels according to pressing force.

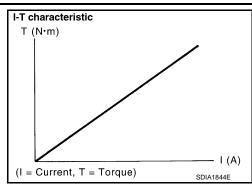
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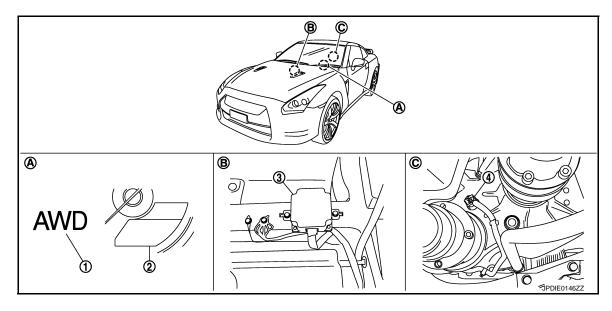
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• Torques transmitted to the front wheel are determined according to the command current.



Component Parts Location (GT-R certified NISSAN dealer)

INFOID:0000000011490259



- 1. AWD warning lamp
- Information display
- 3. AWD control unit

- 4. AWD solenoid connectorA. Combination meter
- B. Front RH seat under
- C. Front side of the transmission

Component Description (GT-R certified NISSAN dealer)

INFOID:0000000011490260

Component	Reference/Function
AWD control unit	DLN-11, "Description (GT-R certified NISSAN dealer)"
Wheel sensor	BRC-39, "Description (GT-R certified NISSAN dealer)"
AWD solenoid valve	DLN-13, "Description (GT-R certified NISSAN dealer)"
electric controlled coupling	Transmits driving force to the front final drive.
AWD warning lamp	DLN-22, "Description (GT-R certified NISSAN dealer)"
ABS actuator and electric unit (control unit)	DLN-12, "Description (GT-R certified NISSAN dealer)"
ECM	DLN-16, "Description (GT-R certified NISSAN dealer)"
TCM	DLN-17, "Description (GT-R certified NISSAN dealer)"
Combination meter	Transmits condition of parking brake switch to AWD control unit via CAN communication.
Steering angle sensor	BRC-85, "Description (GT-R certified NISSAN dealer)"
Vehicle information display	DLN-39, "Description (GT-R certified NISSAN dealer)"

DIAGNOSIS SYSTEM (AWD CONTROL UNIT)

< SYSTEM DESCRIPTION >

[TRANSFER]

DIAGNOSIS SYSTEM (AWD CONTROL UNIT)

CONSULT Function (GT-R certified NISSAN dealer)

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FUNCTION

CONSULT can display each diagnostic item using the diagnostic test modes as follows.

Diagnostic test mode	Function	
ECU Identification	AWD control unit part number can be read.	
Self Diagnostic Result	Self-diagnostic results can be read and erased quickly.	
Data Monitor	Input/Output data in the AWD control unit can be read.	
Active Test	Diagnostic Test Mode in which CONSULT drives some actuators apart from the AWD control unit and also shifts some parameters in a specified range.	

ECU IDENTIFICATION

AWD control unit part number can be read.

SELF - DIAGNOSTIC RESULT

Before performing the self-diagnosis, start the engine and drive vehicle at 30 km/h (19 MPH) or more for approximately 1 minute.

Display Item List

Refer to DLN-31, "DTC Index".

How to Erase Self-Diagnostic Results

Before erasing DTC memory, start the engine and drive at 30 km/h (19 MPH) or more for approximately 1 minute. Check that ABS warning lamp turns OFF.

NOTE:

When AWD warning lamp is ON with system malfunction of DTC "C1203", run the vehicle at 30 km/h (19MPH) or more for a minute and check that ABS warning lamp is turned OFF. Then turn ignition switch OFF, and start the engine again. Otherwise AWD warning lamp may not turned OFF even if it is normal.

DATA MONITOR

Display Item List

NOTE:

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

Monitor item (Unit)	Remarks
STOP LAMP SW [On/Off]	Stop lamp switch signal status via CAN communication line is displayed.
ENG SPEED SIG [Run/Stop]	Engine status is displayed.
ETS ACTUATOR [On/Off]	Operating condition of AWD actuator relay (integrated in AWD control unit) is displayed.
4WD WARN LAMP [On/Off]	Control status of AWD warning lamp is displayed.
4WD MODE SW [##]	Mode switch is not equipped, but displayed.
4WD MODE MON [AUTO]	Control status of AWD is displayed.
DIS-TIRE MONI [mm]	Improper size tire installed condition is displayed.
P BRAKE SW [On/Off]	Parking brake switch signal status via CAN communication line is displayed.
BATTERY VOLT [V]	Power supply voltage for AWD control unit
THRTL POS SEN [%]	Throttle opening status is displayed.
ETS SOLENOID [A]	Monitored value of current at AWD solenoid
FR RH SENSOR [km/h] or [mph]	Wheel speed calculated by front RH wheel sensor signal is displayed.
FR LH SENSOR [km/h] or [mph]	Wheel speed calculated by front LH wheel sensor signal is displayed.
RR RH SENSOR [km/h] or [mph]	Wheel speed calculated by rear RH wheel sensor signal is displayed.
RR LH SENSOR [km/h] or [mph]	Wheel speed calculated by rear LH wheel sensor signal is displayed.

DIAGNOSIS SYSTEM (AWD CONTROL UNIT)

< SYSTEM DESCRIPTION >

[TRANSFER]

ACTIVE TEST

Description

Use this mode to determine and identify the details of a malfunction based on self-diagnostic results or data monitor. AWD control unit gives drive signal to actuator with receiving command from CONSULT to check operation of actuator.

Test Item

Test item	Condition	Description	
ETS S/V (Detects AWD solenoid)	Vehicle stopped Engine running No DTC detected	Change command current value to AWD solenoid, and then change driving mode. (Monitor value is normal if it is within approx. ±10% of command value.) • Qu: Increase current value in increments of 0.2 A • Qd: Decrease current value in increments of 0.2 A • UP: Increase current value in increments of 0.02 A • DOWN: Decrease current value in increments of 0.02 A	

CAUTION:

Never energize continuously for a long time.

C1201 AWD CONTROL UNIT

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER]

DTC/CIRCUIT DIAGNOSIS

C1201 AWD CONTROL UNIT

Description (GT-R certified NISSAN dealer)

INFOID:0000000011490262

- Controls driving force distribution by signals from each sensor from rear wheel driving mode (0:100) to 4wheel driving mode (50:50).
- If malfunction occurs in AWD system, AWD control unit activates rear-wheel drive condition or weak 4-wheel drive condition by fail-safe function.

DTC Logic (GT-R certified NISSAN dealer)

INFOID:0000000011490263

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1201	CONTROLLER FAILURE	Malfunction has occurred inside AWD control unit.	Internal malfunction of AWD control unit

DTC CONFIRMATION PROCEDURE

1.DTC REPRODUCTION PROCEDURE

(P)With CONSULT

- 1. Turn the ignition switch OFF to ON.
- Perform self-diagnosis for "ALL MODE AWD/4WD".

Is DTC "C1201" detected?

YES >> Proceed to diagnosis procedure. Refer to <u>DLN-11, "Diagnosis Procedure (GT-R certified NISSAN dealer)"</u>.

NO >> INSPECTION END

Diagnosis Procedure (GT-R certified NISSAN dealer)

INFOID:0000000011490264

1.PERFORM SELF-DIAGNOSIS

(P)With CONSULT

NO

- 1. Erase self-diagnostic results for "ALL MODE AWD/4WD".
- 2. Turn the ignition switch OFF, and then wait 10 seconds or more.
- 3. Perform self-diagnosis for "ALL MODE AWD/4WD".

Is DTC "C1201" detected?

YES >> Replace AWD control unit. Refer to DLN-44, "Exploded View (GT-R certified NISSAN dealer)".

>> Check AWD control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

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C1203 ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER]

C1203 ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

Description (GT-R certified NISSAN dealer)

INFOID:0000000011490265

Transmits the following signals via CAN communication to AWD control unit.

- Vehicle speed signal
- Stop lamp switch signal (brake signal)
- · Yaw rate sensor signal
- Side G sensor signal
- · Decel G sensor signal

DTC Logic (GT-R certified NISSAN dealer)

INFOID:0000000011490266

DTC DETECTION LOGIC

DTC	Display items	Malfunction detected condition	Possible cause
C1203	ABS SYSTEM	Malfunction related to wheel sensor has been detected by ABS actuator and electric unit (control unit).	ABS malfunction Malfunction of ABS actuator and electric unit (control unit) Vehicle speed signal error

DTC CONFIRMATION PROCEDURE

1. DTC REPRODUCTION PROCEDURE

(P)With CONSULT

- 1. Start the engine and drive at 30 km/h (19 MPH) or more for approximately 1 minute.
- 2. Perform self-diagnosis for "ALL MODE AWD/4WD".

Is DTC "C1203" detected?

YES >> Proceed to diagnosis procedure. Refer to <u>DLN-12</u>, "<u>Diagnosis Procedure (GT-R certified NISSAN</u> dealer)".

NO >> INSPECTION END

Diagnosis Procedure (GT-R certified NISSAN dealer)

INFOID:0000000011490267

${f 1}$.PERFORM ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) SELF-DIAGNOSIS

(I) With CONSULT

Perform self-diagnosis for "ABS".

Is any DTC detected?

YES >> Check the DTC.

NO >> GO TO 2.

2. PERFORM SELF-DIAGNOSIS

(P)With CONSULT

- Erase self-diagnostic results for "ALL MODE AWD/4WD".
- Start the engine and drive vehicle at 30 km/h (19 MPH) or more for approximately 1 minute.
- Make sure that ABS warning lamp turns OFF.
- 4. Perform self-diagnosis for "ALL MODE AWD/4WD".

Is DTC "C1203" detected?

YES >> Replace AWD control unit. Refer to <u>DLN-44</u>, "<u>Exploded View (GT-R certified NISSAN dealer)</u>".

NO >> Check AWD control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

C1204 AWD SOLENOID

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER]

C1204 AWD SOLENOID

Description (GT-R certified NISSAN dealer)

INFOID:0000000011490268

Controls electric controlled coupling by command current from AWD control unit.

DTC Logic (GT-R certified NISSAN dealer)

INFOID:0000000011490269

DTC DETECTION LOGIC

DTC	Display items	Malfunction detected condition	Possible cause
C1204	4WD SOLENOID	Malfunction related to AWD solenoid has been detected.	Internal malfunction of electric controlled coupling

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DTC CONFIRMATION PROCEDURE

1.DTC REPRODUCTION PROCEDURE

(I) With CONSULT

Turn the ignition switch OFF to ON.

2. Perform self-diagnosis for "ALL MODE AWD/4WD".

Is DTC "C1204" detected?

YES >> Proceed to diagnosis procedure. Refer to <u>DLN-13</u>, "<u>Diagnosis Procedure (GT-R certified NISSAN dealer)</u>".

NO >> INSPECTION END

Diagnosis Procedure (GT-R certified NISSAN dealer)

INFOID:0000000011490270

1. CHECK AWD SOLENOID POWER SUPPLY

- Turn the ignition switch OFF.
- 2. Disconnect AWD control unit harness connector.
- Check the voltage between AWD control unit harness connector and ground.

AWD co	AWD control unit		Voltage
Connector	Terminal		voltage
B213	9	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 2.

NO

>> Perform the trouble diagnosis for power supply circuit. Refer to <u>DLN-20, "Diagnosis Procedure (GT-R certified NISSAN dealer)"</u>.

2.CHECK AWD SOLENOID GROUND

Check the continuity between AWD control unit harness connector and ground.

AWD co	AWD control unit		Continuity	
Connector	Terminal		Continuity	
B213	10	Ground	Existed	
DZ 13	11	Giodila	LAISIEU	

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Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

3.CHECK AWD SOLENOID CIRCUIT

- Disconnect AWD solenoid harness connector.
- Check the continuity between AWD control unit harness connector and AWD solenoid harness connector.

AWD co	ntrol unit	AWD solenoid		Continuity
Connector	Terminal	Connector	Terminal	Continuity
B213	1	B123	1	Existed
D213	2	D123	2	LAISIGU

3. Check the continuity between AWD control unit harness connector and the ground.

AWD co	AWD control unit		Continuity	
Connector	Terminal	_	Continuity	
B213	1	Cround	Not existed	
D213	2	Ground	Not existed	

4. Check the continuity between AWD solenoid harness connector and the ground.

AWD s	olenoid		Continuity	
Connector	Terminal		Continuity	
B123	1	Ground	Not existed	
B123	2	Giodila	Not existed	

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

4. CHECK AWD SOLENOID

Check the resistance between AWD solenoid harness connector terminals. Refer to <u>DLN-14</u>, "Component Inspection (GT-R certified NISSAN dealer)".

Is the inspection result normal?

YES >> GO TO 5.

NO >> AWD solenoid is malfunctioning. Replace electric controlled coupling. Refer to <u>TM-403</u>, "<u>Exploded View (GT-R certified NISSAN dealer)</u>".

5. CHECK TERMINALS AND HARNESS CONNECTORS

- 1. Check AWD control unit pin terminals for damage or loose connection with harness connector.
- 2. Check AWD solenoid pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> Replace AWD control unit. Refer to DLN-44, "Exploded View (GT-R certified NISSAN dealer)".

NO >> Repair or replace error-detected parts.

Component Inspection (GT-R certified NISSAN dealer)

INFOID:0000000011490271

1. CHECK AWD SOLENOID

- Turn the ignition switch OFF.
- 2. Disconnect AWD solenoid harness connector.
- 3. Check the resistance between AWD solenoid harness connector terminals.

AWD s	olenoid	Resistance (Approx.)
Terminal		Resistance (Approx.)
1	2	1.75 Ω

Is the inspection result normal?

YES >> INSPECTION END

NO >> AWD solenoid is malfunctioning. Replace electric controlled coupling. Refer to <u>TM-403</u>, "Exploded <u>View (GT-R certified NISSAN dealer)"</u>.

C1205 AWD ACTUATOR RELAY

	01200	AND ADIOAION NELA	•	
< DTC/CIRCU	IT DIAGNOSIS >		[TRANSFER]	
C1205 AW	D ACTUATOR RE	LAY		Λ
Description	(GT-R certified NISS	SAN dealer)	INFOID:000000011490272	\wedge
	is supplied with voltage by (GT-R certified NISS	the internal circuit of AWD control AN dealer)	unit.	В
DTC DETECT	TION LOGIC			С
DTC	Display item	Malfunction detected condition	Possible cause	

DTC	Display item	Malfunction detected condition	Possible cause
C1205	4WD ACTUATOR RLY	Malfunction has been detected from AWD actuator relay integrated with AWD control unit, or malfunction related to AWD solenoid has been detected.	Internal malfunction of AWD control unit
	RMATION PROCEDUR		
.DTC REPR	ODUCTION PROCEDUR	RE	
With CONS	SULT gnition switch OFF to ON.		

2. Perform self-diagnosis for "ALL MODE AWD/4WD".

Is DTC "C1205" detected?

YES >> Proceed to diagnosis procedure. Refer to <u>DLN-15</u>, "<u>Diagnosis Procedure (GT-R certified NISSAN dealer)</u>".

NO >> INSPECTION END

Diagnosis Procedure (GT-R certified NISSAN dealer)

INFOID:0000000011490274

1.PERFORM SELF-DIAGNOSIS

With CONSULT

NO

- 1. Erase self-diagnostic results for "ALL MODE AWD/4WD".
- 2. Turn ignition switch OFF, and wait 10 seconds or more.
- 3. Perform self-diagnosis for "ALL MODE AWD/4WD".

Is DTC "C1205" detected?

YES >> Replace AWD control unit. Refer to <u>DLN-44</u>, "Exploded View (GT-R certified NISSAN dealer)".

>> Check AWD control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

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[TRANSFER]

C1210 ECM

Description (GT-R certified NISSAN dealer)

INFOID:0000000011490275

Transmits the following signals via CAN communication to AWD control unit.

- Accelerator pedal position signal
- Engine speed signal

DTC Logic (GT-R certified NISSAN dealer)

INFOID:0000000011490276

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
C1210	ENGINE SIGNAL 1	Malfunction related to engine signal has been detected.	Malfunction of engine control system

DTC CONFIRMATION PROCEDURE

1.DTC REPRODUCTION PROCEDURE

(P)With CONSULT

- 1. Start the engine. Drive the vehicle for a while.
- 2. Perform AWD control unit self-diagnosis for "ALL MODE AWD/4WD".

Is DTC "C1210" detected?

YES >> Proceed to diagnosis procedure. Refer to <u>DLN-16</u>, "<u>Diagnosis Procedure (GT-R certified NISSAN dealer)</u>".

NO >> INSPECTION END

Diagnosis Procedure (GT-R certified NISSAN dealer)

INFOID:0000000011490277

1.PERFORM ECM SELF-DIAGNOSIS

(I) With CONSULT

Perform self-diagnosis for "ENGINE".

Is any DTC detected?

YES >> Check the DTC.

NO >> GO TO 2.

2.PERFORM SELF-DIAGNOSIS

(P)With CONSULT

- 1. Erase self-diagnostic results for "ALL MODE AWD/4WD".
- Turn the ignition switch OFF.
- 3. Start the engine. Drive the vehicle for a while.
- 4. Make sure that malfunction indicator lamp (MIL) turns OFF.
- 5. Stop the vehicle. Perform self-diagnosis for "ALL MODE AWD/4WD".

Is DTC "C1210" detected?

YES >> Replace AWD control unit. Refer to <u>DLN-44</u>, "<u>Exploded View (GT-R certified NISSAN dealer)</u>".

NO >> Check AWD control unit pin terminals for damage or loose connection with harness connector. If any items are damaged, repair or replace damaged parts.

P1826 TRANSFER FLUID TEMPERATURE

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER]

P1826 TRANSFER FLUID TEMPERATURE

Description (GT-R certified NISSAN dealer)

INFOID:0000000011490278

TCM transmits a transmission oil temperature sensor signal to AWD control unit via CAN communication.

DTC Logic (GT-R certified NISSAN dealer)

INFOID:0000000011490279

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
P1826	OIL TEMP SEN	Malfunction of transmission oil temperature sensor signal has been detected.	Malfunction of transmission fluid temperature sensor or transmission fluid temperature sensor circuit.

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DTC CONFIRMATION PROCEDURE

1. DTC REPRODUCTION PROCEDURE

(I) With CONSULT

1. Turn the ignition switch ON.

- Erase self-diagnostic results for "ALL MODE AWD/4WD".
- 3. Start the engine and run idle for 8 minutes or more.
- Perform self-diagnosis for "ALL MODE AWD/4WD".

Is DTC "P1826" detected?

YES >> Proceed to diagnosis procedure. Refer to <u>DLN-17, "Diagnosis Procedure (GT-R certified NISSAN dealer)".</u>

NO >> INSPECTION END.

CAUTION:

If "CAN COMM CIRCUIT [U1000]" is detected, first perform the trouble diagnosis for CAN communication line. Refer to DLN-18, "Diagnosis Procedure (GT-R certified NISSAN dealer)".

Diagnosis Procedure (GT-R certified NISSAN dealer)

INFOID:0000000011490280

1.PERFORM TCM SELF-DIAGNOSIS

(P)With CONSULT

Perform self-diagnosis for "TRANSMISSION".

Is any DTC detected?

YES >> Check the DTC.

NO >> Replace AWD control unit. Refer to <u>DLN-44</u>, "<u>Exploded View (GT-R certified NISSAN dealer)</u>".

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[TRANSFER]

U1000 CAN COMM CIRCUIT

Description (GT-R certified NISSAN dealer)

INFOID:0000000011490281

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 error 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 independent). 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 (GT-R certified NISSAN dealer)

INFOID:0000000011490282

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
U1000	CAN COMM CIRCUIT	AWD control unit is not transmitting/receiving CAN communication signal for 2 seconds or more.	CAN communication error Malfunction of AWD control unit

DTC CONFIRMATION PROCEDURE

1. DTC REPRODUCTION PROCEDURE

(P)With CONSULT

- 1. Turn the ignition switch OFF to ON.
- Perform self-diagnosis for "ALL MODE AWD/4WD".

Is DTC "U1000" detected?

YES >> Proceed to diagnosis procedure. Refer to <u>DLN-18</u>, "<u>Diagnosis Procedure (GT-R certified NISSAN dealer)</u>".

NO >> INSPECTION END

Diagnosis Procedure (GT-R certified NISSAN dealer)

INFOID:0000000011490283

Proceed to LAN-15, "Trouble Diagnosis Flow Chart".

U1010 CONTROL UNIT (CAN)

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER]

U1010 CONTROL UNIT (CAN)

Description (GT-R certified NISSAN dealer)

INFOID:0000000011490284

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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 error 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 independent). 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 (GT-R certified NISSAN dealer)

INFOID:0000000011490285

DTC DETECTION LOGIC

DTC	Display item	Malfunction detected condition	Possible cause
U1010	CONTROL UNIT (CAN)	Detecting error during the initial diagnosis of CAN controller of AWD control unit.	Malfunction of AWD control unit

DTC CONFIRMATION PROCEDURE

1.DTC REPRODUCTION PROCEDURE

(P)With CONSULT

- 1. Turn the ignition switch OFF to ON.
- 2. Perform self-diagnosis for "ALL MODE AWD/4WD".

Is DTC "U1010" detected?

YES >> Proceed to diagnosis procedure. Refer to <u>DLN-19</u>, "<u>Diagnosis Procedure (GT-R certified NISSAN dealer)</u>".

NO >> INSPECTION END

Diagnosis Procedure (GT-R certified NISSAN dealer)

INFOID:0000000011490286

1. CHECK AWD CONTROL UNIT

Check AWD control unit harness connector for disconnection and deformation.

Is the inspection result normal?

YES >> Replace AWD control unit. Refer to DLN-44, "Exploded View (GT-R certified NISSAN dealer)".

NO >> Repair or replace damaged parts.

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Revision: 2015 June DLN-19 GT-R

POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER]

POWER SUPPLY AND GROUND CIRCUIT

Description (GT-R certified NISSAN dealer)

INFOID:0000000011490287

Supplies power to AWD control unit.

Diagnosis Procedure (GT-R certified NISSAN dealer)

INFOID:0000000011490288

1. CHECK AWD CONTROL UNIT POWER SUPPLY (1)

- 1. Turn the ignition switch OFF.
- 2. Disconnect AWD control unit harness connector.
- 3. Check the voltage between AWD control unit harness connector and ground.

AWD co	ntrol unit	_	Voltage (Approx.)
Connector	Terminal		voltage (Approx.)
B213	7	Ground	0 V

Turn the ignition switch ON.

CAUTION:

Never start the engine.

5. Check the voltage between AWD control unit harness connector and ground.

AWD co	ntrol unit		Voltage
Connector	Terminal		voltage
B213	7	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 2.

2. CHECK AWD CONTROL UNIT POWER SUPPLY (2)

- Turn the ignition switch OFF.
- Check the 10A fuse (#45).
- 3. Disconnect IPDM E/R harness connector.
- 4. Check the continuity between AWD control unit harness connector and IPDM E/R harness connector.

AWD co	ntrol unit	IPDI	M E/R	Continuity
Connector	Terminal	Connector	Terminal	Continuity
B213	7	E5	25	Existed

Is the inspection result normal?

YES >> Perform the trouble diagnosis for ignition power supply circuit. Refer to <u>PG-37, "Wiring Diagram - IGNITION POWER SUPPLY -"</u>.

NO >> Repair or replace error-detected parts.

3.check awd solenoid power supply (1)

- Turn the ignition switch OFF.
- Disconnect AWD solenoid harness connector.
- 3. Check the voltage between AWD control unit harness connector and ground.

•	AWD co	ntrol unit		Voltage
	Connector	Terminal		voltage
	B213	9	Ground	Battery voltage

Turn the ignition switch ON.

CAUTION:

Never start the engine.

5. Check the voltage between AWD control unit harness connector and ground.

POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER]

AWD co	ntrol unit		Voltage
Connector	Terminal	_	voltage
B213	9	Ground	Battery voltage
	1.	10	

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<u>Is the inspection result normal?</u>

YES >> GO TO 5. NO >> GO TO 4.

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4. CHECK AWD SOLENOID POWER SUPPLY (2)

- 1. Check the 10A fuse (#33).
- 2. Check the harness for open or short between AWD control unit harness connector No.9 terminal and fuse box.

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Is the inspection result normal?

- YES >> Perform the trouble diagnosis for power supply circuit. Refer to <u>PG-6, "Wiring Diagram BAT-TERY POWER SUPPLY -"</u>.
- NO >> Repair or replace error-detected parts.

5. CHECK AWD SOLENOID GROUND

- 1. Turn the ignition switch OFF.
- 2. Check the continuity between AWD control unit harness connector and ground.

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AWD co	ontrol unit		Continuity		
Connector	Terminal	_	Continuity		
B213	10	Ground	Existed		
6213	11	Giouna	LAISIEU		

Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair or replace error-detected parts.

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AWD WARNING LAMP

Description (GT-R certified NISSAN dealer)

INFOID:0000000011490289

- Turns ON when there is a malfunction in AWD system. AWD warning lamp indicates the vehicle is in fail-safe mode and shifting to rear-wheel drive or 4-wheel drive (front-wheels still have some driving torque).
- Also turns ON when ignition switch is turned ON, for the purpose of lamp check. Turns OFF approximately
 for 1 second after the engine starts if system is normal.

AWD WARNING LAMP INDICATION

Condition	AWD warning lamp			
Lamp check	Turns ON when ignition switch is turned ON. Turns OFF approx. 1 second after the engine start.			
AWD system malfunction	ON			
Protection function is activated due to excessive load to electric controlled coupling. (AWD system is not malfunctioning and AWD system changes to rear wheel drive.)	Quick blinking: 2 times/second (Blinking in approx. 1 minute and then turning OFF)			
Large difference in diameter of front/rear tires	Slow blinking: 1 time/2 seconds (Continuing to blink until turning ignition switch OFF)			
Other than above (system normal)	OFF			

CAUTION:

AWD warning lamp also turns ON due to data reception error, CAN communication error etc.

Component Function Check (GT-R certified NISSAN dealer)

INFOID:0000000011490290

1. CHECK AWD WARNING LAMP FUNCTION

- 1. Turn ignition switch ON.
- 2. Make sure that AWD warning lamp lights up.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to diagnosis procedure. Refer to <u>DLN-22, "Diagnosis Procedure (GT-R certified NISSAN</u> dealer)".

Diagnosis Procedure (GT-R certified NISSAN dealer)

INFOID:0000000011490291

1. CHECK POWER SUPPLY AND GROUND CIRCUIT

Perform the trouble diagnosis for power supply and ground circuit. Refer to <u>DLN-20</u>, "<u>Diagnosis Procedure</u> (<u>GT-R certified NISSAN dealer</u>)".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace the error-detected parts.

2.PERFORM SELF-DIAGNOSIS

(P)With CONSULT

Perform self-diagnosis for "ALL MODE AWD/4WD".

Is any DTC detected?

YES >> Check the DTC.

NO >> GO TO 3.

3. CHECK AWD WARNING LAMP SIGNAL

(I) With CONSULT

 Turn the ignition switch ON. CAUTION:

Never start the engine.

2. Check "4WD WARN LAMP" of CONSULT "DATA MONITOR" for "ALL MODE AWD/4WD".

Does the item on "DATA MONITOR" indicate "On"?

Revision: 2015 June DLN-22 GT-R

AWD WARNING LAMP

< DTC/CIRCUIT DIAGNOSIS >

[TRANSFER]

YES >> GO TO 4.

NO >> Replace AWD control unit. Refer to <u>DLN-44</u>, "Exploded View (GT-R certified NISSAN dealer)".

4. CHECK COMBINATION METER POWER SUPPLY CIRCUIT

Perform the trouble diagnosis for combination meter power supply circuit. Refer to <u>MWI-68</u>, <u>"COMBINATION METER: Diagnosis Procedure"</u>.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair or replace the error-detected parts.

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ECU DIAGNOSIS INFORMATION

AWD CONTROL UNIT

Reference Value (GT-R certified NISSAN dealer)

INFOID:0000000011490292

VALUES ON THE DIAGNOSIS TOOL

NOTE:

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

Monitor item	Condition	Value/Status
STOP LAMP SW	Brake pedal: Depressed	On
STOP LAIVIP SVV	Brake pedal: Released	Off
ENG SPEED SIG	Stop	
LING OF LED SIG	Run	
ETS ACTUATOR	Engine stopped (Ignition switch: ON)	Off
E13 ACTUATOR	Engine running	On
4WD WARN LAMP	AWD warning lamp: ON	On
4VVD WARN LAWP	AWD warning lamp: OFF	Off
4WD MODE SW	Always	##
4WD MODE MON	Engine running	AUTO
	Vehicle running with normal size tire installed	0 – 4 mm
DIS-TIRE MONI	Vehicle running with improper size tire installed (Front/rear tire size difference, wear condition)	4 – 8 mm, 8 – mm
P BRAKE SW	On	
P BRAKE SW	Parking brake not operated	Off
BATTERY VOLT	Always	Battery voltage
THRTL POS SEN	When depressing accelerator pedal (Value rises gradually in response to throttle position.)	0 – 100%
ETC COLENOID	Engine running • At idle speed	Approx. 0.000 A
ETS SOLENOID	Engine running • 3,000 rpm or more constant	Approx. 0.000 – 0.500 A*
	Vehicle stopped	0.00 km/h (0.00 mph)
FR RH SENSOR	Vehicle running CAUTION: Check air pressure of tire under standard condition.	Approx. equal to the indication on speedometer (Inside of ±10%)
	Vehicle stopped	0.00 km/h (0.00 mph)
FR LH SENSOR	Vehicle running CAUTION: Check air pressure of tire under standard condition.	Approx. equal to the indication on speedometer (Inside of ±10%)
	Vehicle stopped	0.00 km/h (0.00 mph)
RR RH SENSOR	Vehicle running CAUTION: Check air pressure of tire under standard condition.	Approx. equal to the indication on speedometer (Inside of ±10%)
	Vehicle stopped	0.00 km/h (0.00 mph)
RR LH SENSOR	Vehicle running CAUTION: Check air pressure of tire under standard condition.	Approx. equal to the indication on speedometer (Inside of ±10%)

AWD CONTROL UNIT

< ECU DIAGNOSIS INFORMATION >

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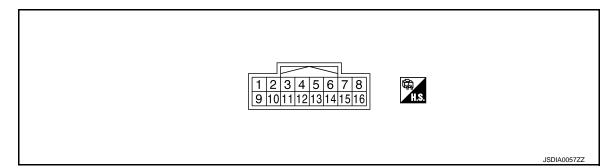
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*: The values are changed by throttle opening and engine speed.

TERMINAL LAYOUT



PHYSICAL VALUES

Terminal No. Description (Wire color) Value (Approx.) Condition Input/ Signal name Output 2.5 V Engine speed: At idle AWD solenoid power sup-1 Output Ground (R) ply 8 V* Engine speed: 3,000 rpm or more constant 0 V Engine speed: At idle 2 Ground AWD solenoid ground (G) Engine speed: 3,000 rpm or more constant 0 V 6 (V) Ignition switch: ON Battery voltage 7 Ground Ignition switch Input (W) Ignition switch: OFF 0 V 8 Input/ CAN-H (L) Output 9 Power supply (AWD sole-Ground Input Always Battery voltage (Y) noid) 10 0 V Ground Ground Always (B) 11 Ground Ground 0 V Always (B) 16 Input/ CAN-L (P) Output

CAUTION:

When using circuit tester to measure voltage for inspection, be sure not to extend forcibly any connector terminals.

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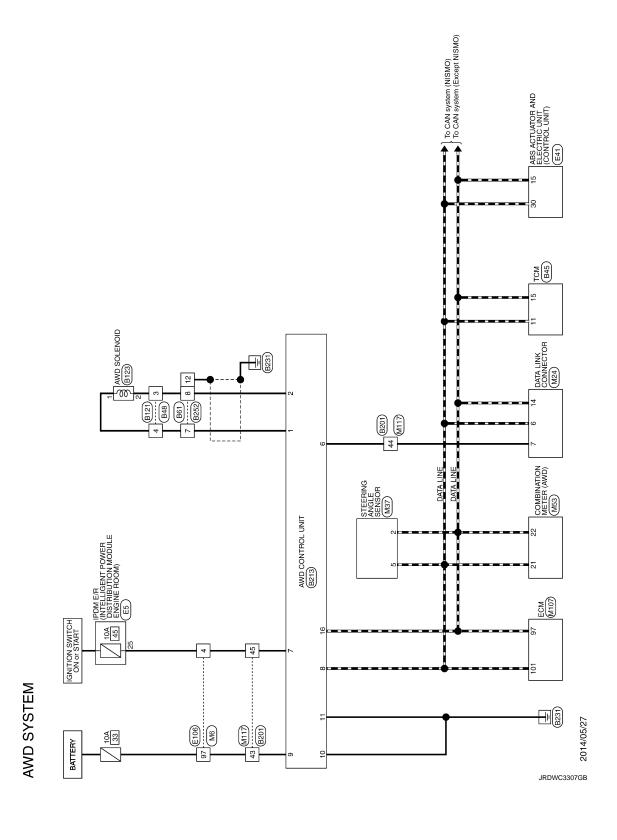
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^{*:} The values are changed by throttle opening and engine speed.

Wiring Diagram - AWD SYSTEM - (GT-R certified NISSAN dealer)

INFOID:0000000011490293



Connector No. 1845	S I EIVI	Connector No. B48	Connector No. B121	Connector No.	B201	_
Iο	TCM	<u>و</u>	و ا	9	WIRE TO WIRE	
Connector Type	RH40FB-RZ8-L-LH-Z	Connector Type RH06FB	Connector Type RH06MB	Connector Type	TH80FW-CS16-TM4	_
1	# 15 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	HS. 6554321	HS 123456	S: E:		1
erminal Color Of	Sional Name (Specification)	nal	Jal	nal	Signal Name [Specification]	
Wire	WEW > Iddits aswood	No. Wire	No. Wire	No.		_
:	GROUND			+		_
а	GROUND	5 B	5 B	8 BG		
Μ	POWER SUPPLY (MEMORY BACK-UP)-3	6 BG .	9	M 6	•	
В	GROUND			10 R		
۵	GROUND		-	+		_
۵	POWER SUPPLY (MEMORY BACK-UP)-1	Connector No. B61	Connector No. B123			-
9	BACK-UP LAMP SIGNAL	Connector Name WIRE TO WIRE	Connector Name AWD SOLENOID	33 BB		
ح ۔	DOWED OFF			34		_
ء ،	LOWEROLL	٦.	٦.	$^{+}$		_
ı ≥	STOP LAMP SWITCH SIGNAL		E	41 GH		_
>	IGNITION SWITCH SIGNAL			43		_
GR	STARTER RELAY SIGNAL	13		44		
BR	AUTO/MANUAL RANGE CHANGE SWITCH I SIGNAL	7 c +	(1 2)	Н		
_	RANGE SENSOR POWER SOURCE 1	12 11 10 9 8 7)	51 SB		_
D]	RANGE SENSOR POWER SOURCE 2			\dashv	•	
G	RANGE SENSOR NO SIGNAL			4		_
>	AUTOMANUAL RANGE CHANGE SWITCH 2 SIGNAL	Ierminal Color Of Signal Name [Specification]	Signal Name [Specification]	+		_
밁>	DANGE SENSOR NO 1 SIGNAL	+	+	6 9		_
g	SAVE MODE SWITCH SIGNAL			╁		_
g		9 8		57 89		_
GR	R MODE SWITCH SIGNAL			64 GR		_
æ				G 69		_
8	PADDLE SHIFTER (SHIFT-UP SWITCH) SIGNAL			70 L		
_		- A 2		71 B		_
۵	RANGE SENSOR NO.4 SIGNAL	8 L		80 L		
GR	RANGE SENSOR NO.5 SIGNAL	9 BG .		81 SB		
g	R MODE LAMP SIGNAL	10 GR .		82 ^		
≥	SHIFT LOCK SOLENOID CONTROL SIGNAL	11 LG .		83 B	,	_
G	SAVE MODE LAMP SIGNAL					_
				85 BR		_
				Se SHELD		_
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Corrector No. E106	Terminal Co	VDC UP SW 6 P	10	G SENSOR GROUND 11 SB	13 P	TION LED	DP RL 18 L	22	10N LED	DSFL 26 L		9 G G	35 G · · · · · · · · · · · · · · · · · ·
Corrector No. Corrector Name Corrector Type A.S.	nal Color Of Wire R V V GR	8 6 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	26 W B	BB BB	Н	× BC ×	36 L 37 R 38 V BHAKE	ე >	LG SB W	46 R 47 B 0			
7	Connector Type		Terminal Color Of Signal Name [Specification]	> 1	> ¤	╫	13 R	Н	30 GR	. EG 86			
AWD SYSTEM 96 Y	13.	Terminal Color Of Signal Name [Specification] No. Wire Sol +		7 W IGN 8 L CAN-H	> B	11 B GHOUND	Connector No. B252	Connector Type TH12MW-NH		7 8 9 10 11 12	Terminal Color Of Signal Name (Specification)	2	SB S

JRDWC4632GB

AWD CONTROL UNIT

State Conception Figure Conception Conception	Connector No. M24 Connector Name DATA LINK CONNECTOR Connector Type BD16FW M3 M3 M4 5 6 7 8	Terminal Color Col Signal Name [Specification] Signal Name Specification] Signal Name Signal Name Specification] Signal Name Signal
Corrector Name WIFE T	×	See See
	MAS WIRE TO WIRE TO WIRE THROMW.CS16-TM4	No No No No No No No No
	STEM	

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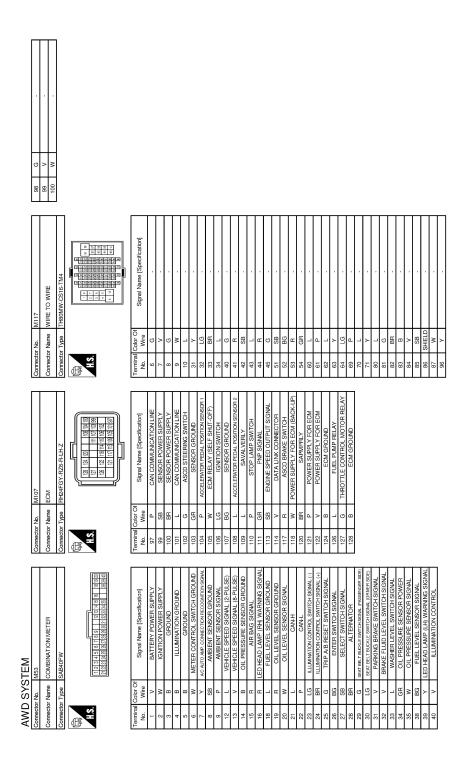
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JRDWC4633GB



JRDWC4634GB

Fail-Safe (GT-R certified NISSAN dealer)

INFOID:0000000011490294

AWD system

- If any malfunction occurs in AWD electrical system, and control unit detects the malfunction, AWD warning lamp on combination meter turns ON to indicate system malfunction.
- When AWD warning lamp is ON, vehicle changes to rear-wheel drive or shifts to 4-wheel drive (front-wheels still have some driving torque).

AWD CONTROL UNIT

< ECU DIAGNOSIS INFORMATION >

[TRANSFER]

 AWD system activates its protection function (shuts down AWD system temporarily) if AWD system detects high load continuously or the front wheel tire size differs from the rear tire size. (AWD system is automatically restored if AWD system no longer detects any overload or the tire size difference is eliminated.)

Mode	Warning lamp	DTC	Detected area (Error area)	Error area and root cause		
Protection	Blinking*1	_	AWD control unit	Transfer assembly in protection mode. It is not malfunction. (Internal temperature rise of electric controlled coupling)		
function Blinking*		_	Outer diameters of front and rear wheel tires	Malfunction in each tire or different tire diameter		
		C1201	AWD control unit	Internal malfunction of AWD control unit		
		C1203	ABS actuator and electric unit (control unit)	ABS malfunction • Vehicle speed signal error		
ON Fail-safe	ON	C1204 AWD solenoid		Internal malfunction of electric controlled coupling		
	ON	C1205	AWD control unit	Internal malfunction of AWD control unit		
		C1210	ECM	Malfunction of engine control system Accelerator pedal position signal error Engine speed signal error		
	OFF	P1826	Transmission fluid temperature sensor	Malfunction of transmission fluid temperature sensor system		
	ON	U1000	CAN communication line	CAN communication error Malfunction of AWD control unit		
		U1010	AWD control unit	Malfunction of AWD control unit		

^{*1:} Quick blinking: 2 times/second (blinking for approximately 1 minute and then turned OFF)

DTC Inspection Priority Chart (GT-R certified NISSAN dealer)

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

Priority	Detected items (DTC)
1	U1000 CAN COMM CIRCUIT U1010 CONTROL UNIT (CAN)
2	C1201 CONTROLLER FAILURE C1205 4WD ACTUATOR RLY
3	C1203 ABS SYSTEM C1210 ENGINE SIGNAL 1 P1826 OIL TEMP SEN
4	C1204 4WD SOLENOID

DTC Index

DTC	Display Items	Reference
C1201	CONTROLLER FAILURE	DLN-11, "DTC Logic (GT-R cer- tified NISSAN dealer)"
C1203	ABS SYSTEM	DLN-12, "DTC Logic (GT-R cer- tified NISSAN dealer)"
C1204	4WD SOLENOID	DLN-13, "DTC Logic (GT-R cer- tified NISSAN dealer)"
C1205	4WD ACTUATOR RLY	DLN-15, "DTC Logic (GT-R certified NISSAN dealer)"
C1210	ENGINE SIGNAL 1	DLN-16, "DTC Logic (GT-R cer- tified NISSAN dealer)"

Revision: 2015 June DLN-31 GT-R

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^{*2:} Slow blinking: 1 time/2 seconds (continuing to blink until ignition switch is turned OFF)

AWD CONTROL UNIT

< ECU DIAGNOSIS INFORMATION >

[TRANSFER]

DTC	Display Items	Reference
P1826	OIL TEMP SEN	DLN-17, "DTC Logic (GT-R cer- tified NISSAN dealer)"
U1000	CAN COMM CIRCUIT	DLN-18, "DTC Logic (GT-R cer- tified NISSAN dealer)"
U1010	CONTROL UNIT (CAN)	DLN-19, "DTC Logic (GT-R cer- tified NISSAN dealer)"

AWD WARNING LAMP DOES NOT TURN ON [TRANSFER] < SYMPTOM DIAGNOSIS > SYMPTOM DIAGNOSIS Α AWD WARNING LAMP DOES NOT TURN ON Description (GT-R certified NISSAN dealer) INFOID:0000000011490297 В AWD warning lamp does not turn ON when the ignition switch is turned to ON. Diagnosis Procedure (GT-R certified NISSAN dealer) INFOID:0000000011490298 1. CHECK AWD WARNING LAMP DLN Perform the trouble diagnosis for AWD warning lamp. Refer to DLN-22, "Diagnosis Procedure (GT-R certified NISSAN dealer)". Is the inspection result normal? Е YES >> Check each harness connector pin terminal for malfunction or disconnection. NO >> Repair or replace the error-detected parts. F Н K L M Ν

AWD WARNING LAMP DOES NOT TURN OFF

< SYMPTOM DIAGNOSIS >

[TRANSFER]

AWD WARNING LAMP DOES NOT TURN OFF

Description (GT-R certified NISSAN dealer)

INFOID:0000000011490299

AWD warning lamp does not turn OFF several seconds after the engine started.

Diagnosis Procedure (GT-R certified NISSAN dealer)

INFOID:0000000011490300

1.PERFORM SELF-DIAGNOSIS

(A) With CONSULT

Perform self-diagnosis for "ALL MODE AWD/4WD".

Is any DTC detected?

YES >> Check the DTC.

NO >> GO TO 2.

2.CHECK AWD WARNING LAMP

Perform the trouble diagnosis of the AWD warning lamp. Refer to <u>DLN-22</u>, "<u>Diagnosis Procedure (GT-R certified NISSAN dealer</u>)".

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace the error-detected parts.

3.CHECK AWD CONTROL UNIT POWER SUPPLY AND GROUND CIRCUIT

Perform the trouble diagnosis of the power supply and ground circuit. Refer to <u>DLN-20</u>, "<u>Diagnosis Procedure</u> (<u>GT-R certified NISSAN dealer</u>)".

Is the inspection result normal?

YES >> Check each harness connector pin terminal for malfunction or disconnection.

NO >> Repair or replace the error-detected parts.

HEAVY TIGHT-CORNER BRAKING SYMPTOM OCCURS

ITRANSFER1 < SYMPTOM DIAGNOSIS > HEAVY TIGHT-CORNER BRAKING SYMPTOM OCCURS Α Description (GT-R certified NISSAN dealer) INFOID:0000000011490301 Heavy tight-corner braking symptom occurs when the vehicle is driven and the steering wheel is turned fully to either side after the engine is started. NOTE: Light tight-corner braking symptom may occur depending on driving conditions. This is not malfunction. Diagnosis Procedure (GT-R certified NISSAN dealer) INFOID:0000000011490302 PERFORM ECM SELF-DIAGNOSIS DLN (P)With CONSULT Perform self-diagnosis for "ENGINE". Е Is any DTC detected? YES >> Check the DTC. NO >> GO TO 2. 2.perform self-diagnosis F (P)With CONSULT Perform self-diagnosis for "ALL MODE AWD/4WD". Is DTC "U1000" detected? YES >> CAN specification chart. Refer to LAN-15, "Trouble Diagnosis Flow Chart". NO >> GO TO 3. Н 3.CHECK AWD SOLENOID Perform the trouble diagnosis of the AWD solenoid. Refer to DLN-13, "Diagnosis Procedure (GT-R certified NISSAN dealer)". Is the inspection result normal? YES >> GO TO 4. NO >> Repair or replace the error-detected parts. 4. CHECK ELECTRIC CONTROLLED COUPLING Turn the ignition switch OFF. 2. Set the transmission to neutral. Release the parking brake. Lift up the vehicle. Rotate the rear propeller shaft. 5. Hold the front propeller shaft lightly. Does the front propeller shaft rotate? YES >> Replace electric controlled coupling for mechanical malfunction (clutch sticking etc.). Refer to TM-403, "Exploded View (GT-R certified NISSAN dealer)". NO >> Check each harness connector pin terminal for disconnection. Ν

VEHICLE DOES NOT ENTER AWD MODE

< SYMPTOM DIAGNOSIS >

[TRANSFER]

VEHICLE DOES NOT ENTER AWD MODE

Description (GT-R certified NISSAN dealer)

INFOID:0000000011490303

Vehicle does not enter 4-wheel drive mode even though AWD warning lamp turned to OFF.

Diagnosis Procedure (GT-R certified NISSAN dealer)

INFOID:0000000011490304

1. CHECK AWD WARNING LAMP

Turn the ignition switch ON.

Does AWD warning lamp turn ON?

YES >> GO TO 2.

NO >> Proceed to diagnosis procedure. Refer to <u>DLN-22, "Diagnosis Procedure (GT-R certified NISSAN dealer)"</u>.

2.CHECK PARKING BRAKE SWITCH SIGNAL

(P)With CONSULT

Check "P BRAKE SW" of CONSULT "DATA MONITOR" for "ALL MODE AWD/4WD".

Monitor Item	Condition	Status
P BRAKE SW	When the parking brake pedal is operration.	On
F BRARE SW	When the parking brake pedal is not operation.	Off

Is the inspection result normal?

YES >> GO TO 3.

NO >> Perform the trouble diagnosis for parking brake switch signal circuit. Refer to <u>MWI-76</u>, "<u>Diagnosis</u> <u>Procedure</u>".

3. CRUISE TEST

Drive the vehicle for a period of time.

Does any symptom occur?

YES >> Replace electric controlled coupling for mechanical malfunction (mechanical engagement of clutch is not possible). Refer to TM-403, "Exploded View (GT-R certified NISSAN dealer)".

NO >> Check each harness connector pin terminal for disconnection.

AWD WARNING LAMP BLINKS QUICKLY

< SYMPTOM DIAGNOSIS > [TRANSFER]

AWD WARNING LAMP BLINKS QUICKLY

Description (GT-R certified NISSAN dealer)

INFOID:0000000011490305

While driving, AWD warning lamp blinks 2 times in 1 second and it turns OFF after 1 minute.

- This symptom protects drivetrain parts when a excessive load is applied to the electric controlled coupling and multiple disc clutch temperature increases. Also, optional distribution of torque sometimes becomes rigid before lamp blinks quickly. Both cases are not malfunction.
- When this symptom occurs, stop vehicle and allow it to idle for some times. Blinking will stop and system will be restored.

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AWD WARNING LAMP BLINKS SLOWLY

< SYMPTOM DIAGNOSIS > [TRANSFER]

AWD WARNING LAMP BLINKS SLOWLY

Description (GT-R certified NISSAN dealer)

INFOID:0000000011490306

AWD warning lamp blinks at approximately 2 seconds intervals while driving.

Diagnosis Procedure (GT-R certified NISSAN dealer)

INFOID:0000000011490307

1. CHECK TIRE

Check the following.

- · Tire pressure
- Wear condition
- Front and rear tire size (There is no difference between front and rear tires.)

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace error-detected parts. And then, drive the vehicle at speed of 20 km/h (12 MPH) or more for 5 seconds or more. Improper size information is initialized accordingly.

2.CHECK INPUT SIGNAL OF TIRE DIAMETER

(P)With CONSULT

- 1. Start the engine.
- 2. Drive at 20 km/h (12 MPH) or more for approximately 4 minutes.
- 3. Check "DIS-TIRE MONI" of CONSULT "DATA MONITOR" for "ALL MODE AWD/4WD".

Does the item on "DATA MONITOR" indicate "0 - 4 mm"?

YES >> INSPECTION END

NO >> GO TO 3.

3. TERMINAL INSPECTION

Check AWD control unit harness connector for disconnection.

Is the inspection result normal?

YES >> Replace AWD control unit. Refer to DLN-44, "Exploded View (GT-R certified NISSAN dealer)".

NO >> Repair or replace the error-detected parts.

INFORMATION DISPLAY IS NOT DISPLAYED

< SYMPTOM DIAGNOSIS >

[TRANSFER]

INFORMATION DISPLAY IS NOT DISPLAYED

Description (GT-R certified NISSAN dealer)

INFOID:0000000011490308

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Even when the AWD warning lamp is illuminating or blinking, nothing appears on the information display. Information display indicator

Condition	Display item				
AWD system is malfunctioning	AWD system error Contact the dealer to ask for inspection.				
Protection function is activated due to excessive load to electric controlled coupling (The system is not malfunctioning)	The temperature of the AWD clutch is high Stop the vehicle until the warning lamp turns OFF				
As internal pressure or wear on tires is remarkably different between the front and rear tires, the revolution of those wheels is remarkably different (The diameters of front and rear tires are different)	The sizes of the front and rear tires are improper Contact the dealer to ask for inspection.				

Diagnosis Procedure (GT-R certified NISSAN dealer)

INFOID:0000000011490309

1. CHECK AWD WARNING LAMP

Check that information except AWD system is displayed on information display. Is the inspection result normal?

YES >> Replace AWD control unit. Refer to <u>DLN-44</u>, "<u>Exploded View (GT-R certified NISSAN dealer)</u>".

NO >> Check information display. Refer to MWI-54, "Diagnosis Description".

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< PRECAUTION > [TRANSFER]

PRECAUTION

PRECAUTIONS

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

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

WARNING:

Always observe the following items for preventing accidental activation.

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision that would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.
- Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see "SRS AIR BAG".
- Never use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.

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

WARNING:

Always observe the following items for preventing accidental activation.

- When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the
 ignition ON or engine running, never use air or electric power tools or strike near the sensor(s) with
 a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing
 serious injury.
- When using air or electric power tools or hammers, always switch the ignition OFF, disconnect the battery, and wait at least 3 minutes before performing any service.

Precautions Necessary for Steering Wheel Rotation After Battery Disconnection

INFOID:0000000011490311

CAUTION:

Comply with the following cautions to prevent any error and malfunction.

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

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

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

OPERATION PROCEDURE

1. Connect both battery cables.

NOTE:

Supply power using jumper cables if battery is discharged.

- Turn the ignition switch to ACC position. (At this time, the steering lock will be released.)
- Disconnect both battery cables. The steering lock will remain released with both battery cables disconnected and the steering wheel can be turned.

< PRECAUTION > [TRANSFER]

- Perform the necessary repair operation.
- 5. When the repair work is completed, re-connect both battery cables. With the brake pedal released, turn the ignition switch from ACC position to ON position, then to LOCK position. (The steering wheel will lock when the ignition switch is turned to LOCK position.)
- Perform self-diagnosis check of all control units using CONSULT.

Precaution for Battery Service

INFOID:0000000011490312

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.

Precautions for Removing Battery Terminal

INFOID:0000000011490313

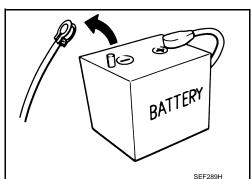
 When removing the 12V battery terminal, turn OFF the ignition switch and wait at least 30 seconds.

NOTE:

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

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

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



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

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

Aluminum Die-Casting Parts Handling

INFOID:0000000011490314

PROHIBITION OF WELDING OR BEATING REPAIR

- Material made of aluminum die-casting parts is heat-treated and looses strength when being exposed to welding heat. Do not perform welding repair for cracks, damage or others.
- For aluminum die-casting parts deformation, do not perform repair by beating. Always repair by replacement as an assembly.

CRACK CHECK

When the vehicle is damaged, always perform a visual deformation check and a crack check.

Crack Check Procedures

For a crack check, use dye penetrant inspection fluid (pre-cleaning fluid, penetrant fluid and developer fluid). **CAUTION:**

Always perform a crack check in accordance with the procedures specified by the manufacturer of the dye penetrant inspection fluid.

- 1. Spray pre-cleaning fluid on the checking surface for cleaning.
- 2. Spray penetrant fluid on the checking surface and wait until the penetrant fluid soaks into any cracks.
- 3. Wipe off excessive penetrant fluid, and then also lightly wipe off penetrant fluid using a wet cloth.
- Spray developer fluid on the checking surface.
- Cracks, if any, are dyed red in color.

STRAY CURRENT CORROSION

- Corrosion occurs to aluminum die-casting parts by the stray current corrosion phenomenon, when directly
 contacting other parts made of steel. Always apply anti-stray current corrosion paint (primer) on the mounting surface.
- Clean mounting surface to prevent any foreign matter, steel powder or others from being mixed in. Always
 apply the specified adhesive when installing.

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< PRECAUTION > [TRANSFER]

- Corrosion by stray current corrosion may occur when installing with any other bolts than the specified bolt.
 Always use the specified bolt that is surface treated.
- When loosening the specified bolt that is tightened, the treated surface may peel. Never reuse the specified bolt that is tightened once.

TIGHTENING TORQUE CONTROL

Material made of aluminum die-casting parts is soft in term of hardness. Tightening torque must be controlled exactly as specified. Always use a torque wrench to install any part to the specified tightening torque.

WARNING:

Never use a power tool to remove or tighten bolts for aluminum die-casting part to prevent damage to aluminum die-casting parts.

Titanium Muffler Handling

INFOID:0000000011490315

CAUTION:

- Never touch the titanium muffler directly with bare hands or allow oils to adhere to it during inspection, removal, and installation.
- Always wear new thick cotton gloves or working gloves. (Never use oil-adhered gloves.)
- After oil adhesion, wait until the titanium muffler cools and immediately remove oil with parts cleaner.
- · Always use genuine parts cleaner (dry type) or the equivalent.
- When cleaning oil in on-board condition, apply parts cleaner to a waste to wipe out oil. By doing so, peripheral parts can be protected from parts cleaner adhesion.
- · Be careful not to cut fingers with the insulator edge or the main muffler cooling fin.

Service Notice or Precautions for the Transfer

INFOID:0000000011490316

- The transfer is integrated with the transmission. When working on the transfer, refer to the precautions for the transmission. Refer to <u>TM-356</u>, "<u>Precautions for Replacement of TCM and Transmission Assembly (GT-R certified NISSAN dealer</u>)".
- Before starting diagnosis of the vehicle, understand symptoms well. Perform correct and systematic operations.
- Replace all tires at the same time. Always use tires of the proper size and the same brand and pattern. Fitting improper size and unusually worn tires applies excessive force to vehicle mechanism and can cause longitudinal vibration.

TRANSFER FLUID

< PERIODIC MAINTENANCE > [TRANSFER]

PERIODIC MAINTENANCE

TRANSFER FLUID

Transfer Fluid

CAUTION:

Refer to TM-365, "Inspection" because the transfer is integrated with the transmission.

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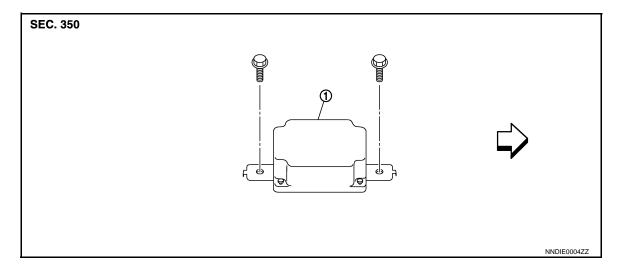
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REMOVAL AND INSTALLATION

AWD CONTROL UNIT

Exploded View (GT-R certified NISSAN dealer)

INFOID:0000000011490318



1. AWD control unit

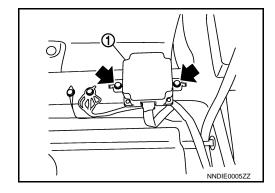
∀: Vehicle front

Removal and Installation (GT-R certified NISSAN dealer)

INFOID:0000000011490319

REMOVAL

- Remove driver seat. Refer to <u>SE-58, "Exploded View"</u>.
- 2. Remove the rear side finisher. Refer to INT-15, "Exploded View".
- 3. Remove the dash side finisher (RH). Refer to INT-15, "Exploded View".
- 4. Remove floor carpet hook. Refer to INT-22, "Exploded View".
- 5. Remove the front seat belt (RH) anchor bolt. Refer to SB-7, "SEAT BELT RETRACTOR: Exploded View".
- 6. Pull up the floor carpet and remove the floor spacer. **CAUTION:**
 - Never damage the floor spacer.
 - Never apply excessive force against the floor carpet.
- 7. Disconnect AWD control unit harness connector.
- 8. Remove the bolts (from AWD control unit (1).
- 9. Remove AWD control unit.



INSTALLATION

Installation is the reverse order of removal.

TRANSFER ASSEMBLY

< UNIT REMOVAL AND INSTALLATION >

[TRANSFER]

UNIT REMOVAL AND INSTALLATION

TRANSFER ASSEMBLY

Removal and Installation (GT-R certified NISSAN dealer)

INFOID:0000000011490320

The transfer is integrated with the transmission. When replacing the transfer, replace the transmission assembly. Refer to <u>TM-403</u>, "Removal and Installation (GT-R certified NISSAN dealer)".

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SERVICE DATA AND SPECIFICATIONS (SDS)

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[TRANSFER]

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

General Specifications

INFOID:0000000011490321

Refer to <u>TM-407</u>, "General Specification" because the transfer is integrated with the transmission.

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING [FRONT PROPELLER SHAFT: 3F56A-DOJ75]

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< SYMPTOM DIAGNOSIS >

SYMPTOM DIAGNOSIS

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NVH Troubleshooting Chart

Use the chart below to find the cause of the symptom. If necessary, repair or replace these parts.

Reference		DLN-50, "Inspection (GT-R certified NISSAN dealer)"	DLN-52, "Inspection (GT-R certified NISSAN dealer)"	I	DLN-52, "Inspection (GT-R certified NISSAN dealer)"	I	DLN-52, "Inspection (GT-R certified NISSAN dealer)"	DLN-52, "Inspection (GT-R certified NISSAN dealer)"	NVH in DLN section.	NVH in FAX, RAX, FSU and RSU section.	NVH in WT section.	NVH in WT section.	NVH in FAX and RAX section.	NVH in BR section.	NVH in ST section.	C DLN E F G
Possible cause and SUSPECT	ED PARTS	Uneven rotating torque	Center bearing improper installation	Excessive center bearing axial end play	Center bearing mounting (insulator) cracks, damage or deterioration	Excessive joint angle	Rotation imbalance	Excessive runout	DIFFERENTIAL	AXLE AND SUSPENSION	TIRE	ROAD WHEEL	DRIVE SHAFT	BRAKE	STEERING	J K L M
	Noise	×	×	×	×	×	×	×	×	×	×	×	×	×	×	0
Symptom	Shake		×			×				×	×	×	×	×	×	
	Vibration	×	×	×	×	×	×	×		×	×		×		×	D

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PRECAUTIONS

Precautions for Removing Battery Terminal

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

NOTE:

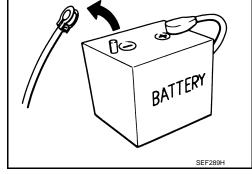
ECU may be active for several tens of seconds after the ignition switch is turned OFF. If the battery terminal is removed before ECU stops, then a DTC detection error or ECU data corruption may occur.

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

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

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

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



INFOID:0000000011490323

INFOID:0000000011490324

The removal of 12 v i

Aluminum Die-Casting Parts Handling

PROHIBITION OF WELDING OR BEATING REPAIR

- Material made of aluminum die-casting parts is heat-treated and looses strength when being exposed to welding heat. Do not perform welding repair for cracks, damage or others.
- For aluminum die-casting parts deformation, do not perform repair by beating. Always repair by replacement as an assembly.

CRACK CHECK

When the vehicle is damaged, always perform a visual deformation check and a crack check.

Crack Check Procedures

For a crack check, use dye penetrant inspection fluid (pre-cleaning fluid, penetrant fluid and developer fluid). **CAUTION**:

Always perform a crack check in accordance with the procedures specified by the manufacturer of the dye penetrant inspection fluid.

- Spray pre-cleaning fluid on the checking surface for cleaning.
- 2. Spray penetrant fluid on the checking surface and wait until the penetrant fluid soaks into any cracks.
- 3. Wipe off excessive penetrant fluid, and then also lightly wipe off penetrant fluid using a wet cloth.
- 4. Spray developer fluid on the checking surface.
- 5. Cracks, if any, are dyed red in color.

STRAY CURRENT CORROSION

- Corrosion occurs to aluminum die-casting parts by the stray current corrosion phenomenon, when directly
 contacting other parts made of steel. Always apply anti-stray current corrosion paint (primer) on the mounting surface.
- Clean mounting surface to prevent any foreign matter, steel powder or others from being mixed in. Always
 apply the specified adhesive when installing.
- Corrosion by stray current corrosion may occur when installing with any other bolts than the specified bolt.
 Always use the specified bolt that is surface treated.
- When loosening the specified bolt that is tightened, the treated surface may peel. Never reuse the specified bolt that is tightened once.

TIGHTENING TORQUE CONTROL

Material made of aluminum die-casting parts is soft in term of hardness. Tightening torque must be controlled exactly as specified. Always use a torque wrench to install any part to the specified tightening torque.

WARNING:

< PRECAUTION >

[FRONT PROPELLER SHAFT: 3F56A-DOJ75]

Never use a power tool to remove or tighten bolts for aluminum die-casting part to prevent damage to aluminum die-casting parts.

Titanium Muffler Handling

INFOID:0000000011490325

CAUTION:

- Never touch the titanium muffler directly with bare hands or allow oils to adhere to it during inspection, removal, and installation.
- Always wear new thick cotton gloves or working gloves. (Never use oil-adhered gloves.)
- After oil adhesion, wait until the titanium muffler cools and immediately remove oil with parts cleaner.
- Always use genuine parts cleaner (dry type) or the equivalent.
- When cleaning oil in on-board condition, apply parts cleaner to a waste to wipe out oil. By doing so, peripheral parts can be protected from parts cleaner adhesion.
- Be careful not to cut fingers with the insulator edge or the main muffler cooling fin.

Service Notice or Precautions for Front Propeller Shaft (GT-R certified NISSAN dealer)

INFOID:0000000011490326

- Replace the propeller shaft assembly if there is a breakage or deflection on the tube.
- Never hit the tube or apply an impact on it during repair service. Never damage the tube as well.
- The joint cannot be disassembled. Never disassemble it.
- If a constant velocity universal joint is bent during removal, installation, or transportation of the propeller shaft assembly, the joint may be damaged. Wrap a shop cloth or rubber sheet around the joint to protect it from being damaged.
- The main propeller shaft is constantly rotating while the engine is running. To prevent interference, stop the engine before removing or installing the propeller shaft assembly.

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FRONT PROPELLER SHAFT

< PERIODIC MAINTENANCE >

[FRONT PROPELLER SHAFT: 3F56A-DOJ75]

PERIODIC MAINTENANCE

FRONT PROPELLER SHAFT

Inspection (GT-R certified NISSAN dealer)

INFOID:0000000011490327

NOISE

- Check the propeller shaft tube surface for dents or cracks. If damaged, replace propeller shaft assembly.
- If center bearing is noisy or damaged, replace propeller shaft assembly.

RUNOUT

If vibration is present at high speed, inspect propeller shaft runout first.

1. With a dial indicator, measure propeller shaft runout at runout measuring points by rotating final drive companion flange.

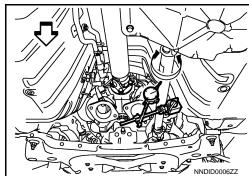
The front of vehicle

Limit

Propeller shaft runout : Refer

: Refer to <u>DLN-54, "Propeller Shaft Runout (GT-R certified NISSAN</u>

dealer)".



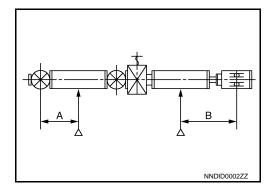
- 2. If runout still exceeds specifications, separate propeller shaft from final drive companion flange or transfer companion flange; then rotate companion flange 90, 180, 270 degrees and install propeller shaft.
- 3. Check runout again. If runout still exceeds specifications, replace propeller shaft assembly.
- 4. Check the vibration by driving vehicle.

RUNOUT MEASURING POINT

Propeller shaft runout measuring point (point "△")

Dimension A: 330 mm (12.99 in)

B: 421 mm (16.57 in)

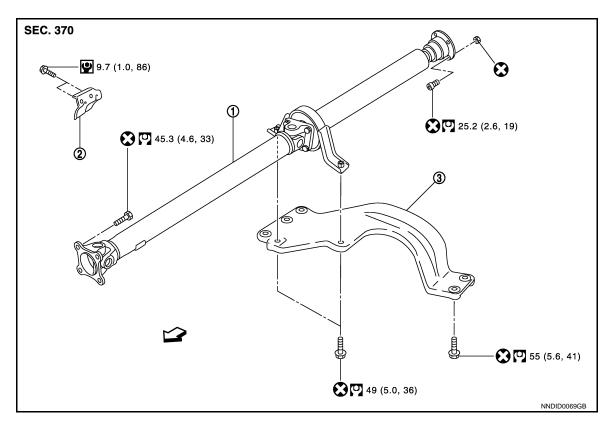


[FRONT PROPELLER SHAFT: 3F56A-DOJ75]

REMOVAL AND INSTALLATION

FRONT PROPELLER SHAFT

Exploded View



1. Front propeller shaft assembly

2. Heat bracket

3. Tunnel stay

∀
 □: Vehicle front

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

Removal and Installation (GT-R certified NISSAN dealer)

REMOVAL

- 1. Remove the sub-muffler. Refer to <u>EX-7</u>, "<u>Exploded View</u>" (with stainless steel muffler), <u>EX-14</u>, "<u>Exploded View</u>" (with titanium muffler).
- 2. Remove the heat plate.
- 3. Remove the heat bracket.
- 4. Put matching marks onto propeller shaft flange yoke and front final drive and transmission companion flanges.

CAUTION:

For matching marks, use paint. Never damage propeller shaft flange yoke and front final drive and transmission companion flange.

- Loosen front propeller shaft fixing bolts and nuts. CAUTION:
 - When fixing the propeller shaft, never use a service tool inside the journal bearing to prevent damaging the joint seal.
 - Tighten front propeller shaft assembly fixing bolt and nuts temporarily.

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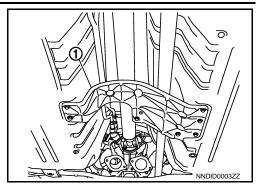
FRONT PROPELLER SHAFT

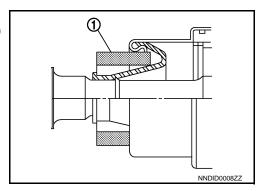
< REMOVAL AND INSTALLATION >

[FRONT PROPELLER SHAFT: 3F56A-DOJ75]

- Remove the center bearing bracket and the tunnel stay (1). CAUTION:
 - Never use power tools to remove or install the bolt on the tunnel stay.
 - If the coating on the joint surface between the tunnel stay and the vehicle has peeled off, apply primer on the surface to prevent electric corrosion.
 - Never use bolts other than those that are specified, otherwise electric corrosion occurs. Always use the specified bolt with its surface appropriately finished.
 - Never reuse the bolt removed from the tunnel stay.
- 7. Remove front propeller shaft fixing bolts and nuts, and then remove the front propeller shaft assembly from the vehicle.

 CAUTION:
 - Never bend the primary joint at an angle of more than 5°.
 - Cover the joint boot on the primary joint with a cushion (1) or other appropriate materials to prevent deformation.





INSTALLATION

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

- Align the alignment mark when installing the propeller shaft assembly in the companion flange of the final drive.
- When installing the front propeller shaft assembly in the transmission, cover the boot on the primary joint with a cushion or other appropriate materials to prevent deformation.
- After assembly, perform a driving test to check propeller shaft vibration. If vibration occurred, separate propeller shaft from final drive. Reinstall companion flange after rotating it by 90, 180, 270 degrees. Then perform driving test and check propeller shaft vibration again at each point.
- Never use power tools to remove or install the bolt on the tunnel stay.
- If the coating on the joint surface between the tunnel stay and the vehicle has peeled off, apply primer on the surface to prevent electric corrosion.
- Never use bolts other than those that are specified on the tunnel stay, otherwise electric corrosion occurs.
 Always use the specified bolt with its surface appropriately finished.
- Never reuse the bolt removed from the tunnel stay.

Inspection (GT-R certified NISSAN dealer)

INFOID:0000000011490330

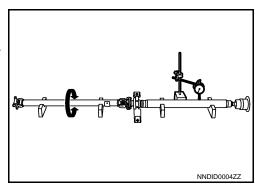
PROPELLER SHAFT RUNOUT

Check propeller shaft runout at measuring point with a dial indicator. If runout exceeds specifications, replace propeller shaft assembly. For measuring point, refer to <u>DLN-50</u>. "Inspection (GT-R certified <u>NISSAN dealer</u>)".

Limit

Propeller shaft runout

: Refer to <u>DLN-54</u>, "<u>Propeller Shaft Runout (GT-R certified NISSAN dealer)"</u>.



JOURNAL AXIAL PLAY

FRONT PROPELLER SHAFT

< REMOVAL AND INSTALLATION >

[FRONT PROPELLER SHAFT: 3F56A-DOJ75]

 As shown in the figure, while fixing yoke on one side, check axial play of joint. If it is outside the standard, replace propeller shaft assembly.

Standard

Journal axial play : Refer to <u>DLN-54</u>,

"Journal Axial Play (GT-R certified NISSAN

dealer)".

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CAUTION:

Never disassemble joints.

CENTER BEARING

Check center bearing for noise and damage. If noise or damage is detected, replace propeller shaft assembly. **CAUTION:**

Never disassemble center bearing.

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SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS) [F

[FRONT PROPELLER SHAFT: 3F56A-DOJ75]

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

General Specifications

INFOID:0000000011490331

Drive type		AWD				
Engine		VR38DETT				
Transmission		GR6Z30A				
Propeller shaft model		3F56A-DOJ75				
Number of joints		3				
	1st joint	CVJ type				
Type of journal bearings (Non-disassembly type)	2nd joint	Cardan type				
	3rd joint	Cardan type				
Coupling method with transm	nission	Flange type				
Coupling method with front fi	nal drive	Flange type				
Chaft langth	1st (Spider to spider)	855 mm (33.66 in)				
Shaft length	2nd (Spider to spider)	750 mm (29.53 in)				
01 6 4 5	1st	50.8 mm (2.000 in)				
Shaft outer diameter	2nd	42.7 mm (1.681 in)				

Propeller Shaft Runout (GT-R certified NISSAN dealer)

INFOID:0000000011490332

	Unit: mm (in)
Item	Limit
Propeller shaft runout	0.8 (0.031)

Journal Axial Play (GT-R certified NISSAN dealer)

INFOID:0000000011490333

	Unit: mm (in)
Item	Standard
Journal axial play	0 (0)

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING [MAIN PROPELLER SHAFT: 2F71A-VL101]

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INFOID:0000000011490334

< SYMPTOM DIAGNOSIS >

SYMPTOM DIAGNOSIS

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NVH Troubleshooting Chart

Use the chart below to find the cause of the symptom. If necessary, repair or replace these parts.

Reference		DLN-61, "Inspection (GT-R certified NISSAN dealer)"	I	I	I	DLN-61, "Inspection (GT-R certified NISSAN dealer)"	DLN-59, "Inspection (GT-R certified NISSAN dealer)"	DLN-61, "Inspection (GT-R certified NISSAN dealer)"	NVH in DLN section.	NVH in FAX, RAX, FSU and RSU section.	NVH in WT section.	NVH in WT section.	NVH in FAX and RAX section.	NVH in BR section.	NVH in ST section.	C DLN E F G
Possible cause and SUSPECT	ED PARTS	Uneven rotating torque	Center bearing improper installation	Excessive center bearing axial end play	Center bearing mounting (insulator) cracks, damage or deterioration	Excessive joint angle	Rotation imbalance	Excessive runout	DIFFERENTIAL	AXLE AND SUSPENSION	TIRE	ROAD WHEEL	DRIVE SHAFT	BRAKE	STEERING	J K L M
	Noise	×	×	×	×	×	×	×	×	×	×	×	×	×	×	0
Symptom	Shake		×			×				×	×	×	×	×	×	
	Vibration	×	×	×	×	×	×	×		×	×		×		×	_

^{×:} Applicable

[MAIN PROPELLER SHAFT: 2F71A-VL101]

PRECAUTION

PRECAUTIONS

Precautions for Removing Battery Terminal

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

NOTE:

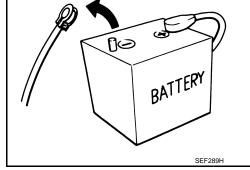
ECU may be active for several tens of seconds after the ignition switch is turned OFF. If the battery terminal is removed before ECU stops, then a DTC detection error or ECU data corruption may occur.

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

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

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

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



Aluminum Die-Casting Parts Handling

INFOID:0000000011490336

INFOID:0000000011490335

PROHIBITION OF WELDING OR BEATING REPAIR

- Material made of aluminum die-casting parts is heat-treated and looses strength when being exposed to welding heat. Do not perform welding repair for cracks, damage or others.
- For aluminum die-casting parts deformation, do not perform repair by beating. Always repair by replacement as an assembly.

CRACK CHECK

When the vehicle is damaged, always perform a visual deformation check and a crack check.

Crack Check Procedures

For a crack check, use dye penetrant inspection fluid (pre-cleaning fluid, penetrant fluid and developer fluid). **CAUTION**:

Always perform a crack check in accordance with the procedures specified by the manufacturer of the dye penetrant inspection fluid.

- 1. Spray pre-cleaning fluid on the checking surface for cleaning.
- 2. Spray penetrant fluid on the checking surface and wait until the penetrant fluid soaks into any cracks.
- 3. Wipe off excessive penetrant fluid, and then also lightly wipe off penetrant fluid using a wet cloth.
- 4. Spray developer fluid on the checking surface.
- 5. Cracks, if any, are dyed red in color.

STRAY CURRENT CORROSION

- Corrosion occurs to aluminum die-casting parts by the stray current corrosion phenomenon, when directly
 contacting other parts made of steel. Always apply anti-stray current corrosion paint (primer) on the mounting surface.
- Clean mounting surface to prevent any foreign matter, steel powder or others from being mixed in. Always
 apply the specified adhesive when installing.
- Corrosion by stray current corrosion may occur when installing with any other bolts than the specified bolt.
 Always use the specified bolt that is surface treated.
- When loosening the specified bolt that is tightened, the treated surface may peel. Never reuse the specified bolt that is tightened once.

TIGHTENING TORQUE CONTROL

Material made of aluminum die-casting parts is soft in term of hardness. Tightening torque must be controlled exactly as specified. Always use a torque wrench to install any part to the specified tightening torque.

WARNING:

< PRECAUTION >

[MAIN PROPELLER SHAFT: 2F71A-VL101]

Never use a power tool to remove or tighten bolts for aluminum die-casting part to prevent damage to aluminum die-casting parts.

Titanium Muffler Handling

INFOID:0000000011490337

CAUTION:

- Never touch the titanium muffler directly with bare hands or allow oils to adhere to it during inspection, removal, and installation.
- Always wear new thick cotton gloves or working gloves. (Never use oil-adhered gloves.)
- After oil adhesion, wait until the titanium muffler cools and immediately remove oil with parts cleaner.
- Always use genuine parts cleaner (dry type) or the equivalent.
- When cleaning oil in on-board condition, apply parts cleaner to a waste to wipe out oil. By doing so, peripheral parts can be protected from parts cleaner adhesion.
- Be careful not to cut fingers with the insulator edge or the main muffler cooling fin.

Precautions for terminology

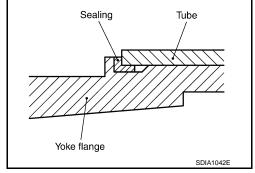
INFOID:0000000011490338

The "Main carbon composite propeller shaft" adopted on this model is called the "Main propeller shaft" in this manual.

Service notice or Precautions for Main Propeller Shaft (GT-R certified NISSAN dealer)

INFOID:0000000011490339

- If the main propeller shaft is dropped, replace the main propeller shaft assembly.
- Never tap the tube. Avoid impacts and scratching.
- If there are cracks, peeling, or any other breakage on the seal (yoke and tube joint) replace the main propeller shaft assembly.
- Check that there is clearance between the tube end and yoke flange. If no clearance is found, replace the main propeller shaft.
- Replace the propeller shaft assembly if there are cracks or deflection on the tube.
- Protect the main propeller shaft tube from damage with a tube protector during repair service.
- Always stop the engine before removing or installing the main propeller shaft assembly.



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PREPARATION

[MAIN PROPELLER SHAFT: 2F71A-VL101]

PREPARATION

PREPARATION

Commercial Service Tools (GT-R certified NISSAN dealer)

INFOID:0000000011490340

Tool number Tool name		Description
37331JF00A Propeller shaft protector	NNDID0037ZZ	Removal or installation of main propeller shaft assembly

[MAIN PROPELLER SHAFT: 2F71A-VL101]

PERIODIC MAINTENANCE

MAIN PROPELLER SHAFT

Inspection (GT-R certified NISSAN dealer)

INFOID:0000000011490341

NOISE

Check the main propeller shaft tube surface for dents or cracks. If damaged, replace main propeller shaft assembly.

RUNOUT

If vibration is present at high speed, inspect main propeller shaft runout first.

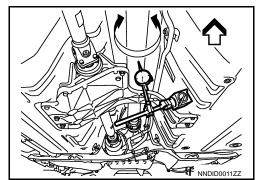
1. With a dial indicator, measure propeller shaft runout at several points by rotating final drive companion flange with hands.

The front of vehicle

Limit

Main propeller shaft runout

: Refer to DLN-63, "Propeller Shaft Runout (GT-R certified NISSAN dealer)".



CAUTION:

When rotating the main propeller shaft, use a spanner or a suitable tool on the hex end (A) of the rebro joint and rotate the shaft in the clockwise direction as viewed from the crankshaft (in the counterclockwise direction, as viewed from the back of the vehicle).

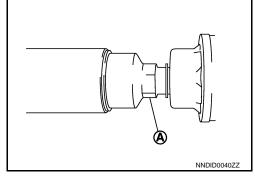
- If runout still exceeds specifications, separate the main propeller shaft from the transmission companion flange. Rotate the companion flange in five steps; 60°, 120°, 180°, 240°, and 300° and install main propeller shaft.
- 3. Check runout again. If runout still exceeds specifications, replace propeller shaft assembly.
- 4. Check the vibration by driving vehicle.

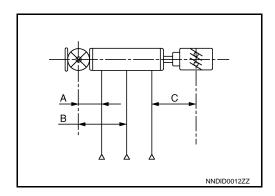
RUNOUT MEASURING POINT

Runout measuring point for the main propeller shaft (point "△")

Dimension A: 220 mm (8.66 in)

B: 524 mm (20.63 in) C: 280 mm (11.02 in)





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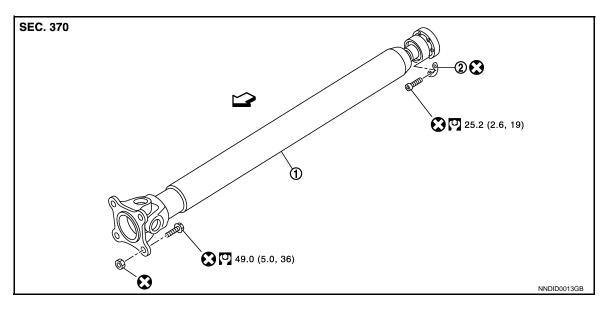
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[MAIN PROPELLER SHAFT: 2F71A-VL101]

REMOVAL AND INSTALLATION

MAIN PROPELLER SHAFT

Exploded View



- 1. Main propeller shaft assembly
- 2. Plain washer

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

Removal and Installation (GT-R certified NISSAN dealer)

INFOID:0000000011490343

REMOVAL

- 1. Remove the front propeller shaft assembly. Refer to DLN-51, "Exploded View".
- Put matching marks on the joint between the main propeller shaft assembly and the companion flanges of the output shaft and the transmission.

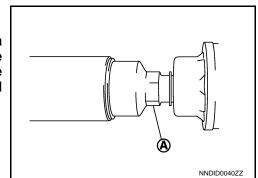
CAUTION:

Use paint for alignment marks to avoid scratching the surface.

Remove the bolts and nuts from the main propeller shaft.

CAUTION:

When rotating the main propeller shaft, use a spanner or a suitable tool on the hex end (A) of the rebro joint and rotate the shaft in the clockwise direction as viewed from the crankshaft (in the counterclockwise direction, as viewed from the back of vehicle).

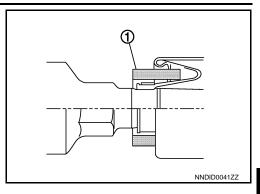


MAIN PROPELLER SHAFT

< REMOVAL AND INSTALLATION >

[MAIN PROPELLER SHAFT: 2F71A-VL101]

- 4. Install propeller shaft protector (commercial service tool) to main propeller shaft. Then remove the main propeller shaft together with the installed propeller shaft tube protector from the vehicle. CAUTION:
 - Install the propeller shaft protector in the carbon area of the main propeller shaft.
 - Never bend the secondary joint at the angle of more than 8.5°.
 - Cover the joint boot on the primary joint with a cushion (1) or other appropriate materials to prevent deformation.



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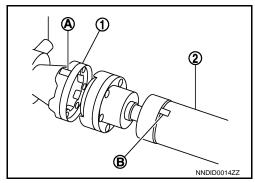
INSTALLATION

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

Align matching marks when installing the main propeller shaft assembly on the companion flange.
 CAUTION:

When installing the main propeller shaft assembly in the transmission, install propeller shaft protector (commercial service tool) in the carbon area of the main propeller shaft assembly.

- Perform a test drive to check that there is no runout on the propeller shaft after installation. Separate the
 main propeller shaft and the transmission assembly, if runout is detected. Rotate the companion flange 60°
 and reinstall it. Perform a test drive to inspect runout.
- If the main propeller shaft assembly or the transmission is replaced, assemble these parts in the following procedure.
- Position main propeller shaft assembly and the transmission so that the matching mark (B) on the main propeller shaft assembly (2) comes as close to the matching mark (A) on the companion flange of the transmission (1) as possible, with the matching mark positioned upward.

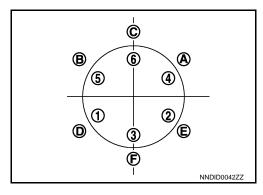


2. Tighten the bolts and nuts on the transmission and the main propeller shaft to the specified torque.

CAUTION:

Tighten the bolts as per the following order.

Tightening procedure	Order
Temporary	$1 \rightarrow 2 \rightarrow 3 \rightarrow 4 \rightarrow 5 \rightarrow 6$
Final	$A \to B \to C \to D \to E \to F$



INFOID:0000000011490344

Inspection (GT-R certified NISSAN dealer)

MAIN PROPELLER SHAFT RUNOUT

MAIN PROPELLER SHAFT

< REMOVAL AND INSTALLATION >

[MAIN PROPELLER SHAFT: 2F71A-VL101]

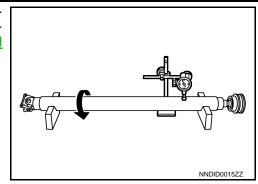
Check propeller shaft runout at measuring points with a dial indicator. If runout exceeds specifications, replace propeller shaft assembly. For measuring point, refer to DLN-59, "Inspection (GT-R certified NISSAN dealer)".

Limit

Main propeller shaft runout

: Refer to DLN-63, "Propeller Shaft Runout (GT-R certified NISSAN

dealer)".



JOURNAL AXIAL PLAY

• Check the play by moving the joint of the main propeller shaft in the direction shown by the arrow in the figure. Replace the main propeller shaft assembly if necessary.

Standard

Journal axial play : Refer to <u>DLN-63</u>,

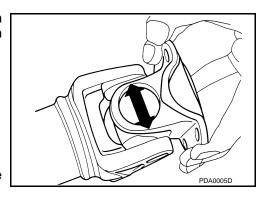
"Journal Axial Play (GT-R certified NISSAN

dealer)".

 Check the main propeller shaft for bend and damage. Replace the main propeller shaft assembly if necessary.

CAUTION:

Never disassemble the joint.



SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

[MAIN PROPELLER SHAFT: 2F71A-VL101]

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

General Specifications

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Drive type		AWD	
Engine		VR38DETT	
Transmission		GR6Z30A	
Propeller shaft model		2F71A-VL101	DLN
Number of joints		2	
Type of journal bearings	1st joint	Cardan type	
(Non-disassembly type)	2nd joint	CVJ type	E
Coupling method with engine		Flange type	
Coupling method with transmission		Rebro joint type	F
Shaft length (Spider to spider)		1117 mm (43.98 in)	
Shaft outer diameter		71 mm (2.80 in)	

Propeller Shaft Runout (GT-R certified NISSAN dealer)

INFOID:00000000114903	346

Items	Limit
Main propeller shaft runout	1.5 (0.059)

Journal Axial Play (GT-R certified NISSAN dealer)

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	Unit: mm (in)
Items	Standard
Journal axial play	0 (0)

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NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

< SYMPTOM DIAGNOSIS >

SYMPTOM DIAGNOSIS

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NVH Troubleshooting Chart

INFOID:0000000011490348

[FRONT FINAL DRIVE: F160A]

Use the chart below to find the cause of the symptom. If necessary, repair or replace these parts.

Reference		DLN-103, "Inspection After Disassembly (GT-R certified NISSAN dealer)".	DLN-90, "Adjustment (GT-R certified NISSAN dealer)"	DLN-103, "Inspection After Disassembly (GT-R certified NISSAN dealer)"	DLN-90, "Adjustment (GT-R certified NISSAN dealer)"	DLN-90, "Adjustment (GT-R certified NISSAN dealer)"	DLN-72, "Inspection"	NVH in DLN section.	NVH in FAX, RAX, FSU and RSU sections.	NVH in WT section.	NVH in WT section.	NVH in FAX and RAX section.	NVH in BR section.	NVH in ST section.
Possible cause and SUSPECTED PARTS		Gear tooth rough	Gear contact improper	Tooth surfaces worn	Backlash incorrect	Companion flange excessive runout	Gear oil improper	PROPELLER SHAFT	AXLE AND SUSPENSION	TIRE	ROAD WHEEL	DRIVE SHAFT	BRAKE	STEERING
Symptom	Noise	×	×	×	×	×	×	×	×	×	×	×	×	×

^{×:} Applicable

[FRONT FINAL DRIVE: F160A]

PRECAUTION

PRECAUTIONS

Precautions Necessary for Steering Wheel Rotation After Battery Disconnection

INFOID:0000000011490349

CAUTION:

Comply with the following cautions to prevent any error and malfunction.

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

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

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

OPERATION PROCEDURE

Connect both battery cables.

NOTE:

Supply power using jumper cables if battery is discharged.

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

Precautions for Removing Battery Terminal

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

NOTE:

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

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

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

detected.

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

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

Aluminum Die-Casting Parts Handling

PROHIBITION OF WELDING OR BEATING REPAIR

- Material made of aluminum die-casting parts is heat-treated and looses strength when being exposed to welding heat. Do not perform welding repair for cracks, damage or others.
- For aluminum die-casting parts deformation, do not perform repair by beating. Always repair by replacement as an assembly.

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< PRECAUTION >

CRACK CHECK

When the vehicle is damaged, always perform a visual deformation check and a crack check.

Crack Check Procedures

For a crack check, use dye penetrant inspection fluid (pre-cleaning fluid, penetrant fluid and developer fluid). **CAUTION:**

Always perform a crack check in accordance with the procedures specified by the manufacturer of the dye penetrant inspection fluid.

- 1. Spray pre-cleaning fluid on the checking surface for cleaning.
- 2. Spray penetrant fluid on the checking surface and wait until the penetrant fluid soaks into any cracks.
- 3. Wipe off excessive penetrant fluid, and then also lightly wipe off penetrant fluid using a wet cloth.
- 4. Spray developer fluid on the checking surface.
- 5. Cracks, if any, are dyed red in color.

STRAY CURRENT CORROSION

- Corrosion occurs to aluminum die-casting parts by the stray current corrosion phenomenon, when directly
 contacting other parts made of steel. Always apply anti-stray current corrosion paint (primer) on the mounting surface.
- Clean mounting surface to prevent any foreign matter, steel powder or others from being mixed in. Always apply the specified adhesive when installing.
- Corrosion by stray current corrosion may occur when installing with any other bolts than the specified bolt.
 Always use the specified bolt that is surface treated.
- When loosening the specified bolt that is tightened, the treated surface may peel. Never reuse the specified bolt that is tightened once.

TIGHTENING TORQUE CONTROL

Material made of aluminum die-casting parts is soft in term of hardness. Tightening torque must be controlled exactly as specified. Always use a torque wrench to install any part to the specified tightening torque.

WARNING:

Never use a power tool to remove or tighten bolts for aluminum die-casting part to prevent damage to aluminum die-casting parts.

Titanium Muffler Handling

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[FRONT FINAL DRIVE: F160A]

CAUTION:

- Never touch the titanium muffler directly with bare hands or allow oils to adhere to it during inspection, removal, and installation.
- Always wear new thick cotton gloves or working gloves. (Never use oil-adhered gloves.)
- After oil adhesion, wait until the titanium muffler cools and immediately remove oil with parts cleaner.
- Always use genuine parts cleaner (dry type) or the equivalent.
- When cleaning oil in on-board condition, apply parts cleaner to a waste to wipe out oil. By doing so, peripheral parts can be protected from parts cleaner adhesion.
- Be careful not to cut fingers with the insulator edge or the main muffler cooling fin.

General Precautions

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CAUTION:

After finishing servicing, check that all the tools and waste are stored in a customary place.

Service Notice or Precautions for Front Final Drive (GT-R certified NISSAN dealer)

- Check for the correct installation before removal or disassembly. If matching marks are required, make sure that they do not interfere with the function of the parts they are applied to.
- Overhaul should be done in a clean work area, it is preferable to work in dustproof area.
- Before disassembly, using steam or white gasoline, completely remove sand and mud from the exterior of the unit, preventing them from entering into the unit during disassembly or assembly.
- Check appearance of the disassembled parts for damage, deformation, and unusual wear. Replace them with a new ones if necessary.
- Replace lock pins, oil seals and bearings with new ones every time they are removed.
- Use Genuine NISSAN parts for replacement.

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< PRECAUTION > [FRONT FINAL DRIVE: F160A]

- In principle, tighten bolts or nuts gradually in several steps working diagonally from inside to outside. If tightening sequence is specified, observe it. Observe a tightening sequence if specified.
- Clean and flush the parts sufficiently and dry them with compressed air.
- Be careful not to damage sliding surfaces and mating surfaces.
- Always use paper type waste for cleaning the inside of components.
- To prevent the entry of lint, do not use cotton gloves or a shop cloth.
- During assembly, observe the specified torque and apply new NISSAN differential oil or multi-purpose grease, as specified for each vehicle.
- Never use gasket fluid because it may dissolve in the gear oil.
- During assembly, observe the specified tightening torque, and apply new gear oil, petroleum jelly, or multipurpose grease as specified for each vehicle, if necessary.
- When the transmission oil temperature exceeds 284°F (140°C) while driving: Change both transmission oil and differential oil immediately after stopping. Differential oil temperature usually increase concurrently.

NOTE:

Because there is not enough space for service, the front oil seal cannot be replaced on the vehicle.

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[FRONT FINAL DRIVE: F160A]

PREPARATION

PREPARATION

Special Service Tools (GT-R certified NISSAN dealer)

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

Tool number (TechMate No.) Tool name		Description
KV381054S0 (J-34286) Puller	ZZA0601D	Removing side oil seal (right side) Removing side bearing outer race
ST33400001 (J-26082) Drift a: 60 mm (2.36 in) dia. b: 47 mm (1.85 in) dia.	ZZA0702D	Installing side oil seal (right side) Installing front oil seal
KV38102100 (J-25803-01) Drift a: 44 mm (1.73 in) dia. b: 36 mm (1.42 in) dia. c: 24.5 mm (0.965 in) dia.	ZZA1046D	Installing side oil seal (left side)
KV38100200 (—) Drift a: 65 mm (2.56 in) dia. b: 49 mm (1.93 in) dia.	ZZA1143D	Installing side shaft oil seal
ST30032000 (J-26010-01) Drift a: 80 mm (3.15 in) dia. b: 38 mm (1.50 in) dia. c: 31 mm (1.22 in) dia.	a b C C S-NT107	Installing side shaft Installing pinion rear bearing inner race

PREPARATION

< PREPARATION >

[FRONT FINAL DRIVE: F160A]

Tool number TechMate No.) Tool name ST3306S001	Description
ST3306S001	
J-22888-D) Differential side bearing puller set : ST33051001 (J-22888-20) Puller :: ST33061000 (J-8107-2) Base a: 28.5 mm (1.122 in) dia. b: 38 mm (1.50 in) dia.	Removing and installing side bearing inner race
ST33230000 J-25805-01) Orift I: 51 mm (2.01 in) dia. I: 41 mm (1.61 in) dia. I: 28.5 mm (1.122 in) dia.	Installing side bearing inner race
ST30611000 J-25742-1) Orift bar	Installing side bearing outer race (Use with KV31103000)
XV31103000 J-38982) Orift t: 49 mm (1.93 in) dia. o: 70 mm (2.76 in) dia.	Installing side bearing outer race
ST3127S000 J-25765-A) Preload gauge	Measuring pinion bearing preload and total preload
J-8129) Spring gauge	Measuring turning torque

PREPARATION

< PREPARATION >

[FRONT FINAL DRIVE: F160A]

Tool number (TechMate No.) Tool name		Description
ST37820000 (—) Drift a: 39 mm (1.54 in) dia. b: 72 mm (2.83 in) dia.	b)a	Installing pinion front and rear bearing outer race
	ZZA0836D	
KV38102510 (—) Drift a: 71 mm (2.80 in) dia. b: 65 mm (2.56 in) dia.	a b ZZA0838D	Installing front oil seal

Commercial Service Tools (GT-R certified NISSAN dealer)

INFOID:0000000011490356

Tool name		Description
Flange wrench		Removing and installing drive pinion lock nut
Replacer	NT035	Removing pinion rear bearing inner race
	ZZA0700D	
Spacer a: 60 mm (2.36 in) dia. b: 36 mm (1.42 in) dia. c: 30 mm (1.18 in)	b c c ZZA1133D	Installing pinion front bearing inner race
Power tool	PBIC0190E	Loosening bolts and nuts

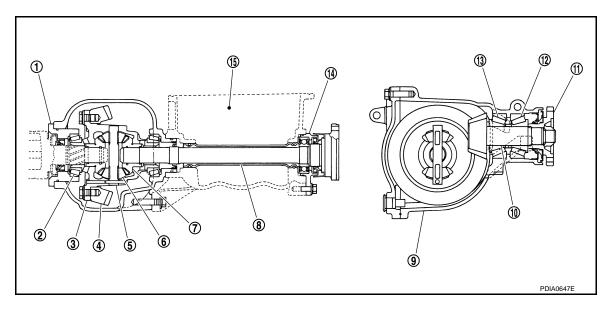
[FRONT FINAL DRIVE: F160A]

SYSTEM DESCRIPTION

FRONT FINAL DRIVE ASSEMBLY

System Diagram (GT-R certified NISSAN dealer)

CROSS-SECTIONAL VIEW



- 1. Side retainer
- 4. Drive gear
- 7. Side gear
- 10. Drive pinion
- 13. Pinion rear bearing

- 2. Side bearing
- 5. Pinion mate shaft
- 8. Side shaft
- 11. Companion flange
- 14. Extension tube retainer
- 3. Differential case
- 6. Pinion mate gear
- 9. Gear carrier
- 12. Pinion front bearing
- 15. Engine assembly

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[FRONT FINAL DRIVE: F160A]

PERIODIC MAINTENANCE

FRONT DIFFERENTIAL GEAR OIL

Inspection INFOID:0000000011490358

OIL LEAKAGE

Visually check final drive assembly surrounding area for smears and leakage of defferential gear oil.

Status	Parts	Required operation		
Smears*1	Each part on the final drive assembly	Use part cleaner or the equivalent to wipe out smeared oil. Then, check for oil leakage.		
Leakage*2	Oil seal	Check the oil seal mounting surface and sliding surface for abnormalities. If it is normal, replace only oil seal. Then, check for oil leakage.		
	Filler plug	Replace the filler plug gasket. Then, check for oil leakage.		
	Drain plug	Replace the drain plug gasket. Then, check for oil leakage.		
	Mating surface between Gear carrier and rear cover.	Check the seal surface for abnormalities. If it is normal, replace only rear cover gasket. Then, check for oil leakage.		

^{*1:} When the oil does not drop

OIL LEVEL

 Remove filler plug (1) and gasket. Then check that oil is filled up (A) from mounting hole for the filler plug.

CAUTION:

Never start engine while checking oil level.

• Set a gasket on filler plug (1) and install it on final drive, and then tighten to the specified torque.

Standard

Filler plug tightening : 35 N·m (3.6 kg-m, 26 ft-lb) torque

CAUTION:

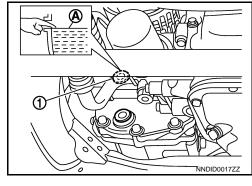
Never reuse gasket.

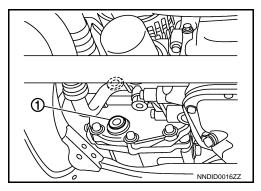
Draining (GT-R certified NISSAN dealer)

- 1. Stop the engine.
- 2. Remove drain plug (1) and drain gear oil.
- 3. Set a gasket on drain plug (1) and install it to final drive and tighten to the specified torque. Refer to <u>DLN-82</u>, "Exploded View (GT-R certified NISSAN dealer)".

CAUTION:

Never reuse gasket.





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^{*2:} When the oil drops

FRONT DIFFERENTIAL GEAR OIL

< PERIODIC MAINTENANCE >

[FRONT FINAL DRIVE: F160A]

Refilling (GT-R certified NISSAN dealer)

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1. Remove filler plug (1). Fill up with new gear oil until oil level reaches the specified level (A).

Oil grade and Viscosity

: Refer to MA-21, "Fluids and

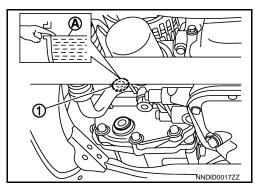
Lubricants".

Oil capacity : I

: Refer to DLN-104, "General

Specifications".

 After refilling oil, check oil level. Set a gasket to filler plug (1), and then install it to final drive and tighten to the specified torque. Refer to <u>DLN-82</u>. "Exploded View (GT-R certified NIS-<u>SAN dealer</u>)".



CAUTION:

Never reuse gasket.

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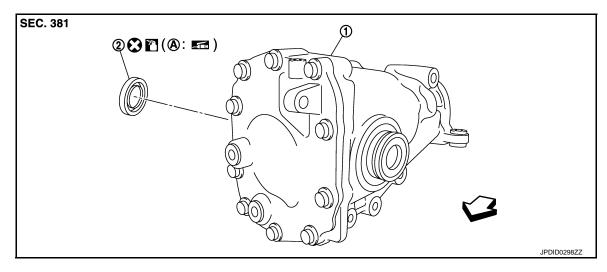
[FRONT FINAL DRIVE: F160A]

REMOVAL AND INSTALLATION

SIDE OIL SEAL RIGHT SIDE

RIGHT SIDE: Exploded View (GT-R certified NISSAN dealer)

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- 1. Front final drive assembly
- 2. Side oil seal (right side)

- A: Oil seal lip

?: Apply gear oil. Refer to MA-21, "Fluids and Lubricants".

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

RIGHT SIDE: Removal and Installation (GT-R certified NISSAN dealer)

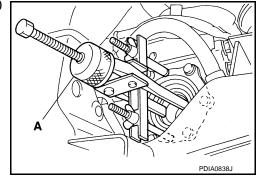
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REMOVAL

- 1. Remove the front drive shaft. Refer to FAX-16, "Exploded View (GT-R certified NISSAN dealer)".
- 2. Remove the side oil seal using a puller (A) [SST: KV381054S0 (J-34286)].

CAUTION:

Never damage gear carrier.



INSTALLATION

1. Apply multi-purpose grease to sealing lips of side oil seal.

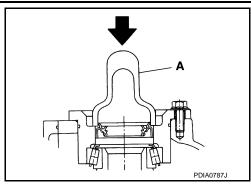
SIDE OIL SEAL

< REMOVAL AND INSTALLATION >

- [FRONT FINAL DRIVE: F160A]
- Using the drift (A) [SST: ST33400001 (J-26082)], press-fit side oil seal so that its surface comes face-to-face with the end surface of the side retainer.

CAUTION:

- Never reuse oil seal.
- When installing, never incline oil seal.
- 3. Install the front drive shaft. Refer to FAX-16, "Exploded View (GT-R certified NISSAN dealer)".
- 4. When oil leaks while removing, check oil level after the installation. Refer to DLN-72, "Inspection".



LEFT SIDE

LEFT SIDE: Exploded View (GT-R certified NISSAN dealer)

SEC. 381 ②**②**【(A: ■)

- Front final drive assembly
- 2. Side oil seal (left side)

- Oil seal lip
- <a>: Vehicle front

?: Apply gear oil. Refer to MA-21, "Fluids and Lubricants".

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

LEFT SIDE: Removal and Installation (GT-R certified NISSAN dealer)

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REMOVAL

- Remove the engine assembly with the suspension member from the vehicle. Refer to EM-53, "Exploded View (GT-R certified NISSAN dealer)".
- 2. Remove the front final drive assembly from the engine assembly with power tool. Refer to DLN-77, "Exploded View (GT-R certified NISSAN dealer)".

CAUTION:

- The left side oil seal is joined with the engine oil pan, therefore the final drive assembly must be removed from the engine assembly before replacing the oil seal.
- The engine oil pan (upper) uses heat-resistant magnesium. Never apply an impact to it.
- Remove the side oil seal using a suitable tool.

CAUTION:

Never damage gear carrier.

INSTALLATION

Apply multi-purpose grease to sealing lips of side oil seal.

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SIDE OIL SEAL

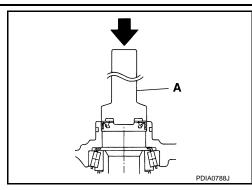
< REMOVAL AND INSTALLATION >

[FRONT FINAL DRIVE: F160A]

 Using the drift (A) [SST: KV38102100 (J-25803-01)], press-fit side oil seal so that its surface comes face-to-face with the end surface of the gear carrier.

CAUTION:

- Never reuse oil seal.
- When installing, never incline oil seal.
- 3. Install the front final drive assembly on the engine assembly. Refer to DLN-77, "Exploded View (GT-R certified NISSAN dealer)".
- 4. Install the engine assembly with the suspension member on the vehicle. Refer to EM-53, "Exploded View (GT-R certified NIS-SAN dealer)".



5. When oil leaks while removing, check oil level after the installation. Refer to <u>DLN-72</u>, "Inspection".

[FRONT FINAL DRIVE: F160A]

UNIT REMOVAL AND INSTALLATION

FRONT FINAL DRIVE ASSEMBLY

Exploded View (GT-R certified NISSAN dealer)

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- Air breather hose
- 2. Front final drive assembly
- 3. Washer with electric corrosion preventive material

Bushina

- Washer with electric corrosion preventive material
- Side shaft

: Vehicle front

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

Removal and Installation (GT-R certified NISSAN dealer)

REMOVAL

- 1. Remove the engine assembly with the suspension member from the vehicle. Refer to EM-53, "Exploded View (GT-R certified NISSAN dealer)".
- Remove the engine assembly from the suspension member. Refer to <u>FSU-27</u>, "Exploded View".
- 3. Remove the front drive shaft (LH and RH). Refer to FAX-16, "Exploded View (GT-R certified NISSAN dealer)".
- 4. Remove the side shaft mounting bolts, and remove the side shaft by tapping with plastic hammer. **CAUTION:**

The engine oil pan (upper) uses heat-resistant magnesium. Never apply an impact to it.

- Remove the alternator. Refer to CHG-30, "Exploded View (GT-R certified NISSAN dealer)".
- Remove the air breather hose.
- 7. Remove the oil return tube (bank 1). Refer to EM-61, "Exploded View".
- Remove the engine mount bracket (RH) (lower). Refer to EM-53, "Exploded View (GT-R certified NISSAN dealer)".

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FRONT FINAL DRIVE ASSEMBLY

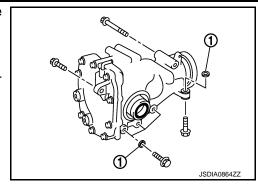
< UNIT REMOVAL AND INSTALLATION >

[FRONT FINAL DRIVE: F160A]

 Remove the front final drive assembly mounting bolts with the washer with electric corrosion preventive material (1). CAUTION:

Never damage the oil pressure switch connector.

- 10. Remove the front final drive assembly from the engine assembly.
- 11. Remove the bushings from the front final drive assembly.



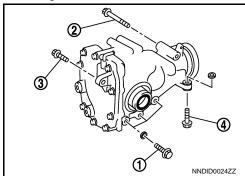
INSTALLATION

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

- Apply multi-purpose grease to the side oil seal and side shaft when installing the side shaft.
- When installing the front final drive assembly, temporarily tighten the bolt and finally tighten the bolt as per the following order: gear carrier side (1), gear carrier upper (2), carrier cover (3), and gear carrier lower (4).

CAUTION:

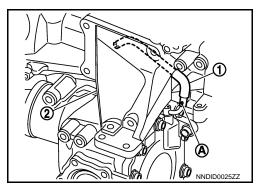
- When installing, align the joint surface between the gear carrier and the oil pan.
- The engine oil pan (upper) uses heat-resistant magnesium. Never apply an impact to it.
- Always install the washer with electric corrosion preventive material.
- Never reuse the washer with electric corrosion preventive material.



• Install the air breather hose (1) as shown in the figure.

CAUTION:

- Make sure there are no pinched or restricted areas on the breather hose caused by bending or winding when installing it.
- Position the paint mark (A) on the air breather hose toward the right side of the vehicle.
- The vehicle side of the air breather hose must be positioned at the engine mount bracket (RH) (2).
- Be sure to insert air breather hose to breather connector until hose end reaches the tube bend R portion.
- When oil leaks while removing final drive assembly, check oil level after the installation. Refer to <u>DLN-72</u>, "<u>Inspection</u>".

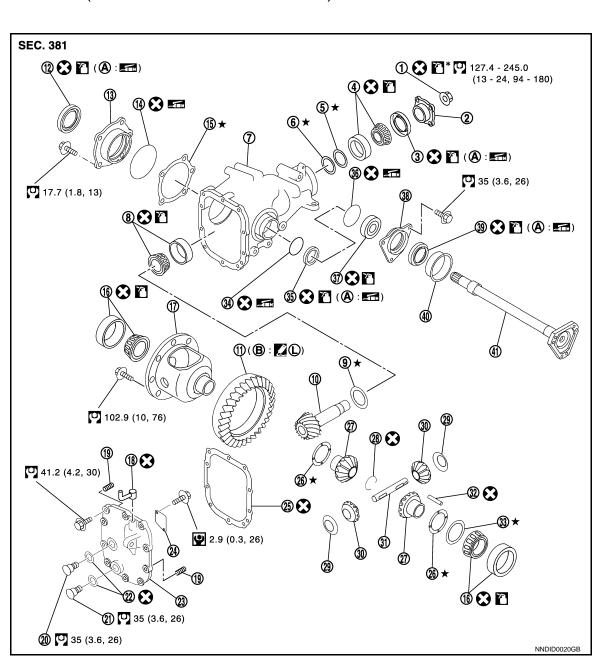


[FRONT FINAL DRIVE: F160A]

UNIT DISASSEMBLY AND ASSEMBLY

SIDE SHAFT

Exploded View (GT-R certified NISSAN dealer)



- 1. Drive pinion lock nut
- 4. Pinion front bearing
- 7. Gear carrier
- 10. Drive pinion
- 13. Side retainer
- To: Glad Totalilo
- 16. Side bearing
- 19. Dowel pin
- 22. Gasket
- 25. Gasket
- 28. Circular clip

- 2. Companion flange
- Drive pinion bearing adjusting wash- 6.
- 8. Pinion rear bearing
- 11. Drive gear
- 14. O-ring
- 17. Differential case
- 20. Filler plug
- 23. Carrier cover
- 26. Side gear thrust washer
- 29. Pinion mate thrust washer

- 3. Front oil seal
 - Drive pinion adjusting washer
- 9. Pinion height adjusting washer
- 12. Side oil seal (right side)
- 15. Side bearing adjusting shim
- 18. Breather connector
- 21. Drain plug
- 24. Gear oil defense
- 27. Side gear
- 30. Pinion mate gear

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[FRONT FINAL DRIVE: F160A]

33. Side bearing adjusting washer

31. Pinion mate shaft

32. Lock pin

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34. O-ring

35. Side oil seal (left side)

36. O-ring

37. Side shaft bearing

38. Extension tube retainer

39. Side shaft oil seal

40. Dust sealA: Oil seal lip

41. Side shaftB: Screw hole

?: Apply gear oil. Refer to MA-21, "Fluids and Lubricants".

*: Apply anti-corrosion oil.

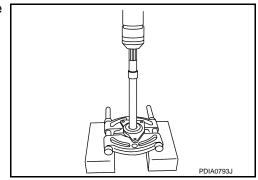
Apply Genuine Medium Strength Thread Locking Sealant or equivalent. Refer to GI-18, "Recommended Chemical Products and Sealants".

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

Disassembly (GT-R certified NISSAN dealer)

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1. Hold extension tube retainer with puller, then press out side shaft using a press.

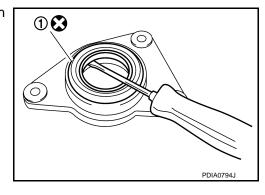


2. Remove side shaft oil seal (1) from extension tube retainer with a flat- blade screwdriver.

CAUTION:

Never damage extension tube retainer.

- 3. Remove side shaft bearing from extension tube retainer.
- 4. Remove O-ring from extension tube retainer.
- 5. Remove dust seal from side shaft.



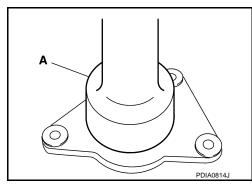
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Assembly (GT-R certified NISSAN dealer)

 Using the drift (A) [SST: KV38100200 (—)], install side shaft oil seal.

CAUTION:

- · Never reuse oil seal.
- · When installing, never incline oil seal.
- Apply multi-purpose grease onto oil seal lips, and gear oil onto the circumference of oil seal.
- 2. Install dust seal.



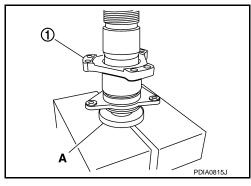
SIDE SHAFT

< UNIT DISASSEMBLY AND ASSEMBLY >

- Support side shaft bearing with the drift (A) [SST: ST30032000 (J-26010-01)], then press side shaft (1) into the side shaft bearing using a press.
- 4. Apply multi-purpose grease to O-ring, and install it to extension tube retainer.

CAUTION:

Never reuse O-ring.



[FRONT FINAL DRIVE: F160A]

Inspection After Disassembly (GT-R certified NISSAN dealer)

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DRIVE GEAR AND DRIVE PINION

- Clean up the disassembled parts.
- If the gear teeth never mesh or line-up correctly, determine the cause and adjust or replace as necessary.
- If the gears are worn, cracked, damaged, pitted or chipped (by friction) noticeably, replace with new drive gear and drive pinion as a set.

BEARING

- Clean up the disassembled parts.
- If any chipped (by friction), pitted, worn, rusted or scratched marks, or unusual noise from the bearing is observed, replace as a bearing assembly (as a new set).

SIDE GEAR AND PINION MATE GEAR

- · Clean up the disassembled parts.
- If any cracks or damage on the surface of the tooth is found, replace.
- If any worn or chipped mark on the contact sides of the thrust washer is found, replace.

SIDE GEAR THRUST WASHER AND PINION MATE THRUST WASHER

- Clean up the disassembled parts.
- If it is chipped (by friction), damaged, or unusually worn, replace.

OIL SEAL

- Whenever disassembled, replace.
- If wear, deterioration of adherence (sealing force lips), or damage is detected on the lips, replace them.

DIFFERENTIAL CASE

- Clean up the disassembled parts.
- If any wear or crack on the contact sides of the differential case is found, replace.

COMPANION FLANGE

- Clean up the disassembled parts.
- If any chipped mark [about 0.1 mm, (0.004 in)] or other damage on the contact sides of the lips of the companion flange is found, replace.

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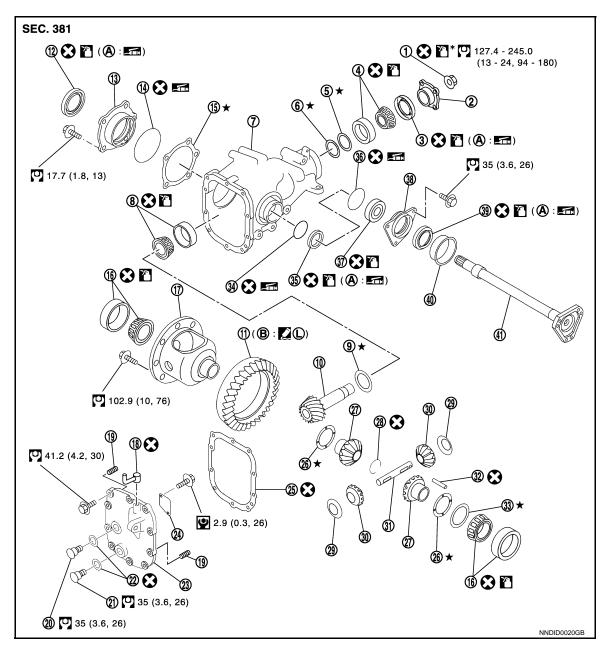
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Exploded View (GT-R certified NISSAN dealer)

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- 1. Drive pinion lock nut
- 4. Pinion front bearing
- 7. Gear carrier
- 10. Drive pinion
- 13. Side retainer
- 16. Side bearing
- 19. Dowel pin
- 22. Gasket
- 25. Gasket
- 28. Circular clip
- 31. Pinion mate shaft

- 2. Companion flange
- 5. Drive pinion bearing adjusting wash- 6. er
- 8. Pinion rear bearing
- 11. Drive gear
- 14. O-ring
- 17. Differential case
- 20. Filler plug
- 23. Carrier cover
- 26. Side gear thrust washer
- 29. Pinion mate thrust washer
- 32. Lock pin

- 3. Front oil seal
- 6. Drive pinion adjusting washer
- 9. Pinion height adjusting washer
- 12. Side oil seal (right side)
- 15. Side bearing adjusting shim
- 18. Breather connector
- 21. Drain plug
- 24. Gear oil defense
- Side gear
- 30. Pinion mate gear
- 33. Side bearing adjusting washer

< UNIT DISASSEMBLY AND ASSEMBLY >

[FRONT FINAL DRIVE: F160A]

34. O-ring 35. Side oil seal (left side) 36. O-ring

37. Side shaft bearing 38. Extension tube retainer 39. Side shaft oil seal

40. Dust sealA: Oil seal lipB: Screw hole

?: Apply gear oil. Refer to MA-21, "Fluids and Lubricants".

*: Apply anti-corrosion oil.

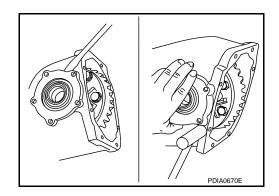
2: Apply Genuine Medium Strength Thread Locking Sealant or equivalent. Refer to GI-18, "Recommended Chemical Products and Sealants".

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

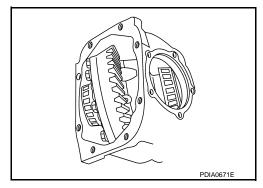
Disassembly (GT-R certified NISSAN dealer)

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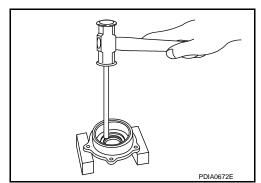
- 1. Drain gear oil, if necessary.
- 2. Remove carrier cover mounting bolts.
- Remove carrier cover from gear carrier by tapping carrier cover with plastic hammer. CAUTION:
 - Never damage the carrier cover and gear carrier.
- 4. Remove side retainer.
- 5. Remove side bearing adjusting shim.
- 6. Remove O-ring from side retainer.



Remove differential case assembly from gear carrier.



8. Remove side oil seal (right side) from side retainer.



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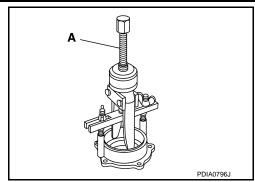
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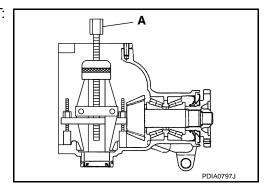
< UNIT DISASSEMBLY AND ASSEMBLY >

[FRONT FINAL DRIVE: F160A]

- 9. Remove side bearing outer race with puller (A) [SST: KV381054S0 (J-34286)].
- 10. Remove O-ring from gear carrier.
- 11. Remove side oil seal (left side) from gear carrier.



12. Remove side bearing outer race with puller (A) [SST: KV381054S0 (J-34286)].



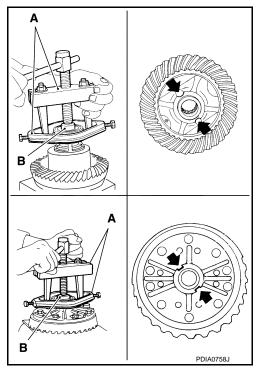
13. Remove side bearing inner race.

To prevent damage to bearing, engage puller jaws in groove ().

A: Puller [SST: ST33051001 (J-22888-20)] B: Base [SST: ST33061000 (J-8107-2)]

CAUTION:

- To prevent damage to the side bearing and drive gear, place copper plates between these parts and vise.
- It is not necessary to remove side bearing inner race except if it is replaced.



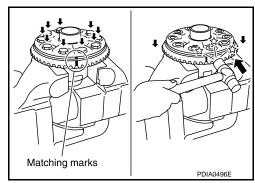
14. For proper reinstallation, paint matching marks on one differential case assembly.

CAUTION:

For matching marks, use paint. Never damage differential case and drive gear.

- 15. Remove drive gear mounting bolts.
- 16. Tap drive gear off differential case assembly with a soft hammer. CAUTION:

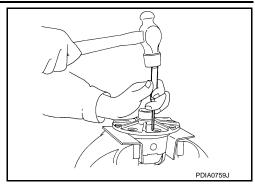
Tap evenly all around to keep drive gear from bending.



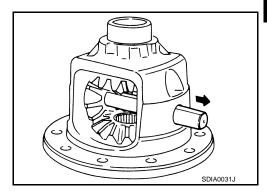
< UNIT DISASSEMBLY AND ASSEMBLY >

[FRONT FINAL DRIVE: F160A]

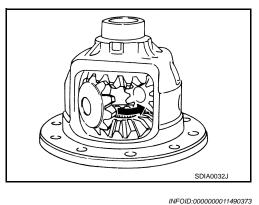
17. Remove lock pin of pinion mate shaft with a punch from drive gear side.



18. Remove pinion mate shaft.

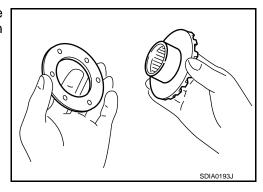


19. Turn pinion mate gear, then remove pinion mate gears, pinion mate thrust washers, side gears and side gear thrust washers from differential case.



Assembly (GT-R certified NISSAN dealer)

 Install side gear thrust washers with the same thickness as the ones installed prior to disassembly or reinstall the old ones on the side gears.



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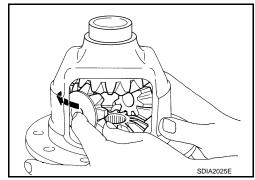
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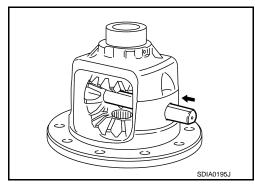
< UNIT DISASSEMBLY AND ASSEMBLY >

[FRONT FINAL DRIVE: F160A]

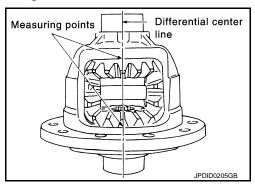
- Install side gears and thrust washers into differential case. CAUTION:
 - Never reuse circular clip.
 - Make sure that the circular clip is installed to side gear (side retainer side).
- 3. Align 2 pinion mate gears in diagonally opposite positions, then rotate and install them into differential case after installing thrust washer to pinion mate gear.



4. Align the lock pin holes on differential case with shaft, and install pinion mate shaft.



- 5. Measure side gear end play. If necessary, select the appropriate side gear thrust washers.
- a. Place differential case straight up so that side gear to be measured comes upward.



< UNIT DISASSEMBLY AND ASSEMBLY >

[FRONT FINAL DRIVE: F160A]

b. Using feeler gauge, measure the clearance between side gear back and differential case at 3 different points, while rotating side gear. Average the 3 readings, and then measure the clearance of the other side as well.

Standard

Side gear back clearance

: Refer to DLN-104, "Differential Side Gear Clearance (GT-R certified NISSAN dealer)".

CAUTION:

To prevent side gear from tilting, insert feeler gauges with the same thickness from both sides.

c. If the back clearance is outside the specification, use a thicker/thinner side gear thrust washer to adjust.

When the back clearance is large:

Use a thicker thrust washer.

When the back clearance is small:

Use a thinner thrust wash-

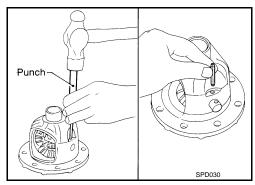
er.

CAUTION:

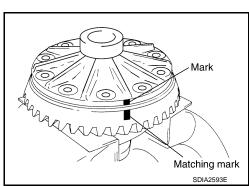
Select a side gear thrust washer for right and left individually.

 Drive a lock pin into pinion mate shaft, using a punch. Make sure lock pin is flush with differential case.
 CAUTION:

Never reuse lock pin.



Align the matching mark of drive gear with the mark of differential case, then place drive gear.



Feeler gauges with the same thickness

Feeler gauges with the same thickness

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< UNIT DISASSEMBLY AND ASSEMBLY >

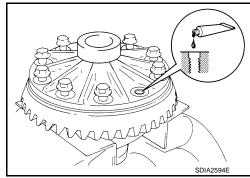
[FRONT FINAL DRIVE: F160A]

8. Apply thread locking sealant into the thread hole of drive gear.

 Use Genuine Medium Strength Thread Locking Sealant or equivalent. Refer to <u>GI-18</u>, "<u>Recommended Chemical</u> <u>Products and Sealants</u>".

CAUTION:

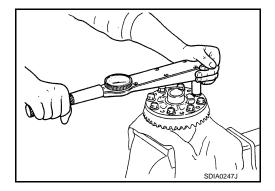
Drive gear back and threaded holes must be cleaned and degreased sufficiently.



9. Install drive gear on the mounting bolts.

CAUTION:

Tighten bolts in a crisscross fashion.



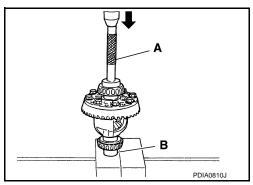
Press side bearing inner races to differential case, using the drift and the base.

A: Drift [SST: ST33230000 (J-25805-01)]

B: Base [SST: ST33061000 (J-8107-2)]

CAUTION:

Never reuse side bearing inner race.



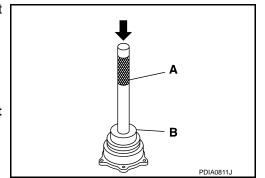
 Press-fit side bearing outer race into side retainer with the drift and the drift bar.

A: Drift bar [SST: ST30611000 (J-25742-1)]

B: Drift [SST: KV31103000 (J-38982)]

CAUTION:

- At first, using a hammer, tap bearing outer race until it becomes flat to side retainer.
- Never reuse side bearing outer race.



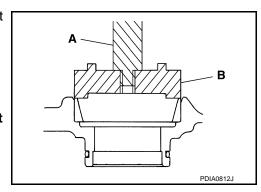
12. Press-fit side bearing outer race into gear carrier with the drift and the drift bar.

A: Drift bar [SST: ST30611000 (J-25742-1)]

B: Drift [SST: KV31103000 (J-38982)]

CAUTION:

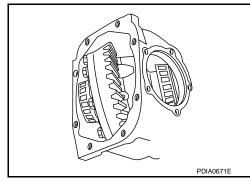
- At first, using a hammer, tap bearing outer race until it becomes flat to gear carrier.
- Never reuse side bearing outer race.



< UNIT DISASSEMBLY AND ASSEMBLY >

[FRONT FINAL DRIVE: F160A]

- 13. Place the differential case assembly into gear carrier.
- 14. Measure side bearing preload. If necessary, select the appropriate side bearing adjusting shim. Refer to DLN-90, "Adjustment (GT-R certified NISSAN dealer)".



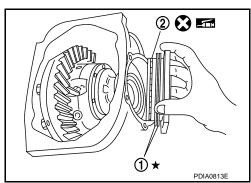
15. Install selected side bearing adjusting shim (1). Refer to <u>DLN-90, "Adjustment (GT-R certified NISSAN dealer)"</u>.

16. Apply multi-purpose grease to O-ring (2), and install it to side retainer.

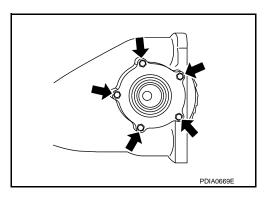
CAUTION:

Never reuse O-ring.

17. Install side retainer assembly to gear carrier.



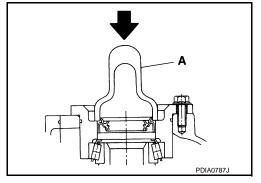
18. Install side retainer mounting bolts.



19. Using the drift (A) [SST: ST33400001 (J-26082)], press-fit side oil seal so that its surface comes face-to-face with the end surface of the side retainer.

CAUTION:

- Never reuse oil seal.
- When installing, never incline oil seal.
- Apply multi-purpose grease onto oil seal lips, and gear oil onto the circumference of oil seal.

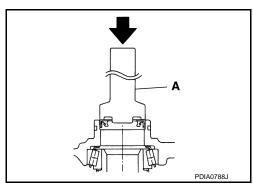


20. Using the drift (A) [SST: KV38102100 (J-25803-01)], press-fit side oil seal so that its surface comes face-to-face with the end surface of gear carrier.

CAUTION:

- Never reuse oil seal.
- · When installing, never incline oil seal.
- Apply multi-purpose grease onto oil seal lips, and gear oil onto the circumference of oil seal.
- 21. Apply multi-purpose grease to O-ring, and install it to gear carrier.

CAUTION:



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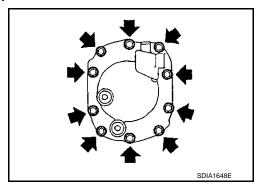
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[FRONT FINAL DRIVE: F160A]

Never reuse O-ring.

- 22. Check and adjust drive gear runout, tooth contact, drive gear to drive pinion backlash, and total preload torque. Refer to DLN-90, "Adjustment (GT-R certified NISSAN dealer)". Recheck above items. Readjust as described above, if necessary.
- 23. Install carrier cover and gasket on gear carrier and tighten mounting bolts.

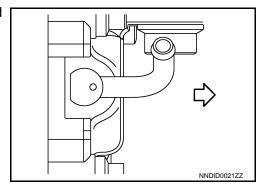


24. Install the breather connector with the paint mark positioned toward the vehicle front.

∀
 : Vehicle front

CAUTION:

Never reuse the air breather.



Adjustment (GT-R certified NISSAN dealer)

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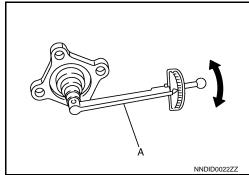
TOTAL PRELOAD TORQUE

- Before inspection and adjustment, drain gear oil.
- 1. Rotate drive pinion back and forth 2 to 3 times to check for unusual noise and rotation malfunction.
- Rotate drive pinion at least 20 times to check for smooth operation of the bearing.
- 3. Measure total preload with preload gauge (A) [SST: ST3127S000 (J-25765-A)].

Standard

Total preload torque : Refer to <u>DLN-104, "Pre-load Torque (GT-R certified</u>

NISSAN dealer)".



NOTE:

Total preload torque = Pinion bearing preload torque + Side bearing preload torque

 If measured value is out of the specification, disassemble it to check and adjust each part. Adjust the pinion bearing preload and side bearing preload.
 Adjust the pinion bearing preload first, then adjust the side bearing preload.

When the preload torque is large

On pinion bearings: Decrease the drive pinion bearing adjusting washer and drive pinion

adjusting washer thickness.

On side bearings: Increase the side bearing adjusting shim thickness. For select parts

refer to parts information.

[FRONT FINAL DRIVE: F160A]

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When the preload torque is small

On pinion bearings: Increase the drive pinion bearing adjusting washer and drive pinion

adjusting washer thickness.

On side bearings: Decrease the side bearing adjusting shim thickness. For select parts

refer to parts information.

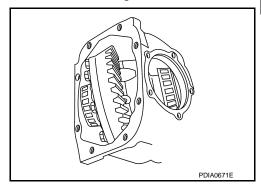
SIDE BEARING PRELOAD

· Before inspection and adjustment, drain gear oil.

1. Remove carrier cover and side retainer. Refer to DLN-83, "Disassembly (GT-R certified NISSAN dealer)".

Make sure all parts are clean. Also, make sure the bearings are well lubricated with gear oil.

3. Place the differential case assembly into gear carrier.

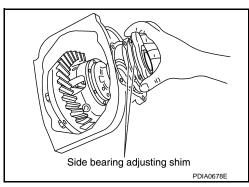


4. Install side bearing adjusting shim before disassembling or shim which thickness is the same as the one before disassembling.

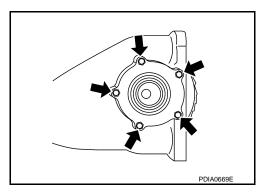
5. Install side retainer assembly to gear carrier.

CAUTION:

Never install O-ring.



6. Install side retainer mounting bolts to the specified torque.



Measure the turning torque of the gear carrier at the drive gear mounting bolts with a spring gauge [SST:
 — (J-8129)].

Specification : 34.2 – 39.2 N (3.5 – 4.0 kg,

7.7 – 8.8 lb) of pulling force at the drive gear bolt

< UNIT DISASSEMBLY AND ASSEMBLY >

[FRONT FINAL DRIVE: F160A]

If the turning torque is outside the specification, use a thicker/ thinner side bearing adjusting shim to adjust.

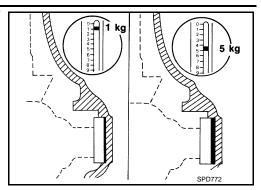
If the turning torque is less than the specified range:

Decrease the side bearing adjusting shim thickness.

If the turning torque is greater than the specification:

Increase the side bearing adjusting shim thickness.

9. Record the total amount of shim thickness required for the correct carrier side bearing preload.



DRIVE GEAR RUNOUT

- 1. Remove carrier cover. Refer to <u>DLN-83</u>, "<u>Disassembly (GT-R certified NISSAN dealer)</u>".
- 2. Fit a dial indicator to the drive gear back face.
- 3. Rotate the drive gear to measure runout.

Limit

Drive gear runout

: Refer to <u>DLN-104</u>, "<u>Drive</u> <u>Gear Runout (GT-R certi-fied NISSAN dealer)</u>".

 If the runout is outside of the repair limit, check drive gear assembly condition; foreign material may be caught between drive gear and differential case, or differential case or drive gear may be deformed, etc.



Replace drive gear and drive pinion gear as a set.

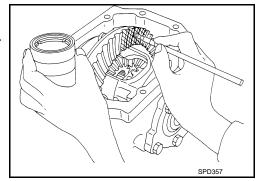


Before inspection and adjustment, drain gear oil.

- 1. Remove carrier cover. Refer to <u>DLN-83, "Disassembly (GT-R certified NISSAN dealer)"</u>.
- 2. Apply red lead to drive gear.

CAUTION:

Apply red lead to both the faces of 3 to 4 gears at 4 locations evenly spaced on drive gear.

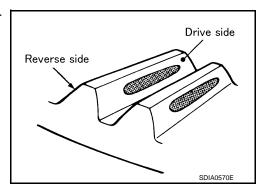


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3. Rotate drive gear back and forth several times, check drive pinion gear to drive gear tooth contact.

CAUTION:

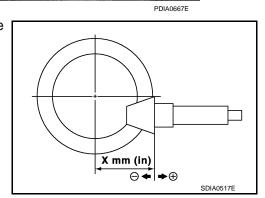
Check tooth contact on drive side and reverse side.



[FRONT FINAL DRIVE: F160A]

Tooth contact pattern					A discontinuo a set usa sociale			
Back side Drive side		Pinion height adjusting washer selection value [mm(in)]	Adjustment requirement (Yes/No)					
Heel side To	oe side	Toe side	Heel side	SCISSION VALUE (IIIII (111))	(163/110)			
				+0. 15 (+0. 0059)				
				+0. 12 (+0. 0047)	Yes			
	<u></u>			+0. 09 (+0. 0035)				
				+0.06 (+0.0024)				
				+0. 03 (+0. 0012)				
				0	No			
			**	-0. 03 (-0. 0012)				
	»			-0. 06 (-0. 0024)				
	»	- «A	***	-0. 09 (-0. 0035)				
	\supset		**	-0. 12 (-0. 0047)	Yes			
- splitte.			****	-0. 15 (-0. 0059)	1			

 If tooth contact is improperly adjusted, follow the procedure below to adjust the pinion height [dimension (X)].



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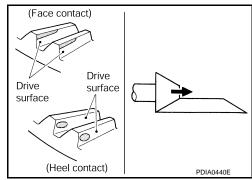
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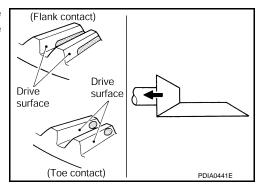
< UNIT DISASSEMBLY AND ASSEMBLY >

[FRONT FINAL DRIVE: F160A]

• If the tooth contact is near the face (face contact), or near the heel (heel contact), thicken pinion height adjusting washers to move drive pinion closer to drive gear.



 If the tooth contact is near the flank (flank contact), or near the toe (toe contact), thin pinion height adjusting washers to move drive pinion farther from drive gear.



BACKLASH

Before inspection and adjustment, drain gear oil.

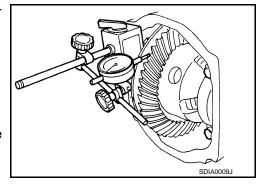
- Remove carrier cover. Refer to <u>DLN-83</u>, "<u>Disassembly (GT-R certified NISSAN dealer)</u>".
- Fit a dial indicator to the drive gear face to measure the backlash.

Standard

Backlash

: Refer to DLN-104, "Backlash (GT-R certified NIS-SAN dealer)".

 If the backlash is outside of the specified value, change the thickness of side bearing adjusting washer.



When the backlash is large:

Decrease side bearing adjusting washer thickness.

When the backlash is small:

Increase side bearing adjusting washer thickness.

Inspection After Disassembly (GT-R certified NISSAN dealer)

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DRIVE GEAR AND DRIVE PINION

- · Clean up the disassembled parts.
- If the gear teeth never mesh or line-up correctly, determine the cause and adjust or replace as necessary.
- If the gears are worn, cracked, damaged, pitted or chipped (by friction) noticeably, replace with new drive gear and drive pinion as a set.

BEARING

- · Clean up the disassembled parts.
- If any chipped (by friction), pitted, worn, rusted or scratched marks, or unusual noise from the bearing is observed, replace as a bearing assembly (as a new set).

SIDE GEAR AND PINION MATE GEAR

· Clean up the disassembled parts.

< UNIT DISASSEMBLY AND ASSEMBLY >

[FRONT FINAL DRIVE: F160A]

- If any cracks or damage on the surface of the tooth is found, replace.
- If any worn or chipped mark on the contact sides of the thrust washer is found, replace.

SIDE GEAR THRUST WASHER AND PINION MATE THRUST WASHER

- Clean up the disassembled parts.
- If it is chipped (by friction), damaged, or unusually worn, replace.

OIL SEAL

- Whenever disassembled, replace.
- If wear, deterioration of adherence (sealing force lips), or damage is detected on the lips, replace them.

DIFFERENTIAL CASE

- Clean up the disassembled parts.
- If any wear or crack on the contact sides of the differential case is found, replace.

COMPANION FLANGE

- Clean up the disassembled parts.
- If any chipped mark [about 0.1 mm, (0.004 in)] or other damage on the contact sides of the lips of the companion flange is found, replace.

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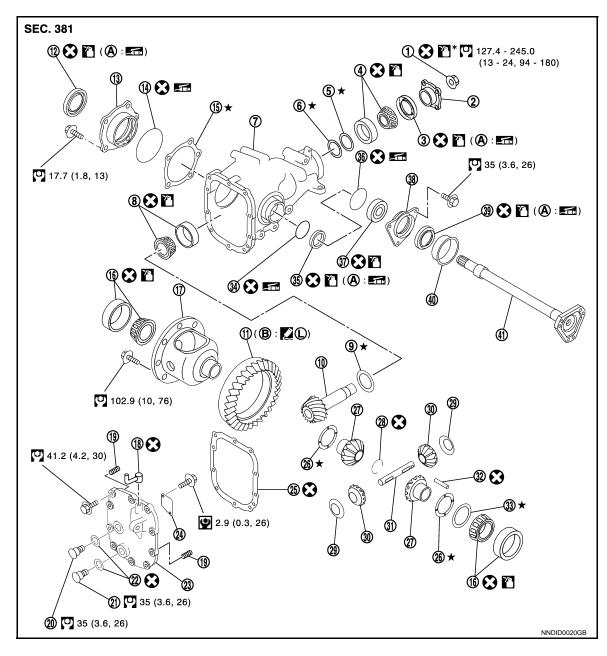
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Exploded View (GT-R certified NISSAN dealer)

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- Drive pinion lock nut
- Pinion front bearing 4.
- 7. Gear carrier
- 10. Drive pinion
- 13. Side retainer
- Side bearing 16.
- 19. Dowel pin
- 22. Gasket
- Gasket 25.
- 28. Circular clip
- 31. Pinion mate shaft

- 2. Companion flange
- 5. Drive pinion bearing adjusting wash- 6.
- 8. Pinion rear bearing
- 11. Drive gear
- 14. O-ring
- 17. Differential case
- 20. Filler plug
- 23. Carrier cover
- 26. Side gear thrust washer
- 29. Pinion mate thrust washer
- 32. Lock pin

- 3. Front oil seal
- Drive pinion adjusting washer
- 9. Pinion height adjusting washer
- 12. Side oil seal (right side)
- 15. Side bearing adjusting shim
- 18. Breather connector
- 21. Drain plug
- 24. Gear oil defense
- 27. Side gear
- Pinion mate gear
- 33. Side bearing adjusting washer

< UNIT DISASSEMBLY AND ASSEMBLY >

[FRONT FINAL DRIVE: F160A]

34. O-ring 35. Side oil seal (left side) 36. O-ring

37. Side shaft bearing 38. Extension tube retainer 39. Side shaft oil seal

40. Dust sealA: Oil seal lipB: Screw hole

?: Apply gear oil. Refer to MA-21, "Fluids and Lubricants".

★: Apply anti-corrosion oil.

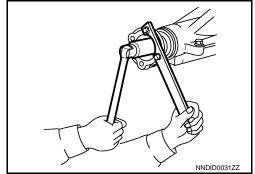
L: Apply Genuine Medium Strength Thread Locking Sealant or equivalent. Refer to GI-18, "Recommended Chemical Products and Sealants".

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

Disassembly (GT-R certified NISSAN dealer)

1. Remove differential case assembly. Refer to <u>DLN-83</u>, "<u>Disassembly (GT-R certified NISSAN dealer)"</u>.

2. Remove drive pinion lock nut with a flange wrench (commercial service tool).



3. Put matching mark (B) on the end of drive pinion. The matching mark should be in line with the matching mark (A) on companion flange (1).

CAUTION:

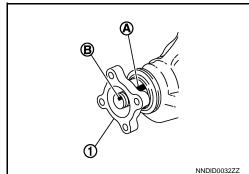
For matching mark, use paint. Never damage companion flange and drive pinion.

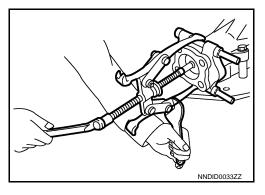
NOTE:

The matching mark (A) on the final drive companion flange (1) indicates the maximum vertical runout position.

When replacing companion flange, matching mark is not necessary.

4. Remove companion flange using a suitable puller.





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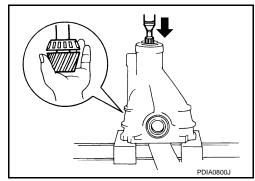
< UNIT DISASSEMBLY AND ASSEMBLY >

[FRONT FINAL DRIVE: F160A]

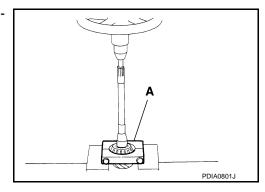
Press drive pinion assembly out of gear carrier. CAUTION:

Never drop drive pinion assembly.

- 6. Remove front oil seal.
- 7. Remove pinion front bearing inner race.
- 8. Remove drive pinion bearing adjusting washer and drive pinion adjusting washer.



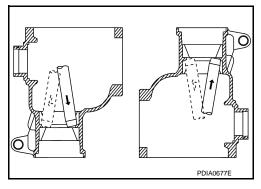
9. Remove pinion rear bearing inner race and pinion height adjusting washer with replacer (A) (commercial service tool).



10. Tap pinion front/rear bearing outer races uniformly a brass rod or equivalent to removed.

CAUTION:

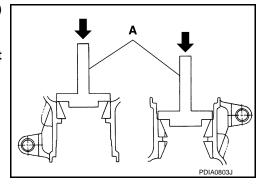
Never damage gear carrier.



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Assembly (GT-R certified NISSAN dealer)

- Install pinion front and rear bearing outer races using drift (A) [SST: ST37820000 ()].
 - **CAUTION:**
 - At first, using a hammer, tap bearing outer race until it becomes flat to gear carrier.
 - Never reuse pinion front and rear bearing outer race.



< UNIT DISASSEMBLY AND ASSEMBLY >

2. Install pinion height adjusting washer (1) to drive pinion.

When hypoid gear set has been replaced

 Select pinion height adjusting washer. Refer to <u>DLN-100</u>, "Adjustment (GT-R certified NISSAN dealer)".

When hypoid gear set has been reused

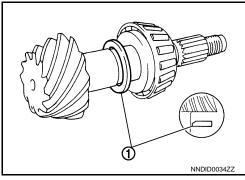
• Install the removed pinion height adjusting washer or same thickness washer to drive pinion.

CAUTION:

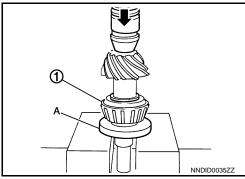
Pay attention to the direction of pinion height adjusting washer.

 Press pinion rear bearing inner race (1) to drive pinion, using drift (A) [SST: ST30032000 (J-26010-01)].
 CAUTION:

Never reuse pinion rear bearing inner race.



[FRONT FINAL DRIVE: F160A]

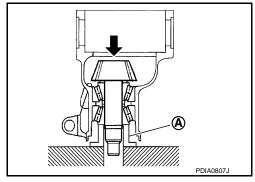


- 4. Assemble a new drive pinion adjusting washer and the pinion bearing adjusting washer with the same thicknesses as the ones removed for disassembly or the removed washers. If the adjusting washers with appropriate thicknesses have been selected, use the ones selected.
- 5. Apply gear oil to pinion rear bearing, and assemble drive pinion into gear carrier.
- Apply gear oil to pinion front bearing, and assemble pinion front bearing inner race to drive pinion assembly.

CAUTION:

Never reuse pinion front bearing inner race.

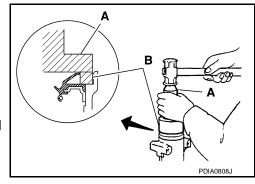
- 7. Using suitable spacer (A), press the pinion front bearing inner race to drive pinion as far as drive pinion nut can be tightened.
- 8. Adjust pinion bearing preload. If necessary, select the appropriate drive pinion adjusting washer and drive pinion bearing adjusting washer. Refer to DLN-100, "Adjustment (GT-R certified NISSAN dealer)".



- 9. Using the drifts, install front oil seal as shown in figure.
 - A: Drift [SST: ST33400001 (J-26082)]
 B: Drift [SST: KV38102510 ()]

CAUTION:

- Never reuse oil seal.
- When installing, never incline oil seal.
- Apply multi-purpose grease onto oil seal lips, and gear oil onto the circumference of oil seal.



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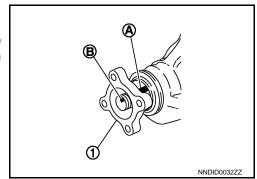
< UNIT DISASSEMBLY AND ASSEMBLY >

[FRONT FINAL DRIVE: F160A]

10. Install companion flange (1).

NOTE:

When reusing drive pinion, align the matching mark (B) of drive pinion with the matching mark (A) of companion flange, and then install companion flange (1).



11. Apply anti-corrosion oil to the thread and seat of new drive pinion lock nut, and temporarily tighten drive pinion lock nut to drive pinion.

CAUTION:

Never reuse drive pinion lock nut.

12. Tighten to drive pinion lock nut, while adjusting pinion bearing preload torque.

A: Preload gauge [SST: ST3127S000 (J-25765-A)]

Standard

Pinion bearing preload : Refer to <u>DLN-104, "Pre-</u>

<u>load Torque (GT-R certified</u> NISSAN dealer)".

CAUTION:

- Adjust to the lower limit of the drive pinion lock nut tightening torque first.
- After adjustment, rotate drive pinion back and forth 2 to 3 times to check for unusual noise, rotation malfunction, and other malfunctions.
- 13. Install differential case assembly. Refer to <u>DLN-85, "Assembly</u> (<u>GT-R certified NISSAN dealer)"</u>.

CAUTION:

Never install carrier cover yet.

14. Check and adjust drive gear runout, tooth contact, drive gear to drive pinion backlash, and companion flange runout. Refer to <u>DLN-90</u>, "Adjustment (GT-R certified NISSAN dealer)" and <u>DLN-100</u>, "Adjustment (GT-R certified NISSAN dealer)".

Recheck above items. Readjust the above description, if necessary.

- 15. Check total preload torque. Refer to DLN-90, "Adjustment (GT-R certified NISSAN dealer)".
- 16. Install carrier cover. Refer to DLN-85, "Assembly (GT-R certified NISSAN dealer)".

Adjustment (GT-R certified NISSAN dealer)

INFOID:0000000011490379

PINION GEAR HEIGHT

If the hypoid gear set has been replaced, select the pinion height adjusting washer.

< UNIT DISASSEMBLY AND ASSEMBLY >

[FRONT FINAL DRIVE: F160A]

Use the formula below to calculate pinion height adjusting washer thickness.

Washer selection equation:

$$T = T_0 + (t_1 - t_2)$$

T: **Correct washer thickness**

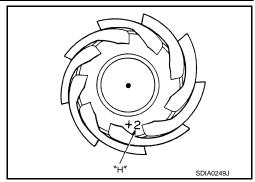
To: Removed washer thickness

t1: Old drive pinion head letter " $H \times 0.01$ "

("H": machined tolerance 1/100 mm × 100)

New drive pinion head letter " $H \times 0.01$ " t2:

("H": machined tolerance $1/100 \text{ mm} \times 100$)



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Example:

$$T = 3.21 + [(2 \times 0.01) - (-1 \times 0.01)] = 3.24$$

3.21 To:

t1: +2

-1 t2:

2. Select the proper pinion height adjusting washer.

If unable to find a washer of desired thickness, use a washer with thickness closest to the calculated value.

Example:

Calculated value... T = 3.22 mm

Used washer... T = 3.21 mm

PINION BEARING PRELOAD

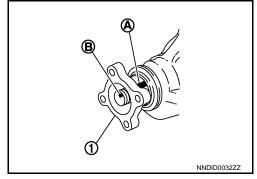
Assemble the drive pinion parts if they are disassembled. Refer to DLN-98, "Assembly (GT-R certified NISSAN dealer)".

1. Make sure all parts are clean. Also, make sure the bearings are well lubricated with gear oil.

2. Install companion flange (1).

NOTE:

When reusing drive pinion, align the matching mark (B) of drive pinion with the matching mark (A) of companion flange, and then install companion flange (1).



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< UNIT DISASSEMBLY AND ASSEMBLY >

Temporarily tighten removed drive pinion lock nut to drive pinion. NOTE:

Use removed drive pinion lock nut only for the preload measure-

- Rotate drive pinion at least 20 times to check for smooth operation of the bearing.
- Tighten to drive pinion lock nut, while adjust pinion bearing preload torque.

A: Preload gauge [SST: ST3127S000 (J-25765-A)]

Standard

Pinion bearing preload : Refer to DLN-104, "Pre-

load Torque (GT-R certified

NISSAN dealer)".

CAUTION:

- Adjust to the lower limit of the drive pinion lock nut tightening torque first.
- After adjustment, rotate drive pinion back and forth 2 to 3 times to check for unusual noise, rotation malfunction, and other malfunctions.

If the pinion bearing preload torque is outside the specification. use a thicker/thinner drive pinion bearing adjusting washer and drive pinion adjusting washer to adjust.



Decrease the drive pinion bearing adjusting washer and drive pinion adjusting washer thickness. For select parts refer to parts information.

When the preload is small:

Increase the drive pinion bearing adjusting washer and drive pinion adjusting washer thickness. For select parts refer to parts information.

7. Remove companion flange, after adjustment.

COMPANION FLANGE RUNOUT

- Fit a dial indicator onto the companion flange face (inner side of the propeller shaft mounting bolt holes).
- 2. Rotate companion flange to check for runout.

Limit

Companion flange runout

: Refer to DLN-104, "Companion Flange Runout (GT-R certified NISSAN dealer)".

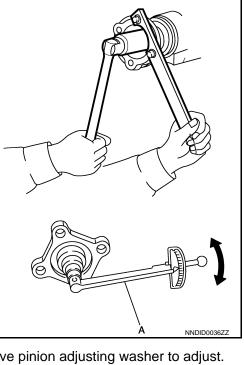
- Fit a test indicator to the inner side of companion flange (socket 3 diameter).
- 4. Rotate companion flange to check for runout.

Limit

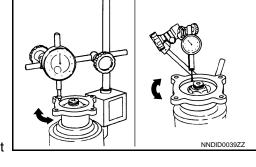
Companion flange runout : Refer to DLN-104, "Com-

panion Flange Runout (GT-R certified NISSAN dealer)".

If the runout value is outside the runout limit, follow the procedure below to adjust.



[FRONT FINAL DRIVE: F160A]



< UNIT DISASSEMBLY AND ASSEMBLY >

[FRONT FINAL DRIVE: F160A]

- a. Check for runout while changing the phase between companion flange and drive pinion by 90° step, and search for the position where the runout is the minimum.
- b. If the runout value is still outside of the limit after the phase has been changed, possible cause will be an assembly malfunction of drive pinion and pinion bearing and malfunction of pinion bearing. Check for these items and repair if necessary.
- c. If the runout value is still outside of the limit after the check and repair, replace companion flange.

Inspection After Disassembly (GT-R certified NISSAN dealer)

INFOID:0000000011490380

DRIVE GEAR AND DRIVE PINION

- Clean up the disassembled parts.
- If the gear teeth never mesh or line-up correctly, determine the cause and adjust or replace as necessary.
- If the gears are worn, cracked, damaged, pitted or chipped (by friction) noticeably, replace with new drive gear and drive pinion as a set.

BEARING

- Clean up the disassembled parts.
- If any chipped (by friction), pitted, worn, rusted or scratched marks, or unusual noise from the bearing is observed, replace as a bearing assembly (as a new set).

SIDE GEAR AND PINION MATE GEAR

- · Clean up the disassembled parts.
- If any cracks or damage on the surface of the tooth is found, replace.
- If any worn or chipped mark on the contact sides of the thrust washer is found, replace.

SIDE GEAR THRUST WASHER AND PINION MATE THRUST WASHER

- Clean up the disassembled parts.
- If it is chipped (by friction), damaged, or unusually worn, replace.

OIL SEAL

- Whenever disassembled, replace.
- If wear, deterioration of adherence (sealing force lips), or damage is detected on the lips, replace them.

DIFFERENTIAL CASE

- Clean up the disassembled parts.
- If any wear or crack on the contact sides of the differential case is found, replace.

COMPANION FLANGE

- Clean up the disassembled parts.
- If any chipped mark [about 0.1 mm, (0.004 in)] or other damage on the contact sides of the lips of the companion flange is found, replace.

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SERVICE DATA AND SPECIFICATIONS (SDS)

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SERVICE DATA AND SPECIFICATIONS (SDS)

General Specifications

INFOID:0000000011490381

[FRONT FINAL DRIVE: F160A]

		AWD
Applied model		VR38DETT
		GR6Z30A
Final drive model		F160A
Gear ratio		2.937
Number of teeth (Drive gear/Drive pinior	1)	47/16
Oil capacity (Approx.)	ℓ (US pt, Imp pt)	0.65 (1-3/8, 1-1/8)
Number of pinion gears		2
Drive pinion adjustment spacer type		Solid

Drive Gear Runout (GT-R certified NISSAN dealer)

INFOID:0000000011490382

Unit: mm (in)

Item	Limit					
Drive gear back face runout	0.05 (0.0020)					

Differential Side Gear Clearance (GT-R certified NISSAN dealer)

INFOID:0000000011490383

Unit: mm (in)

Item	Standard
Side gear backlash (Clearance between side gear and differential case)	0.2 (0.008) or less (Each gear should rotate smoothly without excessive resistance during differential motion.)

Preload Torque (GT-R certified NISSAN dealer)

INFOID:0000000011490384

Unit: N·m (kg-m, in-lb)

Item	Standard				
Pinion bearing preload (P1)	0.78 – 1.57 (0.08 – 0.16, 7 – 13)				
Side bearing preload (P2)	0.78 – 1.08 (0.08 – 0.11, 7 – 9)				
Side bearing to pinion bearing (Total preload) (Total preload = P1 + P2)	1.56 – 2.65 (0.16 – 0.27, 14 – 23)				

Backlash (GT-R certified NISSAN dealer)

INFOID:0000000011490385

Unit: mm (in)

Item	Standard				
Drive gear to drive pinion gear	0.10 - 0.15 (0.0039 - 0.0059)				

Companion Flange Runout (GT-R certified NISSAN dealer)

INFOID:0000000011490386

Unit: mm (in)

Item	Limit				
Companion flange face runout	0.18 (0.0071)				
Inner side of the companion flange runout	0.13 (0.0051)				

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING [REAR FINAL DRIVE]

< SYMPTOM DIAGNOSIS >

SYMPTOM DIAGNOSIS

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NVH Troubleshooting Chart

Use the chart below to find the cause of the symptom. If necessary, repair or replace these parts.

Reference		DLN-126, "Inspection After Disassembly (GT-R certified NISSAN dealer)"	DLN-122, "Adjustment (GT-R certified NISSAN dealer)"	DLN-126, "Inspection After Disassembly (GT-R certified NISSAN dealer)"	DLN-122, "Adjustment (GT-R certified NISSAN dealer)"	I	DLN-112, "Inspection"	NVH in DLN section.	NVH in FAX, RAX, FSU and RSU sections.	NVH in WT section.	NVH in WT section.	NVH in FAX and RAX section.	NVH in BR section.	NVH in ST section.
Possible cause and SUSPECTED PARTS		Gear tooth rough	Gear contact improper	Tooth surfaces worn	Backlash incorrect	Companion flange excessive runout	Gear oil improper	PROPELLER SHAFT	AXLE AND SUSPENSION	TIRE	ROAD WHEEL	DRIVE SHAFT	BRAKE	STEERING
Symptom	Noise	×	×	×	×	×	×	×	×	×	×	×	×	×

^{×:} Applicable

Although operating sound may be heard from LSD while driving, this is not always a malfunction.

DLN-105 Revision: 2015 June GT-R

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PRECAUTION

PRECAUTIONS

Precautions for Removing Battery Terminal

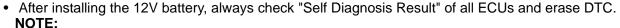
 When removing the 12V battery terminal, turn OFF the ignition switch and wait at least 30 seconds.

NOTE:

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

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

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



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



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PROHIBITION OF WELDING OR BEATING REPAIR

- Material made of aluminum die-casting parts is heat-treated and looses strength when being exposed to welding heat. Do not perform welding repair for cracks, damage or others.
- For aluminum die-casting parts deformation, do not perform repair by beating. Always repair by replacement as an assembly.

CRACK CHECK

When the vehicle is damaged, always perform a visual deformation check and a crack check.

Crack Check Procedures

For a crack check, use dye penetrant inspection fluid (pre-cleaning fluid, penetrant fluid and developer fluid). **CAUTION:**

Always perform a crack check in accordance with the procedures specified by the manufacturer of the dye penetrant inspection fluid.

- Spray pre-cleaning fluid on the checking surface for cleaning.
- 2. Spray penetrant fluid on the checking surface and wait until the penetrant fluid soaks into any cracks.
- 3. Wipe off excessive penetrant fluid, and then also lightly wipe off penetrant fluid using a wet cloth.
- 4. Spray developer fluid on the checking surface.
- 5. Cracks, if any, are dyed red in color.

STRAY CURRENT CORROSION

- Corrosion occurs to aluminum die-casting parts by the stray current corrosion phenomenon, when directly
 contacting other parts made of steel. Always apply anti-stray current corrosion paint (primer) on the mounting surface.
- Clean mounting surface to prevent any foreign matter, steel powder or others from being mixed in. Always
 apply the specified adhesive when installing.
- Corrosion by stray current corrosion may occur when installing with any other bolts than the specified bolt.
 Always use the specified bolt that is surface treated.
- When loosening the specified bolt that is tightened, the treated surface may peel. Never reuse the specified bolt that is tightened once.

TIGHTENING TORQUE CONTROL

Material made of aluminum die-casting parts is soft in term of hardness. Tightening torque must be controlled exactly as specified. Always use a torque wrench to install any part to the specified tightening torque.

WARNING:

PRECAUTIONS

< PRECAUTION > [REAR FINAL DRIVE]

Never use a power tool to remove or tighten bolts for aluminum die-casting part to prevent damage to aluminum die-casting parts.

Titanium Muffler Handling

INFOID:0000000011490390

CAUTION:

- Never touch the titanium muffler directly with bare hands or allow oils to adhere to it during inspection, removal, and installation.
- Always wear new thick cotton gloves or working gloves. (Never use oil-adhered gloves.)
- After oil adhesion, wait until the titanium muffler cools and immediately remove oil with parts cleaner.
- Always use genuine parts cleaner (dry type) or the equivalent.
- When cleaning oil in on-board condition, apply parts cleaner to a waste to wipe out oil. By doing so, peripheral parts can be protected from parts cleaner adhesion.
- Be careful not to cut fingers with the insulator edge or the main muffler cooling fin.

Service Notice or Precautions for Rear Final Drive (GT-R certified NISSAN dealer)

INFOID:0000000011490391

- Never service rear final drive except for the following.
- Checking for oil leakage or other malfunctions.
- Replacing oil.
- Replacing differential assembly.
- Replacing side oil seal.
- Replacing side flange. (When replacing rear sensor rotor.)
- Never use gasket fluid because it may dissolve in the gear oil.
- Overhaul should be done in a clean work area, it is preferable to work in dustproof area.
- When the transmission oil temperature exceeds 284°F (140°C) while driving: Change both transmission oil and differential oil immediately after stopping. Differential oil temperature usually increase concurrently.
- Although operating sound may be heard from LSD while driving, this is not always a malfunction.

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PREPARATION

PREPARATION

Special Service Tools (GT-R certified NISSAN dealer)

INFOID:0000000011490392

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

Tool number (TechMate No.) Tool name		Description
KV40101000 (—) Attachment	ZZA1093D	Removing side flange
ST36230000 (J-25840-A) Sliding hammer	ZZA0803D	Removing side flange
KV40104830 (—) Drift a: 70 mm (2.76 in) dia. b: 63.5 mm (2.50 in) dia.	a b b zzA0832D	Installing side oil seal
KV38105500 (J-33904) Protector a: 40 mm (1.57 in) dia.	ZZA0835D	Installing side flange
ST33081000 (—) Drift a: 43 mm (1.69 in) dia. b: 33.5 mm (1.319 in) dia.	ZZA1000D	Removing side bearing inner race
KV40104730 (—) Drift a: 53.7 mm (2.114 in) dia.	ZZA0999D	Installing side bearing inner race

PREPARATION

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[REAR FINAL DRIVE]

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Tool number (TechMate No.) Tool name		Description	-
KV40104720 (—) Adapter a: 76 mm (2.99 in) dia. b: 64 mm (2.52 in) dia. c: 56 mm (2.20 in) dia. d: 67.5 mm (2.657 in) dia. e: 63.7 mm (2.508 in) dia. f: 48 mm (1.89 in) dia.	NNDID0067ZZ	Installing side bearing inner race	
KV10112100 (BT-8653-A) Angle wrench	ZZA0120D	Tightening the drive gear mounting bolt	
ST01500001 (—) Drift a: 89 mm (3.50 in) dia. b: 79 mm (3.11 in) dia.	ZZA0836D	Installing side bearing outer race	-
KV40105310 (—) Drift a: 89.1 mm (3.508 in) dia. b: 80.7 mm (3.177 in) dia.	a b b zzA0832D	Installing side bearing outer race (side cover side)	-
CV40104710 (—) Orift a: 76.3 mm (3.004 in) dia. b: 67.9 mm (2.673 in) dia.	a b b zzA0832D	Installing side bearing outer race (gear carrier side)	-

Commercial Service Tools (GT-R certified NISSAN dealer)

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PREPARATION

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[REAR FINAL DRIVE]

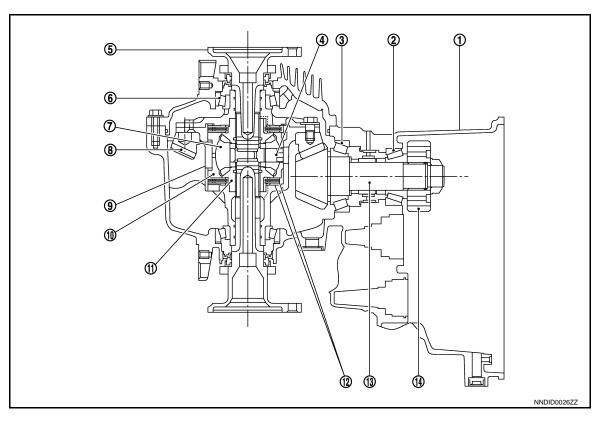
Tool name		Description
Oil syringe		Adjusting gear oil volume
Puller	JPDID0424ZZ	Removing side bearing outer race
Drift a: 114 mm (4.49 in) dia. b: 106 mm (4.17 in) dia.	NNDID0065ZZ	Removing side bearing outer race
` '	a b ZZA0936D	
Adapter		Removing side bearing outer race
	ZZA0846D	
Puller	ZZA0119D	Removing side bearing inner race
Replacer		Removing side bearing inner race
	ZZA0700D	

INFOID:0000000011490394

SYSTEM DESCRIPTION

REAR FINAL DRIVE ASSEMBLY

System Diagram (GT-R certified NISSAN dealer)



- 1. Gear carrier
- 4. Pinion mate shaft
- 7. Pinion mating gear
- 10. Pressure ring
- 13. Drive pinion

- 2. Pinion front bearing
- 5. Side flange
- 8. Drive gear
- 11. Side gear
- 14. Rear reduction gear
- 3. Pinion rear bearing
- 6. Side bearing
- 9. Differential case
- 12. Multiple disc clutch

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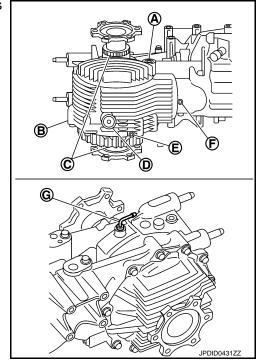
PERIODIC MAINTENANCE

REAR DIFFERENTIAL GEAR OIL

Inspection INFOID:0000000011490395

OIL LEAKAGE

• Visually check final drive assembly surrounding area for smears and leakage of differential gear oil.



Status	Parts		Required operation
Leakage ^{*1, 2}	Transmission assembly (on-board/single unit)	A: Filler plug	Replace gasket. Refer to <u>DLN-118</u> , " <u>Exploded View (GT-R certified NISSAN dealer)</u> ". If oil leakage continues even after replace the transmission assembly. Refer to <u>TM-403</u> , " <u>Exploded View (GT-R certified NISSAN dealer)</u> "
		B: Side cover	Replace the transmission assembly. Refer to TM-403, "Exploded View (GT-R certified NISSAN dealer)"
		C: Oil seal	Replace side oil seal. Refer to <u>DLN-115</u> , " <u>Exploded View (GT-R certified NISSAN dealer)</u> ". CAUTION: Always replace side oil seal together with side flange. (If side oil seal is abnormal, then side flange may also be abnormal.)
		D: Drain plug	Replace gasket. Refer to <u>DLN-118</u> , " <u>Exploded View (GT-R certified NISSAN dealer)</u> ". If oil leakage continues even after replace the transmission assembly. Refer to <u>TM-403</u> , " <u>Exploded View (GT-R certified NISSAN dealer)</u> "
		E: Guide hole	Replace side oil seal (left side). Refer to DLN-115, "Exploded View (GT-R certified NISSAN dealer)". CAUTION: Always replace side oil seal (left side) together with side flange (left side). [If side oil seal (left side) is abnormal, then side flange (left side) may also be abnormal.] 2. If oil leakage continues even after replacing side oil seal, check guide hole. If guide hole is abnormal, replace transmission assembly. Refer to TM-403, "Exploded View (GT-R certified NIS-SAN dealer)".
		F: Air vent	Replace the transmission assembly. Refer to TM-403, "Exploded View (GT-R certified NISSAN dealer)".
	Transmission assembly (single unit) G: Breather		Clean and wipe spouted oil with a part cleaner. Fill with oil to the specified oil level, if necessary.
Smears*3	Each part on the final driving the parts requiring oil		Use part cleaner or the equivalent to wipe out smeared oil. Then, check for oil leakage.

^{*1:} When the oil drops

• Visually check transmission assembly surrounding area (oil seal, drain plug, filler plug, transmission case, etc.) for smears and leakage of transmission oil. Refer to TM-365, "Inspection".

OIL LEVEL

CAUTION:

Oil volume cannot be checked by oil level height.

1. Remove filler plug (1) and gasket.

CAUTION:

Never start engine while checking oil level.

- Insert wire (A) etc. from filler plug mounting hole to confirm if the oil attaches.
 - If oil does not attach at the end of the wire, confirm that there
 is not leakage, then refill the oil. Refer to <u>DLN-114</u>, "<u>Refilling</u>
 (GT-R certified NISSAN dealer)".

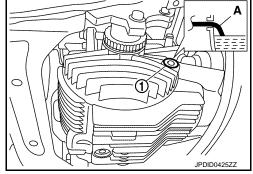
CAUTION:

Prevent foreign matter from getting into final drive.

 Set a gasket on filler plug and install it on final drive, and then tighten to the specified torque. Refer to <u>DLN-118</u>. "Exploded <u>View (GT-R certified NISSAN dealer)"</u>.

CAUTION:

Never reuse gasket.



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^{*2:} If oil leakage is detected, perform necessary procedures, check for oil leakage, and adjust oil level to the proper level.

^{*3:} When the oil does not drop

REAR DIFFERENTIAL GEAR OIL

< PERIODIC MAINTENANCE >

[REAR FINAL DRIVE]

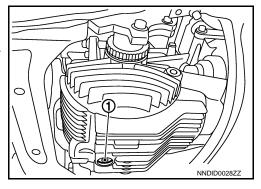
Draining (GT-R certified NISSAN dealer)

INFOID:0000000011490396

- 1. Stop the engine.
- 2. Remove the drain plug (1) and drain gear oil.
- 3. Set a gasket on drain plug (1) and install it to final drive and tighten to the specified torque. Refer to <u>DLN-118</u>, "Exploded <u>View (GT-R certified NISSAN dealer)"</u>.

CAUTION:

Never reuse gasket.



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Refilling (GT-R certified NISSAN dealer)

 Remove filler plug (1). Refill oil up to filler plug mounting hole line (A).

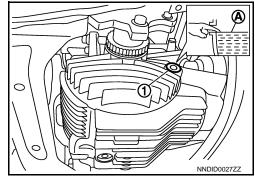
Oil grade and Vis- : Refer to MA-21, "Fluids and

cosity <u>Lubricants"</u>.

Oil capacity : Refer to <u>DLN-128</u>, "General

Specifications".

2. After refilling oil, drain 0.2 liter (3/8 US pt, 3/8 lmp pt) through filler plug mounting hole using oil syringe (commercial service tool) etc, to get the standard volume.



 Set a gasket to filler plug, and then install it to final drive and tighten to the specified torque. Refer to <u>DLN-118</u>, "<u>Exploded View (GT-R certified NISSAN dealer)</u>". CAUTION:

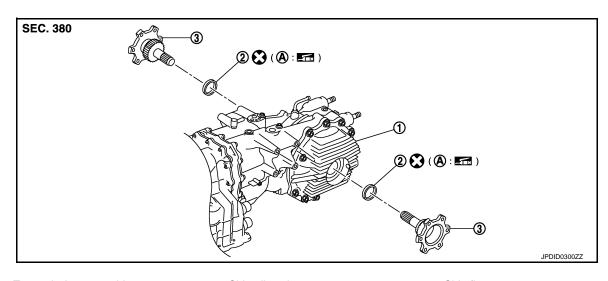
Never reuse gasket.

INFOID:0000000011490398

REMOVAL AND INSTALLATION

SIDE OIL SEAL

Exploded View (GT-R certified NISSAN dealer)



- Transmission assembly
- Side oil seal

Side flange

A. Oil seal lip

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

Removal and Installation (GT-R certified NISSAN dealer)

removal and installation (O1-17 certified 14100AIV dealer)

REMOVAL

- 1. Remove main muffler assembly. Refer to <u>EX-7</u>, "<u>Exploded View</u>" (with stainless steel muffler), <u>EX-14</u>, "<u>Exploded View</u>" (with titanium muffler).
- Remove rear wheel sensor. Refer to <u>BRC-148</u>, "<u>REAR WHEEL SENSOR</u>: <u>Exploded View (GT-R certified NISSAN dealer)</u>".
- Remove rear drive shaft. Refer to <u>RAX-15</u>, "Exploded View (GT-R certified NISSAN dealer)".
- Install attachment (A) to side flange to pull out the side flange with the sliding hammer (B).

A : Attachment [SST: KV401010000 (—)]

B : Sliding hammer [SST: ST36230000 (J-25840-A)]

NOTE:

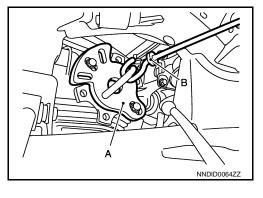
After side flange is removed, confirm that circular clip is attaching on side flange.

5. Remove side oil seal.

CAUTION:

Never damage transmission assembly.

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< REMOVAL AND INSTALLATION >

Install side oil seal (gear carrier side) with the drift (A) [SST: KV40104830 (—)] within the dimension (L) shown as follows.

: 6.3 - 7.3 mm (0.248 - 0.287 in)L

CAUTION:

- · Never reuse oil seal.
- · When installing, never incline oil seal.
- · Apply multi-purpose grease to side oil seal lip.
- Install side oil seal (side cover side) with the drift [SST: KV40104830 (—)] until the side oil seal becomes flush with the side cover end.

CAUTION:

- Never reuse oil seal.
- · When installing, never incline oil seal.
- Apply multi-purpose grease to side oil seal lip.
- 3. Install side flange according to the steps.

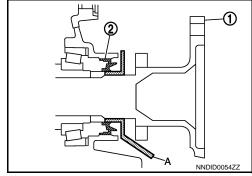
CAUTION:

When replacing side oil seal due to oil leakage, always replace side flange at the same time. (If side oil seal is abnormal, then side flange may also be abnormal.)

- Attach the protector (A) [SST: KV38105500 (J-33904)] to side oil seal (2).
- Insert side flange (1), and engage the serrated part of the flange with that of the side gear to remove protector.
- Put a suitable drift on the center of side flange and drive the drift until sound changes.

NOTE:

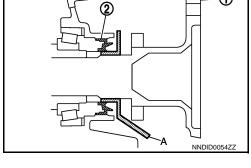
Driving sound of the side flange changes to echo-like sound after complete installation.



d. Check that the installation measurement (A) of the side flange (1) is as follows.

: 370 mm (14.57 in)

- Install rear drive shaft. Refer to RAX-15, "Exploded View (GT-R certified NISSAN dealer)".
- Install rear wheel sensor. Refer to BRC-148, "REAR WHEEL SENSOR: Exploded View (GT-R certified NISSAN dealer)".
- Install main muffler. Refer to EX-7, "Exploded View" (with stainless steel muffler), EX-14, "Exploded View" (with titanium muffler).
- 7. When oil leaks while removing, check oil level after the installation. Refer to DLN-112, "Inspection".



REAR FINAL DRIVE ASSEMBLY

< UNIT REMOVAL AND INSTALLATION >

[REAR FINAL DRIVE]

UNIT REMOVAL AND INSTALLATION

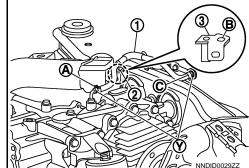
REAR FINAL DRIVE ASSEMBLY

Removal and Installation (GT-R certified NISSAN dealer)

INFOID:0000000011490400

CAUTION:

- When removing/installing the rear final drive, note the following and remove/install the transmission assembly as a set. Refer to TM-403, "Exploded View (GT-R certified NISSAN dealer)".
- Install (A) with the paint mark (Y) on the air breather hose (1) facing upward from the vehicle. Be sure to insert air breather hose to air breather tube until hose end reaches the tube bend R portion.
- Be sure to install the air breather hose clip (2) in (B) of the bracket (3).
- Install (C) with the paint mark (Y) facing downward from the vehicle. Be sure to insert it until it contacts a tube end.
- Make sure there are no pinched or restricted areas on the breather hose caused by bending or winding when installing it.



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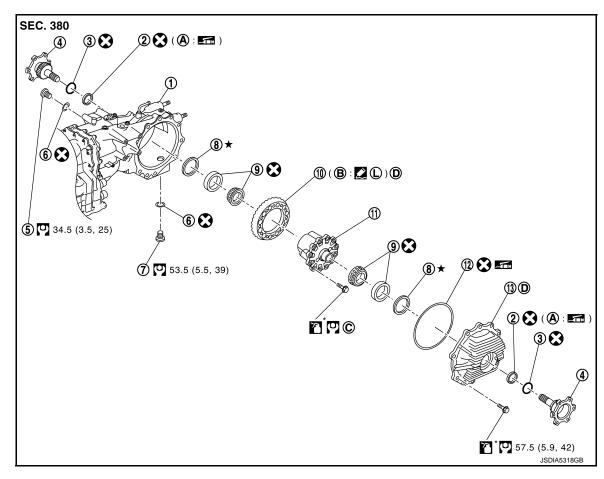
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UNIT DISASSEMBLY AND ASSEMBLY

DIFFERENTIAL ASSEMBLY

Exploded View (GT-R certified NISSAN dealer)

INFOID:0000000011490401



- Gear carrier
- 4. Side flange
- 7. Drain plug
- 10. Drive gear
- 13. Side cover
- A. Oil seal lip

- 2. Side oil seal
- Filler plug
- 8. Side bearing adjusting shim
- 11. Differential case assembly
- B. Screw hole

- 3. Circular clip
- 6. Gasket
- 9. Side bearing
- 12. O-ring
- C. Comply with the assembly procedure when tightening. Refer to <u>DLN-120</u>, "Assembly (GT-R certified NIS-SAN dealer)".

- D. Use an installed part, because it never be replaced alone.
- ∴ Apply anti-corrosion oil.
- Apply Genuine High Strength Thread Locking Sealant or equivalent. Refer to GI-18, "Recommended Chemical Products and Sealants".

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

Disassembly (GT-R certified NISSAN dealer)

INFOID:0000000011490402

CAUTION:

Never disassemble other than the parts shown in <u>DLN-118</u>, "<u>Exploded View (GT-R certified NISSAN dealer)</u>".

< UNIT DISASSEMBLY AND ASSEMBLY >

- Remove drain plug to drain gear oil.
- 2. Remove side flange.

NOTE:

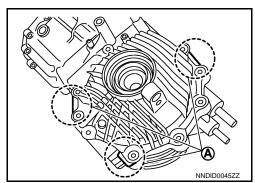
After side flange is removed, confirm that circular clip is attaching on side flange.

Remove side oil seal.

CAUTION:

Never damage gear carrier and side cover.

- 4. Remove side cover mounting bolts, then lightly tap the part (A) of side cover with a plastic hammer to remove side cover.
- 5. Remove O-ring.
- 6. Remove differential assembly from gear carrier.



7. Remove side bearing outer race with the puller (A), drift (B), and adapter (C).

A : Puller (commercial service tool)

B : Drift (commercial service tool)

C : Adapter (commercial service tool)

CAUTION:

Engage puller jaws in groove ().

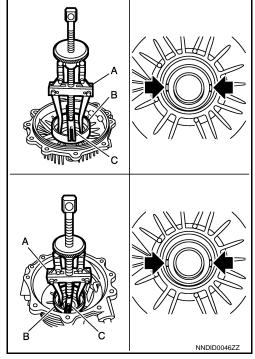
8. Remove side bearing adjusting shim.

CAUTION:

Distinguish and remember the installation position of the side bearing outer race and the side bearing adjusting shim. Never mix them up.

 Measure dimension (A) to prepare for the assembling procedure. This is required for selecting side bearing adjusting shim. Refer to <u>DLN-122</u>, "Adjustment (GT-R certified NISSAN dealer)".
 CAUTION:

Name the measurement value (A) as "A" and write it down.

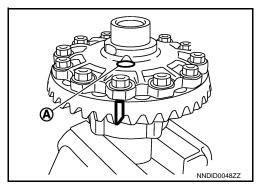


10. Paint matching marks on drive gear.

CAUTION:

- For matching mark, use paint. Never damage differential case and drive gear.
- Paint matching mark to match the part (A) of differential case.
- To prevent damage to the differential case assembly, place copper plate between these parts and vise.
- 11. Remove drive gear mounting bolts.
- 12. Remove drive gear from differential case.
- Measure dimension (B) to prepare for the assembling procedure. This is required for selecting side bearing adjusting shim. Refer to <u>DLN-122</u>, "<u>Adjustment (GT-R certified NISSAN dealer)</u>". CAUTION:

Name the measurement value (B) as "B" and write it down.



Revision: 2015 June DLN-119 GT-R

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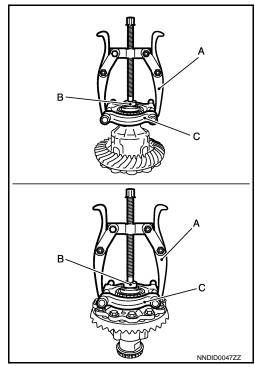
< UNIT DISASSEMBLY AND ASSEMBLY >

14. Remove side bearing inner race with the puller (A), drift (B), and replacer (C).

A : Puller (commercial service tool)

B : Drift [SST: ST33081000 (—)]

C : Replacer (commercial service tool)



Assembly (GT-R certified NISSAN dealer)

INFOID:0000000011490403

1. Press side bearing inner race into differential case with the drift (A), and adapter (B).

A : Drift [SST: KV40104730 (—)]
B : Adapter [SST: KV40104720 (—)]

CAUTION:

Never reuse side bearing.

 Measure dimension (B) to prepare. This is required for selecting side bearing adjusting shim. Refer to <u>DLN-122</u>, "Adjustment (GT-R certified NISSAN dealer)".

CAUTION:

Name the measurement value (B) as "B" and write it down.

Apply thread locking sealant into the thread hole of drive gear.
 Use Genuine High Strength Thread Locking Sealant or an equivalent. Refer to GI-18, "Recommended Chemical Products and Sealants".

CAUTION:

Clean and degrease drive gear back and threaded holes sufficiently.

4. Install the drive gear to differential case.

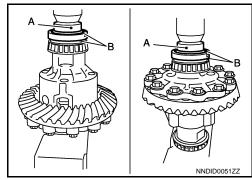
CAUTION:

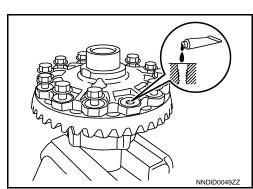
- Align the matching marks of differential case and drive gear.
- Drive gear is required to be replaced as a transmission assembly. Never replace drive gear alone.
- 5. Tighten the drive gear mounting bolts with the following procedure.

CAUTION:

Apply anti-corrosion oil to the thread and seat of mounting bolts.

a. Tighten the bolts in a crisscross fashion to the specified torque.





Drive gear mounting : 78.5 N•m (8.0 kg-m, 58 ft-lb) bolts tightening torque

b. Tighten the bolts additionally at the specified angle.

Drive gear mounting : 31 to 36 degree

bolts tightening angle

CAUTION:

Check the tightening angle by using the angle wrench [SST: KV10112100 (BT-8653-A)]. Never make judgment by visual inspection.

6. Measure dimension (A) to prepare. This is required for selecting side bearing adjusting shim. Refer to <u>DLN-122, "Adjustment (GT-R certified NISSAN dealer)"</u>.

CAUTION:

Name the measurement value (A) as "A'" and write it down.

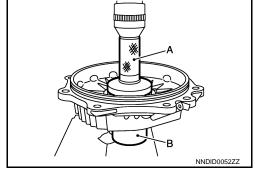
- Select side bearing adjusting shim. Refer to <u>DLN-122</u>, "Adjustment (GT-R certified NISSAN dealer)".
- 8. Install the selected side bearing adjusting shim (side cover side) to side cover.
- 9. Press side bearing outer race into side cover with the drift (A) and (B).

```
\begin{array}{lll} \mathsf{A} & : \mathsf{Drift} \, [\mathsf{SST:} \, \mathsf{ST01500001} \, ( \  \  \  \  \  )] \\ \mathsf{B} & : \mathsf{Drift} \, [\mathsf{SST:} \, \mathsf{KV40105310} \, ( \  \  \  \  \  )] \end{array}
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CAUTION:

Never reuse side bearing.

10. Install the selected side bearing adjusting shim to gear carrier.



11. Press side bearing outer race into gear carrier with the drift (A) and (B).

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A : Drift [SST: ST01500001 ( — )]

B : Drift [SST: KV40104710 ( — )]
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CAUTION:

Never reuse side bearing.

- 12. Install differential assembly to gear carrier.
- 13. Install O-ring to side cover.

CAUTION:

- · Apply multi-purpose grease onto O-ring.
- Never reuse O-ring.
- 14. Install side cover to gear carrier

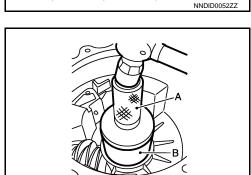
CAUTION:

- Apply anti-corrosion oil to the thread and seat of mounting bolts.
- Side cover is required to be replaced as a transmission assembly. Never replace the side cover alone.
- Install side oil seal (gear carrier side) with the drift (A) [SST: KV40104830 ()] within the dimension (L) shown as follows.



CAUTION:

- Never reuse oil seal.
- When installing, never incline oil seal.
- Apply multi-purpose grease to side oil seal lip.



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16. Install side oil seal (side cover side) with the drift [SST: KV40104830 (—)] until the side oil seal becomes flush with the side cover end.

CAUTION:

- Never reuse oil seal.
- When installing, never incline oil seal.
- · Apply multi-purpose grease to side oil seal lip.
- 17. Check and adjust drive gear to drive pinion backlash. Refer to <u>DLN-122</u>, "Adjustment (GT-R certified NIS-SAN dealer)".
- Check and adjust tooth contact. Refer to <u>DLN-122</u>, "Adjustment (GT-R certified NISSAN dealer)".
 CAUTION:

Adjust the tooth contact within the specified value of backlash to prioritize adjustment of backlash over tooth contact.

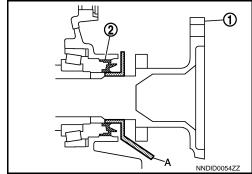
19. Install side flange according to the steps.

CAUTION:

- When replacing side oil seal due to oil leakage, always replace side flange at the same time. (If side oil seal is abnormal, then side flange may also be abnormal.)
- Replace circular clip, because it is non-reusable parts.
- a. Attach the protector (A) [SST: KV38105500 (J-33904)] to side oil seal (2).
- b. Insert side flange (1), and engage the serrated part of the flange with that of the side gear to remove protector.
- Put a suitable drift on the center of side flange and drive the drift until sound changes.

NOTE:

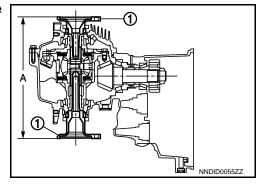
Driving sound of the side flange changes to echo-like sound after complete installation.



d. Check that the installation measurement (A) of the side flange (1) is as follows.

A : 370 mm (14.57 in)

20. Fill with gear oil and install filler plug.

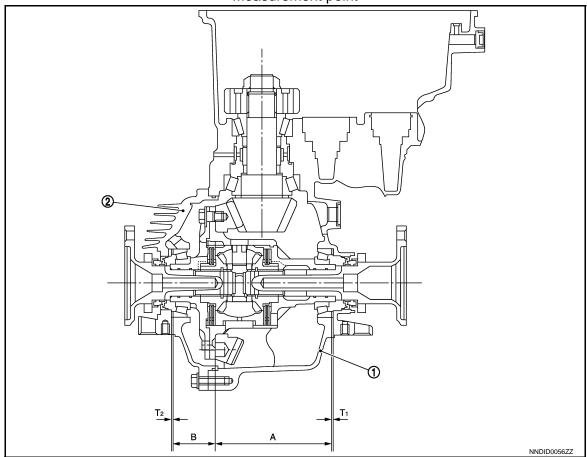


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Adjustment (GT-R certified NISSAN dealer)

SIDE BEARING ADJUSTING SHIM SELECTION

Measurement point



Gear carrier

2. Side cover

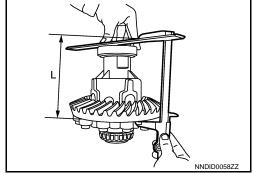
Measure the dimension of each measuring point according to the following steps.
 CAUTION:

The minimum scale of measuring instrument must be 0.01 mm (0.0004 in) or less.

Measuring dimension (A) (gear carrier side)

 Install side bearing outer race to inner race, then measure dimension (L) from drive gear mounting surface to outer race edge surface with a pair of vernier calipers and straightedge.
 CAUTION:

Consider the thickness of a straightedge.



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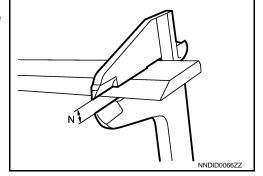
< UNIT DISASSEMBLY AND ASSEMBLY >

- Measure the thickness (N) of straightedge.
- Calculate the dimension (A) from drive gear mounting surface to outer race edge surface by formula below.

$$A = L - N$$

Example:

In case of N = 5.02 mm (0.198 in), L = 153.51 mm (6.044 in) A= 153.51 - 5.02 = 148.49 mm (A= 6.044 - 0.198 = 5.846 in)



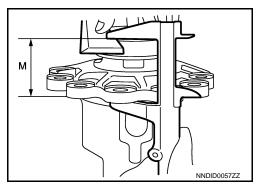
CAUTION:

Measure it in three points, then adapt the minimum.

Measuring dimension (B) (side cover side)

 Install side bearing outer race to inner race, then measure dimension (M) from drive gear mounting surface to outer race edge surface with a pair of vernier calipers and straightedge.
 CAUTION:

Consider the thickness of a straightedge.

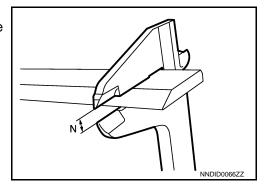


- Measure the thickness (N) of straightedge.
- Calculate the dimension (B) from drive gear mounting surface to outer race edge surface by formula below.

$$B = M - N$$

Example:

In case of N = 5.02 mm (0.198 in), M = 182.55 mm (7.187 in)
B= 182.55 - 5.02 = 177.53 mm
(B= 7.187 - 0.198 = 6.989 in)



CAUTION:

- Measure it in the condition removing drive gear.
- Measure it in three points, then adapt the minimum.
- 2. Calculate the thickness of side bearing adjusting shim by formula below.

$$T1' = T1 + (A - A')$$

 $T2' = T2 + (B - B')$

T1': Thickness of shim after replacement (gear carrier side)
 T2': Thickness of shim after replacement (side cover side)
 T1: Thickness of shim before replacement (gear carrier side)
 T2: Thickness of shim before replacement (side cover side)

A' : Dimension (A) after replacement
 B' : Dimension (B) after replacement
 A : Dimension (A) before replacement
 B : Dimension (B) before replacement

DIFFERENTIAL ASSEMBLY

< UNIT DISASSEMBLY AND ASSEMBLY > [REAR FINAL DRIVE]

BACKLASH

- 1. Remove drain plug.
- Fit a dial indicator to the drive gear face at drain hole to measure the backlash.

Backlash

: Refer to <u>DLN-128</u>, "Backlash (GT-R certified NIS-SAN dealer)".

• If the backlash is outside the specified value, then adjust the shickness raito of shims.

When the backlash is large:

Use thicker adjusting shim for the side cover side and thinner one for the gear carrier side.

When the backlash is small:

Use thinner adjusting shim for the side cover side and thicker one for the gear carrier side.

CAUTION:

Never change the total thickness of shims. Failure to do this changes bearing preload.

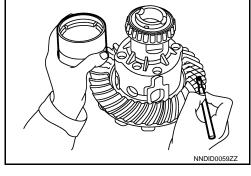
TOOTH CONTACT

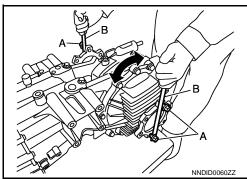
- Remove differential assembly. Refer to <u>DLN-118</u>, "<u>Disassembly (GT-R certified NISSAN dealer)</u>".
- 2. Apply red lead to drive gear.

CAUTION:

Apply red lead to both the faces of 3 to 4 gears at 4 locations evenly spaced on drive gear.

- Install differential assembly. Refer to <u>DLN-120</u>, "Assembly (<u>GT-R</u> certified NISSAN dealer)".
- 4. Shift the parking lever of transmission assembly to a range other than the P range.
- 5. Install the bolts (A) to side flange, then rotate drive gear back and forth several times with a suitable bar (B). Check tooth contact between the drive pinion and the drive gear.





CAUTION:

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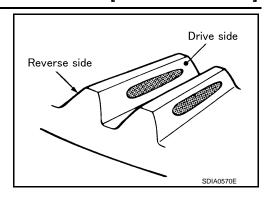
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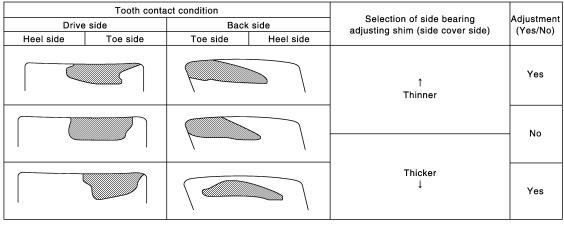
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Check tooth contact both on drive side and reverse side.





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CAUTION:

Judge tooth contact with respect to that of the side cover side.

 If tooth contact is improperly adjusted, use a thinner/thicker adjusting shim with respect to side bearing adjusting shim (side cover side) to the adjust tooth contact.
 CAUTION:

- Adjust the tooth contact within the specified value of backlash to prioritize adjustment of backlash over tooth contact.
- Never change the total thickness of shims on the side cover side and the gear carrier side.

Inspection After Disassembly (GT-R certified NISSAN dealer)

INFOID:0000000011490405

DRIVE GEAR AND DRIVE PINION

- Wash the disassembled parts thoroughly.
- If the gear teeth are inadequate, investigate the cases and adjust to appropriate tooth contact.
- If the teeth are significantly worn, cracked, damaged, pitted, or chipped, replace transmission assembly.

BEARING

- Wash the disassembled parts thoroughly.
- If any chipped, pitted, worn, rusted, or scratched, or unusual noise is heard from the bearing, replace as a bearing assembly (as a new set) with new one.

SIDE BEARING ADJUSTING SHIM

- Wash the disassembled parts thoroughly.
- If the side bearing adjusting shim is chipped, damaged, or abnormally worn, replace the replace the side bearing adjusting shim.

OIL SEAL

- Whenever disassembled, replace.
- If the lip of oil seal is abnormally worn, deteriorated in tension (sealing force of lip), replace the oil seal with a new one.

DIFFERENTIAL CASE

DIFFERENTIAL ASSEMBLY

< UNIT DISASSEMBLY AND ASSEMBLY >

[REAR FINAL DRIVE]

• Wash the disassembled parts thraoughly.

• If the sliding part is worn or cracked, replace the differential case.

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SERVICE DATA AND SPECIFICATIONS (SDS)

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[REAR FINAL DRIVE]

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

General Specifications

INFOID:0000000011490406

		AWD	
Applied model		VR38DETT	
		GR6Z30A	
Final drive type		1.5 WAY mechanical LSD	
Gear ratio		3.700	
Number of teeth (Drive gear/Drive pinion)		37/10	
Oil capacity (Approx.)	ℓ (US pt, Imp pt)	1.35 (2-7/8, 2-3/8)	
Number of pinion gears		4	

Backlash (GT-R certified NISSAN dealer)

INFOID:0000000011490407

Unit: mm (in)

Item	Standard
Drive gear to drive pinion gear	0.15 - 0.20 (0.0059 - 0.0079)